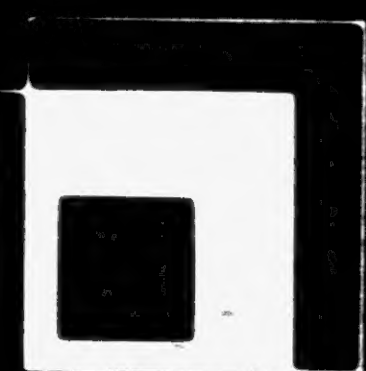


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VOL NO 999

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1980

MICRO PHOTO DIVISION



BELL & HOWELL

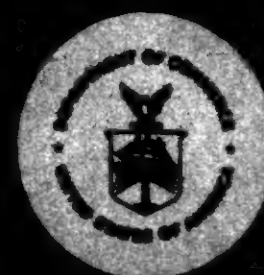
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Vol. 999 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE



PATENTS

October 7, 1980

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

October 7, 1980

Volume 999

Number 1

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee.....	\$35.00
Search fee.....	300.00
Basic fee (first 30 pages).....	190.00
Basic fee supplement (each sheet over 30).....	3.50
Designation fee.....	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

June 17, 1980.

Department of Commerce

PATENT AND TRADEMARK OFFICE

Designation of International Depositary Authorities under the Budapest Treaty

The Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary and Japan. A copy of the Treaty was published in the OFFICIAL GAZETTE on Aug. 23, 1977 (961 O.G. 21-26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depositary on its territory to serve as an international depositary authority. More than one depositary may be designated. Each such depositary will be authorized to receive and store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depositary authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depositary's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depositary to assume the cost of transferring deposits made under the Treaty to another international depositary authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depositary promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-3065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depositary authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depositary authority.

MEMORANDUM

For the purposes of prospective international depositary authorities under the Budapest Treaty

Introduction

1. This memorandum contains information for the benefit of any depositary institutions (culture collections) that may wish to become "international depositary authorities" under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depositary institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depositary authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of inter-governmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 3(1) (a) and 9(1) (a)).

General Remarks on International Depositary Authorities

3. "International depositary authorities" are depositary institutions that have acquired the status of international depositary authorities. To obtain this status, a depositary institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depositary institution acquire such status: it is therefore possible for there to be several international depositary authorities located on the territory of one and the same State.

4. An international depositary authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depositary authority, or again by virtue of a

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decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depositary Authorities

5. The requirements referred to in paragraph 3 above which a depositary institution has to meet in order to become a depositary authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

(i) accepting for deposit any or certain kinds of microorganisms;

(ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms;

(v) complying, with respect to the microorganisms deposited under the Treaty, with the requirement of secrecy, which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph 10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. Reception of the microorganism. The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b) (v)). When it receives the microorganism, the international depositary authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. Viability test. The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1).

8. Viability statement. The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. Storage of the microorganism. The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indicating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. Furnishing of samples. The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure whereby the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. Communication of the scientific description and/or proposed taxonomic designation. If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. Fees. For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

July 14, 1978.

Department of the Treasury United States Customs Service (TMK-2-RRUEE)

NOTICE OF APPLICATION FOR RECORDATION OF TRADE NAME

DONKENNY, INC.

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 13.12), for the recordation under

section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name DONNKENNY, INC., used by Donnkenny, Inc., a corporation organized under the laws of the State of Delaware, located at 1411 Broadway, New York, N.Y. 10018.

The application states that the trade name is associated with women's wearing apparel and sportswear including but not limited to sweaters, skirts, tops, jackets, shirts, jeans, and slacks. The application states further that no foreign firm is authorized to use the trade name sought to be recorded. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received not later than 30 days from the date of publication of this notice in the FEDERAL REGISTER.

Notice of the action taken on the application for recordation of the trade name will be published in the FEDERAL REGISTER.

SALVATORE E. CARAMAGNO,
Acting Director, Office of
Regulations and Rulings.

Dated: Aug. 8, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,107,587, Re. S.N. 171,799, Filed Jul. 24, 1980, Cl. 318/439, THREE-PHASE DC MOTOR HAVING NON-SUPERIMPOSED ARMATURE COILS, Itsuki Ban and Manabu Shiraki, Owner of Record: *Inventors*, Attorney or Agent: Joseph M. Lane, et al., Ex. Gp.: 217

4,175,057, Re. S.N. 162,730, Filed Jun. 25, 1980, Cl. 252/455 Z, ZEOLITE COMPOSITION, Evan E. Davies, et al., Owner of Record: *British Petroleum Company Limited*, London, England, Attorney or Agent: Lorimer P. Brooks, et al., Ex. Gp.: 116

4,180,689, Re. S.N. 162,729, Filed Jun. 25, 1980, Cl. 585/407, PROCESS FOR CONVERTING C3-C12 HYDROCARBONS TO AROMATICS OVER GALLIA-ACTIVATED ZEOLITE, Evan E. Davies, et al., Owner of Record: *British Petroleum Company Limited*, London, England, Attorney or Agent: Lorimer P. Brooks, et al., Ex. Gp.: 116

PATENT NOTICES

Certificates of Correction for Issue of Oct. 7, 1980

Re. 30,091	4,193,256	4,203,405	4,209,499
Re. 30,278	4,197,201	4,203,683	4,209,518
D. 254,278	4,197,247	4,203,829	4,209,555
3,916,053	4,198,374	4,203,836	4,209,611
3,924,653	4,198,573	4,204,297	4,209,782
4,082,323	4,199,030	4,204,390	4,209,810
4,154,927	4,199,404	4,204,678	4,210,541
4,156,916	4,199,461	4,205,189	4,210,560
4,156,918	4,199,479	4,205,490	4,210,948
4,174,461	4,200,485	4,205,852	4,210,995
4,176,226	4,200,521	4,205,885	4,211,150
4,177,333	4,201,282	4,206,084	4,211,507
4,179,064	4,201,295	4,206,446	4,211,665
4,179,503	4,201,572	4,207,097	4,211,792
4,180,641	4,201,680	4,207,175	4,211,847
4,182,792	4,201,769	4,207,453	4,211,932
4,183,799	4,202,394	4,207,477	4,212,023
4,186,012	4,202,603	4,207,613	4,212,216
4,188,230	4,202,975	4,207,947	4,212,633
4,189,012	4,203,170	4,208,805	4,213,745
4,192,727	4,203,401	4,209,445	4,214,020

Disclaimers

3,467,635.—Wallace Raymond Brasen, Claymont and Charles Spencer Cleaver, Wilmington, Del. COPOLYMERS OF TETRAFLUOROETHYLENE AND OLEFINS CURABLE TO ELASTOMERS. Patent dated Sept. 16, 1969. Disclaimer filed May 15, 1978, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby enters this disclaimer to claims 11, 12 and 13 of said patent.

3,966,639.—James L. Callahan, Bedford Heights, Arthur F. Miller and Wilfrid G. Shaw, Lyndhurst, Ohio. AMPHORA AGGREGATES. Patent dated June 29, 1976. Disclaimer filed June 18, 1980, by the assignee, *The Standard Oil Company*.

The term of this patent subsequent to November 12, 1991 has been disclaimed.

4,091,054.—Fumio Saito, Tsurunosato Ohtsu, Fumito Yamai, Kusatsu; Yositsugu Beppu, Shiga and Shinpei Nakayama, Kusatsu, Japan. PROCESS OF PREPARING STYRENIC POLYMER PARTICLES. Patent dated May 23, 1978. Disclaimer filed June 30, 1978, by the assignee, *Sekisui Kagaku Kogyo Kabushiki Kaisha and Sekisui Kaseihin Kogyo Kabushiki Kaisha*.

The term of this patent subsequent to Apr. 18, 1995 has been disclaimed.

4,156,751.—Donald M. Yenni, Jr., Stillwater; Steven W. Knutsen, New Brighton and Edward J. Downing, St. Paul, Minn. SHEET MATERIAL FOR FORMING ENVELOPES USED TO PROTECT ELECTRONIC COMPONENTS. Patent dated May 29, 1979. Disclaimer filed Jan. 21, 1980, by the assignee, *Minnesota Mining and Manufacturing Company*.

The term of this patent subsequent to May 15, 1996 has been disclaimed.

4,175,055.—Glen J. Goller, West Springfield, Mass.; Vincent J. Petraglia, Vernon and Joseph R. Salonia, Middletown, Conn. DRY MIX METHOD FOR MAKING AN ELECTROCHEMICAL CELL ELECTRODE. Patent dated Nov. 20, 1979. Disclaimer filed May 15, 1980, by the assignee, *United Technologies Corporation*.

Hereby enters this disclaimer to claims 1 through 9 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for \$.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for \$.50 each (\$10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,

Program Coordinator,

Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY, OTJAG

Chief, Intellectual Property Division, Room 2D 444
Pentagon, Washington, D.C. 20310

Patent application 6-087,115. Laser Photochemical Synthesis and Coating of Optical Fiber. Filed Oct. 22, 1979.

Patent application 6-089,826. Touch Screen Target Designator. Filed Oct. 31, 1979.

Patent application 6-100,685. Microprocessor Controlled Digital Detector. Filed Dec. 5, 1979.

Patent application 6-112,587. Preparation of HNS From HNBB Using Oxygen. Filed Jan. 16, 1980.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent 4,198,759. Optical Plummet Azimuth Reference Assembly. Filed Aug. 25, 1978. Patented Apr. 22, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-099,812. Direct Extraction Process for the Production of a White Defatted Food-Grade Peanut Flour. Filed Dec. 3, 1979.

Patent application 6-118,886. A Process for Producing a Powdered Flavoring Material. Filed Feb. 6, 1980.

U.S. DEPARTMENT OF COMMERCE

National Technical Information Service, Office of Government Inventions and Patent, Springfield, Va. 22161

Patent application 6-128,591. Handcuff Improvements. Filed Mar. 3, 1980.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-000,740. High-Voltage Crowbar Circuit With Cascade-Triggered Series Igniters. Filed Jan. 3, 1979.

Patent application 6-003,561. Method and Means for Measurement and Control of Pulsed Charged Beams. Filed Jan. 15, 1979.

Patent application 6-018,099. Magneto-hydrodynamic (MHD) Channel Corner Seal. Filed Mar. 6, 1979.

Patent application 6-018,211. Fuel Cell Oxygen Electrode. Filed Mar. 7, 1979.

Patent application 6-028,741. Multiplexer and Time Duration Measuring Circuit. Filed Apr. 10, 1979.

Patent application 6-035,158. Ceramic Components for MHD Electrode. Filed May 2, 1979.

Patent application 6-037,077. Cooperative Heat Transfer and Ground Coupled Storage System. Filed May 8, 1979. Not available NTIS.

Patent application 6-039,427. Gas Cleaning Apparatus. Filed May 15, 1979. Not available NTIS.

Patent application 6-042,462. Nondestructive Method for Detecting Defects in Photodetector and Solar Cell Devices. Filed May 25, 1979. Not available NTIS.

Patent application 6-047,447. Cyclic Thermochemical Process for Producing Hydrogen Using Cerium-Titanium Compounds. Filed June 11, 1979. Not available NTIS.

Patent application 6-047,449. Apparatus for Generating Non-linear Pulse Patterns. Filed June 11, 1979. Not available NTIS.

Patent 4,159,635. Isokinetic Air Sampler. Filed Aug. 24, 1978. Patented July 3, 1979. Not available NTIS.

Patent 4,161,351. All-Reflective Optical Target Illumination System With High Numerical Aperture. Filed May 7, 1976. Patented July 17, 1979. Not available NTIS.

Patent 4,161,950. Electrosurgical Knife. Filed Aug. 1, 1973. Patented July 24, 1979. Not available NTIS.

Patent 4,162,142. Tritium Labeling of Organic Compounds Deposited on Porous Structures. Filed June 29, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,162,157. Secondary Hardening Steel Having Improved Combination of Hardness and Toughness. Filed May 15, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,162,158. Ferritic Fe-Mn Alloy for Cryogenic Applications. Filed Dec. 28, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,162,401. High-Resolution, Cryogenic, Side-Entry Type Specimen Stage. Filed May 17, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,163,516. Method for Joining Metal by Solid-State Bonding. Filed Dec. 28, 1977. Patented Aug. 7, 1979. Not available NTIS.

Patent 4,164,089. Method of Preparing a Positive Electrode for an Electrochemical Cell. Filed Apr. 28, 1978. Patented Aug. 14, 1979. Not available NTIS.

Patent 4,169,884. Hydrogen Production From Water Using Copper and Barium Hydroxide. Filed Aug. 17, 1978. Patented Oct. 2, 1979. Not available NTIS.

Patent 4,170,135. Coaxial Cavity for Measuring Level of Liquid in a Container. Filed Sept. 26, 1978. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,172,926. Electrochemical Cell and Method of Assembly. Filed June 29, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,173,327. Solid Handling Valve. Filed June 1, 1977. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,175,929. Process for Control of Pollutants Generated During Coal Gasification. Filed Aug. 29, 1978. Patented Nov. 27, 1979. Not available NTIS.

Patent 4,180,484. Ceramic Component for Electrodes. Filed June 14, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,555. Process for Producing Hydrogen From Water Using Cobalt and Barium Compounds. Filed Aug. 17, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,775. Magnetic Thin-Film Split-Domain Current Sensor-Recorder. Filed Mar. 18, 1977. Patented Dec. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-117,162. Electrically Conductive Polymeric Compositions. Filed Jan. 31, 1980. Not available NTIS.

Patent application 6-136,227. Generation of Intense, High-Energy Ion Pulses by Magnetic Compression of Ion Rings. Filed Apr. 1, 1980. Not available NTIS.

Patent application 954,058. Improved Method of Infrared Laser Soldering. Filed Oct. 23, 1979. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent application 6-106,192. Automatic Thermal Switch. Filed Dec. 23, 1979. Not available NTIS.

Patent application 6-126,138. Controlled Overspray Spray Nozzle. Filed Feb. 29, 1980. Not available NTIS.

Patent application 6-128,230. Memory-Based Parallel Data Output Controller. Filed Mar. 8, 1980. Not available NTIS.

Patent application 6-129,778. Computer Circuit Card Puller. Filed Mar. 12, 1980. Not available NTIS.

Patent application 6-129,780. Amplified Wind Turbine Apparatus. Filed Mar. 12, 1980. Not available NTIS.

Patent application 6-129,793. Microwave Switching Power Divider. Filed Mar. 12, 1980. Not available NTIS.

Patent application 6-129,798. Process for the Preparation of Polycarbonylphosphazenes. Filed Mar. 12, 1980. Not available NTIS.

Patent application 6-129,799. Carbonylphosphazenes and Their Polymers. Filed Mar. 12, 1980. Not available NTIS.

Patent application 6-135,038. Method and Device for Destructive Detection of a Substance. Filed Mar. 28, 1980. Not available NTIS.

Patent application 6-135,056. Electrical Servo Actuator Bracket. Filed Feb. 20, 1980. Not available NTIS.

Patent 4,191,505. Wind Wheel Electric Power Generator. Filed Feb. 24, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,193,570. Active Nutation Controller. Filed Apr. 19, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,115. Method and Means for Helium/Hydrogen Ratio Measurement by Alpha Scattering. Filed Nov. 7, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,195,244. Cdn Solid State Phase Insensitive Ultrasonic Transducer. Filed July 26, 1978. Patented Mar. 25, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following:

the collections are organized in patent number sequence. Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Texas	Dallas Public Library	(214) 748-9071
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	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 23, 1980

PATENT EXAMINING GROUPS

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New Case
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Action

CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director..... 10-16-79
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.

GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director..... 5-11-79
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.

HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director..... 5-7-79
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.

COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director..... 11-14-79
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.

SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director..... 7-11-79
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director..... 2-4-78
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.

SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... 3-29-79
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.

INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director..... 6-29-79
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.

RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director..... 1-22-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluid Material Handling.

ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director..... 11-9-78
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.

DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... 10-4-78
Industrial Arts; Household, Personal and Fine Arts.

MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director..... 6-3-79
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Apparatuses; Brakes; Railways and Railway Equipment.

MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director..... 5-29-79
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.

AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director..... 7-3-79
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavation; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.

HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director..... 4-2-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.

GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director..... 3-19-79
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.

Expiration of patents: The patents within the range of numbers indicated below expire during August 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,099,837 to 3,102,269, inclusive
Plant Patents..... Numbers 2,271 to 2,276, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 7, 1980

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T999,001

SACK HANDLING DEVICE

Ronald Bevan, "Whitehaven", 76 Hay St., Steeple Morden, Royston, Hertfordshire, England

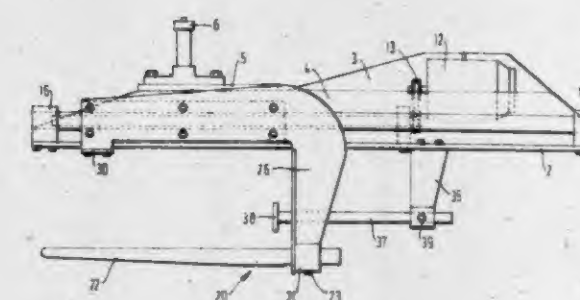
Filed Jul. 24, 1979, Ser. No. 60,125

Claims priority, application United Kingdom, Mar. 14, 1979, 09052/79

Int. Cl.³ B65G 57/10

U.S. Cl. 414-82

3 Sheets Drawing. 7 Pages Specification



A device for handling filled sacks in a stacking machine comprises a gantry; means for securing the gantry to a transportation device; a platform for supporting the filled sacks, suspended from the gantry so as to be moveable therealong between a forward position and a retracted position; and a fence mounted in a fixed position with respect to the gantry and located above the platform to act as a barrier against movement of any sacks supported on the platform as the latter is withdrawn from the forward to the retracted position.

T999,002

APPLICATION OF POLYMERIC POWDERS TO A SUBSTRATE

Henry C. Twiggs, 277 Lakeview Cir., Kingsport, Tenn. 37663; James L. Suggs, Rte. 12, Greeneville, Tenn. 37743, and Dan F. Buck, 816 Liberty Dr., Kingsport, Tenn. 37663

Filed Oct. 2, 1979, Ser. No. 81,233

Int. Cl.³ B05D 3/02

U.S. Cl. 427-385.5

No Drawing. 6 Pages Specification

The present invention provides a method for coating a substrate with a thermoplastic polymeric powder, especially polyester powder, by forming an emulsion containing fine particles of such powder, applying the emulsion to the substrate, and heating the coated substrate to a temperature sufficiently high to evaporate the liquid from the emulsion and thermally bond the particles to the substrate. The emulsifying agents are fatty acid esters of glycerol.

T999,003

SHIFTED PHOTOGRAPHIC DYES AND COMPOSITIONS, ELEMENTS AND PROCESSES EMPLOYING THEM

John A. Ford, and Gregory J. Lestina, both of Kodak Park Works, Rochester, N.Y. 14650

Division of Ser. No. 949,463, Oct. 10, 1978. This application

Apr. 25, 1980, Ser. No. 143,659

Int. Cl.³ G03C 5/54; C07C 107/04

U.S. Cl. 430-223

No Drawing. 53 Pages Specification

Shifted photographic dyes which have good storage stability, yet rapidly unblock under processing conditions contain a blocked hydroxy group and a neighboring group that anchimerically assists the hydrolytic cleavage of the blocking group under processing conditions.

REISSUES

OCTOBER 7, 1980

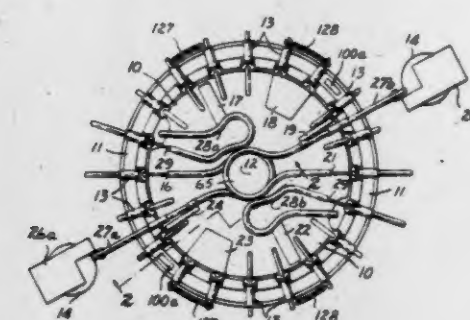
Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,410 APPARATUS FOR LOADING PROPHYLACTIC DEVICES ON TEST APPARATUS

Lawrence Povlacs, Dothan, Ala., assignor to The Akwell Corporation, Akron, Ohio
Original No. 3,391,803, dated Jul. 9, 1968, Ser. No. 541,814, Apr. 11, 1966. Application for reissue Sep. 28, 1973, Ser. No. 401,908

Int. Cl.³ B65G 51/02
U.S. Cl. 406—87

25 Claims



1. A machine for placing thin tubular rubber-like articles on a mandrel comprising conveyor means operable to receive randomly oriented articles in a collapsed condition and deliver such articles individually to a discharge location in a predetermined orientation with the article extended, and article receiving means including a mandrel operable to receive articles at said discharge location in said predetermined orientation and position said articles on said mandrel.

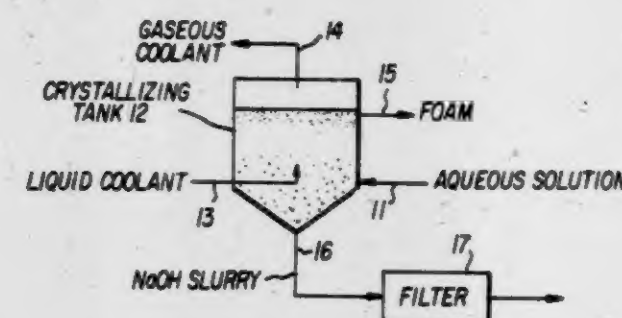
Re. 30,411 PROCESS FOR PURIFYING SODIUM HYDROXIDE Keiichi Nakaya, Chiba; Suekazu Hirata, and Kunio Sato, both of Ichihara, all of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Original No. 4,065,270, dated Dec. 27, 1977, Ser. No. 677,754, Apr. 16, 1976. Application for reissue Apr. 28, 1978, Ser. No. 901,032

Claims priority, application Japan, Apr. 28, 1975, 50-50677
Int. Cl.³ B01D 9/02

U.S. Cl. 23—299

17 Claims



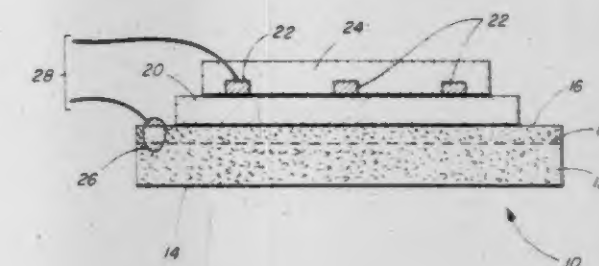
1. A process for purifying sodium hydroxide which [comprises] consists of cooling an aqueous solution of sodium hydroxide containing soluble impurities to form a slurry containing sodium hydroxide hydrate crystals and the fine impurity crystals; forming bubbles in said slurry, whereby said impurity crystals are adsorbed on the bubbles and float upward therewith to form a foamed scum on said slurry; and removing said scum from said slurry, thereby separating the impurity crystals from the sodium hydroxide crystals.

Re. 30,412 CdTe BARRIER TYPE PHOTOVOLTAIC CELLS WITH ENHANCED OPEN-CIRCUIT VOLTAGE, AND PROCESS OF MANUFACTURE

Pranab K. Raychaudhuri, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Original No. 4,035,197, dated Jul. 12, 1977, Ser. No. 671,866, Mar. 30, 1976. Continuation of Ser. No. 885,050, Mar. 9, 1978, abandoned. Application for reissue Apr. 26, 1979, Ser. No. 33,615

Int. Cl.³ H01L 31/06
U.S. Cl. 136—255

10 Claims



5. A photovoltaic cell comprising a layer of crystalline cadmium telluride, a surface of said layer being altered to contain [tellurium oxide] an oxide form of tellurium by heating in an oxygen containing atmosphere for between about 1 minute and about 20 minutes at a temperature between about 250° and about 500° C. the oxygen being present in the atmosphere in an amount that is effective to enhance the open-circuit voltage by at least 50 millivolts compared to the open-circuit voltage of a photovoltaic cell identical in structure except for the layer of cadmium telluride which has in the surface thereof only the oxide forms of tellurium resulting from exposing said surface to air at room temperature, in contact with at least part of said altered surface, a layer of metal capable of forming a barrier with said cadmium telluride altered surface; and an electrode in ohmic contact with said cadmium telluride.

8. A photovoltaic cell comprising a layer of crystalline cadmium telluride, a surface of said layer being altered by heating in an oxygen containing atmosphere for between about 1 minute and about 20 minutes at a temperature between about 250° and about 500° C., the oxygen being present in the atmosphere in an amount that is effective to enhance the open circuit voltage by at least 50 millivolts compared to the open-circuit voltage of a photovoltaic cell identical in structure except for the layer of cadmium telluride which has in the surface thereof only the oxide forms of tellurium resulting from exposing said surface to air at room temperature, and in contact with at least part of said altered surface, a layer of metal capable of forming a barrier with said cadmium telluride altered surface; and an electrode in ohmic contact with said cadmium telluride.

Re. 30,413

BLEOMYCINIC ACID AND PROCESS FOR PREPARING THEREOF

Hamao Umezawa, Tokyo; Yasushi Takahashi, Hoya; Tadashi Shirai, Musashino, and Akio Fujii, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Original No. 3,932,374, dated Jan. 13, 1976, Ser. No. 479,087, Jun. 13, 1974, Division of Ser. No. 290,986, Sep. 21, 1972, Pat. No. 3,867,257, which is a continuation-in-part of Ser. No. 252,252, May 11, 1972, Pat. No. 3,843,448, Application for reissue May 24, 1979, Ser. No. 41,995

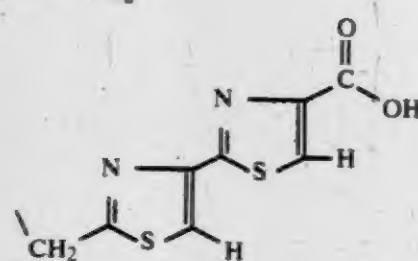
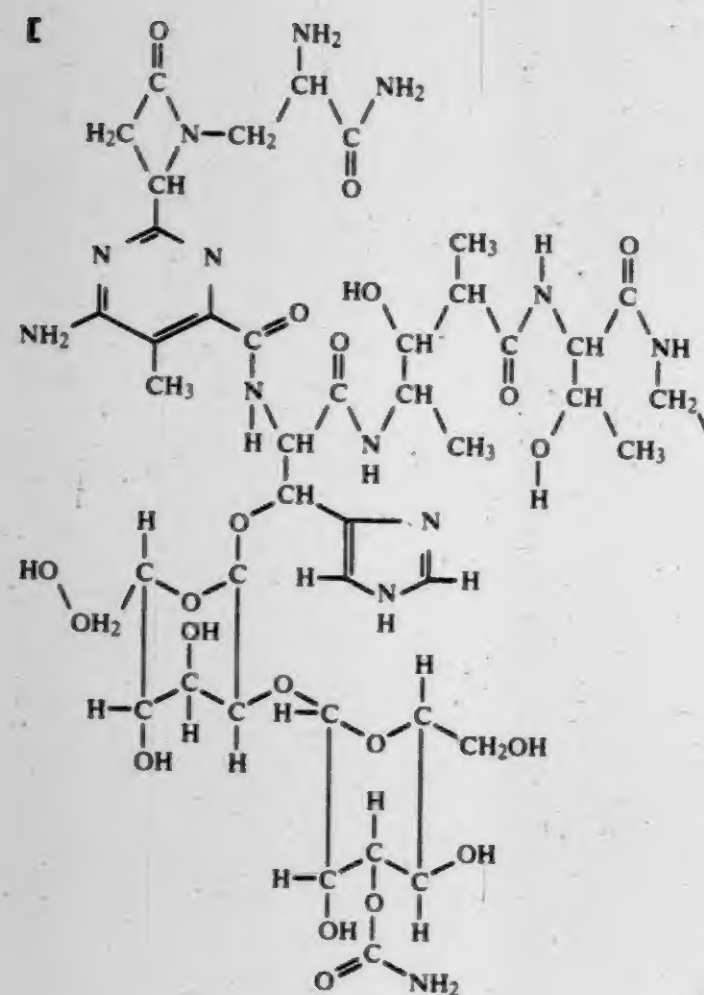
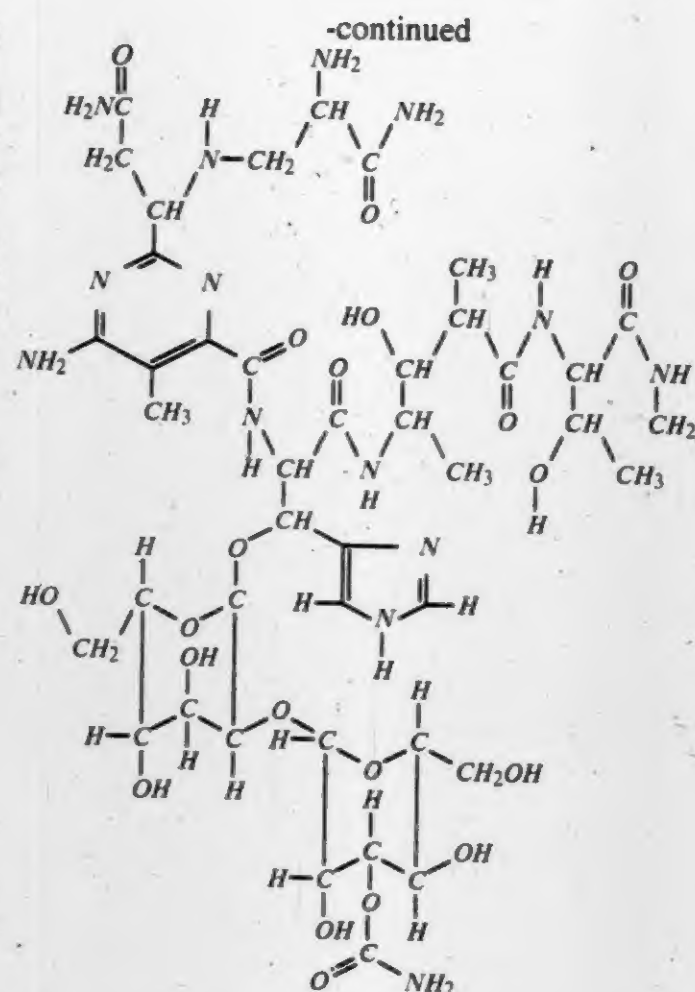
Claims priority, application Japan, May 15, 1971, 46-32232

Int. Cl.³ C07C 103/52; A61K 37/00

U.S. Cl. 260-112.5 R

2 Claims

1. A compound having the structure of:



Re. 30,414

PROCESS FOR PRODUCING A HIGH TENSILE STRENGTH, HIGH YOUNG'S MODULUS CARBON FIBER HAVING EXCELLENT INTERNAL STRUCTURE HOMOGENEITY

Yoshiro Kinoshita, Masaki, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

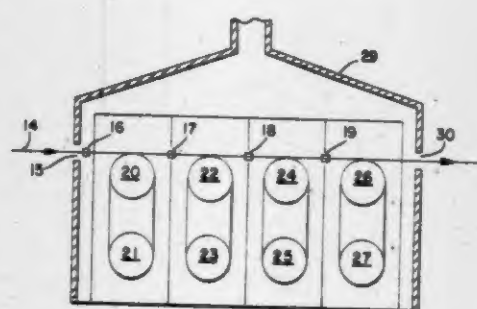
Original No. 4,065,549, dated Dec. 27, 1977, Ser. No. 713,629, Aug. 12, 1976, Division of Ser. No. 622,954, Oct. 16, 1975, abandoned. Application for reissue May 10, 1979, Ser. No. 37,665

Claims priority, application Japan, Oct. 21, 1974, 49-120365; Dec. 2, 1974, 49-138217

Int. Cl.³ D01F 9/14, 9/22

U.S. Cl. 423-447.6

31 Claims



1. A process for producing a carbon fiber having high tensile strength which comprises oxidizing an organic polymeric fiber in an oxidizing atmosphere by intermittently contacting and removing said organic fiber on and from a heated body having a surface temperature from about 200° to about 400° C.

wherein the contact time of said organic fiber on the heated body per single contact is less than about 1 second and the temperature of said oxidizing atmosphere is maintained lower [than] the surface temperature of said heated body, and then carbonizing the oxidized fiber in a non-oxidizing atmosphere at a temperature above about 800° C.

17. A process for producing a carbonizable oxidized fiber which comprises oxidizing an organic polymeric fiber in an oxidizing atmosphere by intermittently contacting and removing said organic fiber on and from a heated body having a surface temperature from about 200° to about 400° C. wherein the contact time of said organic fiber on the heated body per single contact is less than about 1 second and the temperature of said oxidizing atmosphere is maintained lower than the surface temperature of said heated body.

Re. 30,415

SUBSTITUTED PYRROLOQUINOXALINONES AND DIONES

Richard E. Holmes, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

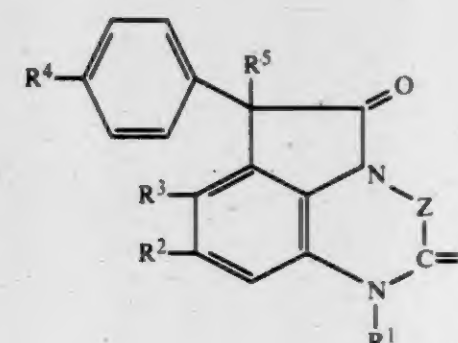
Original No. 4,087,527, dated May 2, 1978, Ser. No. 836,830, Sep. 26, 1977, Division of Ser. No. 772,154, Feb. 25, 1977, Pat. No. 4,075,206, Application for reissue May 29, 1979, Ser. No. 42,848

Int. Cl.² A61K 31/495

U.S. Cl. 424-250

2 Claims

3. A method of treating vascular thrombosis in mammals which comprises administering to a mammal in need of such treatment an amount of a compound of the formula effective for treating vascular thrombosis.



wherein

R¹ is H or C₁-C₃ alkyl; when taken singly, R² is H, C₁-C₃ alkyl, C₁-C₃ alkoxy, F or Cl and R³ is H; and R² and R³ when taken together with the carbon atoms to which they are attached form a benzene ring;

R⁴ is H, Cl or F;

R⁵ is OH, H or phenyl;

Y is O or H₂;

Z is -CH₂-CH₂- or -CHR⁶- wherein R⁶ is H or C₁-C₃ alkyl.

Re. 30,416

AUTOMATIC PROGRAM LOCATOR FOR TAPE DECKS

Tatsuhiko Yasunaga, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

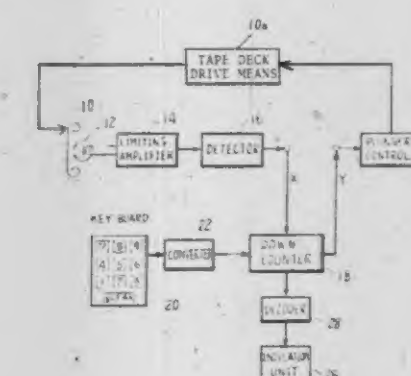
Original No. 4,014,039, dated Mar. 22, 1977, Ser. No. 571,411, Apr. 24, 1975, Application for reissue May 23, 1978, Ser. No. 908,655

Claims priority, application Japan, Apr. 24, 1974, 49-61056

Int. Cl.³ G11B 15/16, 15/18, 15/44

U.S. Cl. 360-72.1

24 Claims



1. An automatic program locating system for tape reproduction systems comprising:

- a sensing head in physical contact with a tape when the tape reproduction system is in the fast forward or rewind drive mode;
- recorded passage detection circuit means connected to receive signals from the sensing head for generating a silence detection signal when the sensing head reaches a silence portion between recorded programs;
- down counter means which counts down one count in response to each occurrence of a silence detection signal;
- key input means for introducing a desired number into the down counter;
- count output detection circuit means for generating a control signal when the down counter counts from said desired number down to zero; and
- shifting means for shifting the operational states of the tape reproduction system upon receiving the control signal.

PLANT PATENTS

GRANTED OCTOBER 7, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,599

ALSTROEMERIA PLANT NAMED YELLOW KING

M. C. van Staaveren, 30, Hornweg, 1432 GM Aalsmeer, Netherlands

Filed Apr. 23, 1979, Ser. No. 32,677

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct variety of alstroemeria plant substantially as herein shown and described, characterized by the distinctive darkish yellow overall coloring of its flower petals, its substantially continuous production of flowers, and the long-lasting quality of the flowers both on the stem and as cut flowers.

4,600

ALSTROEMERIA NAMED PINK TRIUMPH

M. C. van Staaveren, 30, Hornweg, 1432 GM Aalsmeer, Netherlands

Filed Apr. 23, 1979, Ser. No. 32,679

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct alstroemeria cultivar substantially as herein shown and described, characterized by the distinctive overall red-pink coloring of the outer petals of its flowers and the sharply contrasting deep yellow coloring of its nectar-bearing inner petals, its abundant and substantially continuous production of flowers during each blooming season, and the long lasting quality of the individual blooms.

PATENTS

GRANTED OCT. 7, 1980

ERRATA

For	See
CLASS	PATENT NO.
368-066.....	4,226,081
368-285.....	4,226,082
074-688.....	4,226,123
474-082.....	4,226,130
474-082.....	4,226,131
474-082.....	4,226,132
474-042.....	4,226,133
474-181.....	4,226,134
074-606 R.....	4,226,200
440-112.....	4,226,206
224-318.....	4,226,354
023-230 B.....	4,226,713
424-273 P.....	4,226,773
556-470.....	4,226,793
556-443.....	4,226,794
568-386.....	4,226,810
568-937.....	4,226,811
570-157.....	4,226,812
428-304.....	4,226,886
424-059.....	4,226,889
544-321.....	4,227,000
370-004.....	4,227,075
375-013.....	4,227,152

PATENTS

GRANTED OCTOBER 7, 1980

GENERAL AND MECHANICAL

4,225,977

ROLL OF PLASTIC FILM APRONS

Buford B. Smith, P.O. Box 3353 109 N. Duncan Rd., Champaign, Ill. 61820

Filed Jul. 23, 1979, Ser. No. 59,638

Int. Cl.² A41B 13/10

U.S. Cl. 2-48

3 Claims



1. A roll of plastic film aprons comprising an elongated strip of plastic film folded in half longitudinally in substantially extended lengths and wound in said longitudinally folded form as a roll on a core or roller, said longitudinally folded film having a plurality of perforations and cut lines defining a plurality of longitudinally folded aprons connected end to end in said roll, a first set of said perforations and cut lines being spaced longitudinally along said strip at predetermined equally spaced intervals and extending transversely to said strip from the fold line thereof and terminating in a curved end portion at the edges of said strip, a second set of cut lines defining an extended, arcuate cut out portion beginning at said curved end portion of said first perforations or cut lines, extending longitudinally along a line inclined toward the center, curving transversely, and then extending back to said transversely extending perforations or cut lines and terminating in an end portion curved toward the edge of said strip, to define tie straps on each side of said aprons, a third set of perforations and cut lines adjacent to and spaced from said first perforations, extending along an arcuate line from and returning to the fold line of said strip, and defining a subsequently removable portion for producing a neck opening in said apron, and said aprons being severable one by one from said roll along said first set of perforations and cut lines and having tie straps extending upward from a base portion and having a central neck opening when unfolded.

4,225,978

COMBINATION CAPE AND UTILITY BAG

Larry L. Howerton, 2607 McKinney St., Boise, Id. 83704

Filed Mar. 12, 1979, Ser. No. 19,289

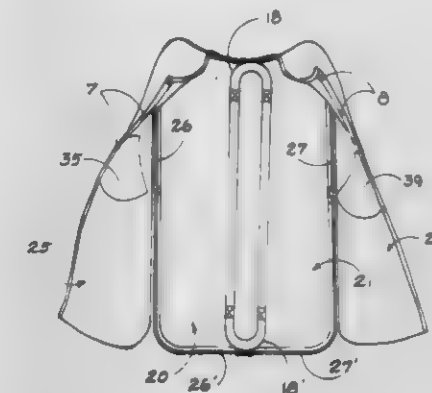
Int. Cl.² A41D 3/08

U.S. Cl. 2-88

10 Claims

1. A combination cape and utility bag comprising: means forming a substantially rectangular back panel, said back panel including a first handle member secured adjacent the top central surface thereof, and a second cooperating handle member secured adjacent the bottom central surface thereof; means forming a first front panel and having a collar opening, said first front panel permanently joined to said back panel along one vertical edge and the top thereof; means forming a second front panel having a collar opening mateable with the collar opening of said first front panel to define a substantially circular collar opening, said second

front panel permanently joined to said back panel along an opposing vertical edge and top, whereby a cape is formed; releaseable fastening means extending along the top peripheral edge of said back panel from substantially the vertical midpoint of one edge to substantially the vertical midpoint of the opposing edge; and



a cooperating fastening means extending along the bottom peripheral edge of said back panel from substantially the vertical midpoint of one edge to substantially the vertical midpoint of the opposing edge to define a utility bag when fastened to said releaseable fastening means.

4,225,979

TOTAL OR PARTIAL URETERAL PROSTHESIS

Pierre Rey, 18 rue Aristide Briand, 77400 Thoiry; Jacqueline Leandri, 50 Avenue de Clichy, 75018 Paris, and Clement Abbou, 43 Av. de la Dame Blanche, 94120 Fontenay Sous Bois, all of France

Filed Nov. 28, 1978, Ser. No. 964,433

Claims priority, application France, Nov. 28, 1977, 77 35685

Int. Cl.³ A61F 1/24, 1/00; A61M 27/00

U.S. Cl. 3-1

20 Claims

1. Total or partial ureteral prosthesis for an organism characterized in that it comprises a generally tubular device with pump effect having an upstream end and a vesical end, compatible with urine and with the organism, made from flexible plastic material which is compatible with the surrounding tissues, which device presents a permanent set distortion on at least one point of its course which modifies the aforesaid course, and is provided with an anti-reflux valve at least on its vesical end, which valve cooperates with the aforesaid set distortion to vary the volume of the aforesaid prosthesis under the action of the physiological movements of the organism, thus creating the desired pump effect.

4,225,980

METALLIC CARDIAC VALVE PROSTHESIS

Wilson Ramos Martinez, Avda. Generalísimo, 96 - piso 16 Apto. 10, Madrid, Spain

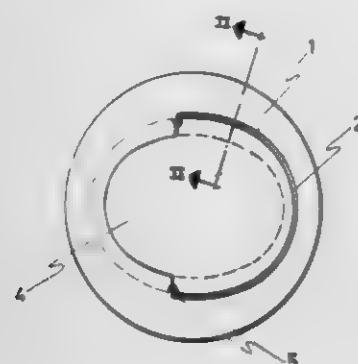
Filed Nov. 28, 1978, Ser. No. 964,442

Claims priority, application Spain, Jan. 7, 1978, 465,824

Int. Cl.³ A61F 1/22

U.S. Cl. 3-1.5

4 Claims



1. A metallic cardiac valve prosthesis device having both aortic and mitral application and the purpose of which is to provide an ample, highly physiological and laminar flow of blood, said device comprising:

a valve body in the form of a single and integral ring-shaped member having an oval-shaped inner periphery;

said ring-shaped member having formed therein first and second recesses respectively defining first and second substantially planar steps, said first recess opening toward a first axial end of said ring-shaped member, said second recess opening toward a second axial end of said ring-shaped member, said first recess extending along a first circumferential portion of said inner periphery, said second recess extending along a second circumferential portion of said inner periphery, and said second circumferential portion being greater than said first circumferential portion;

said first and second recesses having adjacent first ends defined by a pair of respective first end faces positioned adjacent to each other, and said first and second recesses having adjacent second ends defined by a pair of respective second end faces positioned adjacent to each other; said ring-shaped member having integrally formed there-with first and second pivots extending inwardly from said ring-shaped member at positions respectively adjacent said pairs of first and second end faces;

a ventricular plug in the form of an oval-shaped flat member having formed in the periphery thereof first and second spaced inwardly extending grooves;

said flat member being positioned such that said first and second pivots pivotally extend into said first and second grooves, respectively, such that said flat member pivots with respect to said ring-shaped member, between closed and opened positions, about an imaginary pivot axis extending through said pivots and grooves and substantially parallel to and spaced from the minor axis of the oval shape of said flat member;

said first and second planar steps being in planes spaced from each other axially of said ring-shaped member by a distance substantially equal to the thickness of said flat member, and said flat member having opposite substantially planar first and second surfaces respectively contacting said first and second planar steps when said flat member is in said closed position;

said first and second end faces being substantially planar and abutting said opposite surfaces of said flat member when said flat member is in said opened position; and

said first end faces being spaced from each other and said second end faces being spaced from each other by amounts sufficient to enable said flat member, when in said opened position, to extend at an angle of from 80° to 85°

with respect to the position of said flat member when in said closed position.

4,225,981

ENDO PROTHESIS WITH A METAL-CERAMIC UNION

Anton Zeibig, Ottensoos, Fed. Rep. of Germany, assignor to Rosenthal Technik AG, Bavaria, Fed. Rep. of Germany

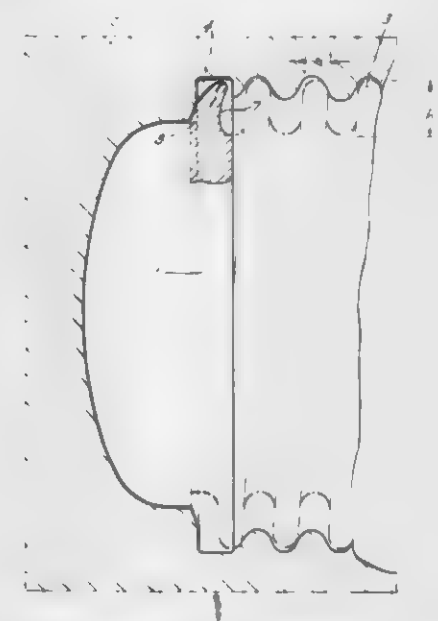
Filed Aug. 22, 1978, Ser. No. 935,804

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742098

Int. Cl.³ A61F 1/03

U.S. Cl. 3-1.913

17 Claims



1. A bone joint endoprosthesis comprising:

a metal shaft having a spigot defined thereon; said spigot having an external thread defined thereon; said external thread being comprised of a raised rib extending around said spigot; said external thread rib having a profile height, which is the radial height of said rib on said spigot, and having a profile width, which is the longitudinal length of said rib along said spigot;

a ceramic head having an opening defined therein in which said externally threaded spigot is received; said opening being defined by a side wall which is internally threaded with an internal thread which is mated with said spigot external thread; said internal thread being comprised of a groove into said side wall in said opening and said external thread rib being received in said groove; and said internal thread having a profile height into said side wall which is less than said profile height of said external thread rib.

4,225,982

MOLDED SYME FOOT WITH ATTACHED STUMP SOCKET

Ian W. Cochrane, 87 Wexford St. N., Winnipeg, Manitoba, Canada (R3R 0R6); Frederick R. Tucker, deceased, late of Winnipeg, Canada; by Mary Tucker, co-executrix, 138 Buxton Rd., Winnipeg, Manitoba, Canada; by George Ackerman, co-executor, 12 Beaumont Bay, Winnipeg, Manitoba, Canada, and by Canada Permanent Trust Co., co-executor, 433 Portage Ave., Winnipeg, Manitoba, Canada (R3B 2C9)

Filed Dec. 4, 1978, Ser. No. 966,362

Int. Cl.³ A61F 1/08, 1/02, 1/04

U.S. Cl. 3-7

18 Claims

1. A Syme foot prosthesis comprising in combination a precast foot including a keel cavity and a custom formed stump socket engaged within the opening of the foot, said socket

including a distal cup portion, an elastomeric material filling said keel cavity and means securing the distal end of said stump



socket within said opening and to said elastomeric material filling said heel cavity.

4,225,983

PROSTHETIC TERMINAL DEVICE

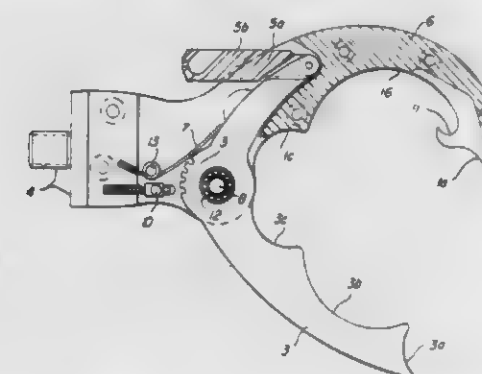
Robert Radocy, 2860 Pennsylvania Ave., Boulder, Colo. 80303, and Ronald E. Dick, Magnolia Star Rte., Nederland, Colo. 80466

Filed Nov. 2, 1978, Ser. No. 957,338

Int. Cl.³ A61F 1/06

U.S. Cl. 3-12

10 Claims



1. A prosthetic, voluntary closing hand comprised of a wrist adaptor an index member extending therefrom, a thumb member pivoted to the index member, a bias spring engaging said thumb member to urge the thumb member to open position with respect to said index member, and a cable to urge said thumb member towards said index finger in closing position for hand grasping functions.

(A) said index member having a movable thumb locking device mounted thereon, and a first inner surface defining three cooperating gripping surfaces extending along its length,

(B) said thumb member having a plurality of locking receptacles for receiving said movable thumb locking device to selectively lock said thumb in a plurality of angular positions with respect to said index member, and a second inner surface facing said first inner surface defining three cooperating gripping surfaces along its length for cooperation with the index member gripping surfaces to grasp objects of different size and;

(C) said wrist adaptor incorporating a standard threaded bolt for attachment to wrist units found on standard arm prosthesis.

4,225,984

PORTABLE THERAPEUTIC WATER MASSAGE MECHANISM

Donnie R. Lindsey, P.O. Box 6428, Baytown, Tex. 77520

Filed Apr. 5, 1979, Ser. No. 27,526

Int. Cl.³ A47K 3/10; A61H 9/00

U.S. Cl. 4-541

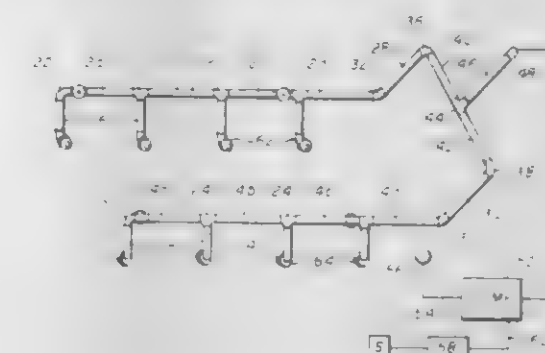
10 Claims

1. A portable therapeutic water massage handling mecha-

nism for use in conjunction with conventional bathtubs, said mechanism comprising:

pump means having suction conduit means and discharge conduit means, said suction conduit means adapted to terminate in the water of said bathtub, allowing said pump to withdraw water from said bathtub;

a pair of elongated water distribution conduits adapted to be removably positioned in spaced relation within said bath-



tub and being extendable along the inner side walls of said bathtub;

a plurality of water jets being positioned in spaced relation along the length of each of said water distribution conduits for directing jets of water toward specific parts of the anatomy of a person within said bathtub; and connection means interconnecting said discharge conduit means and said water distribution conduit means, whereby water discharged from said pump is conducted to said water distribution conduit means.

4,225,985

VALVED VOLUME DIVIDING MEANS

Devendra C. Joshi, 1066 Oak St., Neenah, Wis. 54956, and Virendra N. Sharma, 1400 Linda Ave., Menasha, Wis. 54952

Continuation of Ser. No. 816,900, Jul. 18, 1977, Pat. No.

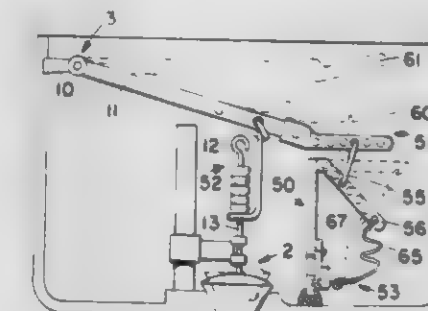
4,143,430. This application Feb. 2, 1979, Ser. No. 8,834

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.³ E03D 1/14, 3/12

U.S. Cl. 4-324

6 Claims



1. A water closet discharge regulating means comprising:

(a) a minitank unit whereby a toilet tank is divided into water retaining compartments: a first compartment and a second compartment,

(b) a port in the minitank unit through which water may pass between the first compartment and the second compartment,

(c) a valve which serves to seal and open the port,

(d) an actuator linking unit by means of which the valve is operably connected to an existing flush arm of the tank,

(e) an adjustment means which is employable to set the degree of rotation of the flush arm needed for a valve opening, and

(f) means for providing that the minitank unit, the actuator linkage unit, and the adjustment means are directly installable in the toilet tank without modifying or significantly disturbing the existing in-tank mechanisms and the installation of the discharge regulating means requires no specialized tools and no specialized skills.

4,225,986

WATER RELEASE MECHANISM

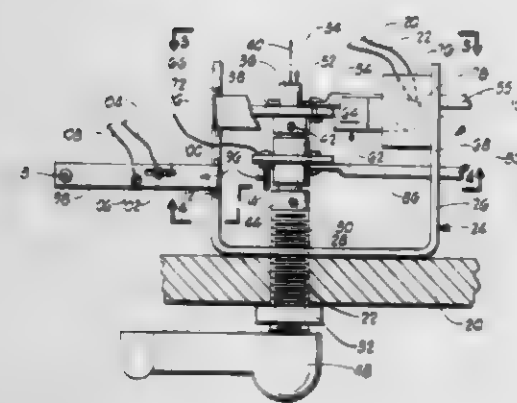
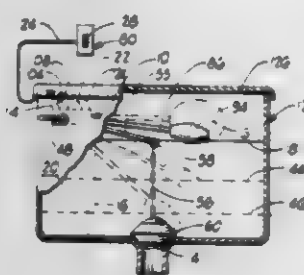
Eugene M. Mauk, 3320 W. Oklahoma, Enid, Okla. 73701

Filed Jun. 25, 1979, Ser. No. 51,833

Int. Cl.² E03D 1/14, 3/12

U.S. Cl. 4—324

12 Claims



1. A mechanism for releasing a selected volume of water from a tank, comprising:

- a shaft assembly secured to the wall of the tank, comprising:
 - a bracket inside the tank;
 - a bushing connected to the bracket and extending through a hole in the wall of the tank; and
 - a shaft extending through the bushing and supported thereby for positioning of the shaft in a preselected water release position and for pivotation of the shaft from the water release position;

- a valve support arm fixed on the support arm and extending laterally therefrom, wherein a drain for the tank is formed below extensive portions of the valve support arm;

- a valve suspended from the valve support arm over the drain in the water release position of the shaft, whereby the weight of the valve urges the shaft to pivot away from the water release position so as to lower the valve to a position wherein the valve closes the drain;

- latch means, engagable with the shaft in the water release position of the shaft, for holding the shaft in the water release position in an engaged condition of the latch means with the shaft and for freeing the shaft for pivotation from the water release position in a disengaged condition of the latch means with the shaft;

- latch release means for placing the latch means in the disengaged condition thereof with the shaft in response to an electrical signal;

- signal generator means responsive to the depth of water in the tank for providing the electrical signal to the latch release means at a preselected water depth; and
- means for introducing water into the tank at such times that the depth of water therein is less than a preselected depth.

4,225,987

VARIABLE VOLUME CONTROL FOR TOILET FLUSH TANKS

Harley R. Goldman, 8 Russell Dr., Mineola, N.Y. 11501, and Stewart Hall, 138-10 Jewel Ave., Flushing, N.Y. 11367

Filed Sep. 4, 1979, Ser. No. 72,284

Int. Cl.² E03D 1/24, 5/02

U.S. Cl. 4—325

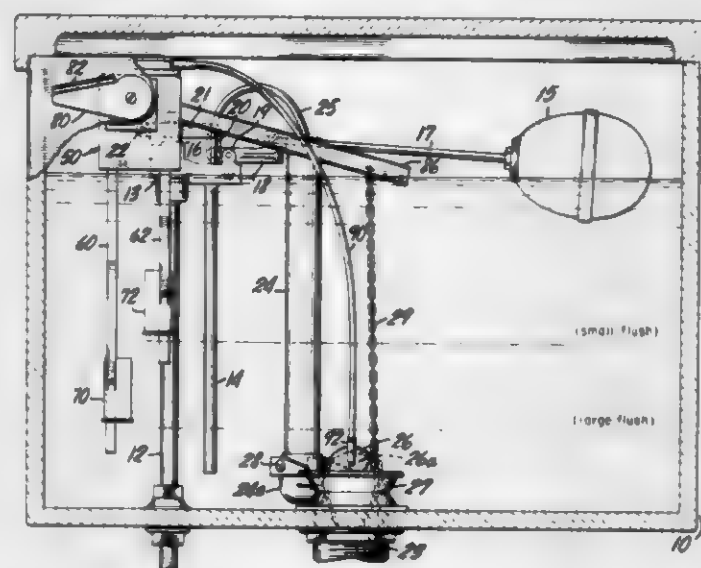
20 Claims

1. For use in a toilet flush tank normally filled with flushing water to a prescribed level, said tank having a flush discharge opening at the bottom and a discharge valve for closing the

discharge opening, said discharge valve having an air chamber open at the bottom and adapted to be lifted to flush water from the tank through the discharge opening, flush control apparatus for regulating the amount of water flushed from the tank comprising,

- a housing adapted to be mounted within said flush tank above the normal water level in said tank,
- vent means in said housing,

- air passage means coupling said air chamber in said discharge valve to said vent means, and



water level responsive means for opening said vent means when said water level falls to a predetermined height below said normal level,

whereby air trapped within said chamber when the discharge valve is lifted to initiate a flushing operation retains the discharge valve in floating condition until the water level in the tank falls to said predetermined height at which said water level responsive means opens said vent means to permit the air entrapped in said chamber to escape, whereupon water enters the chamber to cause the discharge valve to drop to its seated position and close the discharge opening.

4,225,988

ORTHO-TURN BED

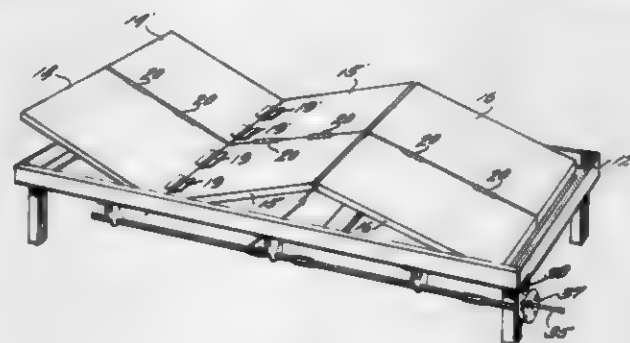
George R. Cary, 3439 Prytania St., New Orleans, La. 70115, and Noelle B. Pfisterer, 6970 Argonne Blvd., New Orleans, La. 70124

Filed Jan. 30, 1979, Ser. No. 7,824

Int. Cl.³ A61G 7/10

U.S. Cl. 5—61

13 Claims



1. A bed assembly comprising:

- a frame;

- a plurality of mattress support members adapted to be supported by said frame, including at least three first members, and at least three second members;

- first pivot means for mounting said first members with respect to each other and said second members with respect to each other, so that said members are movable from a first position wherein said first members are substantially planar with each other and with said second members, to

4,225,990

CRIMPING TOOL FOR AUTOMOTIVE IGNITION TERMINALS AND THE LIKE

Werner C. Theiler, Sr., Dix Hills, N.Y., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 16, 1978, Ser. No. 951,491

Int. Cl.³ B25B 7/22

U.S. Cl. 7—107

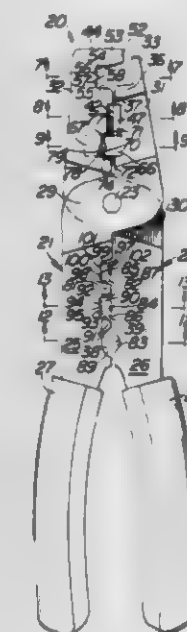
16 Claims

a second position wherein said first and second members assume an articulated position with respect to a straight line interconnecting the centers of said member;

second pivot means for mounting said first members with respect to said second members so that said first members are movable from a first position wherein they are substantially planar with said second members, to a third position wherein they make a positive angle relative to the horizontal and with respect to said second members;

first actuating means for effecting movement of second members about said first pivot means from said first to said second position, and vice versa; and

second actuating means for effecting movement of said first members about said second pivot means from said first to said third position thereof, and vice versa; said second actuating means comprising lever means operatively attached to at least one of said first members, a shaft, and force transmitting means for interconnecting said shaft and said lever means for transforming rotation of said shaft into movement of said lever means to effect pivoting of said first members about said second pivot means, without interference with said first actuating means.



1. A crimping tool for automotive ignition terminals and the like, said tool comprising: a pair of pivotally connected levers, a cut-off edge on one lever adjacent to the other lever, an anvil on the other lever facing toward said cut-off edge for abutting engagement therewith to sever a wire, a pair of insulation stripping knife edges on said levers for cutting engagement with insulation of an interposed wire, one of said knife edges extending beyond the adjacent portion of its lever and the other of said knife edges being recessed into its lever for receiving one knife edge when said knife edges are in said limiting position, said knife edges extending toward and terminating short of each other in a limiting position with said anvil and cut-off edge abutting to leave an unsevered insulation tag, and said knife edges having facing notches for receiving a wire core without severance.

4,225,985

INFLATABLE SUPPORTS

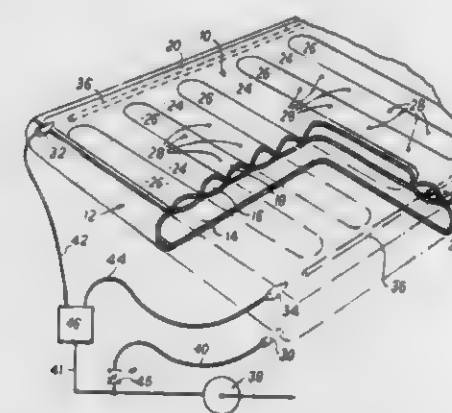
Aubrey E. Corbett, Kenilworth; Siu L. Ho, Coventry, and Ronald J. Clark, Sidmouth, all of England, assignors to Glyndwr Group Services Limited, Birmingham, England

Filed Oct. 5, 1978, Ser. No. 948,798

Int. Cl.² A61G 7/04; A47C 27/10

U.S. Cl. 5—453

9 Claims



1. An inflatable body support comprising an upper inflatable layer and a lower inflatable layer, the upper layer comprising upper and lower surfaces sealed together providing a plurality of separate air passages which are independently inflatable and deflatable and which air passages, taken together, are distributed over the area of the upper layer with each air passage including a series of elongated tubes, such that the tubes of different air passages are juxtaposed, the upper surfaces of the tubes being convexly curved, taken transverse to the direction of elongation, to present a series of generally parallel curved surfaces which support the body located thereon, said lower inflatable layer being located directly beneath the upper layer and being inflatable separately from the upper layer and continuously over substantially the entire area directly beneath the upper layer, such that the lower layer, when inflated, continuously and directly supports substantially the entire area of the upper layer, such that the extent of the said curved surfaces of the tubes which acts to support the person thereon is dependent upon the degree of inflation of the lower inflatable layer, and the upper surface of the upper layer includes means for permitting limited air bleeding therethrough.

4,225,991

FABRIC WASHING SYSTEM

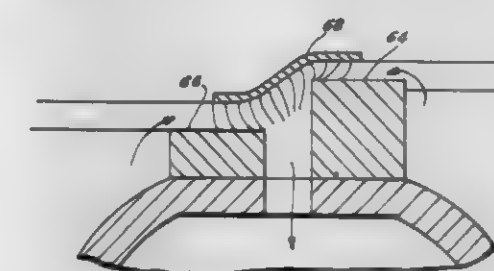
Joseph A. Bolton, Glens Falls, and Olavi A. Huhtala, Scotia, both of N.Y., assignors to Albany International Corp., Menands, N.Y.

Filed Apr. 12, 1979, Ser. No. 29,540

Int. Cl.³ D06B 1/02, 15/00

U.S. Cl. 8—151

19 Claims



9. A method for cleaning and drying a porous fabric such as carpet comprising the steps of:

- wetting a fabric;
- passing said fabric through a gap between a vacuum source and backup means positioned opposite said source, said backup means preventing the flow of air directly through said fabric and causing it to flow in an indirect route into said vacuum source; and

arranging said vacuum source and said backup means such that air flows substantially only in one direction through said fabric and gap into said vacuum source.

12. A device for extracting liquid from a porous fabric comprising:

a vacuum source, said source including a vacuum slot defined by a stepped structure including a slot entrance surface and a slot exit surface over which a fabric may pass, said slot exit surface having a greater height than said slot entrance surface; and

backup means positioned opposite said vacuum source such that said fabric must pass through a gap between said vacuum source and said backup means.

4,225,992

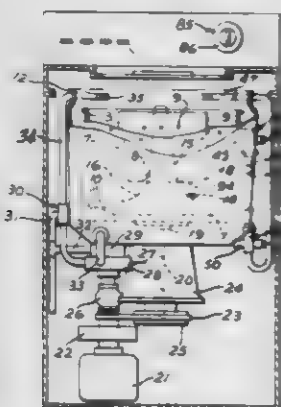
CLOTHES WASHING METHOD

Everett D. Morey, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Division of Ser. No. 848,536, Nov. 4, 1977, Pat. No. 4,175,409, which is a continuation-in-part of Ser. No. 695,585, Jun. 14, 1976, abandoned. This application Jun. 26, 1979, Ser. No. 52,299

Int. Cl.² D06F 37/00

U.S. Cl. 8-158



1. The method of washing clothes in a vertical axis clothes washing machine having a wash fill, wash, spin extraction, rinse fill, rinse, and spin extraction operations including a tub, an agitator, a first basket within the tub, water control valves for feeding hot and cold water into the machine at a first flow rate, electrically powered drive means for operating the agitator to effect washing of the fabrics and for rotating the basket and agitator in unison to centrifugally extract water from the fabrics, communication means to allow water to flow from the basket into the tub, drain means to take water from the tub and direct it to an external drain during spin extraction, the improved method including:

- placing a second basket within the first basket and positioned on the agitator for movement therewith;
- placing fabrics to be washed in only the second basket;
- continuously introducing fresh water from the water control valves for feeding hot and cold water into the second basket during the continuous washing and rinsing operation at a second flow rate less than the first flow rate;
- flowing wash and rinse water through the second basket into the first basket at a rate sufficient to prevent a bath type washing and rinsing action in the second basket, and from the first basket into the tub;
- oscillating the agitator and second basket with the agitator in unison during the continuous washing and rinsing of the fabrics in the second basket;
- pumping water from the tub to an external drain during the continuous washing and rinsing operation;
- stopping both the flow of water into the second basket and the oscillation of the agitator and second basket; and
- spinning the basket to centrifugally extract water from the fabrics while pumping the water from the tub to an external drain.

4,225,993

CIRCULAR LIFEBOAT

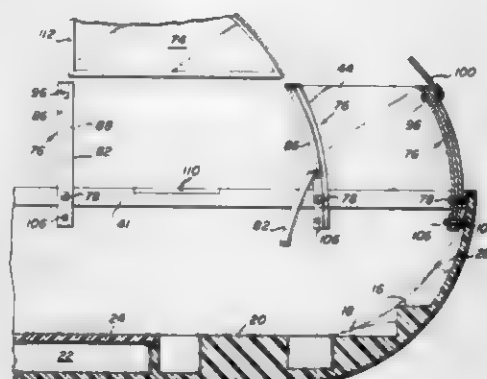
Donald A. Hay, deceased, late of Bethesda, Md. (by Robert D. Hay, personal representative)

Filed Jun. 1, 1978, Ser. No. 911,428

Int. Cl.² B63C 9/02

U.S. Cl. 9-4 R

3 Claims



1. A circular lifeboat having a bowl shaped configuration including a flat bottom and a rounded circular hull, the interior of the lifeboat including a plurality of concentrically arranged seats, and a continuous partition positioned around the perimeter of the lifeboat and extending upwardly to provide an additional area of free-board, said partition including a plurality of plastic panels, each panel having its opposite edges supported by a pair of upwardly extending rotatable arms, each of said rotatable arms pivotally connected to the upper edge of the boat hull, and is movable from a normally stored position within the confines of the upper edge of the boat hull and to an upright active position wherein each arm is positioned vertically, each arm being provided with a pair of longitudinally extending slots positioned on opposite edges thereof for receiving edges of plastic panels, each of said arms is further provided with a slot for receiving an end of a top supporting rib when the arms occupy their vertical position, each panel being readily removable for storage within the boat and each arm being rotatable for storage within the boat.

4,225,994

POWER-OPERATED TOOTHBRUSH

Werner Stoltz, Friedrichsdorf, Fed. Rep. of Germany, assignor to Blendax-Werke - R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

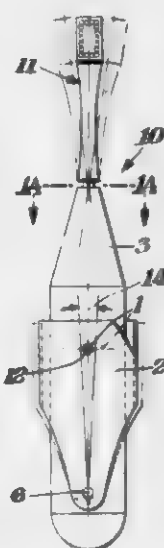
Continuation-in-part of Ser. No. 857,030, Dec. 2, 1977, Pat. No. 4,149,291. This application Dec. 18, 1978, Ser. No. 970,227

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757590

Int. Cl.³ A46B 13/02

U.S. Cl. 15-22 R

8 Claims



1. A power operated toothbrush comprising a housing, a

replaceable movable brush mounted on the end of the housing, power-operated means in the housing for causing the brush to move in a predetermined path of movement, a reversing switch on the housing for causing the power-operated means to move the brush in two different directions, a handle section, coupling means connecting the handle section to the reversing switch for actuating it, a handle section motion-permitting means mounting the handle section on the housing whereby movement of the handle section relative to the housing causes the actuation of the reversing switch in both of its directions.

4,225,995

BRUSH ASSEMBLY FOR VEHICLE WASHING APPARATUS HAVING A FLEXIBLE ELASTIC COUPLING

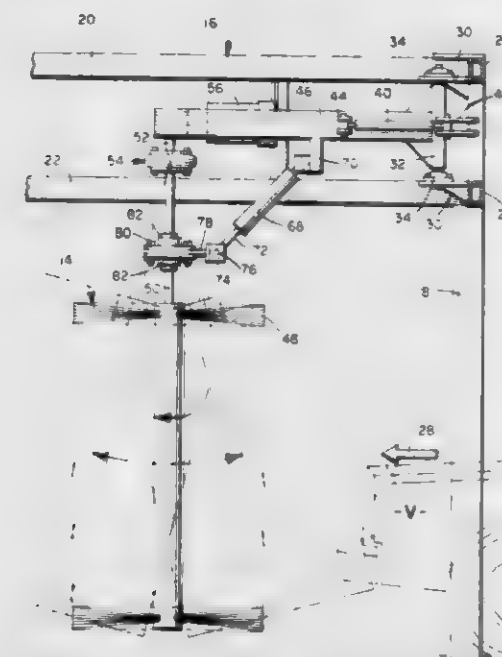
George T. Ennis, Playa Del Rey, Calif., assignor to N/S Car Wash Enterprises, Inc., Sharon, Pa.

Filed Mar. 6, 1978, Ser. No. 883,514

Int. Cl.² B60S 3/06

U.S. Cl. 15-53 AB

32 Claims



1. In a vehicle washing apparatus having a support frame, a brush assembly supported by said frame for washing one or more of the front, side and rear of a vehicle moving relative thereto comprising:

- brush support means connected to said frame;
- a brush for washing the vehicle moving relative thereto;
- a shaft for supporting said brush in a normal operating position;
- a coupling device for coupling said shaft to said brush support means, said coupling device comprising flexible coupling means responsive to the force of the vehicle against said brush for flexing freely in any direction to tilt said brush, said flexible coupling means, upon flexing in any direction, further generating a restoring force equal in all directions to urge said brush toward its normal operating position; and

motor means coupled to said shaft for rotating said shaft and said brush in the opposite direction at the surface of the vehicle to the direction of movement of said brush assembly relative to the vehicle to generate a rotary reaction force against the vehicle which walks said brush along the surfaces of the vehicle, said motor means cooperating with said flexible coupling means by generating a rotary reaction force which adds to the restoring force caused by the flex of said flexible coupling means to walk said brush around one or more of the front, side and rear surfaces of the vehicle to thereby wash the vehicle.

4,225,996

ROLLER SKATE WHEEL CLEANING APPARATUS

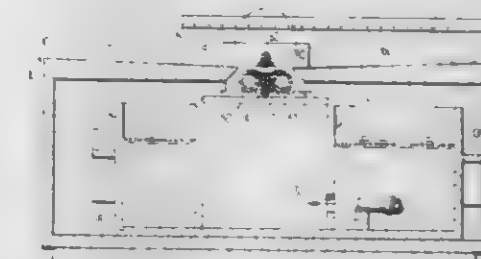
Richard E. Hoos, 756 Hill Rd., Brentwood, Tenn. 37027

Filed Jun. 4, 1979, Ser. No. 45,354

Int. Cl.³ A63C 3/00; A47L 23/00

U.S. Cl. 15-97 R

10 Claims



1. A roller skate wheel cleaning apparatus for cleaning the wheels of a roller skate having a front pair of wheels and a rear pair of wheels, and comprising:

- a housing;
- a pair of parallel horizontal roller means for simultaneously frictionally engaging the skating surfaces of both wheels of a pair of skate wheels, said roller means being mounted for rotation relative to said housing and being spaced apart;
- scouring means for cleaning the skate wheels and being mounted in the space between said roller means for engaging said surfaces of said skate wheels when said roller means are frictionally engaging said skate wheels;
- drive means for driving at least one of said roller means so that, when said roller means are frictionally engaging the skate wheels, the skate wheels are rotated to continuously move the surfaces thereof across said scouring means; and
- a container of cleaning fluid mounted in said housing below said roller means so that the surfaces of said roller means contact the cleaning fluid and are wetted thereby.

4,225,997

SELF-CLEANING BRUSH

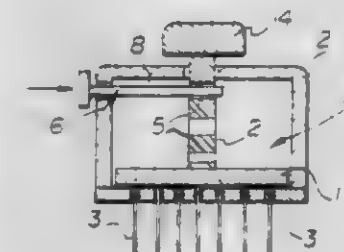
William J. Thomas, #107-11771 King Rd., Richmond, British Columbia, Canada (V7A 3B5), and John E. Adam, 54 Qualicum St., Ottawa, Ontario, Canada (K2H 7M4)

Filed Jan. 11, 1979, Ser. No. 2,798

Int. Cl.³ A46B 7/00

U.S. Cl. 15-184

9 Claims



1. A self-cleaning brush comprising a brush body member comprising a posterior wall having a first opening there-through, an anterior wall member having therein a plurality of spaced apertures, and a side wall integrally joined with the posterior and anterior walls, said walls defining a hollow compartment in the interior of the body member, said first opening in said posterior wall communicating with said hollow interior compartment; a bristle supporting member generally disposed within the hollow compartment and comprising a brush head from whose lower surface a plurality of bristles extend in

registration with the apertures in said anterior wall member; and a brush head operating member integral with the upper surface of the brush head, and extending in a plane perpendicular to the axis of the brush body member through said first opening in the posterior wall, and projecting above said posterior wall; said brush head operating member being adapted to move reciprocally within the hollow compartment from a first fully extended position in which the brush head is in juxtaposition with said anterior wall member and said bristles project through their respective apertures in said anterior wall member, to substantially their full length, at which position the brush is operable as such; to a second retracted position in which the brush head is in juxtaposition with the inner surface of the posterior wall of said brush body member, at which position the bristles are fully retracted within the body, the tips of said bristles being within the apertures in said anterior wall member, thereby to allow the easy removal of hair or debris from said bristles; said bristle supporting member being reciprocally movable by manual operation of the free end of said brush head operating member; and further comprising a locking mechanism adapted to lock the bristle supporting member when the brush is in use, said locking mechanism comprising a lever member which extends from the exterior of the brush body adjacent the side wall through a second opening formed in the brush body, in a plane normal to the longitudinal axis of said brush body, and at least one recess formed in the bristle supporting member and adapted to receive at least the inner end portion of the lever member, said lever member being reciprocally movable into and out of engagement with said recess in said bristle supporting member by manual operation of its free end, such manual operation being facilitated by a knob which is attached to said free end of said lever member.

4,225,998

DUST MOP FRAME

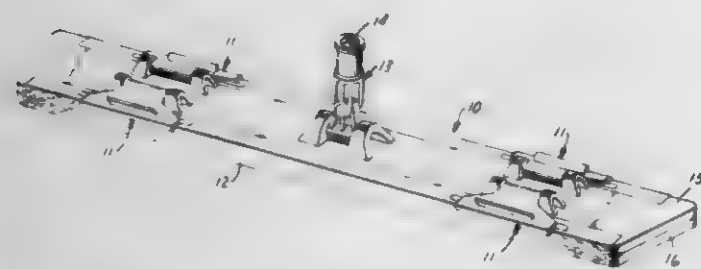
James E. Thielen, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 20, 1979, Ser. No. 22,312

Int. Cl.³ A47L 13/256, 13/29

U.S. Cl. 15—231

8 Claims



1. A dust mop frame having opposite top and bottom surfaces and being adapted to receive dusting fabric with a central portion of said fabric extending across said bottom surface and opposite edge portions of said frame extending onto said top surface; and

means for retaining the edge portions of said fabric on said top surface comprising a plurality of toggle assemblies, each of said toggle assemblies being disposed in opposed sets with at least one toggle assembly adjacent each of said edge portions, each toggle assembly comprising:

a toggle member having a pivot axis, an arm portion projecting generally radially from said axis, a lip portion spaced from said axis, projecting from one side of said arm portion and extending parallel to said axis, and a curved portion having an arcuate surface disposed around said pivot axis;

means mounting said toggle member on said frame for positionable pivotable movement around said axis between a release position with said lip spaced from the top surface of said frame to afford insertion of the edge portion of said dusting fabric therebetween, and an engage position with said lip pressing the edge portion

of said dusting fabric therebetween against said top surface;

a spring mounted on said frame and having a portion adapted to frictionally engage and slide along said arcuate surface upon movement of said toggle member between said release and engage positions; and the adjacent surfaces of said frame and said lip being shaped to hold the edge portion of said fabric therebetween when said toggle member is in its engage position thereby to restrict the withdrawal of the fabric.

4,225,999

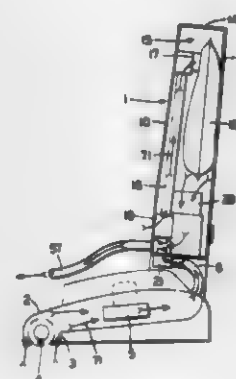
MULTI-MOTOR SUCTION CLEANER CONSTRUCTION
Eugene F. Martinec, East Cleveland, and Nora Robinson, Cleveland, both of Ohio, assignors to Health-Mor Inc., Cleveland, Ohio

Filed Apr. 20, 1979, Ser. No. 31,988

Int. Cl.³ A47L 5/14

U.S. Cl. 15—300 A

32 Claims



1. Multi-motor suction cleaner construction including
 - (a) a suction nozzle housing,
 - (b) a first motor-fan unit in the housing in communication with the suction nozzle,
 - (c) an operating handle for the cleaner connected to the housing,
 - (d) a closed suction compartment carried by the handle,
 - (e) dust bag means removably mounted in the compartment,
 - (f) airflow passage means connecting said first motor-fan unit with the dust bag means,
 - (g) said passage means including a converter receptacle mounted in the compartment,
 - (h) a second motor-fan unit mounted in the compartment having a suction inlet in communication with the suction compartment,
 - (i) converter means including a flexible hose having a connector end,
 - (j) the converter means connector end being removably connected with the converter receptacle and when so connected simultaneously blocking communication through said passage means between said first motor-fan unit and the dust bag means and establishing communication between the flexible hose and the dust bag means,
 - (k) and means including said connector end and first and second switch means for selectively, alternatively, operating the first or second motor-fan unit;
 - (l) whereby the second motor-fan unit is operated and the first motor-fan unit is disabled when the hose connector end is connected with the converter receptacle.

4,226,000

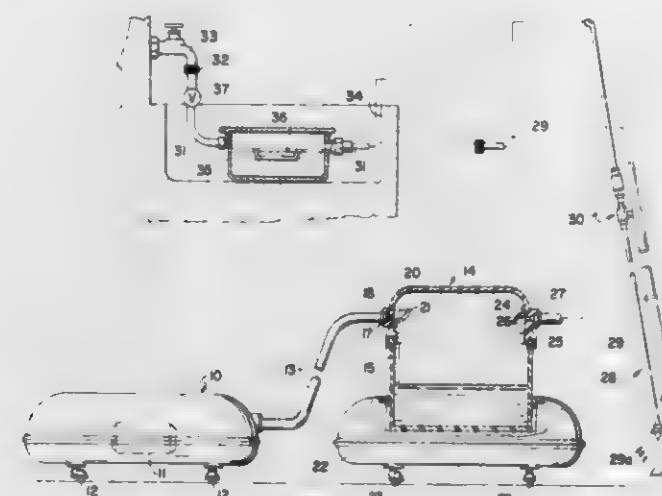
WET AND DRY VACUUM CLEANING SYSTEM
Herbert Tribolet, 2671 Paradise Way, Grand Junction, Colo. 81501

Continuation of Ser. No. 803,504, Jun. 6, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,666

Int. Cl.³ A47L 7/00

U.S. Cl. 15—321

7 Claims



1. A hot water extraction system comprising a vacuum container;
 - a water tank for normally containing water up to a selective maximum operative water level therein under a vacuum condition and including a first hose interconnected to said vacuum container whereby a vacuum condition in the vacuum container provides a corresponding vacuum condition in the water tank;
 - a water extractor including a second hose interconnected to said water tank whereby a vacuum condition in said water tank provides a corresponding vacuum condition in said water extractor;
 - stationary flow direction controlling means stationarily fixedly disposed relative to the selective maximum operative water level in the water tank for preventing the water flowing into the water tank from the extractor up to such maximum water level under a vacuum condition from entering the vacuum container, said means being arranged relative to the extending disposition of such water level for controlling the flow direction of the vacuum induced flow into and through the water tank to travel substantially at inclined angles to such extending disposition of the water level;
 - a water applicator in proximity to said water extractor;
 - a line for the supply of water comprising a hose adapted to interconnect said water applicator to a conventional remote source of hot water supply; and
 - a valve for metering the amount of water supplied through said water applicator.

4,226,001

PIVOTAL JOINT WITH POSITION-STABILIZING SPRING

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Cantu, Italy

Filed Mar. 23, 1979, Ser. No. 23,324

Claims priority, application Italy, Apr. 4, 1978, 21956 A/78

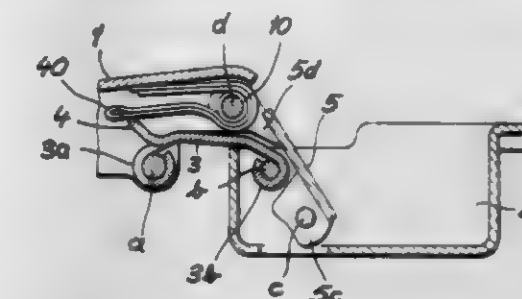
Int. Cl.³ B14C 29/00

U.S. Cl. 16—145

6 Claims

1. A pivotal joint for two relatively swingable components, comprising:
 - a first member adapted to be secured to one of said components;
 - a second member adapted to be secured to the other of said components;
 - an articulated linkage interconnecting said members, said linkage including a pair of hinge straps each having re-

spective ends joined by pivot means to both said members, said pivot means including a pintle on said first member surrounded by a bushing of resilient material; and a generally hairpin-shaped leaf spring with a first leg and a second leg interconnected by a bight portion closely embracing said bushing, said first leg bearing upon said first



member, said second leg bearing upon a projection of one of said hinge straps for biasing said members into either of two relative positions, said leaf spring consisting of at least two nested and substantially coextensive steel plies of substantially the same thickness elastically reinforcing one another.

4,226,002

WINDOW OR THE LIKE STAYS

Ronald P. Davis, Wellington, New Zealand, assignor to Interlock Industries Limited, Wellington, New Zealand

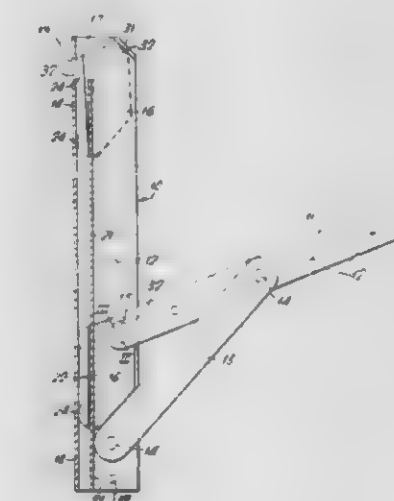
Filed Oct. 2, 1978, Ser. No. 948,022

Claims priority, application New Zealand, Sep. 30, 1977, 185308; Nov. 23, 1977, 185769

Int. Cl.² E05F 3/22

U.S. Cl. 16—179

18 Claims



1. A window stay for adjustable mounting of a window sash into a window frame comprising a first mounting plate adapted for attachment to the frame of a window, a second mounting plate adapted for attachment to a sash of a window, a carriage slidably mounted on the first mounting plate, characterized in that an arm is pivoted at one end to the second mounting plate and at its other end to the first mounting plate, the second mounting plate being further pivoted, at a point remote from the pivot coupling the arm, to the carriage, abutment means provided with said first mounting plate and engagement means provided with said carriage and which cooperate with said abutment means during the initial opening and final closing operations of the stay to cause displacement of the carriage such that the pivot coupling the arm to the carriage is angularly displaced across the face of the first mounting plate.

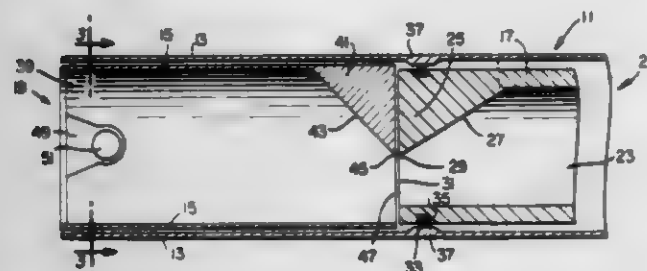
4,226,003

LARGE CASINGS STUFFING PRODUCT STOPPERING MEANS

Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 812,023, Jun. 30, 1977, Pat. No. 4,133,076.
This application Oct. 20, 1978, Ser. No. 953,109
Int. Cl.² A22C 17/02

U.S. Cl. 17-49

4 Claims



1. In a method for encasing viscous fluid product in continuous lengths of flexible tubular casing by forceably directing such product from a product supply source through a stuffing horn assembly and into such casing and wherein product flow is selectively stopped, the improvement of controllably selectively stopping said product flow at a location inwardly recessed from the product discharge end of the stuffing horn assembly a distance of at least twice the equivalent diameter of the discharge end of the stuffing horn assembly.

4,226,004

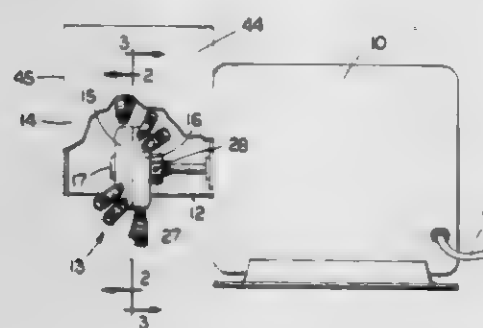
FISH SCALE REMOVER

Jessie G. Zimmerman, R.R. 15, Box 219, Bedford, Ind. 47421, and Robert T. Snider, Sr., 1439 Deloss, Indianapolis, Ind. 46201

Filed Jan. 25, 1979, Ser. No. 6,356
Int. Cl.² A22C 25/02

U.S. Cl. 17-67

3 Claims



1. A device for removing scales from a fish comprising: a rotatable shaft; a plurality of helical springs with proximal ends mounted radially on said shaft and free distal end portions to engage and pull off scales on a fish as said shaft and springs are rotated and said springs are forced against the fish; and means mounting said springs on said shaft and wherein said means includes a drum mounted to said shaft with an outer cylindrical wall upon which said proximal ends are mounted, said cylindrical wall being mounted to and extending axially along said shaft which extends therethrough, said drum includes mounting means extending between and securing said cylindrical wall to said shaft, said springs are pivotally mounted to said cylindrical wall.

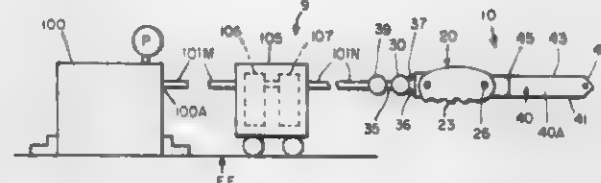
4,226,005

APPARATUS AND TOOL FOR CUTTING ANIMAL CARCASSES BY IMPINGING AIR JETS

William G. Meyers, R.R. #1, Gretna, Nebr. 68028
Filed Apr. 20, 1979, Ser. No. 32,012
Int. Cl.³ A22B 5/16; A22C 17/04

U.S. Cl. 17-1 R

10 Claims



1. Apparatus for removing hides, select cuts of meat, and other relatively large portions of animal carcasses in cleanly-cut non-communited condition, said apparatus comprising:

- A. an air-compressor including an outlet-port for the emergence of the high pressure compressed air;
- B. an elongate flexible conduit extending downstream of the air-compressor for conducting the compressed air as an airstream, the flexible conduit having an inlet-end removably attached to the air-compressor outlet-port and having an outlet-end removably attached to an inlet-port of a portable workman's tool;
- C. said workman's tool comprising:
 - i. a rearward handle wieldable by the workman;
 - ii. an elongate shank attached to and extending forwardly of the handle, said shank at its peripheral edge being provided with at least one orifice having an orifice-diameter not exceeding one millimeter;
 - iii. an airstream passageway extending from the inlet-port and at least partially extending along the shank interior and terminating at said at least one orifice, and
 - iv. a manually actuatable tool-valve accessible to the handle and for controlling the airflow rate along said airstream passageway;
- D. filtering means located upstream of said workman's tool for filtering from the airstream solids having a particle size exceeding about one-half the orifice-diameter; and
- E. desiccating means located upstream of said workman's tool for desiccating the airstream before it enters the tool inlet-port.

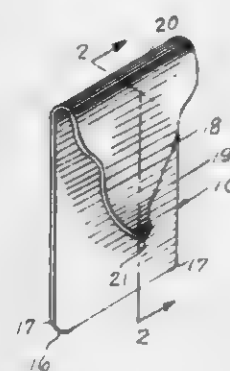
4,226,006

BILLFOLD SAFETY CLIP

James Toyama, 1980 Cedar Ave., Long Beach, Calif. 90806
Filed Jun. 22, 1978, Ser. No. 918,110
Int. Cl.² A44B 21/00

U.S. Cl. 24-3 L

1 Claim



1. A safety clip for preventing the theft of billfolds by pick-pockets comprising in combination: a body portion of substantially planar rectangular configuration having curved bottom corners, an arcuate top portion having substantially the same width as said body portion, and a tapered portion integral with said arcuate portion

facing said body portion so that an air space between said tapered portion and said body portion exists below said arcuate portion defining a substantially bulbous air space when viewed in cross section which thereafter narrows, and said tapered portion terminates in an outwardly splayed free end just below said narrow, said free end defining a point and said tapered portion extending down from the arcuate portion whereby said body portion extends within a sleeve area of the billfold which is disposed within a person's pocket, said arcuate portion lies on a top lip of the pocket and a belt worn by the person and said tapered portion substantially snaps over the belt to provide firm retention therein.

4,226,007

SEALLESS STRAP CONNECTION

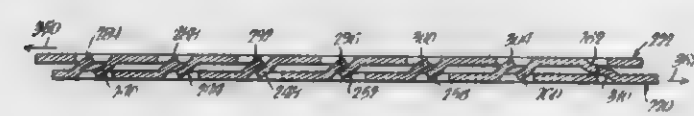
William F. Duenser, Mt. Prospect, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Mar. 16, 1979, Ser. No. 21,264

Int. Cl.³ B65D 63/02

U.S. Cl. 24-20 EE

6 Claims



1. A sealless strap connection between first and second overlapped lengths of strap which comprises an array of longitudinally spaced joints; each joint comprising lengthwise opposed protuberances displaced from the respective planes of said overlapped lengths of strap and interlocked with each other; said protuberances on said first length longitudinally spaced in a first and second group with the protuberances of the first group equally spaced from each other and with the spacing of the adjacent protuberances of the second group progressively increasing in the direction away from said first group; said protuberances on said second length longitudinally spaced in a first and second group with the protuberances of the first group equally spaced from each other and with the spacing of the adjacent protuberances of the second group progressively increasing in the direction away from said first group; said first and second group of protuberances on said first length interlocked with said second and first group of protuberances, respectively, on said second length whereby when the connection is initially formed, protuberances intermediate the ends of the connection interlock before protuberances at the ends of the connection.

4,226,008

FASTENER FOR BANDS OR THE LIKE

Friedhelm Kramer, Ennepetal-Milspe, Fed. Rep. of Germany, assignor to Schaeffer-Homburg GmbH, Wuppertal, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,049

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745820

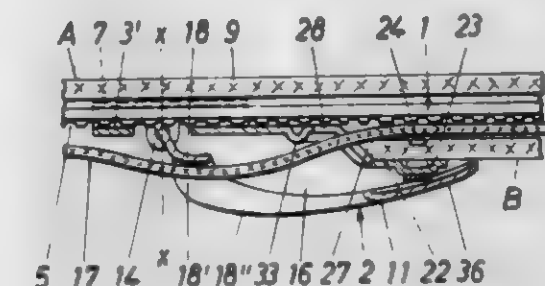
Int. Cl.² A44B 19/00; A41D 1/06

U.S. Cl. 24-206 B

8 Claims

1. Fastener for bands or the like, particularly on pants, shirts, pockets or the like, comprising a rail having catches defining catch recesses, a slide running on said rail, said slide having a slide bottom plate defining a rail guide tunnel, said rail extending through said guide tunnel, said slide having a cover covering said rail guide tunnel, an angular-shaped folding lever being pivotally mounted to said slide, said folding lever having a longer leg constituting lever actuation handle and a shorter angle leg, the latter carries a catch projection engaging in said catch recesses of said rail in a folded-up locked position of said

folding lever, said longer leg of said folding lever having frame legs defining a window opening in said longer leg, the latter being adapted for the free passage therethrough of a cover strip, the latter lying on the outside in front of said rail, one of said frame legs points to said slide bottom plate and carries said shorter angle leg, the latter via said



catch projection engaging in said catch recesses of said rail, said one frame leg is angled-off such that in said locked position of said folding lever said one frame leg extends in a substantially parallel flat position relative to said cover of said rail guide tunnel and to the cover strip.

4,226,009

RECEPTACLE RETAINER

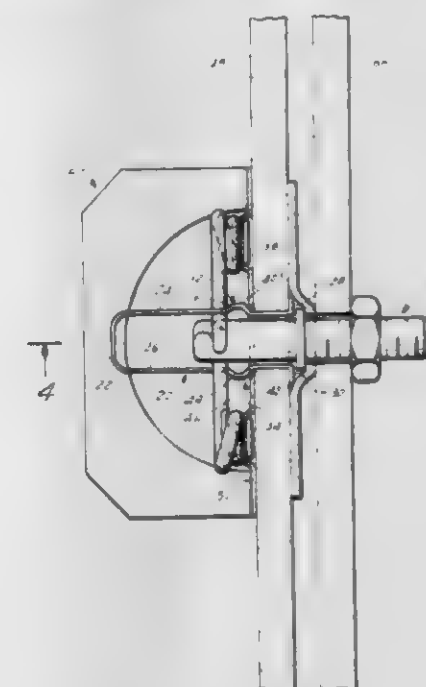
Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,900

Int. Cl.² A44B 17/00

U.S. Cl. 24-221 R

11 Claims



1. A receptacle retainer for holding a receptacle to one of two members to be fastened in position to be coupled with a stud mounted on the other of the two members to form a fastener for holding the two members together, the retainer comprising: means for engaging the surfaces surrounding an aperture in the one member so as to be fixed in position while permitting passage of a portion of the stud therethrough, a projecting leg portion of the retainer extending from the one member and the projecting leg portion adapted to engage and hold the receptacle on the retainer and one member, the projecting leg portion holding the receptacle with limited free movement of the receptacle on the one member including axial and rotational movement so as to be retained in the proximity of the aperture therein and in position to be freely moved and rotated into fastened interengagement with the stud and fully seated against the one member free of interference with the retainer without the necessity of disengaging the retainer from the one

member when the stud and receptacle are coupled to hold the two members together.

4,225,010

PROCESS FOR BOUNCE CRIMP TEXTURIZING YARN
Philip C. Feffer, Silver Spring, Md., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 7, 1978, Ser. No. 967,449

Int. Cl.³ D02G 1/16, 1/12

U.S. Cl. 28-248

5 Claims



1. In a process for the bounce crimp texturizing of thermoplastic yarn which comprises the steps of:

- (a) supplying drawn yarn to a fluidized bounce crimp texturizer;
- (b) bounce crimp texturizing said yarn in said bounce crimp texturizer and discharging texturized, loosely compacted yarn therefrom in a substantially tensionless state via a yarn outlet tube; and
- (c) continuously collecting said texturized yarn on a yarn collecting means,

wherein the improvement comprises the steps of:

- (a) sensing the thickness of the yarn at a location between the bounce crimp texturizer and said yarn collecting means; and
- (b) increasing the tension on said texturized crimped yarn and the rate of yarn takeup on said collecting means when the thickness of the sensed yarn exceeds a first predetermined thickness of a first predetermined value and reducing the tension on said texturized crimped yarn and decreasing the rate of yarn takeup on said collecting means when the thickness of the sensed yarn is equal to or less than a second predetermined thickness of a second predetermined value, whereby said yarn is discharged from said compacting outlet in a loosely compacted tensionless state and is not accumulated prior to being collected by said collecting means, thereby substantially reducing tangles.

4,226,011

MANUFACTURING METHOD FOR METALIZED PLASTIC DIELECTRIC CAPACITORS FOR IMPROVED CURRENT CAPABILITIES

Delbert E. Hunt, Ogallala, Nebr., assignor to TRW Inc., Los Angeles, Calif.

Filed Jan. 2, 1979, Ser. No. 206

Int. Cl.³ H01G 4/18, 1/14

U.S. Cl. 29-25.42

11 Claims

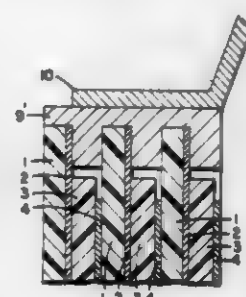
1. A method for manufacturing multi-layered capacitors, each layer consisting of a thermoplastic dielectric film and a conductive film associated therewith, different sets of conductive films being electrically connectable to separate lead electrodes, said method comprising:

winding said layers into a coil, said layers being positioned with respect to one another so that at one axial end of said

coil the conductive films of one set and the dielectric films associated therewith project axially beyond the edges of the remaining layers;

initially heating said coil at a temperature below the rated operating temperature of said capacitor for a period of time sufficient to cause the initial contraction of said thermoplastic dielectric films;

bonding a conductive bonding material to the axially extending conductive films at least at said one axial end of said coil, said bonding material penetrating between the axially



projecting layers so as to form an electrical connection with the conductive films of the projecting layers while not contacting the conductive films of the layers which do not project axially;

subsequently heating said coil to above the rated operating temperature of said capacitor for a period of time sufficient to cause the dielectric films to contract into a mechanically rigid package without adversely affecting the electrical properties of the said dielectric films, said conductive films or said bonding material.

4,226,012

METHOD OF REPAIRING A HEAT EXCHANGER AND BODY FOR USE IN THIS METHOD

Jan Esseggers, Nieuwerkerk aan de IJssel, Netherlands, assignor to B.V. Neratoom, The Hague, Netherlands

Continuation of Ser. No. 727,627, Sep. 8, 1976, abandoned. This application Sep. 27, 1978, Ser. No. 946,457

Claims priority, application Netherlands, Oct. 6, 1975, 7511726

Int. Cl.³ B23P 9/00, 15/26

U.S. Cl. 29-157.3 R

2 Claims



1. A method of repairing a heat exchanger having a housing defining an elongated enclosure in which a plurality of spaced apart tubes is arranged for passing a fluid, vapour or gas through the heat exchanger, and means for passing a hot medium through the enclosure surrounding the tubes so as to establish a heat exchange with the fluid, vapour or gas passed

through the tubes, in the event of leakage of one of the tubes said method comprising the steps of sealing the defective tube at both ends to terminate the flow of said fluid, vapour or gas therethrough, cutting the defective tube through adjacent one of its ends, cutting the defective tube through at a corresponding place at the other end thereof, said steps of cutting being performed intermediate the sealed ends of said tube removing the thus severed tube section from the heat exchanger, and replacing said severed tube section by mounting a body in the heat exchanger having a structure so that during operation a proper mixing occurs between the hot medium flowing in the vicinity of the body and the hot medium flowing elsewhere in the enclosure surrounding the tubes, said body having means for creating nonlaminar flow of the hot medium along the body.

4,226,013

TOOL KIT FOR ATTACHING AND REMOVING SPIRAL LOCK WASHERS

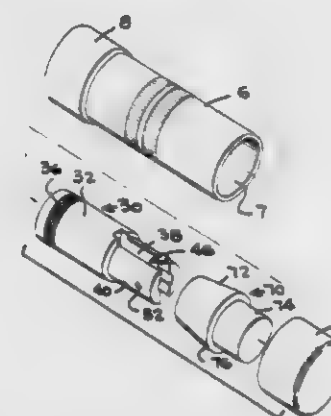
Steven Helesfal, Nicholasville, Ky., assignor to Harry C. Miller and Georgia R. Miller, both of Merritt Island, Fla.

Filed Apr. 4, 1979, Ser. No. 26,952

Int. Cl.³ A44B 13/02

U.S. Cl. 29-235

20 Claims



1. A tool for removing a spiral lock washer having upper and lower spiral flights from an annular washer retaining groove adjacent a free end of a supporting member having an axial opening in said free end and also having a cylindrical outer surface, said tool comprising an elongated body member having a guide end and a handle end, pivot means mounted in one end of said elongated body member extending transversely with respect thereto, a pivot lever mounted on said pivot means, said guide end of said elongated body member being dimensioned and shaped so as to be matingly insertable in said axial opening, a lift finger on an outer end of said pivot lever having an outer end tip positioned externally adjacent the guide end to be positionable in a space between the end tip of the upper spiral of the spiral lock washer positioned in an annular washer retaining groove of a supporting member when said guide end is inserted a predetermined distance in the associated axial opening of the supporting member whereby movement of said guide end inwardly of said axial opening beyond said predetermined distance effects pivotal movement of the lift finger to cause the end of the upper spiral to be lifted outwardly of the annular washer retaining groove to ride up on the lift finger to result in the positioning of the lift finger between the upper spiral flight and the lower spiral flight whereby subsequent rotation of the elongated body member about its longitudinal axis effects traversal of the lift finger along the entire length of space between the upper and lower spiral flights to a position below the lower flight to cause the spiral washer to be peeled off of the supporting member and completely removed from the annular groove and displaced outwardly of the free end of the supporting member.

4,226,014

TENSION CONTROL OF FASTENERS

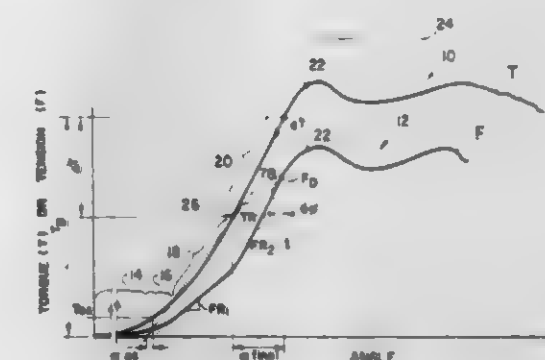
Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,346

Int. Cl.³ B23P 19/06

U.S. Cl. 29-407

4 Claims



1. Apparatus for monitoring the tightening of a joint having components including at least one threaded fastener, comprising

a powered tool for tightening the fastener; means for sensing torque and not load at various angles of advance during tightening; and means for determining, from the sensed values, the stress appearing in the fastener at least at the termination of tightening at a stress value below the yield point of any joint component that can be correlated with stress.

4,226,015

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570, and Ser. No. 712,554, Aug. 9, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,356

Int. Cl.³ B23P 19/06

U.S. Cl. 29-407

3 Claims



1. A method of connecting a multiplicity of joints with threaded fastener pairs, comprising tightening each fastener pair with a powered instructable tool to a stress value of at least 0.4 yield strength and below the yield point; suspending tightening and allowing the joint to relax; and resuming tightening to a final tightening parameter.

4,226,016

METHOD OF REMOVING A TRACK PIN FROM A TRACK SHOE

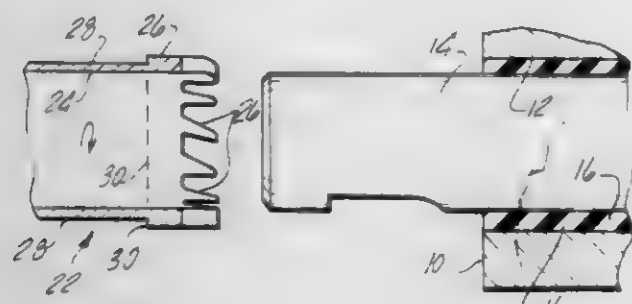
Nathaniel Carr, Detroit, Mich., assignor to The United States of America as represented by the secretary of the Army, Washington, D.C.

Filed Mar. 2, 1979, Ser. No. 16,776

Int. Cl.¹ B23P 19/04; B25B 33/00

U.S. Cl. 29—426.4

1 Claim



1. A method for removing a compressed rubber bushing from an annular space between a relatively large diameter smooth cylindrical bore extending through a track shoe and a relatively small diameter track pin extending through said bore; said method including the steps of providing an annular cutter element with an internal diameter as a sliding fit on the pin and an external diameter as a sliding fit on the bore surface so that the annular thickness of the cutter element is the same as the annular thickness of the compressed rubber bushing; providing a series of cutting teeth on an end edge of the annular cutter element; providing a reduction in the external diameter of the cutter element at a locality spaced a very slight axial distance from the cutting teeth to form an inwardly-directed shoulder at the outer side surface of the cutting teeth; rapidly rotating and simultaneously advancing the annular cutter element against the rubber bushing for a depth of approximately two inches to form rubber particulates at the teeth-rubber interface; withdrawing the cutter element out of the cylindrical bore to enable the aforementioned shoulder to remove particulates from the bore, and repeating the steps of advancing and withdrawing the rotating cutter element until the cutting teeth have advanced entirely through the bushing material.

4,226,017

METHOD FOR MAKING A SEMICONDUCTOR DEVICE

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Filed May 15, 1978, Ser. No. 905,978

Int. Cl.² B01J 17/00

U.S. Cl. 29—572

9 Claims

1. A method of making a semiconductor device, comprising providing a wafer of host material, said wafer having two major surfaces and being doped with an impurity of one conductivity type, contacting one of said major surfaces with a layer of a metal-containing composition without alloying or sintering, and then heating said wafer in the presence of an impurity of a second conductivity type to a temperature at which, at least said metal of said metal-containing composition diffuses into and thereby alloys with or sinters to said one major surface to form a high-low junction thereat, while said second conductivity type impurity substantially concurrently forms a p-n junction at the other of said major surfaces.

4,226,018

METHOD FOR MANUFACTURING A FLOATING TYPE THIN FILM MAGNETIC HEAD

Takuji Nakanishi, Tomoyuki Toshima, and Keiichi Yanagisawa, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

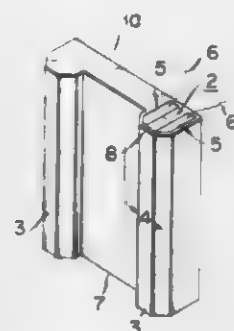
Filed Feb. 23, 1979, Ser. No. 14,718

Claims priority, application Japan, Feb. 27, 1978, 53-20901

Int. Cl.³ G11B 5/42

U.S. Cl. 29—603

12 Claims



1. A method for manufacturing a floating type thin film magnetic head which comprises the steps of:

- (a) depositing a large number of thin film transducers in a matrix form on a lapped plain surface of a core block stock;
- (b) cutting up the core block stock into a plurality of narrow parallelepiped core blocks each including a row of thin film transducers;
- (c) lapping the recording medium-facing lateral plane of the narrow parallelepiped core blocks so as to prepare a slider surface of connected heads;
- (d) covering the lapped recording medium-facing lateral plane of the core block with a thin film patterned mask;
- (e) ion-etching the lapped recording medium-facing lateral plane of the core block by irradiating accelerated ions of argon gas through the patterned mask to provide air-bearing surfaces each having a prescribed width, the ion-etching step comprising placing the core block in a bell-jar of a sputtering apparatus, introducing argon gas therein to which contains hydrogen gas having a partial pressure of about 1.6×10^{-3} Torr, placing a moisture holding material in the bell-jar to substantially fix the content of residual moisture in the bell-jar, and supplying radio frequency electric power to the sputtering apparatus;
- (f) removing the patterned mask from the core block by a corrosive liquid; and
- (g) cutting up the processed core block into individual magnetic heads.

4,226,019

CLEANING MEMBER FOR TWO-EDGE SHAVING BLADE UNIT

Makoto Sugiyama, Seki, Japan, assignor to KAI Cutlery Center Co., Ltd., Gifu, Japan

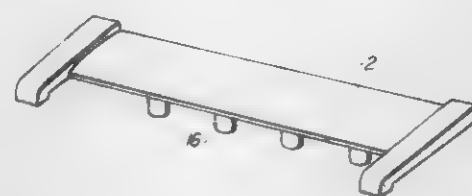
Filed Jan. 26, 1979, Ser. No. 6,872

Claims priority, application Japan, Jan. 27, 1978, 53-7829

Int. Cl.³ B26B 21/22

U.S. Cl. 30—41

10 Claims



1. An ejecting member adapted to be interposed between two blade elements of a two-edge shaving blade unit and to be

retractably moved forwardly to eject shaved hair particles and other matters deposited in and clogging the space between the cutting edges of said blade elements, the improvement wherein said ejecting member has an integral tabular construction including an outer frame portion which defines the outer profile of said ejecting member, an aperture which defines at its outer sides the inner edges of said outer frame portion, an inner island portion defined by the inner sides of said aperture and adapted to be fixedly cramped between said upper and lower blade elements, and at least one resilient bridge portion by which said inner island portion is resiliently connected to said outer frame portion, wherein said outer frame portion and said resilient bridge portion are thinner than said inner island portion.

4,226,020

KNIFE AND BLADE ADVANCE AND LOCKING MECHANISM THEREFOR

Michel C. Quenot, Ornans, and Louis Scandella, Marnay, both of France, assignors to Stanley Mabo S.A., France

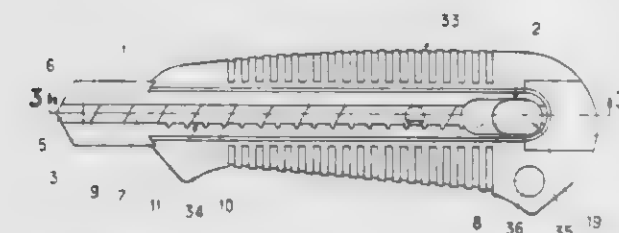
Filed Feb. 1, 1979, Ser. No. 8,586

Claims priority, application France, Feb. 1, 1978, 78 03293

Int. Cl.¹ B26B 1/08

U.S. Cl. 30—162

9 Claims



1. A knife comprising an elongated tubular blade-carrying sheath open at one end and having a longitudinally extending slot in the front wall thereof, a blade having a cutting edge on a longitudinal edge of the blade and being disposed within the sheath for relative longitudinal sliding movement, a combined sliding and locking member having means for releasably mounting one end of the blade with the cutting edge directed downwardly, the lower edge of the slot having a series of longitudinally spaced notches, a detent on said member selectively engageable with said notches for locking said member in adjusted position, said member having a biasing means for biasing the member downwardly to urge said detent into a notch, the detent being disengaged from a notch when the member is lifted upwardly against the bias of said biasing means.

4,226,021

SHAFT ASSEMBLY FOR LAWN TRIMMER

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

Continuation-in-part of Ser. No. 788,357, Apr. 18, 1977, Pat. No. 4,126,928, and Ser. No. 871,603, Jan. 23, 1978. This application

Oct. 19, 1978, Ser. No. 952,715

Int. Cl.³ A01D 35/26

U.S. Cl. 30—276

15 Claims

1. A shaft assembly for physically connecting a driving head at one end to a driven tool at the other end and for housing a flexible drive shaft to drive the tool from the head, said assembly having a straight portion and a bent portion so as to dispose the axis of the tool end at an angle to the axis of the driving head, comprising

an outer frame shaft tube of relatively large diameter and structural strength extending continuously along said straight portion and said bent portion,

an inner sheath tube of relatively much smaller diameter formed of rigid but bendable tubing and extending substantially coaxially through the straight and bent portions of the frame shaft,

and bushing means interposed between the two tubes in

closely interfitting relation with both and including an elongated, thick-walled continuous bushing of semirigid material extending over the length of the bent portion of the assembly and substantially filling the space between

the tubes so as to provide substantially continuous support for the sheath tube from the frame shaft over such bent portion, and means in an adjoining straight portion of the assembly for holding the sheath tube coaxial with the frame tube.

4,226,022

ELLISOGRAPH

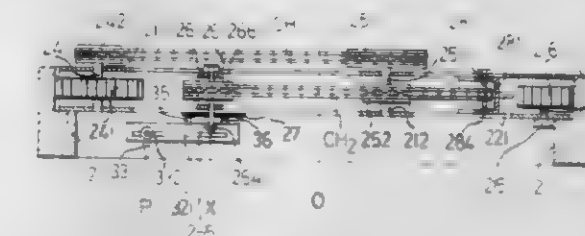
Jen-Sheng Chen, and Jen-Hung Chen, both of 4, Alley 17, Lane 73, Chang Tai St, Taipei 109, Taiwan

Filed Jul. 17, 1979, Ser. No. 58,302

Int. Cl.¹ B43L 11/04

U.S. Cl. 33—30 G

6 Claims



1. An ellipsograph comprising: a ring gear having internal teeth; a main seat bar disposed diametrically within said ring gear and being rotatable about the center of said ring gear; a vertical shaft mounted on said seat bar; an arm mounted on said shaft for rotation therewith; a drawing implement adjustably mounted on said arm; a drive gear mounted on one end of said seat bar and meshes with said inner teeth of said ring gear; and chain drive means drivingly interconnecting said drive gear with said vertical shaft so that rotation of said main seat bar produces rotation of said drive gear which is transmitted to said vertical shaft for rotating said arm to produce an ellipse whose major axis equals twice the sum of a first value defined by the distance between the center of said ring gear and said vertical shaft and a second value defined by the distance between said vertical shaft and said drawing implement, and whose minor axis equals twice the difference between said first and second values.

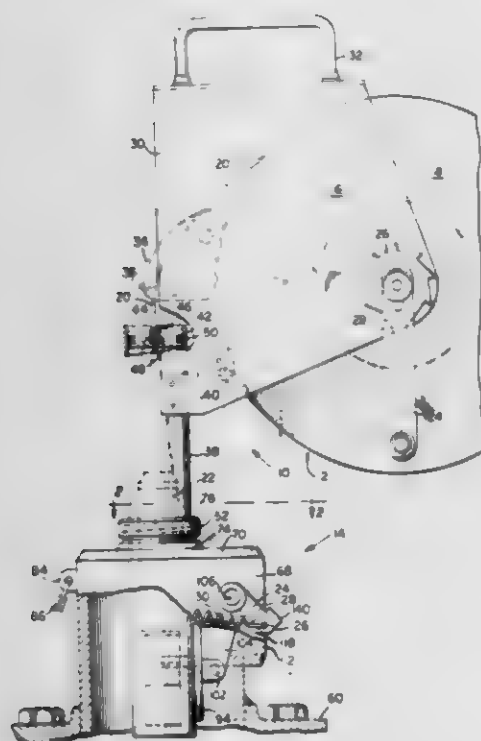
4,226,023

PORTABLE DEVICE FOR DETERMINING PHYSICAL QUALITIES OF PRESSURIZED CONTAINER CONTENTS

William H. Gravert, Port Washington, N.Y., assignor to Marine Moisture Control Company, Inc., Inwood, N.Y.
Filed Apr. 11, 1979, Ser. No. 29,134
Int. Cl.³ G01F 23/04

U.S. Cl. 33—126.5

5 Claims



1. Apparatus for gauging liquid in pressurized tanks having at least one sealable outlet port comprising in combination a portable hand held measuring device and a valve housing assembly secured to the tank outlet port at each station to be gauged, said hand held measuring device comprising:

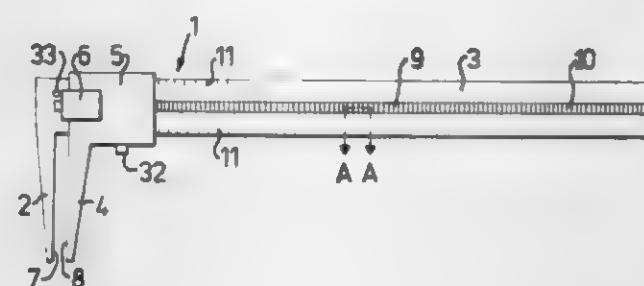
- (a) a reel housing having a hand hold thereon;
- (b) a fluid responsive device;
- (c) a tape reel mechanism including a tape assembly having one end coupled with the fluid response device and the other end coupled with said tape reel mechanism;
- (d) a second elongate hollow housing carried by the reel housing; said housing adapted to receive a portion of the tape assembly and the fluid responsive device;
- (e) means at the upper end of the second housing providing a gas seal for the tape assembly; and
- (f) a stuffing nut engaging the external surface of the second housing; said valve housing assembly comprising:
 - (1) means at the lower end thereof for sealing engagement with a tank outlet port;
 - (2) an externally threaded neck at the opposite end of the valve housing sized to be engaged by the stuffing nut carried by the second housing;
 - (3) an axial bore through the externally threaded neck, said axial bore having a diameter to freely receive said second elongate hollow housing;
 - (4) a sealing means mounted in the axial bore of the threaded neck and adapted to sealingly engage the external surface of the said second elongate housing when said housing is inserted through the neck;
 - (5) a valve seat at the inner end of the said neck;
 - (6) a valve cap;
 - (7) means pivotally mounting the valve cap within the valve housing; and
 - (8) spring means urging the valve cap into sealing engagement with the valve seat, said valve cap being displaceable to a position to permit entry of a portion of the second housing into the valve housing against the urging of said spring by the inward movement of the second elongate housing.

4,226,024
CALIPER

Gerhard Westerberg, Taby, and Hans Jacobsen, Solna, both of Sweden, assignors to Gerhard Westerberg, Taby, Sweden
Filed Jan. 24, 1979, Ser. No. 5,976
Claims priority, application Sweden, Jan. 30, 1978, 7801122
Int. Cl.³ G01B 3/20, 7/02

U.S. Cl. 33—143 L

6 Claims



1. A caliper for measuring the diameter of tree stems comprising:

- (1) a stationary leg fixed with a bar having a length and a movable leg slidably mounted on said bar by a support member and movable along the length thereof in two opposite directions;
- (2) a plurality of grooves located in the bar for a length of the bar along which the movable leg is movable, the bar being of a magnetic material at least in a portion containing the grooves and the grooves being uniformly spaced from each other and directed perpendicular to the directions of movement of the movable leg; and
- (3) electronic means for measuring the distance the movable leg is moved from the stationary leg, said means comprising:
 - (a) two field plates rigidly attached to the support member of the movable leg adjacent said grooves, each field plate magnetically sensing each groove and producing an electrical signal in response thereto, the plates being located relative to each other so that the electrical signals produced thereby in response to the sensed grooves are out of phase from each other, and the phase difference between the produced electrical signals indicating the direction of movement of the movable leg relative to the stationary leg;
 - (b) means for converting said electrical signals from the field plates to pulses substantially in phase with said electrical signals;
 - (c) comparison and scaling means for comparing the phase relationship of the pulses to determine the direction of travel of the movable leg along the bar and for counting the number of pulses to determine the distance the movable leg is moved from the stationary leg;
 - (d) converter means for converting the number of pulses to readable measurement values; and
 - (e) portable data terminal means for storing the measurement values.

4,226,025

SURGICAL CALIPER

Michael R. Wheeler, 1720 Andres Ave., Torrance, Calif. 90501
Filed Mar. 5, 1979, Ser. No. 17,400
Int. Cl.³ G01B 5/02

U.S. Cl. 33—148 E

12 Claims

1. A measuring caliper adapted for measuring anatomical parts of mammals during surgery without damaging the parts particularly inside a body cavity;
- (a) a pair of long straight arms with longitudinal axes which are approximately parallel in a closed position of the arms each arm having a distal end and an opposite end connected to a handle which is provided by extensions of each of the arms, the arms each having a series of parallel precisely positioned reflecting means along the longitudinal axis near the distal end of the arms which can reflect

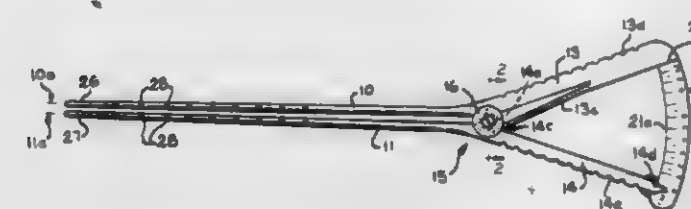
4,226,027

MATERIAL FEED SYSTEM FOR JET MILLS AND FLASH DRYERS

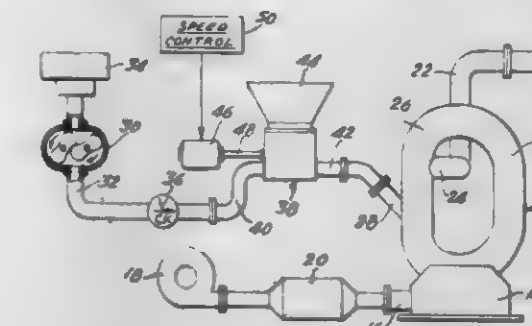
James F. Albus, Newtown, Pa., assignor to Aljet Equipment Company, Willow Grove, Pa.
Filed Mar. 27, 1979, Ser. No. 24,249
Int. Cl.³ F26B 17/00

U.S. Cl. 34—57 R

2 Claims



(c) a scale with index marks as part of the handle which is attached to one of the extensions of the arms such that the other arm extension is moveable across the scale for measuring as the arms are opened or closed in a scissors movement.



1. In a jet mill or flash dryer comprising a first conduit, means producing a high-velocity flow of gas in said first conduit for effecting treatment of solid particles therein and an opening in the wall of said first conduit for the introduction of solid matter to be treated, a material feed system comprising:
- blower means for producing a flow of air under a pressure higher than the pressure at said opening resulting from the flow of gas in said first conduit;
 - means providing a second conduit connected at one of its ends to said blower means to receive air therefrom;
 - feeder means for introducing solid material to be treated into said first conduit through said opening, said feeder means comprising means providing a chamber, means providing an air inlet opening in said chamber connected to the other end of said second conduit, means providing a material inlet opening for introducing solid material into said chamber, and means providing an outlet opening, air-locked conveying means for conveying solid material to be treated into said chamber and preventing continuous flow of air from said air inlet opening outwardly from said chamber through said material inlet opening, said air-locked conveying means comprising a series of movable blades and means for moving said blades to effect movement of solid material into said chamber, said blades being positioned so that, through at least part of its travel, at least a portion of each blade is located in the path of flow of air between said air inlet opening and said outlet opening; and
 - means providing a third conduit connected to receive air and solid material from said outlet opening and to deliver the same to said opening in the wall of said first conduit;
- in which said means comprising a series of blades is a rotary valve having a rotatable shaft, and in which said chamber is bounded in part by a pair of end walls, and a side wall in the form of a surface of revolution coaxial with said shaft and extending between said end walls, said blades being secured to and extending radially outwardly from said shaft and substantially conforming to said end walls and to said surface of revolution, thereby forming a series of movable chambers within said chamber, and in which said air inlet opening is in one of said end walls, said outlet opening is in the other of said end walls, and said material inlet opening is formed by a gap in said side wall, and said blades are sufficient in number to prevent direct communication between said material inlet opening and said air inlet opening and between said material inlet opening and said outlet opening regardless of the position of said rotatable shaft, and in which said air inlet opening and said air outlet opening are positioned in said opposite end walls for continuous communication between them through said movable chambers.

4,226,026

DUAL ENERGY INPUT CYCLE FOR A DRYER

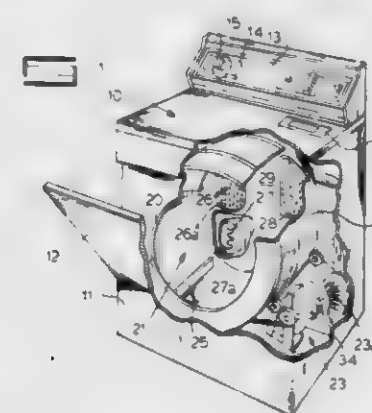
Charles P. Deming, Watervliet Township, Berrien County; Norbert J. Rybarczyk, Jr., Lincoln Township, Berrien County, and Alvin E. Burkall, Coloma Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 16, 1979, Ser. No. 21,079

Int. Cl.³ F26B 21/10, 3/04

U.S. Cl. 34—31

10 Claims



1. In a dryer having a means for directing a flow of air for drying a clothes load over a period of time during a preselected programmed cycle of operation, and a heater for raising the temperature of said air, a control means for said heater comprising:

- a first means for providing a low thermal output from said heater during a first portion of said cycle of operation;
- a second means for providing a high thermal output at a level sufficient to de-wrinkle permanent press fabrics from said heater for a second portion of said cycle of operation; and
- a third means for automatically changing sequentially from said low to said high thermal output with no intervening decrease in thermal output at a selected time during said cycle of operation so that a relatively higher energy input occurs near the end of the cycle to enhance de-wrinkling of permanent presstype fabrics.

4,226,028

NDB INSTRUMENT FLIGHT TRAINER

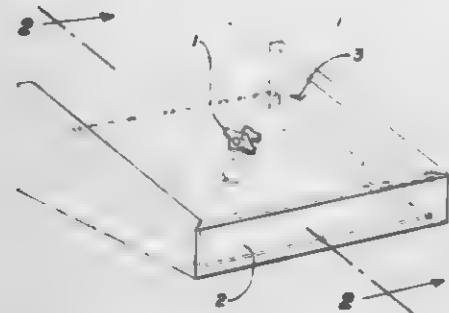
David P. Robson, 4602 Schenley Rd., Baltimore, Md. 21210

Filed Jul. 10, 1978, Ser. No. 923,201

Int. Cl.³ G09B 9/08

U.S. Cl. 35—10.26

4 Claims



1. Apparatus for visually demonstrating NDB instrument navigational techniques, comprising:
 - a planar table having a first playing surface inclined with respect to the horizontal, and an opposing second surface; first magnetic means selectively positionable adjacent to said second surface of said table, opposite said first surface;
 - a manually movable model airplane having a nose and an opposing tail and engageable with said first surface of said table, said model airplane including a facsimile automatic direction finder relative bearing indicator responsive to said first magnetic means, said facsimile relative bearing indicator including an annular azimuth scale with degree markings equally spaced around the periphery thereof from zero degrees to 360 degrees, the zero marking adjacent said nose of said model airplane;
 - a pointer positioned within the central opening of said azimuth scale, said pointer rotatable about an axis vertical to said model airplane;
 - said pointer further includes a second magnetic means fixed thereto so that said pointer is rotated and directed toward first magnetic means, and
 - a facsimile gyro compass containing a compass card with direction markings thereon including north, south, east and west at the proper 90 degree relationships, said compass card mounted to an axis vertical to said model airplane and freely rotatable through 360 degrees.

4,226,029

REFLECTIVE TRACING DEVICE

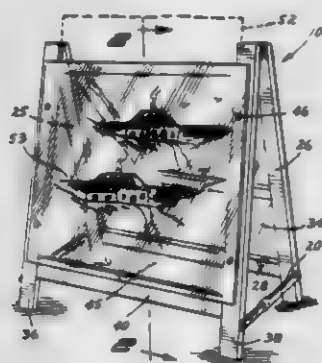
Kevin C. McGuire, Sauk Rapids, Minn., assignor to Arthur M. Gunderson, St. Cloud, Minn.

Filed Feb. 9, 1979, Ser. No. 10,707

Int. Cl.³ G09B 11/06

U.S. Cl. 35—26

5 Claims



1. A perceptual educational tracing apparatus, having in combination
 - a transparent panel member,
 - a transparent sheet member bearing indicia,
 - means removably holding said transparent sheet member to underlay said transparent panel member,
 - a panel member having a mirrored surface, and
 - means adjustably securing said first and second mentioned

panel members relative to each other for reflection of said indicia upon said mirrored surface, whereby there is direct observation of the hand of the operator in tracing said indicia and an observation of said hand as a mirrored image for perceptual guidance of said hand in tracing said indicia as seen upon said mirrored surface.

4,226,030

SUBJECT IDENTIFICATION SYSTEM WITH OVERLIE COVER

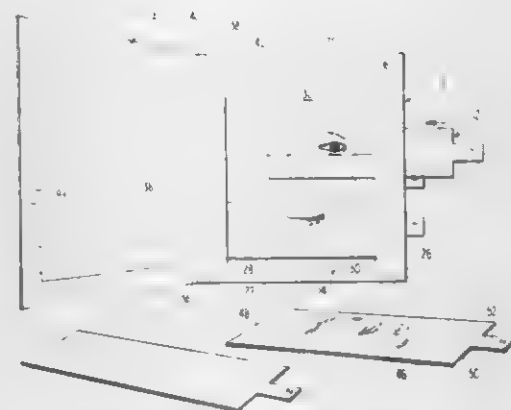
William T. Quinn, III, 681 Park Ave., Freehold, N.J. 07728

Filed Sep. 18, 1978, Ser. No. 943,428

Int. Cl.³ G09B 1/04

U.S. Cl. 35—28

4 Claims



1. In a facial identification system in which a composite of facial features interrelated to form a representation of a subject, the composite being made up of changeable individual feature component segments which partially overlap one another in irregular, layered fashion, the combination of a holder for said segments, and the segments, comprising:
 - a back member comprising a substantially rectangular panel of opaque, flexible material having opposite front and rear faces, top and bottom edges, and inner and outer side edges;
 - the panel having a pair of vertically extending slots formed therein in substantially parallel relation to the side edges and spaced inwardly therefrom;
 - the slots terminating at locations spaced from the top and bottom edges;
 - the slots defining a backing panel therebetween;
 - a cover member formed of transparent flexible plastic and including a cover panel and fold tab;
 - the cover panel and the fold tab being hingedly joined together along a fold line;
 - the fold tab being fixedly secured to the rear face of the back member and having a terminal side edge located in parallel, inwardly spaced relations to the inner side edge of the back member;
 - the cover panel being dimensioned to overlies the back member;
 - the segments being elongated and having inside edges and having outside edges;
 - the segments being inserted through the slots to overlies the backing panel with the inside edges abutting the terminal side edge of the fold tab, and having pull tabs on the outside edges thereof, said pull tabs projecting outwardly of the backing panel when the inside edges abut the terminal side edge of the fold tab.

4,226,031

SANDAL

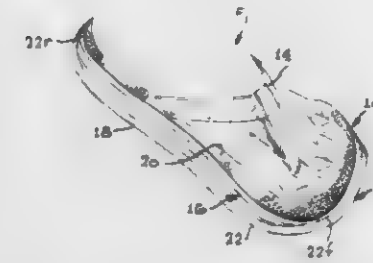
James K. Wong, 46-194 Nona Loop, Kaneohe, Hi. 96744

Filed Jun. 19, 1978, Ser. No. 916,463

Int. Cl.³ A43B 3/12

U.S. Cl. 36—11.5

1 Claim



1. A decorative sandal, comprising:
 - a base; and
 - strap means for holding a foot to the base;
 - said base including an upper base portion, a stripe layer lying generally against the bottom of the upper base portion, and a tough sole layer lying against the bottom of the stripe layer;
 - said upper base portion being tapered in thickness, so it is progressively thinner at progressively more forward locations, and the stripe and sole layers extending at an upward-forward incline near the front of the base;
 - the extreme front edge of said base being angled from the vertical so it extends perpendicular to the front end of the stripe layer, as seen in a side elevation view, whereby to keep the thickness of the stripe layer uniform at the front and sides of the sandal.

4,226,032

GOLF SHOE

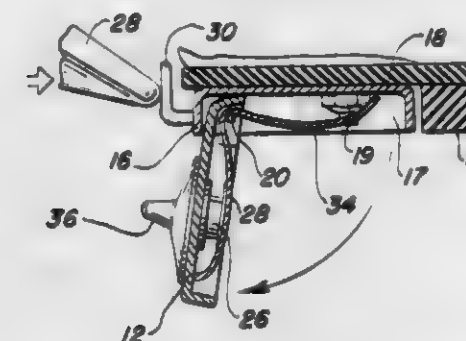
Richard E. Herro, 1472 Pioneer Rd., Joliet, Ill. 60435

Filed Oct. 19, 1978, Ser. No. 952,811

Int. Cl.³ A43B 5/00; A43C 15/00; A63B 55/00

U.S. Cl. 36—127

9 Claims



1. A golf shoe which comprises: a plate; hinge means connecting said plate to the outer edge of the golfer's back shoe; means for retaining said plate in a first position wherein said plate lies flat against the shoe sole; and means for holding said plate in a second position wherein said plate is angled with respect to the shoe sole to thereby tilt the shoe inwardly when worn by the golfer while said plate is in the second position, said means for retaining said plate in the first position including a fastener which is operable when the golfer moves the plate from the second position to the first position by applying a normal force to the outside face of said plate by sliding the shoe generally laterally outward and then lowering the shoe keeping the shoe sole substantially parallel with the ground until the cleats on the shoe sole are in contact with the ground.

4,226,033

TREE TRANSPLANTING MACHINE

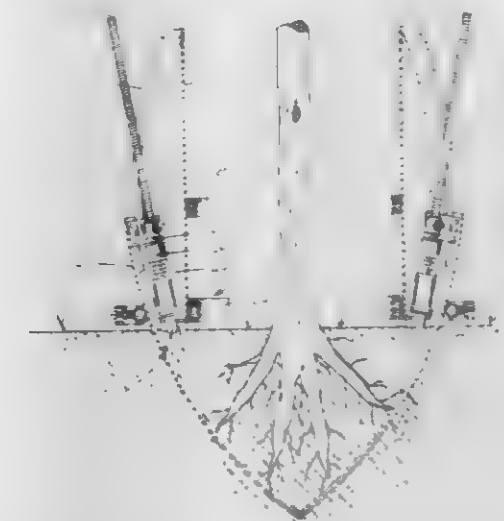
John M. DeHaan, Pella, Iowa, assignor to Vermeer Manufacturing Co., Pella, Iowa

Filed Jun. 1, 1979, Ser. No. 44,530

Int. Cl.³ A01G 23/06

U.S. Cl. 37—2 R

6 Claims



1. A machine for excavating a tree from the ground with a root ball including:
 - (a) a base frame for encircling a tree to be excavated;
 - (b) a plurality of upright blade guide units on said base frame;
 - (c) a plurality of movable digging blades corresponding in number to said guide units, with each blade movable in a guided path adjacent to and outwardly from an associated guide unit;
 - (d) means for guidably supporting a blade for movement in said guided path from an upper position out of the ground, to a lower ground inserted position wherein said blades are inclined downwardly and inwardly of said base frame to form a tree ball for the roots of a tree being excavated;
 - (e) means for moving each blade in the guided path therefor including an upright lift screw and coacting nut assembly, located within each guide unit;
 - (f) means supporting the lower end portion of said lift screw on the base frame for rotational movement about an upright axis and for pivotal movement in a plane laterally of a blade;
 - (g) means for connecting each nut assembly to the upper end portion of an associated blade;
 - (h) coacting means on a guide unit and nut assembly for defining said guided path of movement of a blade; and
 - (i) means for reversibly rotating said lift screw.

4,226,034

VACUUM SNOW REMOVER FOR REMOVING SNOW FROM ROADS AND OTHER SNOW COVERED SURFACES

Irving Benjamin, and Diana M. Benjamin, both of 7539 E. Prairie Rd., Skokie, Ill. 60076

Filed Nov. 6, 1978, Ser. No. 957,734

Int. Cl.³ E01H 5/10

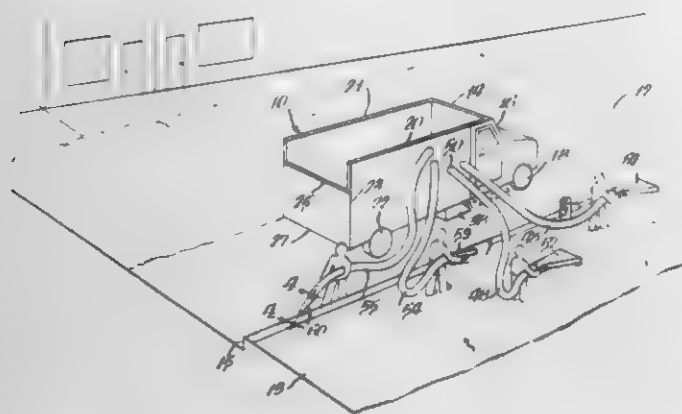
U.S. Cl. 37—12

13 Claims

1. A vacuum snow remover for removing snow from a snow covered road and the like, comprising:
 - a wheeled motorized vehicle for driving upon a snow covered road having a cab at its front end and a snow-receiving collection tank at its rear end;
 - a main intake conduit communicating with said snow-receiving collection tank and extending to a position adjacent said snow covered road, said intake conduit being located and spaced rearwardly of said cab;
 - pneumatic snow removing means including fan means operatively associated with said snow-receiving collection

tank for creating a suction less than atmospheric pressure to effectively draw snow upwardly from said snow covered road through said main intake conduit and into said snow-receiving collection tank as said vehicle is stopped and while said vehicle is moving;

said snow-receiving collection tank having a melting chamber with melting means for melting said snow and defining a basin below said melting chamber for receiving said melted snow;



discharge means communicating with said basin for discharging said melted snow from said collection tank; and at least one auxiliary inlet conduit for drawing in snow from locations adjacent said road, said auxiliary inlet conduit having one end operatively connected to said fan means and communicating with said snow-receiving collection tank and another end defining a manually graspable intake portion adapted to be manually moved to said locations adjacent said road.

4,226,035

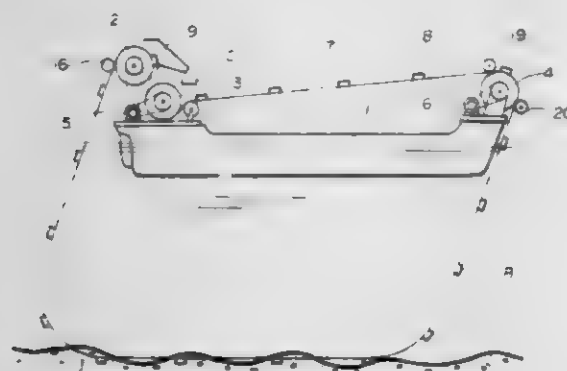
APPARATUS FOR CONTINUOUSLY DREDGING SUBMARINE MINERAL DEPOSIT

Nakaji Saito, 6-3, Higashi Jujo, Kitaku, Tokyo, Japan
Filed Jan. 21, 1978, Ser. No. 871,197

Claims priority, application Japan, Oct. 25, 1977, 52/127755
Int. Cl.³ E02F 3/08, 3/14

U.S. Cl. 37-69

2 Claims



1. An apparatus for continuously dredging submarine mineral deposits comprising:
an endless rope for circulating over the upper deck of a barge and along the seabed;
buckets fixed to the endless rope to effect scraping-up the mineral deposit from the seabed;
pulleys to engage and drive the endless rope and to be mounted on the barge;
the endless rope including spaced parallel pairs of endless ropes each of which is capable of traveling in translational motion;
said pulleys including a plurality of component pulleys rotatably mounted coaxially at a preset distance;
each of said buckets being interposed between spaced pairs of endless ropes and affixed thereto and being adapted to travel between said component pulleys when each bucket is disposed at the location where the endless ropes are in

contact with and driven by a plurality of said component pulleys;

clamping means including a metal pipe open at both ends for each endless rope, the endless rope mounted in both open ends of the metal pipe, adhesive within the pipe securing the rope therein, and caulking on the outer peripheral surface of the pipe to thereby fasten securely the pie to both ends of the rope and provide an endless rope;

a pair of spaced rods bridging adjacent spaced pairs of endless ropes and affixed thereto for each bucket and the bucket mounted to said rods thereby affixing the bucket to the spaced pairs of endless ropes while locating the buckets between the pairs of endless ropes so as to minimize adjustment of bucket position during use; and means for mounting each bucket to the rods to permit limited relative movement therebetween and lessen shock during use.

4,226,036

BRACELET ASSEMBLY FOR IDENTIFICATION DEVICE

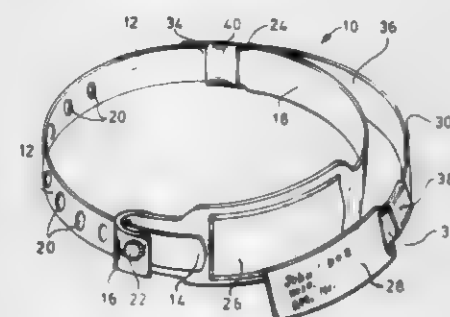
Albert E. Krug, Wyckoff, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 18, 1978, Ser. No. 970,148

Int. Cl.³ G09F 3/14

U.S. Cl. 40-21 C

7 Claims



1. A bracelet assembly for carrying an identity tag used to transfer identity information to a business record, which comprises:

(a) an elongate, flexible, band of a synthetic, polymeric resin, said band having a first end, a second end and a band body joining the first and second ends;

said body having a perforation therein adjacent the first end and adjacent to the second end, a means for association with the perforation to form a permanently closed loop of the band;

a stop means on the band body at a point which is a predetermined distance from the second end;

an identity tag;

an open pocket on the band body, positioned between the second end and the stop means, said pocket being adapted by size and configuration to receive the identity tag when inserted in the opening thereof; and

(b) an elongate, flexible tether having a first end, a second end and a tether body joining the first and second end of the tether;

means at the first tether end for permanently attaching to the identity tag;

means at the second tether end for slidably mounting the tether on the band body, between the first end of the band and the stop means, said means at the second tether end being stopped by said stop means from sliding between the stop means and the second end of the band, in a direction toward the second end of the band before the permanently closed loop is formed;

said tether being slidably mounted on the band through the means for the sliding mount;

said tether body having a length less than the aforementioned predetermined distance.

4,226,037

WALL DISPLAY DEVICE

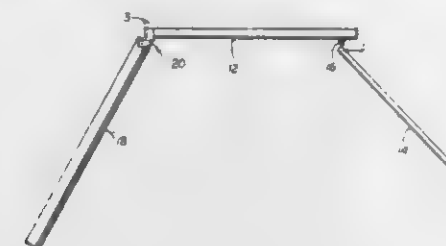
Robert Rodriguez, 8515 Gilman, Westland, Mich. 48185

Filed Jan. 2, 1979, Ser. No. 137

Int. Cl.³ G09F 1/12

U.S. Cl. 40-152.1

3 Claims



1. A display device adapted to be mounted on a wall comprising:

a first section of generally flat, rectangular shape and adapted to be mounted substantially flush against the wall, said first section having a generally flat rectangular recess covering substantially all of the front face thereof, said recess being faced with a first display surface;

a second section of generally flat rectangular shape and dimensioned along its height and width to freely nest into said recess of said first section, said second section being mounted to said first section by a first hinge means near a first vertical edge of said first section, said hinge means permitting said second section to be pivotally swung outward about 180° from its nested position to an open position substantially parallel to the plane of said first section, said second section having second and third display surfaces on opposite faces thereof, said second display surface facing outwardly away from the wall when said second section is in its nested position and said third display surface facing outwardly away from the wall when said second section is swung to its open position;

a third section of generally flat rectangular shape having on one face a generally flat, rectangular recess which is faced with a fourth display surface and having on its opposite face a fifth display surface, said third section being mounted to said first section by second hinge means near the second vertical edge of said first section, said third section and said recess therein being dimensioned to completely cover and obscure said first and said second sections when said third section is in a closed position, with said recess receiving at least a portion of the depth of said first and second sections, and said second hinge means permitting said third section to be swung outward about 180° from said closed position to an open position substantially parallel to the plane of said first section.

4,226,038

PHOTO-SLIDE HANDLER AND VIEWER

John Ashworth, 101 Valley Oaks Dr., Santa Rosa, Calif. 95405

Filed Apr. 2, 1979, Ser. No. 25,983

Int. Cl.³ G02B 27/02

U.S. Cl. 40-361

10 Claims

1. A device for displaying photo-slide comprising:

a panel;

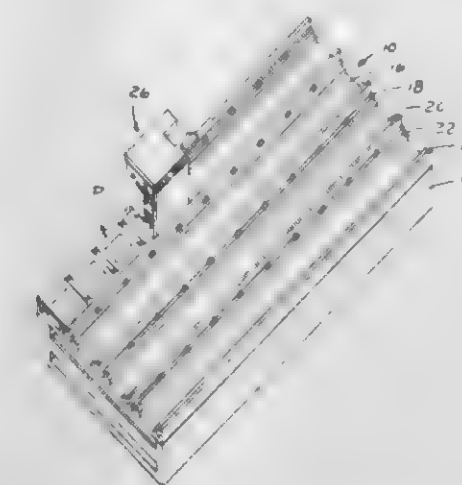
upper and lower rails on the panel;

the upper and lower rails are parallel and are spaced to support the tops and bottoms of the flat, back surfaces of photo-slides;

a slide handler box for receiving a stack of photo-slides and having side walls, back wall, and a bottom support spaced from said side walls;

slide surfaces, at the lower edges of said side walls, to slide along said panel astride said upper and lower rails with a stack of photo-slides supported in said handler box; and pick-off teeth, each with a stop surface of a height slightly less than the thickness of a photo-slide, along one of said upper and lower rails, said teeth being spaced slightly

more than the width of a photo-slide so that, as said box is moved along said upper and lower rails, a photo-slide is



picked off by each of said teeth and deposited on said upper and lower rails.

4,226,039

MULTI-POCKETED HOLDER FOR FILM AND CARD STORAGE

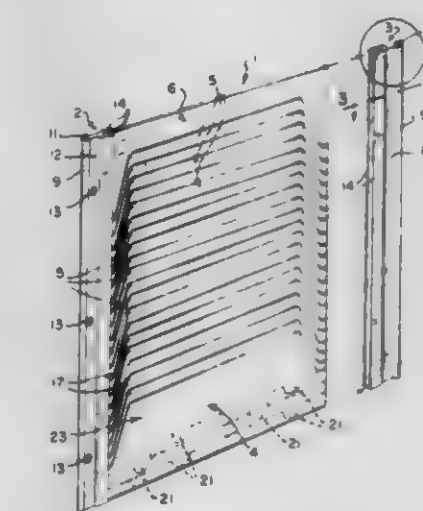
Raymond R. Young, Glenview, Ill., assignor to Wilson Jones Company, Chicago, Ill.

Filed Aug. 2, 1978, Ser. No. 930,367

Int. Cl.³ G09F 1/10

U.S. Cl. 40-373

6 Claims



1. A film and card holder comprising

(a) two spaced-apart frame pieces which include panel receiving portions;

(b) a first and a second pocket panel each of which in turn comprises

(i) two opposing walls attached along a base crease;
(ii) at least one spacer tab unitary with the panel and depending below the base crease; and
(iii) end portions positioned in said panel receiving portions; and

(c) the first pocket panel being nested in the second pocket panel with the spacer tab of the first panel abutting the base crease of the second panel.

4,226,040

FOLDING SCAFFOLD SIGN

Michael A. Carroll, and John L. Carroll, both of St. Louis, Mo., assignors to R & J Sign Company, Inc., St. Louis, Mo.

Filed Jun. 29, 1979, Ser. No. 53,281

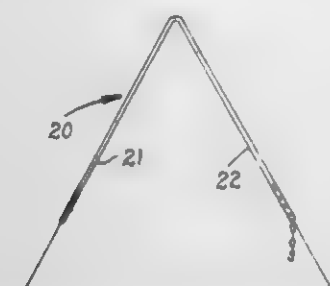
Int. Cl.³ G09F 15/00

U.S. Cl. 40-610

7 Claims

1. A weather resistant plastic folding scaffold sign comprised

of a pair of panels connected together by a fold means, leg members connected to each of said panels extending away from said fold means, said panels being comprised of a honey-



comb structure having openings extending perpendicularly to said fold means and said leg members being connected to said panels by interfitting in selected openings of said honeycomb structure.

4,226,041

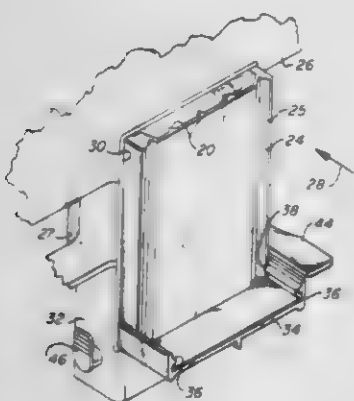
PREPACKAGED AMMUNITION SYSTEM

William H. Goodworth, 3112 Carey Ave., Davenport, Iowa 52803

Filed Jul. 3, 1978, Ser. No. 921,390
Int. Cl.³ F41C 25/02

U.S. Cl. 42—50

9 Claims



1. A prepackaged ammunition system comprising a weapon having a chamber, ammunition feed lips and a follower thereon, said weapon having a housing,

a disposable magazine having ammunition therein adapted for insertion into said housing,

said magazine comprising walls surrounding a vertical stack of cartridges,

said housing having said follower vertically moveable therein and latch means for retaining said follower in a downward position until after insertion of said magazine,

said housing having detent means thereon to permit unidirectional insertion and removal of said magazine therefrom.

4,226,042

ANIMAL TRAP STAKE

James K. Gilbert, R.R. 6, Box 493, Connersville, Ind. 47331

Filed Dec. 11, 1978, Ser. No. 968,368

Int. Cl.³ A01M 23/24

U.S. Cl. 43—96

3 Claims

1. An animal trap stake for anchoring an animal trap into the ground, said animal trap stake comprising:

a length of hollow pipe having an outwardly flared enlarged portion at a first end and a flattened blade portion at the opposite end;

a "figure 8" swivel member having a first larger loop and a second smaller loop, said first larger loop being slidably received around said length of hollow pipe; and
two oppositely disposed anchoring arms secured to said length of hollow pipe adjacent said flattened blade portion

and defining an acute included angle with the longitudinal axis of said length of hollow pipe, said flattened blade



4,226,043

INSECT KILLING APPARATUS

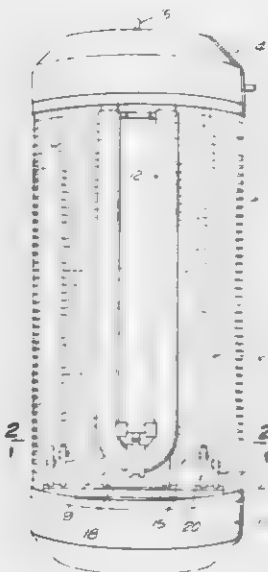
Dean Peterson, Antioch, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Feb. 2, 1979, Ser. No. 8,936

Int. Cl.³ A01M 1/04

U.S. Cl. 43—112

3 Claims



1. In an electrical apparatus for killing insects having means for attracting the insects, first vertically extending mesh electrode means surrounding the attracting means, second vertically extending mesh electrode means in spaced surrounding relationship to said first electrode means, a top and a bottom, the improvement comprising:

a first pair of insulators affixed to the inwardly facing surface of the first electrode means edge margin and the bottom; and

a second pair of insulators affixed to the outwardly facing surface of the second electrode means edge margin and the bottom;

said first and second pairs of insulators being located outwardly of the space between the electrode means leaving said space therebetween free of all obstruction by said insulators.

4,226,044

DRIVE-IN TELLER COIN BANK

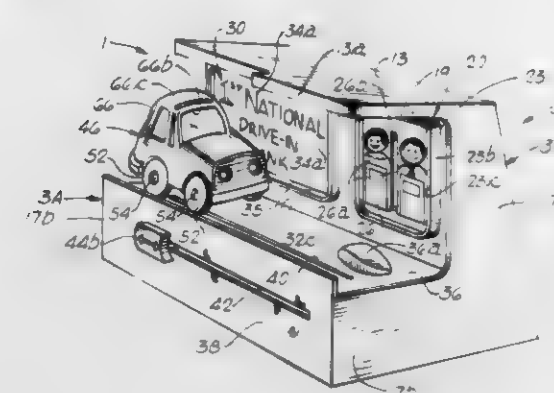
Ulrich H. Thomas, Bellwood, Ill., assignor to Banthrico Inc., Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,510

Int. Cl.³ A63H 33/00

U.S. Cl. 46—4

15 Claims



1. A coin bank comprising: a coin bank housing including a front support base and a rear portion defining a coin storage compartment behind said support base, said rear portion including a forwardly facing vertical wall extending along and mounted for movement along the top of said front support base in a direction parallel to the front of the coin bank and from a coin-receiving position adjacent one end portion thereof to a coin-ejecting position adjacent the opposite end portion thereof, said vehicle having a coin-receiving means to receive a coin when the vehicle is in said coin-receiving position and a coin-receiving slot oriented to receive a coin held in a vertical plane extending transversely to the direction of movement of said vehicle over said support base through which slot the coin drops onto said coin-receiving means, a coin-receiving opening in said vertical wall in the form of a vertical slot at the rear of said support base and positioned to receive a coin ejected from said vehicle when in said coin-ejecting position; and means responsive to the movement of said vehicle to said coin-ejecting position for imparting movement to said coin-receiving means therein to eject the coin from the side of the vehicle facing said vertical wall into said coin-receiving opening therein where the coin falls into said coin storage compartment.

4,226,045

STACKABLE TOY

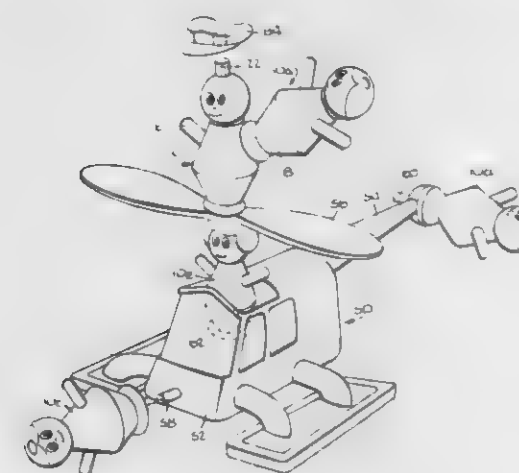
Roger W. Lehmann, Belle Mead, and Vincent F. Siravo, New Monmouth, both of N.J., assignors to Knickerbocker Toy Co., Inc., Middlesex, N.J.

Filed Mar. 22, 1979, Ser. No. 23,020

Int. Cl.³ A63H 33/08

U.S. Cl. 46—25

7 Claims



1. A stackable toy, comprising:

- (a) a doll,
- (b) a pin mounted in said doll for longitudinal movement relative to the doll,
- (c) said pin being movable in one direction to outwardly projecting position and in the opposite direction to inwardly retracted position,
- (d) a socket formed in said doll in registration with said pin,
- (e) said socket being engageable with the pin of a second such doll when said pin is in outwardly projecting position,
- (f) the pin of the first doll, when in outwardly projecting position, being engageable with the socket of a third such doll,
- (g) whereby the first doll is stackable with the second and third such dolls,
- (h) said doll comprising a body, a head and a base,
- (i) said body and head having a continuous passage formed therein along the longitudinal axis of the doll and said passage being open at the top of said head,
- (j) said pin being mounted within said passage and being longitudinally movable therein between retracted and outwardly projecting positions relative to the doll,
- (k) means for moving the pin into retracted and projecting positions,
- (l) said projecting and retracting means comprising a helical cam and cam follower means between the doll and the pin.

4,226,046

FIGURINE CAPABLE OF GRIPPING A SUPPORT

René Delhome, Les Chassis, 26600 La Roche de Glun, France

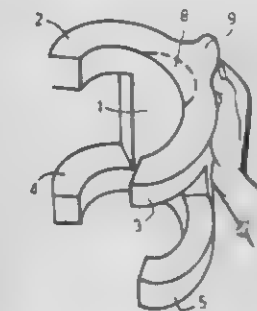
Filed Apr. 17, 1978, Ser. No. 897,185

Claims priority, application France, Apr. 20, 1977, 77 11933; Jan. 25, 1978, 78 02085

Int. Cl.³ A63H 3/04

U.S. Cl. 46—123

12 Claims



1. A toy figurine comprising a body having at least one pair of enclosing shaped limbs joined thereto and projecting outwardly therefrom in close relation to each other, and means adapted, upon manipulation of said means, to move said limbs apart and return same close to one another in order for them to cling to a support and maintain the figurine thereon, characterized in that it comprises no hard armature, in that said means adapted to return the limbs close to one another consist essentially of a portion integral with the figurine body made of resilient compressible material, and in that this integral resilient portion is connected to said limbs.

4,226,047

RACKS FOR THE CULTIVATION OF MUSHROOMS AND SIMILAR FUNGI

Ludovicus C. Maaijwee, Waalwijk, Netherlands, assignor to Alcoa Nederland B.V., Drunen, Netherlands

Filed Jan. 5, 1979, Ser. No. 1,374

Claims priority, application Netherlands, Jan. 6, 1978, 7800190

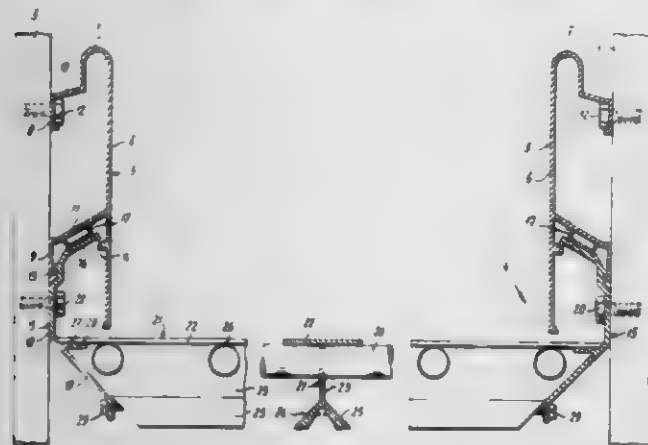
Int. Cl.³ A01G 1/04

U.S. Cl. 47—1.1

7 Claims

1. Rack for the cultivation of mushrooms and similar fungi, comprising vertical girders which have been mounted in two parallel planes, and troughs for the cultivation of the mushroom.

rooms, said troughs being superimposed horizontally and fixed between said girders and each one of said troughs comprising a bottom and side slats, characterized in that the side slats consist of extruded aluminum profiles to be secured to the inner sides of the girders and an upper edge lying at a distance from said girders, said edge may be used as rails, and a substantially vertical, flat inner wall extending from the upper edge till close to the bottom of the trough, that said bottom is constituted by horizontal, extruded aluminum members running in



transverse direction, said aluminum members being connected to the side slats adjacent the girders, each one of said aluminum floor members comprising a top flange having a smooth surface and at least one vertical web provided with openings near the top flange, through which bars or tubes protrude, said bars or tubes connecting the floor members with each other and constituting the bottom of the trough together with the floor members, and that short sections of connecting members made of extruded aluminum connect the ends of the floor members to the side slats.

4,226,048

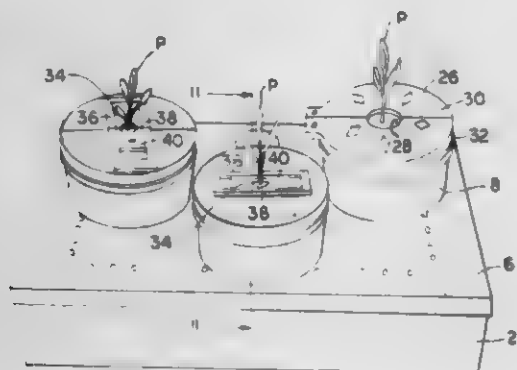
PLANT GROWING ASSEMBLY

Martin A. Molnar, Apt. #3, 1006 W. Loyola Ave., Chicago, Ill. 60626

Filed Dec. 8, 1977, Ser. No. 858,569
Int. Cl.² A01G 27/00

U.S. Cl. 47-81

1 Claim



1. A plant growing assembly comprising a first housing adapted to retain water therein, said first housing having an opening in an upper surface thereof, a second housing adapted to retain a plant therein, said opening being shaped complementarily to said second housing and being adapted to receive and retain said second housing therein, a frame disposed in said first housing for supporting said second housing at the bottom of said second housing at a position removed from the bottom of said first housing, said frame having a first hole therein in alignment with said opening, a water transfer element extending through a second hole in the bottom of said second housing and said first hole and interconnecting the interior of said first housing proximate the bottom thereof and the interior of said second housing proximate the bottom thereof, to transfer water in said first housing to said plant in said second housing, and a top disposed on said second housing, said top comprising

a planar top surface having an elongated opening therein, a first cover member slidably disposed between first and second tracks on said top, said tracks being disposed on opposite lengthwise sides of said elongated opening and in parallel coextensive arrangement, said first cover member being slidably movable over said elongated opening in said tracks, said first cover member having a first recess on a first edge thereof facing a central portion of said second housing, and a second cover member slidably disposed over said elongated opening between said tracks and having a second edge thereof opposed to said first edge and having a second recess therein in alignment with and complementary to said first recess, said first and second recesses forming a third hole upon abutment of said first and second edges, the third hole being adapted to be disposed about said plant, said cover members being adapted for slidable movement in said tracks apart from each other to accommodate growth of said plant, and stop means at the ends of said tracks to restrict movement of said cover members to positions within the perimeter of said planar top surface.

4,226,049

SECURITY VENTILATING SYSTEM

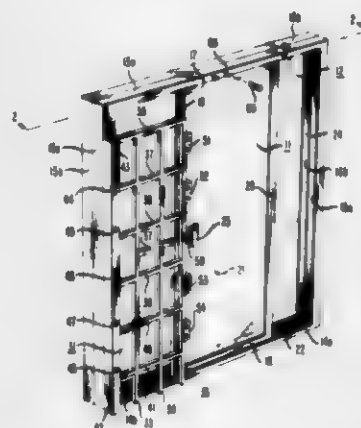
Charles I. Maust, 45 Blackburn Pl., Summit, N.J. 07901

Filed May 3, 1979, Ser. No. 35,475

Int. Cl.² E06B 9/02

U.S. Cl. 49-57

11 Claims



1. A security system assembly in accordance with the present invention designed for installation in an arrangement of one or more laterally rolling or sliding doors or windows mounted in a door or window frame comprising substantially aligned upper and lower parallel tracks, and vertical door or window jamb casings at opposite edges of said frame, which assembly comprises in combination:

at least one lift-out grill comprising a plurality of horizontal and vertical bars rigidly fastened together;

an elongated channel substantially colinear with and constructed to accommodate a first one of said vertical bars adjacent one periphery of said grill, said channel secured to the inner flange of one said vertical door or window jamb casing;

a plurality of short channels secured in vertical alignment adjacent a peripheral vertical edge of one of said rolling or sliding doors or windows, which edge is constructed to close against said one door or window jamb casing;

said short channels being constructed to accommodate a second one of said vertical bars adjacent the opposite periphery of said grill, or in alternation, one or more vertical bars disposed intermediate to said first and second peripheral bars; and

wherein said short channels are each positioned between one pair of the horizontal bars of said grill and are dimensioned not to exceed the distance between said pair of bars.

4,226,050

ANTI-LEAKAGE WINDOW FRAME CONSTRUCTION FOR TILT-IN WINDOW SASH

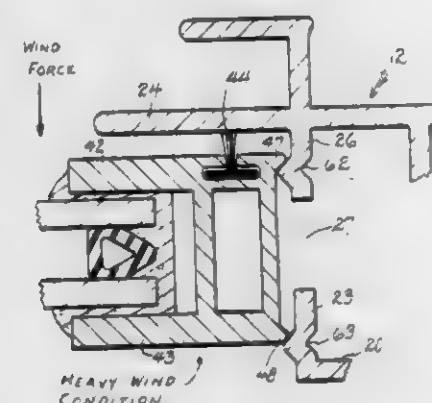
Gerald Kessler, Box 389, McClurg Rd. at Southern Blvd., Youngstown, Ohio 44512

Filed Feb. 2, 1979, Ser. No. 9,061

Int. Cl.² E05D 15/22

U.S. Cl. 49-181

8 Claims



1. A tilt-in window assembly comprising: a window frame having vertical side rails of generally L-shaped open channel construction, and horizontal top and bottom frame portions; a sash member having a top, bottom and two sides, and slidably pivoted at its sides adjacent the bottom thereof to said side rails, and retractable bolt means holding the sides of said sash near the top thereof to said side rails; said L-shaped channel of each said side rail being open toward the inside of said sash with a first leg of said L extending parallel to said sash along the outside edge of the side of said sash, and a second leg of said L extending parallel to the thickness of said sash; weather-stripping between the outside edge of each side of said sash and the first leg of said L, said weather-stripping extending generally parallel to the second leg of said L and being normally sealingly disposed between the sash side and the first leg of said L; and inter-engageable stop means to limit deflection of said sash member toward the inside and to prevent unsealing of said weather-stripping when the sash member is subjected to heavy external wind forces, said stop means comprising respective projections on the side edge portions of the sash member and on the second leg of said L of each side rail, said projections serving to interengage when the sash member is subjected to heavy winds but the terminal portions of such projections being spaced laterally of the window assembly to permit frictional clearance of said projections when said sash member is tilted.

4,226,051

LOUVRE WINDOWS

Norman Thompson, Bridgnorth, England, assignor to Beta Aluminium Products Limited, Bridgnorth, England

Filed Sep. 12, 1978, Ser. No. 941,805

Claims priority, application United Kingdom, Sep. 15, 1977, 38456/77

Int. Cl.² E06B 7/08

U.S. Cl. 49-403

5 Claims

1. A blade holder for a louvre window comprising an elongated member, a first longitudinally extending groove in the elongated member with an inwardly facing opening for receiving an end edge of a louvre blade, means intermediate the ends of the member for pivotally mounting the member on a window frame element, a second longitudinally extending groove in the elongated member, and an elongated reinforcement element for mounting in said second groove, said first and second longitudinally extending grooves being separated by a common wall of smaller depth than the reinforcement element,

and said element being shaped to project across the common wall to engage the louvre blade when the reinforcement element



ment and the louvre blade are received in their respective grooves.

4,226,052

DISENGAGEABLE HINGE DEVICE FOR A REMOVABLE VEHICLE ROOF PANEL

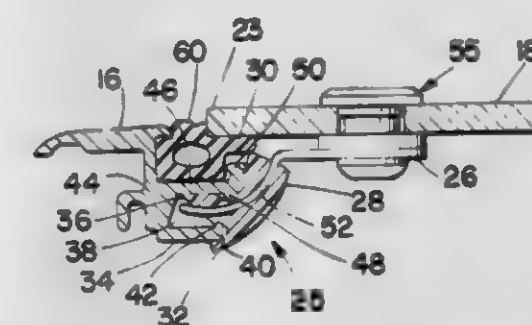
George E. DeStepheno, San Dimas, Calif., assignor to Le Van Specialty Co., Inc., City of Industry, Calif.

Filed Mar. 9, 1979, Ser. No. 19,003

Int. Cl.² E05C 21/02

U.S. Cl. 49-465

5 Claims



1. A disengageable hinge device for a removable vehicle roof panel associated with a fixed frame structure, comprising: a hinge-bracket member having means to secure said bracket in a fixed position on said fixed frame structure; a circular arcuate slot formed in said bracket having one open end terminating in a substantially vertical plane and an opposite open end terminating in a substantially horizontal plane; a disengageable hinge-tongue member fixedly mounted to said panel for engagement with said hinge-bracket member, said tongue having an arcuate, projecting, end section to conform to said arcuate slot of said bracket member, whereby said panel must be rotated to a substantially vertical position before being separated from said frame structure; and wherein said hinge bracket comprises a main body having said arcuate slot disposed therein, and wherein said securing means comprises: a pair of latch fingers extending outwardly from the upper portion of said body to latch to said frame structure; a strut member adapted to be received in said frame structure; and a depending flange-coupling member arranged to connect to said frame structure at the lower portion thereof.

4,226,053

GRINDING APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

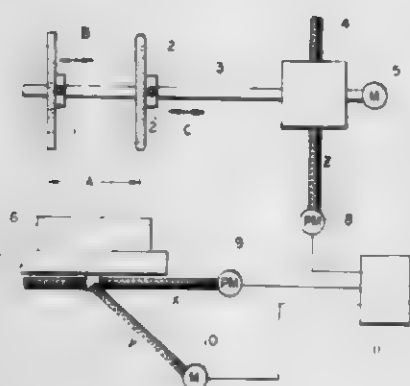
Filed May 5, 1978, Ser. No. 903,062

Claims priority, application Japan, May 10, 1977, 52-53405

Int. Cl.³ B24B 49/00

U.S. Cl. 51-165.77

6 Claims



1. A grinding apparatus comprising:
at least two grinding wheels coaxially and rotatably supported on a common spindle including a first, rough-grinding wheel and a second, finish-grinding wheel having a different texture from that of the first wheel;
a worktable for mounting a workpiece in juxtaposition with said wheels;
means provided on one of said worktable and said spindle for displacing said wheels and said workpiece relatively along a Z-axis orthogonal to the spindle axis;
means for effecting relative displacement of the wheels and worktable along an X-axis which is normal to said Z-axis and is codirectional with said spindle axis;
means for effecting relative displacement of the wheels and worktable along a Y-axis which is normal to both said Z-axis and to said X-axis; and
means for applying control-signal pulses to at least said Z-axis displacement means and said X-axis displacement means for stepping the relative displacement along the respective axes, the distance between said wheels being adjustable and said distance being memorized in said means for applying control signals, each of the displacements along the Z-axis and X-axis is effected with an increment of displacement of 1 to 5 microns per pulse.

4,226,054

PARTICLE COLLECTION SYSTEM

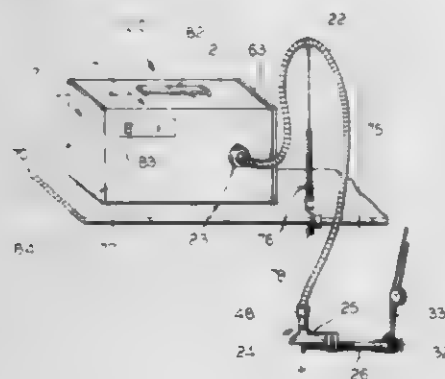
David Coty, 9229 E. Prairie, Skokie, Ill. 60203

Continuation-in-part of Ser. No. 770,993, Feb. 22, 1977, abandoned. This application Apr. 20, 1978, Ser. No. 898,161

Int. Cl.² E05F 13/00

U.S. Cl. 51-270

6 Claims



1. In an apparatus for intercepting and collecting particles debried during use of a hand-held grinder, said apparatus of the type having a vacuum line communicating at one end with a source of vacuum within a cabinet and, at the other end, with

a collector, said grinder of the type having a grinding wheel rotating about an axis, the improvement comprising:

a hood formed on said collector,
an exit port formed on said hood at right angles to said axis of rotation of said grinding wheel,
said exit port being substantially larger in diameter than the thickness of said grinding wheel,
said hood shaped to position said port proximate said grinding wheel,
said vacuum line attachable to said hood at said exit port, whereby particles intercepted by said collector are drawn therethrough to said cabinet;
a body integral with said hood; and
means to removably attach said body to said grinder.

4,226,055

DRESSING AND CONDITIONING RESIN-BONDED DIAMOND GRINDING WHEEL

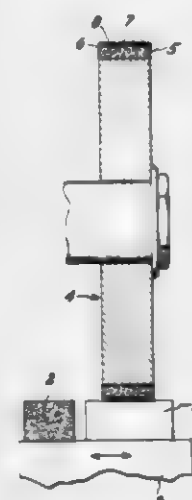
Rangachary Komanduri, and William R. Reed, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,767

Int. Cl.³ B24B 1/00

U.S. Cl. 51-325

4 Claims



1. A method for simultaneously dressing and conditioning a resin-bonded diamond grinding wheel during grinding which comprises contacting the surface of said resin-bonded diamond grinding wheel with a wetting liquid which wets the face of the resin component of said wheel surface forming a film thereon, grinding the wetted wheel with a polycrystalline ceramic body selected from the group consisting of silicon carbide which ranges in density from about 80% to about 100% of the density of silicon carbide and silicon nitride which ranges in density from about 80% to about 100% of the density of silicon nitride generating chips of said ceramic body which adhere to said wetted resin face forming a slurry layer thereon and grinding the resulting wheel with a workpiece.

4,226,056

FASCIA GUTTER

Dennis M. Hallam, Zillmere, Australia, assignor to E. Sachs & Co. Ltd., Zillmere, Australia

Filed Jan. 18, 1979, Ser. No. 4,526

Claims priority, application Australia, Jan. 19, 1978, 3080/78

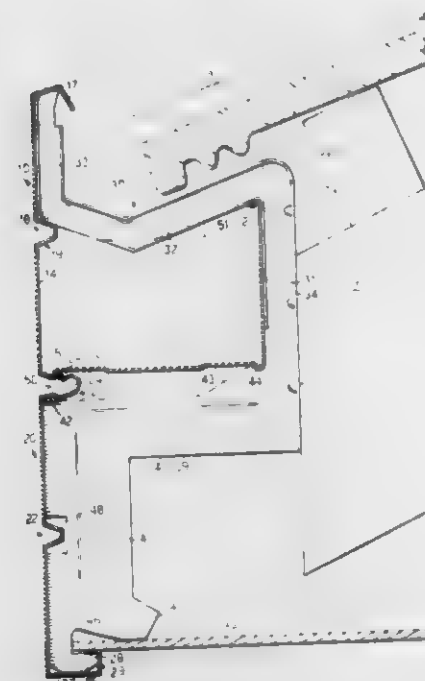
Int. Cl.² E04D 13/04

U.S. Cl. 52-11

8 Claims

1. A fascia gutter assembly comprising
(a) a series of mounting brackets adapted to be secured to a roof assembly, each bracket including an upper arm which extends forwardly, and upwardly at the front thereof;
(b) a gutter having substantially vertical front and back flanges, and a bottom wall interconnecting said flanges, said back flange being mounted on and supported by said

brackets, said front gutter flange being formed with a rearwardly extending top support flange which extends over the upper end of the upper arm of said bracket, said upper arm including a vertically extending portion which bears on the upper part of said front flange below said top support flange, said gutter being further formed with a



longitudinal channel having top and bottom faces, said bottom face being below the top of the back flange of said gutter and having overflow ports formed therein, and
(c) a fascia panel mounted on and supported by said brackets below said gutter, the front wall of said fascia panel being coplanar with said front flange of said gutter.

4,226,057

SELF-CLEANING INVERTIBLE GUTTER SYSTEM

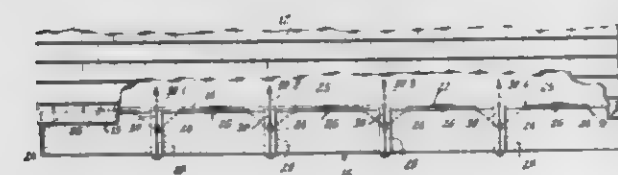
William G. Wolcott, 25 Bramble La., Riverside, Conn. 06878

Filed Mar. 9, 1979, Ser. No. 18,942

Int. Cl.² E04B 13/00

U.S. Cl. 52-11

7 Claims



1. An invertible gutter system comprising:
(a) a straight length of gutter having a trough-like interior;
(b) a plurality of lengths of supporting line attached to the side of the building at spaced points above the location of the gutter;
(c) said lengths of supporting line extending down near the side of the building and each being attached to a lower portion of the gutter;
(d) a plurality of lengths of hoisting and lowering line attached to the top of the gutter near the front of the gutter and extending diagonally upwardly toward the building for holding the gutter upright near the side of the building in normal operating position when said lengths of hoisting and lowering line are pulled taut; and
(e) operating mechanism attached to the building for pulling said lengths of hoisting and lowering line taut and for loosening said lengths of hoisting and lowering line when it is desired to lower the gutter into an inverted position; whereby loosening of said lengths of hoisting and lowering line allows said gutter to roll down and over into an inverted position in which debris is dumped from the gutter

and in which the trough-like interior of said inverted gutter can be viewed by a person standing on the ground, thereby to enable the interior of the gutter to be flushed out if necessary by a jet of water from the nozzle of a garden hose.

4,226,058

ANCHOR FOR ROOF MOUNTED EQUIPMENT

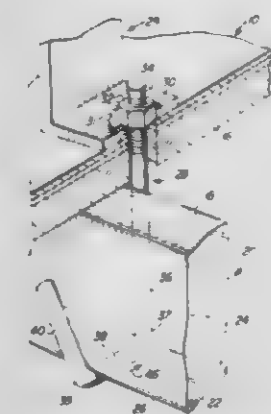
James P. Riley, Phoenix, Ariz., assignor to Goettl Air Conditioning, Inc., Phoenix, Ariz.

Filed Nov. 6, 1978, Ser. No. 957,988

Int. Cl.² E04F 19/00

U.S. Cl. 52-27

5 Claims



1. Anchoring apparatus for securing an object to a relatively thin support having an outer surface and an inner surface, the inner surface being held by a beam, the support having therein a hole adjacent the beam, the beam having a back side and first and second opposed sides, said anchoring apparatus comprising in combination:

a. connecting means for connecting said anchoring apparatus to the object to hold the object against the support;
b. a first elongated section having a first end connected to said connecting means for extending through said hole and transmitting a force pulling said connecting means toward the support, said first elongated section extending along a first side of the beam; and said first elongated section also having a second end; said first elongated section being substantially straight;
c. a second elongated section having a first end connected to the second end of said first elongated section for engaging a back side of said beam, said second elongated section extending approximately perpendicularly to said first elongated section; said second elongated section also having a second end; said second elongated section being substantially straight; said first and second elongated sections lying in a first plane; and
d. a third elongated section having a first end connected to the second end of said second elongated section for extending beyond another side of the beam and toward the inner surface of the support to prevent said second elongated section from slipping off of the back side of the beam as a result of said force, said third elongated section being substantially straight and being inclined with respect to said first plane by a first angle, the first angle being selected so that said third, second and first elongated sections, respectively, can be sequentially passed through said hole from the outer surface of said support.

4,226,059

ATTACHING DEVICE FOR SOFFITS

Carol Pichette, 163 de l'Eglise St., Chateau Richer, Canada (G0A 1N0)

Filed Nov. 9, 1978, Ser. No. 959,332

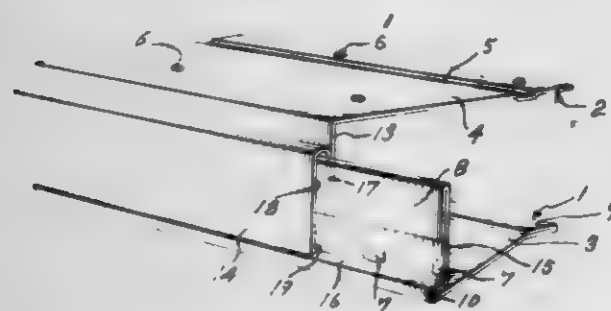
Int. Cl.² E04B 7/00

U.S. Cl. 52-94

3 Claims

1. An attaching device to secure soffits to the eaves of a roof or to attach other covering panels to a support, including a first

piece and a second piece, each made of an elastic sheet material, each having a profile generally in the shape of the letter L and characterized by a first branch and a second branch, the second branches being attachable one to the other by overlapping, the first branches extending in the same direction relative to the second branches when the latter are attached such that the joint has a profile in the shape of the letter U, the second branch of the said first piece being provided at its outer edge with an extension folded back twice to form two U-configurations disposed side by side on the outside of said last-named second branch, the U-configurations next to said last-named second branch opening towards said first branch of said first piece and the other U-configuration opening in a direction opposed to the first branch of this first piece, said other U-configuration defining a space, the longitudinal axis of which is substantially parallel to the said second branch of the first



piece, whereby the second branch of the said second piece may be inserted into said space up to a limit position; a shelf formed at the free edge of said other U-configuration and partially masking the opening of said space, and longitudinally spaced-apart teeth formed on the second branch of said second piece and engaging said shelf with a snap action in the limit position of said second branch of said second piece, said shelf and teeth cooperatively maintaining the engagement of the said second branches and preventing their disengagement once the limit position is attained, the first branch of said first piece having means to secure the same to a support which is to be covered by a panel, the first branch of the second piece serving as a covering branch for the end of said panel, and the second branch of said first piece extending across the end of said panel and serving as a stop for said panel to keep said panel out of the way of said space.

4,226,060

FLOOR PLATE FOR FORMING A FOOT PATH AND METHOD OF LAYING A WALKING SURFACE ON A ROOF

Shintaro Sato, 11-8, Yoshiwara 1-chome, Fuji-city, Shizuoka Prefecture, Japan

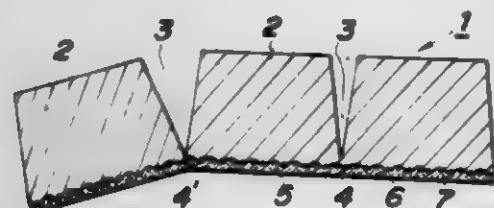
Filed Sep. 26, 1978, Ser. No. 946,524

Claims priority, application Japan, Nov. 26, 1977, 52-141789

Int. Cl.² E04B 1/00

U.S. Cl. 52-99

5 Claims



1. A floor plate for use in forming a floor surface, said floor plate comprising:

- a plate-shaped member formed of a brittle material such as concrete, said member having spaced parallel first and second major surfaces;
- said member having formed in at least said first major surface thereof a plurality of crack inducing grooves dividing said member into a plurality of blocks which are con-

nected to each other by weak joint portions defined between the bottoms of said crack inducing grooves and said second major surface, said weak joint portions having a thickness and strength to allow cracking therealong when said member is placed on a support layer having surface irregularities and when a load is applied thereto; and said member having incorporated therein means for maintaining said blocks flexibly connected to each other after said cracking, said means comprising flexible reinforcing material extending through said member at a position between said second major surface and said bottoms of said grooves, said material spanning all of said weak joint portions.

4,226,061

REINFORCED MASONRY CONSTRUCTION

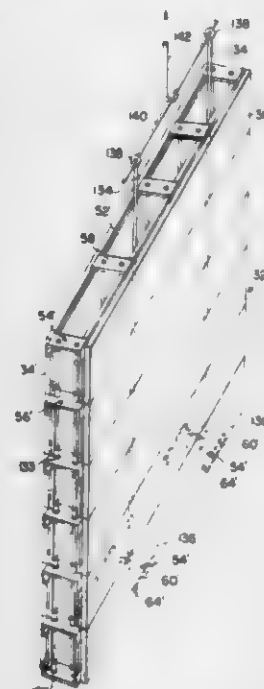
Paul T. Day, Jr., Apt. 14, 2909 Fallstaff Rd., Baltimore, Md. 21209

Filed Jun. 16, 1978, Ser. No. 916,126

Int. Cl.² E04H 17/00

U.S. Cl. 52-122

34 Claims



17. Reinforced masonry construction for walls and slabs, including

- (a) permanent forms spaced apart a predetermined distance in opposed relationship, leaving a void therebetween
- (b) each of said opposed forms comprising a plurality of elongated, preformed panels arranged in rows with the longitudinal edges in contiguous relationship
- (c) each of said panels including a body portion of cementitious material
- (d) a reinforcing truss embedded in said body portion
- (e) ties in vertically aligned relationship connecting each row of opposed panels for positioning said panels and spanning the void therebetween
- (f) each of said ties including a flat body portion
- (g) the ends of said body portion being adapted for engagement with opposed panels
- (h) the body portion of said tie being provided with at least one opening
- (i) a reinforcing rod extending through the vertically aligned ties for substantially the entire transverse dimension of the forms, and
- (j) An insulating agent between said forms engaged with said ties and reinforcing rod to provide a structure of high compression strength.

4,226,062

MOLDED STORAGE RECEPTACLE

Elbert E. Doane, 4961 SW, 17th St., Fort Lauderdale, Fla. 33517

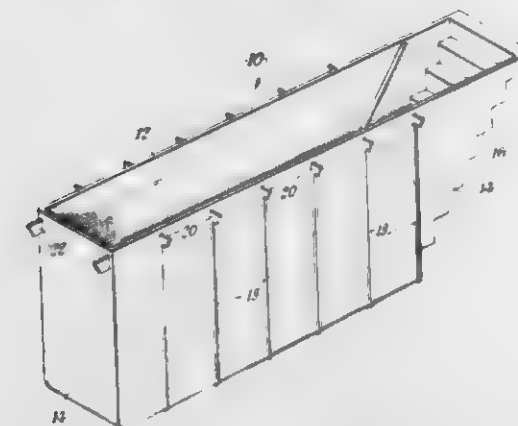
Filed Jul. 17, 1978, Ser. No. 925,000

Int. Cl.² E04F 11/00

U.S. Cl. 52-169.6

2 Claims

the peripheral edges of said sheets, and inner filamentary seal having desiccant material comprising a mixture of molecular sieves having absorption pores of about 4A and of about 10A respectively incorporated therein throughout its cross-section with the concentration of the desiccant material substantially greater in the inner portion thereof than in the outer portion thereof.



1. A prefabricated fiberglass receptacle which is mounted in the earth for use as a subterranean storage area or vehicle mechanical pit, comprising:

- a molded, substantially rectangular shell, said shell having molded integrally a plurality of vertical sides, an end wall, and a bottom surface, said shell including a premolded stairway access at one end extending from the bottom surface to the top edge, the shell being open across the top;
- a plurality of U-shaped ribs, each of said ribs being disposed vertically on the side walls and spaced apart and continuing across the bottom surface on the exterior, said ribs being used for increasing the structural rigidity of the shell;
- a plurality of laterally, outwardly extending flanges disposed around the top of the shell opening but below said shell opening for engagement with the earth, said laterally disposed flanges being formed with said ribs, said shell being mountable within a cavity in the earth such that the upper open portion is substantially ground level while the laterally disposed flanges are within the earth's surface; and
- an elongated, substantially flat fiberglass prefabricated molded cover mountable on the top of said storage shell to provide a sealed relationship covering said shell, said cover being disposed at ground level.

4,226,064

FLOORING COMPRISING ADJOINING PLASTICS ELEMENTS

Hans Kraayenhof, 8 Vlosbergweg, Asten Holland, Netherlands

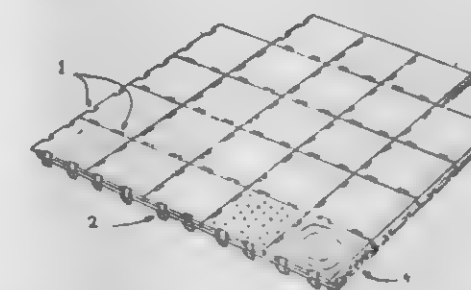
Filed Jan. 18, 1978, Ser. No. 870,469

Claims priority, application Netherlands, Feb. 2, 1977, 7701096

Int. Cl.² B44D 5/08

U.S. Cl. 52-180

3 Claims



1. Flooring which comprises: a plurality of adjoining perforate generally planar plastic elements, each of said elements including first means connecting and locking together adjacent elements, said first means being formed in the material of each element during the moulding thereof, said first means including depending pawls which are selectively engageable with an adjacent element, said pawls being disposed on each of said elements to engage automatically on interconnection of adjacent elements, each of said elements further including second means to terminate the interlocked condition of adjacent elements, said second means to terminate including third means to shift said pawl, said second means to terminate being accessible from the upper surface of said flooring.

4,226,065

STAIR CONSTRUCTION AND METHOD FOR MAKING SAME

Alfred Jagemann, Wartweg 11, 3401 Seulingen, Fed. Rep. of Germany

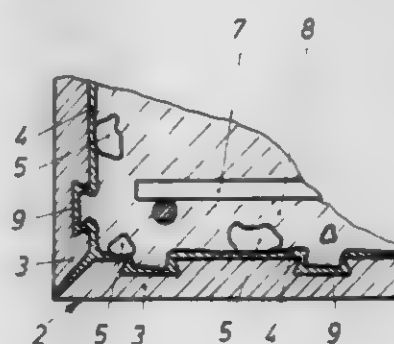
Filed Mar. 28, 1979, Ser. No. 24,729

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 7809575[U]; Oct. 20, 1978, 2845699

Int. Cl.² E04F 11/10; E04C 2/26

U.S. Cl. 52-189

16 Claims



1. In a stair comprising a non-removable wooden shell which essentially forms the stair surface, a reinforcement disposed in the interior space of said stair, a hardened filling composition poured into said space and connecting said wooden shell and reinforcement, the improvement comprising: a resin sealing layer disposed between said wooden shell and

4,226,063

HERMETIC SEALS IN MULTIPLE PANE WINDOWS

Pierre Chenel, Enghien les Bains, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

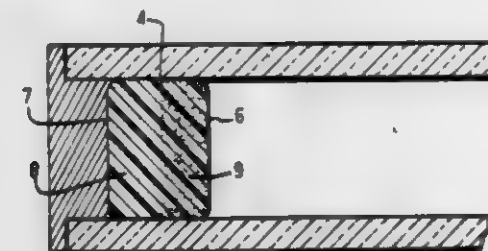
Filed Dec. 11, 1975, Ser. No. 639,786

Claims priority, application France, Dec. 11, 1974, 74 40827

Int. Cl.² E06B 7/12

U.S. Cl. 52-172

3 Claims



1. A multiple pane window comprising a pair of transparent or translucent sheets arranged in generally parallel spaced relationship, an inner filamentary seal of plastic material between said sheets adjacent the periphery thereof, and an outer seal encircling said inner seal and positioned to seal together

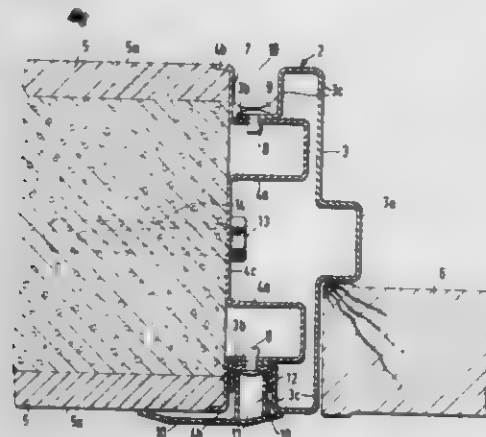
said filling composition, wherein said filling composition comprises cement-bonded concrete, said stair further comprising an attachment bridge disposed between said wooden shell and said filling composition.

4,226,066 DOOR JAMB

Hans B. F. Persson, Gärdesgatan 8, 46400 Mellerud, Sweden
Filed Sep. 27, 1978, Ser. No. 946,459
Int. Cl.³ E06B 1/04

U.S. Cl. 52-211

6 Claims



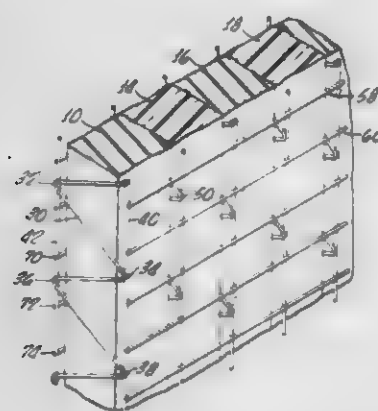
1. A door jamb comprising, a first sheet metal section having a flat portion for attachment to a vertical face of an aperture in a wall and a pair of channel-shaped portions on either side of said flat portion, an inner flank of one channel-shaped portion being connected by said flat portion to an inner flank of the other channel-shaped portion, a second sheet metal section for accommodating one edge of a door leaf, said second sheet metal section including a pair of longitudinal flange portions, each of which is slidably displaceable transversely of a respective one of the outer flanks of said channel-shaped portions, and means for fastening each of said longitudinal flange portions in a selected transverse position on the respective one of said outer flanks.

4,226,067 STRUCTURAL PANEL

Richard F. Artzer, Riverside, Calif., assignor to Covington Brothers Building Systems, Inc., Riverside, Calif.
Filed Dec. 5, 1977, Ser. No. 857,235
Int. Cl.³ E04C 2/26

U.S. Cl. 52-309.12

21 Claims



1. A structural panel comprising:
a plurality of contiguous elongated filler elements forming a panel core,
a plurality of lattice structures, each being interposed between a pair of mutually contiguous ones of said elements and each being pressed into mutually opposed surfaces of such contiguous elements whereby mutually adjacent ones of said elements have opposed surfaces in face-to-face contact with each other, and
a plurality of transverse members extending across said filler

elements and across said core, each said transverse member being fixed to at least a group of said lattice structures to thereby hold said lattice structures and filler elements pressed together in a unitary panel configuration, said mutually opposed surfaces of said elements having grooves formed therein by pressure of said structures in a pattern corresponding to said lattice structures, portions of said lattice structures being substantially completely embedded in mating grooves of adjacent filler elements whereby said elements provide an enhanced barrier to vapor.

4,226,068 APPEARANCE SYSTEM

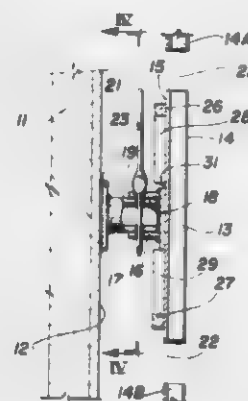
Walter J. Wadsworth, Buzzards Bay, Mass., assignor to Fern Engineering, Bourne, Mass.

Filed Dec. 4, 1978, Ser. No. 966,001

Int. Cl.³ E04C 1/40; E04B 1/38

U.S. Cl. 52-508

5 Claims



1. Appearance system for use with an outdoor structure having a vertical surface, comprising:

- (a) a plurality of flat panels, each having a decorative outer surface facing outwardly of the said vertical surface and having an inner surface lying in spaced, parallel relationship to the said vertical surface, the outer surfaces of the panels lying in the same general plane with adjacent edges of adjacent panels having a substantial space between them, the said space between the adjacent edges of adjacent panels being sufficient to permit human access to the rear of each panel and to the fastener,
- (b) an elongated primary support element fixed to and extending at a right angle to the center of the inner surface of each panel,
- (c) an elongated secondary support element fixed to the said vertical surface and extending horizontally therefrom, the primary and secondary support elements having conjugate surfaces to lock them rigidly together, the secondary support being provided with a base which is welded to the vertical surface of the structure, the conjugate surfaces consisting of an external cylindrical surface on one of the support elements and an internal cylindrical surface on the other support element, and
- (d) a fastener joining the support elements to prevent unintended separation, the fastener consists of a pin extending vertically through matching apertures in the support element.

4,226,069

SHINGLE SIMULATING STRIP MATERIAL
Caryl E. Hinds, Norwood, Mass., assignor to Bird & Son, Inc., East Walpole, Mass.

Continuation-in-part of Ser. No. 875,240, Feb. 6, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 14,368

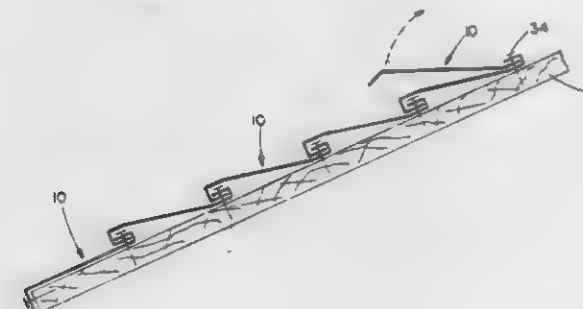
Int. Cl.³ E04D 1/00

U.S. Cl. 52-521

1 Claim

1. A first laminated strip material adapted to be laid in horizontally extending weatherproof interlocked courses on a roof

deck and secured thereto by concealed fastening means, said first laminated strip material comprising
an underlying plastic base sheet of between about 1 to 10 mils thickness and formed from a group consisting of plastic films, plastic foams and bonded non-woven webs of plastic fibers
a self sealing asphalt mastic coating layer having a thickness of about 0.050-0.100 inches adhered to the front face only of said base sheet, the rear face of said base sheet forming the rear face of said laminated strip material
a mineral granule front surface layer having a thickness of about 0.030 to 0.050 inches adhered directly to said asphalt mastic coating layer, said mineral granule layer forming the front face of said laminated sheet material
said laminated strip material having
on its front face a single longitudinally extending groove adjacent to and spaced from one of its longitudinally extending edges and



on its rear face a single longitudinally extending groove adjacent to and spaced from the other of its longitudinally extending edges

said grooves extending for a width at least about equal to the total thickness of said strip material and for a depth of at least about one-half of the thickness of said strip material whereby said first laminated strip material is foldable along said grooves for 180 degrees around the edge of a second adjacent strip of said laminated strip material without damaging said laminated strip material, for 180 degree fold interlocking of the edges of adjacent strips of said strip material to conceal said fastening means, with said fastening means extending through said first strip material and into said roof deck for securing the strip to the deck, said asphalt mastic sealing material automatically sealing around the shanks of said fastening means and preventing the passage of moisture through holes formed in said first laminated strip material by the fastening means.

4,226,070

SYNTHETIC SPANISH OR MISSION TILE ROOFING SYSTEM

Robert C. Aragon, 6405 Ester NE, Albuquerque, N. Mex. 87109
Filed Apr. 30, 1979, Ser. No. 34,854

Int. Cl.³ E04B 7/00; E04D 1/30, 3/40

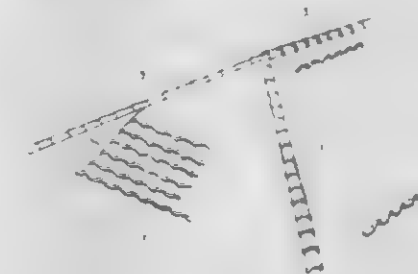
U.S. Cl. 52-57

1 Claim

1. A synthetic spanish tile roofing system said system comprising:

- a panel having one or more rows having alternate arcuate sections and flat sections and on its lower edge of said panel, its entire length, having a lip protruding downward and on its upper edge, its entire length having a lip protruding upward, and the panels ending on one end with an arcuate section and on the other end a flat section and the end of said panel, having a flat section, having a lip upward the entire length of the end, and the alternate arcuate and flat sections of the panel being dimensioned similar to Spanish tile; and
- a bird stop having a mounting lip its entire length on its bottom edge, and the top edge having an alternate arcuate sections and flat sections configuration to mate with the alternate arcuate sections and flat sections of the said panel, and the bird stop having a protruding lip along the

entire upper edge which engages the downward protruding lip of a lowest panel installed on a roof, and
a hip cap section having an arcuate crosssection and a plurality of false lips appearing as the ends of tile and the lower end having a lip protruding downward and the upper end having a lip protruding upward so that the lower end of one hip cap section overlaps the upper end of the adjoining hip cap section, and
a ridge row cap having a plurality of alternating arcuate sections and flat sections, dimensioned to mateably fit the



alternating arcuate sections and flat sections of the afore-said panel, and having an arcuate section whose axis is normal to the arcuate and flat sections of the ridge row cap, said ridge row cap being used in pairs so that the arcuate sections normal to the arcuate and flat sections of the ridge row cap overlap at the ridge row; and
said panel, bird stop, ridgerow cap and hip cap are made of fiberglass material of sufficient strength and thickness for roofing material, and being impregnated with pigment or painted to appear as Spanish tile.

4,226,071

METHOD FOR THE PREPARATION OF LOW TEMPERATURE STRUCTURE

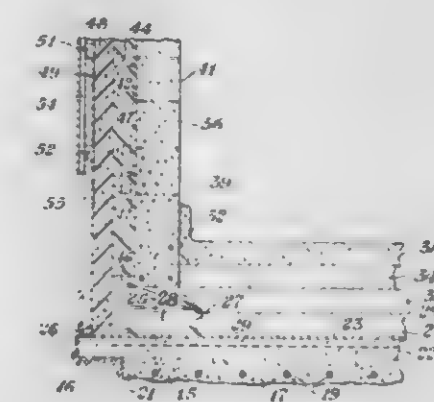
Robert B. Bennett, Hebron, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 906,181, May 15, 1979. This application Jul. 20, 1979, Ser. No. 59,411

Int. Cl.³ E04B 1/00

U.S. Cl. 52-741

1 Claim



1. A method for the preparation of a thermally insulated masonry building, the steps of the method comprising providing a building foundation including a masonry slab, disposing on said slab a vapor barrier, positioning on the vapor barrier a layer of thermally insulating material, constructing masonry walls on the layer of insulating material disposed on the slab, providing a floor member over the insulating material disposed on the slab, providing a roof which covers space enclosed by the walls, disposing on the roof and walls a layer of thermally insulating material, disposing a vapor barrier over the insulating material on the walls and roof and joining the vapor barrier

said filling composition, wherein said filling composition comprises cement-bonded concrete, said stair further comprising an attachment bridge disposed between said wooden shell and said filling composition.

4,226,066

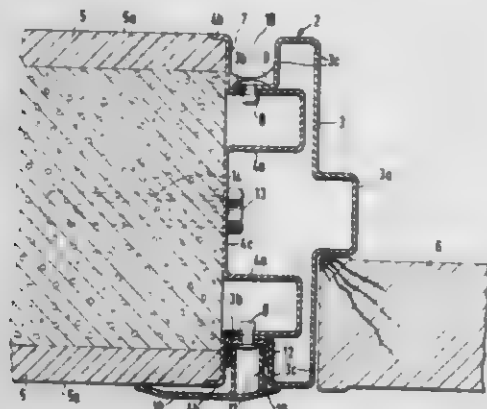
DOOR JAMB

Hans B. F. Persson, Gärdesgatan 8, 46400 Möllerud, Sweden
Filed Sep. 27, 1978, Ser. No. 946,459

Int. Cl.² E06B 1/04

U.S. Cl. 52-211

6 Claims



1. A door jamb comprising, a first sheet metal section having a flat portion for attachment to a vertical face of an aperture in a wall and a pair of channel-shaped portions on either side of said flat portion, an inner flank of one channel-shaped portion being connected by said flat portion to an inner flank of the other channel-shaped portion, a second sheet metal section for accommodating one edge of a door leaf, said second sheet metal section including a pair of longitudinal flange portions, each of which is slidably displaceable transversely of a respective one of the outer flanks of said channel-shaped portions, and means for fastening each of said longitudinal flange portions in a selected transverse position on the respective one of said outer flanks.

4,226,067

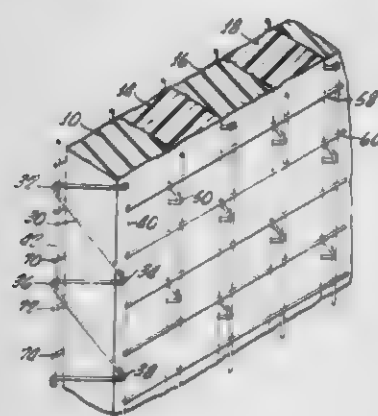
STRUCTURAL PANEL

Richard F. Artzer, Riverside, Calif., assignor to Covington Brothers Building Systems, Inc., Riverside, Calif.
Filed Dec. 5, 1977, Ser. No. 857,235

Int. Cl.² E04C 2/26

U.S. Cl. 52-309.12

21 Claims



1. A structural panel comprising:
a plurality of contiguous elongated filler elements forming a panel core,
a plurality of lattice structures, each being interposed between a pair of mutually contiguous ones of said elements and each being pressed into mutually opposed surfaces of such contiguous elements whereby mutually adjacent ones of said elements have opposed surfaces in face-to-face contact with each other, and
a plurality of transverse members extending across said filler

elements and across said core, each said transverse member being fixed to at least a group of said lattice structures to thereby hold said lattice structures and filler elements pressed together in a unitary panel configuration, said mutually opposed surfaces of said elements having grooves formed therein by pressure of said structures in a pattern corresponding to said lattice structures, portions of said lattice structures being substantially completely embedded in mating grooves of adjacent filler elements whereby said elements provide an enhanced barrier to vapor.

4,226,068

APPEARANCE SYSTEM

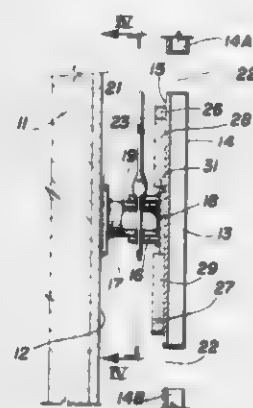
Walter J. Wadsworth, Buzzards Bay, Mass., assignor to Fern Engineering, Bourne, Mass.

Filed Dec. 4, 1978, Ser. No. 966,001

Int. Cl.² E04C 1/40; E04B 1/38

U.S. Cl. 52-508

5 Claims



1. Appearance system for use with an outdoor structure having a vertical surface, comprising:

- (a) a plurality of flat panels, each having a decorative outer surface facing outwardly of the said vertical surface and having an inner surface lying in spaced, parallel relationship to the said vertical surface, the outer surfaces of the panels lying in the same general plane with adjacent edges of adjacent panels having a substantial space between them, the said space between the adjacent edges of adjacent panels being sufficient to permit human access to the rear of each panel and to the fastener,
- (b) an elongated primary support element fixed to and extending at a right angle to the center of the inner surface of each panel,
- (c) an elongated secondary support element fixed to the said vertical surface and extending horizontally therefrom, the primary and secondary support elements having conjugate surfaces to lock them rigidly together, the secondary support being provided with a base which is welded to the vertical surface of the structure, the conjugate surfaces consisting of an external cylindrical surface on one of the support elements and an internal cylindrical surface on the other support element, and
- (d) a fastener joining the support elements to prevent unintended separation, the fastener consists of a pin extending vertically through matching apertures in the support element.

4,226,069

SHINGLE SIMULATING STRIP MATERIAL

Caryl E. Hinds, Norwood, Mass., assignor to Bird & Son, Inc., East Walpole, Mass.

Continuation-in-part of Ser. No. 875,240, Feb. 6, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 14,368

Int. Cl.² E04D 1/00

U.S. Cl. 52-521

1 Claim

1. A first laminated strip material adapted to be laid in horizontally extending weatherproof interlocked courses on a roof

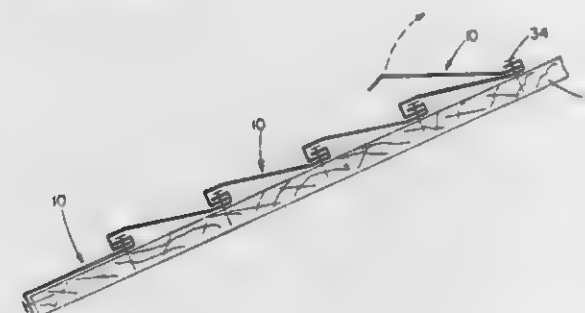
deck and secured thereto by concealed fastening means, said first laminated strip material comprising

an underlying plastic base sheet of between about 1 to 10 mils thickness and formed from a group consisting of plastic films, plastic foams and bonded non-woven webs of plastic fibers

a self sealing asphalt mastic coating layer having a thickness of about 0.050-0.100 inches adhered to the front face only of said base sheet, the rear face of said base sheet forming the rear face of said laminated strip material

a mineral granule front surface layer having a thickness of about 0.030 to 0.050 inches adhered directly to said asphalt mastic coating layer, said mineral granule layer forming the front face of said laminated sheet material

said laminated strip material having on its front face a single longitudinally extending groove adjacent to and spaced from one of its longitudinally extending edges and



on its rear face a single longitudinally extending groove adjacent to and spaced from the other of its longitudinally extending edges

said grooves extending for a width at least about equal to the total thickness of said strip material and for a depth of at least about one-half of the thickness of said strip material whereby said first laminated strip material is foldable along said grooves for 180 degrees around the edge of a second adjacent strip of said laminated strip material without damaging said laminated strip material, for 180 degree fold interlocking of the edges of adjacent strips of said strip material to conceal said fastening means, with said fastening means extending through said first strip material and into said roof deck for securing the strip to the deck, said asphalt mastic sealing material automatically sealing around the shanks of said fastening means and preventing the passage of moisture through holes formed in said first laminated strip material by the fastening means.

4,226,070

SYNTHETIC SPANISH OR MISSION TILE ROOFING SYSTEM

Robert C. Aragon, 6405 Ester NE, Albuquerque, N. Mex. 87109
Filed Apr. 30, 1979, Ser. No. 34,854

Int. Cl.² E04B 7/00; E04D 1/30, 3/40

U.S. Cl. 52-57

1 Claim

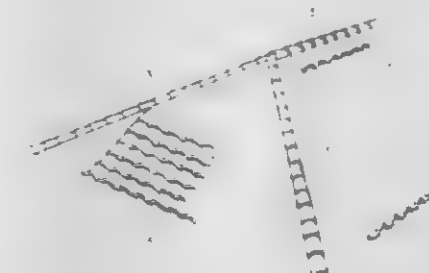
1. A synthetic spanish tile roofing system said system comprising:

- a panel having one or more rows having alternate arcuate sections and flat sections and on its lower edge of said panel, its entire length, having a lip protruding downward and on its upper edge, its entire length having a lip protruding upward, and the panels ending on one end with an arcuate section and on the other end a flat section and the end of said panel, having a flat section, having a lip upward the entire length of the end, and the alternate arcuate and flat sections of the panel being dimensioned similar to Spanish tile; and
- a bird stop having a mounting lip its entire length on its bottom edge, and the top edge having an alternate arcuate sections and flat sections configuration to mate with the alternate arcuate sections and flat sections of the said panel, and the bird stop having a protruding lip along the

entire upper edge which engages the downward protruding lip of a lowest panel installed on a roof; and

a hip cap section having an arcuate crosssection and a plurality of false lips appearing as the ends of tile and the lower end having a lip protruding downward and the upper end having a lip protruding upward so that the lower end of one hip cap section overlaps the upper end of the adjoining hip cap section, and

a ridge row cap having a plurality of alternating arcuate sections and flat sections, dimensioned to mateably fit the



alternating arcuate sections and flat sections of the aforesaid panel, and having an arcuate section whose axis is normal to the arcuate and flat sections of the ridge row cap, said ridge row cap being used in pairs so that the arcuate sections normal to the arcuate and flat sections of the ridge row cap overlap at the ridge row; and said panel, bird stop, ridgerow cap and hip cap are made of fiberglass material of sufficient strength and thickness for roofing material, and being impregnated with pigment or painted to appear as Spanish tile.

4,226,071

METHOD FOR THE PREPARATION OF LOW TEMPERATURE STRUCTURE

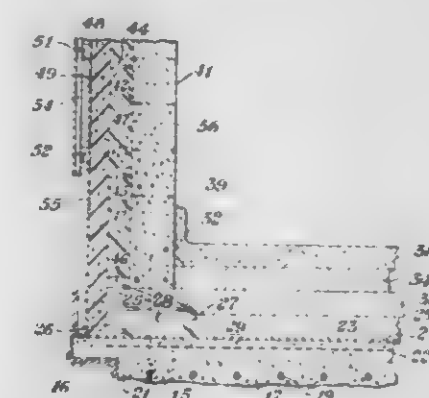
Robert B. Bennett, Hebron, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 906,181, May 15, 1979. This application Jul. 20, 1979, Ser. No. 59,411

Int. Cl.² E04B 1/00

U.S. Cl. 52-741

1 Claim



1. A method for the preparation of a thermally insulated masonry building, the steps of the method comprising providing a building foundation including a masonry slab, disposing on said slab a vapor barrier, positioning on the vapor barrier a layer of thermally insulating material, constructing masonry walls on the layer of insulating material disposed on the slab, providing a floor member over the insulating material disposed on the slab, providing a roof which covers space enclosed by the walls, disposing on the roof and walls a layer of thermally insulating material, disposing a vapor barrier over the insulating material on the walls and roof and joining the vapor barrier

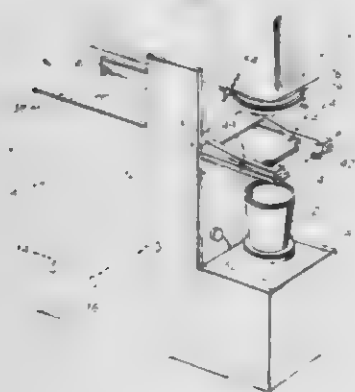
of the walls to the vapor barrier disposed on the slab of the building.

4,226,072

APPARATUS FOR APPLYING A FILM LID TO A CUP
Winton E. Balzer, 963 Central Ave., Needham, Mass. 02192, and
Kenneth M. Knobel, 37 Percy Rd., Lexington, Mass. 02173
Filed Dec. 6, 1978, Ser. No. 966,876

Int. Cl. B65B 7/28; B67B 3/04; B65B 51/14
U.S. Cl. 53—298

2 Claims



1. Apparatus for heat sealing a section of heat sealable film over the top of a cup, or the like, comprising

- (a) a cup holder adapted to reciprocate along a vertical axis,
- (b) a heat sealing and film severing head mounted in spaced relation above said holder,
- (c) a film advance mechanism mounted for movement in a horizontal plane between said holder and said head for drawing from a roll a leading section of film across said axis in position between said holder and head,
- (d) control means operatively connected to said holder, head and mechanism for raising said holder and a cup thereon upwardly against the lower face of said film section, to apply the upper face of said film section against said head to heat seal said film section to the rim of said cup and sever said section from said roll, then lowering said holder and cup, and actuating said mechanism to draw a fresh section of film into position,
- (e) said film advance mechanism including a carriage mounted for horizontal reciprocation from a retracted to an extended position,
- (f) said carriage including jaws and jaw actuating means adapted to open and close said jaws against said film in response to said control means whereby said jaws are closed while holding a section of film extended over said cup and open when said carriage retracts along the feed path of said film said jaws then closing to grip the leading edge of said film as said carriage extends to draw out a fresh section of film,
- (g) said carriage including a relatively fixed lower jaw assembly and a relatively movable upper jaw assembly, each assembly being formed with a pair of parallel arms extending forwardly of said carriage parallel to the side edges of said film,
- (h) said upper jaw assembly being pivotally connected to said lower jaw assembly whereby biasing movement applied at one end of said upper jaw assembly will open and close said jaw selectively,
- (i) said apparatus including a film stabilizer comprising a flat weighted plate mounted adjacent the path of travel of said film proximate to the retracted position of said jaws for sliding engagement with the upper surface of said film, said plate being restrained against horizontal movement but free for limited vertical movement above the path of said film, and,
- (j) means for biasing said upper jaw assembly,
- (k) said film stabilizer including a pair of spaced vertical rods

slidably mounted to said carriage and engaging opposite side edges of said plate and a weighted member engaging the lower ends of said rods,

- (l) said plate being formed with a pair of notches in the forward edge thereof to receive the gripping ends of said jaws when said carriage is in a retracted position.

4,226,073

TRAY LOADER

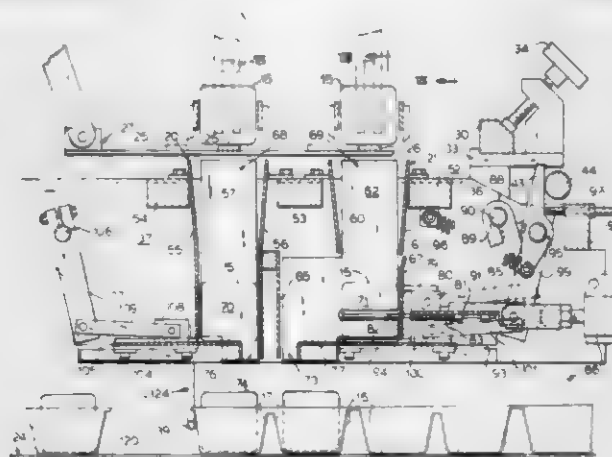
Edward Rose, Skokie, and Robert A. Roth, Chicago, both of Ill.,
assignors to Peters Machinery Company, Subsidiary of Katy
Industries, Inc., Chicago, Ill.

Filed May 3, 1979, Ser. No. 35,687

Int. Cl. B65B 35/30, 39/14

U.S. Cl. 53—532

18 Claims



1. In an apparatus for loading cookies and the like into trays for packaging,

- at least one cookie receiving tray having aligned successively arranged compartments therein,
- a transfer conveyor transferring counted groups of cookies for loading into said compartments,
- a tray conveyor disposed beneath and extending transversely of said transfer conveyor,
- drop gates movable to release counted groups of cookies from said transfer conveyor for loading into said compartments,
- an individual drop chute extending beneath each drop gate for guiding groups of cookies released by said drop gates to said compartments,
- the improvement comprising:
- release means for said drop chutes movable relative to the trays on said tray conveyor to position and release cookies from said drop chutes for loading into said compartments, and
- means providing dwells in travel of said trays along said tray conveyor upon release movement of said release means.

4,226,074

LAWNMOWER DECK

David L. Mullet, Hesston; Raymond J. Rilling, Moundridge, and
Elmer D. Voth, Newton, all of Kans., assignors to Excel Industries, Inc., Hesston, Kans.

Filed Jan. 8, 1979, Ser. No. 1,532

Int. Cl. A01D 67/00

U.S. Cl. 56—320.2

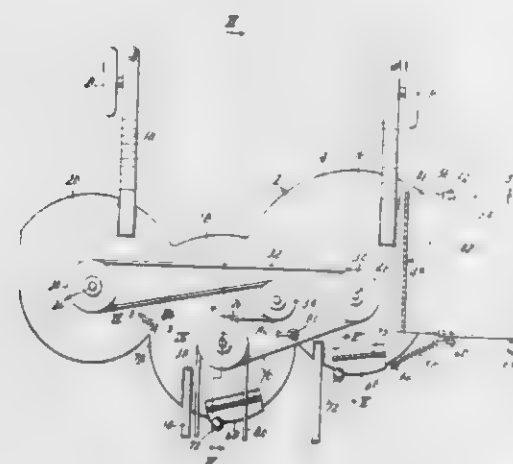
3 Claims

1. A lawnmower deck comprising:

- a. a deck body consisting of a horizontal deck plate having a peripheral depending skirt, whereby to form a plurality of compartments spaced laterally apart beneath said deck plate, said skirt being interrupted to form a laterally opening side outlet for cuttings, relative to the direction of travel of the mower, and a rear outlet for cuttings at the rearward portion of at least certain of said compartments,
- b. means for supporting said deck body for movement over the ground with the lower edge of said skirt spaced above ground level,
- c. a rotatably driven horizontal blade mounted in each of

said deck compartments below said deck plate and all turned in the same direction so that in the forward portions of their orbits they move toward the side of said deck having said side outlet opening, said compartments being interconnected in a path across the forward portions of said blades,

- d. a gate movably mounted on said deck body and operable to selectively open or close said side outlet opening.



- e. a gate movably mounted on said deck body in association with each of said rear outlets, each operable to selectively open or close its associated rear outlet, and

- f. a gate disposed interiorly of the deck intermediate each successive pair of compartments, said gate being movable relative to said deck body selectively either to close the interconnection between said successive compartments, or to open said interconnection.

4,226,075

FRUIT PICKING APPARATUS

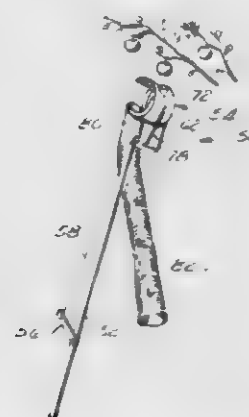
George Adams, 383 N. Beckett Pl., Grover City, Calif. 93433

Filed Feb. 22, 1979, Ser. No. 13,877

Int. Cl. A01D 46/24

U.S. Cl. 56—337

1 Claim



- 1. An apparatus for picking fruit from trees comprising: an elongated member having an upper end and a lower end; actuation means mounted on said lower end of said member; cutting means mounted on said upper end of said member, said cutting means being movable to effect the cutting operation, said actuation means being connected to said cutting means, upon manual activation of said actuation means said cutting means being moved through the cutting operation;
- guide means mounted on said member directly adjacent said upper end and said cutting means, said guide means being tubular for conducting therethrough a piece of fruit in a particular direction after the stem of the fruit has been severed by said cutting means, said guide means including an elongated flexible walled chute for guiding and depositing the fruit in a container without bruising of the fruit; said cutting means includes a rotatable cylinder defining an interior chamber, said rotatable cylinder having a cylin-

dical wall, a cutting blade fixed to said upper end of said member and mounted within said interior chamber and located in close proximity of said cylindrical wall, a first opening formed within said cylindrical wall, a second opening formed within said cylindrical wall, a single piece of fruit to be inserted through said first opening and upon activation of said actuation means the cylindrical wall is moved across said fixed cutting blade to thereby sever the stem of the fruit and cause the fruit to fall freely within said interior chamber and out through said second opening and into said guide means; and

spring biasing means connected between said elongated member and said rotatable cylinder, said spring biasing means exerting a continuous bias on said rotatable cylinder tending to locate said rotatable cylinder in a pre-cutting position.

4,226,076

APPARATUS AND PROCESS FOR PRODUCING A COVERED ELASTIC COMPOSITE YARN

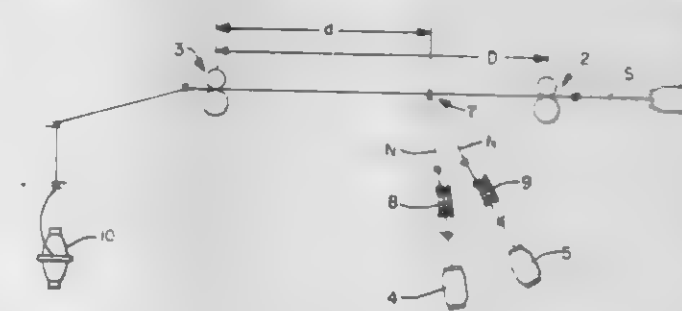
Ernest J. Griset, Jr., Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 4, 1978, Ser. No. 965,774

Int. Cl. D02G 3/32

U.S. Cl. 57—12

21 Claims



- 1. In a process for covering an elastic core yarn with inelastic textured cover yarns, the steps comprising: continuously supplying an elastic core yarn to feeder means; applying a controlled stretch to said core yarn by passing the yarn between a pair of drawing rolls arranged downstream of said feeder means; intertwining at least two strands of textured cover yarn with said core yarn by passing the cover yarns and the core yarn through a thread guide disposed intermediate said feeder means and said drawing rolls, and further intertwining said cover yarns with said core yarn by applying twist thereto downstream of said drawing rolls.
- 14. An apparatus for covering an elastic core yarn with inelastic textured cover yarns comprising: feeder means for supplying a core yarn at a first predetermined rate; a pair of drawing rolls arranged downstream of said feeder means for withdrawing the core yarn from said feeder means at a second predetermined rate which is greater than the first predetermined rate, to thereby stretch the core yarn in a controlled manner; thread guide means disposed intermediate said feeder means and said drawing rolls for guiding said core yarn and at least two textured cover yarns along a preselected linear path so the cover yarns will intertwine with each other and said core yarn and form a composite yarn before entering between said pair of drawing rolls; and means disposed downstream of said drawing rolls, for applying twist to said composite yarn as it passes through said drawing rolls, whereby said cover yarns are twisted about said core yarn.

4,226,077

METHOD AND APPARATUS FOR MANUFACTURING WRAPPED YARNS

Richard G. Hilbert, Smithfield, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation-in-part of Ser. No. 947,137, Sep. 29, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,721

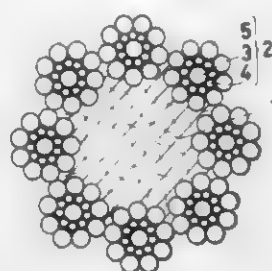
Int. Cl.¹ D02G 3/36; D01H 7/18, 11/00

U.S. Cl. 57—18

25 Claims



comprising: the acoustic wave propagation velocity of said first type of metal varies from the acoustic wave propagation



velocity of said second type by at least 5% wherein said wire rope damps vibrations that are induced therein.

1. Method for manufacturing wrapped yarn wherein a binder strand advancing from a supply source mounted on a rotatably driven hollow spindle and rotating therewith is wrapped helically about a core strand introduced from a remote source into one end of said hollow spindle and passing through the bore of the spindle to form a wrapped yarn and wherein the advancing binder strand balloons in its path of advance from its rotating supply to said core strand being wrapped, comprising the steps of: substantially enclosing said binder strand balloon and the ingress end of said hollow spindle in a zone isolating the same from the ambient atmosphere while providing an ingress guide opening toward the bore of said hollow spindle for guiding said core strand to said bore from a core strand source remote from said spindle.

13. In an apparatus for manufacturing wrapped yarn wherein a binder strand advancing from a supply source mounted on a rotatably driven hollow spindle for rotation therewith is wrapped helically about a core strand moving from a remote source into the ingress end of said spindle and through the bore of said spindle to form a wrapped yarn and wherein the binder strand balloons in its path of advance from its rotating supply to said core strand being wrapped comprising, in combination, the improvement comprising enclosure means for enclosing said balloon in its substantial entirety up to said ingress end of said spindle to isolate said balloon from airborne textile fly or lint while providing an opening for the passage of said core strand to said spindle bore from said remote source.

4,226,078

WIRE ROPE

Kazutoshi Ohta, and Hironori Takano, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1978, Ser. No. 936,555

Claims priority, application Japan, Aug. 24, 1977, 52-103465

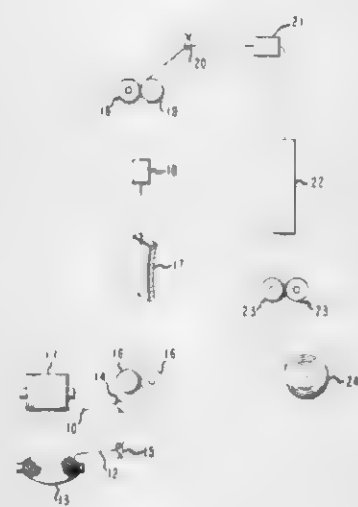
Int. Cl.¹ D07B 1/06

U.S. Cl. 57—213

10 Claims

1. In a wire rope formed by twisting a first type of metal wire together with a second type of metal wire, the improvement

1. A continuous process for producing heather yarn comprising the steps of combining a continuous filament polyester feed yarn having a residual draw ratio in the range of from 1.6 to 2.0 with a continuous filament polyamide feed yarn having a residual draw ratio in the range of from 106 to 120 percent of the residual draw ratio of the polyester feed yarn, feeding the combined yarns to a draw-texturing zone, false twist texturing and drawing the combined yarns in the draw-texturing zone at a draw ratio equivalent to 95 to 105 percent of the residual draw ratio of the polyester feed yarn, feeding the combined yarns from the draw-texturing zone to a jet-intermingling zone, randomly entangling the combined yarns together in the jet-intermingling zone and withdrawing the heather yarn.



4,226,079

HEATHER YARN MADE BY COMBINING POLYESTER AND POLYAMIDE YARNS

Bruce D. Mountney, and Ralph C. Wirsig, both of Kingston, Canada, assignors to Du Pont Canada Inc., Montreal, Canada

Filed Apr. 16, 1979, Ser. No. 30,709

Claims priority, application United Kingdom, May 4, 1978, 17857/78

Int. Cl.¹ D02G 3/02; D02J 1/22

U.S. Cl. 57—288

8 Claims

4,226,080

LOADING DEVICE FOR FALSE-TWIST APPARATUS
Theo Bieber; Friedrich Schuster; Günther Paul; Günther Schmitt, and Wolfgang Schmucker, all of Hammelburg, Fed. Rep. of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Fed. Rep. of Germany

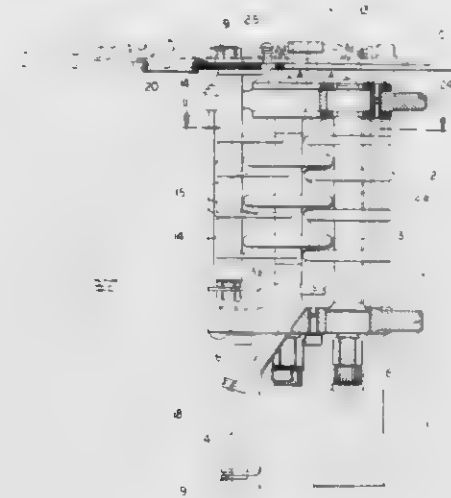
Filed May 30, 1979, Ser. No. 43,847

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824034

Int. Cl.¹ D01H 7/92, 13/04

U.S. Cl. 57—339

18 Claims



1. In combination with a false-twist apparatus including: a support defining at least three generally parallel and radially spaced axes surrounding a central axially extending twisting region; respective shafts lying on said axes and journaled in said support for rotation about the respective axes; respective axially staggered sets of axially spaced disks fixed on said shafts, said disks having rims radially overlapping at said twisting region; and a pair of yarn eyes axially flanking said disks and axially aligned with said twisting region, whereby a yarn to be false-twisted can pass axially through one of said eyes, then zig zag along said region in contact with said disks, and then axially through the other eye; the improvement comprising: drive means connected to all of said shafts for permanently connecting same together for joint rotation, whereby a yarn passing through said eyes and said region is false-twisted by the rotating disks; a holder displaceable in a substantially straight line generally perpendicular to said region toward and away from said region; and a loading arm carried on and jointly displaceable with said holder and having a yarn-pushing tip turned toward said region and engageable between said disks, said tip being displaceable with said arm between an outer position spaced from said disks and an inner position with said tip and a yarn engaged thereover in said region and axially between said disks.

4,226,081

ELECTRONIC TIMEPIECE

Singo Ichikawa, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1978, Ser. No. 919,675

Claims priority, application Japan, Jul. 1, 1977, 52/78521

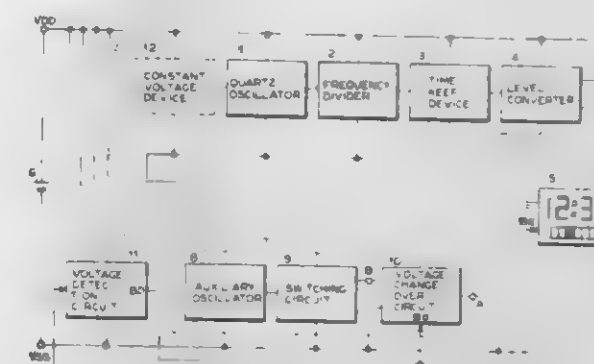
Int. Cl.² G04C 3/00

U.S. Cl. 368—66

8 Claims

1. An electronic timepiece comprising: (a) a time reference signal supply source for generating a time reference signal; (b) a time keep circuit for preparing a time keep signal on the basis of said time reference signal;

(c) a time display device driven by the output delivered from said time keep circuit and displaying times; (d) a power source; (e) a voltage detection circuit for detecting the voltage of said power source and generating a first signal when the voltage is higher than a predetermined value and a second signal when the voltage is lower than the predetermined value; and



(f) a voltage converter connected to the power source for providing an output voltage which is less than the voltage of the power source and including a circuit for connecting the output voltage of said voltage converter to said time reference signal supply source and to said time keep circuit when the first signal from said voltage detection circuit is generated and for connecting the power source directly to said time reference signal supply source and to said time keep circuit when the second signal from said voltage detection circuit is supplied.

4,226,082

ORNAMENTAL PART FOR WATCHES AND METHOD OF PRODUCING THE SAME

Nobuo Nishida, 2-26-24, Igusa, Suginami-ku, Tokyo, Japan

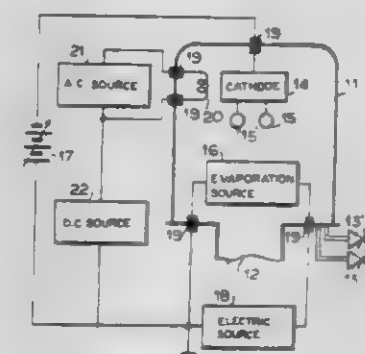
Continuation-in-part of Ser. No. 750,885, Dec. 15, 1976, abandoned. This application Sep. 25, 1978, Ser. No. 945,292

Claims priority, application Japan, Jun. 7, 1976, 51/66320; Jun. 7, 1976, 51/66321; Jun. 7, 1976, 51/66322; Jun. 7, 1976, 51/66323; Jun. 7, 1976, 51/66324; Jun. 7, 1976, 51/66325; Jun. 7, 1976, 51/66326; Jun. 7, 1976, 51/66327; Jun. 7, 1976, 51/66328; Jun. 7, 1976, 51/66329; Jun. 7, 1976, 51/66331; Jun. 7, 1976, 51/66332; Jun. 7, 1976, 51/66333; Jun. 7, 1976, 51/66335; Jun. 7, 1976, 51/66336

Int. Cl.² G04B 37/00; B05D 3/06

U.S. Cl. 368—285

20 Claims



1. An ornamental part for watches comprising a substrate and a composite coating essentially consisting of titanium nitride and titanium formed by physical vapor deposition, said coating including an amount of titanium which continuously decreases from the portion adjacent said substrate to the surface thereof wherein said coating has a color tone with a brightness value of from 10 to 22 for a mirror surface test piece defined by a color difference measuring unichromatic system, with a ratio of red color to green color of from -5 to +5 and with a ratio of a yellow hue to blue color of from 0 to +5.

8. In the method of forming a coating essentially consisting of titanium nitride and titanium on the surface of a substrate by the physical vapor deposition method, a method of producing an ornamental part for watches comprising:

evaporating titanium from a source of evaporation at a substrate temperature ranging from about 100° to about 300° under the condition in which a voltage sufficient for producing glow discharge is applied across said substrate and said source of evaporation placed in a vacuum vessel; feeding a nitrogen gas into said vacuum vessel; and changing a ratio of the partial pressure of titanium vapor to the partial pressure of said nitrogen gas in said vacuum vessel depending upon the progress of the vaporization, such that the ratio of titanium to titanium nitride contained in the resulting coating continuously decreases from the portion closest to said substrate toward the outer surface.

4,226,083

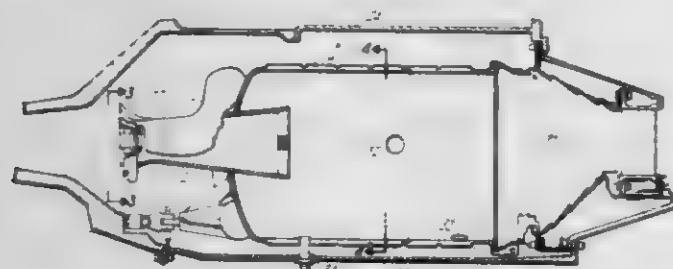
METHOD AND APPARATUS FOR REDUCING NITROUS OXIDE EMISSIONS FROM COMBUSTORS

George D. Lewis, North Palm Beach; Paul L. Russell, Lake Park, and Jeffrey Stettler, Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 19, 1978, Ser. No. 870,789
Int. Cl.² F02C 7/22

U.S. Cl. 60-39.06

6 Claims



1. A combustor structure having a combustion zone including a central portion and a radially outward portion encased by a cylindrical body, and having a fuel and air mixing zone upstream thereof which includes a main fuel and air mixing tube surrounded by a plurality of pilot fuel and air mixing tubes wherein said main tube includes means for circumferentially swirling effluent dischargeable therefrom into the central portion of the combustion zone and wherein said pilot tubes are so oriented as to cause effluent dischargeable therefrom to swirl circumferentially about the radially outward portion of the combustion zone.

4,226,084

DUCTED FAN ENGINE EXHAUST MIXER

Esten W. Spears, Jr., Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1970, Ser. No. 58,127
Int. Cl.³ F02K 3/06, 1/26

U.S. Cl. 60-262

3 Claims



1. A jet propulsion engine comprising, in combination, a gas turbine having a gas discharge end, a bypass duct surrounding the turbine, means driven by the turbine operative to discharge air through the duct, a common outlet pipe for the turbine and bypass duct extending downstream therefrom, and means for mixing the air and gas and minimizing thermal radiation from

the turbine through the duct comprising: a fairing enclosing the discharge end of the turbine, a plural number of circumferentially spaced exhaust pipes leading from the turbine discharge end through the fairing, a baffle extending around the fairing and spaced from the outlet pipe and fairing so as to define air passages extending over both inner and outer sides of the baffle, the baffle including lobes extending inwardly and downstream behind the exhaust pipes so as to hide the exhaust pipes from the outlet of the outlet pipe and allow the mixture of gas and air inside the baffle to flow rearwardly principally between adjacent lobes.

4,226,085

UNITARY PLUG MIXER AND SUPPORT THEREFOR

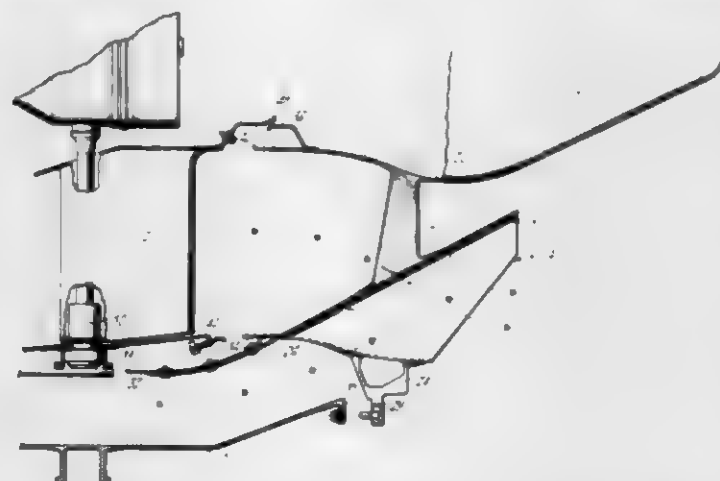
Leonard A. Johnson, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 13, 1978, Ser. No. 877,206

Int. Cl.² F02K 3/02

U.S. Cl. 60-262

4 Claims



1. A combined convoluted lobe mixer and plug for a fan jet engine having a turbine exhaust case and a generally cylindrical tail pipe spaced from and concentric to said turbine exhaust case, said turbine exhaust case having an exit exhausting the gas turbine working medium, said space between said exhaust case and tail pipe defining a passage for the fan exhaust air, said lobed mixer having a plurality of alternately circumferentially spaced crown portions and valley portions, a first plurality of radially extending struts carried by at least some of said crown portions and a second plurality of radially extending struts extending between at least some of said valley portions and said plug, and means carried by said first struts for attaching and providing the primary support for said combined convoluted lobe mixer and plug adjacent said turbine exhaust case for mixing the flow streams from said turbine exhaust case and said passage.

4,226,086

AUTOMATIC RESTART CONTROL FOR A POWER PLANT BOILER

Morton H. Binstock, Pittsburgh; Robert C. Lehmer, Shaler Township, Allegheny County; Steven J. Johnson, McCandless Township, Allegheny County; John J. Topolosky, Monroeville, and Thomas E. Smith, Gibsonia, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 21, 1979, Ser. No. 40,782

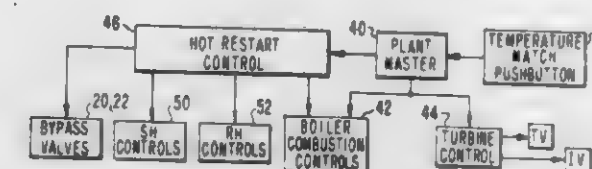
Int. Cl.³ F01K 13/02

U.S. Cl. 60-656

10 Claims

1. A hot restart control for a power plant having a boiler and a steam turbine with steam admission valve means for turbine steam flow and bypass valve means for bypass steam from the boiler to the plant condenser, said control comprising means for generating a turbine metal temperature signal, means for generating a boiler steam temperature signal, means for generating a boiler throttle pressure signal, computer means for generating a target boiler load and pressure for a turbine and steam temperature match in response to the turbine metal

temperature and throttle pressure, means for controlling the boiler combustion to increase the boiler firing rate after a boiler shutdown with the turbine admission valve means closed so as to increase the boiler steam pressure and temperature with continuously adequate boiler steam flow, means for operating said bypass valve means to control the steam throttle pressure to a pressure setpoint based on the target pressure with the turbine admission valves remaining closed, means for detecting



when boiler steam and turbine temperature match conditions exist and for holding said combustion controlling means when such match conditions are achieved, and means for controlling the opening movement of the turbine admission valves to transfer steam flow to the turbine from said bypass valve means so as to accelerate, synchronize and load the turbine as said bypass valve operating means provides steam throttle pressure control with closing bypass valve movement.

4,226,087

FLAMEHOLDER FOR GAS TURBINE ENGINE

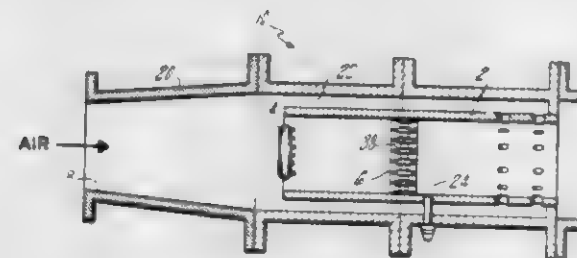
Louis J. Spadaccini, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 1, 1979, Ser. No. 16,759

Int. Cl.³ F02C 7/22

U.S. Cl. 60-749

2 Claims



1. A flameholder for a burner for a gas turbine engine where the burner receives air from an airstream, said flameholder comprising a block-like element extending transverse to the airstream in proximity to where combustion ensues, a plurality of spaced axially extending apertures formed in said block-like element for passing air from said airstream therethrough, the diameters of said apertures are varied to form in each a converging section on the upstream end, a circular section on the downstream end, an adjacent diverging section and a throat section intermediate the converging and diverging sections relative to the airstream, cusps surrounding said apertures extending in a direction facing said airstream so that the apex thereof contacts said airstream first for precluding the formation of stagnation points in said diffuser section, said cusps having extending surfaces for removing heat from said block-like element, the downstream facing surface of said plate-like element being substantially planar and the circular sections of said apertures terminating therein for defining a web-like pattern wherein the discharging flow forms localized eddies for defining relatively small recirculating zones for stabilizing the flame formed adjacent thereto.

4,226,088

GAS TURBINE COMBUSTOR

Satoshi Tsukahara; Isao Sato; Yoshihiro Uchiyama, and Masanobu Kusaba, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

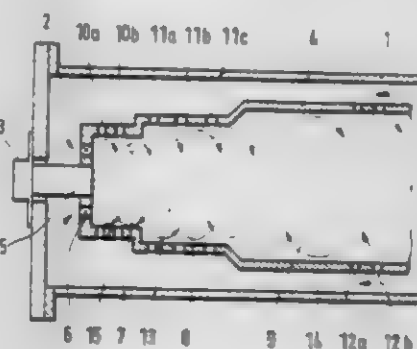
Filed Feb. 22, 1978, Ser. No. 880,109

Claims priority, application Japan, Feb. 23, 1977, 52-18116

Int. Cl.³ F02C 7/22

U.S. Cl. 60-752

6 Claims



1. A combustor for gas turbines comprising: an outer housing having an end plate, a combustion chamber disposed in said outer housing and including a first combustion section having an end member disposed near the end plate of said outer housing, a second combustion section having a larger diameter than that of the first combustion section and adjoining therewith, and a main combustion section having a larger diameter than that of the second combustion section and connected therewith, an air passage formed between said outer housing and said cylindrical combustion chamber, a plurality of primary air supply openings formed through a wall of the first combustion section, and defined so that air introduced into the first combustion section is in the range of about 25 to about 32% of the total amount of air supplied to said combustion chamber, a swirl member provided at the end member of the first combustion section, a nozzle member provided at the end plate of said outer housing extending into the first combustion section for supplying fuel to the first combustion section, a plurality of secondary air supply openings formed through the wall of the second combustion section, and defined so that air introduced therethrough into the second combustion section as secondary air is in the range of about 38 to about 50% of the total amount of air supplied to said combustion chamber, and a plurality of diluting air supply openings formed through a wall of the main combustion section of said combustion chamber, and defined so that air introduced therethrough into the main combustion section is in the range of below about 30% of the total amount of air supplied to said combustion chamber.

4,226,089

WASTE HEAT RECOVERY DEVICE

Billy E. Barrow, 2434 Funston St., Hollywood, Fla. 33020

Filed Jun. 30, 1978, Ser. No. 920,791

Int. Cl.³ F25B 43/02, 7/00, 47/00, 27/02

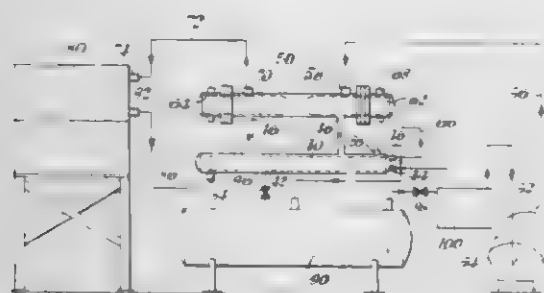
U.S. Cl. 62-84

3 Claims

1. A method for using waste heat from a refrigeration system comprising the steps of:

- (a) discharging superheated vaporized refrigerant from a refrigeration compressor into the shell side of a heat exchanger for use in raising the temperature of useful fluids;
- (b) impinging said superheated vaporized refrigerant onto a plurality of tube bundles disposed within said heat exchanger thus transferring heat from said superheated vaporized refrigerant into useful liquids being transported through said tube bundles causing said liquids to increase

- in temperature and said superheated vaporized refrigerant to become desuperheated vaporized refrigerant,
 (c) discharging said desuperheated vaporized refrigerant into an evaporative condenser for condensation of said vapor into a liquid;
 (d) moving said liquid refrigerant through an expansion means for decreasing the pressure of said liquid refrigerant;



- (e) moving said expanded liquid refrigerant through an evaporator for transferring heat from a space to be cooled to said refrigerant for further useful purposes in heating fluids; and
 (f) removing oil from said shell side of said heat exchanger that has separated out from said superheated vaporized refrigerant during desuperheating.

4,226,090
CONTROL SYSTEM FOR VEHICLE AIR CONDITIONER
 James G. Horian, 7340 Indiana, Dearborn, Mich. 48126
 Filed Aug. 6, 1979, Ser. No. 64,324
 Int. Cl. B60H 3/04
 U.S. Cl. 62-133

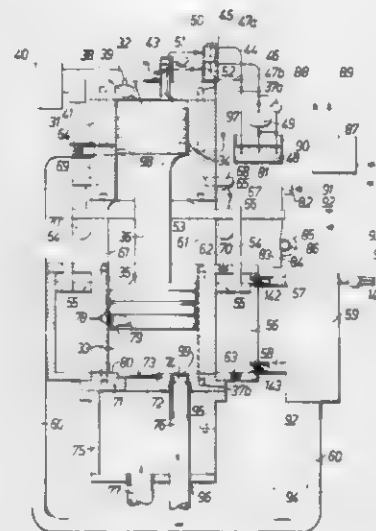
1 Claim



1. For use with a vehicle including an internal combustion engine and an air conditioner having a compressor driven by the engine, a control system for the compressor of the air conditioner comprising: an electrical control circuit including first, second, and third branch circuits for selectively operating the air conditioner compressor to provide cooling of the vehicle; the first branch circuit including a vacuum sensor for sensing the intake manifold vacuum of the engine to automatically suspend operation of the air conditioner compressor whenever the intake manifold vacuum is below a predetermined extent; the second branch circuit including a temperature switch for sensing the engine operating temperature to maintain the compressor operation during engine warmup even when the intake manifold vacuum falls below the predetermined extent; and the third branch circuit including a tachometer for sensing vehicle speed to maintain the compressor operation whenever the speed sensed is above a predetermined value even when the intake manifold vacuum is below the predetermined extent.

4,226,091
HEAT PUMP CONTAINING A PISTON COMPRESSOR AND DRIVEN BY A PISTON ENGINE
 Jan-Erik A. Nowacki, Hölö, Sweden, assignor to Studsvik Energiteknik AB, Nyköping, Sweden
 Filed Apr. 17, 1979, Ser. No. 30,892
 Claims priority, application Sweden, Apr. 26, 1978, 7804805
 Int. Cl. F25B 27/00, 27/02, 13/00
 U.S. Cl. 62-323

15 Claims



1. A heat pump containing a piston compressor driven by a piston engine, in which the cylinder (33) of the compressor communicates with the condenser of the heat pump via a high pressure refrigerant conduit (76), and communicates with the evaporator of the heat pump via a low pressure refrigerant conduit (77), characterized in that an accumulator chamber (75) for low pressure refrigerant is provided in the low pressure refrigerant conduit (77) adjacent the cylinder (33) of the compressor, the low pressure refrigerant in said accumulator chamber (75) driving the compressor piston (35) and the engine piston (34) during the compression stroke of the engine, the volume of said accumulator chamber (75) being of such magnitude that the compressor piston (35) and the engine piston (34) are given a sufficiently high speed to produce the compression in the engine cylinder (32).

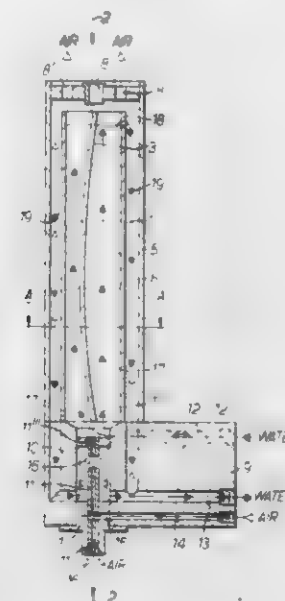
4,226,092
DEVICE FOR COOLING HEATED TEXTILE YARNS OF THERMOPLASTIC MATERIAL
 Walter Lüthi, Ebnat-kappel, Switzerland, assignor to Heberlein Maschinenfabrik AG, Wattwil, Switzerland
 Filed Jan. 23, 1979, Ser. No. 5,853
 Claims priority, application Switzerland, Jan. 25, 1978, 783/78
 Int. Cl. F25D 17/02
 U.S. Cl. 62-374

3 Claims

1. A device for cooling rotating heated textile yarns of thermoplastic material, comprising a coolant pipe having a yarn inlet and a yarn outlet through which yarn can be passed lengthwise in a single run, means for passing cooling liquid into said pipe, a plate presenting a convexly curved surface to deflect the yarn from the direct flow path between the yarn inlet and yarn outlet, said plate being located in said pipe and extending substantially the entire length of said pipe, a jacket enclosing said pipe, a cover on said jacket which defines a yarn inlet, a supporting member at the exit end of said pipe which

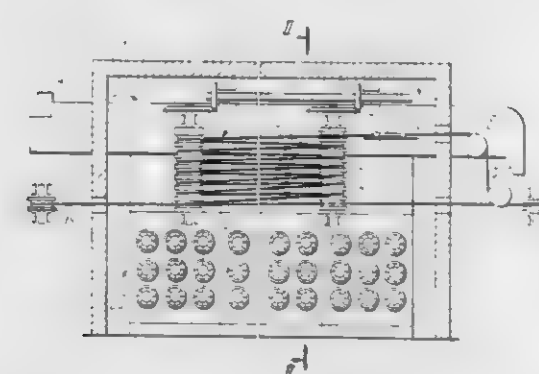
defines a bore aligned with said pipe, a removable sealing member positioned in said bore and having a yarn outlet, a

having at least two different outer diameters relative to each other and each provided with mounting threads extending over its inner peripheral surface, the width of each outer annular section being substantially less than the width of the inner annular section such that when said outer annular sections are removably attached from an end of said inner annular section



4,226,093
RAPID-FREEZING APPARATUS FOR FOOD PRODUCTS
 Andrei M. Voitko, Studencheskaya ulitsa, 12, korpus 1, kv. 64, Kishinev, U.S.S.R.
 Filed Jan. 19, 1979, Ser. No. 4,836
 Claims priority, application U.S.S.R., Feb. 1, 1978, 2576361
 Int. Cl. F25D 25/02
 U.S. Cl. 62-381

4 Claims

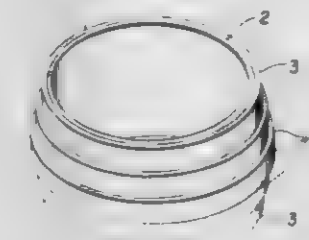


1. A rapid-freezing apparatus for food products, comprising a refrigeration chamber, conveying means for partly prepared and ready-made food products accommodated in said refrigeration chamber and including a multi-level conveyor comprising at least two rotatable vertical supports, a flexible traction member running about said rotatable vertical supports, a helical monorail extending about said rotatable vertical supports encompassed by said flexible traction member, a plurality of screen trays attached to said flexible traction member, said screen trays having rollers engaging said helical monorail for motion therealong, an air cooler, and a fan adapted for circulating the air passed through said air cooler through said refrigeration chamber.

4,226,094
FINGER RING
 Sharon A. Wolpoff, 12000 Old Georgetown Rd., Rockville, Md. 20852
 Filed Jun. 7, 1978, Ser. No. 913,410
 Int. Cl. A44C 9/00
 U.S. Cl. 63-15.4

4 Claims

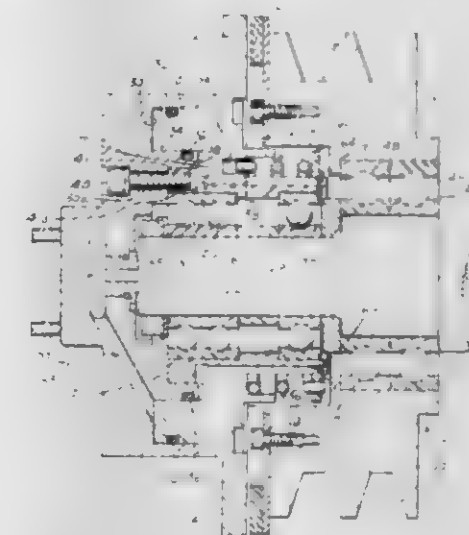
1. A finger ring comprising an inner annular section and a plurality of at least three outer annular sections; said inner annular section provided with mounting threads extending over its outer peripheral surface; said outer annular sections



to form a composite outer structure comprising said plurality of outer annular sections in abutting relation, the total width of said outer annular section is equal to the width of said inner annular section such that the mounting threads of said inner annular section are covered and no portion of the inner peripheral surface of any of the said outer annular sections will be in direct contact with the wearer's finger.

4,226,095
MECHANISM FOR MAINTAINING CONTACT BETWEEN THE DRIVING SIDE OF TORQUE TRANSFERING SURFACES OF A FIRST ROTATABLE MEMBER AND THE DRIVEN SIDE OF MATCHING TORQUE TRANSFERING SURFACES OF A SECOND ROTATABLE MEMBER
 Philip I. Loken, Savage, Minn., assignor to Horton Manufacturing Company, Inc., Minneapolis, Minn.
 Continuation of Ser. No. 802,378, Jun. 2, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 952,659
 Int. Cl. F16D 3/14
 U.S. Cl. 64-27 CT

3 Claims



1. A mechanism for maintaining contact between the driving side of the torque transmitting surfaces of a first rotatable member against the driven side of matching torque transmitting surfaces of a second rotatable member comprising:
 (a) said first rotatable member having an axial hole with internal splines on the surface thereof forming torque transmitting surfaces,
 (b) said second rotatable member having elongated splines extending axially on the outer surface thereof forming torque transmitting surfaces in engagement with said internal splines,
 (c) a helical coil spring encircling said splines on said second rotatable member,

- (d) means connecting one end of said coil spring to said first rotatable member,
- (e) a washer having teeth formed on the internal edge thereof engageable with the splines of said second rotatable member,
- (f) means connecting the other end of said coil spring to said washer,
- (g) means for preloading said spring including said washer freely rotated on said second rotatable member to torsionally load the spring for engagement of the teeth of the washer with the torque transmitting spline surfaces of said second rotatable member with the spring torsionally loaded.

4,226,096

PATTERN DRUM CONTROL DEVICE IN A CIRCULAR KNITTING MACHINE

Francesco Lonati, Brescia, Italy, assignor to Costruzioni Meccaniche Lonati S.p.A., Brescia, Italy

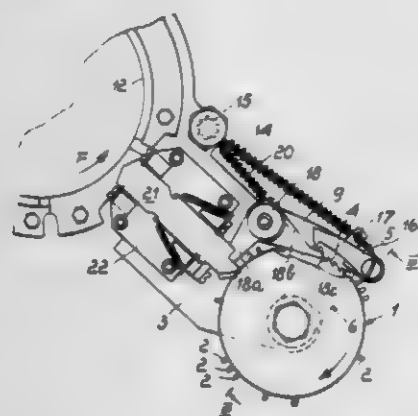
Filed Mar. 19, 1979, Ser. No. 21,535

Claims priority, application Italy, Mar. 24, 1978, 21613 A/78

Int. Cl.² D04B 15/74

U.S. Cl. 66—224

5 Claims



1. A device for controlling the advance movement of a patterning member, like a pattern drum or a number of superposed pattern wheels or disks, in a circular knitting machine having at least one needle cylinder and jack-selecting levers operated by pegs or teeth of said patterning member, comprising a peripheral tooth formation on said patterning member, a pawl for engagement with said tooth formation to cause stepwise advancement thereof about an axis of said patterning member, a support pivotable about said axis of said patterning member and pivotally supporting said pawl, an annular cam rigid with said at least one needle cylinder, a cam follower lever between said annular cam and said support, said cam follower lever being pivotally connected to said support, said cam having a peripheral profile capable of imparting to said cam follower lever and to said support a to-and-fro movement causing said pawl to perform a forward and a return stroke capable of producing a two-tooth advance movement of said peripheral tooth formation at each revolution of said at least one needle cylinder, wherein said profile comprises a first part extending over at least one quarter of a circle, preferably over half a circle, and adapted to cause a one-tooth advance movement of said tooth formation, and a second part having an appreciably greater inclination than said first part and following said first part, said second part being adapted to cause a further one-tooth advance movement of said tooth formation, and wherein said device further comprises means for detaching said pawl from said tooth formation over a half of each of a number of said return strokes, said pegs or teeth being arranged in vertical rows and said patterning member having at least two adjacent equal vertical rows of said pegs or teeth to consecutively act on said jack selecting levers during a two-tooth advance movement of said tooth formation.

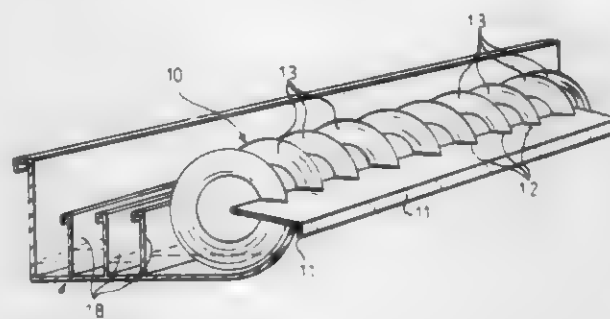
4,226,097 DEVICE FOR APPLYING LIQUIDS ONTO A CONTINUOUSLY-RUNNING WEB Heinz Rommel, Seevetal, Fed. Rep. of Germany, assignor to Artos Dr.-Ing Meier Windhorst KG, Seevetal, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,956

Int. Cl.³ D06B 1/06

U.S. Cl. 68—205 R

13 Claims



1. A device for applying treatment liquids onto continuously-fed textile webs of the type including a liquid-supply container, at least one roller which is partially immersed in the liquid in the liquid-supply container for removing liquid therefrom and a wiper which wipes the liquid off a surface of the roller for subsequent feeding onto the web of goods, the improvement comprising:

said at least one roller having a profiled surface and said wiper having a complementary-configured wiper edge which positively engages said profiled surface of said roller, said profiled surface defined by tooth-like wiping surfaces with each tooth-like surface having two opposed tapering tooth flanks which merge into a circumferential edge portion.

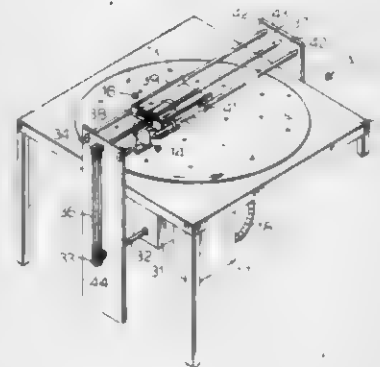
4,226,098 LEATHER YARN PRODUCING MACHINE William M. Alexander, 1835 Elmwood Dr., Hillsborough, Calif. 94010

Filed Dec. 26, 1978, Ser. No. 973,443

Int. Cl.³ C14B 00/00

U.S. Cl. 69—2

11 Claims



1. A machine for producing leather yarn from a disc of leather, comprising:

a base;

a turntable supported by the base for rotation thereon, for receiving the leather disc on its exposed surface;

motor means for driving the turntable rotatably;

means associated with the turntable for creating a pressure differential between the upper side and the lower side of the leather disc when it is on the turntable, with the lower side being at lower pressure, so that the leather disc is caused to lie tightly against the turntable to thus be stiffened and to be driven with the turntable;

cutting means for cutting a yarn in a spiral pattern from the leather disc as the turntable rotates, and frame means

connected to the base for supporting the cutting means above the turntable; and

means for advancing the cutting means radially as the turntable rotates, so that the leather yarn is cut spirally from the disc.

4,226,099

PADLOCK

Francisco E. Garcia, Madrid, Spain, assignor to Patentes FAC, S.A., Madrid, Spain

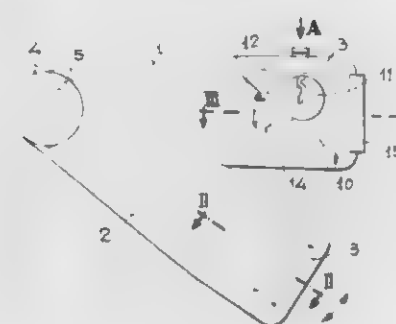
Filed Aug. 3, 1978, Ser. No. 930,511

Claims priority, application Spain, Aug. 3, 1977, 461,328

Int. Cl.² E05B 67/08

U.S. Cl. 70—41

4 Claims



1. A padlock designed for application in the locking of sliding doors with two panels that meet by their butt ends on vertical edges, and which are held fast to one another by the padlock itself, characterized essentially in that the said padlock is constituted of two flat bodies formed by a variable number of platens superimposed and joined with respect to one another by means of rivets in such a way that the said bodies have each an exterior quadrilateral zone at one end and are extended in convergent form to terminate in a semicircular shape at the opposite end, thus providing flat and lengthened bodies that are arranged according to parallel and spaced planes; provision having been made for the connection of the said bodies to be effected through the semicircular end zone of the said bodies by virtue of a shaft common to both, which shaft is fixed to one of the bodies the other body is mobile and rotates around the said shaft, the said mobile body having a cylindrical housing in its quadrangular zone or free end, which housing has a channel formed on the inner lateral surface of the said housing; the fixed body having a small group of platens corresponding to the end quadrangular zone of the said body, which group of small platens faces the housing of the mobile body; with the special feature that this group of small platens, as well as the fixed body have a common pass-through orifice in which a cylindrical lock body is situated, and by which said lock body element is perfectly aligned facing the said channel in the housing of the mobile body when the padlock is in the closed position and wherein the said cylindrical lock body is axially movable within the said pass-through orifice, so as to be engageable in the said channel of the movable arm.

4,226,100

WATERPROOF PADLOCK CASE

Marshall D. Hampton, 2125 S. Ammons, Lakewood, Colo. 80227, and Edwin L. Spangler, Jr., Denver, Colo., assignors to said Marshall D. Hampton, Lakewood, Colo., by said Edwin L. Spangler, Jr.

Filed Jan. 31, 1979, Ser. No. 8,065

Int. Cl.³ E05B 67/38

U.S. Cl. 70—51

10 Claims

1. In a protective cover for padlocks having a case with a keyway in one end and the legs of a U-shaped shackle entering the other:

a box-like housing having a case-encircling body open at both ends, a base detachably connected to the open end where the keyway is located providing access to the latter and a lid detachably connected to the other open end, said

lid having shackle leg receiving openings therein positioned and adapted to pass the shackle legs;

a loose-fitting pliable tubular sleeve mounted on the shackle of a length such that the ends thereof terminate adjacent the shackle receiving openings in the lid when said shackle is closed and locked; and,



annular means encircling the shackle legs cooperating therewith and with the sleeve ends to define continuous fluid-tight seals around both shackle leg receiving openings in the lid.

4,226,101

CABINET LOCK WITH FRANGIBLE COVER PLATE AND PUSH BUTTON LOCK RELEASE AND ALTERNATIVE KEY RELEASE

Walter F. Lee, 250 Paisley La., Minneapolis, Minn. 55422

Filed Dec. 4, 1978, Ser. No. 965,924

Int. Cl.² E05B 65/44, 63/00; E05C 3/02

U.S. Cl. 70—78

7 Claims



1. A cabinet lock with frangible cover plate and lock release push plate comprising:

- a housing,
- a latch having receiving means,
- means mounting said latch for pivotal movement to a position in and out of said housing,
- a lock releasing push plate,
- means slidably mounting said push plate within said housing,
- first means urging said push plate away from said latch,
- means carried by said push plate for engagement with said receiving means of said latch for preventing said latch from pivotal movement outwardly of said housing,
- second means urging said latch pivotally into said housing when said engagement means of said push plate is disengaged from the receiving means of said latch by means of said push plate slidably pushed inwardly of said housing,
- a frangible plate carried by said housing and covering said push plate, and
- said latch being pivotally secured in a position extending outwardly of the housing when said push plate is released and is urged away from said latch thereby engaging said

engagement means of said push plate into said receiving means of said latch.

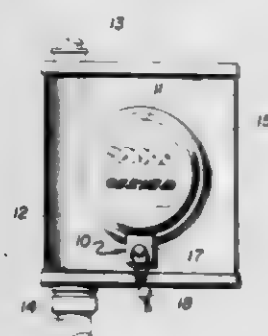
4,226,102

METER LOCK

Albert Mattress, Jr., Spencer, Mass., assignor to Norman S. Blodgett, Worcester, Mass., a part interest
Continuation of Ser. No. 908,972, May 24, 1978, abandoned, which is a continuation of Ser. No. 771,757, Feb. 24, 1977, abandoned. This application Aug. 22, 1979, Ser. No. 68,586
Int. Cl.³ B65D 55/14

U.S. Cl. 70-164

14 Claims

**11. Meter clamp, comprising:**

- (a) a band formed as a loop adapted to embrace an annular meter flange,
- (b) a housing permanently attached to one end of the band, the housing being formed with an inner chamber and with a passage leading into it, the other end of the band being formed with an apertured tongue adapted to extend into the passage,
- (c) a cam member located in the housing and forming a separate movable element within the housing, said cam member having a finger which is spring-biased to a position within the passage for engagement with the aperture in the tongue into the passageway and to prevent withdrawal of the tongue from the passage by virtue of the engagement of the finger within said aperture, and
- (d) locking means for engaging said cam member at a point spaced from said finger and limiting movement of the cam member.

12. Meter clamp, comprising:

- (a) a U-section loop band adapted to embrace an annular meter flange and similar flange on a meter box, the band having two free ends, one of the free ends having an aperture,
- (b) retaining means including a projecting element that extends into said aperture for holding the free ends of the loop together to form a closed loop,
- (c) a housing for shielding the retaining means, and
- (d) locking means connected to the retaining means, said locking means comprising a key actuated locking pin that extends through the housing, the axis of the locking pin being transverse to the plane of the loop band.

4,226,103

LOCKING DEVICE FOR GLAD HAND BRAKE LINE COUPLERS

Ray M. Strickland, Box Dy 146, Cave Creek Stage, Phoenix, Ariz. 85020

Filed Sep. 5, 1978, Ser. No. 939,458

Int. Cl.³ E05B 65/14

U.S. Cl. 70-237

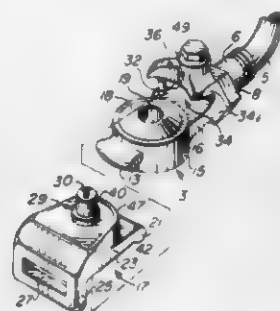
7 Claims

1. A locking device for locking engagement with a trailer brake line coupler having a tongue, a tongue-receiving recess and a seal with an air passage opening therein, said locking device comprising in combination:

- a. a housing having a lower surface and an upper surface;
- b. a tongue extending outward from said housing for insertion into said tongue-receiving recess of said brake line connector;
- c. a flange attached to said housing extending outwardly

from said lower surface, said flange having a tongue-receiving opening for receiving said tongue of said brake line connector; and

- d. a lock mechanism mounted in said housing, said lock mechanism having an extendible plunger extendible outward from said lower surface into said air passage opening, said plunger being retractable by unlocking said locking device, said tongue of said housing extending into said



tongue-receiving recess and said tongue of said brake line connector extending into said tongue receiving opening when said extendible plunger extends into said air passage opening;

whereby, said locking device is not removable from said brake line coupler when said extendible plunger extends into said air passage opening without damaging said locking device and/or said brake line connector.

4,226,104

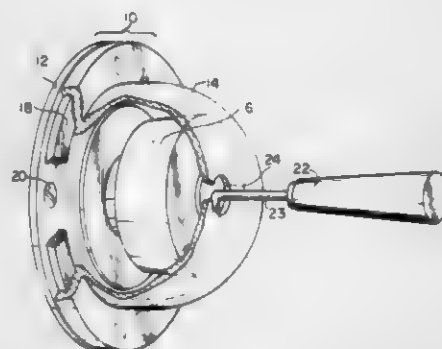
REMOVABLE PROTECTOR FOR LOCKS

Melvin D. Oliver, 4310 N. Carlisle St., Philadelphia, Pa. 19140
Filed Aug. 14, 1978, Ser. No. 933,457

Int. Cl.³ E05B 17/14

U.S. Cl. 70-455

7 Claims



- 1. A protective device to cover a locking mechanism installed in an openable construction member comprising, a magnetically attractive base secured around the locking mechanism, the base being permanently secured to the construction member; and a rigid, removable housing overfitting the locking mechanism and comprising a magnetic portion for magnetically securing said housing to said base, the housing comprising an aperture, the said aperture being adapted to allow insertion of a separate tool to dislodge the housing from the base.

4,226,105

KEY RING HOLDER

Floyd L. Wehrman, Apt. 220, 8477 Regent Ave. North, Minneapolis, Minn. 55443

Filed May 11, 1978, Ser. No. 904,856

Int. Cl.³ A44B 15/00

U.S. Cl. 70-456 R

5 Claims

1. A key ring holder comprising:

- an elongated closed loop member designed to have a belt passed therethrough for support of said loop member by

the belt and which can be withdrawn from the belt only by longitudinal movement thereof off of the end of the belt; said loop member having inner and outer walls joined by top and bottom walls and spaced apart sufficiently to accommodate a belt therebetween and of a length sufficiently great to provide for the full width of such a belt within said loop member, said outer wall of said loop member diverging outwardly from said inner wall from top to bottom;



an eye member having a shank extending along and secured to the bottom of said loop member and an eye portion, said eye portion extending outwardly from said shank in such a manner to extend outwardly and downwardly from the outer wall of said loop member with the entire eye portion being disposed beyond said outer wall; and a spring hook suspended from the outer lowermost portion of said eye member so as to be spaced transversely from the inner wall of said loop member and hence from the body of the wearer, said spring hook being adapted to receive a key ring upon yieldable opening of said hook.

4,226,106

PLANTS FOR TREATING ROLLED STEEL PRODUCTS

Mario Economopoulos, Liege, and Jean Y. Respen, Herstal, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Continuation of Ser. No. 646,426, Jan. 5, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,848

Claims priority, application Belgium, Jan. 3, 1975, 824100; Feb. 28, 1975, 826199

Int. Cl.³ B21B 45/02

U.S. Cl. 72-39

10 Claims



1. A plant for treating a rolled steel product, comprising, in combination with a rolling mill, in sequence, a quenching apparatus through which the rolled steel product passes from the outlet of the rolling mill, and a still-air cooling area, the quenching apparatus having a series of cooling means for directing cooling liquid onto the rolled product passing through the quenching apparatus, the plant further comprising liquid removal means including only liquid means for completely removing the cooling liquid from the rolled product, the liquid removal means being located after each of the cooling means, and cutting means for cutting the product between the quenching apparatus and the still-air cooling area, the cooling means comprising at least two ducts spaced apart one after the other on a common axis, an enlarged extension enveloping the annular passage defined between the ends of the two ducts spaced from one another, and means for supplying fluid under pressure to the annular passage.

4,226,107

DEVICE FOR EDGING THE POINTS OF BALL PENS IN PARTICULAR THOSE MADE OF HARD MATERIAL

Ugo Buzzi, Arzo, Switzerland, assignor to Albe SA, Agno, Switzerland

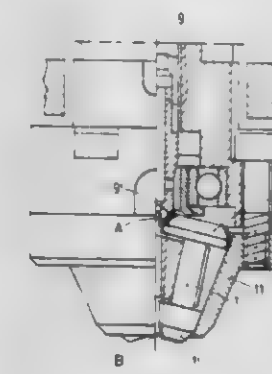
Filed Nov. 21, 1978, Ser. No. 963,920

Claims priority, application Switzerland, Nov. 29, 1977, 14634/77; Oct. 13, 1978, 10614/78

Int. Cl.³ B21D 19/06

U.S. Cl. 72-121

7 Claims



1. A device for edging the point of a ball point pen comprising three working rollers arranged to run without slip on a conical running surface and arranged at 120° angular spacing so that regions of the rollers cooperate to define a working zone into which the point is moved to be engaged by said regions, the axes of the three rollers converging at the apex of said conical surface, a stationary shaft having a tapered end, resiliently yieldable means urging said tapered end towards the rollers, and ball or roller bearing means rotatably supporting said conical surface.

4,226,108

APPARATUS FOR COOLING METAL PRODUCTS

Stephan H. Wilmette, Ninane, Chaudfontaine; Jean A. Nautet, Hony-Esneux, and Marios Economopoulos, Liege, all of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

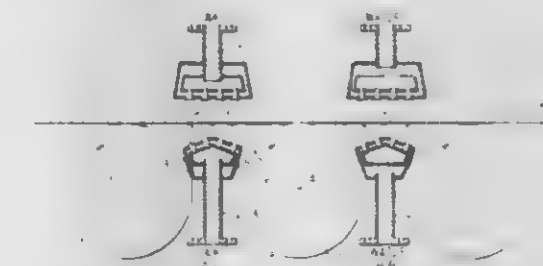
Filed Feb. 8, 1978, Ser. No. 875,981

Claims priority, application Belgium, Feb. 11, 1977, 851381; Feb. 11, 1977, 851382; Sep. 5, 1977, 858416

Int. Cl.³ B21B 27/10, 45/02

U.S. Cl. 72-201

10 Claims



1. Apparatus for cooling a metal product by spraying a coolant towards a surface of the product, the product surface traveling along a given path, the apparatus comprising two hollow caissons arranged one inside the other and rigidly connected together to constitute a unit having a front face, the front face being in spaced relation to said product surface, the front face extending across said path, each caisson having a plurality of holes in a wall of the front face facing said surface, each hole of the outer caisson being paired with a hole of the inner caisson, the pair of holes being in coaxial alignment and a coolant sprayer for directing coolant onto the traveling product surface being fixed in each pair of holes, said apparatus further comprising means defining the said path of the product surface, and means for supplying a cooling fluid to each caisson, each sprayer communicating with both caissons, whereby

said coolant is emittable as a fluid spray whose density can be kept uniform between said front face and said product surface.

4,226,109

TOOL FOR THE STAMPING OF HOLES OR THE LIKE IN SHEET MATERIAL SUCH AS METAL PLATE

Sven R. Nilsson, Löfstigen, Sweden, assignor to Lindova Aktiebolag, Lindsberg, Sweden

Filed Oct. 13, 1978, Ser. No. 951,041

Claims priority, application Sweden, Oct. 13, 1977, 7711530

Int. Cl.³ B21D 28/26, 31/06

U.S. Cl. 72—412

7 Claims

1. (Amended) A tool for the stamping of holes or the like in sheet material, such as metal plate, said tool being intended for use in combination with a [pneumatic or hydraulic] fluid actuated piston and cylinder motor, preferably with a motor which can be held in the hand, and is comprised of a stationary part which is supported against the motor cylinder and a displaceable part which can be connected to the piston of the motor, characterized in that the displaceable tool part is provided with at least one slot at right angles to the direction of the stroke of the motor, in which the metal plate is insertable into engagement with a base thereof, and a through drilling which extends through the slot at right angles to same and at a distance from its base, the portion of the drilling on the side of said slot remote from [turned away from] said motor being formed as a stamping die and [a] the portion thereof [turned towards the motor] between said slot and said motor being formed to accommodate an axially displaceable plunger, the inwardly turned end of which abuts against the stationary tool part in such a manner that the plunger, upon displacement of the [engine] piston away from the tool is forced into and through the metal plate therein.

4,226,110

HYDRAULIC COMPRESSION TOOL

Yasuo Suganuma, Nagano, Japan, assignor to Izumi Products Company, Matsumoto, Japan

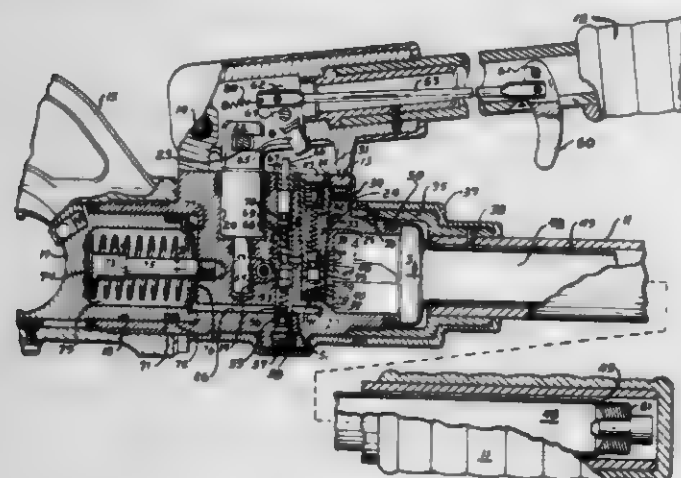
Filed Jul. 17, 1978, Ser. No. 925,416

Claims priority, application Japan, Aug. 22, 1977, 52/112747

Int. Cl.³ B21D 7/06

U.S. Cl. 72—416

5 Claims



1. In a hydraulic compression tool for compressing a connector onto a wire end, said tool including a pair of complementary compression dies, means defining a reservoir for holding a supply of hydraulic fluid, a hydraulic force applying

means for forcibly urging the dies toward a compressing disposition, a hydraulic pump for delivering hydraulic fluid from said supply under pressure to said force applying means to effect a compressing operation, means for selectively returning hydraulic fluid from said force applying means to said reservoir to release said dies subsequent to a compression operation, means defining a relief flow passage from said force applying means, and body means defining a cavity communicating with said relief flow passage and said reservoir, the improvement comprising:

a two-piece housing removably installed in said cavity including a first portion defining an inlet communicating with said relief flow passage, and a second portion defining an outwardly opening annular outlet communicating with the reservoir and a plurality of diametrically opposed radial outlet passages opening through said housing to said annular outlet;

a pressure relief valve removably installed in said housing and including a biasing spring for controlled closing said inlet while permitting flow of said hydraulic fluid from said inlet to said opening to the reservoir when the pressure of the hydraulic fluid in said force applying means and relief flow passage exceeds a preselected maximum operating pressure; and

release means for passing hydraulic fluid from said force applying means to said annular outlet for return to said reservoir to release said dies, and concurrently directing fluid pressure from said force applying means through said radial outlet passages as an incident of said passing of the hydraulic fluid, said radial outlet passages providing balanced flow of hydraulic fluid about the relief valve in said housing outwardly through said outlet passages and annular outlet to said reservoir when said pressure exceeds said maximum operating pressure and said radial outlet passages providing balanced inwardly directed pressure forces radially against said relief valve in said housing while concurrently permitting said biasing spring to have an increased biasing action against the valve when said release means is operated to release said dies so as to permit a series of finite centering actions as a result of a series of pressure buildup and pressure relief cycles.

4,226,111

METHOD AND APPARATUS FOR THE SURFACE WORKING AND FOR REWORKING OF WORKPIECES

Marcel Wahl, Glattstrasse 844, Rümlang-Zürich, Switzerland

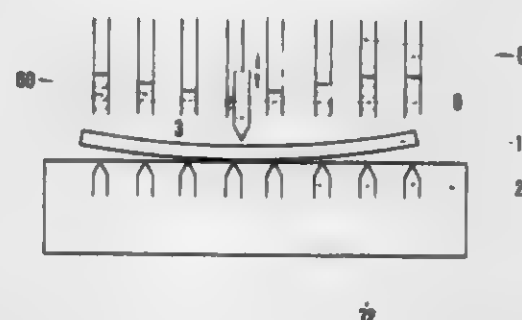
Filed Oct. 10, 1978, Ser. No. 949,984

Claims priority, application Switzerland, Oct. 11, 1977, 12386/77

Int. Cl.³ B21J 5/00

U.S. Cl. 72—437

8 Claims



1. Apparatus for reworking of elongate workpieces, comprising:

an upstanding column;

a strike hammer device movably and adjustably arranged on said column and including at least one strike bolt having a curved point and movable with said strike hammer device for rapidly and repetitively striking a workpiece;

a rigid comparison measuring table for supporting the work-

piece in the path of the strike bolt, said table including at least one backing surface for supporting the workpiece and against which the workpiece is to be deformed by repetitive striking of the workpiece by said strike bolt, said backing surface corresponding to the undistorted shape of the workpiece, means defining a plurality of air channels discharging through said backing surface, said air channels opening through said backing surface in an aligned manner and at substantially equal distances from each other, means for maintaining each air channel under pneumatic pressure and indicating devices connected to said air channels to indicate the air pressure drop as air exits from the respective channels.

4,226,112

METHOD AND APPARATUS FOR ANALYZING GASES

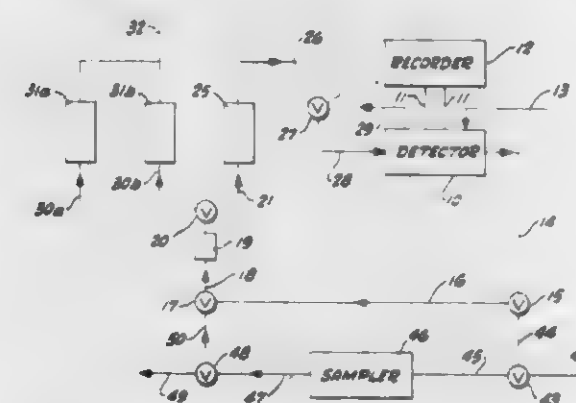
Gomidas Jibelian, 740 Fawn Dr., San Anselmo, Calif. 94960

Filed Jan. 30, 1978, Ser. No. 873,617

Int. Cl.³ G01N 31/08

U.S. Cl. 73—23.1

6 Claims



1. In a chromatograph apparatus of the type comprising:

(1) At least one body of adsorptive material, each such body having an inlet and an outlet, and each having the properties of adsorbing one or more components of a gaseous mixture to be analyzed, of allowing one or more of the adsorbed components to be eluted by passage of an inert carrier gas through the body and, where two or more gaseous components are to be adsorbed by and eluted from a single body, of causing elution of such components in time ordered sequence such that the eluted components are not commingled in the gas leaving the outlet of such body,

(2) a detector having a test conductor, a reference conductor, an electrical circuit including said conductors, said circuit having a nil output when said conductors are at the same temperature and having an output when the conductors are at different temperatures which is proportional to the difference in temperatures, said conductors being sensitive to the thermal conductivity of a gas in contact therewith, said detector having a first gas inlet and a first gas outlet for conducting carrier gas into, through and out of the detector in thermal contact with the reference conductor; said detector also having a second inlet and a second outlet for conducting gas into, through and out of the detector in thermal contact with the test conductor, the improvement which comprises:

(a) a first gas circuit connecting the first detector outlet with the second detector inlet, said circuit including as a portion thereof said body or bodies of adsorptive material by way of the inlet and outlet of each,

(b) a second gas circuit having an inlet end and an outlet end and which is parallel to a portion of said first gas circuit, said second circuit being connected as its inlet end to the first circuit by a first valve means and being connected at its outlet end to the first circuit by a second valve means, said second gas circuit including a sampler element for receiving a predetermined volume of gas to be analyzed, said second gas circuit being located upstream in relation to said body or bodies,

(c) valve operating means for said valve means operable automatically to carry out the following cycle of operation:

(i) acting initially to route carrier gas solely through the first gas circuit from the first detector outlet to the second detector inlet,

(ii) then acting upon commencement of analysis to route carrier gas from the first detector outlet through said first valve means to said second gas circuit to propel said sample of gas from the sampler though said second valve means, thence through the remainder of said first gas circuit including said body or bodies of adsorptive material to the second detector inlet, and

(iii) after said sample of gas has been propelled beyond said second valve means, acting to re-establish flow of carrier gas solely through said first circuit.

4,226,113

LEAK DETECTING ARRANGEMENT ESPECIALLY SUITABLE FOR A STEAM CONDENSER AND METHOD

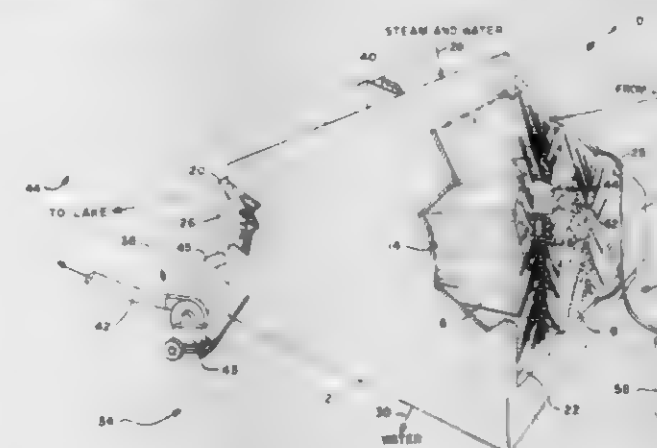
Charles A. Pelletier, Bethesda, and Edgar D. Barefoot, Gaithersburg, both of Md., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 11, 1979, Ser. No. 29,707

Int. Cl.³ G01M 3/22

U.S. Cl. 73—40.7

13 Claims



1. An arrangement for detecting leaks in a plurality of discrete tubes which have opposite adjacent open ends and which form part of a given apparatus also having an inner chamber surrounding said tubes such that the open ends of the latter are accessible from outside said chamber, said arrangement comprising:

(a) means located outside said inner chamber and cooperating with the adjacent open ends of selected ones of said tubes for directing tracer gas into said selected tubes at the cooperating adjacent ends of the latter while, at the same time, isolating said adjacent open ends from the ambient surroundings so as to prevent any tracer gas from escaping into the ambient surroundings including said inner chamber as the tracer gas is directed into said tubes;

(b) means for drawing said tracer gas through said selected tubes from said cooperating adjacent ends to opposite adjacent ends thereof such that, if any of said selected tubes have leaks, a portion of said gas will escape into said chamber through said leaks before reaching said opposite ends;

(c) means cooperating with said opposite adjacent ends of said selected tubes for capturing all of the tracer gas reaching said opposite ends and directing the captured tracer gas to a remote location; and

(d) means for drawing said escaping gas, if any, to a predetermined detection point and detecting the gas at said point, whereby to indicate the presence of a leak.

4,226,114

METHOD AND APPARATUS FOR ANALYSIS OF SUBSTANCES BY CHANGE IN ENTHALPY DURING DISSOLUTION

Fritz Hagedorn, Schade, Fed. Rep. of Germany, assignor to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

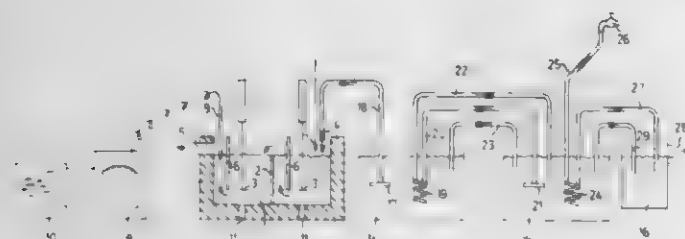
Filed Mar. 16, 1979, Ser. No. 21,140

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811945

Int. Cl.³ G01N 25/48

U.S. Cl. 73-61 R

24 Claims



1. A method for the analysis of a mixture of solid substances comprising at least one soluble component which dissolves with a change in enthalpy, comprising the steps of introducing at a first point a predetermined amount of the mixture of substances in solid form into a uniformly flowing stream of a solvent for the soluble component maintained at a constant temperature; measuring the maximum change of temperature occurring in the stream of solvent at a second point in the stream downstream of the first point of introduction; and comparing said measured maximum change in temperature with the maximum changes in temperature measured previously by analysis of equal amounts of similar mixtures of substances having a known content of said component, whereby the changes in temperature resulting from the solution of said component in the solvent serve as the measure of the content of said component in said mixture of substances.

4,226,115

REMOTE CONTROLLED AIR SAMPLER

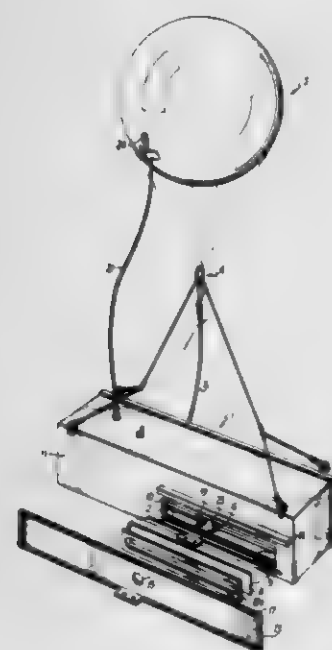
Ralph E. Williams; Larry L. Brown, both of Denver; Robert P. Marchese, Lakewood; Philip A. Russell, and James A. Armstrong, both of Denver, all of Colo., assignors to The United States of America as represented by the Administrator of the United States Environmental Protection Agency, Washington, D.C.

Filed Jun. 30, 1978, Ser. No. 920,944

Int. Cl.³ G01W 1/08; G01N 15/06

U.S. Cl. 73-28

12 Claims



1. A remote controlled air sampler comprising:

- (a) a housing having a wall with an elongated aperture,
- (b) an air filter strip more extensive than said aperture mounted over said aperture,
- (c) a guide means mounted within said housing,
- (d) a suction head within said housing movably engaged to said guide means for sucking a sample of air through a portion of said air filter strip,
- (e) a suction head translating means operatively engaged to said suction head for translating said suction head along said guide means;
- (f) an air pump in fluid communication with said suction head for drawing a sample of air through said suction head, and
- (g) a radio operated, remote control means for selectively actuating said suction head translating means and said air pump in response to radio signals, whereby an air sample is drawn through a portion of said air filter means.

4,226,116

LOGGING WHILE RAISING A DRILL STRING

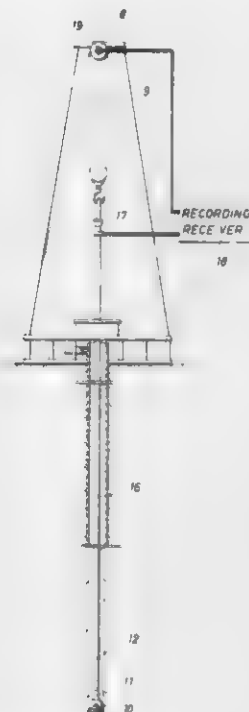
Early B. Denison, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 8, 1979, Ser. No. 1,798

Int. Cl.² E21B 49/00

U.S. Cl. 73-151

10 Claims



- 1. A process for drilling and logging a downwardly extending well borehole comprising:
 - drilling the borehole with a signal transmissive drill string which contains a magnitude-responsive transducer which, during the drilling, is kept at least substantially within the external confines of the drill string;
 - movably-mounting said transducer within a lower portion of the drill string and mechanically connecting it to a motion-imparting means which is capable of being actuated by a command signal transmitted along the drill string to urge the transducer toward or away from an extended position at least substantially in contact with the wall of a borehole drilled by the drill string or a retracted position at least substantially within the exterior confines of the drill string;
 - stopping the drill string and transmitting along it a command signal that initiates the urging of the magnitude-responsive transducer toward its extended position;
 - raising the drill string while transmitting along it a signal indicative of the magnitude at which a subterranean physical or chemical property is encountered by the magnitude-responsive transducer while it is in contact with, or in close proximity to, the borehole wall;
 - operating a movement-responsive transducer to provide a

signal indicative of the distance by which the drill string is raised; providing a record of the variation with depth in said subterranean property; and, stopping the drill string and transmitting along it a command signal that initiates the urging of the magnitude-responsive transducer toward its retracted position.

4,226,117

VORTEX-SHEDDING FLOWMETER HAVING DRAG-ACTUATED TORSIONAL SENSOR

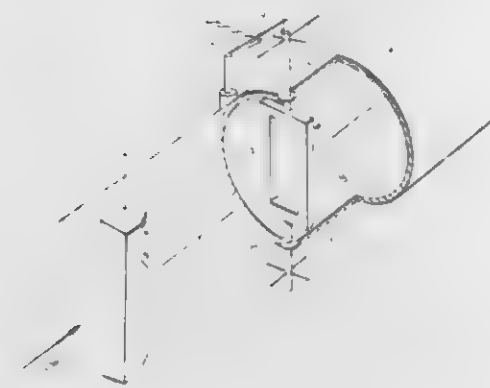
Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Continuation-in-part of Ser. No. 944,624, Sep. 21, 1978, Pat. No. 4,181,020. This application Feb. 21, 1979, Ser. No. 13,557

Int. Cl.³ G01F 1/32

U.S. Cl. 73-861.22

17 Claims



- 1. A vortex-shedding flowmeter comprising:
 - A. a flow tube through which a fluid stream to be metered is conducted, said tube having a longitudinal axis;
 - B. a shedder having a predetermined geometry transversely disposed in said tube to divide the fluid stream therein and to cause vortices to be shed alternately on either edge thereof at a repetition rate proportional to the flow rate of the fluid;
 - C. a torsionally-supported sensor disposed in said tube behind the shedder to define a gap therewith and provided with a pair of relatively broad parallel legs separated by a passage, the legs being symmetrically disposed with respect to a central fulcrum axis which is normal to said tube axis, the divided fluid stream flowing past the shedder producing downstream trains of vortices which travel along the right and left sides of the tube on either side of the sensor, thereby developing a stagnant zone in said gap that is caused by the alternately shed vortices to be alternately drawn in front of each leg whereby fluid from the stream is caused to flow against the other leg and then through said passage to create a torque about said fulcrum axis alternately in the clockwise and counterclockwise direction to cause the sensor to oscillate at a frequency proportional to the flow rate of the fluid stream; and
 - D. transducer means operatively coupled to said oscillating sensor to produce a corresponding electrical signal.

4,226,118

LEVEL DETECTOR

Joe L. Aldrich, Kingwood, Tex., assignor to Keystone International, Inc., Houston, Tex.

Filed Jul. 28, 1978, Ser. No. 928,820

Int. Cl.³ G01F 23/28

U.S. Cl. 73-290 V

42 Claims

- 1. Apparatus for measuring a variable quality or quantity of matter present within a sensing area comprising:
 - (a) signal generation means including first oscillator means for providing an oscillatory signal, and including sensitiv-

ity control means for selectively adjusting the sensitivity of said signal generation means;

- (b) antenna probe means, as part of said signal generation means, for extending in said sensing area and for receiving said oscillatory signal whereby the frequency of said oscillatory signal is varied in accordance with the modification of impedance of said antenna probe means due to the exposure of said antenna probe means to matter within said sensing area;
- (c) electrical processing means for receiving said oscillatory signal and for producing an output signal whose frequency varies as the extent of the antenna probe means so exposed to material within said sensing area; and
- (d) test circuit means, as part of said electrical processing means, for receiving said output signal and providing a



test output indicative of the value of said output signal frequency, including

- (i) counter means for receiving said output signal and for providing, as said test output, counter signals, initiated in sequence, of frequencies that are, progressively, smaller fractional multiples of the frequency of the output signal, wherein a zero output signal frequency results in no oscillatory counter signals being provided;
- (ii) indicator means for separately signaling the production of each such counter signal; and
- (iii) timing means for periodically providing a reset signal to said counter means to define a time span during which said counter means may so produce said counter signals in sequence, said counter means thereafter initiating a subsequent time span for producing counter signals.

4,226,119

SAMPLE INTRODUCTION SYSTEM

Hansueli Buser, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 30, 1978, Ser. No. 956,114

Claims priority, application Switzerland, Nov. 3, 1977, 13390/77; Nov. 25, 1977, 14480/77

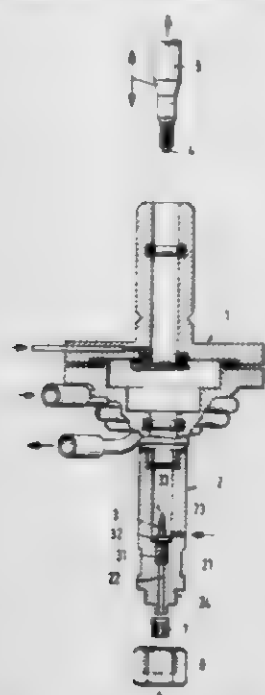
Int. Cl.³ G01N 1/28

U.S. Cl. 73-422 GC

11 Claims

- 1. A sample introduction system for a gas chromatograph comprising:
 - (a) a chamber;
 - (b) a lock on said chamber;
 - (c) an inlet for introducing carrier gas to said chamber;
 - (d) a separating column;
 - (e) a needle mounted in said chamber, said needle having a conical top part which converges upwards to a point, a bottom part having surfaces which converge upwards towards said top part and wherein the generatrices of the bottom part are at a smaller angle to the needle axis than the generatrix of the top part, and a passage extending from said bottom part up through said top part to emerge

at an opening in the surface thereof, said bottom part having a bore to receive said separating column and communicating directly with said passageway; and
(f) a sample holder mounted to introduce a sample via said lock into said chamber and onto said needle in sealing



engagement with the surface of said top part, the bottom part of said needle having a configuration such that when said sample reaches said bottom part a gap is formed therebetween to allow carrier gas introduced via said inlet to enter said sample.

4,226,120

ANALOG ACCELEROMETER

Norbert Nissl, Aresing, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

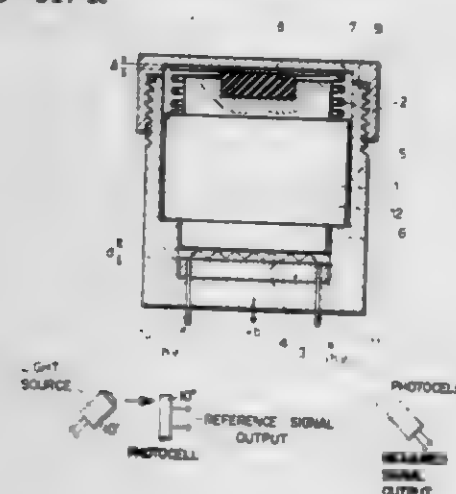
Filed Oct. 19, 1978, Ser. No. 952,653

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748173

Int. Cl.³ G01P 15/08

U.S. Cl. 73-517 R

18 Claims



1. An apparatus for measuring acceleration, comprising housing means, inertia mass means, spring means movably locating said inertia mass means in said housing means for responding to an acceleration force, force measuring means responsive to movements of said inertia mass means, said force measuring means comprising first and second light reflecting surface means arranged to form a gap of variable width between said first and second light reflecting surface means, at least one of said reflecting surface means being operatively associated with said inertia mass means so that said gap is varied in its width in response to said acceleration force acting on said inertia mass means; said apparatus further comprising light source means, light input means for introducing light from said light source means into said gap, light output means operatively connected to said gap, light receiving means ar-

ranged to exclusively receive light from said light output means after repeated reflections in said gap, whereby the change in intensity of the light emanating, after said repeated reflections, from said gap through said light-output means and entering said light receiving means represents a measurement of said acceleration.

4,226,121

ULTRASONIC IMAGING SYSTEM AND IMPROVED SIGNAL PROCESSOR THEREFOR

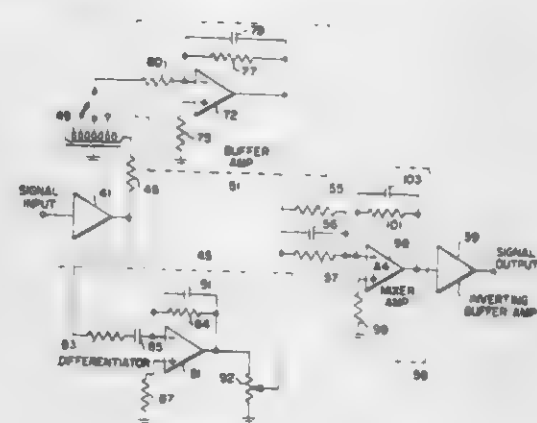
William M. Knosler, Fenwick Rd., Rte. 206, Augusta, N.J. 07822

Filed Mar. 2, 1979, Ser. No. 16,873

Int. Cl.² G01N 29/04

U.S. Cl. 73-602

11 Claims



8. In an ultrasonic imaging device having means to apply ultrasonic pulses to a subject to scan impedance changes in said subject and to detect the resulting sonic reflections and generate electrical signal from said reflections, and a receiver to demodulate the received signals, and an image storage device to store an image of the acoustic impedance changes represented by said electrical signals, the improvement wherein there is provided differentiating means to differentiate the output signal of said receiver to provide a differential signal and summation means to add said differential signal to a representation of the output signal of said receiver to provide a summation signal, and means to apply said summation signal to said image storage device to provide said image of said acoustic impedance changes.

4,226,122

APPARATUS FOR RECORDING ECHO PULSES

Svend A. Lund, Birkerød; Sven E. Iversen, Charlottenlund; Carl E. T. Petersen, Skovlunde; Erik T. Bogen, Dastrup, Viby S.J., and Jørgen Dam, Herlev, all of Denmark, assignors to Akademiet for de Tekniske Videnskaber, Svejsecentralen, Glostrup, Denmark

Filed Jun. 27, 1978, Ser. No. 919,602

Claims priority, application Denmark, Jul. 1, 1977, 2961/77

Int. Cl.³ G01N 29/04

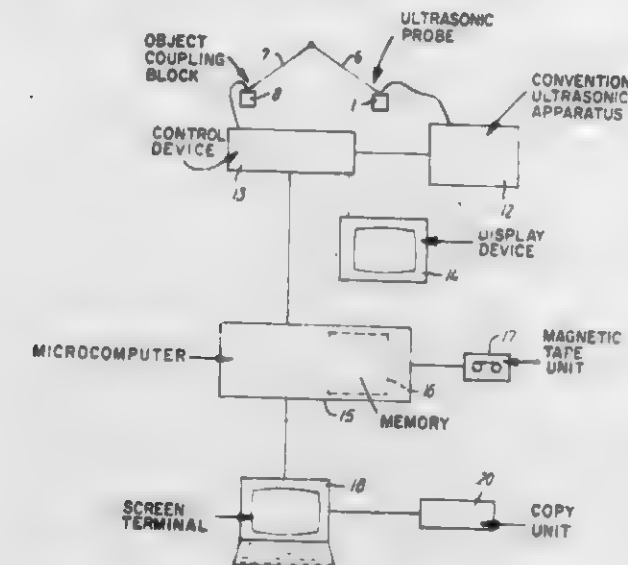
U.S. Cl. 73-609

9 Claims

1. An apparatus for recording projection pictures of internal inhomogeneities in otherwise homogenous objects having a substantially plane or slightly curved surface on projection planes perpendicular to each other, the apparatus recording projection pictures by ultrasonic inspection according to the pulse-echo method, said apparatus comprising:

ultrasonic inspection means having at least one ultrasonic angle probe for emitting and receiving ultrasonic sound pulses, said ultrasonic angle probe being freely movable in a two dimensional scanning movement over the surface of the object;
position signal producing means for producing position signals containing information on the position of said ultrasonic angle probe and the direction of the projection of the ultrasonic sound pulses on the surface of the object;
coordinate signal producing means responsive to echo pulses received from reflecting points in the object for produc-

ing, on the basis of the position signals and the transit time of the ultrasonic sound pulses, coordinate signals containing information on the spatial coordinates of the reflecting points in the object causing the echo pulses;
memory means for storing echo pulse amplitudes, said memory means having a storage area for each of the perpendicular projection planes, said storage area having at least one storage position for each projection on the projection plane of reflecting points in the object; and



recording means connected to said coordinate signal producing means for recording an echo pulse amplitude in each of said storage positions of said memory means, wherein said recording means records the echo pulse amplitude in at least one of said storage positions determined by the coordinate signals from said coordinate signal producing means if the echo pulse amplitude is higher than the last echo pulse amplitude recorded in said storage position.

4,226,123

NON-SYNCHRONOUS FOUR SPEED AUTOMATIC TRANSMISSION WITH OVERDRIVE

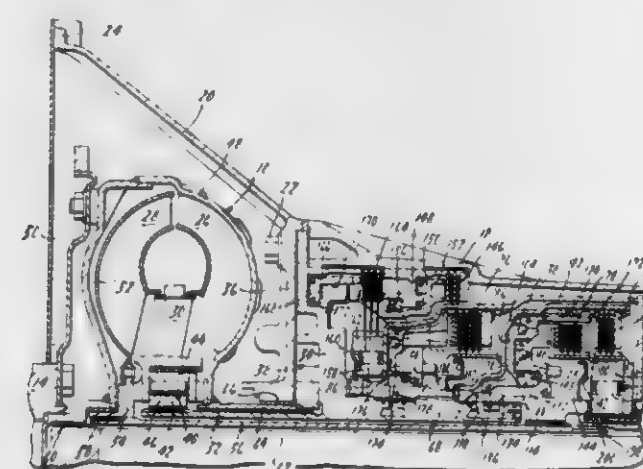
Howard L. Croswhite, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1978, Ser. No. 966,975

Int. Cl.² F16H 57/10

U.S. Cl. 74-688

4 Claims



1. A multiple ratio power transmission mechanism including four forward driving ratios and a single reverse ratio, the fourth overdriving ratio being an overdrive and the third forward driving ratio being a direct drive, compound planetary gearing including a pair of sun gears of differential diameter, a ring gear and a compound planet pinion assembly including a first planet set engageable with the larger sun gear and a second planet set engageable with the smaller sun gear, a ring gear engageable with the first planet set, said planet sets being engageable with each other and being supported on a common

carrier, a driven member connected to said ring gear, a hydrokinetic unit including a bladed impeller and a bladed turbine, a driving member connected to said impeller, a forward driving clutch assembly comprising a first selectively engageable friction clutch and an overrunning coupling means arranged in series relationship for connecting said turbine to said smaller sun gear during operation in the first, second and third speed ratios, a first overrunning brake for transferring reaction torque from said carrier to a stationary portion of the mechanism during operation in the low speed ratio, intermediate brake means comprising a second overrunning brake and a friction brake arranged in series relationship for distributing reaction torque from the larger sun gear to said stationary portion during intermediate speed ratio operation, second friction clutch means for connecting said driving member to said carrier during third speed ratio operation and during overdrive operation, said first clutch means distributing torque to the smaller sun gear during direct-drive operation to establish a split torque delivery with a portion of the torque of the driving member being distributed hydrokinetically and the balance being distributed mechanically to the driven member, and an overdrive brake means for anchoring the larger sun gear during overdrive operation as said second overrunning brake freewheels.

4,226,124

PRESSURE ISOLATOR

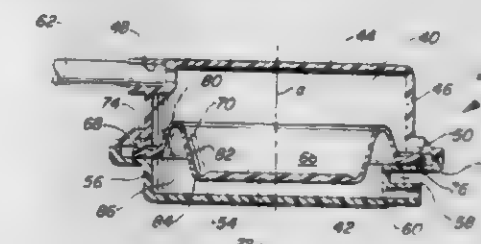
Jean Kersten, Brussels, Belgium, assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 2, 1979, Ser. No. 26,621

Int. Cl.³ G01L 7/08

U.S. Cl. 73-706

12 Claims



1. Apparatus for isolating a pressure-sensitive device from blood flowing in an extra-corporeal blood system and for transmitting the blood pressure from a blood flow line coupled to the pressure sensing device through the isolating apparatus, including a pressure chamber having an inlet coupled to the blood flow line and an outlet coupled to the pressure sensing device, and a membrane disposed transverse said chamber and surrounded by the chamber to segregate an inlet side of said chamber from an outlet side of said chamber, said membrane being fluid-impermeable and having its outer peripheral portion connected to the surrounding housing, comprising:

said membrane having a generally planar, circular central portion lying in a plane between the outer peripheral portion and the outlet side;
said membrane having an intermediate portion contiguous with and between the central portion and the outer peripheral portion, said intermediate portion extending from the outer peripheral portion in the direction of said inlet side and turning to have a curved portion contiguous with the circumference of said circular central portion, whereby said intermediate portion has a generally U-shaped cross-sectional configuration with one side of the U being contiguous with said outer peripheral portion, the other side of the U being contiguous with the central portion and the bight of the U being located in a plane between said outer peripheral portion and said inlet side;
said inlet coupled to the blood flow line being in communication with said inlet side; and
said outlet coupled to the pressure sensing device being in communication with said outlet side.

4,226,125

DIGITAL PRESSURE SENSOR SYSTEM WITH TEMPERATURE COMPENSATION

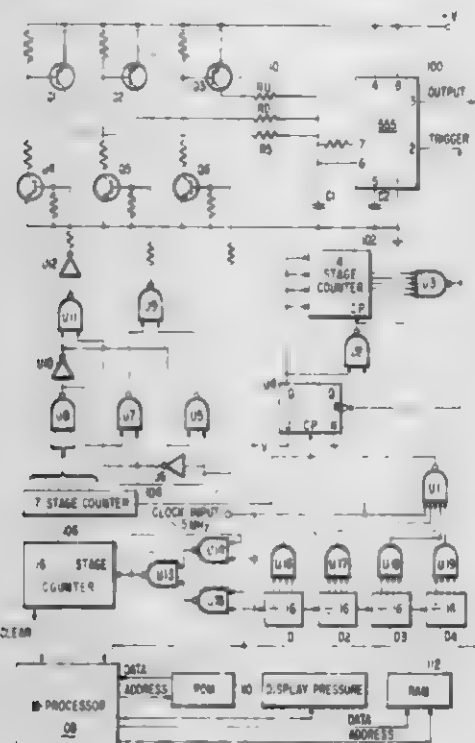
John B. S. Waugh, Mountain Lakes, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 26, 1979, Ser. No. 61,162

Int. Cl.³ G01L 19/04, 9/06

U.S. Cl. 73—708

9 Claims



1. A digital pressure sensor system with temperature compensation comprising:

a timing circuit having an input means and an output means, said timing circuit being capable of producing on said output means a first output level and a second output level, each of said output levels having a time duration responsive to signals on said input means;

a first resistive element coupled to said timing circuit input means wherein the magnitude thereof determines a first time duration of said first output level, said first resistive element having the characteristic wherein the magnitude thereof increases as the ambient pressure there around increases, said first resistive element also being temperature dependent;

a second resistive element coupled to said timing circuit input means wherein the magnitude thereof determines a second time duration of said first output level, said second resistive element having the characteristic wherein the magnitude thereof decreases as the ambient pressure there around increases, said second resistive element also being temperature dependent;

a third resistive element coupled to said timing circuit input means wherein the magnitude thereof determines a third time duration of said first output level, said third resistive element having a temperature dependency significantly less than the temperature dependencies of said first and said second resistive elements;

means both for selectively energizing said first, second and third resistive elements separately for establishing signals on said timing circuit input means relating to said first, said second and said third time durations respectively, of said first output level, and for selectively energizing said first and said second resistive elements simultaneously for establishing a signal on said timing circuit input means relating to a fourth time duration of said first output level; and

means for compiling and analyzing said first, second, third and fourth time durations of said first output level, wherein said first and second time durations of said first output level relate to the ambient pressure and said third and fourth time durations of said first output level relate to the ambient temperature, whereby a pressure reading

may be obtained from said pressure sensor system having the ambient temperature compensated therefor.

4,226,126

MECHANICAL DISPLACEMENT-ELECTRICAL SIGNAL TRANSDUCER

Werner Herden, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

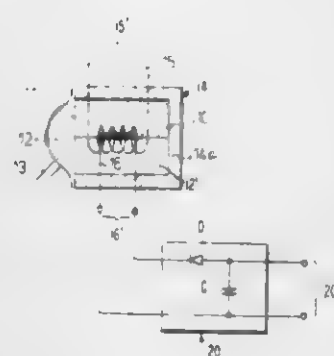
Filed Mar. 13, 1979, Ser. No. 20,226

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815324

Int. Cl.³ G01L 9/10

U.S. Cl. 73—728

14 Claims



1. Displacement transducer to provide an electrical output signal representative of a small displacement comprising a support (14) having an end holder (14a);

a deflectable holder (11) spaced from said end holder and movable in accordance with the displacement to be measured,

and comprising, in accordance with the invention, a ferromagnetic wire (10) having an approximately rectangular B-H diagram characteristic stretched between said end holder (14a) and said deflectable holder (11);

an exciter coil (15) magnetically coupled to said wire and alternately, reversely magnetizing said wire;

a pickup coil (16) magnetically coupled to said wire and providing output pulses having characteristics representative of the strain on the wire as the deflectable holder (11) is displaced upon induced alternate reverse magnetization of said wire by said exciter coil, to permit obtaining a representation of said strain upon evaluation of the characteristics of said output pulses.

4,226,127

HAND OPERATED YIELD TIGHTENING SYSTEM

Russell J. Hardiman, Quakertown, Pa., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Continuation of Ser. No. 864,411, Dec. 27, 1977, abandoned.

This application Aug. 2, 1979, Ser. No. 63,011

Int. Cl.³ B25B 23/142

U.S. Cl. 73—761

9 Claims

8. A method of tightening a fastener assembly comprising the steps of:

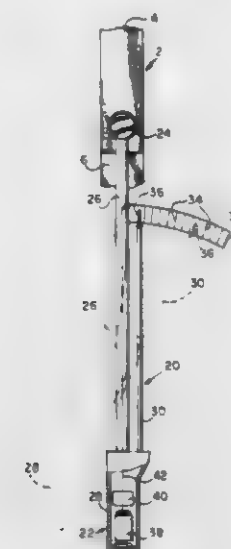
applying torque and imparting rotation to the fastener assembly;

mechanically differentiating the magnitude of said torque with respect to the degree of said rotation for producing discrete, intermittent output parameter signals, the rate of occurrence of successive output parameter signals being substantially directly proportional to the slope of a torque-rotation curve which could be generated for the fastener assembly being tightened;

monitoring said discrete, intermittent output parameter signals; and

providing an indication when a change in the frequency of

successive discrete, intermittent output parameter signals occurs indicative of a change in the slope of said torque-



rotation curve, thereby indicating when the fastener assembly has been tightened to the yield point thereof.

4,226,128

FRICTION DEVICE FOR USE IN CAR RADIOS

Ezio F. Dellantonio, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Apr. 13, 1978, Ser. No. 896,122

Claims priority, application Italy, Apr. 15, 1977, 48980 A/77; Aug. 10, 1977, 50625 A/77

Int. Cl.² F16H 35/18

U.S. Cl. 74—10 R

15 Claims



1. A friction device for use in car radios in which a frame carries a conventional tuning slider, a tuning knob and a key-board of keys for the preselection of transmitter stations, wherein the improvement comprises: a reciprocable element secured to the tuning slider; and a rotatable element driven by the tuning knob, said elements being releasably urged against each other into frictional contact and their surfaces of mutual contact being shaped in such a manner that the surface of one element is wedged into the surface of the other element.

4,226,129

WORM DRIVE MECHANISM

Harvey Henderson, P.O. Box 84, Palm Desert, Calif. 92260

Filed Apr. 12, 1978, Ser. No. 895,538

Int. Cl.² F16H 27/02, 29/20

U.S. Cl. 74—89.15

14 Claims

14. A drive mechanism comprising:

an elongated worm;

a nut having at least one internal groove engaging said worm;

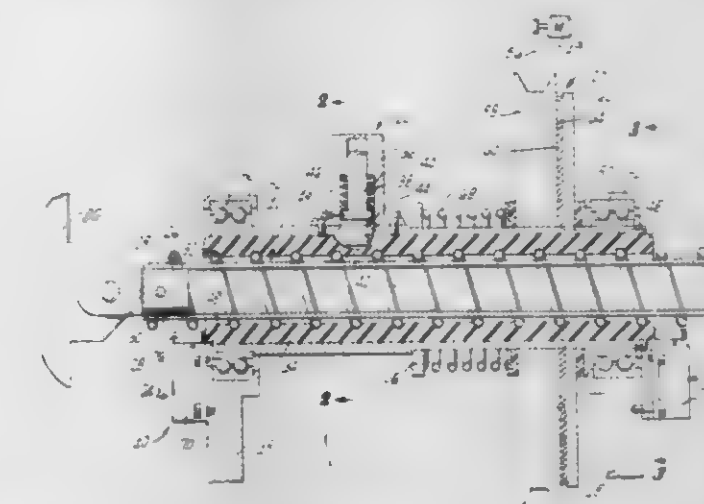
a sleeve surrounding said nut;

motor means for rotating said sleeve;

locking means for locking said nut to said sleeve for rotation therewith, said locking means comprises a recess defined by the outer surface of said nut, a drive member carried by said sleeve, and a locking spring arranged to bias said

drive member toward and into said recess, said recess extending longitudinally along said nut and being tapered for maximum depth at the center thereof to allow disengagement of said drive member from said recess upon longitudinal movement of said nut in either of two opposite directions; and

release means for normally preventing longitudinal movement of said nut relative to said sleeve and for releasing



said nut for longitudinal movement upon actuation thereof, said release means comprising a pair of blocking members disposed at opposite ends of said nut, each of said blocking members having a retaining position in which it engages said nut and a release position in which it does not engage said nut, whereby movement of one of said blocking members to its release position permits free longitudinal movement of said nut with said worm member in one direction.

4,226,130

FRONT DERAILLEUR FOR A BICYCLE

Mitsuhide Isobe, Toyonaka, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

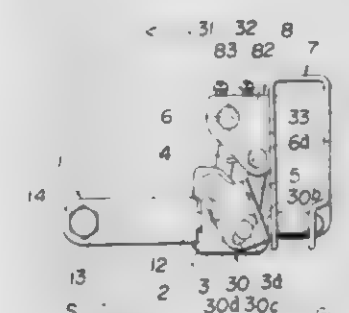
Filed Aug. 31, 1978, Ser. No. 938,692

Claims priority, application Japan, Sep. 6, 1977, 52-12035[U]; Sep. 5, 1977, 52-120236[U]

Int. Cl.² F16H 7/00, 9/00

U.S. Cl. 474—82

4 Claims



1. A front derailleur for a bicycle mounted to an upwardly extending seat tube thereof for shifting a driving chain from one of at least two gears including a larger diameter gear and a smaller diameter gear to the remaining gear comprising:

a base member fixed to said seat tube;

two linkage members fixed swingably to said base member and extending upwardly and outwardly from said seat tube; and

a movable member pivoted to said linkage members having a chain guide; said linkage members having first end portions pivoted to said base member and second end portions pivoted to said movable member, said second end portions being positioned upward from the seat tube with respect to said base member, said chain guide moving said chain

from said larger diameter gear in an upwardly convex arc, and moving said chain downwardly in a convex arc when said chain is moved from said smaller diameter gear to said larger diameter gear whereby said chain meshes with said gears with a minimum amount of contact with the sides of said gears.

4,226,131

BICYCLE REAR DERAILLEUR

Kazuto Yamasaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

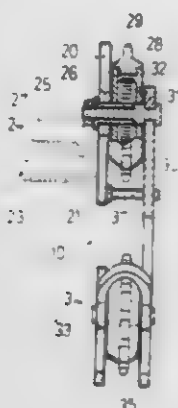
Filed Oct. 16, 1978, Ser. No. 951,798

Claims priority, application Japan, Oct. 14, 1977, 52-123829

Int. Cl.² F16H 9/00, 7/12

U.S. Cl. 474-82

5 Claims



1. A bicycle rear derailleur comprising:

- a guide pulley guard pivotally mounted on a first shaft which is support by a movable element of a shifter means connected to a mounting bracket fixedly secured to a bicycle rear wheel hub spindle;
- a coil spring surrounding said first shaft so as to urge said guide pulley guard in one direction about said first shaft;
- a second shaft supported by said guide pulley guard and spaced apart from said first shaft;
- an inner pulley rotatably mounted on said second shaft;
- a guide pulley rotatably mounted on said inner pulley;
- a flat spiral spring operatively interposed between said inner pulley and said second shaft;
- one end of said flat spiral spring being fixedly connected to said second shaft and another end of said flat spiral being engaged with said inner pulley;
- a tension link mounted at its upper end to said second shaft and rigidly connected to said inner pulley, so that the tension link together with said inner pulley are urged by said flat spiral spring so as to move in one direction about said second shaft;
- said tension link being provided at its lower end with a tension pulley guard;
- a third shaft supported by said tension pulley guard; and
- a tension pulley rotatably mounted on said third shaft.

4,226,132

REAR DERAILLEUR FOR A BICYCLE

Maaschi Nagano, Sakai, and Mitsuhide Isobe, Toyonaka, both of Japan, assignors to Shimano Industrial Company, Limited, Osaka, Japan

Filed Apr. 12, 1979, Ser. No. 29,303

Claims priority, application Japan, Apr. 17, 1978, 53/45530

Int. Cl.³ F16H 7/22

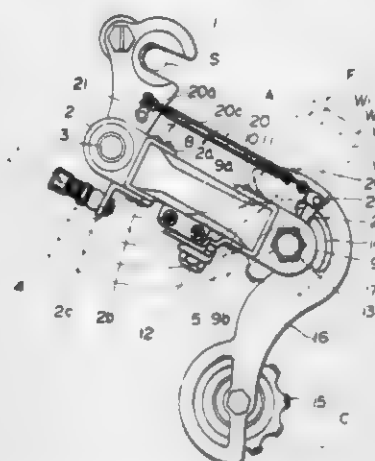
U.S. Cl. 474-82

11 Claims

1. A rear derailleur for a bicycle, which is adapted to switch a driving chain to a sprocket of a multi-stage freewheel attached to a rear hub of the bicycle, said derailleur comprising:
- (a) a fitting member fixed to the bicycle frame;
 - (b) a pantograph mechanism swingably supported to said fitting member through a first transverse shaft;
- said pantograph mechanism comprising a supporting member pivoted to said fitting member through said first transverse

shaft, two linkage members pivoted to said supporting member through first and second longitudinal shafts, and a movable member pivoted to said linkage members through third and fourth longitudinal shafts, said supporting member, two linkage members and movable member, being formed in a parallelogram, whereby said parallelogram is transformed to allow said movable member to move axially of said freewheel;

- (c) guide cages having two pulleys and being supported swingably to said movable member at said pantograph mechanism through a second transverse shaft;



- (d) urging means for urging said guide cages in the direction of applying tension to said driving chain guided by said pulley;

- (e) a holder provided between the fitting member and said pantograph mechanism,

said holder holding said pantograph mechanism in a particular position with respect to said fitting member to thereby offset the position of said movable member with respect to each of the sprockets at said freewheel, so that when said movable member is moved axially of said freewheel to switch said driving chain to one of said sprockets said movable member is moved radially of said freewheel.

4,226,133

ADJUSTABLE PULLEY CONSTRUCTION

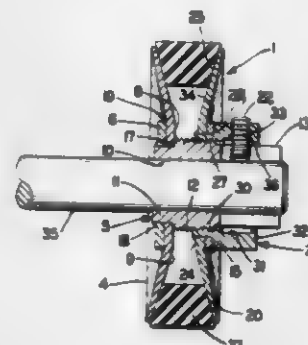
Merlin S. Hanke, 27570 French Creek Rd., Avon, Ohio 44011

Filed Jun. 15, 1978, Ser. No. 915,961

Int. Cl.³ F16H 55/36, 55/52

U.S. Cl. 474-42

6 Claims



1. Variable pitch pulley construction including:

- (a) first and second disc means having spaced, outwardly extending complementary belt-engaging surfaces;
- (b) inner hub means mounted on and extending concentrically from the first disc means, said first disc means and inner hub means being formed with a shaft-receiving bore;
- (c) the inner hub means having an externally threaded portion located adjacent the first disc means and an unthreaded outer end portion;
- (d) longitudinally extending slot means formed in the unthreaded outer end portion of the inner hub means and communicating with the bore of said inner hub means;

- (e) outer hub means mounted on an extending concentrically from the second disc means, said second disc means and outer hub means being formed with a bore axially aligned with the bore of the first disc means and inner hub means;
- (f) the outer hub means bore having an internally threaded portion and an internally unthreaded portion;
- (g) a radially extending threaded opening formed in the outer hub means and communicating with the unthreaded portion of the outer hub means bore;
- (h) single set screw means adjustably mounted in the radially extending threaded opening of the outer hub means;
- (i) the internally threaded portion of the outer hub means bore being engaged with the externally threaded portion of the inner hub means to adjustably mount the second disc means on the inner hub means of the first disc means for selectively spacing the belt engaging surfaces of the first and second disc means with respect to each other, said radially extending threaded opening of the outer hub means being adapted to be in radial alignment with the slot means of the inner hub means when the disc means are in an adjusted position;
- (j) the set screw means extending through the aligned radial opening and slot means of the outer and inner hub means and into the bore of the inner hub means for engaging a shaft extending through said inner hub means bore to mount the pulley construction on said shaft while simultaneously operatively engaging the inner hub means to prevent relative rotation between the adjusted inner and outer hub means; and
- (k) the unthreaded outer end of the inner hub means forming a slip fit telescopic engagement with the unthreaded portion of the outer hub means bore.

4,226,134

BELT PULLEY

Rüdiger Sohnle, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

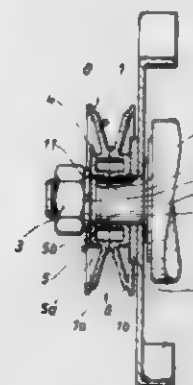
Filed Jan. 22, 1979, Ser. No. 5,486

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808332

Int. Cl.³ F16H 55/36

U.S. Cl. 474-181

6 Claims



1. A belt pulley including a hollow hub region having a central opening for receiving a shaft and an outer belt-carrying region, said belt pulley being formed by mating juxtaposition of two substantially identical pulley halves, each of said pulley halves (1a, 1b) having an inner bulge in contact with the inner bulge of the other defining said hub region;

wherein said bulges in each of said pulley halves (1a, 1b) includes

- a first, outer axially extending surface (5a) attached to said outer belt-carrying region, the first axially extending annular surface, having first end portions in contact with each other,
- a second diametrically extending outer annular surface (5b), the outer edge of which is connected to the second end portions of said first annular surface (5a) and which extends in a plane substantially parallel to the plane of the pulley, and a cylindrical axially extending inner annular surface (5c), one edge of which is connected to said sec-

ond annular surface (5b), said cylindrical inner annular surfaces (5c) of said halves being in contact with and abutting against each other, being substantially coaxial with a shaft and defining the opening for a shaft in said hub region.

4,226,135

LOAD-SPLITTING TRANSMISSION

August Winter, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

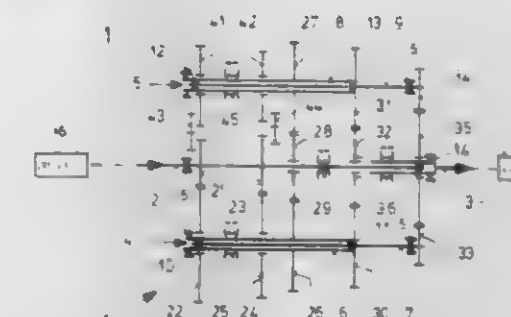
Filed Jul. 20, 1978, Ser. No. 926,288

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736929

Int. Cl.² F16H 3/08, 37/10

U.S. Cl. 74-330

10 Claims



1. A load-splitting transmission comprising:

- a central shaft having coaxial and relatively rotatable input and output parts;
- two outer shafts flanking said central shaft, at least one of said outer shafts having a tube shaft, a core shaft in said tube shaft, and means rotationally interconnecting said core and tube shafts and permitting limited relative twisting of said core and tube shafts remote from said means;
- a plurality of sets of gears each including a central gear on said central shaft and two respective outer gears on said outer shafts each meshing continuously with the respective central gear, one of said outer gears of one of said sets being on said tube shaft and one of said outer gears of another of said sets being on said core shaft;
- means for rotationally coupling one of said central gears to said output part, another of said central gears being freely rotatable on said central shaft; and
- means for transmitting torque between said input part and both of said outer shafts, whereby the torque applied to said input end is imparted to both of said outer shafts and then split therebetween by means of said other central gear and is eventually summed by said one central gear and applied to said output part.

4,226,136

GEAR DRIVE ASSEMBLY

Troy L. Porter, Wheeling, and Rudolph J. Belansky, Elmhurst, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed May 24, 1979, Ser. No. 42,167

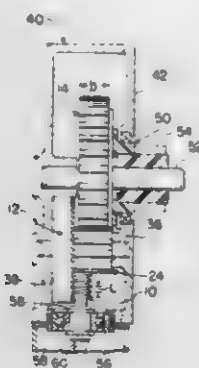
Int. Cl.³ F16H 1/16

U.S. Cl. 74-416

11 Claims

1. A compact gear drive assembly for use in a window actuator or the like comprising two gear sets, a skew axis input gear set and a parallel axis output gear set; said input gear set including a drive pinion and a face gear; said output gear set including a spur gear and an output gear; the face gear of the input gear set and the spur gear of the output gear set being coaxial and forming a cluster gear; said face gear having a base plane out of which gear teeth project; the spur gear having radially projecting teeth which extend longitudinally out of the base plane of said face gear a predetermined distance thereby overlapping the teeth of said face gear; the drive pinion having a diameter which is less than said predetermined distance; the

output gear having radially projecting teeth which are designed to mesh with and be driven by the teeth of said spur



gear, said output gear having a thickness which is also less than said predetermined distance such that the gear drive assembly has a generally flat, compact configuration.

4,226,137

SCREW AND NUT MECHANISM

Roy T. Sharp, Cheddington, England, assignor to Lucas Industries Limited, Birmingham, England

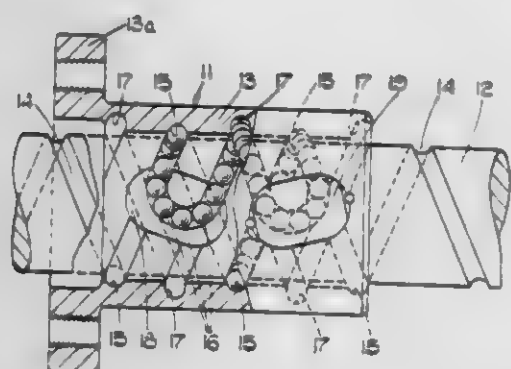
Filed Jul. 20, 1978, Ser. No. 926,242

Claims priority, application United Kingdom, Aug. 4, 1977, 32719/77

Int. Cl.² F16N 55/04

U.S. Cl. 74-459

4 Claims

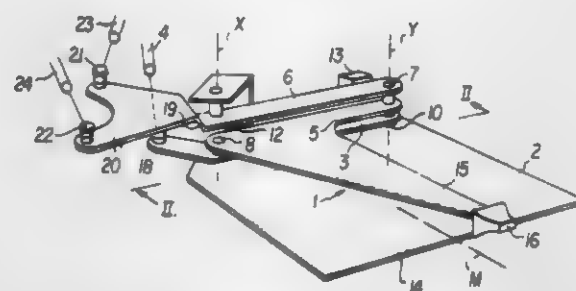


1. A recirculating ball screw and nut mechanism comprising a screw which includes a shaft having an external helical groove, a nut including a sleeve encircling said shaft, said sleeve having an internal helical groove defining with said external groove of the shaft a helical working track and balls running in said track for effecting co-operation between the nut and the screw, said balls moving from one end to the other end of said working track during relative rotation of the nut and screw and means wholly within said sleeve defining a ball return path for returning balls from said other end to said one end of the working track, said ball return path including a groove extending around an inner wall of the sleeve coaxial with the working track and between convolutions of the working track without crossing the working track, said groove having a depth greater than the diameter of the balls and the return path including a generally U-shaped region at each end for respectively diverting balls from and returning balls to the working track.

4,226,138
DEVICE FOR LEVER OPERATION OF THE AIR
CONDITIONING CONTROLS OF AN AUTOMOBILE
Pascal Ha-Pham, Asnieres, France, assignor to Regie Nationale
des Usines Renault, Boulogne-Billancourt, France
Filed Jun. 13, 1978, Ser. No. 915,235
Claims priority, application France, Jun. 13, 1977, 77 17987
Int. Cl.² G05G 9/00

U.S. Cl. 74-471 R

5 Claims



1. A multiple-command device for cable control of the air conditioning elements of an automobile comprising:
a mounting plate immovably fixed to said automobile;
a control lever;
at least one link articulated on the plate by a fixed axis serving as pivot for the lever and also articulated on the lever by an axis movable with respect to the plate and offset with respect to the fixed axis, the lever being articulated on the plate successively about said two axes by the intermediary of said at least one link;
at least one control cable attached to said at least one link;
a stop on the plate, the movable axis being rendered momentarily fixed by the stop, said at least one link coming to rest against the stop in the course of the excursion of the lever so that the movable axis becomes a new pivot for the rest of the travel of the lever.

4,226,139

VISCIOUS SHEAR DAMPERS

Imre Zilahi-Szabo, Gyor, Hungary, assignor to Magyar Vagon-
es Gepgyar, Gyor, Hungary

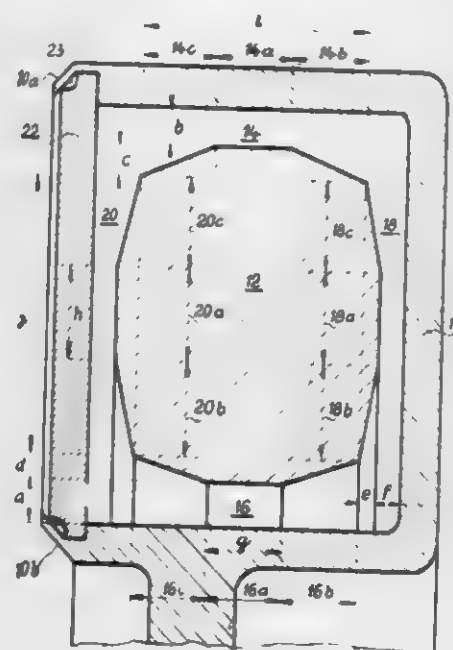
Filed Dec. 13, 1977, Ser. No. 858,907

Claims priority, application Hungary, Dec. 13, 1976, MA 2839

Int. Cl.³ F16F 15/10

U.S. Cl. 74-574

4 Claims



1. A viscous shear damper including a ring-shaped casing and a seismic mass in the form of an annular body arranged for floating in said casing, said casing and said seismic mass defining between them an outer peripheral gap, an inner peripheral gap, and a pair of lateral gaps for being filled with a viscous

fluid, all said gaps having each oppositely widening out sections on both sides of a middle portion, the widths of the gaps at their widest points being not greater than twice their widths at their narrowest points, and the middle portion of each gap being not longer than the widening out portions contiguous therewith, the annular body having convex peripheral and lateral surfaces comprising each an elevated middle portion between a pair of outwardly declining lateral portions, the declining lateral portions of the convex surfaces lying on cones having apices, the apices of the cones lying on the axis of the damper while the middle portions are cylindrical contiguous to the peripheral gaps and annular contiguous to the lateral gaps so that the annular body has altogether eight conical surfaces.

4,226,140

SELF-PROPELLED VEHICLE

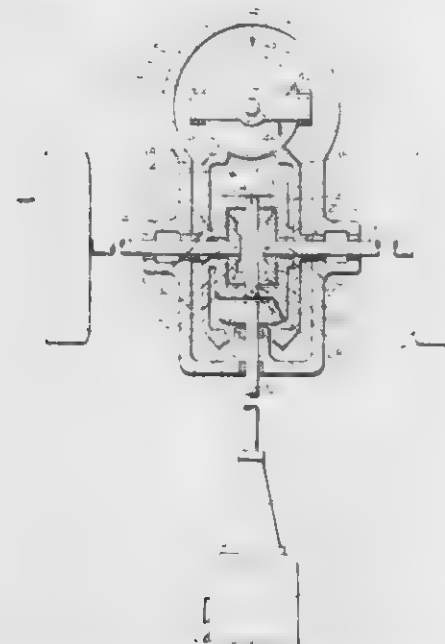
Johannes L. Gaasenbeek, 127 Glen Rd., Toronto, Ontario, Canada (M4W 2W1)

Continuation-in-part of Ser. No. 751,189, Dec. 14, 1976,
abandoned. This application Dec. 15, 1977, Ser. No. 860,875

Int. Cl.³ F16H 37/06

U.S. Cl. 74-690

16 Claims



1. A self-propelled vehicle having non-steerable ground reaction members and having a steering and propulsion drive comprising a differential gear having a rotary carrier member rotated by the vehicle engine, at least one planetary gear carried on the carrier member and rotating bodily therewith, two reaction gears meshing with the planetary gear and driving left-hand and right-hand ground reaction members, respectively, a variable-speed traction drive connected between the two reaction gears, comprising a rotatory member coupled to each reaction gear, a body of revolution, one of said body and said rotatory member being of varying diameter along its rotational axis, and means supporting the body in tractional driving engagement with the rotatory members for shifting the position of the body of revolution relative to the rotatory members whereby the tractional drive ratio between the rotatory members can be varied and whereby the vehicle can be steered by adjusting the drive ratio of the variable speed traction drive so as to adjust differentially the speeds of the two reaction gears and of the ground reaction members coupled thereto.

4,226,141

AUTOMATIC TRANSMISSION GEAR CHANGE SHOCK
REDUCTION SYSTEM PARTICULARLY FOR
AUTOMOTIVE DRIVE TRAINS

Helmut Espenschied, Ludwigsburg, Fed. Rep. of Germany, as-
signor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Ger-
many

Filed May 3, 1978, Ser. No. 902,420

Claims priority, application Fed. Rep. of Germany, Jun. 10,
1977, 2726377

Int. Cl.¹ B60K 15/00, 20/16

U.S. Cl. 74-858

2 Claims



1. In combination with a drive train system having an internal combustion (IC) engine (1) and an automatic transmission (2) coupled to the engine, means to reduce the switching shock upon gear change of the transmission comprising means (18) generating up-shift and down-shift gear change control signals; fuel supply control means (6) including timing means (60) responsive to a gear change control signal and connected to and controlling the fuel supply to the engine to inhibit fuel supply to the engine for a predetermined time interval upon sensing a gear change control signal and providing a fuel supply inhibit signal when fuel supply is to be inhibited; time delay means (62) connected to the fuel supply control means (6), said delay means being controlled by the gear change control signals and being effective upon control by a down-shift gear change control signal, but ineffective upon control by an up-shift gear change control signal to delay by a predetermined time interval inhibition of fuel supply upon down-shifting permit a speed increase of the engine just prior to engagement of a down-shift gear of the transmission to thereby stimulate a double clutching effect; and wherein the IC engine includes a carburetor an air bypass (21) in the vacuum system of the carburetor, and a controllable valve (23) in the air bypass, connected to and controlled by said inhibit signal to selectively break or hold the vacuum in the carburetor by opening or closing, selectively, said bypass to control the carburetor to be responsive to said inhibit signal to inhibit fuel supply upon sensing said inhibit signal.

4,226,142

AUTOMATIC TRANSMISSION UTILIZING A SLIDER
FOR PRESSURE DISTRIBUTION TO
SERVO-ELEMENTS CONTROLLING THE GEAR RATIO

Helmut Rembold, Moglingen, and Ernst Linder, Muhlacker,
both of Fed. Rep. of Germany, assignors to Robert Bosch
GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,997

Claims priority, application Fed. Rep. of Germany, Oct. 1,
1977, 2744286

Int. Cl.² B60K 41/04

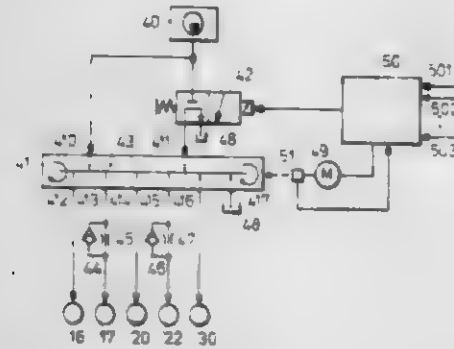
U.S. Cl. 74-867

7 Claims

1. In a transmission having gears operable in a plurality of gear ratios, a control unit (50) for furnishing gear shift control signals signifying a desired shift from a the-present gear ratio to a newly selected gear ratio, a plurality of servo-elements (16,

etc.) for controlling the engagement and disengagement of said gears in accordance with pressure applied thereto, said plurality of servo-elements including at least one servo-element to be activated during said desired shift, and a pressure source (40) furnishing a pressure medium at a main pressure:

a gear shift system comprising distributor means (41) having a first and second pressure medium intake (410, 411), a plurality of pressure medium outlets (412-416) each connected to a corresponding one of said servo-elements, and movable slider means adapted to connect the pressure medium outlet connected to said at least one servo-element



ment to said second pressure medium intake during said desired shift; moving means (49) for moving said movable slider means under control of said gear shift control signals; connecting means for connecting said first pressure medium intake directly to said pressure source; and valve means (42, 52) interconnected between said pressure source and said second pressure medium intake for regulating transmission of pressure from said pressure source to said second pressure medium intake under control of said gear shift control signals.

4,226,143

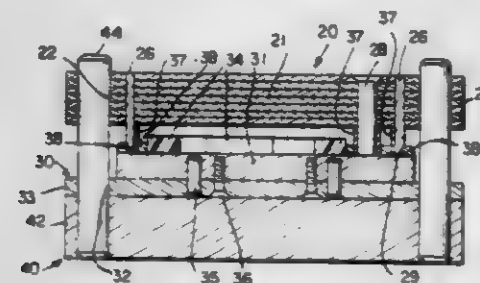
METHOD OF MAKING STEEL RULE TYPE PIERCING AND BLANKING DIES

Graydon D. Whitecotton, 791 Shallow Brook Dr., and Walley E. Whitecotton, 1316 Branch Ln., both of Columbia, S.C. 29210

Filed May 14, 1979, Ser. No. 37,511
Int. Cl.³ B21K 5/12

U.S. Cl. 76-107 C

9 Claims



1. The method of making steel rule dies, comprising forming a steel rule first die having shearing elements with shearing side faces thereon and having means for positioning the die in a holder, mounting a punch die blank on a support having means for positioning the punch die in aligned relation with the first die, applying to the shearing side faces of the shearing elements one or more layers of adhesive tape of predetermined thickness to define a clearance-producing layer thereon, providing an adherent impressionable soft layer of hardenable resin on the punch blank over areas opposite the shearing elements of said first die, said layer being of substantial thickness so as to form a die element impression defined by edge faces of substantial width, assembling the first die in aligned relation with the punch die

blank and with the shearing elements of the first die impressed deeply in said soft impressionable resin layer so as to form wide edge faces in said layer matching the faces of said clearance-producing layer of tape on the shearing faces of the first die,

hardening said resin layer with the parts so assembled so as to form a hardened impression defined by said wide edge faces,

and machining the punch blank to said hardened impression to form a punch to match said first die with clearance therefrom corresponding to the thickness of said tape.

4,226,144

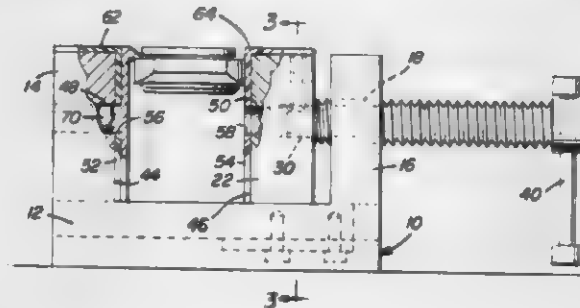
VICE WITH WATCH COMPONENT ENGAGING JAW ACCESSORIES

Larry E. Pliley, 470 S. Colorado Blvd., Suite 209, Denver, Colo. 80222

Filed Jul. 20, 1978, Ser. No. 926,402
Int. Cl.³ G04D 3/00

U.S. Cl. 81-6

2 Claims



1. A vise for assisting in performing various watch repair and maintenance functions, said vise including a pair of jaws having generally planar and parallel opposing surfaces and supported for guided relative movement toward and away from each other along a path disposed substantially normal to said surfaces, said jaws including coaxial cylindrical recesses formed therein opening outwardly of said surfaces and disposed substantially normal thereto, said surfaces having thin panel members secured thereover constructed of shape retentive, stiff but slightly deformably resilient material, said panel members including circular openings therein substantially coaxial with and the same diameter as said recesses, said openings and recesses being adapted to receive supporting shank portions of jaw accessories therein, a watch case back loosening accessory for one of said jaws, said back loosening accessory including a generally planar panel overlying the corresponding panel member and including an outwardly projecting integral shank portion removably snugly received through and in the corresponding circular opening and cylindrical recess, respectively, said panel including a marginal edge portion thereof along which a rigid outstanding lip extends, said lip projecting outwardly from said panel toward the other jaw and tapering outwardly from said panel to define a sharpened wedge member for wedging between adjacent portions of a watch back and case.

4,226,145

WIRE STRIPPER

John F. Gill, 919 Libby St., Clarkston, Wash. 99403

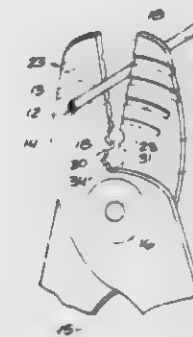
Filed Jun. 25, 1979, Ser. No. 51,849
Int. Cl.³ H02G 1/12

U.S. Cl. 81-9.5 R

5 Claims

1. A wire stripper, comprising: a pivot pin defining a fixed pivot axis; a first jaw member mounting the pivot pin and extending to one side of the pivot axis; a first handle member joined to the first jaw member and extending to an opposite side of the pivot axis;

a second jaw member mounted to the pivot pin and extending to the one side of the pivot axis; a second handle member joined to the first jaw member and extending to the opposite side of the pivot axis; the first and second jaw members having facing planar surfaces arranged perpendicular to the pivot axis to slide over one another in a shearing motion in response to pivotal movement of the handle members about the pivot axis;



oppositely facing leading edges extending substantially radially with respect to the fixed pivot axis along the first and second jaw members; an arcuate groove formed along the planar surface of each jaw member, extending along the planar surface from the leading edge thereof; wherein the grooves are formed along a single radius from the fixed pivot axis and face each other to define an opening of cross-sectional dimension substantially equal to a standard electrical wire diameter.

4,226,146

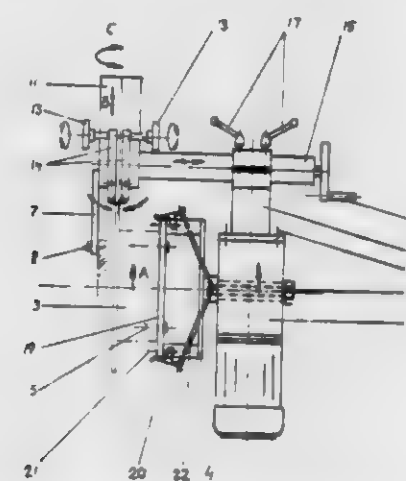
PORTABLE LATHE DEVICE

Uno Ekman, Restadvägen 12, Vänersborg, Sweden

Filed Aug. 14, 1978, Ser. No. 933,588
Int. Cl.³ B23B 5/04

U.S. Cl. 82-4 A

1 Claim



1. A portable lathe device, intended primarily for returning of brake discs and comprising a portable driving device including a drive member and a clutch device connected with said drive member, said clutch device incorporating a centering device adapted to ascertain that the driving device and the brake disc shafts are aligned, said centering device comprising a rotatable disc for mounting to the brake disc, guiding means for aligning the rotatable disc with the brake disc and clamping means for locking the rotatable disc and the brake disc in aligned position, means for attaching said clutch device to a brake disc for rotation of the disc when still mounted on a wheel shaft and from which brake disc the vehicle wheel has been dismantled, a tool holder adjacent the driving device and provided with feed means, means for attaching said tool holder to the mounting points for a dismantled brake yoke, said tool holder including two individually adjustable lathe tools intended one for each side of the brake disc and said tool holder being moveable radially relative to the brake disc and a sup-

porting arm rigidly connecting said last holder with said driving device to form an integral portable unit.

4,226,147

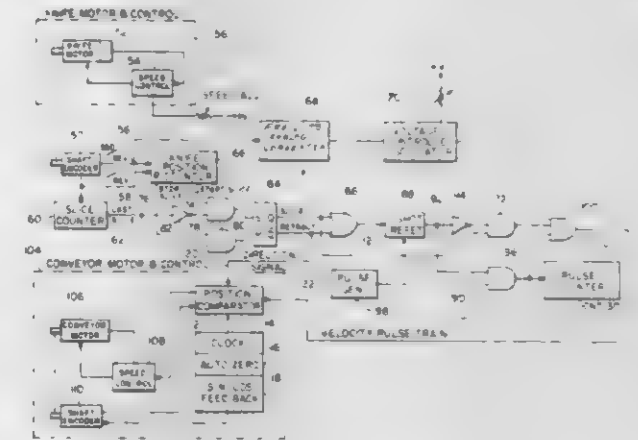
SLICE CONTROL CIRCUIT FOR A SLICING MACHINE

Theodore B. Kumzi, Oaklawn, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Oct. 27, 1978, Ser. No. 955,669
Int. Cl.³ B26D 5/30, 3/22, 1/28

U.S. Cl. 83-37

19 Claims



18. A method of intermittently slicing a product on a slicing machine having a rotating knife to produce discrete series of slices, said method comprising the steps of: advancing the product across the knife at a first rate until a predetermined number of whole slices has been cut to form a first said series of slices; interrupting slicing by retracting the product from the blade at a second rate, faster than said first rate; introducing the product to the knife by moving the product at said second rate to engage the knife with the latter in the same position relative to the product as in the start of said retracting step; and again advancing the product across the knife at said first rate whereby to form a second said series of slices, the said position of the knife at the start of said retracting step and the end of said introducing step being preselected to avoid partial, non-uniform slices at the beginning and end, respectively of said second and first series.

4,226,148

DEVICE FOR TRANSLATING AND ROTATING A CUTTING PLATEN WITH RESPECT TO A RECIPROCAL CUTTER

David J. Logan, Glastonbury, and Robert J. Pavone, South Windsor, both of Conn., assignors to Gulf & Western Corporation, New York, N.Y.

Filed May 2, 1978, Ser. No. 902,263
Int. Cl.³ A24C 1/00, 1/04; B26D 5/30

U.S. Cl. 83-71

14 Claims

1. A device for cutting a piece from a flat workpiece at a location identified by two or more binary coded numbers, said device comprising: a cutter; a cutting platen having an upper workpiece supporting cutting surface and a lower portion; a plurality of upstanding shiftable members, guide means on said platen adjacent said lower portion for loosely receiving said

members; means for moving said members in accordance with said coded numbers; and means for forcing said cutter against said cutting surface, said guide means including first, second and third guide ways on said platen, said first and second guide ways extending generally in a first direction and said third guide way extending in a second direction at a known angle to said first direction wherein said shiftable members are first, second and third drive elements slidably received in said first, second and third guide ways respectively and wherein said moving means includes first drive means for shifting said first drive element in a drive direction generally transverse to said first guide way, second drive means for shifting said second drive element in a drive direction generally transverse to said second guide way, and third drive means for shifting said third drive element in a drive direction generally transverse to said third guide way.

4,226,149

APPARATUS FOR TRANSVERSELY SEVERING OR TRANSVERSELY PERFORATING WEBS OF MATERIAL

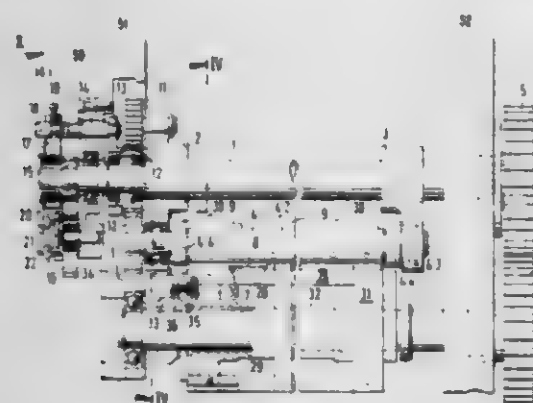
Richard Feldkamper, and Klaus Ginschel, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmoller & Holcher, Lengerich of Westphalia, Fed. Rep. of Germany
Filed May 9, 1978, Ser. No. 904,311

Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722925

Int. Cl.³ B26D 1/56

U.S. Cl. 83—305

9 Claims



1. Apparatus for selectively transversely severing predetermined lengths of web material and for transversely perforating the web materials, the web materials being preferably paper webs used in the manufacture of paper sacks, comprising:

- a frame;
- a central shaft rotatably mounted in said frame;
- end plates carried by and rotatable about said central shaft;
- a splined shaft mounted in said frame parallel to said central shaft;
- a first plurality of angularly offset tools carried by said splined shaft;
- a knife shaft rotatably mounted in said end plates parallel to said central shaft;
- a second plurality of angularly offset tools carried by said knife shaft, said first and second plurality of tools being selectively positionable to sever and perforate webs;
- a spur gear concentric with and carried by said knife shaft for rotating said knife shaft;
- an intermediate gear loosely rotatably mounted in one of said end plates for driving said spur gear;
- a central gear engaged by said intermediate gear and carried by one of said end plates, said central gear being concentric with and rotatable about said central shaft;
- a first lever having a first end connected to said central gear;
- an entrainment pin carried by a second end of said lever;
- a second lever freely rotatable about said central shaft and having a plurality of arms with openings formed therein, the angular orientation of said arms coinciding with the angular orientation of tools carried by said knife shaft, said

entrainment pin being selectively insertable into one of said openings;

- a second spur gear freely rotatable in said frame;
- a crank pin eccentrically mounted on said second spur gear;
- a third spur gear secured to said central shaft and meshing with said spur gear, the transmission ratio between said third spur gear and said second spur gear being selectable in dependence on the predetermined length to be severed;
- a pin fixed with respect to said frame for holding said central gear stationary; and
- a crank rod for selectively connecting said second lever to said crank pin and said pin.

4,226,150

DEFLECTABLE BEARER ROLL

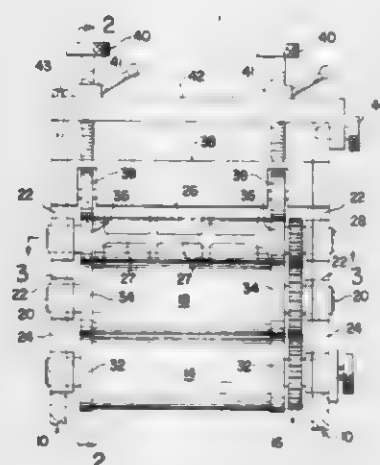
Charles F. Reed, Leroy Township, Lake County, Ohio, assignor to Avery International Corporation, San Marino, Calif.

Filed Aug. 15, 1978, Ser. No. 934,057

Int. Cl.² B23D 25/12; B26D 1/40

U.S. Cl. 83—346

8 Claims



1. A roll assembly comprising first and second rolls each having bearers at its ends in rolling contact with corresponding bearers of the other roll to establish the spacing between the rolls, the bearers of the first roll being between the bearers of the second roll and additional bearers that are on the opposite side of the first roll from the second roll, the bearers of the first roll also being in rolling contact with the additional bearers, the bearers of the first roll each comprising a radially intermediate portion, a radially inner portion rotatable with the roll, and a radially outer portion whose periphery is in rolling contact with a bearer of the second pair of rolls and with one of the additional bearers, the intermediate portion of each bearer of the first roll transmitting bearing loads between its associated inner and outer portions but being independent from each of them with respect to rotation, the intermediate portion of each bearer of the first roll including an annulus whose deflectability is relatively great as compared to the deflectability of other parts of the bearer construction, whereby application and increase of clamping-force loading on opposite sides of the bearers of the first roll by the bearers of the second roll and the additional bearers while constraining the axis of the first roll against lateral movement tends to increasingly deflect the deflectable annuli and to increasingly laterally displace the radially outer portions of the bearers of the first roll out from between the bearers of the second roll and the additional bearers to thereby increasingly diminish the spacing between the first and second rolls.

4,226,151

SLITTER HAVING ARBOR PAIRS MOUNTED ON A CASTER SUPPORTED BASE SHIFTABLE AND ORIENTABLE ALONG THE SLITTER FRAME

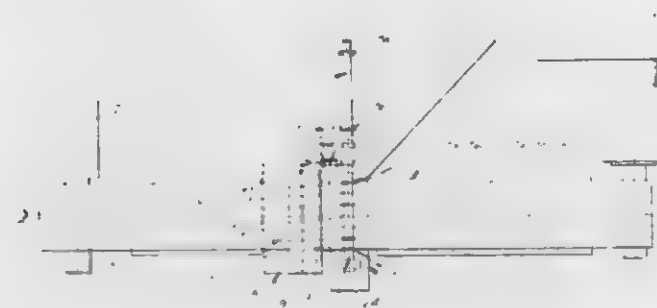
John J. Littley, Hamilton; Carl W. Koors, Harrison, both of Ohio; Richard F. Fassner, Brookville, Ind., and Frank Lengel, Cincinnati, Ohio, assignors to Cincinnati Incorporated, Cincinnati, Ohio

Filed Mar. 29, 1979, Ser. No. 24,970

Int. Cl.³ B23D 19/06

U.S. Cl. 83—479

13 Claims



1. A slitter for use in a slitting line, said slitter comprising a supporting frame having a first frame portion extending transversely of the center line of said slitting line with an inboard end to one side of said slitting line and an outboard end to the other side of said slitting line and a second frame portion extending from said inboard end of said first frame portion, said inboard end of said first frame portion and said second frame portion supporting a smooth upper surface, at least two pairs of cooperating blade carrying arbors, said arbors of said pairs each having an inboard end and an outboard end, an inboard bearing housing for each of said arbor pairs, said inboard ends of the arbors of each pair being mounted in their respective one of said inboard bearing housings, said inboard bearing housings being mounted on a common base, caster means on said base, said base and its caster means being located on said smooth upper surface of said support frame and being shiftable and positionable thereon with each arbor pair being shiftable thereby between a working position extending transversely of said center line of said slitting line and a set-up position extending away from slitting line, an outboard bearing housing slidably mounted at said outboard end of said first frame portion and being shiftable thereon between a retracted position and a position in which it engages said outboard ends of said arbors of any one of said arbor pairs when in said working position.

4,226,152

SAW GUIDE SUBASSEMBLY FOR MITRE BOX

Sylvester W. Bies, Bloomfield, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed May 29, 1979, Ser. No. 42,887

Int. Cl.³ B27G 5/02

U.S. Cl. 83—764

14 Claims

- 1. A saw guide assembly for a mitre box comprising:
 - A. a pair of saw guide elements adapted to receive a saw therebetween, said saw guide elements having vertically extending guide means on their opposed surfaces adjacent their ends;
 - B. opposed pairs of slides slidably seated on said saw guide elements and having bearing pads extending towards each other, said slides having guide means cooperating with said guide means of said saw guide elements to provide substantially aligned vertical movement of said bearing pads on said saw guide;
 - C. biasing means biasing said slides upwardly on said saw guide elements along said guide means thereof; and
 - D. means securing said saw guide elements in assembly whereby said pads are adapted to provide bearing surfaces for the associated saw received between said saw guide elements and said pads may be moved downwardly rela-

tive to said saw guide elements against the biasing pressure of said biasing means of downward pressure exerted by

the saw as it cuts downwardly into an associated work-piece.

4,226,153

COMPENSATING GLASS SCORING HEAD

Thomas A. Insolio, Bristol, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.

Filed May 17, 1979, Ser. No. 39,858

Int. Cl.³ B26D 3/08; C03B 33/10

U.S. Cl. 83—881

9 Claims



1. Apparatus for scoring sheet glass, comprising a support body adapted for relative movement in a plane generally parallel to the glass to be scored, piston means in said support body and adapted for limited reciprocating movement on a line oriented perpendicular said plane, glass scoring wheel support means reciprocally mounted in said piston means for limited movement on the same line of action as that of said piston means, a glass scoring wheel rotatably mounted in said reciprocable wheel support means for limited angular casting action on the said line of action, at least one glass contacting pressure roller mounted to said piston means for rotation on an axis oriented parallel to the axis of rotation of said glass scoring wheel and said roller axis intersecting said line of action for said piston means and said scoring wheel support means, biasing means acting between said support body and said piston means to provide a predetermined pressure for said roller to exert on the glass, and biasing means acting between said piston means and said scoring wheel support means to provide a cutting force for the scoring wheel which is independent of the

pressure of said roller on the glass and also independent of relative motion between the support body and said piston means due to unevenness in the glass surface being scored.

4,226,154

ELECTRONIC MUSICAL INSTRUMENT

Dean E. Easler, 193 Pennsylvania Ave., Medford, N.Y. 11763
Filed Dec. 4, 1978, Ser. No. 965,812

Int. Cl.³ G10H 1/36, 1/40

U.S. Cl. 84—1.01

21 Claims



1. An electronic musical keyboard instrument comprising a console including sound producing and modulating circuitry and operator actuated first switching means formed of a number of switches for controlling said circuitry and initiating production and modification of sounds, and a separate unit including a second switching means formed of a number of switches less than the number of switches of said first switching means for functionally duplicating only a portion of said first switching means for controlling said circuitry, said unit being specially adapted for operation by a physically handicapped person and being specially formed complementarily to the handicap of such person.

4,226,155

MUSIC SYNTHESIZER

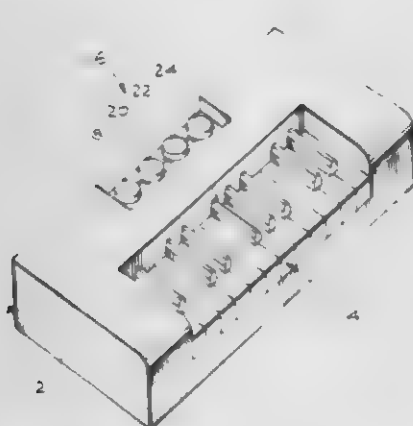
Scott A. Ferdinand, Hawthorne, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 16, 1979, Ser. No. 12,885

Int. Cl.³ G10F 1/00

U.S. Cl. 84—1.03

6 Claims



1. A music synthesizer comprising, in combination: keyboard means for entering musical notes to be synthesized into the music synthesizer; rhythm control means for selecting prestored repetitive rhythm patterns and tempos to be synthesized into the music synthesizer; single computer means comprising read only memory means and programmable processor means responsive to the keyboard means and the rhythm control means for selecting the priority of a musical note to be synthesized and for generating a binary signal and a first enable signal indicative of the frequency and amplitude respectively of the

musical note to be synthesized and for generating musical instrument signals indicative of the frequency, amplitude, and tone color of the musical instruments to be synthesized, and for combining the musical instrument signals into the rhythm patterns and tempos to be synthesized; monophonic tone generator means responsive to the binary signal for generating a first squarewave signal having the frequency of the musical note to be synthesized; tone blender and shaper means including first wave shaping means responsive to the first squarewave signal and the first enable signal for forming a first tone signal having a first predetermined wave shape indicative of the musical note to be synthesized, a second wave shaping means responsive to the musical instrument signals for forming a second tone signal having a second predetermined wave shape indicative of a drum beat of predetermined frequency and forming a portion of the rhythm pattern to be synthesized, a third wave shaping means responsive to the musical instrument signals for forming a third tone signal having a third predetermined wave shape indicative of a snare drum sound and forming a portion of the rhythm pattern to be synthesized, and means for combining the first, second and third signals into a composite signal; and speaker means responsive to the composite signal for forming sound waves comprising the preselected repetitive rhythm pattern and musical notes determined by operation of the keyboard means.

4,226,156

PERCUSSION INSTRUMENT WITH ELECTRIC PICKUP UNIT

Seiichi Hyakutake, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

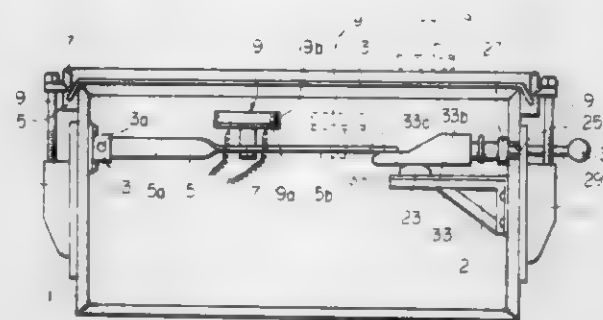
Filed Mar. 5, 1979, Ser. No. 16,957

Claims priority, application Japan, Mar. 9, 1978, 53-29083[U]

Int. Cl.³ G10H 3/14

U.S. Cl. 84—1.14

9 Claims



1. An improved electric percussion instrument, comprising: a cylindrical drum frame having an open end; a drum head made of a flexible material and covering, in a stretched state, said open end of said drum frame; a mute assembly including a rigid substrate and flexible mute element mounted on said substrate; a mechanical-electric converter embedded in said substrate of said mute assembly and including a vibration responsive pickup element; means for positioning said mute assembly in such a manner that said mute element faces one surface of said drum head; manually adjustable means for urging said mute assembly towards said drum head such that said mute element is placed in tight pressure surface contact with said one surface of said drum head; and an electric signal processing circuit coupled to said mechanical-electric converter.

4,226,157

WAVEFORM SYNTHESIS FOR AN ELECTRONIC MUSICAL INSTRUMENT

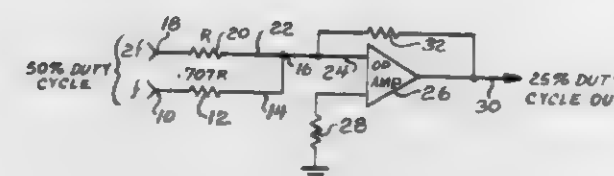
George S. Klaiber, Tonawanda, N.Y.; Anthony C. Ippolito, DeKalb, and William R. Hoskinson, Geneva, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Jun. 20, 1978, Ser. No. 917,307

Int. Cl.³ G10H 1/06

U.S. Cl. 84—1.22

10 Claims



1. In an electronic musical instrument, a first bus having a nominal footage B and carrying first rectangular waves of 50% duty cycle, a second bus having a nominal footage of $\frac{1}{2}B$ and carrying second rectangular waves of 50% duty cycle, output means, and means for combining said first and second waves as rectangular waves at relative amplitudes A and about 0.707A to said output means to produce an output wave with a harmonic spectrum of a 25% duty cycle rectangular wave of footage B.

4,226,158

DAMPER ASSEMBLY FOR KEYBOARD MUSICAL INSTRUMENTS

Eiji Kobayashi, and Hiroyoshi Takahashi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

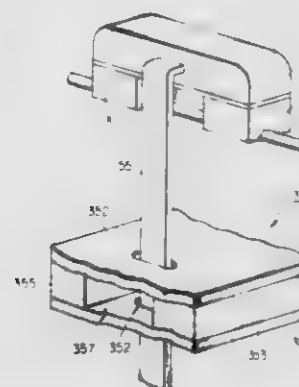
Filed Dec. 29, 1978, Ser. No. 376

Claims priority, application Japan, Jan. 14, 1978, 53/3027[U]; Jan. 14, 1978, 53/3028[U]

Int. Cl.³ G10C 3/16

U.S. Cl. 84—239

6 Claims



1. An improved damper assembly for a keyboard musical instrument comprising a vertically extending damper holder having a free bottom end which is operable by an associated key, said damper holder having one longitudinal section which is non-circular in traverse cross section, a damper head mounted on said damper holder and facing an associated string for being engagable with the string, and a fixed damper block arranged below said associated string and being provided with a respective vertical opening for said damper holder, through which said one longitudinal section of said damper holder is movable, said one vertical opening being similar in cross section to said longitudinal section of said damper holder.

4,226,159

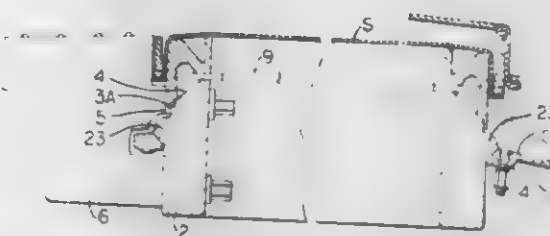
BANJO CONSTRUCTION

Charles T. Lowe, 5165 Torrey Rd., Flint, Mich. 48507
Filed Oct. 28, 1975, Ser. No. 626,235

Int. Cl.² G01D 1/10

U.S. Cl. 84—272

8 Claims



1. In a banjo construction comprising an annular banjo rim having an annular banjo tone ring mounted thereon for contacting the underside of the banjo skin, the improvement which comprises: a pair of radially extending sound conducting braces whose radially outer ends bear against said tone ring with one brace being disposed adjacent the banjo neck and the other brace being disposed adjacent the banjo tailpiece and a sound post extending between and being disposed in clamped relationship to the radially inner ends of said braces.

4,226,160

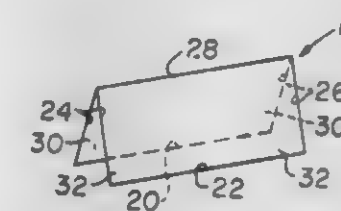
UNITARY PICK HAVING MULTIPLE PICKING SURFACES

Andrew V. Picciocchi, 208 Andrews Rd., Mineola, N.Y. 11501
Filed Nov. 13, 1978, Ser. No. 959,927

Int. Cl.³ G10D 3/16

U.S. Cl. 84—322

12 Claims



1. A pick for use with stringed musical instruments comprising: a unitary body being a substantially planar member having at least a pair of oppositely disposed edges, a resilient fold provided in said member creasing the same intermediate said oppositely disposed edges to delineate a pair of relatively spaced pick blades of said unitary body connected at and depending from said resilient fold, each of said pick blades carrying one of said oppositely disposed edges and angularly diverging from said fold relative to the other of said pick blades such that when the folded body is grasped in the area of said fold the pick blades may be varied in relative spacing and said edges are disposed in their normally spaced apart relation for multiple sequential sound-generating contact of said edges with a musical instrument string each time said pick is moved across the string.

4,226,161

ACCORDION SUPPORT APPARATUS

Elmer A. Goetsch, 3119 Grimes Ave. North, Minneapolis, Minn. 55422

Filed Sep. 21, 1978, Ser. No. 944,575

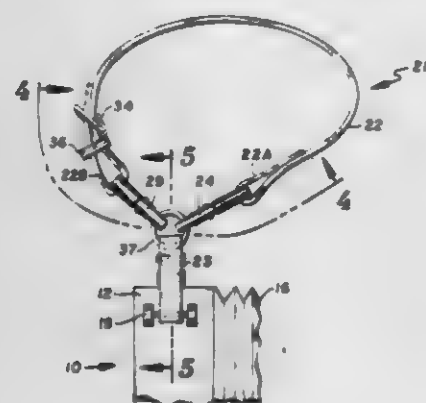
Int. Cl.³ G10G 5/00

U.S. Cl. 84—376 A

18 Claims

1. An apparatus for supporting an accordion on a player, said accordion having an upper end and a lower end, and shoulder strap means connected to the upper and lower end

adapted to be located about at least one shoulder of a player, comprising: a flexible belt adapted to surround the waist of the player, means for adjusting the length of the belt, said belt having a first end and a second end, a flexible link having a first end and a second end, means connecting said first end of the link to the lower end of the accordion to allow the link to move relative to the accordion, ring means pivotally connected to



the second end of the link allowing the ring means to pivot relative to the second end of the link, first hook means attached to the first end of the belt, said first hook means being releasably connected to the ring means, and second releasable hook means attached to the second end of the belt, said second hook means being releasably connected to the ring means whereby the belt, ring means, and link support the accordion from the waist of the player.

4,226,162

ATTACHMENT FOR MUSICAL WIND OPERATED INSTRUMENTS

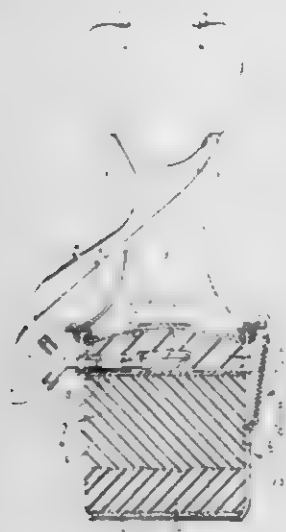
Alfred Ebach, Uthmannstrasse 26, 6502 Mainz, Kontheim, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,389

Int. Cl.³ G10D 9/06; A61B 7/02

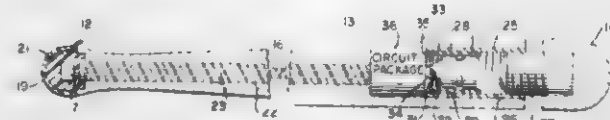
U.S. Cl. 84-400

6 Claims



1. An attachment for a musical wind instrument, such as trumpet or the like which has a bell-type end, comprising a hollow body having rigid side walls and two unobstructed open ends, one end adapted to fit within the bell-type end of the trumpet, a stethoscope having membrane means and two earpieces, said membrane means being positioned within the hollow body between the ends of said body, said earpieces being located externally of said body, the internal volume of said body not occupied by said membrane means being filled with air-permeable acoustically damping material.

4,226,163
ILLUMINATED DRUMSTICKS
James D. Welcomer, 4979 Hamilton Dr., Paxton Hollow Estates, Box 106, Harrisburg, Pa. 17111
Continuation-in-part of Ser. No. 789,628, Apr. 21, 1977, abandoned. This application Feb. 27, 1979, Ser. No. 15,817
Int. Cl.³ G10D 13/00
U.S. Cl. 84-422 S 4 Claims



1. In a slender striking device having an elongated shank for use with a percussion instrument the elongated shank having a circumference which is small relative to its length throughout its length, the combination comprising:

an impact resistant tip means for striking said percussion instrument, said tip means comprising an epoxy lens and continuing the slender striking device, said tip means having a circumference which is substantially equal to the circumference of the elongated shank,

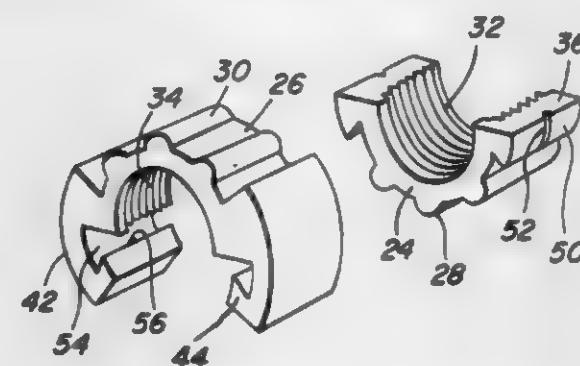
light emitting diode means within said tip for illuminating said tip,

protection means for said light emitting diode, said protection means comprising a clear epoxy potting compound filling a space between said light emitting diode and said lens, said lens, potting compound, and light emitting diode comprising a solid tip which is free of voids allowing said striking device to be used as a drumstick for repeatedly striking a percussion instrument,

a power supply for said light emitting diode, a bore in said shank and conductive means in said bore for coupling said power supply to said light emitting diode, and

means for selectively connecting said power supply to said light emitting diode.

4,226,164
SPLIT THREADED COUPLING NUT
Alton L. Carter, 325 Claremore, Corpus Christi, Tex. 78412
Filed Jan. 10, 1979, Ser. No. 2,706
Int. Cl.³ F16B 33/02
U.S. Cl. 85-33 3 Claims



1. A split threaded coupling nut comprising a pair of first and second coextensive and generally semi-cylindrical nut halves, said nut halves including exterior surface portions engageable by hand or tools to facilitate turning of said halves, together, as a unitary nut, said nut halves including coextensively threaded inner surfaces, said first nut half including arc end generally radially outwardly projecting inner lugs including first abutment surfaces remote and facing in directions opposite from the corresponding arc end faces of said first nut half, and outer surfaces extending between said arc end faces and first abutment surfaces, the arc ends of said second nut half including outer peripheral extensions projecting outwardly therefrom and terminating outwardly in radially inwardly projecting

outer lugs including second abutment surfaces remote and facing in directions opposite from the corresponding arc end faces of said second nut half, and inner surfaces extending between said second abutment surfaces and arc end faces, said first and second abutment surfaces being abuttingly engaged with each other and said first and second halves being separable upon relative shifting in axial directions, said halves being constructed of substantially rigid, but slightly resilient material, the outer surfaces of said inner lugs and the inner surfaces of said extensions including juxtaposed substantially coaxial arcuate surfaces, one set of arcuate surfaces including grooves formed therein extending circumferentially therealong and the other set of arcuate surfaces each including a central projection spaced closely adjacent the corresponding outer lug and snap seated in the corresponding groove.

4,226,165

FISHING NET

Jiro Maruyama, Hakodate, and Seiji Suzuki, Yokkaichi, both of Japan, assignors to Hakodate Seimo Sengu Co., Ltd., Japan Division of Ser. No. 752,848, Dec. 21, 1976, Pat. No. 4,139,225.

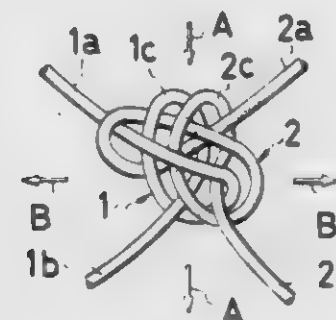
This application Nov. 30, 1978, Ser. No. 965,105

Claims priority, application Japan, Dec. 23, 1975, 50/152891

Int. Cl.³ D04G 1/02; A01K 69/02

U.S. Cl. 87-12

3 Claims



1. A fishing net having a plurality of knots formed by intertwining warps and wefts, each of said knots comprising:

- a section of said warp and a section of said weft intertwined therewith;
- opposite ends of said warp section defining first and second leg strings;
- opposite ends of said weft section defining third and fourth leg strings;
- a portion of said warp section intermediate said first and second leg strings defining a warp loop;
- a portion of said weft section intermediate said third and fourth leg strings defining a weft loop; and
- each of said leg strings extending in a different direction such that a crotch is formed between each adjacent pair of leg strings, each leg string of each adjacent pair of leg strings being separated from the remaining leg string of said adjacent pair by at least one of said warp and weft loops, said warp and weft loops running in parallel with each other.

4,226,166

CONTROL UNIT FOR THE SUPPLY OF A WORK UNIT FED IN PARALLEL FROM A HYDRAULIC STATION COMMON TO OTHER UNITS

Roger F. Frank, Cluses, France (74300)

Filed Feb. 14, 1978, Ser. No. 877,726

Claims priority, application France, Feb. 16, 1977, 77 05166

Int. Cl.³ F15B 11/16, 13/06

U.S. Cl. 91-5

5 Claims

1. In an arrangement having a plurality of hydraulically operable work units fed from a common hydraulic pressure source through parallel supply conduits, the improvement comprising:

a control unit in the supply conduit of at least one of said work units, there being a fluid distributor and a pressure

accumulator between said control unit and said one work unit;

said control unit comprising a block defining a cylinder having an inlet form and an outlet to said supply conduit, said cylinder having an obturator therein urged by resilient means to a position in which it closes communication between said inlet and outlet, said resilient means being in a portion of said cylinder comprising a first chamber defined in part by said obturator;



a relief valve in said block and a second conduit means communicating with said chamber, said outlet and said relief valve; and

opposite sides of said relief valve communicating with further conduits leading, respectively, to a return tank and to said inlet, said further conduit leading to said inlet being arranged so that pressure in said inlet tends to close said relief valve, said relief valve, when open, providing communication between said outlet and said return tank.

4,226,167

AIR-SPRING RETURN AIR CYLINDER

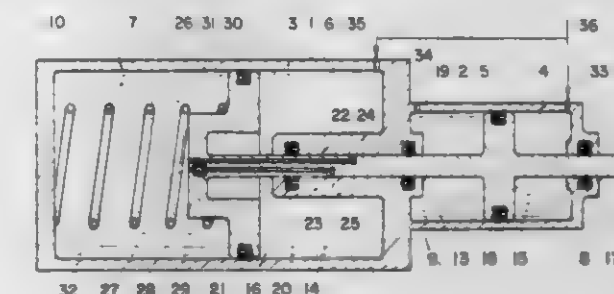
Yon S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed May 17, 1978, Ser. No. 907,030

Int. Cl.³ F15B 15/22; F01B 7/00

U.S. Cl. 91-399

4 Claims



1. An air cylinder comprising:

- a cylinder having a first cylindrical cavity engaged by a first piston and a second cylindrical cavity engaged by a second piston, said first and second pistons rigidly connected to a connecting rod engaging a hole disposed on one end of said cylinder, whereby, said connecting rod extends from and retracts into said cylinder depending on the force exerted on said first and second pistons by compressed air introduced into said cylinder; (b) a first means for introducing the compressed air into and venting from first and third compartments, said first compartment being one side half of said first cylindrical cavity divided into compartments by said first piston, and said third compartment being one side half of said cylindrical cavity divided into two compartments by said second piston; whereby the introduction of the compressed air into said first and third compartments pushes said connecting rod to one extreme position, said one extreme position being either

the fully retracted position or the fully extended position; by a second piston, said first and second piston rigidly connected to a connecting rod engaging a hole disposed on one end of said cylinder, whereby, said connecting rod extends from and retracts into said cylinder depending on the force exerted on said first and second pistons by the compressed air introduced into said cylinder;

(b) a first means for introducing the compressed air into and venting from a first and third compartments, said first compartment being one side half of said first cylindrical cavity divided into two compartments by said first piston, and said third compartment being one side half of said cylindrical cavity divided into two compartments by said second piston; whereby, the introduction of the compressed air into said first and third compartments pushes said connecting rod to one extreme position, said one extreme position being either the fully retracted position or the fully extended position;

(c) a second means for introducing the compressed air into a second compartment, said second compartment being the other side half of said first cylindrical cavity divided into two compartments by said first piston, said first means including means for preventing the compressed air entered into said second compartment from flowing out of said second compartment;

(d) a third means for venting the compressed air entered into said second compartment; said third means allowing the compressed air in said second compartment to vent only when said connecting rod is located at the other extreme position, said the other extreme position being the opposite to said one extreme position; whereby, the compressed air introduced into said first and third compartments pushes said connecting rod to said one extreme position, said one extreme position being maintained by the force exerted on said second piston by the compressed air in said third compartment, while the force exerted on two sides of said first piston by the compressed air in said first and second compartments canceling one another; upon venting said first and third compartments, the compressed air trapped in said second compartment by means of said second means pushes said connecting rod to said other extreme position, said compressed air trapped in said second compartment being vented by means of said third means only after said connecting rod is moved to said the other extreme position; whereby, said connecting rod can be easily moved back to said one extreme position again by introducing the compressed air back to said first and third compartments.

4,226,168

SPRING-LOADED BRAKE CYLINDER

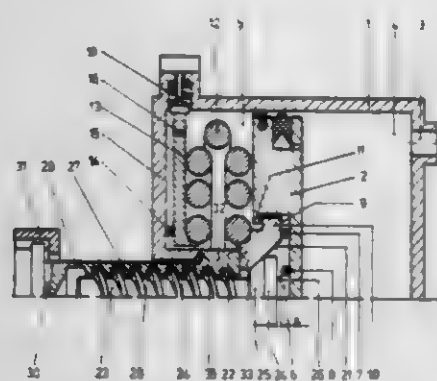
Josef Staltmeir, Bernd Woesig, both of Munich, and Julius Nadas, Echling, all of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany
Filed Oct. 27, 1978, Ser. No. 955,368

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748540

Int. Cl.³ F16J 1/10; F01B 31/00

U.S. Cl. 92—130 A

14 Claims



1. A spring-loaded brake cylinder particularly for a railway

vehicle and comprising a housing, a piston slideable within said housing, a threaded shaft and nut carried on said threaded shaft between said piston and a piston rod, said threaded shaft having a non-self-locking thread, one of said shaft and nut being rotatable and the other being non-rotatable, a loading spring within said housing having one end rotatably supportable by a portion of said housing and secured against axial displacement and a second end acting against said piston, means for coupling said spring second end and the rotatable one of said nut and shaft, said rotatable one capable of receiving a load imposed by said spring and of rotating in such a manner to permit torque to be transmitted to said housing, and rotary coupling means in the path of torque resulting from the force exerted by said spring upon said shaft and nut so that said spring and the rotatable one of said nut and shaft are free to rotate upon selective operation of said rotary coupling means.

4,226,169

ADJUSTABLE EXPANDABLE CRYOGENIC PISTON AND RING

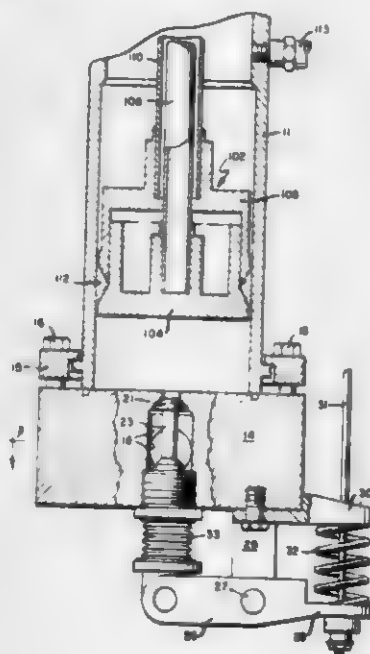
Peter O. Mazur, Aurora, and Carl B. Pallaver, Woodridge, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 5, 1978, Ser. No. 912,784

Int. Cl.³ F16J 1/06, 9/10

U.S. Cl. 92—206

2 Claims



1. In a reciprocating engine comprising a cylinder (11), a piston (102) reciprocable in said cylinder consisting of an inner portion (104) and an outer portion (106), a sealing ring (112) compressible between the inner portion (104) and the outer portion (106) of the piston (102) against the inner wall of the cylinder (11) and means for adjusting the compression on said sealing ring (112) to vary the pressure of the sealing ring against the wall of the cylinder, the improvement wherein said means for adjusting the compression is operable while the piston is reciprocating and includes a first rod (108) attached to the inner portion (104) and having a threaded upper end, a second rod (110), coaxial with the first rod (108), attached to the outer portion (106), an internally threaded sleeve (124) attached to the second rod (110) which threadedly engages said threaded upper end, an index wheel (126) including a sleeve (128) surrounding threaded sleeve (124) in mating sliding engagement therewith, the mating surface being noncircular in cross section

and permitting relative longitudinal movement therebetween and means (142) for rotating index wheel (126) whereby relative longitudinal movement of inner portion (104) and outer portion (106) of piston (102) varies the compression of sealing ring (112) against the cylinder wall.

4,226,170

METHOD FOR MANUFACTURING A LINED CONTAINER

Od W. Christensson, Veddestavägen 7 - 9, S-175 62 Järfälla, Sweden

Division of Ser. No. 871,497, Jan. 23, 1978, Pat. No. 4,184,608.

This application Oct. 18, 1978, Ser. No. 952,296

Claims priority, application Sweden, Jan. 26, 1977, 008068; Mar. 15, 1977, 028991

Int. Cl.³ B31B 7/00

U.S. Cl. 93—36.01

14 Claims



1. In a method of manufacturing a container having an outer container tube of cardboard or similar stiff material and a lining of plastic or any other easily formable material provided in the said outer container tube, one end of the container exposing an openable lining side and the opposite end intended to be filled and closed, the steps of: providing a tubular outer container blank having bottom close flaps, the combined surface of which is at least as large as the bottom surface of the container and top flaps, and the total surface of which is substantially less than the cross sectional area of the container, providing a separate linking blank in the form of an open lining blank, introducing the lining blank into the outer container blank so that the upper side thereof is positioned at or adjacent the upper edge of the container blank, pressing the lining blank from the openable side back some distance into itself to provide a lining rib extending round the openable side, and securing the lining blank in the outer container blank by folding the top flaps of the outer container blank in and securing them to the said lining rib.

4,226,171

MANUFACTURE OF PAPER TUBES

Michael Cuffe, Flat 6, 26 E. Crescent St., McMahon's Point, New South Wales 2060, Australia

Filed Jul. 10, 1978, Ser. No. 923,069

Claims priority, application Australia, Jul. 15, 1977, PD0866

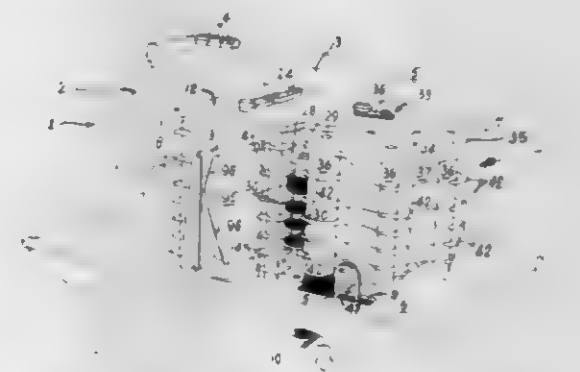
Int. Cl.³ B31C 3/00

U.S. Cl. 93—81 MT

11 Claims

1. A machine for manufacturing paper tubes comprising means for rotatably mounting a roll of paper, paper feed rollers arranged in juxtaposition to said mounting means for the roll of paper, a rotatable turret, at least one tube forming spindle carried by said turret, said turret being rotatable to move said spindle to a tube forming position; a paper drive roller in juxtaposition to the position of said tube forming spindle when in said tube forming position, said paper drive roller being normally in working engage-

ment with said spindle to engage and drive the paper between said roller and said spindle, a rotatable tube ejection means arranged in juxtaposition to said tube forming spindle, said turret being rotatable to move said spindle away from said tube forming position and out of engagement with said paper drive roller into a tube ejection position in engagement with said ejection means,



said ejection means having a surface engagable with the outer cylindrical surface of said spindle and thus with a formed tube carried thereby and moving in a direction substantially parallel to the axis of said spindle for ejection of a formed tube from said spindle, said turret then being rotatable in the opposite direction to move said spindle away from said ejection means and back to engagement with said drive roller.

4,226,172

METHOD FOR MANUFACTURING A SQUARE BOTTOM BAG

Marinus J. M. Langen, Rexdale, and Edgar H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Ltd., Toronto, Canada

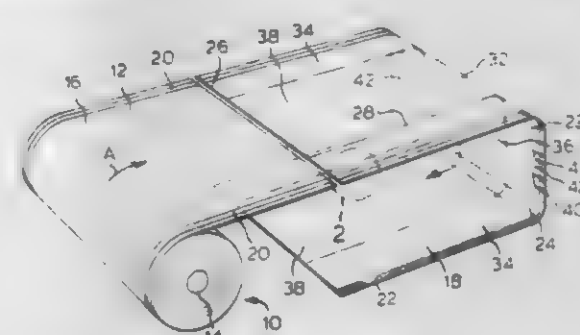
Division of Ser. No. 910,737, May 30, 1978, Pat. No. 4,184,413.

This application Dec. 13, 1978, Ser. No. 969,154

Int. Cl.³ B31B 37/02

U.S. Cl. 93—35 SB

14 Claims



1. A method of forming a square bottom bag from a bag forming section of a web of bag forming material which has a length in a first direction and a width in a second direction at right angles to said first direction and which includes a main panel extending in said first direction and bounded on either side by a side closure forming panel comprising the steps of: (a) driving said web in said first direction and bending said web upon itself across its width, as it is driven in said first direction to an open U-shaped configuration in which said main panel forms unitary, serially connected, front, bottom and back walls which are closed in the configuration which they will assume when said bag is open; (b) supporting said main panel in said open U-shaped configuration; (c) folding said side closure forming panels toward one another to an overlapping relationship and securing said side closure forming panels with respect to one another in said overlapping relationship to form side walls of a bag.

4,226,173

PROTECTIVE CAP FOR AN EXHAUST PIPE

Mostafa M. Khooropour, Oregon, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Filed May 7, 1979, Ser. No. 36,286
Int. Cl.³ F23L 17/02

U.S. Cl. 98-59

3 Claims



1. A protective cap for an exhaust pipe, comprising a generally U-shaped clamping member having a curved section disposed around the outer surface of an exhaust pipe adjacent the outer end thereof and having a pair of legs extending outwardly from the curved section, an arm, a cover secured to the arm and movable between a closed position where it encloses the outer end of the exhaust pipe to an open position, said arm including an inner section secured flatwise to the cover and lying in a substantial horizontal plane when the lid is in the closed position, said arm also including an outer section extending in a substantially vertical plane, and a twisted central section connecting the inner and outer sections, pivot means for pivotally connecting the outer section of said arm to said legs, and a stop mounted on said legs and disposed between said pivot means and said curved section in a position to be engaged by a first portion of the outer section of said arm to limit downward movement of the cover and space the cover out of contact with the outer end of the exhaust pipe when the cover is in the closed position, said stop being positioned to be engaged by a second portion of the outer section of the arm on opening of the cover to limit the open position of the cover.

4,226,174

HUMIDIFIERJames E. Vesper, 2408 Stratton Dr., Potomac, Md. 20854
Filed Nov. 8, 1976, Ser. No. 739,882Int. Cl.³ F23L 13/00

U.S. Cl. 98-109

8 Claims



1. A room humidifier of the type adapted to be secured to a vertically disposed wall register comprising substantially rectangular container means having top, bottom side, front and rear walls, said front and rear walls each having a single substantially rectangular aperture, said apertures being aligned with each other and substantially coextensive with the upper half of

said front and rear walls with the lower half of said front and rear walls in conjunction with said side walls and bottom wall defining a water reservoir, a plurality of ridges disposed on the opposing surfaces of said top and bottom walls defining vertically aligned pairs of grooves extending perpendicular to said front and rear walls, a plurality of vertically disposed ridges on the interior of the front wall beneath the aperture therein, said vertically disposed ridges being in alignment with the ridges on said bottom wall to define guide grooves which are continuous with the grooves on said bottom wall, a plurality of evaporation plates disposed in said pairs of grooves in spaced apart parallel relations to each other perpendicular to said front and rear walls, means for detachably connection said humidifier to said vertically disposed wall register and float means for indicating the water level in said container.

4,226,175

APPARATUS FOR MAKING HOT BEVERAGES

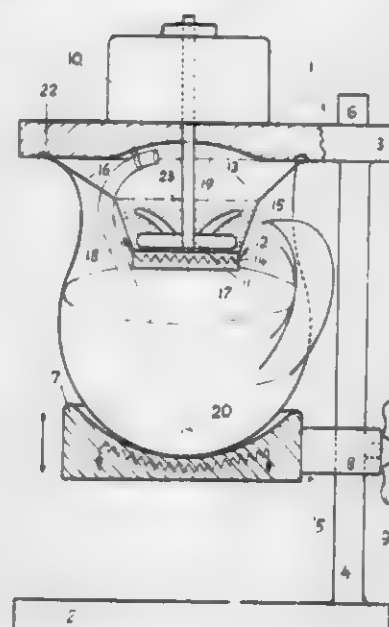
Steven D. Sandor, 19 Woodmount Crescent, Ottawa, Canada (K2E 5P9)

Division of Ser. No. 869,217, Jan. 14, 1978. This application Jan. 29, 1979, Ser. No. 7,517

Int. Cl.³ A47J 31/42

U.S. Cl. 99-286

17 Claims



1. An apparatus for making beverages from a commodity to be processed therein, comprising a pervious container (15, 115) having motivated blade means (12, 112) in said pervious container operable at selective speeds for respective roasting, grinding and stirring phases of a commodity in said pervious container;

heating means (H₂ H₃) operable to heat a commodity for roasting thereof in said pervious container;
flow means for effecting passage of a heated fluid into said pervious container to permeate through a commodity ground therein to produce a beverage flow into a flask;
whereby a commodity may be heated and roasted at a preselected low blade means speed and ground at a preselected high blade means speed and subjected to flow of hot fluid therethrough while being stirred at a preselected low blade means speed to produce a beverage flow into a flask from said pervious container.

4,226,176

BREAD TOASTER

Giannino Macchi, Via Zini n. 13, Tradate (Varese), Italy

Filed May 1, 1979, Ser. No. 34,941

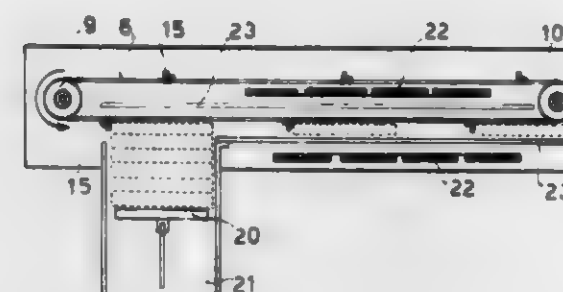
Int. Cl.³ A47J 37/08

U.S. Cl. 99-335

5 Claims

1. An automatic toaster comprising, in combination, an elongated horizontal parallelepipedal housing, said housing having adjacent one end thereof an opening for the introduc-

tion of bread slices to be toasted and adjacent the other end thereof an opening for the exit of toasted bread slices, means to insert automatically and one by one the bread slices to be toasted into said housing through the first opening from a stack of bread slices, two vertically spaced horizontal endless metal conveyor members disposed in the housing, rolls in the housing adjacent opposite ends of the housing about which said conveyor members circulate, said first opening being positioned so as to feed bread slices to said conveyor members at a location between said rolls an electric motor for driving one of said rolls in rotation to circulate said endless conveyor mem-



bers, cross members on the endless conveyor members and interconnecting the endless conveyor members to push bread slices lengthwise along the housing from the first opening to the second opening, electric resistance heating means for heating the bread slices conveyed by said conveyor members, fixed guide means to hold the bread slices out of contact with the electric resistance heating means and to position the bread slices along their path of movement from the first opening to the second opening, and time delay means for heating said heating means for a predetermined period of time prior to actuation of said motor.

4,226,177

PORTABLE GRILLING DEVICE

Klaus Schmidt, Ritterhude, Fed. Rep. of Germany, assignor to EWG Import u. Export GmbH & Co. Handelskommanditgesellschaft, Fed. Rep. of Germany

Division of Ser. No. 896,153, Apr. 13, 1978, Pat. No. 4,177,720.

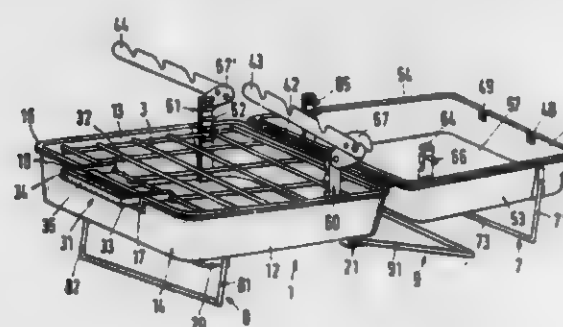
This application Apr. 2, 1979, Ser. No. 26,416

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1978, 2800857

Int. Cl.³ A47J 37/00

U.S. Cl. 99-372

7 Claims



1. A portable grill device comprising first and second bowls hingedly connected to move between an overlying closure position, a generally right angular use position, and a generally horizontal use position, a grate adapted to be connected in operational relation with each bowl, said grates being disposed in a generally coplanar attitude in the horizontal use position of said first and second bowls, a front leg bail and a rear leg bail connected to said first bowl, and a supplemental leg bail, connected to said second bowl, all said leg bails cooperating to support said first and second bowls in said horizontal use position, and said first bowl's leg bails cooperating to support said first and second

bowls independently of said supplemental bail in said right angular use position, and latch means secured to said first bowl and engageable by said supplemental bail to secure and positively latch said bowls in the overlying closure position.

4,226,178

HOT-AIR GRILLS

Hans-Juergen Geissler, Frankfurt am Main; Peter Mueller, Debring; Manfred Oppelt, Mistendorf; Horst Schoener, Bamberg, and Franz A. Stuetzer, Muehlheim am Main, all of Fed. Rep. of Germany, assignors to Rowenta-Werke, GmbH, Of-fenbach am Main, Fed. Rep. of Germany

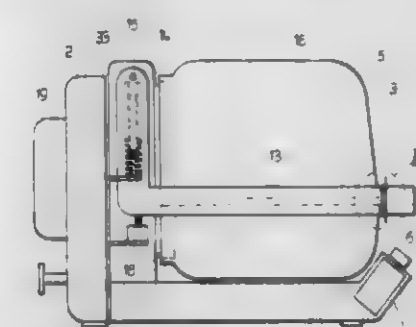
Filed Jan. 29, 1979, Ser. No. 7,534

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804817

Int. Cl.³ A47J 27/00

U.S. Cl. 99-447

7 Claims



1. In an electrical hot-air grill of a type comprising a chassis, a grilling compartment supported on the chassis and bounded by an upper shell and a lower shell, which may be separated from each other to open the grilling compartment, a blowing and heating apparatus mounted on the chassis and arranged to blow hot air into the grilling compartment, an improvement wherein the upper shell is supported removably on a frame, which is mounted pivotally to the chassis, so as to be removable from the frame without it being necessary to release a fastening element and so as to be pivotable up and down about a transverse axis, which is located so as to provide that the grilling compartment is opened when the upper shell thus is pivoted up and closed when the upper shell thus is pivoted down and that condensate dripping from the inner side of the upper shell tends to drip mostly into the lower shell but not onto outer portions of the electrical hot-air grill when the grilling compartment is opened.

4,226,179

APPARATUS FOR APPLYING SPROUT INHIBITOR

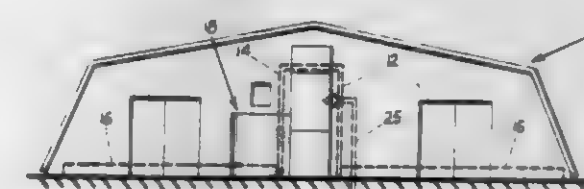
Dwight M. Sheldon, III, Richland, and F. Lee Beezhold, Seattle, both of Wash., assignors to Kenneth T. Place, Corvallis, Oreg.

Filed Nov. 15, 1978, Ser. No. 960,876

Int. Cl.³ A23B 4/04

U.S. Cl. 99-475

4 Claims



1. Apparatus for creating an aerosol of a viscous liquid chemical agent at a high volumetric rate and small aerosol particle size and applying said aerosol to the surfaces of edible produce stored in an enclosure, said apparatus comprising:

(a) chemical agent supply means for providing a chemical constituent for an aerosol, said chemical agent supply means including heater means for heating said chemical agent within said chemical agent supply means and con-

trol means responsive to the temperature of said chemical agent for automatically controlling said heater means so as to maintain said chemical agent in said chemical agent supply means at a predetermined temperature in the liquid range of said chemical agent;

- (b) atomizing means connected to said chemical agent supply means for atomizing said chemical agent into liquid droplets of different sizes having diameters both greater and less than a predetermined size, said atomizing means including ultrasonic nozzle means for mixing gas under pressure with said chemical agent and expanding the resultant mixture and means defining a resonator cavity associated with said nozzle means for ultrasonically subdividing said mixture, thereby forming said aerosol;
- (c) separator means for removing from said aerosol those droplets of said liquid whose diameters are greater than said predetermined size, said separator means comprising vertically oriented cylindrically shaped mist chamber means for containing said mixture and ambient air supply inlet duct means for introducing a supply of circulating air separate from and in addition to said gas under pressure into said mist chamber means in a tangentially entering stream, thereby causing a cyclonic circulatory pattern within said mist chamber means;
- (d) aerosol uptake conduit means located within said mist chamber means for receiving said aerosol at a position near the bottom of said mist chamber means;
- (e) scrubber means presenting a large surface area in the path of flow of said aerosol for obstructing and collecting droplets having diameters greater than said predetermined size, said scrubber means being located within said aerosol uptake conduit means; and
- (f) discharge means for connecting to said enclosure and exhausting said aerosol from said separator means into the interior of said enclosure.

4,226,180

TYPE SEPARATOR IN A HAMMER ACTUATED PRINTER

Hirotohi Matsui, Shiki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

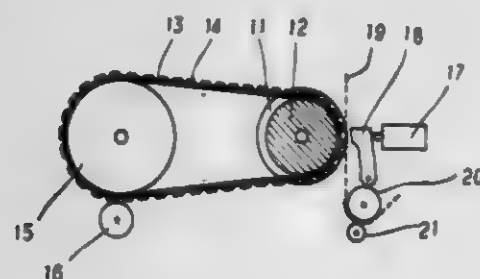
Filed Feb. 22, 1978, Ser. No. 880,092

Claims priority, application Japan, Feb. 22, 1977, 52-21661[U]

Int. Cl.³ B41J 1/20, 9/38, 27/12

U.S. Cl. 101-111

3 Claims



1. A printer comprising a printing drum, a plurality of type carrying belts secured on said printing drum, a plurality of types carried by the respective type carrying belts, a print receiving member, and a plurality of hammers for depressing said print receiving member toward said printing drum when a selected type appears at a predetermined position, comprising: a plurality of separator strips formed on the periphery of said printing drum for separating said plurality of type carrying belts from each other, said separator strips extending upwardly from the surface of said printing drum beyond the outer extremity of the types on said type carrying belts;

an idler pulley operatively disposed adjacent to and substantially parallel with said printing drum, said plurality of type carrying belts extending between said idler pulley and said printing drum;

an ink roller operatively disposed adjacent to said idler pulley for coating said types with ink; and said hammers being operatively positioned to depress said print receiving member towards said printing drum and between said separator strips to impart an image of the types thereto;

whereby said spacing strips being shaped and spaced to prevent said print receiving member from accidentally impinging upon said types while protecting the surface of said print receiving member when depressed by said hammers, and said ink roller supplying ink to said types adjacent said idler pulley to prevent linking of said spacing strips.

4,226,181

METHOD AND APPARATUS FOR ADJUSTING THE POSITION OF A STENCIL RELATIVE TO A PRINTING TABLE

Sylvie J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silk-screen Maskiner AB, Norsborg, Sweden

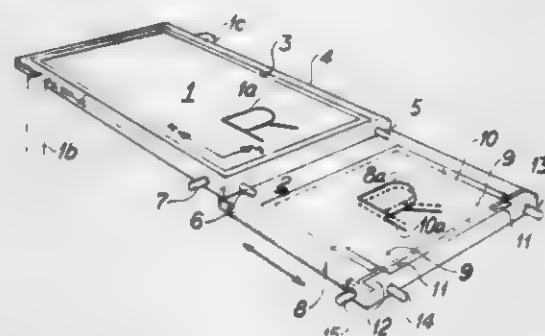
Filed Apr. 17, 1978, Ser. No. 897,743

Claims priority, application Sweden, Apr. 19, 1977, 7704459

Int. Cl.² B41F 1/34, 15/36; B41L 13/02

U.S. Cl. 101-129

5 Claims



1. A method for adjusting the position of a stencil relative to a printing table, comprising the steps of:

- (a) placing a stencil having a pattern upon a frame and providing first adjustable registering means such that the position of the stencil relative to the frame can be adjusted;
- (b) fixedly placing a reference pattern on the printing table, said reference pattern corresponding to said stencil pattern;
- (c) placing a transparent material on the printing table over the reference pattern and providing second adjustable registering means such that the position of the transparent material relative to the printing table can be adjusted;
- (d) transferring the stencil pattern to the transparent material;
- (e) adjusting the second registering means to displace the transparent material relative to the printing table so that the positions of the transferred stencil pattern and the reference pattern coincide, and measuring the amount of such adjustment; and
- (f) adjusting the first registering means by the same measured amount to displace the stencil relative to the frame in the same manner and by an amount corresponding to the displacement of said transparent material to thereby provide registration between said stencil pattern and said reference pattern.

4,226,182

SPRAYING

Kennet Danielsen, Vanløse, and Torben Nielsen, Ballerup, both of Denmark, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

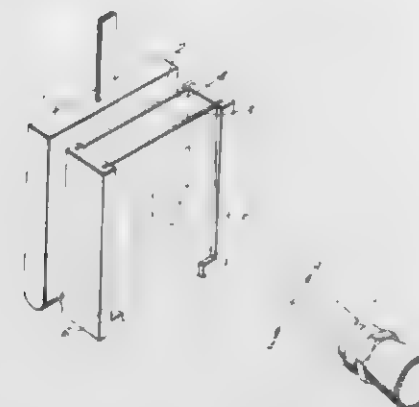
Filed Mar. 13, 1979, Ser. No. 20,139

Claims priority, application United Kingdom, Mar. 13, 1978, 9437/78

Int. Cl.² B41M 1/12

U.S. Cl. 101-129

3 Claims



1. A method of spraying a liquid to form an image on an article comprising positioning the article with the surface to receive the image substantially vertical and parallel with and spaced away from the adjacent one of a pair of stencils by a distance of 2 to 6 mm, each apertured in the shape and size of the image to be reproduced, said pair of stencils being spaced apart in parallel planes by a distance of between 2 and 8 mm, and spraying the liquid onto the article through the pair of stencils.

4,226,183

INK SUPPLY DEVICE FOR LABEL PRINTING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

Filed Sep. 5, 1978, Ser. No. 939,665

Int. Cl.² B41F 1/46, 1/50

U.S. Cl. 101-295

6 Claims



1. A label printing machine, including: a frame; a platen supported by said frame; a printing head, including type surfaces opposable to said platen; means for moving said printing head toward said platen for engaging said type surfaces against a label on said platen and for moving said printing head away from said platen; an ink supply device for inking said type surfaces; said ink supply device comprising an ink roller for being rolled over said type surfaces; an ink roller holding mechanism for holding said ink roller to rotate as said ink roller moves over said type surfaces; said means for moving being further connected with said ink roller holding mechanism for moving said holding mechanism

nism back and forth through said frame and across said type surfaces as said printing head moves toward and away from said platen;

guiding means for guiding said holding mechanism for moving said ink roller over said type surfaces with a predetermined pressure against said type surfaces as said guide mechanism also moves with said printing head; said guiding means including a guide element attached to said holding mechanism;

a guide link rockably attached to said printing head and including a guide path means for being engaged by said guide element; said guide path means being shaped and oriented for guiding said guide element and said holding mechanism attached thereto across said type surfaces and for regulating the spacing between the axis of said ink roller and said type surfaces as said guide path means is engaged by said guide element;

said guide means further comprising a first and a second spaced apart rocking link; both said rocking links having one portion pivotally attached to said printing head, and said pivotal attachments being arrayed along the direction of motion of said ink roller across said printing head types; both said rocking links having another portion pivotally attached to said guide link.

4,226,184

PRIMER

Sten H. Ljungberg, Stockholm, Sweden, assignor to Nitro Nobel AB, Gyttopp, Sweden

Filed Mar. 13, 1978, Ser. No. 885,578

Claims priority, application Sweden, Mar. 18, 1977, 7703136

Int. Cl.² C06C 5/06; F42B 3/00

U.S. Cl. 102-24 R

5 Claims



1. A primer intended to reinforce the explosive power of a detonator, comprising, a cylindrical casing having closed ends and containing an explosive, and

a device on one of said ends of said casing for centering and frictionally retaining a detonator in a predetermined position in relation to said casing,

said device having thereon a cylindrical tube extending axially of said casing with one end of said tube in communication with the bore in said casing, and with the opposite end of said tube being spaced axially inwardly from the outer end of said device and registering with a central opening in said outer end of said device, said tube having an axial bore disposed to receive and fit snugly around and envelop the peripheral surface of said detonator adjacent one end thereof so that the detonator, irrespective of its length, when retained in said tube, partly protrudes at its opposite end from said tube into direct contact with the explosive in said casing,

said device having in its outer surface an open groove for guiding an ignition fuse, which projects from the detonator that is retained in said tube, said groove communicating at one end with said central opening in said device, and with said opposite end of said tube, and extending laterally and rearwardly thereof to guide said fuse rearwardly and beneath the outer surface of said device so as to be pro-

ected thereby against external forces at least adjacent said one end of the casing.

4,226,185

PROJECTILE WITH A PAYLOAD

Bruno Tobler, Wallisellen, and Hugo Sigris, Hinwil, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

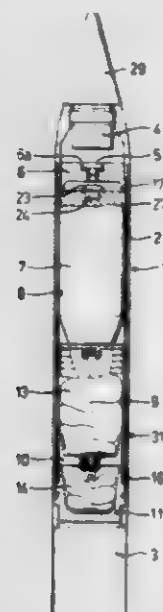
Filed Aug. 21, 1978, Ser. No. 935,701

Claims priority, application Switzerland, Sep. 2, 1978, 10720/78

Int. Cl.³ F42B 13/40

U.S. Cl. 102—35.4

8 Claims



1. A projectile for a payload, comprising:
 - a hollow projectile jacket;
 - a payload arranged within said projectile jacket;
 - said payload having opposite ends;
 - a first brake system and a second brake system arranged to one side of one end of said payload;
 - a container within which there is arranged said second brake system;
 - means for connecting said second brake system with said payload;
 - said first brake system being arranged externally of said container containing said second brake system;
 - means for connecting said first brake system with said container;
 - a first explosive charge and a second explosive charge arranged towards the other side of the other end of said payload;
 - a drive disk arranged at said other side of said payload;
 - said drive disk separating said first explosive charge and said second explosive charge from one another;
 - said first explosive charge serving for releasing said first brake system;
 - said second explosive charge serving for releasing said second brake system;
 - said drive disk, said payload, and said container with said second brake system being arranged within said projectile jacket to assume a first position lengthwise of said projectile jacket prior to ignition of said first explosive charge;
 - means provided for said projectile jacket for defining a latching location within the projectile jacket for retaining the drive disk, the payload and the container in a second position within the projectile jacket which is spaced axially of said first position lengthwise of said projectile jacket after igniting the first explosive charge.

4,226,186

SEALED-VOLUME CARTRIDGE

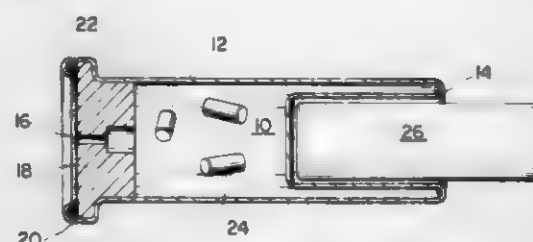
William P. Peck, La Plata, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 13, 1978, Ser. No. 950,944

Int. Cl.³ F42B 5/10

U.S. Cl. 102—38 PP

3 Claims



1. A high-pressure, sealed-volume stores-separation cartridge, which comprises:
 - a casing;
 - an ignition means, integrally connected to said casing; and
 - an ignitable main powder charge housed within said casing, and wherein said charge comprises a condensible propellant formulation consisting essentially from about 65 to about 85 weight percent of potassium perchlorate, from about 10 to about 20 weight percent of a high-energy material selected from the group consisting of light metals and light-metal compounds, and a resin binder selected from the class consisting of polybutadiene, polysulfide, and polyethylene.

4,226,187

SKI LIFT APPARATUS AND SAFETY DEVICE

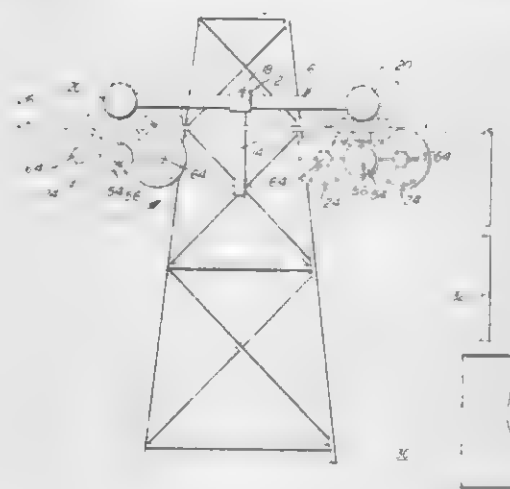
Rex E. Paulsen, Littleton, and Harold Moser, Denver, both of Colo., assignors to SDI Welding Corporation, Dillon, Colo.

Filed Oct. 23, 1978, Ser. No. 953,355

Int. Cl.³ B61B 11/00

U.S. Cl. 104—182

10 Claims



1. Ski lift apparatus comprising:
 - a main support;
 - at least one beam carried by the support;
 - a rope-carrier assembly mounted on the beam and including at least two peripherally grooved sheaves;
 - a continuous rope carried by the assembly for translation in the direction of the longitudinal axis of the rope;
 - a vehicle carrier having a generally vertical hanger bar provided at its upper end with a laterally extending hanger arm fixedly secured at its free end to the rope;
 - a rope guard mechanism including a base connected to the beam and a plurality of guard fingers movably mounted on the base;
 - the free ends of the fingers being located adjacent to the rope-carrier assembly at the side remote from the main support and overlapping and spaced laterally from the

upper outer margin of at least one of the sheaves a distance substantially less than the diameter of the rope to constitute barriers to positively prevent the rope from falling outward from the assembly;

the guard fingers lying in a generally vertical plane in the path of travel of the hanger arm and being displaceable by contact of the arm about their movable connections with the base in the direction of movement of the arm;

the base includes a bearing mounting;

an enclosure surrounds the mounting;

a rotatable shaft is journaled in the mounting;

a hub is fixed on the outer portion of the shaft; and

the guard fingers are mounted on the hub to extend radially and define a star wheel to rotate about the axis of the bearing mounting, and are resiliently connected to the hub for limited angular movement with respect to the hub in response to contact by a hanger arm.

4,226,188

SIDE BEARING ASSEMBLY

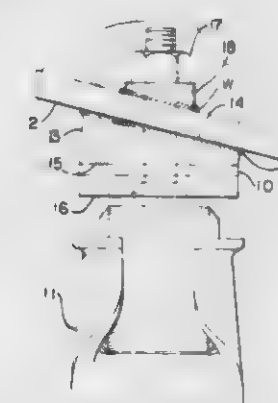
Richard C. Snyder, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Continuation of Ser. No. 711,937, Aug. 5, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,685

Int. Cl.² B61F 5/14

U.S. Cl. 105—199 CB

4 Claims



1. A shear resistant roll restraining means for arresting lateral rolling motion of a railway car having a truck including a transverse truck bolster beam, a transverse car bolster beam having divergent laterally and upwardly sloping bottom web sections, and a center bearing means pivotally coupling and supporting the car bolster on the truck bolster, the improvement comprising:
 - a side bearing means upstanding from the truck bolster and being laterally spaced from said center bearing means,
 - a wear plate assembly on said car bolster vertically aligned with and abutably engageable with said side bearing means,
 - said wear plate assembly including an alignment wedge depending from said web section and having an upper surface portion generally conforming thereto and a substantially horizontal bottom abutment surface,
 - said wear plate assembly also including a horizontally extending wear plate supported below said bottom abutment surface,
 - means defining vertically extending and aligned openings in said wear plate, said wedge and said web section,
 - fastening means removably positioned within said vertically aligned openings and securing said wear plate to said wedge in vertical load transfer relation, and
 - weld attachment means extending substantially about the periphery of said upper surface portion of said wedge and integrally uniting said wedge and said web section independently of said fastening means, thereby to eliminate bending of said fastening means due to shearing action between said wedge and said upwardly inclined web section when said horizontal bottom abutment surface of said wedge engages said side bearing means.

4,226,189

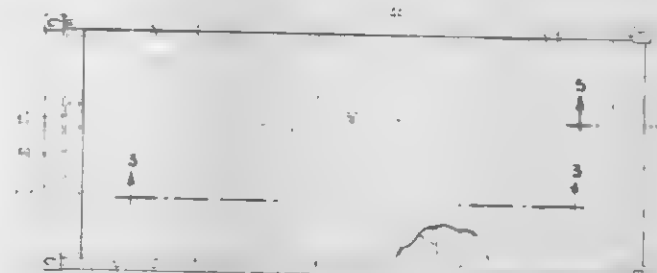
VEHICLE SIDEWALL AND ROOF CONSTRUCTION
William A. Bertolini, 115-65 Undercliff Ter., Kinnelon, N.J. 07405

Filed Mar. 20, 1978, Ser. No. 887,949

Int. Cl.² B61D 17/18

U.S. Cl. 105—423

13 Claims



10. An intermodal container including interconnected side-walls and a roof, each sidewall comprised of panels of predetermined width and a height substantially equal to that of the container, each panel including an outer steel sheet adhesively secured to an inner plywood sheet, the front edges of the steel and plywood sheets of each panel being flush whereas the rear edge of said steel sheet extends beyond that of said plywood sheet to form a recess, the front flush edges of one panel fitting into said recess of an adjacent panel to form a lap joint and vertically spaced fasteners securing adjacent panels through said lap joints, said roof including inner plywood boards of predetermined width and length substantially equal to the width of said container and a one-piece seamless water-imperious outer roof skin adhesively secured to said plywood boards substantially coextensive with said container.

4,226,190

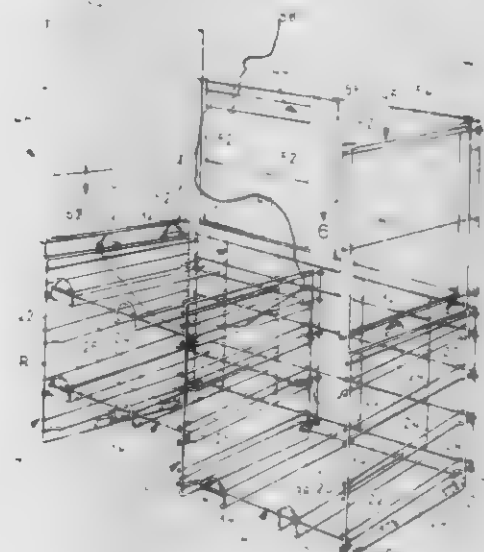
DISPLAY RACK

Richard D. A. Ashton, R.R. 1, Terra Cotta, Ontario, Canada
Filed Nov. 20, 1978, Ser. No. 962,168

Int. Cl.² A47B 7/00

U.S. Cl. 108—11

8 Claims



1. A display rack for displaying merchandise for sale, and storing additional merchandise, said rack comprising:
 - a shelving back wall;
 - at least two shelving side walls having forward and rearward edges and lower and upper edges;
 - hinge means on said rearward edges interconnecting said side walls with said back wall, whereby said side walls may be folded flat against said back wall, and may be swung apart when erected;
 - shelving support means integrally formed on one said side

walls formed by offset bend portions formed of wire rod adjacent the forward and rearward ends thereof; generally rectangular removable shelves dimensioned to fit between two adjacent said side walls when the same are in their swung apart erected position, said shelves being disengageable from said side walls and back wall for shipping and storage, and, interlock means on said shelves, at all four corners thereof, formed by wire rods defining forward hook portions at the front corners thereof, and rearward hook portions at the rear corners thereof, said forward hook portions being directed forwardly for interengagement with said forward offset bend portions, and said rearward hook portions being directed rearwardly for interengagement with said rearward offset bend portions, whereby when the same are interlocked, said shelving is firmly attached to said side walls at all four corners thereof, thereby providing a rigid three-dimensional structure, without the use of additional fastenings.

4,226,191

REMOTELY CONTROLLED ROLLER PLATFORM FOR USE IN A VISUAL AID SYSTEM

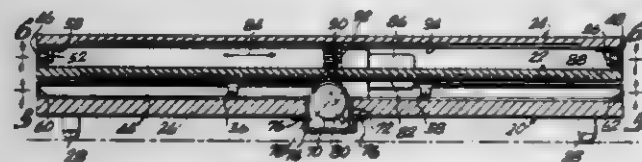
Guillermo A. Espana, Hialeah, Fla., assignor to University of Miami, Coral Gables, Fla.

Filed Feb. 26, 1979, Ser. No. 14,592

Int. Cl.² A47B 85/00

U.S. Cl. 108—20

5 Claims



1. A platform, for supporting various types of reading materials, for use in a visual aid system including a conventional type of camera for transmitting enlarged images of said printed material to a TV monitor, comprising,

a tri-level platform including a generally rectangular flat plate base, intermediate and top portions including a top surface to support the reading material relative to the camera;

first and second trolley means to respectively connect said intermediate portion to said base portion for reciprocating, longitudinal movement relative thereto, and said top portion to said intermediate portion for longitudinal movement therewith and reciprocating transverse movement relative thereto, said first trolley means comprising a pair of channel members, fixed respectively along front and rear longitudinal top edge portions of said base portion, and a pair of trolley rollers in a predetermined spaced apart relation engaged in each of said channels and suspended from confronting longitudinal bottom edge portions of said intermediate portion; said second trolley means comprising a second pair of channel members, fixed respectively along a pair of opposed transverse top edge portions of said intermediate portion, and a second pair of trolley rollers in a predetermined spaced apart relation, engaged in each of said transverse edge channels, suspended from respective confronting transverse edge portions of said top portion;

a first reversibly electric gear motor, mounted to said base portion and including a pinion gear in driving engagement with a first gear rack, extending longitudinally along an underside of said intermediate portion to transmit relative longitudinal movement to said intermediate portion;

a second reversible electric gear motor mounted to said base portion, and including a pinion gear in driving engagement with a second gear rack extending transversely along an underside of said top portion to transmit relative transverse movement to said top portion, said second gear

rack being of a longitudinal width so as to accommodate said longitudinal movement of said intermediate portion; remote control means operably connected to said first and second gear motors.

4,226,192

PALLET FOR TRANSPORTING AND DISPLAYING MERCHANDISE

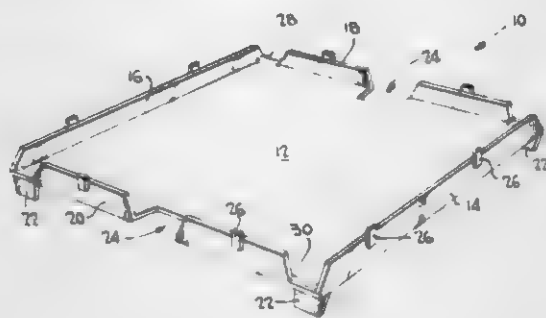
Douglas R. Myers, 5348 Norbeck Rd., Rockville, Md. 20853

Filed Jan. 5, 1979, Ser. No. 1,385

Int. Cl.² B65D 19/18

U.S. Cl. 108—53.1

6 Claims



1. A pallet for receiving and stacking products for storage, shipping, and advertising, said pallet comprising a generally rectangular base, product retaining sides along all edges of said base and extending upwardly therefrom and including first and second retaining sides, feet extending downwardly from about one-half inch to one and one-half inches from said base for supporting said base upon a supporting surface for receiving therebeneath a lifting element, said feet being elongated along two remote sides of said base and arranged in two pairs, the feet of each pair being elongated parallel to said first retaining side and lying in a common general plane, and said first retaining side being terminated at opposite ends thereof in spaced relation adjacent said second retaining sides to provide clearances for said feet, with said feet being spaced inwardly from one adjacent edge of said base a distance at least equal to the thickness of an adjacent one of said retaining sides and said base having a recess located adjacent each end of said first retaining sides to receive a foot of a like pallet stacked thereon, said rectangular base having a length on at least two opposite edges thereof between said feet sufficient to receive a hand-truck, and said feet extend below said base a distance greater than the height of said retaining sides.

4,226,193

SHELF ASSEMBLY

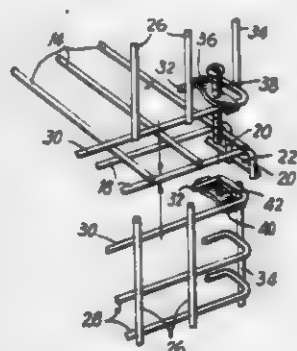
Alvin Gindel, Brookville, N.Y., assignor to Alsy Manufacturing Inc., Hicksville, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,725

Int. Cl.² A47B 55/02

U.S. Cl. 108—111

25 Claims



1. A shelving assembly having at least one horizontal wire shelf, and vertical supports, both formed of intersecting wires secured together and said shelf comprising: a pair of closely-spaced transverse connection ribs at opposite ends of each said

wire shelf; a pair of vertical supports for each said wire shelf and each support having a transverse connection rib on at least one of its ends, distal end portions of said transverse connection rib of said vertical supports being bent so as to be disposed parallel to the adjacent portion of said transverse connection ribs; pairs of clamping means having apertures adapted to secure together each of said pair of transverse connection ribs of a wire shelf to a transverse connection rib and the distal ends thereof of each said vertical support; each of said clamping means comprising first and second clamps and fastener means, said first clamps being positioned on and bridging across each said pair of transverse connection ribs of said wire shelf, the second clamps being positioned on and bridging across said transverse connection rib and said distal end portions thereof of each said vertical support, and said fastener means passing through said clamping means and urging said first and second clamps tightly together in a generally parallel relation so as to form an overall rigid and sturdy shelf structure.

4,226,194

METHOD OF IDENTIFYING A THIEF AND STOLEN ARTICLES

Donald T. Grahn, 6551 - 45th Ave. N.E., Seattle, Wash. 98115

Filed Feb. 12, 1979, Ser. No. 11,092

Int. Cl.² G08B 15/02

U.S. Cl. 109—25

13 Claims

1. A method of chemically labeling an article with an imperceptible latent color reagent whereby said article may be subsequently distinguished from similar articles not so labeled comprising contacting at least a portion of said article with an effective amount of a material selected from the group consisting of ninhydrin and hydriindantin and mixtures thereof.

4,226,195

WATER HEATING STOVE

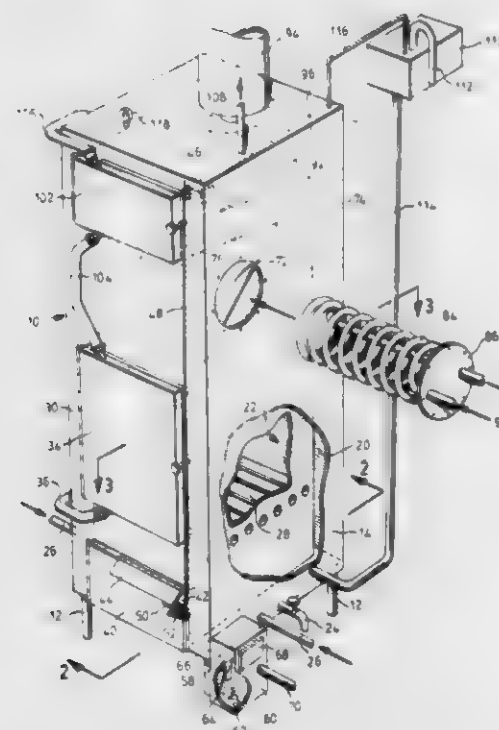
Martti K. Lindroos, Birch Hill Rd., R. 2 Sudbury, Ontario, Canada (P3E 19M)

Filed Dec. 22, 1978, Ser. No. 972,224

Int. Cl.² F23G 5/00

U.S. Cl. 110—234

8 Claims



1. A water heating stove for supply of hot water to circulating hot water heating systems, comprising:

a fire box having a fire supporting grate therein, a fuel loading aperture in a front wall thereof and a flue outlet for exit of combustion gases therefrom;

a water jacket lining the rear and side upright walls of said fire box;

inlet and outlet means for circulating water into and out of said water jacket;

a fuel loading door adapted to close the fuel loading aperture to prevent ingress of combustion air through the said aperture;

a combustion air inlet in the fire box and disposed at a level below the fuel loading door, said combustion air inlet being equipped with damper means adapted to adjust air flow therethrough, said damper controlled air inlet comprising the sole substantial inlet for combustion air to the fire box when the fuel loading door is closed;

a bottom wall of said fire box, below the fire supporting grate, shaped to provide a lowermost zone for collection therein of liquid residues and condensates from the fire box;

an outlet conduit having an inner end communicating with said lowermost zone inside the fire box and an outer end disposed exteriorly of the fire box and at a level below that of the inner end;

a water trap into which the outer end of said outlet conduit protrudes, said outer end being disposed below the water level in said water trap, substantially to prevent access of air to the fire box through said outlet conduit.

4,226,196

TUFTING MACHINES

David Booth, Brighouse, England, assignor to Firth Carpets Limited, Brighouse, England

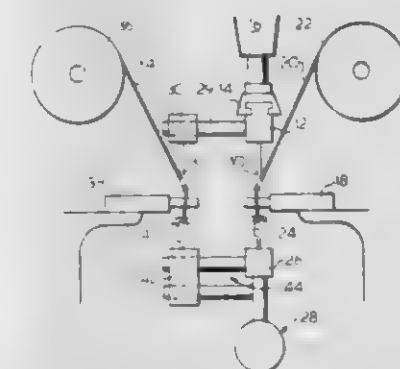
Filed Apr. 6, 1979, Ser. No. 27,720

Claims priority, application United Kingdom, Apr. 14, 1978, 14698/78

Int. Cl.² D05C 15/00

U.S. Cl. 112—79 R

9 Claims



1. A sliding needle bar tufting machine characterized by a pair of needle bars, a single row of needles carried by each needle bar, a pair of looper bars, a single row of loopers carried by each looper bar for co-operating with a respective one of said rows of needles, and means mounting said needle bars and said looper bars for adjustment of said bars in a warpwise direction thereby to permit corresponding warpwise adjustment of the spacing respectively between the two rows of needles and the two rows of loopers.

4,226,197

SEWING MACHINE WITH EDGE GUIDE

Konrad Pollmeier, Bielefeld, and Wilhelm Theising, Halbach, both of Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,807

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710418

Int. Cl.² D05B 19/00, 35/10

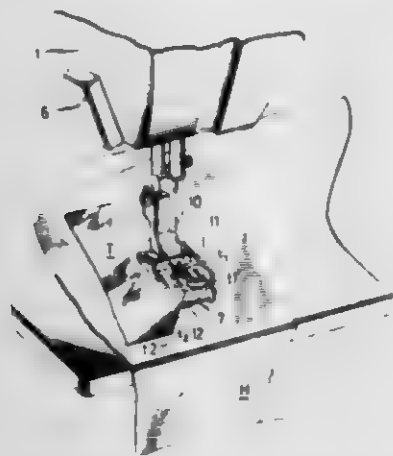
U.S. Cl. 112—121.11

8 Claims

1. A sewing machine for the edge-parallel stitching of a workpiece having a pair of angularly adjoining edges, said sewing machine comprising:

a sewing machine head having a needle adapted to stitch a seam in said workpiece along each of said edges upon

displacement of said workpiece past said needle at a stitching location;
 an edge guide engageable with the edges of said workpiece for guiding same past said location;
 reflection sensor means on said sewing machine head trained at a location ahead of said stitching location;
 control means responsive to said sensor means for stopping



said needle in said workpiece upon a completion of a seam along a first edge of said workpiece, thereby facilitating the turning of said workpiece to align a second edge with said edge guide; and
 a lug having a reflective upper surface extending transversely from said edge guide ahead of said needle and covered by said workpiece until exposed to activate said sensor.

4,226,198

DEVICE FOR THE CONTOUR SEWING OF WORKPIECES

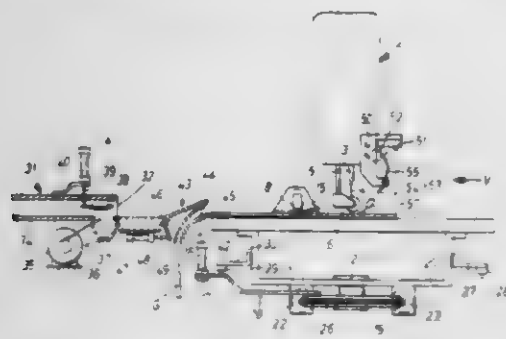
Kurt Petry, Stelzenberg, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany
 Filed Sep. 6, 1979, Ser. No. 73,111

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 3842993

Int. Cl.² D05B 21/00, 23/00, 33/00, 27/00

U.S. Cl. 112-121.12

6 Claims



1. A device for use with a motor driven sewing machine having a reciprocating needle which in moving from an upper to a down position penetrates a workpiece which is fed over a support past and in contact with a guide edge disposed alongside the needle to form a plurality of different seam lengths at diverse angles to each other, comprising a stacking device adjacent the support having means for feeding the workpieces into a stack, turning means associated with said sewing machine and disposed alongside said support including a member movable through a path to engage the workpiece and turn it about the axis of the needle when the needle is in a down position engaged in the workpiece so as to position the workpiece in respect to the guide edge for sewing of the next seam length, and a rail switch disposed between said stacking device and said turning means and said support having a first switch position defining a path over which the material is fed to said stacking device and a second switch position defining a path over which said material is delivered to said turning means and

means connected to said rail switch and said end of sewing machine for changing the rail switch position.

4,226,199

SEWING MACHINE SIX MOTION WORK FEEDING MECHANISM

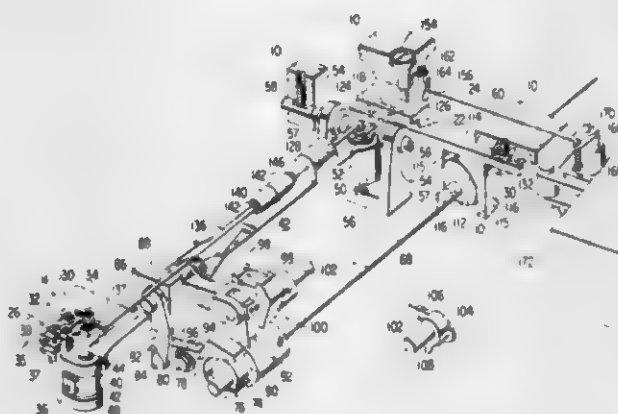
Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 6, 1979, Ser. No. 100,762

Int. Cl.³ D05B 27/00

U.S. Cl. 112-306

6 Claims



1. A work feeding mechanism for a sewing machine having a work supporting bed with an axis along its length, a throat plate having a set of mutually orthogonal feed dog accommodating slots defining mutually perpendicular directions of work feeding along the surface of said bed, said directions comprising a longitudinal direction of feeding extending in a direction transverse to the axis along the length of said bed, and a lateral direction of fabric feeding perpendicular to said longitudinal direction, an elongated feed bar carried beneath said bed and extending substantially along the length of said work supporting bed, a feed dog bracket pivotally supported at one extremity of said feed bar including a feed dog having a set of mutually orthogonal work engaging teeth positioned to be accommodated within said feed dog accommodating slots and slidable means for supporting said feed dog on said bracket wherein said feed dog is constrained to slide along a line extending parallel to said axis of said bed,

gimbal means having a vertical axis pivot, said gimbal means fastened to said feed bar and supporting the extremity of said feed bar opposite the extremity having said feed dog pivotally fastened thereto to permit said feed dog to be driven in said longitudinal direction transversely across said bed and in a direction above and below said throat plate,

a feed bar drive mechanism operable in timed relation to said sewing machine for imparting oscillations to said feed bar about said gimbal means in mutually perpendicular directions, including said longitudinal direction transversely across said bed to provide work advancing and return movements to said feed dog, and in said direction above and below said throat plate to raise said feed dog to a position above said throat plate during work advancing movement and to drop said feed dog below said throat plate during the return movement thereof,

means driven by said feed bar drive mechanism for imparting oscillatory motion to said feed dog along said line constrained by said slidable means and extending parallel to said axis of said bed, and

adjustable control means responsive to electrical signals for varying the amplitude and direction of oscillatory motion imparted to said slidable means by said oscillatory drive means.

4,226,200

AUTOMATIC TRANSMISSION CASING

Kunio Morisawa, and Tatsuo Kyushima, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

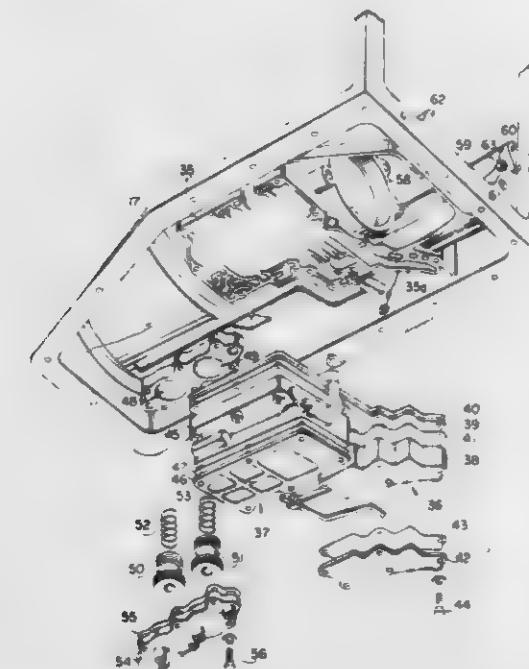
Filed Jun. 5, 1978, Ser. No. 912,838

Claims priority, application Japan, Jan. 30, 1978, 53/9093

Int. Cl.² F16H 37/08, 57/02

U.S. Cl. 74-606 R

9 Claims



1. An automatic transmission, comprising:

- (a) a casing with an integral grooved portion comprising a plurality of oil passage circuits;
- (b) a changeover gear mechanism, supported within the casing and including a plurality of oil pressure operated servo mechanisms, which provides various speed stages in accordance with variation of supply of oil pressure to the servo mechanisms;
- (c) a first valve body member directly engaged with a first part of the grooved portion and which incorporates a manually controlled shift valve which when operated varies supply of oil pressure to the servo mechanisms and changes over the speed stages manually; and
- (d) a second valve body member directly engaged with a second part of the grooved portion and which incorporates a plurality of hydraulically operated control valves which shift in accordance with supply of oil pressure, and which by shifting varies supply of oil pressure to the servo mechanisms and change over said speed stages automatically.

4,226,201

EQUIPMENT FOR FORMING CAN BODIES

Yuzo Takahashi; Yoshinari Maeda; Yasuyuki Tanaka; Kastumi Nagai, and Shiro Oyama, all of Iwazuki, Japan, assignors to Hokkai Can Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,619

Claims priority, application Japan, Mar. 14, 1978, 53-29435

Int. Cl.² B21D 51/26

U.S. Cl. 113-12

3 Claims

1. A can body forming equipment comprising:
 a continuous length of can forming cylinder;
 a forming section provided at the starting end of said cylinder;

said forming section being provided with a can body blank feeding mechanism which feeds said blank into a position around the outer periphery of said cylinder to form the same into a roughly cylindrical body with opposite ends of said blank positioned proximate each other at a lower part of said cylinder,

a bending section provided somewhat spaced apart from said forming section;
 said bending section being provided with a stationary die internally of said cylinder at a lower part thereof and with a movable die externally of said cylinder and directly below said stationary die, the lower end face of said stationary die and the upper end face of said movable die being tapered inwardly of said cylinder to such an extent that said opposite ends of said roughly cylindrical body are slightly bent inwardly;
 a heating section provided somewhat spaced apart from the preceding bending section;
 said heating section being provided with high-frequency induction heating coils at positions corresponding to said opposite ends of said roughly cylindrical body, those portions of said coils corresponding to the corner portions of said opposite ends being spaced apart from said ends by a larger gap than that corresponding to the center portions of said ends;
 a can body completing section provided at the ending end of said cylinder;



said can body completing section being provided with a spline cut in the underside of said cylinder and having a length corresponding to the length of the can body, said spline being provided therein via a heat-insulating material with a cooling and pressure-receiving part which has a coolant passage and has its lower end face exposed outside,

a vertically movable hammer being provided directly beneath said lower end face of said pressure-receiving part, said hammer having a recess in which a striking part having a coolant passage is provided via a heat-insulating material;

said cylinder having an outwardly extending mechanism on both lateral sides thereof in said completing section, and pushing members being provided on the opposite sides of said cylinder externally thereof;

feeding pawl members for advancing said roughly cylindrical body to the respective succeeding steps being provided freely projectably at each advanced end of said forming section, bending section, heating section and can body forming section of said cylinder.

4,226,202

FLOATING LASH BARGE LIFTING DEVICE

Edward G. Conrad, P.O. Box 133, Marrero, La. 70073

Filed Nov. 23, 1977, Ser. No. 854,493

Int. Cl.² B63C 1/02

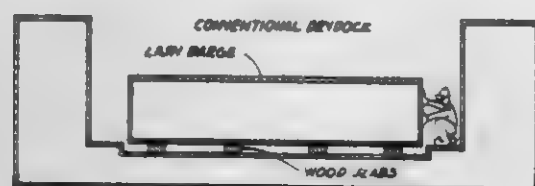
U.S. Cl. 114-48

19 Claims

1. A floating lifting device for a floating LASH barge, which as a hull with sides and a bottom, said device comprising:

(a) a hull including:

- (i) a pair of longitudinally extending, laterally spaced buoyant hull members,
- (ii) cross-beam means rigidly interconnecting the two buoyant hull members below where the cross-beams would interfere with ingress to and egress by the floating vessel from where the floating vessel is when it is lifted;
- (b) a carriage configured to support the floating LASH barge from the bottom thereof being provided on the hull of said floating lifting device;
- (c) a set of four upstanding posts mounted on the carriage (a) in a rectangular array which is congruent with the array of stacking post sockets conventionally provided on the hull bottoms of LASH barges;
- (d) an elevating means interposed between the carriage (b)



and the hull (a) and being configured to raise and lower, and support the carriage (b) upon the hull (a), between

(i) a fully lowered condition in which the carriage (b) is so low relative to the hull (a) that, although the floating lifting device is riding high because it is not weighted down with supporting an object floating vessel, an object floating vessel may be brought thereover without interference therewith to and from where the floating vessel is when it is lifted, and

(ii) a fully raised condition in which the carriage (b) is so high relative to the hull (a) that, although the floating lifting device is riding low because it is supporting the object vessel which had been floating, the object vessel is raised sufficiently to permit above board access for repair to such portion of said object vessel as may be in need thereof.

4,226,203

FLOATABLE CONCRETE PALLET FOR LIFTING AND BEARING HEAVY LOADS

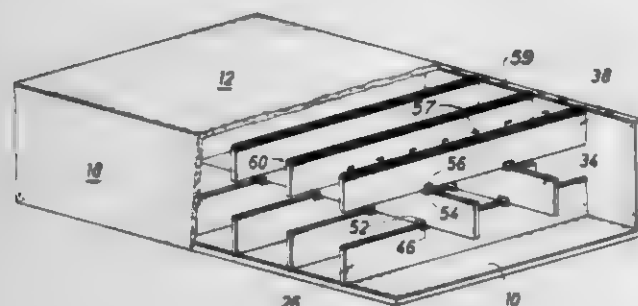
Benjamin G. Marcia, Houston, Tex., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sep. 25, 1978, Ser. No. 945,269

Int. Cl.³ B63B 5/14

U.S. Cl. 114—65 A

8 Claims



1. The method of making a floatable pallet for lifting heavy loads, which comprises precasting in prestressed concrete a plurality of substantially identical elongated elements for each layer of the superstructure of the pallet, said elements having cast therein connectors for joining the elements to adjacent structures, casting and joining a concrete bottom slab to a row of parallel aligned and edgewise elements comprising the bottom layer,

edgewise elements in layers starting with a layer on top of said bottom layer, the elements of each successive layer being transverse with the elements therebeneath, casting and joining concrete vertical bulkheads to the ends of said elements and to said bottom slab, and casting and joining a concrete top slab to the top edges of the elements in the top layer of elements and to the top edges of said vertical bulkheads.

4,226,204

OFF-SHORE MOORING DEVICE FOR A LARGE-SIZED FLOATING BODY

Samuel Tuson, Mesnil-le-Roi, France, assignor to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H., France

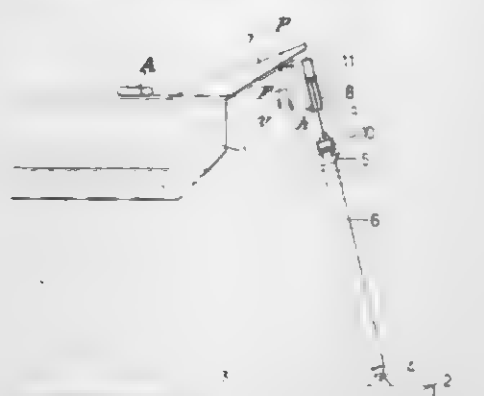
Filed Dec. 22, 1977, Ser. No. 863,325

Claims priority, application France, Dec. 24, 1976, 76 39081; Dec. 14, 1977, 77 37690

Int. Cl.² B63B 21/00

U.S. Cl. 114—230

5 Claims



1. An off-shore mooring device for a large-size floating body with an anchoring system for anchoring the floating body to the sea bed, comprising: a mooring head located above sea level and rotatably mounted at the upper end of a column-like structure, the latter being connected at its other end to said anchoring system by means of a universal joint; a rigid arm fixedly secured to said floating body to overhang in an out-board fashion therefrom; and a pulling force generator providing a vertical force component adapted to act substantially upwardly upon said mooring head and which is impressed on said floating body, said force generator comprising at least one hydraulically operated piston-and-cylinder linear actuator with a selectively adjustable fluid feed pressure, wherein said actuator is pivotally coupled to the free end of said rigid arm and adapted to be removably connected to said mooring head so as to draw said free end towards said head or withdraw it therefrom.

4,226,205

AUXILIARY SUBMERSIBLE FOR DEEP-SEA WORK

Paul Bastide, 108 rue de Rennes, Paris, France

Filed Feb. 15, 1978, Ser. No. 877,846

Claims priority, application France, Feb. 17, 1977, 77 04473

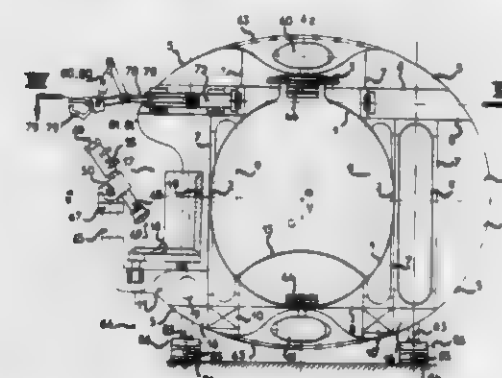
Int. Cl.² B63G 8/08

U.S. Cl. 114—337

13 Claims

8. A submersible comprising a thick hull which consists, firstly of a main body formed from two hemispherical elements interconnected by a circular-base cylinder having a longitudinal axis, and secondly a system of four identical strong cylinders disposed so as to be capable of being used as trim or list correction tanks and as submersible compensation tanks, a lightweight body, which particularly contains driving ballasts, completely surrounding the main body of the thick hull and having an external shape which is rounded throughout and completely smooth, the only discontinuity in the outline being, firstly in the extreme forward part of the submersible and, secondly, on the longitudinal side walls, and finally on the top

and bottom walls, in the form of a plurality of recesses which are open to the exterior as widely as possible and are connected at their periphery to the outer part of the lightweight hull of the submersible by connections of very rounded shape; said



submersible including two main propulsion and steering devices and two additional propulsion and steering devices, each of said propulsion and steering devices including means for changing the orientation thereof thereby enhancing the maneuverability of said submersible.

4,226,206

RETRACTABLE PROPULSIVE MEANS FOR SMALL BOATS

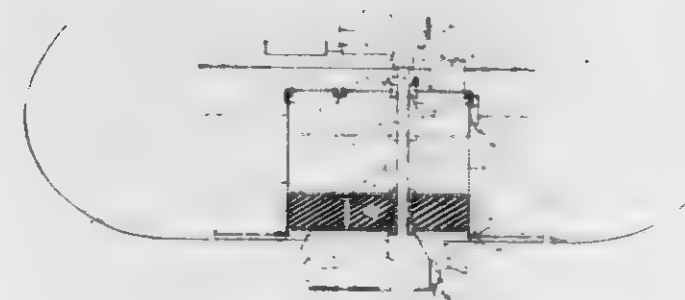
John E. Wilson, 1501 Parklane Dr., Bettendorf, Iowa 52722

Filed May 21, 1979, Ser. No. 40,716

Int. Cl.³ B63H 5/12

U.S. Cl. 440—112

2 Claims



1. A mounting for attaching a propelling assembly to a boat, said propelling assembly being the type having an outwardly extending shaft and a control handle attached to the outer end of said shaft, said mounting comprising:

a box having a closed wall to be positioned vertically within said boat, a lower edge of said wall adapted to be sealed to the bottom of said boat about an opening through said bottom,

a horizontal cover for said box detachably connected to said wall,

a horizontal supporting member movable like a piston within said wall, said supporting member having a resilient peripheral portion functioning as a tight seal between said supporting member and said wall,

first and second resilient grommets in a vertical line through said supporting member and through said cover respectively, said shaft extending from said propelling assembly upwardly through said first and second grommets to position said propelling assembly directly below said supporting member, said shaft movable manually in a vertical direction within said second grommet for moving said supporting member and said propelling assembly in unison between a lower position and an upper position, said first grommet fitting tightly enough about said shaft to cause said supporting member to move vertically within said closed wall while remaining at a fixed vertical distance with respect to said propelling assembly, said propelling assembly while in said upper position being positioned within said box and while in said lower position being positioned below said bottom of said boat, said

supporting member while in said lower position being within a lower position of said wall to function as the bottom of said boat, and said shaft being rotatable by use of said control handle to steer said boat.

4,226,207

APPARATUS FOR APPLYING PROTECTIVE COATINGS TO GRAPHITE BODIES

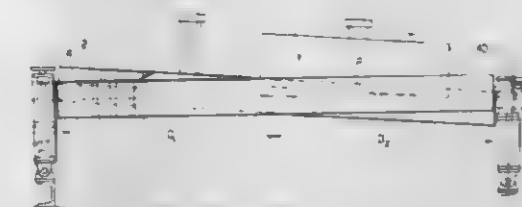
Ivan V. Genev, Mihail Konstantinov, Alexander Valchev, and Vassil Peev, all of Sofia, Bulgaria, assignors to DSO "Cherna Metalurgia", Sofia, Bulgaria

Continuation-in-part of Ser. No. 760,504, Jan. 19, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,491

Int. Cl.² B05C 5/00

U.S. Cl. 118—620

11 Claims



1. An apparatus for applying protective coatings to cylindrical graphite bodies, comprising:

a base;

a first shaft rotatable about a first axis and mounted on said base;

a second shaft rotatable about a second axis and mounted on said base in a closely spaced-apart relationship with said first shaft and forming a first guideway therebetween for said graphite bodies, said first axis and said second axis lying in respective parallel planes;

variable-length means between said base and an end of at least one of said shafts for displacement of said axis thereof within said respective plane thereof to form a variable angle of less than 30° with said axis of said other shaft;

reversible driving means on at least one of said shafts for the reversible rotation thereof and the reciprocal displacement thereby along said guideway of said bodies;

a battery of coating tools adjacent said guideway intermediate the ends of said shafts for applying said coating to said bodies;

a pair of electrodes respectively positioned above said guideway to either side of said battery of coating tools at locations fixed along said axes;

slip rings formed on at least one of said shafts; and an electric-arc current supply connected to said electrodes and said slip rings for leading current to the electrodes.

4,226,208

VAPOR DEPOSITION APPARATUS

Keijiro Nishida, Nimomiya; Mitsuo Kakei, Tokyo; Osamu Kamiya, and Nobuyuki Sekimura, both of Yokohama, all of Japan, assignors to Canon Kabushiki-Kaisha, Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,435

Claims priority, application Japan, Aug. 4, 1977, 52-93798; Jun. 1, 1978, 53-66160

Int. Cl.² C23C 13/08

U.S. Cl. 118—706

15 Claims

1. A vacuum processing apparatus comprising:

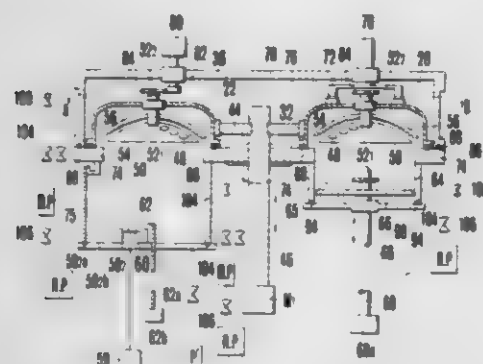
(a) a housing forming a main vacuum container;

(b) a driving shaft;

(c) vacuum chamber forming means for forming a plurality of independent vacuum chambers located within said main vacuum container, said vacuum chamber forming means comprising:

(i) cover means located within said housing and being rotatively mounted on and controlled by said driving shaft for forming said independent vacuum chambers,

- said cover means at least being covered by a vacuum within said main vacuum container, and
- (ii) sealing means for keeping said independent vacuum chambers air tight;
- (d) hanger means for supporting articles to be processed within each of said independent vacuum chambers;
- (e) means forming an entrance-and-exit chamber having an inlet-and-outlet opening through which the articles to be processed are moved in and out of said housing, said



- entrance-and-exit chamber being one of said independent vacuum chambers;
- (f) inhaling-and evacuating means for evacuating said main vacuum container and the plurality of independent vacuum chambers for maintaining them at a predetermined pressure level; and
- (g) evaporant means for causing at least one evaporant material disposed in certain of said independent chambers to evaporate for effecting vacuum plating on the articles to be processed.

4,226,209

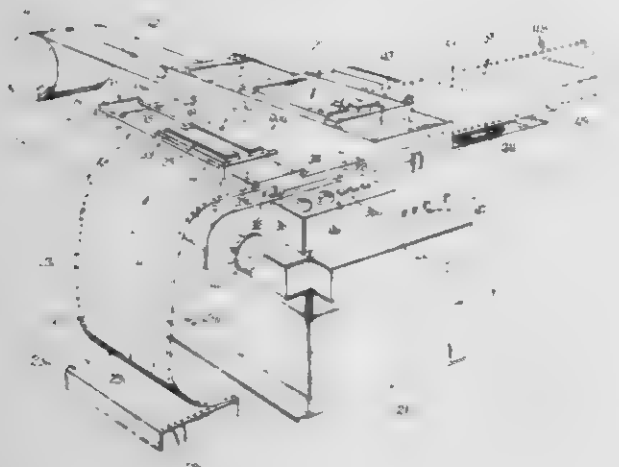
APPLICATOR FOR LIQUID ADHESIVE TO A PAPER FORM FOR SECURING A STENCIL THERETO

Grant F. Kenworthy, Des Plaines, Ill., assignor to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed Dec. 5, 1977, Ser. No. 857,686
Int. Cl.³ B05C 1/16

U.S. Cl. 118—708

7 Claims



1. An applicator for applying a liquid adhesive in a desired pattern and quantity to a paper form for receiving and holding a stencil thereto, comprising a storage chamber for a liquid adhesive, an applicator chamber located adjacent said liquid adhesive storage chamber, means delivering a measured quantity of liquid adhesive from the storage chamber to the applicator chamber, said applicator chamber having an opening adjacent a paper form, means in said opening controlling the passage of liquid adhesive from said applicator chamber to said paper form, said means in said opening comprising a flexible porous open celled polyurethane plastic material, the plastic material being condensed and permanently pre-compressed to different degrees of porosity in selected areas thereof to itself

control the passage or non-passage of liquid adhesive through said selected areas.

4,226,210

ABALONE MARICULTURE

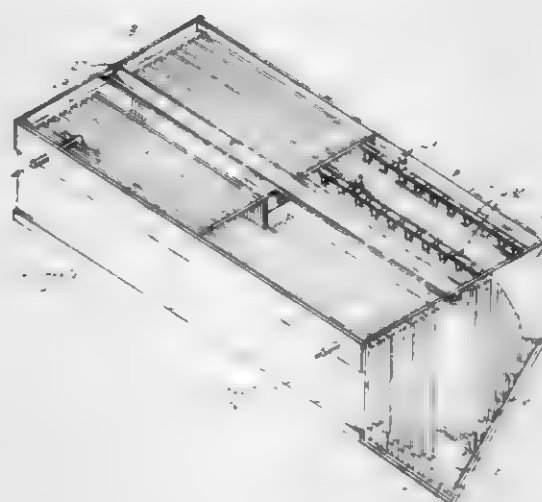
George S. Lockwood, Carmel Valley; Fred T. Shultz, Sonoma, and Gerrit Bevelander, Carmel, all of Calif., assignors to Monterey Abalone Farms, Monterey, Calif.

Filed Oct. 30, 1978, Ser. No. 955,944

Int. Cl.³ A01K 61/00

U.S. Cl. 119—4

74 Claims



1. The process of culturing gastropod molluscs and other benthic motile marine and aquatic animals from the larval stage through infancy in a body of water in a growing tank having therein settlement surfaces upon which the larvae settle and the animals resulting from larvae metamorphosis live, which comprises:

- (a) conditioning the settlement surfaces to develop thereon a microbiological community so as to induce settlement of larvae and to support life thereon;
- (b) introducing larva of the animal into the tank whereby at least a portion of the larvae will settle upon the settlement surfaces and undergo metamorphosis and subsequent growth;
- (c) circulating water in the tank at least periodically; and
- (d) controlling the biological and chemical balance in the tank to provide food and to limit the build-up of harmful components and conditions in the tank.

4,226,211

EGG COLLECTOR

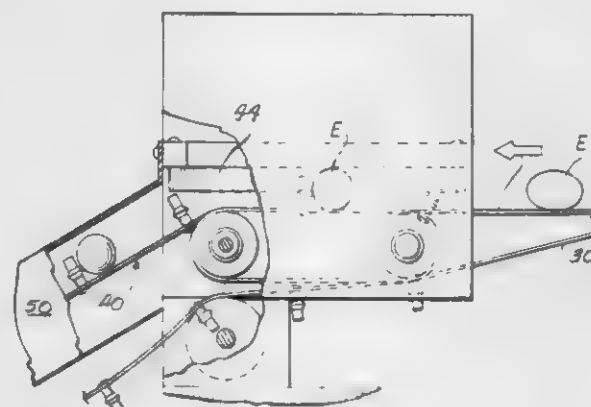
Earl Barrentine, Bogart, Ga., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Mar. 10, 1978, Ser. No. 885,122

Int. Cl.² A01K 31/16

U.S. Cl. 119—48

23 Claims



1. Apparatus for collecting eggs from a number of poultry cages, the cages including means for urging any eggs laid in the

cage to a cage collecting location, the apparatus including first collector conveyor means for receiving the eggs at each cage egg collecting point, and having a tail end, ramp conveyor means for receiving the eggs from the first collector conveyor means, and having a head end, the collector conveyor means tail end and the ramp conveyor means head end being located in adjacent, parallel, co-planar positions, deflector means for urging the eggs from the collector conveyor to the ramp conveyor means, finger means including a short finger and a long finger mounted side-by-side in a row upon said ramp collector means to permit easy egg acquisition and safe egg retention on the ramp conveyor means out of contact with any other egg during ramp conveyor means operation, drive means for driving the collector conveyor and the ramp conveyor means, the ramp conveyor means being driven substantially twice as fast as the collector conveyor, and accumulator conveyor means for receiving the eggs from the ramp conveyor means and for conveying the eggs to an accumulation point.

4,226,212

ANIMAL HOLDING GATE WITH AUTOMATIC CLOSING OPERATION

Marvin J. Priefert, Mt. Pleasant, Tex., assignor to Priefert Mfg. Co., Mt. Pleasant, Tex.

Filed May 11, 1979, Ser. No. 38,090

Int. Cl.³ A61D 3/00

U.S. Cl. 119—98

6 Claims



1. An animal holding gate comprising:

- (a) an upright main frame having a pair of transversely spaced side members and bottom and top cross members,
- (b) an upright animal engaging member for each of said side members having a lower portion guidably connected to said bottom cross member for movement laterally of said main frame,
- (c) a lever corresponding to each of said animal engaging members pivotally supported intermediate the ends thereof on an adjacent side member having a first end portion and a second end portion pivotally connected with an associated animal engaging member,
- (d) a transverse rock shaft rotatably mounted on said main frame adjacent the upper ends of said side members in a horizontally parallel spaced relation with said top cross member to form therewith a guideway for guidably supporting the upper ends of said animal engaging members for movement laterally of the gate,
- (e) a pair of rock arms on said rock shaft each of which is movably connected with the first end portion of an associated lever whereby said animal engaging members are moved laterally toward or away from each other into or out of animal engaging position in response to a rotational movement of said rock shaft.

4,226,213

INTERNAL COMBUSTION ENGINE

Otto Bernauer, Weinstadt, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 24, 1978, Ser. No. 954,125

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750463

Int. Cl.³ F02B 43/00; F02M 31/00

U.S. Cl. 123—1 A

8 Claims



1. An internal combustion engine having cylinder wall means adapted to be cooled and delimiting at least one working space means of an internal combustion engine, characterized in that a hydrogen-imperious enclosed metal hydride storage means having an enclosure means is provided in direct heat-conducting contact within the cylinder wall means forming a pre-heat storage means, and in that an interior of the enclosure means of the metal hydride storage means is operable to be selectively connected with at least one of a hydrogen source and a separate further hydrogen storage means.

4,226,214

APPARATUS FOR THE COMBINED PRODUCTION OF ELECTRICAL ENERGY AND HEAT

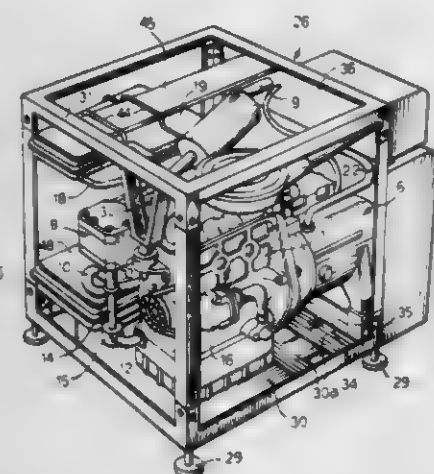
Mario Palazzetti, Avigliana, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Jul. 10, 1978, Ser. No. 923,272

Claims priority, application Italy, Jul. 29, 1977, 53376B/77
The portion of the term of this patent subsequent to Aug. 14, 1996, has been disclaimed.Int. Cl.³ F02B 63/04; F02F 7/00; H02P 9/04

U.S. Cl. 123—2

19 Claims



1. A self-contained modular unit for the combined production of electrical energy and heat, comprising
 - an internal combustion engine having a coolant jacket for the circulation of liquid coolant, and a coolant inlet and outlet communicating with said jacket;
 - a primary liquid coolant circuit including said engine coolant jacket, a gas/liquid heat exchanger through which the engine exhaust gases flow to give up heat to coolant flowing out of the jacket outlet and a liquid/liquid heat exchanger disposed in said primary circuit between said gas/liquid heat exchanger and the jacket inlet;
 - a secondary liquid circuit comprising said liquid/liquid heat exchanger and a heating apparatus;
 - an electrical generator driven by the engine, said generator having a casing and a cooling jacket surrounding the casing, said generator cooling jacket being connected in said secondary circuit to receive a cooling flow of liquid therefrom; and
 - a housing for said unit, said housing having a box-like structure and being comprised of a support framework formed by metal elements positioned to define the edges of a parallelepiped, thermally and acoustically insulating panels cladding the side faces and the upper face of the parallelepiped defined by said framework and means releasably attaching said thermally and acoustically insulating panels to said framework.

4,226,215

ELECTRONICALLY-CONTROLLED FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE HAVING ODD NUMBERS OF CYLINDERS

Akio Kobayashi, Kariya; Kunio Endo, Anjo, and Norio Omori, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 25, 1978, Ser. No. 927,818

Claims priority, application Japan, Jul. 28, 1977, 52-91972

Int. Cl.³ F02B 3/00

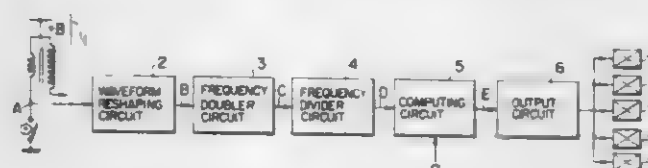
U.S. Cl. 123—487

10 Claims

1. An electronically-controlled fuel injection system for an internal combustion engine having an odd number of cylinders, in which the quantity of fuel supplied to the engine cylinders is regulated by the duration of pulses of a fuel injection pulse signal applied to solenoid-operated fuel injection valves, and two fuel injection pulses are generated in each operating cycle

of the engine in synchronism with the revolution of the engine, said system comprising:

- a waveform reshaping circuit adapted to be connected to an ignition unit of the engine for reshaping the waveform of an ignition signal upon receipt from said ignition unit thereby providing an output pulse signal subjected to the waveform reshaping;
- a frequency doubler circuit connected to said waveform reshaping circuit for doubling the frequency of the output pulse signal of said waveform reshaping circuit thereby generating a frequency-doubled output pulse signal;



- a frequency divider circuit connected to said frequency doubler circuit for dividing the frequency of the output pulse signal of said frequency doubler circuit by the number of engine cylinders thereby providing a frequency-divided output pulse signal; and
- computing means connected to said frequency divider circuit for generating said two fuel injection pulses in synchronism with the output pulse signal of said frequency divider circuit.

4,226,216

METHOD OF QUICK PNEUMATIC BRAKING OF A DIESEL ENGINE

Dirk Bastenhof, Eaubonne, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint Denis, France

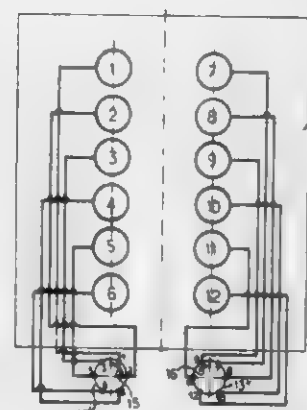
Filed Aug. 16, 1977, Ser. No. 825,145

Claims priority, application France, Sep. 30, 1976, 76 29411

Int. Cl.² F01L 13/02, 13/04, 13/06; F02D 9/04

U.S. Cl. 123—41 R

10 Claims



1. A method of improving the effectiveness of the pneumatic braking of a reversible diesel engine operating in particular on a four-stroke cycle, the engine having intake and exhaust valve means controlled by an engine-driven camshaft with forward running cams and reverse running cams, said camshaft being axially displaceable between an engine forward running position and an engine reverse running position, an even number of at least ten working cylinders arranged in particular in two V-shaped rows of a same number of working cylinders, at least some of which in each row are respectively provided with individual starting valves automatically closed by spring means after having been vented and the openings of which are pneumatically controlled sequentially by at least one central engine-driven rotary distributor, said closing being delayed in time with respect to the moment at which the order to close is delivered by, shutting off the compressed air and by venting said distributor as an increasing function of the length of feed piping of each starting valve from said distributor and of the instant rotary speed of said engine, said method including

reducing through constructional design of said distributor the relative duration of admission, through said distributor, of compressed pilot air for opening said starting valves in at least one row of working cylinders with respect to the duration for the other row thereby advancing the delivery of the order to close in such a manner that each starting valve involved closes not later than about the time at which the corresponding exhaust valve opens on the associated working cylinder, wherein the improvement comprises the steps of optimizing through constructional design of said distributor at least approximately the thus shortened value of the actual relative duration or control of opening of the compressed air passage-way at the distributor for each starting valve of one row of working cylinders intended for braking purposes with a view to increasing the instantaneous decreasing value of the rotary speed of the engine from which the braking step is initiated thereby advancing the moment at which the braking begins and of optimizing the duration for each starting valve of the other row of working cylinders for performing the starting step.

4,226,217

INTERNAL COMBUSTION ENGINE WITH SOUND-INSULATING CAPSULE AND WATER RADIATOR ARRANGED OUTSIDE THE CAPSULE

Peter Haslbeck, and Hans Kocherscheidt, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

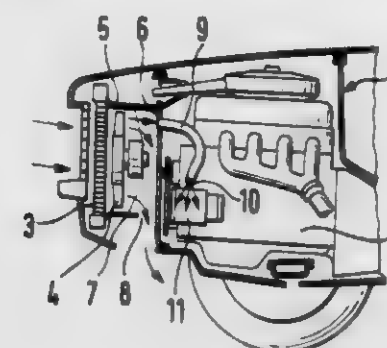
Filed Sep. 8, 1978, Ser. No. 940,731

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740918

Int. Cl.³ F02F 1/34; F02B 77/00

U.S. Cl. 123—41.62

4 Claims



1. An internal combustion engine with a sound-insulating enclosure means and with a radiator means arranged outside of the enclosure means and having a cooling fan and a cooling air box means, the cooling air box means having a discharge outlet outside of the enclosure means, characterized in that at least one cooling air line means in the form of a hose laid out curved and having a relatively narrow cross section is connected to the cooling air box means, leads into the enclosure means and extends within said enclosure means so that the discharge opening means of the hose is directed at least against one particular part or aggregate of the engine to be cooled.

4,226,218

CARBURETOR IDLE JET CONTROL

Russell L. Lutz, R.D. #1, Box 1148, Mohnton, Pa. 19540

Filed Sep. 5, 1978, Ser. No. 939,464

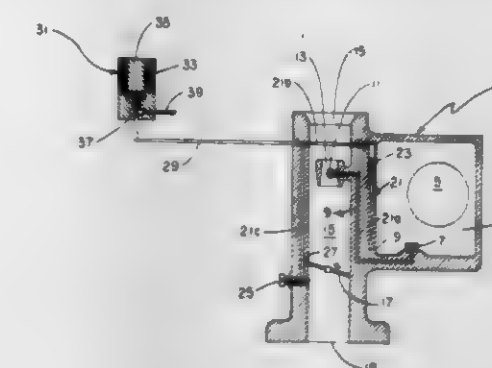
Int. Cl.² F02D 31/00

U.S. Cl. 123—325

2 Claims

1. A method for increasing the efficiency of an automotive internal combustion engine by interrupting the flow of fuel to the idle jet of the carburetor when idle jet fuel is not required to keep the engine running, the improvement comprising an electrically operated valve to control the flow of fuel through the idle jet which is controlled by a first switch wired in series with the valve and a second and a third switch wired in a series with each other and the valve but in parallel to the first switch;

the opening and closing of the first switch being controlled by the throttle, the second switch being controlled by the speed of



the engine, and the third switch controlled by the vacuum within the intake manifold of the engine.

4,226,219

ENGINE TIMING CIRCUIT WITH NOISE IMMUNITY

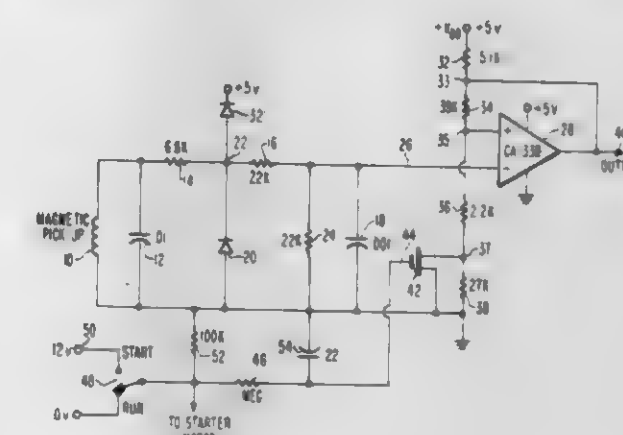
John A. Olmstead, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,626

Int. Cl.³ F02P 9/00

U.S. Cl. 123—424

4 Claims



1. In an electric timing system for an internal combustion engine,
 - a magnetic pick-up positioned on the engine to produce a signal waveform in which each cycle has a gradual up slope and steep down slope,
 - a Schmitt trigger including a voltage divider, and including a comparator having an input receptive to said signal waveform, and having a reference input and an output connected to taps on said voltage divider, so that the Schmitt trigger produces an output pulse having a leading edge when the input signal on the up slope reaches an upper trip point and having a trailing edge when the input signal on the down slope reaches a lower trip point,
 - a transistor having output electrodes defining a conduction path connected across a portion of said voltage divider, and
 - means operative at low engine cranking speeds when the signal waveform cycles have a lower peak amplitude to render said transistor conductive and thereby reduce the upper trip point of said Schmitt trigger.

4,226,220

IGNITION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yukio Suzuki, and Kunihiko Sato, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

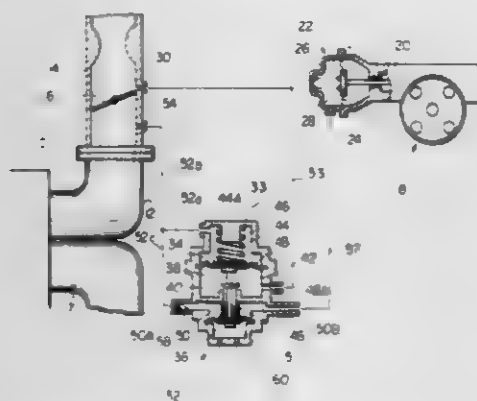
Filed Feb. 22, 1979, Ser. No. 13,978

Claims priority, application Japan, Oct. 4, 1978, 53-135419[U]

Int. Cl.³ F02P 5/04

U.S. Cl. 123-408

8 Claims



1. An ignition timing control system for an internal combustion engine, said engine having an intake device provided with a throttle valve, said system comprising:

a distributor;

vacuum actuator means for operating said distributor;

a vacuum source formed in said intake device at a position located downstream of said throttle valve in its idle condition;

valve means having a casing, a pair of diaphragms arranged across the interior of said casing, a valve member connected to both said diaphragms, a valve seat arranged between said diaphragms so as to face said valve member, and spring means for urging said valve member so that said valve member is rested on said valve seat;

vacuum conduit means for introducing a vacuum signal from said vacuum source into a first chamber formed on one side of the first diaphragm remote from the second diaphragm;

an atmospheric pressure source connected to a second chamber formed between said first diaphragm and said valve seat;

second vacuum conduit means for introducing an input vacuum signal from said vacuum source into a third chamber formed between said valve seat and said second diaphragm; and

third vacuum conduit means introducing an output vacuum signal from said third chamber into said vacuum actuator means;

said second diaphragm forming, on one side remote from said first diaphragm, a fourth chamber which is always opened to the atmosphere, whereby the level of the vacuum in said third chamber is controlled by air introduced into said third chamber from said second chamber in response to the vacuum level in said first chamber and said third chamber.

4,226,221

CLOSED LOOP MIXTURE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Masaharu Asano, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 10, 1979, Ser. No. 28,865

Claims priority, application Japan, Jun. 13, 1978, 53-70311,

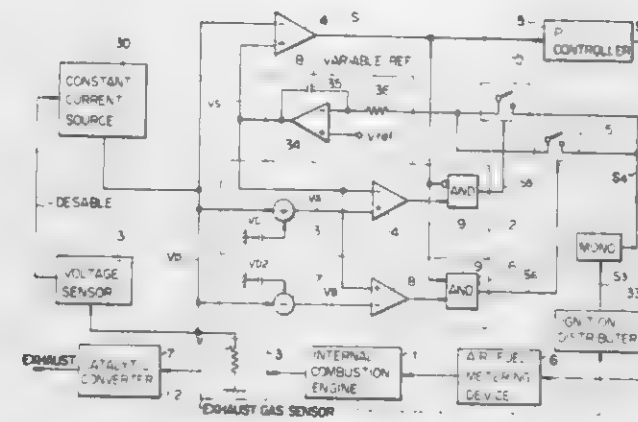
Int. Cl.³ F02B 3/00; F02M 7/00

U.S. Cl. 123-440

7 Claims

1. A closed loop mixture control system for an internal combustion engine having an exhaust gas sensor for generating a signal representing the concentration of a predetermined

constituent of the emissions of the engine, said exhaust gas sensor having an internal impedance which varies inversely as a function of temperature, and means for generating a signal representing the deviation of said concentration representative signal from a reference voltage to correct the air-fuel ratio of the mixture supplied to said engine, said deviation representative signal having a first voltage level corresponding to a lean mixture condition and a second voltage level corresponding to a rich mixture condition, comprising:



means for injecting a current into said exhaust gas sensor to raise the voltage level of said concentration representative signal, whereby said voltage level decreases from a high to a low level as a function of temperature; and means for controlling said reference voltage to lie between the maximum and minimum peak values of said concentration representative signal.

4,226,222

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tokio Kohama, Nishio; Takeshi Matsui, Aichi; Hisasi Kawai, Toyohashi; Akira Nishimatsu, Aichi; Toshikazu Ina, Okazaki; Hidetaka Nohira, and Kiyoshi Kobashi, both of Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

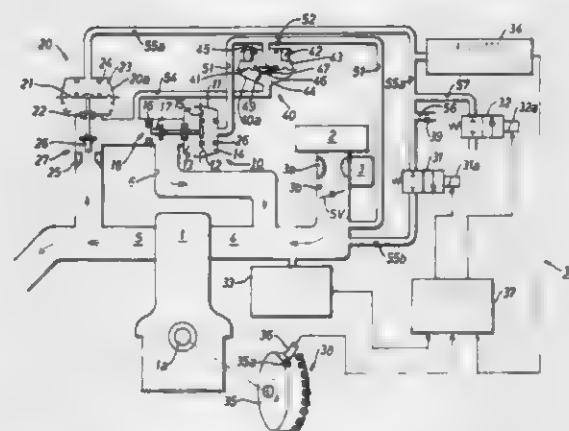
Filed Apr. 11, 1979, Ser. No. 30,606

Claims priority, application Japan, Apr. 14, 1978, 53-44445

Int. Cl.³ F02M 25/06

U.S. Cl. 123-568

6 Claims



1. In an exhaust gas recirculation system for an internal combustion engine having an induction pipe for conducting air-fuel mixture into a combustion chamber of said engine and an exhaust pipe for discharging exhaust gases from the combustion chamber therethrough, said system comprising:

a recirculation pipe leading said exhaust pipe to said induction pipe to recirculate exhaust gases into the combustion chamber of said engine therethrough;

first flow control means for controlling the flow quantity of exhaust gases through said recirculation pipe in accordance with changes of negative pressure applied thereto

from said induction pipe in relation to exhaust pressure value appearing in said recirculation pipe at the upstream of said first flow control means; and

second flow control means for controlling the flow quantity of exhaust gases through said recirculation pipe in accordance with pneumatic pressure applied thereto, said second flow control means including first and second electrically operated valves to be selectively energized to apply the negative pressure and the atmospheric pressure respectively from said induction pipe and the exterior to said second flow control means to control the said pneumatic pressure;

an electric control apparatus for said system comprising:

a first detector for detecting rotational speed of said engine to produce a first electric signal indicative of the rotational speed of said engine;

a second detector for detecting negative pressure in said induction pipe to produce a second electric signal indicative of the negative pressure;

a third detector for detecting pneumatic pressure to said second flow control means to produce a third electric signal indicative of the pneumatic pressure;

a speed signal generator for producing an electric binary signal indicative of the rotational speed of said engine in response to the first electric signal;

an analog-to-digital converter for converting the second electric signal into an electric binary signal indicative of the negative pressure;

a digital computer for repetitively calculating an optimum value indicative of optimum pneumatic pressure to be applied to said second flow control means in accordance with the binary signals, said computer being programmed to calculate the optimum value from a function describing a desired relationship among an optimum value, rotational speed of said engine and negative pressure in said induction pipe;

a digital-to-analog converter for converting an electric binary signal indicative of the calculated optimum value into an electric analog signal;

a drive circuit for selectively energizing said first and second electrically operated valves in response to an output signal therefrom, said drive circuit including means for comparing a level of the third electric signal with first and second levels based on the electric analog signal to produce the output signal when the level of the third electric signal is out of a predetermined range defined by said first and second levels and to cease the output signal when the level of the third electric signal is in said predetermined range.

4,226,223

MACHINE FOR SAWING BLOCKS OF SOLID, ESPECIALLY STONY MATERIALS, SUCH AS MARBLE, GRANITE AND THE LIKE

Ermanno Pacini, Via R. De Grada 3, Milan, Italy

Filed Nov. 21, 1978, Ser. No. 962,658

Claims priority, application Italy, Dec. 1, 1977, 30282 A/77

Int. Cl.³ B28D 1/06

U.S. Cl. 125-16 R

5 Claims

1. A machine for sawing blocks of a solid material, more particularly stony materials, said machine comprising a movable frame for supporting a plurality of parallel toothed blades, and frame actuating means for moving said frame along a preselected substantially elliptical path, said frame actuating means comprise at each side of said blade-carrying frame a pair of wheels having continuous concordant rotary motions around parallel fixed axes, a pair of remote sliders and a pair of connecting rods one end of each of said connecting rods being pivotally eccentrically attached to a respective one of said wheels and the other end of each of said connecting rods being pivotally attached to a respective one of said pair of sliders, means mounting each of said sliders for movement rectilinearly parallel to a line between said axes of the wheels, said connect-

ing rods being of substantially the same length and having a side of said blade-carrying frame pivotally attached thereto at



respective points substantially equally spaced from said other end of said connecting rods.

4,226,224

WOOD BURNING STOVE FOR HEATING HOMES

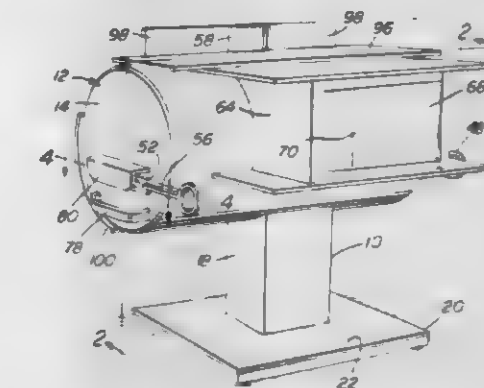
Orley B. Milligan, P.O. Box 279, Medford, Oreg. 97501

Filed Jun. 19, 1978, Ser. No. 916,498

Int. Cl.³ F24C 15/25

U.S. Cl. 126-83

27 Claims



1. A stove for burning wood and other solid fuels, said stove including a horizontally elongated hollow body having opposite sides and opposite ends, defining a combustion chamber therein and including a flue gas outlet centrally intermediate the opposite ends of said body opening outwardly of an upper portion of said combustion chamber, the opposite ends of said body being provided with upstanding end wall structures each including combustion air inlet means for admitting combustion air therethrough in a generally horizontal direction into the interior of said body from the exterior thereof, support means operatively connected to said hollow body for support of said body from a suitable support structure, said body including means for admitting solid fuel to be burned therein, and a generally horizontal baffle plate in said combustion chamber above the level of said air inlet means, registered with and spaced below said flue gas outlet, said plate extending longitudinally of said body and including opposite side marginal portions sealed relative to said hollow body sides and opposite end marginal portions spaced inwardly of said end wall structures, a lower portion of the interior of said hollow body intermediate the opposite ends thereof and spaced below said baffle plate being adapted to receive said solid fuel for burning in said combustion chamber below said baffle plate.

4,226,225

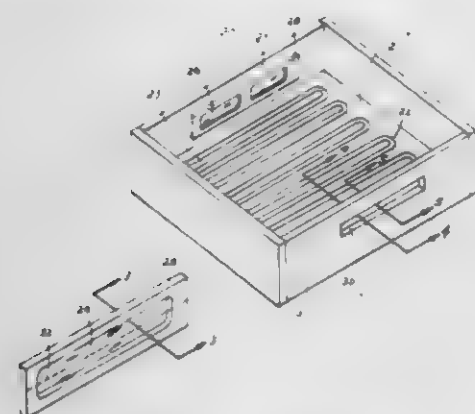
THERMAL OVERLOAD RELEASE FOR SOLAR ENERGY COLLECTORS

William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54303

Filed Oct. 27, 1977, Ser. No. 845,965
Int. Cl.³ F24J 3/02; F16K 17/38

U.S. Cl. 126—422

5 Claims



1. A solar energy collector including a solar ray absorption member, an enclosure for said solar ray absorption member wherein to trap solar heat, an opening in the enclosure whereby to vent the interior of the enclosure to the internal atmosphere, means in said opening to permit air transfer from the interior of the enclosure to the external atmosphere whereby to prevent pressure buildup within the enclosure under normal operating conditions, said means including a closure for the said opening, said closure comprising a thin, fusible membrane constructed arranged to rupture at a specified temperature, whereby the membrane will automatically rupture at a specified temperature so as to unclog the said opening and to vent the heated interior of the enclosure to the cooler external atmosphere.

4,226,226

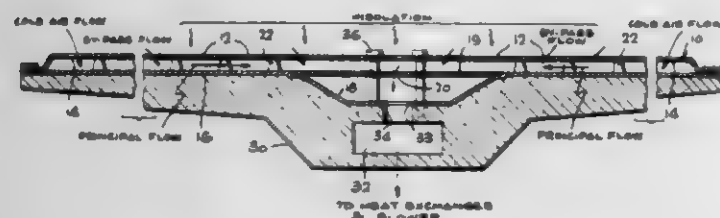
SOLAR ENERGY COLLECTOR

Stellan Knoss, Rancho Palos Verdes, Calif., assignor to AGA Aktiebolag, Lidings, Sweden

Filed Dec. 1, 1977, Ser. No. 856,255
Int. Cl.³ F24J 3/02

U.S. Cl. 126—432

14 Claims



1. A compact solar radiation collector comprising: collector panel means having a surface area of less than 1 m², and second panel means adjacent the collector panel means and providing a principal flow channel under the panel, said collector panel means including means providing a bypass flow with an f number (ratio of bypass flow to principal flow) in the range of 0.2 to 0.5, said collector panel means with the second panel means defining a flow path length of less than 0.5 m and a channel height of approximately 1.5 mm.

4,226,227

SOLAR COLLECTOR

Gerhard Harups, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

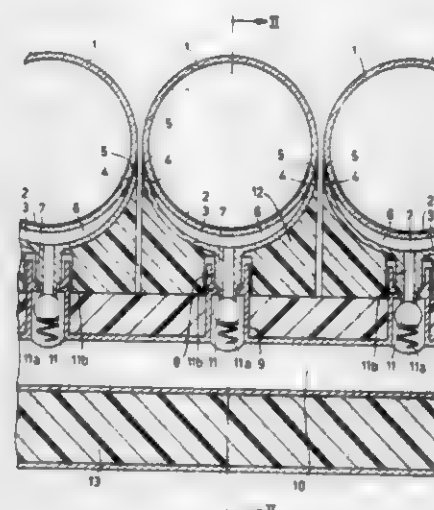
Filed Apr. 19, 1978, Ser. No. 897,736

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726457

Int. Cl.³ F24J 3/02

U.S. Cl. 126—442

4 Claims



1. A solar collector constituted of one or more individual heat exchanger unit each comprising a body provided with a trough; a sealed and evacuated transparent cover tube in contact with said trough, said cover tube and said trough being of complementary shape and forming a heating duct therebetween; an absorber associated with the cover tube adjacent the heating duct and serving to transfer heat derived from incident solar radiation during operation to a heat-transport medium fed through the heating duct; means to seal the cover tube to the trough along and adjacent to their line of contact; a heat-transport medium inlet duct and a heat-transport medium outlet duct respectively positioned in the vicinity of the cover tube ends; connection tubes respectively extending from said inlet duct and said outlet duct; and corresponding connection sleeves extending from the respective ends of said heating duct for removable reception by said connection tubes.

4,226,228

MULTIPLE JOINT RETRACTOR WITH LIGHT

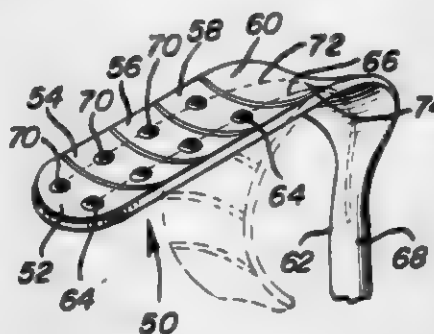
Hee J. Shin, and Jung H. Shin, both of 195 Haggerty Ave., Phillipsburg, N.J. 08865

Filed Nov. 2, 1978, Ser. No. 957,008

Int. Cl.³ A61B 1/06

U.S. Cl. 128—20

9 Claims



1. A surgical retractor for use within a surgical cavity, the retractor comprising retracting means and illuminating means, said retracting means comprising an inward surface and an outward surface, said outward surface conformingly contacting said cavity, said illuminating means comprising a plurality of electric lamps held in electrical contact by mounting means located upon said inward surface for directing illumination within said cavity, said mounting means being connected by

electrical conductor means to a source of electric power, said retracting means comprising a plurality of flexible segments adjustably connected at pivotal connecting joints so as to afford a different pattern of illumination and a different contour for conformance with the surgical cavity.

4,226,229

ANATOMY TESTING DEVICE

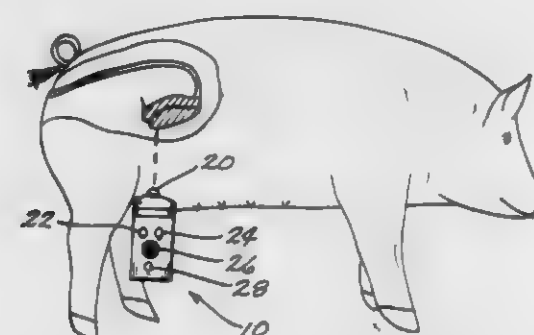
Thomas D. Eckhart, R.R. 2, Nevada, Iowa 50201; Richard L. Nelson, Oelwein, and Jack M. Hoglan, Independence, both of Iowa, assignors to Thomas D. Eckhart, Nevada, Iowa

Filed Mar. 31, 1978, Ser. No. 892,264

Int. Cl.³ A61B 10/00

U.S. Cl. 128—66

8 Claims



1. A pregnancy testing device comprising: a housing having an outer surface, said housing being of a size capable of being held in one hand; a transducer probe located on said outer surface of said housing, a first indicator light on said housing for indicating proper contact of said probe with an animal's body; a second indicator light on said housing to indicate a positive pregnancy in said animal; an audio alarm on said housing for indicating a positive pregnancy in said animal; a circuit means within said housing for actuating said probe to transmit ultrasonic pulses into said animal and to receive echo pulses sensed by said probe; a first analyzer portion of said circuit means for analyzing echoes received during a first time interval from said pulses transmitted into said animal, said first analyzer portion of said circuit being connected to said first indicator light and being adapted to turn on said first indicator light during said first time interval in response to receipt of echoes of predetermined characteristics caused by the tissue of said animal; a second analyzer portion of said circuit means for receiving and analyzing echo signals during a second interval of time from said pulses transmitted into said animal, said second analyzer portion being connected to said second indicator light and said audio alarm and being adapted to turn on said second indicator light and said audio signal during said second time interval in response to echoes of predetermined characteristics caused by amnion fluid in the uterus of said animal; and power means within said housing for powering said circuit means.

4,226,230

ORTHOPEDIC DEVICES, MATERIALS AND METHODS

James E. Potts, Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 881,138, Feb. 24, 1978, abandoned. This application Mar. 27, 1979, Ser. No. 24,320

Int. Cl.³ A61F 5/04

U.S. Cl. 128—90

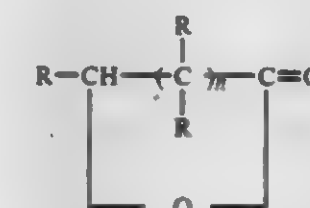
8 Claims

1. Method of applying an orthopedic cast to a portion of a human or animal body which comprises: (A) heating a flexible bandage material suitable for forming an orthopedic cast, comprising a substrate in the form of a

netting, the strands of said netting having on their surfaces a coating comprising a crosslinked copolymer, said cross-linked copolymer being produced by crosslinking a thermoplastic, crosslinkable copolymer which is produced by



the process which comprises reacting, at a temperature from 25° to 300° C., an active-hydrogen containing initiator with a molar excess of a monomer mixture comprising: (i) from 80 to 99.5 weight percent of at least one lactone of the formula



wherein n is an integer having a value from about 3 to 6, at least N+2 of the R's are hydrogen and the remaining R's are each alkyl or 1 to 10 carbon atoms; and (ii) from 0.5 to 99.5 weight percent of a polyfunctional acrylate monomer to a temperature above the softening point of the cross-linked copolymer; (B) wrapping the heated bandage material around the body portion in a repetitive manner to form overlying layers of bandage material conforming in shape to the body portion and forming an encasement therefor; (C) applying sufficient pressure during and after wrapping to the overlying layers to ensure contact which causes fusion of the overlying layers into a unitary structure encasing the body portion; and (D) cooling the applied layers of bandage to form a rigid, unitary structure.

4,226,231

FRACTURE BOARD

Arthur L. Andersen, Rte. 1, Box 1891, Anderson, Calif. 96007

Filed Nov. 8, 1978, Ser. No. 958,736

Int. Cl.³ A61F 13/00

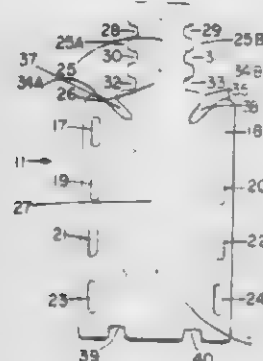
U.S. Cl. 128—134

17 Claims

1. A fracture board for use in the handling of an injured person at the site of an accident, and for use in the lifting, carrying and transportation of said injured person to a treatment facility, said board comprising a panel having a head portion integrally connected to a lower portion, said portions taken together forming an outline conforming to the outline of the human body,

said lower portion having a plurality of laterally, evenly spaced pairs of slots extending longitudinally and spaced apart from each other, and a pair of slits emanating from the top edge of the lower

portion angularly disposed toward the vertical centerline of said portion, and
a pair of spaced apart notches along the bottom edge of said board,



and strap means for securing the injured person to the panel adapted to pass over and around the body and through the slots, slits and notches, and having tightening means to hold the injured party to the panel.

4,226,232

WOUND DRESSING

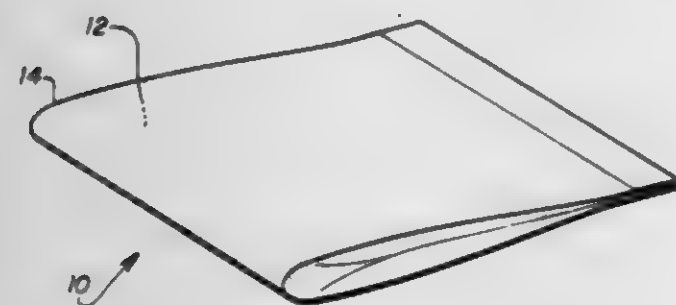
Wayman R. Spence, Waco, Tex., assignor to Spenco Medical Corporation, Waco, Tex.

Filed Apr. 9, 1979, Ser. No. 28,610

Int. Cl.³ A61L 15/00

U.S. Cl. 128-156

24 Claims



1. A method for treating a secreting skin wound comprising applying to the wound a gel mixture comprising a water absorbent graft copolymer and water.

7. A gel wound dressing comprising:

- (a) a water absorbent hydrolyzed starch-polyacrylonitrile graft copolymer;
- (b) water in an amount from about 10% to about 50% of the graft copolymer's water absorbency.

4,226,233

RESPIRATORS

Richard W. Kritzer, Chicago, Ill., assignor to Longevity Products, Inc., Chicago, Ill.

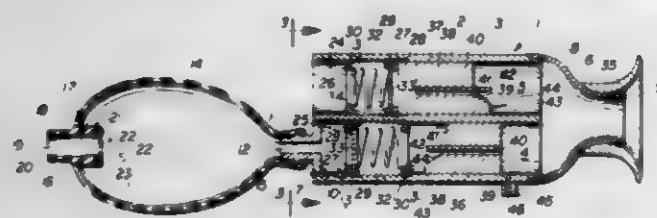
Filed Oct. 10, 1978, Ser. No. 949,402

The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.

Int. Cl.³ A61M 16/00

U.S. Cl. 128-205.13

10 Claims



1. A respirator comprising

- a. an elongated tubular housing having a mouthpiece at one

end thereof for insertion into a person's mouth and to enable the person to

- (1) inhale in one direction longitudinally through said housing, and
- (2) exhale longitudinally through said housing in the direction opposite to said one direction,
- b. means in said housing for vibrating material inhaled and exhaled therethrough, and
- c. means connected to said housing for applying positive pressure to material passing through said housing and mouthpiece into such a person's mouth,
- d. said last mentioned means having
 - (1) an inlet passageway thereinto, and
 - (2) a separate outlet passageway therefrom.

4,226,234

RESPIRATORY VALVE FACE MASK STRUCTURE

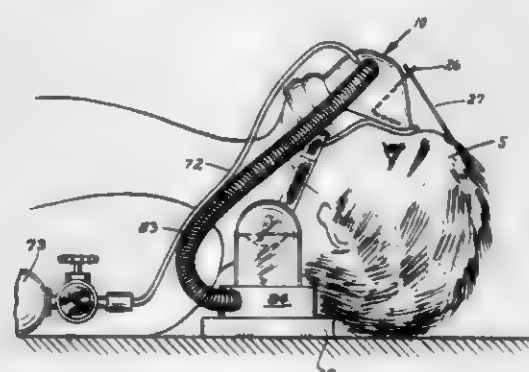
Arthur M. Gunderson, St. Cloud, Minn., assignor to RescueTech Corporation, St. Cloud, Minn.

Filed Feb. 12, 1979, Ser. No. 11,136

Int. Cl.³ A61M 16/00

U.S. Cl. 128-205.24

9 Claims



1. A respiratory valve face mask structure for use in connection with an appropriate pressurized oxygen and air supply, consisting of

- a flexible body portion formed to overlie the front portion of a face and the nose and mouth air passages of a subject, an internal flexible rib projecting from the underside of said body portion adapted to extend about said nose and mouth air passages of said subject and having sealing engagement with said face,
- an outward projection of said body portion from said rib forming a chamber,
- a valve having a central portion disposed through said projecting portion and said chamber a first end portion and a second end portion each extending outwardly of said projecting portion, said first and second end portions and said central portion having a passage therethrough,
- first air ports disposed longitudinally of said central portion of said housing and communicating said chamber with said passages,
- said first end portion of said valve housing having second air ports communicating with the atmosphere, said first and portion having a portion thereof forming a first valve seat between said first and second air ports
- a pressurized oxygen supply and a pressurized air supply connected to said second end portion of said housing,
- said second end portion of said valve housing forming a second valve seat between said pressurized oxygen supply and pressurized air supply and said first air ports,
- a valve member slidably disposed within said passage of said housing and being movable to first, second and third positions,
- means normally urging said valve member to said first position to engage said second valve seat to seal said air ports from said pressurized oxygen and air supply and to admit the passage of ambient air,
- said urging means yielding to a first predetermined pressure of incoming pressurized air from said air supply bearing

against said valve member to said second position for movement of said valve member to engage said first valve seat to seal off the entry of ambient air and pass said pressurized air to said air passages,
said urging means yielding further to a second higher degree of pressure of air within said chamber for movement of said member to said third position communicating said second air ports with said passage.

4,226,235

PLURAL INJECTING DEVICE

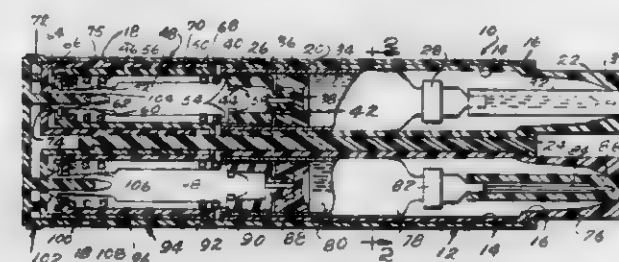
Stanley J. Sarnoff; George B. Calkins, both of Bethesda, and N. Lawrence Dalling, Gaithersburg, all of Md., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Jan. 25, 1979, Ser. No. 6,555

Int. Cl.³ A61M 5/00

U.S. Cl. 128-218 F

11 Claims



1. A plural hypodermic needle and plural spring actuated injecting device comprising

- outer housing means adapted to be exteriorly manually engaged by a user,
- actuating means carried by said outer housing means for movement into an actuating position in response to a manual movement by a user with said outer housing means exteriorly manually engaged as aforesaid,
- a first cylindrical liquid container within said outer housing means;
- a first hypodermic needle disposed within said outer housing means in a storage position in operative association with said first container,
- first plunger means within said outer housing means extending into said first container,
- first spring means operatively associated with said first plunger means within said outer housing means,
- first releasable means normally retaining said first spring means in a stressed condition within said outer housing means for actuation in response to the movement of said actuating means into said actuating position to effect release of the stressed condition of said first spring means so that the spring force resulting from said release acts upon said first plunger means to move (1) said first hypodermic needle from said storage position to an extended position into the user and (2) liquid within said first container outwardly through said first hypodermic needle into the user;
- a second cylindrical liquid container,
- a second hypodermic needle operatively associated with said second liquid container,
- second plunger means operatively associated with said second liquid container,
- second spring means operatively associated with said second plunger means,
- second releasable means normally retaining said second spring means in a stressed condition operable upon actuation to effect release of the stressed condition of said second spring means,
- safety means operable (1) when in a safety position with respect to both said first and second releasable means to prevent actuation thereof as aforesaid and (2) when removed from said safety position in relation to said first releasable means to permit the actuation of said first releasable means as aforesaid and from said safety position in

relation to said second releasable means to permit actuation thereof, and
means mounting said second container, said second hypodermic needle, said second plunger means, said second spring means and said second releasable means within said outer housing means in operative relation to one another as aforesaid so that when said safety means is removed from said safety position in relation to said second releasable means the latter will be actuated as a result of the actuation of said first releasable means so that the spring force resulting from the release of said second spring means by said second releasable means acts upon said second plunger means to move (1) said second hypodermic needle longitudinally outwardly into an extended position into the user in generally side-by-side relation to said first hypodermic needle and (2) liquid within said second container outwardly through said second hypodermic needle into said user.

4,226,236

PREFILLED, VENTED TWO-COMPARTMENT SYRINGE

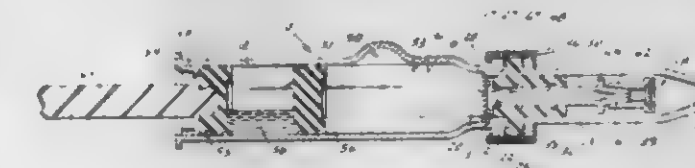
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 7, 1979, Ser. No. 36,927

Int. Cl.³ A61M 5/00

U.S. Cl. 128-218 M

16 Claims



1. A prefilled, vented, readily activated syringe assembly adapted to receive a hypodermic needle comprising:

- a barrel member defining a substantially tubular chamber having a wall portion;
- a nozzle portion communicating with said tubular chamber;
- a hydrophobic filter element operatively associated with said nozzle portion of said barrel member;
- a holder member in sealing arrangement with said nozzle portion and positioned outwardly from said filter element; means to retain said holder member on said nozzle portion; passage means defined by said holder element;
- a piercing tubular member having a piercing point, slidably positioned in said passage means of said holder member and said piercing point spaced from said filter element;
- a first stopper in slidable and sealing engagement in said tubular chamber to provide a compartment for a first flowable medicinal material;
- a second stopper adapted to receive a plunger rod in slidable and sealing engagement in said tubular chamber of said barrel member and spaced from said first stopper to provide a compartment for a second flowable medicinal material;
- means constructed and arranged in combination with said first and second stoppers and said barrel member to provide upon movement of said first stopper toward said second stopper fluid communication between said compartments for said first and second medicinal materials; whereby upon movement of said second stopper in the direction of said first stopper, intermixing of said first and second medicinal materials will be effected with emission of air through said filter element; upon subsequent movement of said piercing tubular member toward said filter with a piercing thereof; attachment of said hypodermic needle to said piercing tubular member; and upon further movement of said second stopper toward said first stopper substantially; all of said medicinal materials will be expelled from said syringe.

4,226,237

LAYERED ABSORBENT STRUCTURE

Yvon G. Levesque, Montreal, Canada, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 30, 1979, Ser. No. 7,279

Int. Cl.³ A61F 13/20, 13/16

U.S. Cl. 128—285

13 Claims



1. A product for absorbing body fluids having an absorbent element consisting of a plurality of absorbent layers and including at least first and second adjacent absorbent layers; said first layer comprising cellulose fibers and said second layer comprising, in admixture, peat moss and finely divided ground mechanical wood pulp in a weight ratio of at least about 0.35 grams of said mechanical wood pulp per gram of said peat moss; said ground wood pulp having a Canadian Standard Freeness of from about 30 to about 600; whereof said second layer preferentially absorbs at least about twice the weight of absorbed fluid as said first layer.

4,226,238

DISPOSABLE DIAPER

Carlo Bianco, Pescara, Italy, assignor to Fameccanica S.p.A., Italy

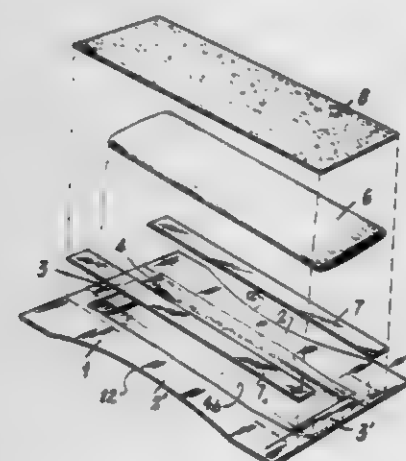
Filed Nov. 3, 1978, Ser. No. 957,063

Claims priority, application Italy, Jun. 5, 1978, 24191 A/78

Int. Cl.³ A61F 13/16

U.S. Cl. 128—287

16 Claims



1. A diaper comprising an outer sheet of waterproof plastic material having a recessed area between the sides and ends thereof forming a pad receiving cavity bordered by marginal areas on each side and end, said cavity having a bottom spaced outwardly from said marginal areas, an absorbent pad disposed

in said cavity, and a moisture holding strip of plastic overlying at least a part of a marginal area on each side of said cavity and at least a portion of each side of said pad and having at least a portion secured to the outer sheet along the length of said moisture holding strip.

4,226,239

SURGICAL LIGATING INSTRUMENT AND METHOD

Todd J. Polk, Croydon, and Francis E. McGowan, Abington, both of Pa., assignors to KLI, Inc., Newtown, Pa.

Continuation of Ser. No. 725,272, Sep. 21, 1976, abandoned. This application Jan. 31, 1978, Ser. No. 873,852

Int. Cl.³ A61B 17/00

U.S. Cl. 128—303 A

70 Claims



1. In a surgical ligating instrument for applying a plurality of elastic rings to one or more anatomical elements to be ligated, said rings having substantially the same width, the combination which comprises:

- (a) means on said instrument forming a support for a plurality of elastic rings, said support having an end adjacent which said rings may be stretched adjacent to and in substantial contact with each other;
- (b) actuating means movable in increments relative to said support for displacing a plurality of said rings toward said end of said support, one said increment being substantially equal to the width of one of said rings;
- (c) control means carried by said instrument for limiting said displacement substantially to the dimension of said increment after one of said rings, but not the adjacent ring, has been displaced off said end, and
- (d) said control means including manually adjustable means for subsequently adjusting said control means for permitting said actuating means to displace said adjacent ring off of said end.

4,226,240

SURGICAL FORCEPS

William E. Walker, Jr., 9th St. & Sugar Estate Rd., St. Thomas, V.I. 00801

Continuation-in-part of Ser. No. 831,221, Sep. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 706,847, Jul. 19, 1976, abandoned. This application May 30, 1979, Ser. No. 43,796

Int. Cl.³ A61B 17/28

U.S. Cl. 128—321

17 Claims

1. A surgical forceps comprising a pair of cross members having securing means for pivotally securing the members to one another, said cross members having a first set of arms extending in a first direction from the securing means and a second set of arms secured to said first set of arms and extending in an opposite direction from said securing means, said first set of arms adapted with gripping means for pivoting said first set of arms and said second set of arms about the securing means; the second set of arms comprising a pair of end members substantially disposed in a plane containing the first set of arms and directed away from the longitudinal axis of the first set of arms, and the extremity of the end members terminating with a set of mating jaws disposed in a plane substantially perpendicular to the plane containing the securing means, said set of jaws comprising a first jaw having spaced-apart notches

disposed in its outer lengthwise edge and a second jaw having a like number of notches disposed in its outer lengthwise edge



such that when the jaws are in a closed mated position, the notches are in abutting alignment.

4,226,241

SURGICAL FORCEPS

William E. Walker, Jr., 9th St. & Sugar Estate Rd., St. Thomas, V.I. 00801

Continuation of Ser. No. 831,221, Sep. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 706,847, Jul. 19, 1976, abandoned. This application Jun. 26, 1979, Ser. No. 52,194

Int. Cl.³ A61B 17/28

U.S. Cl. 128—321

4 Claims



1. Surgical forceps comprising a pair of cross members having securing means for pivotally securing the cross members to one another, said cross members having a first set of arms extending in a first direction from the securing means and a second set of arms secured to said first set of arms and extending in an opposite direction from said securing means, said first set of arms adapted with gripping means for pivoting said arms about the securing means, the second set of arms terminating with a set of equal length mating jaws extending in a plane substantially perpendicular to the plane containing the first set of arms and curved to the anatomical curve of the cervix and wherein the outer edge of each of the extending jaws has three spaced apart notches oriented such that when the jaws are in a closed mated position the jaws are disposed in parallel planes with the notches in abutting alignment, and said notches in each jaw being spaced apart from an adjacent notch by between about $\frac{1}{8}$ and about $\frac{1}{4}$ inch.

4,226,242

REPEATING HEMOSTATIC CLIP APPLYING INSTRUMENTS AND MULTI-CLIP CARTRIDGES THEREFOR

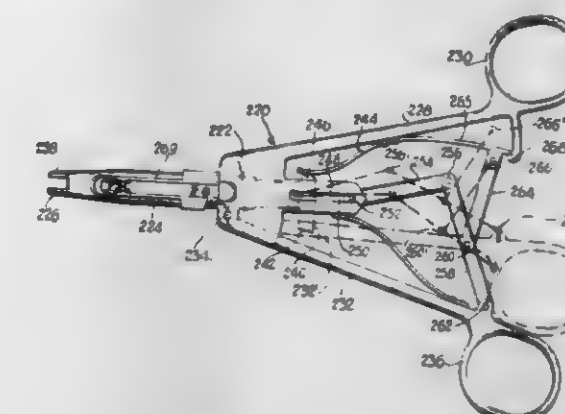
Robert K. Jarvik, Salt Lake City, Utah, assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 730,933, Oct. 8, 1976, Pat. No. 4,166,466. This application Sep. 13, 1977, Ser. No. 832,972

Int. Cl.³ A61B 17/12

U.S. Cl. 128—325

26 Claims



1. A hemostatic clip cartridge adapted to be removably mounted on a repeating hemostatic clip applying instrument, said cartridge comprising:

- A. a plurality of generally U-shaped planar hemostatic clips in vertical alignment forming a U-shaped stack, said clips adapted to be crushed about tissue one at a time by the instrument;
- B. stack-guide means for confining and guiding said U-shaped stack for motion along the vertical axis of said stack;
- C. spring means for biasing said stack downward;
- D. stop means at the bottom of said stack-guide means for preventing said stack from further downward motion, said stop means cooperating with said stack-guide means to form a rearward aperture for receiving a clip pusher member of the instrument and a forward rectangular slot for passing a single clip;
- E. clip-guide means comprising a channel member extending horizontally from said forward slot, the width of said forward slot corresponding to the width of the channel in said clip-guide means; and
- F. quick release interlocking means adapted to interlock with the instrument for quickly mounting and dismounting the cartridge on the instrument so that a plurality of cartridges can be used in a single surgical procedure; wherein said clip pusher member of the instrument upon which the cartridge is mounted may push the lowermost clip of said stack through said forward slot and into said clip-guide means.

4,226,243

SURGICAL DEVICES OF POLYESTERAMIDES DERIVED FROM BIS-OXAMIDODIOLS AND DICARBOXYLIC ACIDS

Shalaby W. Shalaby, Lebanon, and Dennis D. Jamieson, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

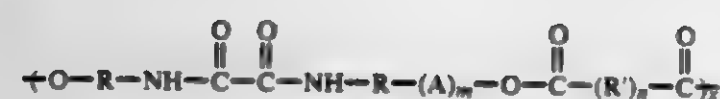
Division of Ser. No. 905,325, May 12, 1978. This application Jul. 27, 1979, Ser. No. 61,339

Int. Cl.³ A61L 17/00; A61F 1/00

U.S. Cl. 128—335.5

17 Claims

1. A surgical suture comprising an oriented filament of an alternating esteramide polymer having repeating units represented by



wherein R is a divalent aliphatic or aromatic hydrocarbon radical having from 3 to about 8 carbon atoms, R' is a divalent hydrocarbon radical having from 1 to about 8 carbon atoms, A is a divalent oxyalkylene radical having from 4 to 8 carbon atoms, m is 0 or 1, n is 0 or 1, and x is the degree of polymerization resulting in a film-forming or fiber-forming polymer.

4,226,244

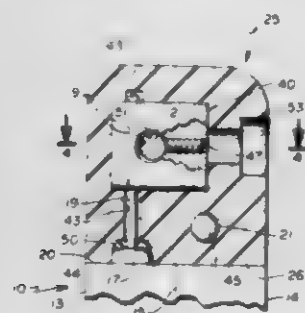
ELECTRICAL CONNECTOR FOR IMPLANTABLE ELECTRICAL GENERATORS

Arthur J. Coury, St. Paul, and Frank J. Wilary, Plymouth, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Jul. 31, 1978, Ser. No. 929,315

Int. Cl.³ A61N 1/36

U.S. Cl. 128-419 P

1 Claim



1. An electrical connector for attachment to an implantable electrical generator and for connecting an electrical feedthrough lead of the generator to a lead wire, of which there may be one or more of each, comprising: preformed body means formed of a molded biocompatible plastic material and having one surface thereof adapted to rest on the signal generator for connection thereto, terminal means in said body adapted to receive and connect the feedthrough lead and the lead wire, the terminal means having first and second bore means and the preformed connector means comprising first and second corresponding aperture means respectively associated with the first and second bore means, the first and second aperture means accepting and guiding the feedthrough lead and lead wire respectively into the first and second bore means, and the first bore means extending to the connector surface adapted for contact with the electrical generator.

4,226,245

SYSTEM FOR DETECTING HEART PACEMAKER PULSES

Robert M. Bennett, Jr., Ham Lake, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,815

Int. Cl.³ A61N 1/36

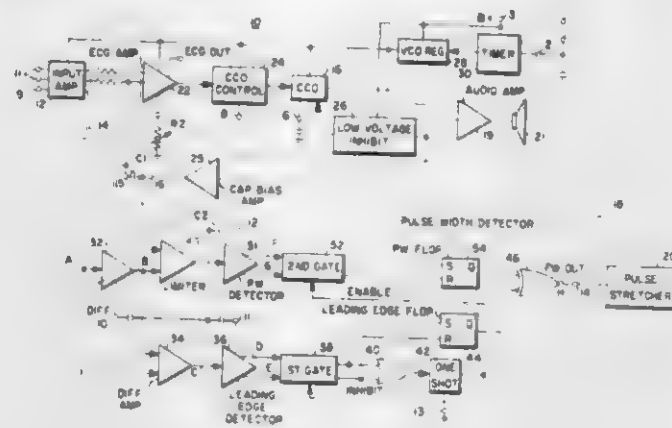
U.S. Cl. 128-419 PT

11 Claims

1. Apparatus for accurately detecting the pulse width of stimulating pulses applied by an artificial pacemaker to a patient's heart, each of the stimulating pulses comprising a relatively fast rising leading edge followed by an attenuated wave form portion and terminating in a relatively slow falling trailing edge, said apparatus comprising:

wave shaping amplifier means for receiving and amplifying the stimulating pulses along with low frequency noise signals in accordance with a transfer function such that low frequency component signals are amplified with a relatively low gain and higher frequency component signals are amplified with a relatively high gain whereby said noise signals are substantially discriminated against; first normally deactuated threshold means responsive to the output of said amplifier means of an amplitude greater

than a first predetermined level for providing a first output signal indicative of the occurrence of the trailing edge; differential amplifier means responsive to the output of said amplifier means and to the stimulating pulses and noise signals, for providing a difference output signal corresponding to the difference between the input signals; second normally actuated threshold means responsive to the difference output of an amplitude greater than a second predetermined level for providing a second output signal indicative of the occurrence of the leading edge;



said transfer function of said amplifier means and said first predetermined level being selected to provide an accurate indication of the occurrence of the trailing edge without prematurely responding to the attenuated wave form portion of the stimulating pulse; and means responsive to the second output signal for disabling said second threshold means and for enabling said first threshold means to initiate detection of the trailing edge of the stimulating pulse.

4,226,246

APPARATUS FOR MAINTAINING THE NEGATIVE POTENTIAL OF HUMAN, ANIMAL, AND PLANT CELLS

Jean Fragnet, Susy-en-Brie, France, assignor to Carba Societe Anonyme, Switzerland

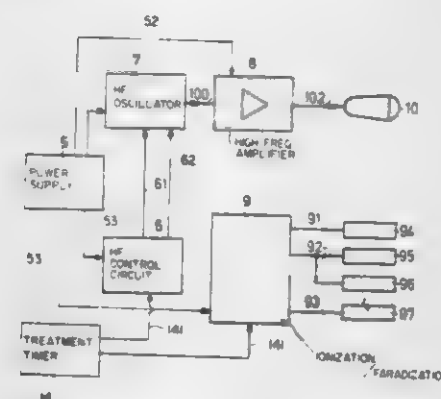
Filed May 23, 1978, Ser. No. 908,638

Claims priority, application Switzerland, May 27, 1977, 6578/77

Int. Cl.³ A61N 1/36

U.S. Cl. 128-420 R

3 Claims



1. An apparatus for maintaining the negative potential of human, animal and vegetable cells and/or for the penetration of substances into the cells, comprising a generator and control circuit means for producing high frequency pulses of adjustable repetition frequency, amplitude and duration and a d.c. circuit for selectively producing a d.c. voltage and a pulsating d.c. voltage for the ionization and d.c. pulses of predetermined shape and variable repetition frequency for the faradization of the tissue to be treated; means connected to the outputs of said generator and d.c. circuit for selectively applying said high frequency pulses, said ionization voltage and said faradization

pulses produced thereby to the body; indicator means for indicating the magnitude of signals supplied to said means for applying; connector means in circuit relationship with the outputs of said generator and d.c. circuits for selectively connecting the generator and d.c. circuit outputs to calibration circuit elements having a load characteristic similar to that of the cells to be treated; and means for adjusting the level of signals produced and displayed on said indicator means while said elements are connected, whereby desired signal levels can be established before application thereof to the cells.

4,226,247

BIOLOGICAL ELECTRODE

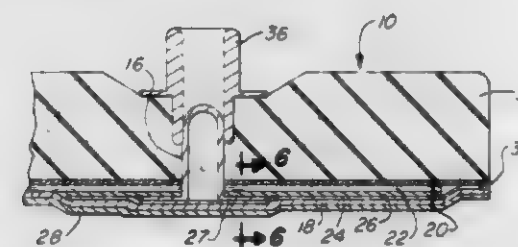
Ray L. Hauser, and John F. Harris, both of Boulder, Colo., assignors to Hauser Laboratories, Boulder, Colo.

Filed Aug. 21, 1978, Ser. No. 935,480

Int. Cl.³ A61B 5/04

U.S. Cl. 128-641

4 Claims



1. A biological electrode for electrically connecting the skin of the human body to an electrical recording or stimulating device, said electrode comprising:

- a plurality of longitudinally extending contiguous strands of conducting material, all of said strands lying generally parallel to each other, said strands having first and second opposed surfaces;
- a thin layer of sponge rubber attached to said first surface of said strands to maintain them in adjacent parallel relationship;
- a bus bar extending across one end of said second surface of said strands and in electrical contact therewith;
- an adhesive coated over the remainder of said second surface of said strands to form a conductor/adhesive composite wherein said strands are imbedded in said adhesive, said adhesive being displaceable from said strands as said electrode is pressurally applied to the skin so that said second surface of each of said strands contacts the skin substantially along its entire length and said adhesive fills any voids formed by skin and strand irregularities so that said electrode is adhered to the skin in all areas not contacted by said strands; and
- an electrical plug connected to said bus bar and extending through said layer of sponge rubber for connection to the electrical recording or stimulating device.

4,226,248

PHONOCEPHALOGRAPHIC DEVICE

Samir H. Manoli, 136 Black Bay Crescent, Thunder Bay, Ontario, Canada

Filed Oct. 26, 1978, Ser. No. 955,029

Int. Cl.³ A61B 7/04

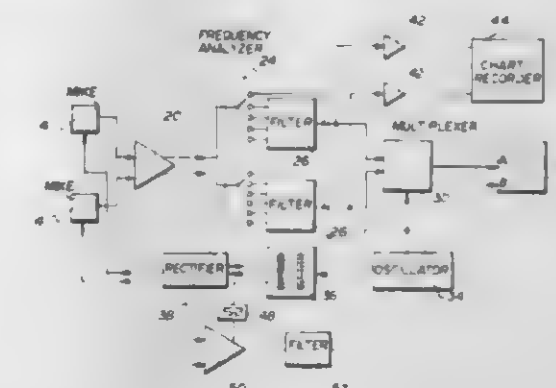
U.S. Cl. 128-773

12 Claims

1. A device for monitoring, amplifying and frequency analyzing sounds from the surface and cavities of the head comprising:

- (i) a microphone of sufficient sensitivity to detect such sound, the microphone being secured to an ear piece of a shape which permits insertion thereof into a patient's ear and transfer of sounds within the ear to the microphone;
- (ii) a head band to which the microphone is secured, to support the microphone in position with the ear piece inserted in the ear of the patient;

- (iii) an amplifier electrically associated with the microphone for increasing the output signals from the microphone;
- (iv) a frequency analyzer electrically connected to the amplifier whereby signals from the amplifier are passed to the



frequency analyzer in order to filter and analyze those signals;

(v) display means electrically connected to the analyzer and to the amplifier to receive and display filtered or unfiltered signals.

4,226,249

CIGARETTE FIRE EXTINGUISHER

Marion A. Newman, 4812 Gina, Del City, Okla. 73115

Continuation-in-part of Ser. No. 850,585, Nov., 1977,

abandoned. This application Apr. 27, 1979, Ser. No. 34,087

Int. Cl.³ A24D 1/10

U.S. Cl. 131-4A

3 Claims



1. In an elongated smoking article which includes a cylinder of tobacco and cylindrical wrapping of combustible material closely surrounding said tobacco cylinder and being longitudinally coextensive therewith, said smoking article having opposing ends forming, respectively, a mouth end and a fire end, the improvement comprising:

- an elongated open end tube formed from combustible material axially disposed within said tobacco cylinder and extending from a point adjacent the mouth end to the fire end;
- an elongated liquid containing reservoir within said tobacco cylinder and axially joined to the mouth end of said tube; and,
- frangible wall means at the juncture of said tube and reservoir normally maintaining the liquid in said reservoir.

4,226,250

SMOKING SYSTEM TO FILTER TOBACCO SMOKE

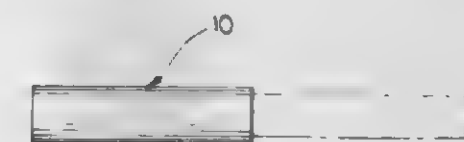
Seymour Ehrenpreis, and Barry Freedman, both of Skokie, Ill., assignors to Peterson Labs., Inc., Chicago, Ill.

Filed Jul. 12, 1978, Ser. No. 923,980

Int. Cl.² A24F 13/02, 7/04

U.S. Cl. 131-187

5 Claims



1. A smoking system to filter tobacco smoke comprising: a hollow casing; a first aperture means disposed at one end of

said casing and adapted to receive an article of smoking material, said first aperture means having a tapered edge; second aperture means disposed at the opposite end of said casing and forming a mouthpiece; a plurality of spaced apart shoulders projecting slightly inwardly from the inner surface of said hollow casing defining a plurality of chambers linearly aligned within said casing; cation exchange material disposed in one of said chambers; filter elements formed of cellulose acetate disposed in each of said chambers immediately adjacent to both sides of the chamber containing said cation exchange material and removably secured by said shoulders, whereby smoke generated by said article of smoking material passes through one of said filter elements, then through said cation exchange material, then through a second of said filter elements, and then through said second aperture, thereby reducing the amount of nicotine, tars, and other harmful ingredients from the smoke passing through said second aperture.

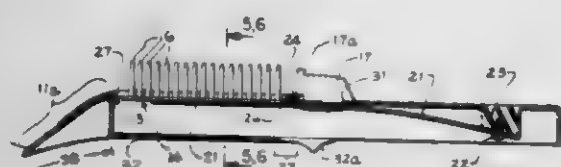
4,226,251

HAIRBRUSH CONSTRUCTION

Albert Wall, 515 S. Crescent Ave., Lodi, Calif. 95240
Continuation of Ser. No. 803,359, Jan. 3, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,648
Int. Cl.² A45D 44/18

U.S. Cl. 132-85

3 Claims



1. A hairbrush comprising an elongate body including a bristle portion carried by said body, a bristle-free, elongate grip portion at one end of said body of sufficient length to be readily held in the hand of a person using the brush for manipulating the brush, a bristle-free end portion separate from and protruding axially away from said bristle portion adjacent thereto at the other end of said body, the last named said end portion being tapered as viewed in elevation and plan to a degree sufficient to shield the bristles of the adjacent end of said bristle portion to permit said adjacent end of said bristle portion to enter a shock of hair to be brushed, while said grip portion is held for manipulating said brush, said grip portion and said end portion being disposed at opposite ends of said bristle portion to permit said grip portion to be readily held in a person's hand while inserting said tapered end portion into the hair.

4,226,252

ELECTRO-MECHANICAL WINNINGS DISTRIBUTION ASSEMBLY FOR SLOT MACHINES

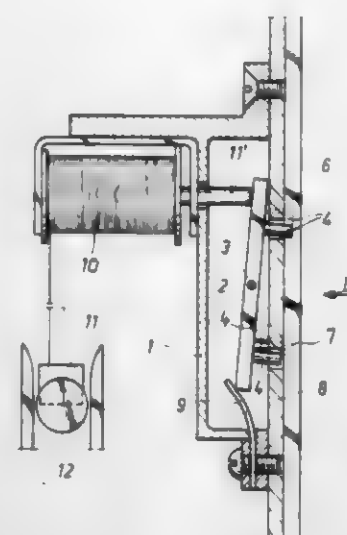
Paavo Lahtinen, Kaskenpolttajantie 11, 02340 Espoo 34, Finland
Filed Sep. 28, 1978, Ser. No. 946,572
Int. Cl.³ G07D 1/00

U.S. Cl. 133-1 R

4 Claims

1. An electro-mechanical winnings distribution assembly for slot machines or the like including in combination, means for supporting a pair of adjacent columns of coins on end, a lever, means supporting said lever adjacent to said columns for pivotal movement between a payoff position and a coin retaining position, a first pair of spaced pins adjacent the ends of said lever and associated with one of said columns, a second pair of spaced pins adjacent the ends of said lever and associated with the other of said columns, the pins adjacent one end of said lever and the pins at the other end of said lever alternately respectively entering said columns and being withdrawn from

said columns in the two positions of said lever, means normally holding said lever in said coin retaining position and means



responsive to a payout coin for moving said lever to said payoff position.

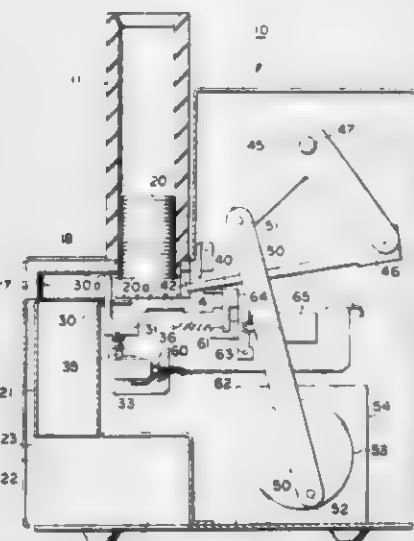
4,226,253

COIN COUNTING AND DISCHARGE MACHINE HAVING RECIPROCATING PUSHERS FOR TRANSFERRING COINS

Eiichi Kokubo, and Akemi Sugai, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1978, Ser. No. 958,336
Int. Cl.³ G07D 9/04

U.S. Cl. 133-4 A

2 Claims



1. A coin discharge machine for individually discharging the lowermost coin from coins stacked in a cartridge and for transferring the discharged coin to a dropping outlet, said machine comprising:

support means for supporting coins stacked in a cartridge in such manner that the lowermost coin has a portion thereof supported and spaced apart, longitudinally-extending non-supported portions;
a pair of longitudinally-extending rod pushers mounted for continuous reciprocating movement below the cartridge, each of said pushers being formed at an end thereof with an upwardly extending projection, the pushers being mounted in such manner to be movable between raised positions with the projections contacting edges of the non-supported portions of the lowermost coin and lowered positions with the projections lower than the lowermost coin;
means for axially reciprocating said pushers between the cartridge and a dropping outlet;
means for moving said pushers into said raised positions during forward strokes thereof so that said raised projec-

tions contact edges of the lowermost coin and transfer the coin to the dropping outlet, and for moving said pushers into said lowered positions during rearward strokes thereof so that said lowered projections pass beneath residual stacked coins, the residual coins being supported by said support means after removal of the lowermost coin; and
counting means for counting transferred coins and including a count arm positioned between the cartridge and the dropping outlet, said count arm being disposed to be engaged by a center portion of a coin being transferred.

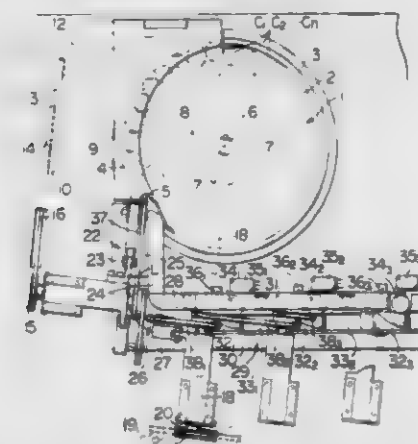
4,226,254

COIN SELECTING AND COUNTING MACHINE

Shingo Mouri, and Nobuo Ueda, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1979, Ser. No. 4,213
Claims priority, application Japan, Jan. 25, 1978, 53/6973
Int. Cl.³ G07D 9/04

U.S. Cl. 133-8 E

5 Claims



1. A coin selecting and counting machine for selecting and counting a number of mixed coins in accordance with the kinds thereof on the basis of the differences in their diameters, including a rotary disc made rotatable for discharging the mixed coins by the centrifugal force thereof, and a selecting and counting track extending downstream of said rotary disc and formed at its bottom with a number of selecting holes of sizes corresponding to the kinds of the mixed coins for receiving the discharged mixed coins to allow the same to fall into the corresponding selecting holes, while being unidirectionally conveyed one by one, so that they may be selected and conveyed, wherein the improvement comprises: said selecting and counting track including a guide rail section extending downstream of said rotary disc for guiding the discharged mixed coins, a curved rail section extending downstream of said guide rail section for changing the moving direction of the mixed coins to force the same into contact with the curved inner wall thereof, and a counting rail section extending downstream of said curved rail section; first conveying means for conveying the mixed coins from said guide rail section to said curved rail section; second conveying means for conveying the mixed coins from said curved rail section through said counting rail section, so that the mixed coins, which might otherwise be non-uniformly located widthwise of said selecting and counting track, have their circumferences forced into contact with the inner wall of said curved rail section and in accordance with the inner wall of said counting rail section; and counting means arranged in said counting rail section for counting each kind of the mixed coins;
wherein said curved rail section includes a curved rail having a large and a small radius of curvature and having an upstream end merged into the downstream end of said guide rail section so that the circumferences of the mixed coins are forced into contact with the inner wall of said curved rail having a larger radius of curvature;
wherein said counting rail section includes a reference rail

and a selecting rail, both having their upstream ends merged into the downstream ends of said curved rail section so that the mixed coins are conveyed in contact with the inner wall of said reference rail.

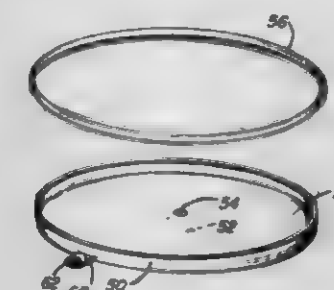
4,226,255

GRILL AND RACK CLEANING CONTAINER

Harold M. Tarrer, P.O. Box 156, Lula, Ga. 30554
Filed Apr. 25, 1979, Ser. No. 33,204
Int. Cl.³ B08B 3/04

U.S. Cl. 134-117

3 Claims



3. A container for storing and cleaning the grill of a barbecue device, comprising:
an imperforate base having a generally cylindrical shape with a circular bottom and upstanding annular side wall attached to said bottom;
a projection formed in the center of said circular bottom extending axially downwardly from the center of said base and having an aperture formed therein for receiving the shaft of the barbecue grill;
a top having a generally cylindrical shape and including a circular upper portion and a depending annular flange, said top being slightly larger than said base for press fitting onto said base and enclosing the interior of said base;
a cleaning solution disposed in said base for cleaning a barbecue grill immersed therein; and
means connected to said container for hanging said container in a convenient location.

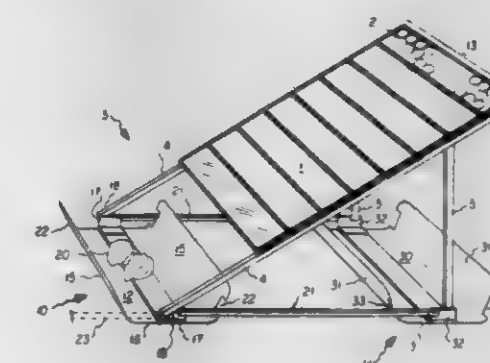
4,226,256

SOLAR PANEL ASSEMBLY AND SUPPORT PAD

Wilbur W. Hawley, Northridge, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Sep. 18, 1979, Ser. No. 76,539
Int. Cl.³ H01L 31/04

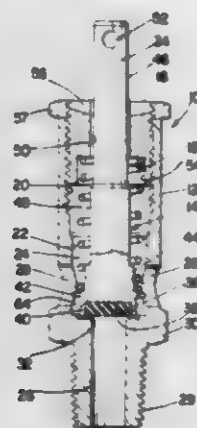
U.S. Cl. 136-244

7 Claims



1. A pad adapted for supporting an associated solar panel assembly, comprising a longitudinally extending base plate having longitudinal edges joined by opposing lateral ends, the length of said base plate adapted to be approximately the width of said associated solar panel assembly, upstanding sides extending along said longitudinal edges of said base plate, flange means at opposite ends of said base plate and near said lateral ends, said upstanding sides having apertures therein along said lateral ends adapted to allow support members from said associated solar panel assembly to reach said flange means, said

smaller than the diameter of said end to define a thin annular wall section therebetween; a resilient valve element received in said counterbore and engageable with said valve seat, the thickness of said valve element being somewhat less than the depth of said counterbore such that the annular wall section extends beyond the outer face of said valve element and into said annular channel when said poppet element is in its first position; a radially extending annular lip formed on said stem member and spaced above said end thereof to define a chamber



within said valve body above said lip, the outer diameter of said lip being slightly smaller than the inside diameter of said chamber to define a sliding fit therebetween; and means for limiting movement of said valve stem in a direction out of engagement with said valve seat, the relationship between the axial location of said lip and said at least one exhaust port being such that at least a portion of the cross-section area of said at least one exhaust port is open to said chamber above said lip when said valve stem is in its maximum position out of engagement with said valve seat.

4,226,262

LOAD RESPONSIVE CONTROL VALVE

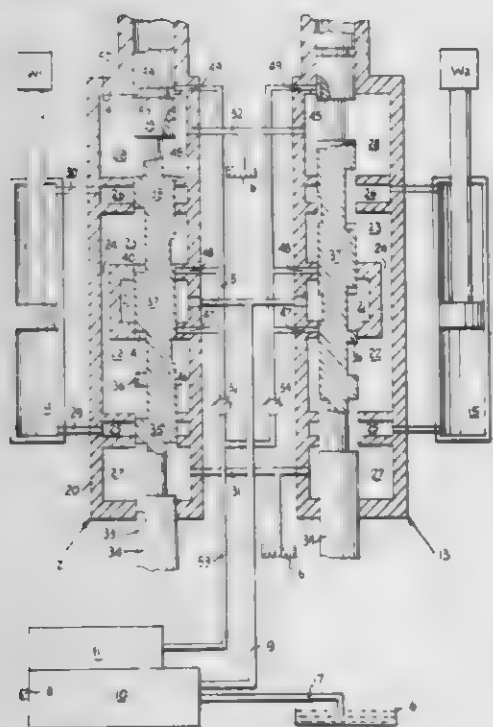
Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Nov. 13, 1978, Ser. No. 960,467

Int. Cl.³ F15B 13/08

U.S. Cl. 137—596.13

8 Claims



1. A load responsive valve assembly comprising at least one valve housing having an inlet chamber, first and second load chambers, at least one exhaust chamber, and load sensing port means operable through signal conducting passage means to transmit load pressure signal to output flow control means of a pump, direction control means for selectively interconnecting and isolating said chambers and said load sensing port means in a number of control positions including a neutral position and

a float position, in said float position said direction control means having means for interconnecting said first and second load chambers with said exhaust chamber, means for isolating said inlet chamber from said first and second load chambers and said exhaust chamber, means on said direction control means for blocking said load sensing port means, and means for connecting said signal conducting means with said exhaust chamber down stream of passages connecting said load chambers with said exhaust chambers.

4,226,263

EROSION CONTROL TRIM IN A CONTROL MECHANISM FOR A BALL VALVE

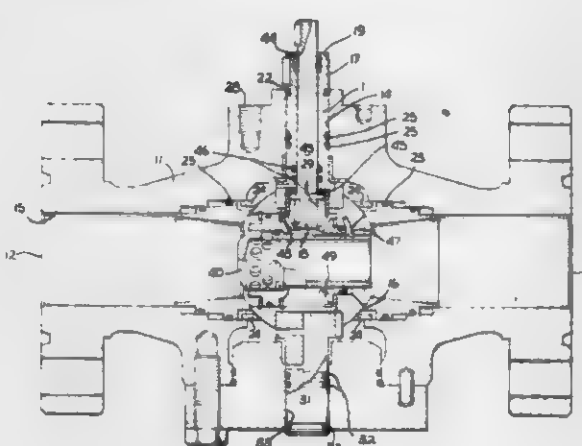
John D. Muchow, Long Beach, Calif., assignor to Valve Concepts International, Carson, Calif.

Filed Aug. 14, 1978, Ser. No. 933,141

Int. Cl.³ F16K 5/06

U.S. Cl. 137—614.17

4 Claims



1. An improvement for not only controlling the flow of fluid in a conduit but also providing erosion trim control to be used in combination with a ball valve which includes:

a valve body having a bore extending therethrough, said valve body having an inlet and an outlet adapted to be mechanically coupled to the conduit and said valve body also having an aperture therein;

a spherical valve member having a port, the axis of which is alignable with the axis of the bore of said valve body to enable flow through said port, said valve member movable to a position blocking flow through said bore of said valve body;

a stem having an inner end operably coupled to said spherical valve member and an axially outer end which extends through the aperture of said valve body for moving said valve member to and from flow enabling and flow blocking position by moving said stem; and

means for forming a seal between the aperture of said valve body and said stem to block leakage of fluid therebetween, said improvement comprising:

a cylindrical sealing member movably disposed in said port of said valve member and having a central passage, an outer cylindrical sidewall, said cylindrical sealing member having an enclosed end of said central passage and a plurality of oppositely disposed holes in said outer cylindrical sidewall adjacent said enclosed end to form an erosion control trim to direct the flow through said holes into said central passage to impinge upon itself at the center of said central passage of said cylindrical sealing member, said cylindrical sealing member being slidably received and sealed within the port of the spherical valve member, and

means for moving the position of said cylindrical sealing member in said port of said spherical valve member for exposing said holes in said cylindrical member to regulate the amount of fluid flowing through said holes and said port from exteriorly of said valve body.

4,226,264

ELASTIC AMYLOSE POLYMERS

Douglas J. Bridgeford, Champaign, Ill., assignor to Teepak, Inc., Chicago, Ill.

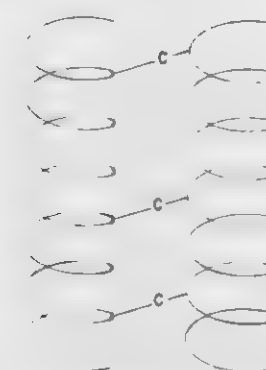
Continuation of Ser. No. 409,528, Oct. 25, 1973, abandoned.

This application Sep. 2, 1975, Ser. No. 609,476

Int. Cl.³ A22C 13/00

U.S. Cl. 738—118.1

14 Claims



13. An elastic film which comprises amylose or an amylose derivative in substantially helical conformation crosslinked with an agent to provide crosslink sites in a proportion of from 1 crosslink per 500 monomer units to 1 to 10 monomer units.

4,226,266

PROCESS AND DEVICE FOR DISPENSING A PREDETERMINED AMOUNT OF A LIQUID SUBSTANCE INTO A VESSEL

Jean Guigan, 9, rue Jean Mermoz, 75008 Paris, France

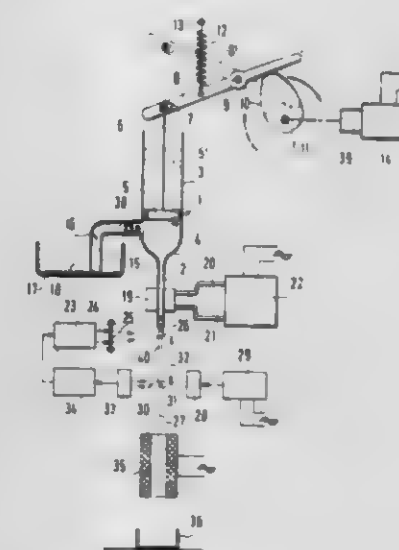
Filed Jun. 8, 1979, Ser. No. 46,965

Claims priority, application France, Jun. 23, 1978, 78 18831

Int. Cl.³ B65B 3/26

U.S. Cl. 141—11

13 Claims



1. Process for dispensing a predetermined amount of a liquid substance into a vessel, said process comprising the following steps:

causing a portion of said substance to pass into a tubular part whose lower portion is calibrated tube which is arranged vertically above the vessel,

applying a downwardly directed vertical pressure on the upper surface of the substance which has been taken up in the tubular part,

cooling said lower portion of the tubular part sufficiently to form a continuous vertical thread of frozen substance, and under the influence of said pressure, extruding said thread from said calibrated tube bottom, and

cutting the thread such that a detached portion of predetermined length which has been removed from the thread falls by gravity into the vessel, whereby said detached portion constitutes, after regaining the liquid state, said predetermined dispensed amount.

4,226,267

VENDING MACHINE WITH SELF CONTAINED WATER SUPPLY

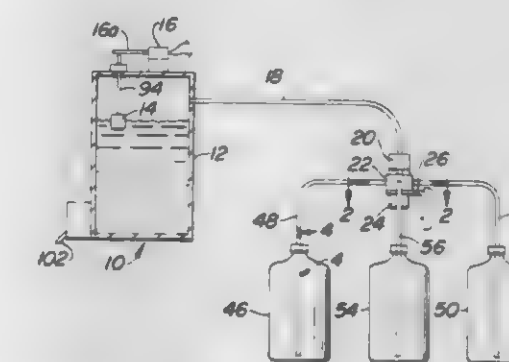
Thomas E. Meacham, Jr., Philadelphia, Pa., assignor to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Aug. 29, 1978, Ser. No. 937,698

Int. Cl.³ B65B 3/26

U.S. Cl. 141—18

7 Claims



1. An improvement in a vending machine with a self-contained water supply comprising a vending machine having a water tank from which water is to be dispensed, a pump having its outlet connected to said tank, said tank having a means for

4,226,265

WITHDRAWING CARRIER FOR LOOMS WITH REMOVAL OF THE FILLING THREAD FROM STATIONARY BOBBINS

Hans Zollinger, Tann-Rüti, Switzerland, assignor to Rüti Machinery Works Ltd., Rüti, Switzerland

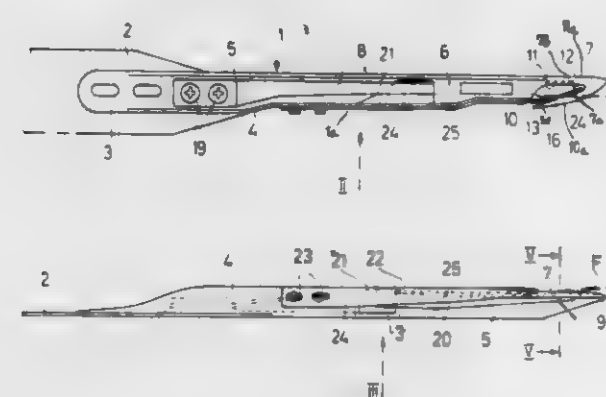
Filed Feb. 1, 1979, Ser. No. 8,543

Claims priority, application Switzerland, Feb. 28, 1978, 2130785/78

Int. Cl.³ D03D 47/20

U.S. Cl. 139—446

10 Claims



1. A withdrawing carrier for looms with removal of the filling thread from stationary bobbins comprising:

means providing a gripper body for the withdrawing carrier, a hook having a hook mouth for receiving a filling thread to be engaged and provided for said gripper body;

a pivotable clamping tongue cooperating with said hook for exerting a clamping action upon a filling thread located in said hook mouth;

an additional clamping element for augmenting the clamping action exerted by said clamping tongue; and said additional clamping element comprising a clamping spring extending essentially in the lengthwise direction of the gripper body.

controlling operation of said pump in response to the level of water in said tank so that the pump is operative when the water level in said tank is below a predetermined level, a plurality of water storage containers, a valve having a plurality of inlets and a single outlet, said valve outlet being connected to the inlet side of said pump, each valve inlet being connected to one of said storage containers, said valve including a valve member for selectively controlling flow from said inlets to said valve outlet, a motor connected to said valve member, circuitry interconnecting said valve motor and said pump with said liquid level responsive means so that when water in one storage container is depleted, the valve member is moved by said motor to communicate said pump inlet with another of said containers.

4,226,268 FUNNEL

Norbert Wasser, Cologne, Fed. Rep. of Germany, assignor to Walther & Cie Aktiengesellschaft, Koeln-Dellbrueck, Fed. Rep. of Germany

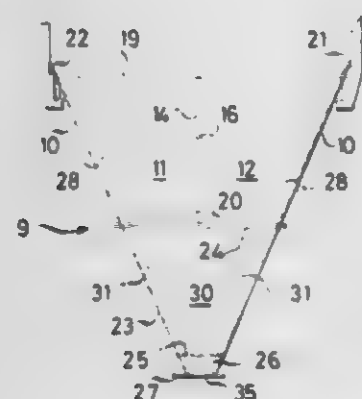
Filed Nov. 29, 1978, Ser. No. 966,315

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753712

Int. Cl.³ B67C 11/00; B01D 23/28

U.S. Cl. 141—331

12 Claims



1. A funnel for collecting dust from a filter comprising a body having a plurality of walls; said walls being sloped in the vertical direction and connected to each other to form the inlet and the outlet of the funnel, said body including an upper portion and a lower portion, said upper portion including at least two separate parts and being formed with flanges at a lower end thereof, said flanges extending transversally outwardly from each wall forming said upper portion, and said lower section being formed with flanges at its upper end, said flanges extending transversely outwardly from each wall forming said lower portion to meet said flanges of the upper portion, said flanges of said upper portion being screwed to said flanges of said lower portion.

4,226,269

ICE BODY DISPENSER

Keith E. Carr, Stevensville, and John J. Symons, Benton Harbor, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 26, 1978, Ser. No. 972,806

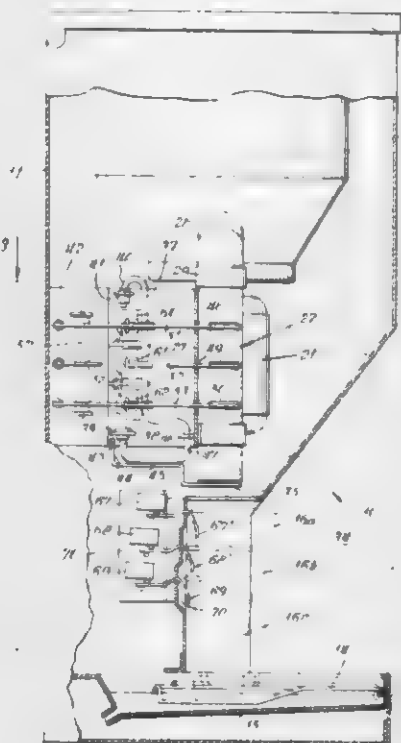
Int. Cl.³ B65B 3/04

U.S. Cl. 141—361

16 Claims

12. An ice body dispenser comprising:
means defining a storage chamber for storing a plurality of ice bodies;
means defining a delivery duct having an upper end opening into said storage chamber for receiving ice bodies therefrom, and a lower end for dispensing ice bodies therefrom;
agitator means in said storage chamber for lifting ice bodies therein and allowing said ice bodies to fall through said duct upper end into said duct;
a control element selectively insertable laterally into said

duct at a preselected position intermediate said ends to prevent delivery of ice bodies downwardly therepast;
closure means for selectively closing said lower end;
operating means for concurrently inserting said timed element into said duct and removing said closure means from said lower end to dispense from said duct those ice bodies



previously delivered thereto from said storage chamber disposed above said closure element and below said preselected position; and
means for causing operation of said agitator means to cause said duct to be refilled with ice bodies upon completion of a dispensing operation.

4,226,270

TREE HARVESTER

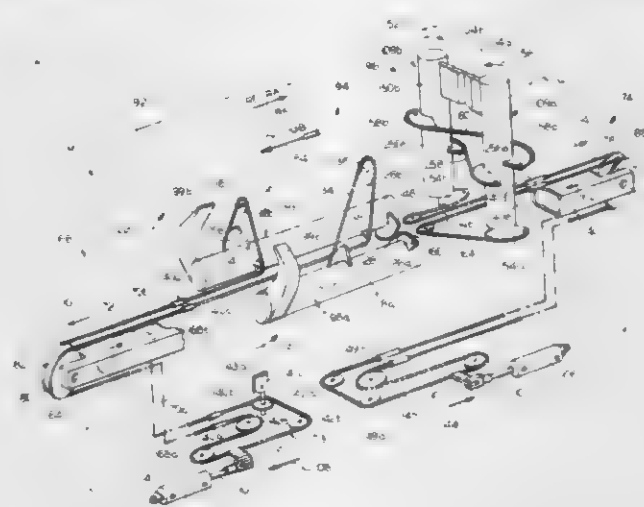
Charles R. Sturtz, Jr., St. Joseph, Mich., and Robert W. Joworski, London, Canada, assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 14, 1977, Ser. No. 860,359

Int. Cl.³ A01G 23/08; B27L 1/00

U.S. Cl. 144—2 Z

59 Claims



1. A tree harvester which comprises a first elongated beam member;
a second elongated beam member being longitudinally disposed with respect to said first beam member, being guidingly mounted thereto, and being longitudinally movable in first and second directions with respect to said elongation of said first beam member;
first means for longitudinally moving said second beam member in said first direction;

a third member being guidingly mounted to said second elongated beam member and being longitudinally movable in first and second directions with respect to said elongation thereof;
second means for longitudinally moving said third member in said first direction with respect to said second beam member;
a fourth member being secured to said third member and being movable with respect thereto;
a fifth member being secured to said first beam member; and means, comprising a flexible tension element having a portion thereof that is substantially longitudinally disposed, for mechanically transmitting motions in first and second directions from said fifth member to said fourth member.

4,226,271

DRUM DEBARKER

Thomas R. Coleman, Rte. 4, Yazoo, Miss. 39194

Filed Jun. 21, 1978, Ser. No. 917,589

Int. Cl.³ B27L 1/04

U.S. Cl. 144—208 B

4 Claims



1. An apparatus for debarking logs comprising a drum having cylindrical configuration and open end faces for the ingress and egress of logs, a support stand underlying said drum having a depressed central area and raised side areas, plural arrays of inflated tires carried by said support stand and rotatably supporting said drum, motor means carried on said support stand having a drive mechanism powering at least one of said arrays for rotating said drum, a pair of spaced parallel circumferential flanges disposed on said drum, a tire rotatably carried on said support means, said tire contacting said flanges and being disposed and extending between said flanges such that a radial line from said cylinder coincides with the axis of rotation of said tire, whereby engagement of said tire with said flanges constrains said drum from axial translation.

4,226,272

TIRE TRACTION DEVICE

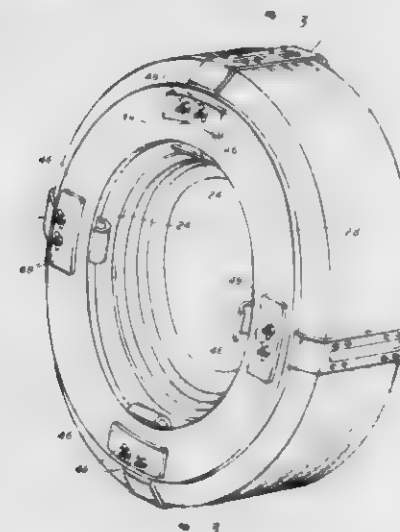
Michael E. Deluty, 37 Addington Rd., Brookline, Mass. 02146

Filed Sep. 22, 1978, Ser. No. 944,746

Int. Cl.³ B60C 27/00

U.S. Cl. 152—225 C

11 Claims



1. A removable traction increasing device for use on a vehicle tire comprising:
(a) a plurality of independent separate substantially U-shaped cleats sized and shaped to be adapted to fit around

the tire, each said cleat extending and fitting around the outer sidewall, the tread, and the inner sidewall of the tire, each said cleat having traction means on the bottom exterior portion of said cleat for gripping the underlying road surface;

(b) each said cleat having an interior portion sized and shaped to fit loosely around the tire when said cleat is out of contact with the underlying road surface; said interior portion fitting less loosely around the tire when said cleat is in contact with the underlying road surface;
(c) a single cleat holder adapted to be positioned adjacent to the outer sidewall of the tire, said cleat holder being unfixed to the tire or to the tire's wheel;
(d) means for loosely and detachably mounting said cleats on said cleat holder at spaced-apart locations on said cleat holder, said cleat mounting means preventing said cleats from being urged and solidly maintained against said cleat holder; and
(e) said cleat mounting means including a stud holding base mounted on said cleat, at least one stud being embedded in and protruding from said stud holding base, walls forming an oversized aperture in said cleat holder through which said stud is adapted to protrude without necessarily touching said aperture walls, said stud holding base protruding through and being dimensionally smaller than said cleat holder oversized aperture, and fastener means engaging said stud, said cleat holder adapted to be confined between said cleat and said fastener without necessarily touching either one.

4,226,273

NONPNEUMATIC TIRE AND RIM ASSEMBLY

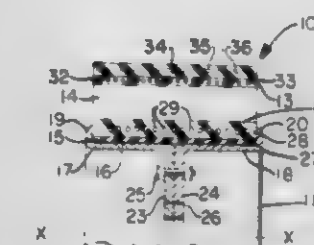
Barry W. Long, Copley, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 30, 1978, Ser. No. 920,668

Int. Cl.³ B60C 7/00

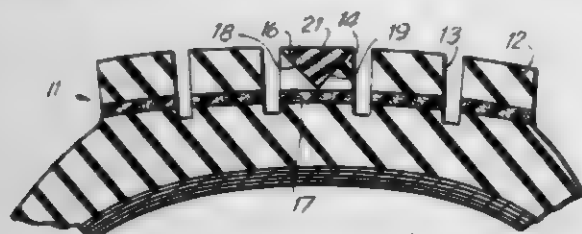
U.S. Cl. 152—326

6 Claims



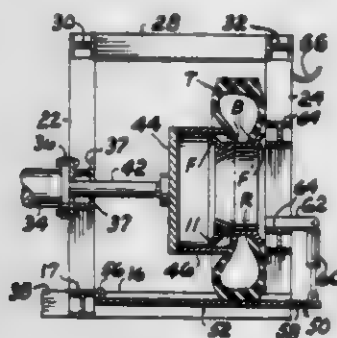
1. A nonpneumatic tire and rim assembly rotatable about an axis comprising an annular rim of substantially rigid material having a generally cylindrical tire-supporting surface, a pair of flanges at the edges of said tire-supporting surface, at least one of said flanges being detachably fastened to said rim for removal to mount and remove said tire, an annular tire of resilient material including a generally cylindrical inner member at the inner periphery, a generally cylindrical outer member spaced radially outward from said inner member, radially extending connecting wall members between said inner member and said outer member, said inner member being reinforced by a ply of cords having a high modulus of elasticity extending circumferentially of said inner member and having a radius in the unmounted condition which is greater than the radius of said tire-supporting surface of said rim, and at least a portion of said tire-supporting surface of said rim having a radius greater than radii of adjacent portions of said tire rim-engaging surface in the unmounted condition so that in the mounted condition of said tire on said rim said tire will be held in nonrotatable engagement with said rim.

4,226,274
RUBBER TIRE WITH WEAR INDICATOR THEREIN
 Herbert Y. Awaya, 3268 Kilbuck Pl., and Ronald S. Hleda, 738
 21st. Ave., both of Honolulu, HI. 96816
 Filed Sep. 18, 1978, Ser. No. 943,273
 Int. Cl.² B60C 11/00
 U.S. Cl. 152—330 A 10 Claims



1. A rubber tire, comprising a wear indicator in the general form of the letter K disposed within the tread of said tire, the vertical back of said letter being located at a region such as to indicate, on becoming visible as the result of wear of said tire that said tire is dangerously worn, the two diagonal arms of said letter being disposed for forming a triangle with the road-contact surface of said tire, said vertical back and the space between said arms including a colored component visually distinguishable from the remainder of the tread of said tire, whereby the length of the exposed side of said triangle at said surface of said tire serves as a quantitative measure of the remaining tread in said tire until the back of said letter becomes exposed.

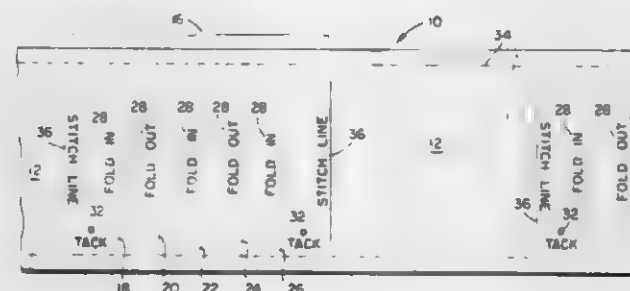
4,226,275
TIRE BEAD BREAKING APPARATUS
 Robert R. Robins, 721 N. Woodland, Minneapolis, Kans. 67467
 Filed Jan. 31, 1979, Ser. No. 8,019
 Int. Cl.¹ B60C 25/06
 U.S. Cl. 157—1.2 3 Claims



1. A machine for breaking the beads on the side wall of a tire away from bead seats on a rim having annular outwardly projecting flanges at its ends forming the bead seats and restraining the side walls, said machine comprising:
 an upright open frame capable of loosely surrounding a rim mounted tire when vertically positioned therein,
 one side of said frame having cross members forming a backstop in the plane of said one side against which the tire and rim are disposed;
 ram means supported by the side of said frame opposite said one side for movement toward and away from said backstop;
 adjustable platform means underlying said tire and rim for coaxially aligning said rim with an endless ring means, said platform means including an elongated plate hingedly connected, at one end portion, with a base portion of said frame below said ram means and projecting, at its other end portion, beyond said one frame side in underlying relation with respect to said backstop forming cross members, and,
 a hydraulic cylinder pivotally connecting said plate other end portion with one said cross member for vertically

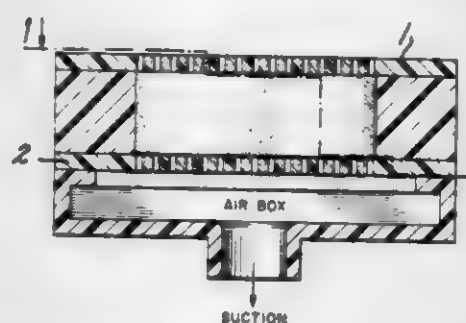
moving said plate other end portion toward and away from said cross members; and,
 said endless ring means supported by said ram means for coaxially engaging the adjacent side wall of said tire in close spaced circumferential relation with respect to the periphery of the rim flange.

4,226,276
DEVICE FOR PLEATING DRAPERIES
 Terry L. Bressler, 255 W. 35th St., New York, N.Y. 10001
 Filed Oct. 12, 1978, Ser. No. 950,737
 Int. Cl.² A47H 1/00
 U.S. Cl. 160—348 2 Claims



1. An improved backing for forming symmetrical groupings of pleats in a drapery or the like comprising a thin strip of resilient permanently deformable material which may be pre-measured to a desired length and mounted in said drapery or the like including a plurality of transverse pleat groupings provided therein, each pleat grouping comprising a discrete plurality of parallel transverse equidistant printed score lines, each such discrete plurality of said score lines being transversely bounded by a corresponding pair of printed stitch lines, said material being permanently deformable by folding along said discrete pluralities of said score lines and otherwise being impermanently resiliently deformable along its length, each of said respective pairs of transverse stitch lines being alignable in overlapping relationship when said material is folded along a discrete plurality of said transverse score lines; a pair of parallel longitudinal stitch lines, each of said stitch lines being equidistant from a respective longitudinal edge of said material; a plurality of aligned paired markings on said material, each of said paired markings corresponding to a discrete plurality of said score lines; and printed indicia adjacent each of said score lines aiding an operator in forming a pleat in each discrete plurality of said score lines.

4,226,277
NOVEL METHOD OF MAKING FOUNDRY MOLDS AND ADHESIVELY BONDED COMPOSITES
 Ralph Matalon, 432 Cherry Hill Blvd., Cherry Hill, N.J. 08034
 Filed Jun. 29, 1978, Ser. No. 920,499
 Int. Cl.² B22C 9/12, 1/18
 U.S. Cl. 164—7 27 Claims

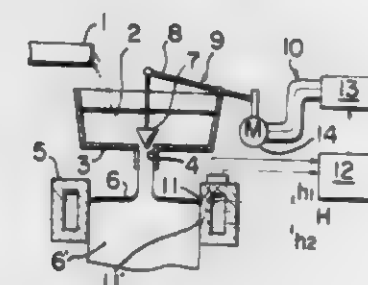


1. A method for manufacturing foundry molds or cores comprising
 (a) forming a green foundry sand around a pattern in a box having at least two air permeable faces, said sand comprising from 94 to 99.9% of a refractory foundry sand and having 0.1% to 6% by weight of an aqueous solution

containing a soluble silicate as a binder, said silicate containing an alkali metal, ammonium, an ammonium complex, or mixtures thereof as a cation and a silicate as the anion, the anion to cation mole ratio being between 1:1 and 4:1, said soluble silicate further containing from 47 to 70% water; and
 (b) applying a differential pressure between said air permeable faces sufficient to force air therebetween at a rate sufficient in less than two minutes to remove at least 30% of the water contained in said aqueous solution and to harden the sand to an instant tensile strength in excess of that obtainable from hardening said green sand by carbon dioxide gasing.

4,226,278
AUTOMATIC MOLTEN METAL SURFACE LEVEL CONTROL SYSTEM FOR CONTINUOUS CASTING MACHINES

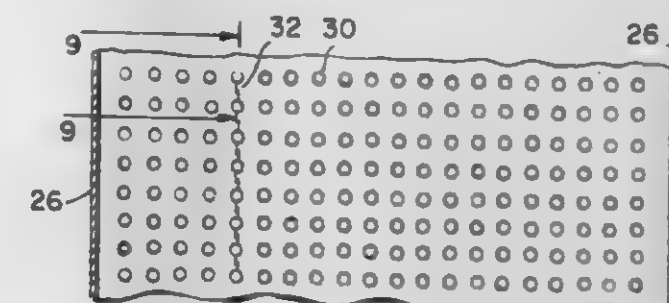
Kozo Osugi, Tokyo, Japan, assignor to Furukawa Metals Co., Ltd., Tokyo, Japan
 Filed Nov. 13, 1978, Ser. No. 959,639
 Claims priority, application Japan, Nov. 25, 1977, 52/141292;
 Jan. 13, 1978, 53/2476
 Int. Cl.³ B22D 11/16
 U.S. Cl. 164—449 3 Claims



1. In a continuous casting machine for producing ingots having a predetermined sectional area in which molten metal is continuously fed into a molten metal reservoir at a predetermined feed rate and said molten metal in said reservoir is poured into a continuous casting mold through a gate in said reservoir, said reservoir having an aperture that is adjustable under the control of an electric control mechanism, an automatic molten metal surface level control system for the continuous casting machine comprising: upper and lower electric level detecting means that detect that the molten metal surface in said casting mold has reached an upper command limit level or a lower command limit level, and a middle command level between said upper and lower limit levels, each of said upper and lower limit levels having a vertical command deviation from said middle command level; and, a signal generator, coupled to said level detecting means to generate controlling pulses having a predetermined pattern so arranged that when said molten metal surface has reached said upper command limit level the aperture of said gate is first brought to a substantially fully-closed position for a moment's time so as to bring down said molten metal surface to about said middle command level and then said gate is opened to a position that is closed slightly more from the initial aperture before the foregoing control operation, and, when said molten metal surface has reached said lower command limit level, the aperture of said gate is first brought to almost a fully-opened position so as to bring said molten metal surface up to about said middle command level and then, said gate is partially closed to the extent that it is slightly more closed than before the foregoing controlling operation.

4,226,279
METHOD OF SUPPRESSING FORMATION OF HEAT EXCHANGE FLUID PARTICLES INTO STANDING WAVES

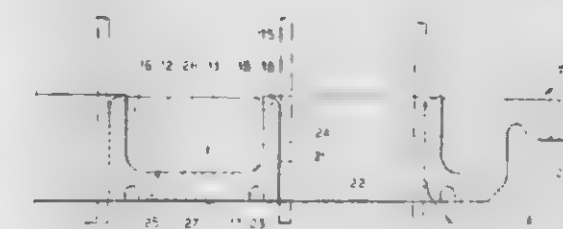
Frantisek L. Eisinger, Demarest, and Harry H. Pratt, West Orange, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.
 Filed Aug. 15, 1978, Ser. No. 933,706
 Int. Cl.³ F28F 9/22
 U.S. Cl. 165—1 4 Claims



1. A method of suppressing the formation of heat exchange fluid particles into standing waves, said heat exchange fluid being passed through a shell, and over a plurality of tube sections disposed transversely across said shell, to effect heat transfer between said fluid and said tube sections, said method comprising the steps of:

- disposing a plurality of metal fins within said shell, each of said fins extending parallel to a respective one of said tube sections and parallel to the direction of flow of said fluid through said shell;
 - arranging said fins to define with at least some of said tube sections a barrier, said barrier being adapted to interrupt movement of laterally extending columns of said fluid particles in a direction perpendicular to the direction of flow of said fluid through said shell; and
 - connecting said fins to respective tube sections adjacent said fins,
- whereby said barriers affect the standing wave frequencies of said columns.

4,226,280
LINER FOR A PERFORATE PLATE OF A HEADER TANK OF A HEAT EXCHANGER HAVING TUBES
 Bruno Hellouin de Cenival, Noisy-le-Roi, and Jean-Louis Moulene, Elancourt, both of France, assignors to Societe Anonyme Francaise du Ferodo, France
 Filed Feb. 9, 1979, Ser. No. 10,836
 Claims priority, application France, Feb. 21, 1978, 78 04942
 Int. Cl.³ F28F 9/04
 U.S. Cl. 165—69 4 Claims



1. A flexible rubber or rubberlike liner for an apertured plate having collared apertures for a header tank, said liner having holes rimmed with sleeves corresponding to the collared apertures, said sleeves being adapted to be inserted into the collared apertures of the apertured plate for holding a plurality of tubes associated with the header tank, said sleeves, when mounted, being squeezed between the tubes and the collars to effect fluid tightness around the tubes, said liner being designed to effect fluid tightness at the periphery of the header tank and/or between compartments of said header tank, the improvement

comprising a zone of reduced thickness surrounding each said sleeve whereby a deformation of portions of said liner beyond the zones of reduced thickness is prevented when stress is developed in said sleeves.

4,226,281

THERMAL CONDUCTION MODULE

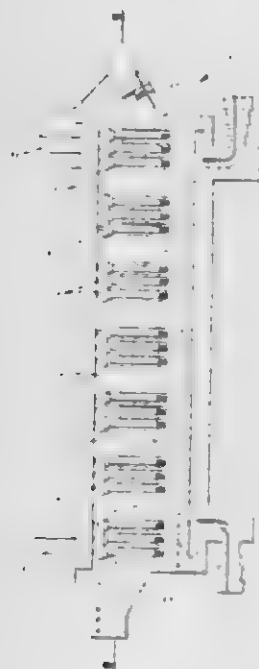
Richard C. Chu, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 11, 1979, Ser. No. 47,513

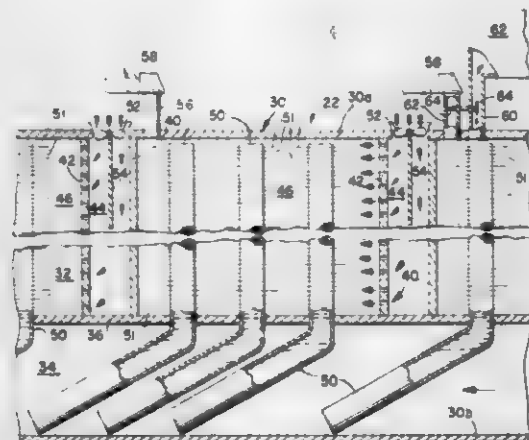
Int. Cl.³ H01L 23/40

U.S. Cl. 165—80 A

10 Claims



their respective evaporator sections located in said lower portion and their respective condenser sections located in said upper portion, a plurality of panels internal to said upper portion dividing the upper portion into a plurality of heat transfer compartments and adjacent cooling fluid plenums, said compartments substantially enclosing the upper portions of some of said thermal siphon pipes, the panel dividing each compartment from its respective



plenum provided with means to substantially uniformly distribute the flow of a cooling fluid from said plenum into said compartment, each compartment provided with an outlet to exhaust the cooling fluid after it has passed over the condenser section of said thermal siphon pipes, means for introducing a flow of cooling fluid into each of said plenums and through said inlet opening to cool said condenser sections of said heat pipes.

4,226,283

MULTITUBULAR HEAT EXCHANGER

Masahiro Furukawa, and Tamotsu Yamane, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

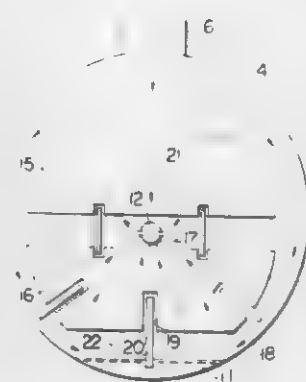
Filed Aug. 11, 1977, Ser. No. 823,655

Claims priority, application Japan, Aug. 27, 1976, 51-101574

Int. Cl.² F28B 9/10; F28F 9/22

U.S. Cl. 165—114

12 Claims



1. In a thermal conduction module for providing cooling of one or more integrated circuit chips having an exposed surface comprising:

- a housing having a surface adjacent the exposed surface of said circuit chips;
 - a plurality of cylindrical openings adjacent each chip extending into said housing from the surface facing said circuit chips;
 - a plurality of pin-pistons, one located in each of said plurality of cylindrical openings adjacent each chip and extending therefrom into contact with the exposed surface of said circuit chip;
 - a spring means located between said housing and each of said pin-pistons to provide a predetermined spring loading force of said pin-piston against the exposed chip surface; and
 - header means located at the outer end of each of said pin-pistons in contact with the exposed chip surface;
- said pin-pistons contacting the exposed chip surface even when the chip is tilted thereby providing improved heat transfer.

4,226,282

HEAT EXCHANGE APPARATUS UTILIZING THERMAL SIPHON PIPES

Laszlo Kunsagi, Montclair, and Ernest L. Daman, Westfield, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 707,575, Jul. 22, 1976. This application Aug. 30, 1978, Ser. No. 938,242

Int. Cl.³ F28B 1/06

U.S. Cl. 165—105

9 Claims

4. A heat exchanger for exchanging heat energy from a relatively hot fluid to a relatively cooler fluid comprising:

- a heat exchanger housing defined by top, bottom and side walls, a partition dividing the interior of said housing into an upper portion and a lower portion, a plurality of thermal siphon pipes extending through said partition with

1. In a feedwater heater comprising a shell, a heating medium inlet formed in said shell, a high temperature tube bundle and a low temperature tube bundle located within said shell and formed by a large number of U-shaped heat transfer tubes for permitting a medium to be heated to flow therethrough so that heat exchange may take place between the medium to be heated and a heating medium introduced into the interior of the shell through the heating medium inlet, and a vent tube interposed between the high temperature tube bundle and the low temperature tube bundle and arranged in the longitudinal direction of the shell for removing noncondensable gas from the interior of the shell, wherein the improvement comprises at least one flow guide plate means located on the outer periphery side of at least the low temperature tube bundle for inducing streams of the heating medium flowing between the shell and the tube bundles to pass on to the vent tube.

4,226,284

GAS WELL DEWATERING METHOD AND SYSTEM

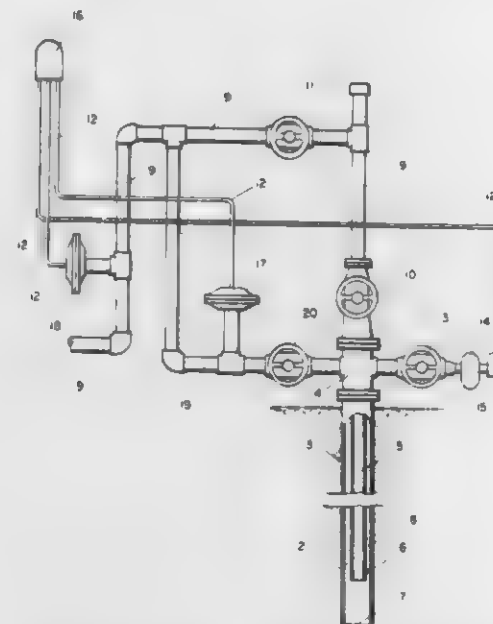
Jack E. Evans, 5804 Ravella Dr., Farmington, N. Mex. 87401

Filed Jan. 22, 1978, Ser. No. 917,933

Int. Cl.³ E21B 43/12

U.S. Cl. 166—64

2 Claims



1. In an gas well having a casing and tubing string in which liquid collection at the bottom of the well interferes with gas production, a system for shutting off the normal flow of gas, and directing the greater casing pressure down the tubing string as desired intervals that comprises a blow-back line connecting the well casing to a flow line said flow line through which the gas from a normally producing well passes; said blow-back line having a shutoff valve, a normally closed motor valve; a normally opened motor valve in the flow line down stream from the junction of the flow line and the blow-back line; a timer connected by a bleed line to the well head, said bleed line having a shut off valve and first gas regulator and a second gas regulator, said bleed line further connecting from the timer to the normally closed motor valve, and normally opened motor valve.

4,226,285

MAGNETIC JUNK RETRIEVER

Meekie D. Moseley, Jr., Rte. 1, Box R-53 G, Beaumont, Tex. 77706

Filed Feb. 12, 1979, Ser. No. 11,378

Int. Cl.² E21B 43/00

U.S. Cl. 166—65 M

5 Claims



1. A magnetic junk retrieving system for magnetizing a drill bit on the lower end of a drill stem and magnetically insulated therefrom, comprising

- a drilling sub, for connecting a drill bit to the lower end of

said drill stem, having a bore extending axially there-through, the drilling sub being of a ferromagnetic material, a wire coil positioned around the circumference of the drilling sub, the wire coil being connected at each end thereof to conductor means, and contact means connected to said conductor means, extending into the bore of said drilling sub, for contacting a power source when said power source is lowered into the bore of said drilling sub, whereby the coil is energized to create a magnetic force, said power source comprising an elongated housing having a bore chamber therein for housing a plurality of batteries, having an upper closed end and a lower closed end, and having a variable capacity for batteries receivable therein, said lower end having means disposed therein for conducting electricity from said batteries to said drilling sub when said housing is in contact with the contact means of said drilling sub.

4,226,286

PITLESS ADAPTER

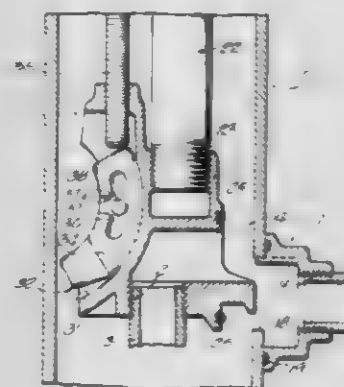
Harold E. Cramer, 10783 County Rd. 9, Findlay, Ohio 45840

Filed Jan. 22, 1979, Ser. No. 5,059

Int. Cl.³ E21B 33/03

U.S. Cl. 166—85

4 Claims



1. In a pitless adapter for use in a well casing to direct water flow through an opening in the well casing to a service pipe, the improvement comprising:

- a seal between the pitless adapter and the well casing protected by a projection within the seal area, a segment shaped locking member movable respecting said adapter downwardly and outwardly away from the seal in a segment shaped track in the adapter to firmly engage a well casing wall, and means to cause said movement and to retain said member in actuated position.

4,226,287

APPARATUS FOR PILE DRIVER CUSHION RECOIL

Joost W. Jansz, The Hague, Netherlands, assignor to Hollandse Beton Groep N.V., Rijswijk, Netherlands

Filed Jul. 7, 1978, Ser. No. 922,538

Claims priority, application United Kingdom, Jul. 15, 1977, 29928/77

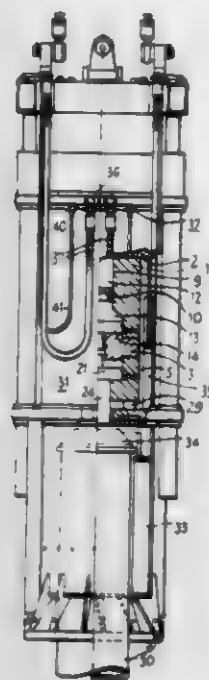
Int. Cl.³ E02D 7/10, 7/14

U.S. Cl. 173—126

10 Claims

1. Apparatus for driving a pile or similar object by the blows of a hammer in which the impact of a hammer blow is transmitted to the pile through resilient means comprising a precompressed gas, said apparatus comprising at least two variable volume compressed gas chambers, each said chamber being closed to the atmosphere and containing a gas which is precompressed to a predetermined value, the chambers being arranged in series in a path by which the impact of a hammer blow is transmitted to the pile whereby the volumes of the respective chambers are decreased by such impact, the prede-

terminated value to which the gas in the chambers is precompressed being such that under the impact of the hammer blow



the aggregate of the minimum forces directly available from the respective chambers exceeds the ground resistance.

4,226,288

SIDE HOLE DRILLING IN BOREHOLES

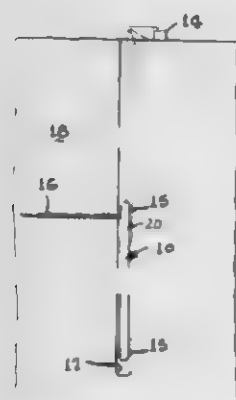
Earl R. Collins, Jr., La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed May 5, 1978, Ser. No. 903,240

Int. Cl.² E21D 10/00

U.S. Cl. 175—62

5 Claims



1. Apparatus useful in forming a side hole in a strata from a location within a borehole that extends into the strata comprising:

boring means which is operable to bore a hole and which includes a flexible elongated portion;
a first series of sheathing members;
a second series of sheathing members; and
means for advancing said boring means and sheathing members into the strata surrounding said borehole while operating said boring means to bore a hole, said means for advancing including means for progressively applying said first and second series of members at opposite sides of said boring means portion while advancing said boring means and sheathing members into the strata surrounding said borehole.

4. A method for forming a side hole from a location along a borehole into the strata surrounding the borehole, comprising: advancing a substantially flexible boring tool substantially sidewardly through the borehole side wall and into the surrounding strata; and successively applying a series of rigid sheathing sections about said boring tool, substantially rigidly connecting together successive sections to prevent the series of sec-

tions from bending to a small radius, and advancing said series of sections into the hole formed by said tool to support said tool against excessive bending as it bores deeply into the strata.

4,226,289

INDEPENDENT ONE-WAY ACTING HYDRAULIC JAR SECTIONS FOR A ROTARY DRILL STRING

Derrel D. Webb, 802 Axilda, Houston, Tex. 77017, and Edwin A. Anderson, 1104 Chimney Rock Rd., Houston, Tex. 77056

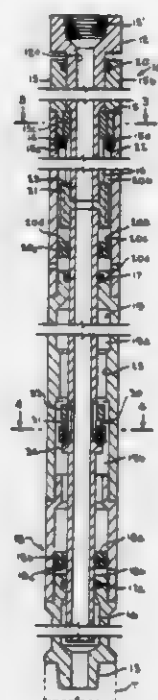
Continuation of Ser. No. 856,650, Dec. 2, 1977, abandoned. This

application Apr. 27, 1979, Ser. No. 34,181

Int. Cl.² E21B 1/10

U.S. Cl. 175—297

18 Claims



1. A hydraulic jar arrangement for incorporating in a drill string for use in a well bore comprising:

a. a first hydraulic jar section for delivering an upward jar to the drill string when it is stuck in the well bore comprising:

1. a first outer tubular member;
2. a first inner tubular member telescopically arranged and terminating within said first outer tubular member;
3. longitudinally spaced seal means between said first inner and outer tubular members forming a first chamber in the drill string for confining hydraulic operating fluid;

4. jarring surfaces on said first inner and outer tubular members for jarring contact with each other to deliver an upward jar to the stuck drill string;

5. longitudinally extending, annular first restriction means on said first outer member within the first chamber;

6. first piston means on said first inner member within the first chamber; and

7. said first piston means including one-way acting fluid meter means operable when said first piston means is between the ends of said first restriction means for restraining relative longitudinal movement of said first inner and outer tubular members to an extended position, said fluid meter means operable after a predetermined relative longitudinal movement between said first inner and outer tubular members to release said first inner and outer tubular members for subsequent unrestrained relative longitudinal movement therebetween until said jarring surfaces on said first inner and outer tubular members engage and deliver an upward jar to the stuck drill string;

b. a second hydraulic jar section for delivering a downward jar to the drill string when it is stuck in the well bore comprising:

1. a second outer tubular member;

2. a second inner tubular member telescopically arranged and terminating within said second outer tubular member;

3. longitudinally spaced seal means between said second inner and outer tubular members forming a second chamber in the drill string for confining hydraulic operating fluid;

4. jarring surfaces on said second inner and outer tubular members for jarring contact with each other to deliver a downward jar to the stuck drill string;

5. longitudinally extending, annular second restriction means on said second outer member within the second chamber;

6. second piston means on said second inner member within the second chamber; and

7. said second piston means including one-way acting fluid meter means operable when said second piston means is between the ends of said second restriction means for restraining relative longitudinal movement of said second inner and outer tubular members to a telescoped position, said fluid meter means operable after a predetermined relative longitudinal movement between said second inner and outer tubular members to release said second inner and outer tubular members for subsequent unrestrained relative longitudinal movement therebetween until said jarring surfaces on said second inner and outer tubular members engage and deliver a downward jar to the stuck drill string;

c. additional spaced seal means between said first inner and outer tubular members and between said second inner and outer tubular members forming an additional chamber in each of said first and second hydraulic jar sections for confining a lubricating fluid;

d. drive means in each of the additional chambers for connecting said first inner and outer tubular members and said second inner and outer tubular members to prevent relative rotation, while accommodating relative longitudinal movement, between said first inner and outer tubular members and between said second inner and outer tubular members respectively;

e. means in the first hydraulic jar section to equalize pressure adjacent one end of each the first chamber and the additional chamber with the pressure in the well bore whereby an upward jarring force may be effected in the stuck drill string independently of any well bore pressure; and

f. means between the second chamber and the additional chamber in said second hydraulic jar section to equalize pressure adjacent one end of each the second chamber and the additional chamber with the pressure in the well bore whereby a downward jarring force may be effected in the stuck drill string independently of any well bore pressure.

4,226,290

ROOF DRILLING SYSTEM

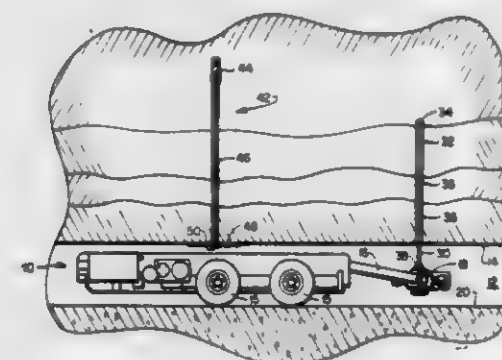
Lawrence H. McSweeney, Rte. #1, South Point, Ohio 45680

Filed Nov. 6, 1978, Ser. No. 957,972

Int. Cl.² E21B 17/00; E21C 1/00

U.S. Cl. 175—320

9 Claims



1. In roof drilling systems for use in subterranean mining applications wherein a drill head is selectively driveably ele-

vated from and lowered to floor level along a drill axis and includes a rotatably driven chuck selectively rotatable in first and second directions having a receiving cavity of fixed peripheral dimension for slideably receiving and laterally abutably engaging for rotation about said drill axis the driven lowermost part of the drive-in portion of an elongate rod component of roof drill steel, the improvement comprising:

a drill steel assembly component having an elongate portion fixed to and extending from a said drive-in portion, said drive-in portion being configured having a said driven lowermost portion of generally square profile and given maximum cross-sectional dimension, said driven lowermost portion extending a predetermined length to a cylindrical neck portion fixed thereto and having a maximum cross-sectional dimension less than said driven lowermost portion maximum cross-sectional dimension to define a first bearing surface therebetween, said neck portion extending from said first bearing surface and fixed to said elongate portion;

said drill head receiving cavity being configured having a right cross-sectional profile for providing about a 45° extent of rotational lost motion freedom about said drill axis with respect to said driven lowermost portion when the latter portion is inserted thereinto, said receiving cavity profile defining four mutually symmetrically disposed lobes the faces of which define four bearing surfaces of tangency with said drive-in portion lowermost portion upon movement of said cavity in either of said first and second directions; and

retainer means of predetermined thickness mounted upon said drill head, stationary with respect to said receiving cavity and having a non-circular aperture formed therein the profile of which is configured to slideably insertably receive said driven lowermost portion of said drive-in portion, the lowermost surface of said retainer means providing a second bearing surface abuttable against said first bearing surface when said drill head is lowered, whereby said elongate rod component of drill steel may be driveably removed from a bore formed thereby.

4,226,291

REAMER STABILIZER FOR ROCK DRILLS

William R. Spelts, P.O. Box 208, Logan Lake, British Columbia, Canada (V0K 1W0)

Filed Feb. 13, 1979, Ser. No. 11,873

Int. Cl.² E21B 9/22; E21C 17/00

U.S. Cl. 175—325

5 Claims

1. Reamer and stabilizer apparatus for rock drilling equipment comprising:

(a) an elongated body member having a threaded socket at one end for connection to a threaded end of a drill stem, (b) means at the other end of the body member for connecting a drill bit thereto,

(c) the body member having a plurality of circumferentially spaced recesses having longitudinally spaced apart end walls,

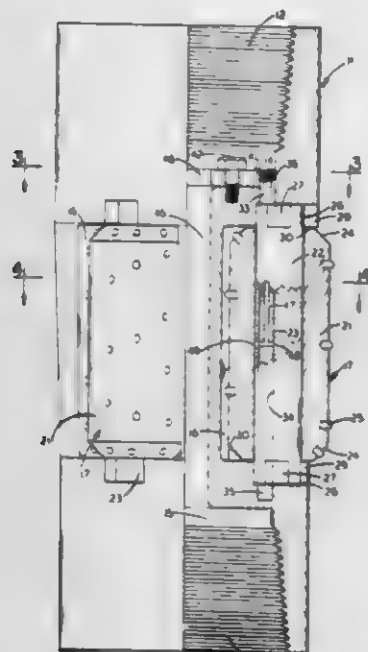
(d) a plurality of roller units, each unit having an axle and a roller rotatably mounted thereon, and each axle having a slidable fit between the end walls of each of the recesses, (e) each axle having a longitudinally extending keeper pin passage opening out of the ends thereof,

(f) bores extending between each recess wall and threaded socket aligned with the passages through the axles,

(g) keeper pin retainer sockets opening out of the opposite end walls of the recesses aligned with the bores,

(h) a keeper pin extendable through the threaded socket and through each axle passage and engaging an associated

keeper pin socket for releasably securing the axles within the recesses,



(i) means releasably secured to the body within the threaded socket for preventing withdrawal of the keeper pins from the respective axles.

4,226,292

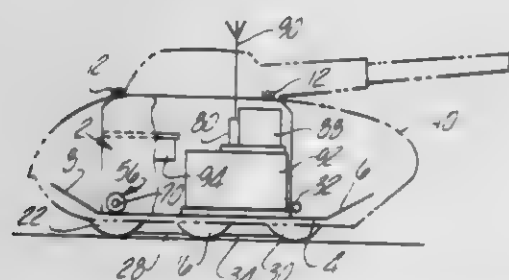
MINIATURE TARGET VEHICLE

Anthony J. Monte, 47660 Bluebird, Utica, Mich. 48087, and Ernest C. Wahoski, 20489 Lancaster, Harper Woods, Mich. 48225

Filed Feb. 1, 1979, Ser. No. 8,319
Int. Cl.³ B62D 55/02; F41J 9/02

U.S. Cl. 180—6.5

5 Claims



1. A track-laying miniature target vehicle simulating a combat tank in appearance and having an exoskeletal basic supporting structure, comprising:

- a metal five-sided box open at the bottom;
- Two supporting axes mounted on opposite sides of the box approximately midway between the ends of the box and in axial alignment, each axle supporting two road wheels for rotation on a common axis by means which secure the two road wheels against relative rotation;
- a second axis of rotation adjacent one end of the box;
- fifth and sixth road wheels, one on each side of the box coplanar with one of said two road wheels on the same side of the box and mounted on the box for rotation on said second axis of rotation;
- a pair of drive means, one for each of the fifth and sixth road wheels, carried by the box closely adjacent to its associated road wheel and drivingly connected to it;
- a third axis of rotation adjacent the end of the box opposite to that of said second axis;
- seventh and eighth road wheels, one for each side of the vehicle;
- means mounting the seventh and eighth road wheels for rotation on said third axis, each of said seventh and eighth

road wheels being coplanar with the remaining one of said two road wheels on the same side of the box;

- first and second drive belts connecting the fifth and sixth road wheels respectively with their corresponding coplanar road wheels;
- third and fourth drive belts connecting the seventh and eighth road wheels respectively with their corresponding coplanar road wheels; and
- a bottom plate secured to the open side of said box at the bottom thereof, said plate having extensions at each end forming ramps with extend upward and away so as to constitute approach ramps as determined by the direction of motion.

4,226,293

TRACK-LAYING VEHICLE WITH IMPROVED SUSPENSION

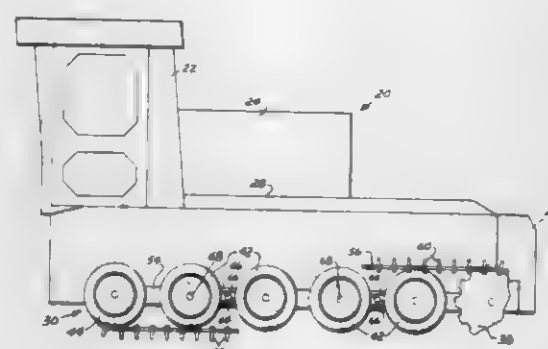
Ron D. Bieker, McCook, Nebr., assignor to Miller W. Corporation, Stratton, Nebr.

Filed Mar. 16, 1979, Ser. No. 21,149

Int. Cl.³ B62D 55/06

U.S. Cl. 180—9.5

10 Claims



1. A track-laying vehicle having a longitudinal main body carried by and between a pair of fore-and-aft track units pivoted at their rear ends to the body on a common transverse pivot axis for vertical oscillation relative to each other and to the body and cross-connected at their front ends to the body by transverse equalizer means, characterized in that the equalizer means comprises parallel linkage means pivoted at opposite ends respectively to the track units on vertically spaced apart pivot axes and pivoted intermediate its ends to the body at its longitudinal centerline on vertically spaced apart pivot axes.

4,226,294

ENGINE SYSTEM USING LIQUID AIR AND COMBUSTIBLE FUEL

Albert L. Latter, Marina del Rey; R. Philip Hammond, and James L. Dooley, both of Santa Monica, all of Calif., assignors to R & D Associates, Marina del Rey, Calif.

Filed Nov. 6, 1978, Ser. No. 958,056

Int. Cl.³ B60K 3/02; F01K 25/06

U.S. Cl. 180—54 B

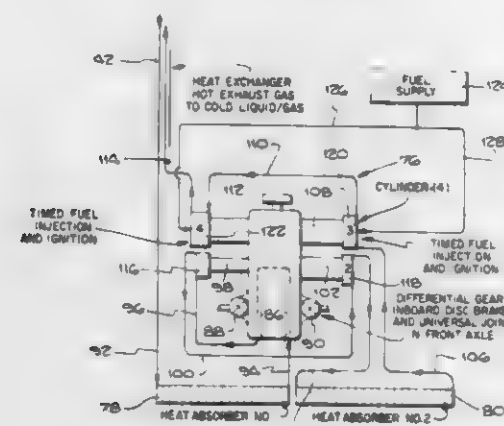
16 Claims

1. An automobile expansion engine system employing a combination of liquid air and combustible fuel as energy sources comprising:

- an insulated storage tank for liquid air;
- means for pumping liquid air from said storage tank to an elevated pressure above 50 bars;
- heat exchanger means coupled to said pump for warming the liquid air toward the ambient to change it to the gaseous state substantially at said elevated pressure;
- expansion engine means, connected to receive air from said heat exchanger means, for permitting said air at high pressure to expand and perform useful work;
- additional heat exchange means for receiving air from said expansion engine means and for further warming the partially expanded air toward the ambient;

means for supplying combustible fuel to said partially expanded air;

means for burning said fuel with a part of the oxygen in said partially expanded air and raising the temperature and pressure of said partially expanded air; and



additional expansion engine means for further expanding said heated air and the associated combustion products and obtaining additional useful work therefrom.

4,226,295

GEAR SHIFT SYSTEM AND METHOD WITH OPTIONAL GAS PEDAL CONTROLLED SHAFT INITIATION

Helmut Rembold, Möglingen; Ernst Linder, Muhlacker, and Ferdinand Grob, Besigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

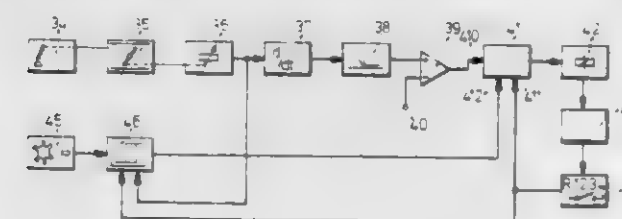
Filed Mar. 6, 1978, Ser. No. 883,873

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714559

Int. Cl.² B60K 20/16

U.S. Cl. 180—335

52 Claims



1. In an automotive vehicle having a gas pedal (34), an engine having a throttle valve (35) coupled to said gas pedal, gearing (43), gear speed sensor means (45) for furnishing a transmission speed signal indicative of the speed of said gearing, and gear shift means (42) for changing gear ratios in said gearing in response to shift command signals, a system for furnishing said shift command signals to said gear shift means, comprising, means (36-39) connected to said gas pedal for furnishing a desired gear shift signal only when the magnitude of rate of change of position of said gas pedal exceeds a predetermined magnitude;

shift enable signal furnishing means (46, 80) connected to said gear speed sensor means, for furnishing an up-shift enable signal when the speed of said gearing exceeds a predetermined first gear speed and for furnishing a down-shift enable signal when the speed of said gearing is less than a predetermined second gear speed;

and gear control means (41) connected to said desired gear shift signal furnishing means and said shift enable signal furnishing means, for furnishing an up-shift command signal to said gear shift means in response to the simultaneous presence of said desired gear shift signal and said up-shift enable signal, and for furnishing a down-shift command signal to said gear shift means in response to the simultaneous presence of said desired gear shift signal and said down-shift enable signal.

4,226,296

FRAME OF MOTORCYCLES

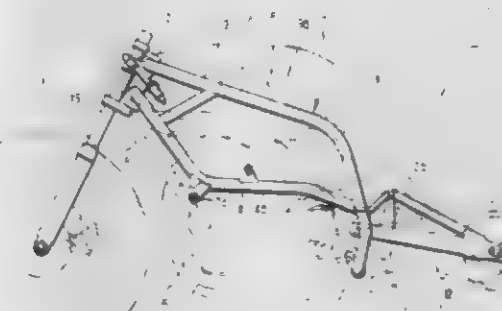
Kazuo Higaki, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 25, 1978, Ser. No. 945,297

Claims priority, application Japan, Sep. 30, 1977, 52/118061
Int. Cl.² B62D 61/02

U.S. Cl. 180—219

9 Claims



1. A motorcycle frame for dependently supporting an engine, comprising: a forward steering head; a pair of laterally spaced-apart upper tubes; a pair of laterally spaced-apart lower tubes, the forward end of each of the tubes being welded to the steering head, the rearward ends of the upper tubes, the lower tubes being welded to the upper tubes at locations spaced forwardly from the rearward ends of the rear portions of the upper tubes being downwardly bent, the intermediate portions of the lower tubes being laterally spaced-apart sufficiently to receive and embrace said engine; at least one upper connector tube laterally interconnecting said upper tubes; at least one lower connector tube laterally interconnecting said lower tubes, the frame being devoid of structure which can interfere with the entry of said engine between said intermediate portions; and bracket means on said frame for dependently suspending said engine between said intermediate portions.

4,226,297

ACOUSTIC TREATED EXHAUST PLUG FOR TURBINE ENGINE

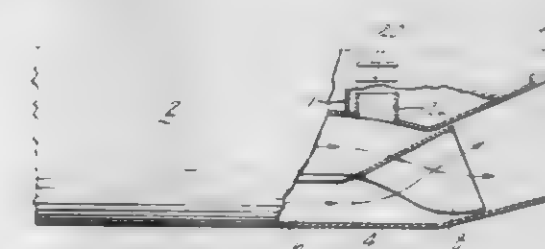
Dennis E. Cicon, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 12, 1979, Ser. No. 3,434

Int. Cl.² F01N 1/00; G10K 11/04; F02K 11/26

U.S. Cl. 181—213

4 Claims



1. In combination, a hollow tail cone plug mounted in the exhaust stream of a turbine type power plant, means for suppressing sound noise in the low frequency range including a plurality of elongated slots having their major axis disposed parallel to the grazing flow spaced circumferentially in the outer skin of the plug and communicating with the cavity portion of the plug, each slot having a hollow depending member extending from the slot radially inward in said cavity defining a volume for supporting a column of air, said volume and the volume of said cavity being selected to tune said suppressing means for the desired frequency of peak attenuation of the noise propagated by the grazing flow.

4,226,298

EXHAUST DEVICE FOR INTERNAL COMBUSTION ENGINES

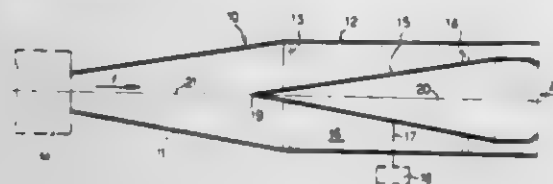
Guy H. Bancel, 83, rue Petit, 75019 Paris, France, and Francois N. E. Varigas, Paris, France, assignors to Guy Henri Bancel, Paris, France

Continuation of Ser. No. 736,937, Oct. 29, 1976, abandoned.
This application Jul. 17, 1979, Ser. No. 58,378

Int. Cl.³ F01N 1/16

U.S. Cl. 181—226

6 Claims



1. An exhaust device for an internal combustion engine with an external envelope comprising in the direction of flow of the exhaust gases, a first section defined by a progressively increasing cross-section, a cylindrical section following said first section the diameter of which is equal to the greater diameter of said first section, and said cylindrical section being further defined with its interior provided with a streamlined member with an ogival or conical surface which is substantially coaxial with said cylindrical section and the vertex of which is upstream, exhaust gases flowing without any perturbation of the fluid stream inside said first section and, after, through a progressively decreasing cross-section, between the streamlined member and the cylindrical section of the envelope.

4,226,299

ACOUSTICAL PANEL

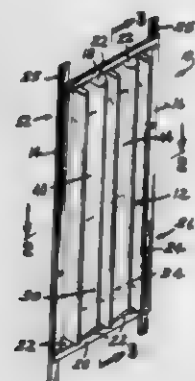
Lawrence F. Hansen, Minneapolis, Minn., assignor to Al-phadyne, Inc., Minneapolis, Minn.

Filed May 22, 1978, Ser. No. 908,545

Int. Cl.³ G10K 11/04; E04B 1/99

U.S. Cl. 181—284

23 Claims



1. An acoustic panel for reducing acoustic noise comprising: means for causing acoustic wave interference of the acoustic noise to occur including a corrugated sheet having a wall of generally parabolic sinusoidal configuration made up of a plurality of curvilinear sections interconnected by a plurality of linear sections to form a plurality of corrugations wherein given sound waves over a selected frequency spectrum striking said wall are segregated into their respective frequency components and are reflected from said wall and phase shifted to meet a complementing frequency component to yield a total phase shift of approximately one hundred and eighty degrees; said corrugated sheet being bounded by a plurality of edges and having a first dimension generally parallel to the corrugations and a second dimension generally perpendicular to the first dimension; and means connected to said edges extending along said second dimension for enabling said corrugated sheet to dissipate acoustic energy by pumping when selected low frequency acoustic energy is applied to the corrugated sheet, said

means including a flange member attached to at least one of said last-mentioned edges, said flange member having selected thickness and width to establish the transaxial stiffness-compliance of said panel such that said panel pumps when acoustic energy below approximately 160 Hertz is applied to the wall of said panel.

4,226,300

SELF PROPELLED AND EXTENSIBLE BOOM LIFT

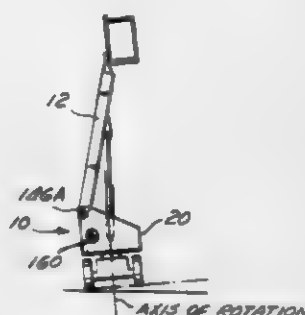
Rallie P. Rallis, Artesia; Richard E. Cullity, La Mirada, and Lyle R. Tamplin, Anaheim, all of Calif., assignors to Mark Industries, Carson, Calif.

Filed Feb. 21, 1979, Ser. No. 13,689

Int. Cl.³ B66F 11/04

U.S. Cl. 182—2

13 Claims



1. In a lift, the combination of a self propelled frame; a boom; and a body mounted on said frame so as to be selectively rotatable thereon about an axis of rotation; said body including (a) a counterweight with a center of gravity, said counterweight being fixed to said body so as to form a portion thereof which is most remote from the axis of rotation, and (b) means for pivotally attaching said boom to said body so that the counterweight center of gravity is always disposed between the boom pivotal attachment and the axis of rotation.

4,226,301

COLLAPSIBLE SAWHORSE

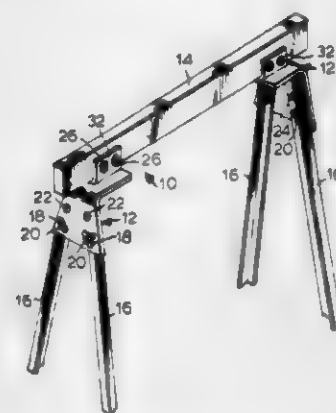
Horace J. McDaniel, 215 Bryan Blvd., Plantation, Fla. 33318, and James A. Young, 720 NW, 178th Terrace, Miami, Fla. 33169

Filed Jan. 29, 1979, Ser. No. 7,350

Int. Cl.³ F16M 11/00

U.S. Cl. 182—155

2 Claims



1. A collapsible sawhorse, comprising: a rigid beam, said beam having a first and second lateral passage near one end, and a third and fourth lateral passage near the opposite end; a pair of rigid plates, each plate having a first area and a second area, said first and second areas defining planes,

said planes being at a predetermined angle relative to each other, said first area having a slot disposed adjacent one end, said slot being sized to receive the lateral width of said rigid beam, said slot being further defined by a pair of substantially perpendicular flanges upwardly disposed and parallel, spaced to encompass the lateral sides of said rigid beam, said flanges including first and second apertures for receiving fasteners and said apertures being spaced apart equal to the first and second and third and fourth lateral passages in said rigid beam, the first area including a portion beyond said slot, said portion for receiving said rigid beam, said beam being extended in length to overlap the non-slotted portion of the first area, the second area including first and second apertures for receiving a fastener and corresponding arcuate apertures; and first and second pairs of rigid legs, first and second fasteners connected between said legs and second area of said rigid plate, third and fourth fasteners connected in said arcuate slots whereby said legs may be pivoted from a first spread apart position to a second substantially parallel position by loosening said fasteners in said arcuate slots; and fifth and sixth removable fasteners disposed between said flanges of said first area, one of said fasteners acting as a pivot such that removal of one fastener in said flange will allow said plate to be rotated such that said legs are parallel to said beam.

4,226,302

SECTIONAL LADDER LOCK

John N. Roche, Greenville, Pa., assignor to R. D. Werner Co., Inc., Greenville, Pa.

Filed Nov. 30, 1978, Ser. No. 965,143

Int. Cl.² E06C 1/10

U.S. Cl. 182—178

16 Claims



1. Apparatus for releasably locking a ladder section to another ladder section, said ladder sections being movable relative to each other, and

latch actuating means protruding from one of said ladder sections and being movable with said one ladder section; and

a latching mechanism mounted on the other of said ladder sections, said latching mechanism including:

a latching hook for securing said other ladder section to said one ladder section, said latching hook being movable between a locking position wherein a portion of said hook is disposed in the path of movement of said latch actuating means to releasably lock said ladder members together and a releasing position wherein said

one ladder member is removable from said other ladder member; and tripping means operable in response to the movement of said latching hook to the locking position to prevent movement of said hook from the locking position, and manually operable for enabling the movement of said locking means from the locking position to the releasing position.

4,226,303

HYDRAULICAL DAMPING ELEMENT, IN PARTICULAR FOR DAMPING OF THE SWIVEL MOVEMENT OF A MOVIE OR TELEVISION CAMERA WHICH IS SECURED ON A HEAD OF A TRIPOD

Georg Thoma, Mozartstr. 14, 8021 Sauerlach, Fed. Rep. of Germany

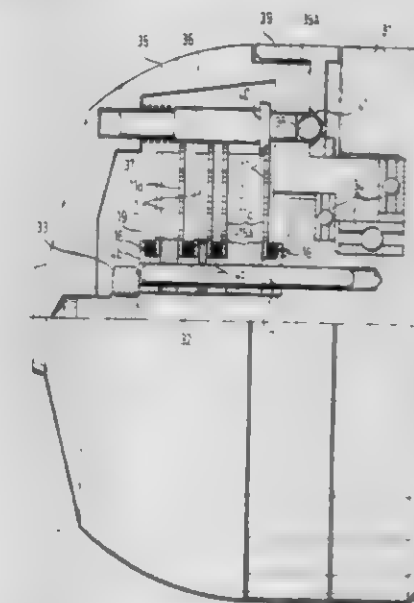
Filed Dec. 16, 1977, Ser. No. 861,410

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2657692

Int. Cl.² F16D 57/02

U.S. Cl. 188—1 B

6 Claims



1. A tripod head for a television or film camera including a rotatable receiving device for the camera, a shaft connected to the receiving device, a fixed stator including bearing means rotatably supporting said receiving device, and a hydraulic damping element interposed between rotatable device and stator,

the damping element comprising a self-contained independent unit incorporating two subunits, the first subunit being composed of alternating, abutting annular disk-shaped spacers and damping disks all having the same hole diameter with outer ones of said spacers forming the outer ends of said first subunit, the second subunit being composed of alternating, abutting annular disk-shaped damping disks and spacers all having the same outside diameter with outer ones of said damping disks forming the outer ends of said second subunit, the damping disks of the two subunits being interfingered with one another in a comb-like manner, the two outer damping disks of the second subunit being slidable in friction bearing relation on the outer spacers of the first subunit, and including a seal therebetween at the friction bearing interface, and damping fluid contained in the thus-sealed damping element; means mounting the damping element as a unit on said head and including means rigidly fixing said first subunit for rotation with said shaft and locking means for locking said second subunit in a fixed position with respect to said stator during the rotary movement of said shaft, said rigidly fixing means including an elongate pin extending through eccentrically located axial openings in said spacers and damping disks of said first subunit and then into an eccentrically located axial hole in said rotatable device,

said locking means comprising teeth on one of said outer ones of said damping disks of said second subunit and means on said stator selectively interengageable therewith, said second subunit including eccentrically located axially extending means locking together said spacers and damping disks of said second subunit and free of connection to said stator means.

4,226,304

DISK BRAKE FOR VEHICLES, ESPECIALLY FOR MOTORCYCLES

Klaus Erdmann, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

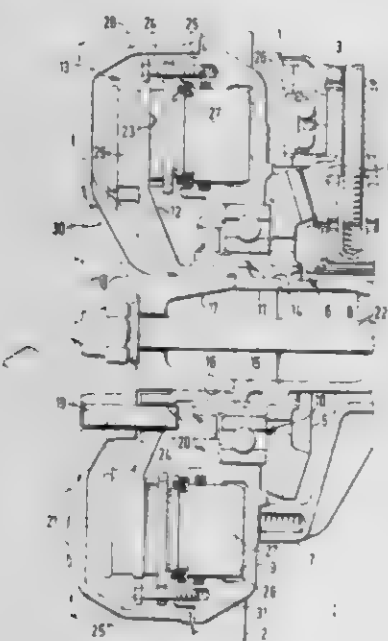
Filed Nov. 29, 1978, Ser. No. 964,636

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753753

Int. Cl.³ F16D 65/12

U.S. Cl. 188—18 A

3 Claims



1. A disk brake arrangement in a vehicle, comprising a wheel means having a wheel hub connected with wheel spokes, said wheel means being supported unilaterally at a wheel guide means, said wheel hub being operatively connected with a support hub rotatably supported at the wheel guide means as well as with a brake disk means, the brake disk means including an axially extending brake disk hub which is clamped in between the support hub and the wheel hub by way of a central connecting means, characterized in that said wheel hub has a central axially extending portion which is centered in a stepped through bore of the brake disk hub, said brake disk hub being non-rotatably connected with said wheel hub and on its outer circumferential surface being centered and connected in a non-rotatable manner in the support hub, whereby the support hub is located in the region of the connection of the brake disk hub and the wheel hub, and wherein said central connecting means clamping said brake disk hub between said support hub and said wheel hub is a central threaded bolt.

4,226,305

ROPE DESCENT CONTROL-BRAKE

Finn Frestad, Floyveien 4, N-4440 Flekkefjord, Norway

Filed Nov. 17, 1978, Ser. No. 961,490

Claims priority, application Norway, Nov. 29, 1977, 774003; Jun. 28, 1978, 782228

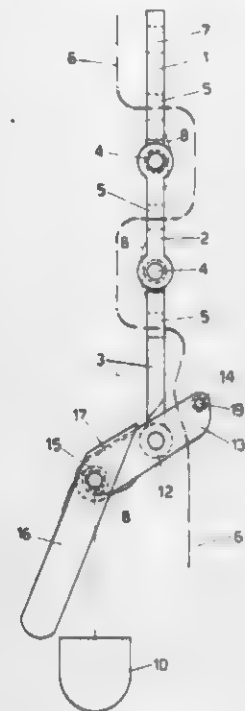
Int. Cl.² B65H 59/26

U.S. Cl. 188—65.2

5 Claims

1. Rope descent control-brake which is movable along a rope and which locks firmly on to the rope when pulled, the rope descent control-brake comprising an upper part, a middle part, and a lower part, said upper part being hinged to said middle part by hinge-joint and said middle part being hinged to

said lower part by a hinge-joint for swinging movement relative to each other about horizontal axes and each part having a hole through which the rope is passed, said holes being horizontal and perpendicular to the axes about which said parts are hinged when said parts are vertically aligned, and the



lower part having an anchorage point for a safety-harness, springs mounted on the hinge-joints between said parts in such a manner as to cause said parts to move into the vertically aligned position as soon as the parts are released following a movement along the rope and thus providing further assurance that the control-brake locks on to the rope quickly and safely.

4,226,306

APPARATUS FOR ACTUATING A BRAKING UNIT

Arnold Schäfer, Kloten, Switzerland, assignor to Schweizerische Lokomotiv- und Maschinenfabrik, Winterthur, Switzerland

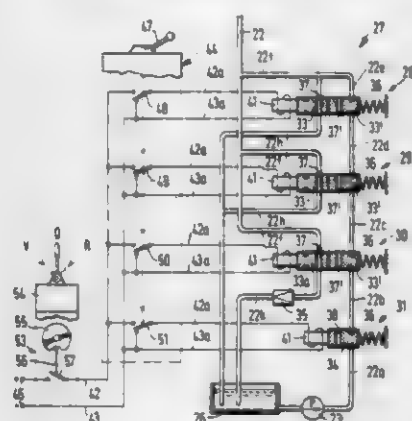
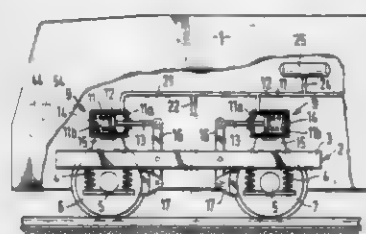
Filed Jan. 16, 1979, Ser. No. 3,902

Claims priority, application Switzerland, Jan. 24, 1978, 724/78

Int. Cl.³ F16D 65/30

U.S. Cl. 188—170

13 Claims



1. Apparatus for actuating at least one braking unit; said apparatus comprising at least two braking control means for effecting a braking action in the braking unit;

at least two shut-off means for preventing a braking action in the braking unit, each shut-off means being coupled to a respective braking control means; at least one lifting control means for re-setting the braking unit; actuating lines connecting said braking control means in parallel to the braking unit and connecting said lifting control means and said shut-off means in series to the braking unit; and positioning means for switching each of said braking control means and said lifting control means between a respective operating position and shut-off position; said operating position of each said braking control means corresponding to an actuation of the braking unit into a braking condition and said shut-off position of each said braking control means corresponding to a blocking of the braking of the braking unit, said operating position of each said shut-off means and said lifting control means corresponding to a release position permitting re-setting of the braking unit and said shut-off position of said shut-off means and said lifting control means corresponding to said operating position of each said braking control means.

4,226,307

APPARATUS FOR TAKING UP WEAR IN A BRAKE AND BRAKE UTILIZING THIS APPARATUS

Henri Dorot, Wattignies, France, assignor to Verlinda, Societe Anonyme, Looz, France

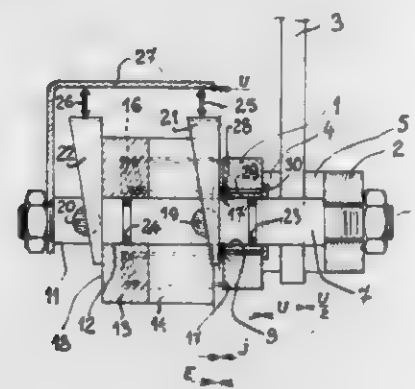
Filed Dec. 1, 1978, Ser. No. 965,413

Claims priority, application France, Dec. 12, 1977, 77 38527

Int. Cl.³ F16D 55/224, 65/52; H02P 3/04

U.S. Cl. 188—196 V

10 Claims



1. Automatic apparatus for compensating for wear in a brake with floating front and rear shoes acting on one side and on the other of a disc blocked in translation, comprising at least one guide fixed at one of its extremities to said rear shoe, said at least one guide being parallel to the axis of said disc, said front shoe, and a yoke, being slidably mounted on said at least one guide, means for preventing the escape of said yoke from said guide, means for distributing from one part and the other of the disc the value of the disengagement movement, means for controlling the attraction of said front shoe and said yoke, and the spacing of said front shoe and said yoke, compensation for wear accruing by limitation of the movement of said front shoe and of said yoke with respect to said disc, being characterized in that it comprises two stops on said at least one guide and two wedges disposed in such a way that for each guide said front shoe and said yoke have their faces which are located away from said disc engaging one of said stops through one of said wedges, and means for urging said wedges to automatically engage more and more between said face and the corresponding one of said stops, whereby in accordance with wear, said wedges separate said yoke and said front shoe.

4,226,308

DISC BRAKE COVER

Yukinori Nishiyama, and Masachika Yamamoto, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

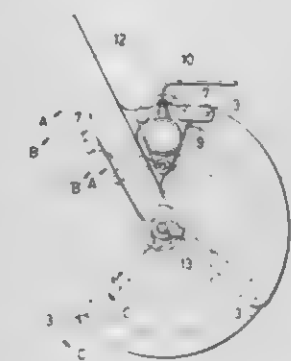
Filed Apr. 30, 1979, Ser. No. 34,701

Claims priority, application Japan, Apr. 28, 1978, 53-57066[U]

Int. Cl.³ F16D 65/00

U.S. Cl. 188—218 A

7 Claims



1. A disc cover for a brake on a two-wheeled vehicle comprising: a vehicle structural support, a disc brake assembly coupled to said support, a braking disc and a central axis about which said disc is mounted, a cover unit having a plurality of overlapping sections, each section coupled to said central axis, said sections adapted to nest in a closed configuration and to be spread to substantially cover one side of said braking disc, means to hold said sections in closed or spread configurations, and a plurality of holes in each section, one hole in each section positioned to be in alignment with a hole in each other section when said sections are nested, wherein said holding means comprises a fixing pin positioned inside said cover unit and having extending rods projecting through said aligned holes when said sections are nested.

4,226,309

SPEED RESPONSIVE ROTARY COUPLING

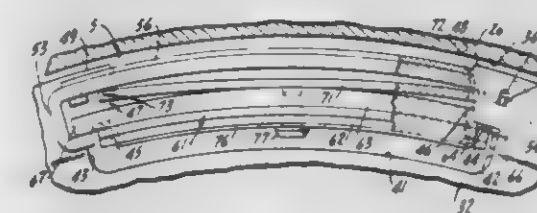
Russel E. Silberschlag, Glen Ellyn, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,385

Int. Cl.² F16D 43/14

U.S. Cl. 192—3.31

9 Claims



1. A speed responsive rotary coupling including a first rotatable member having a circumferentially extending drive surface defined therein, a second rotatable member, said second rotatable member including guide means, and a centrifugally actuated friction shoe movably mounted in said guide means for radial movement toward and from engagement with said drive surface, wherein the improvement comprises auxiliary loading means operatively connected to said friction shoe, said auxiliary loading means including a follower member movably mounted on said second rotatable member, said follower member being movable in a radially outward direction under the influence of centrifugal force responsive to rotation of said second rotatable member, a yieldable load spring engaged between said friction shoe and said follower member, said load spring being subjected to flexure in accordance with radially

outward movement of said follower member, whereby said load spring imposes a force on said shoe proportional to flexure of said spring by said follower member, and further including stop means operative to limit outward movement of said follower member whereby after initial shoe contact with said drive surface, the engaging force of said shoe will have a first relationship to rotational speed of said second rotatable member, and after the follower member contacts the stop means, a second relationship between the shoe engaging force and rotational speed of said second rotatable member is developed.

4,226,310

BICYCLE FREE WHEEL HUB WITH COASTER BRAKE
Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

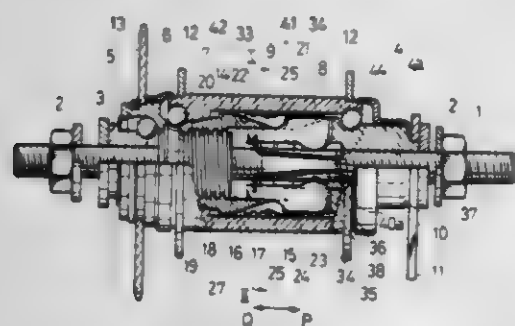
Filed Dec. 14, 1978, Ser. No. 969,271

Claims priority, application Japan, Dec. 16, 1977, 52-152074; Mar. 27, 1978, 53-35124

Int. Cl.³ B62L 5/02; F16D 41/28

U.S. Cl. 192-6 R

12 Claims



1. A bicycle free wheel hub with coaster brake comprising an anchor member fixedly mounted to one end of a stationary axle, a driving member journaled on the other end of said axle, a hub shell journaled on said anchor member and said driving member, a clutch cone screwed on an externally threaded and inwardly extending axial extension of said driving member so as to move axially inward and backward by threads along with directions of rotation of said driving member, a plurality of brake shoes arranged so as to be forcibly expanded radially when said clutch cone moves axially inward, said clutch cone having a clutch surface at its outward end and a brake-shoe expanding surface at its inward end, said clutch cone being provided with an axial hole of which inward end is formed with a non-smooth surface, and a plurality of slits formed in an inward portion of said anchor member within which a plurality of detent pieces are respectively disposed with each end extended into said axial hole, said detent pieces being arranged so as to restrict said brake shoes from circumferential motion and so as to be elastically urged radially by means of at least one spring member for frictionally engaging said each end with said non-smooth surface of said clutch cone.

4,226,311

ROTARY DRIVE DISC BRAKE FOR DRAWWORKS

Earl R. Johnson, and Lesley G. Watkins, both of Tulsa, Okla., assignors to Loffland Brothers Company, Tulsa, Okla.

Division of Ser. No. 795,106, May 9, 1977, Pat. No. 4,144,953.

This application Nov. 6, 1978, Ser. No. 958,107

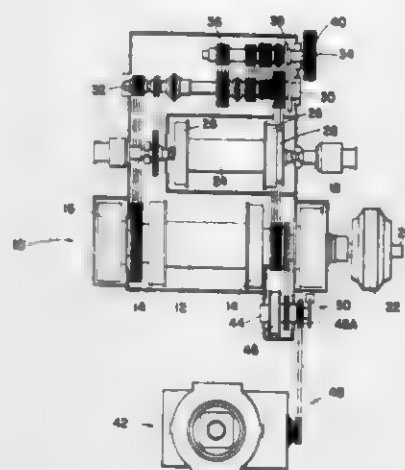
Int. Cl.³ F16D 57/10; B60K 41/24; B60T 7/12

U.S. Cl. 192-8 R

5 Claims

1. In combination with a drawworks operating a drill string during a well bore drilling operation, braking means comprising friction disc means connected with a rotary member of the drawworks for rotation simultaneously therewith, caliper brake means disposed in the proximity of the friction disc means for receiving the outer periphery of said disc means between the braking elements thereof, and means operably connected between the caliper brake means and the drill string for activation of said caliper brake means when reverse torque occurs in the drill string during the well bore drilling operation, and wherein said last-mentioned means comprises control

valve means operable for supplying fluid pressure to the drawworks and caliper brake means for alternate actuation thereof, brake actuator means interposed between said control valve and said caliper brake means for selective activation by said



control valve for actuation of said caliper brake means, and pilot valve means interposed between said control valve and said drawworks for isolating said drawworks from said drill string upon activation of said caliper brake means.

4,226,312

CLUTCH AND BRAKE MECHANISM

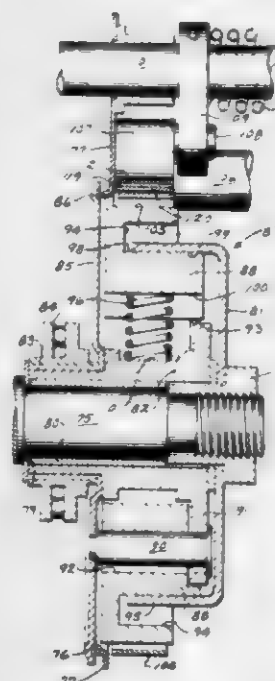
Hugh A. Zindler, Rte. 3, Box 264, Pleasant Valley La., Watertown, Wis. 53094

Filed Jan. 23, 1977, Ser. No. 809,207

Int. Cl.³ F16D 67/02

U.S. Cl. 192-14

18 Claims



1. In a brake-clutch mechanism between rotatable drive and driven members, a housing having an open face, a seal plate extending over the open face of said housing and having a circular opening, a drum carried on said drive member and having at least the circumferential flange thereof disposed in the housing, clutch shoes carried on said driven member and being movable relative thereto into and out of clutching engagement with the drum, means for effecting movement of said shoes into engagement with the drum to drivingly clutch the drive and driven members together, a brake band for effecting movement of said shoes out of engagement with the drum and to stop rotation of the driven member without interrupting the rotation of the drive member, said clutch shoes, brake band and means for effecting movement of said shoes into engagement with the drum all being disposed in said housing, and a slinger plate carried by one of said rotatable members, said slinger

plate extending radially beyond the opening in said seal plate and in close proximity with the edge of the opening to provide a rotary closure for the housing to substantially preclude entry of deleterious matter into said housing.

4,226,313

CLUTCH-BRAKE SYSTEM FOR ROTARY MOWER

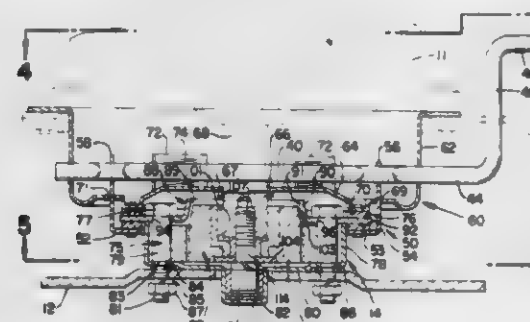
Robert D. Meldahl, Granville, and Robert J. Borel, Columbus, both of Ohio, assignors to J. A. Masterson & Co., Granville, Ohio

Filed Jun. 20, 1977, Ser. No. 808,336

Int. Cl.³ F16D 67/02; A01D 49/08

U.S. Cl. 192-18 R

12 Claims



1. A brake clutch mechanism for a rotary power mower having a cutting blade member comprising:
a clutch assembly including a brake disc;
a pivotable control lever for operating said clutch assembly and brake disc;
said clutch assembly having a cylindrical drum and tapered cone of frictional material forming a cone clutch and operating in association with a mating tapered metal clutch cone cup fixed to said brake disc;
said brake disc including means which simultaneously transfer power from the clutch assembly to the cutting blade member, wherein actuation of the pivotable control lever causes the clutch assembly and brake disc to gradually engage, and further wherein the tapered cone produces a gradual acceleration in the cutting blade member;
a plurality of counterweighted flyweight clutch shoes pivotally mounted on said brake disc outwardly of said clutch drum and adapted to engage the clutch drum, thereby transmitting power to the brake disc and to the cutting blade member;
a drive shaft having an end extending into one end portion of said clutch drum and drivingly connected thereto by key means, a support washer adjacent another end portion of said drum, a sleeve within the other end portion between said washer and the end of said shaft, a pilot screw extending through said washer and sleeve and threadedly connected to the end of said shaft whereby when said screw is tightened, the washer and sleeve are compressed without compressing any part of said drum, thereby relieving the drum of compression stresses and relieving the screw of torsional forces transmitted by said drum so that said screw is not loosened.

4,226,314

COMBINED CLUTCH AND DOUBLE-ACTION BRAKING DEVICE

Karl W. Mombre, Wermelskirchen, Fed. Rep. of Germany, assignor to Ortlinhaus-Werke GmbH, Wermelskirchen, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 885,018

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711505

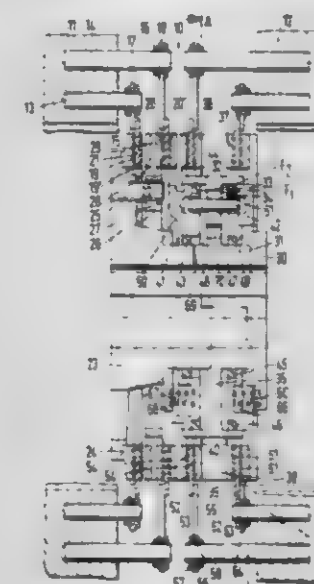
Int. Cl.³ F16D 67/04

U.S. Cl. 192-18 A

8 Claims

1. A combined clutch and double-braking action device for use in machines having a rotational driving shaft and a separate driven shaft, said device comprising at least one coupling disk

secured to said driving shaft; two braking disks fixedly arranged in a spaced relation with each other on a stationary holding member; a clutch support and at least one supporting disk each secured to said driven shaft, said one supporting disk defining a peripheral part and an intermediate part, said peripheral part projecting between said braking disks, said intermediate part including two opposite pressure spaces having a com-



4,226,315

FREE WHEEL HUB MECHANISM

Tooru Kagata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

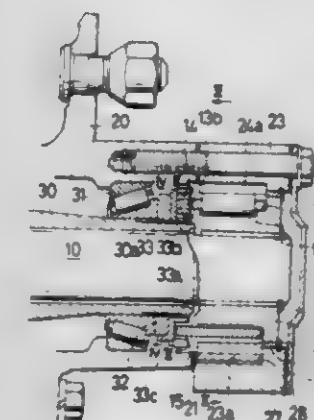
Filed Jul. 26, 1978, Ser. No. 928,265

Claims priority, application Japan, Jul. 27, 1977, 52/100980

Int. Cl.³ F16D 3/34; B62B 27/00

U.S. Cl. 192-38

5 Claims



1. A free wheel hub mechanism comprising:

a body secured to a wheel,
an inner race secured to an axle shaft and rotatable therewith, said inner race having at outer periphery thereof a plurality of cam surfaces,
a cage arranged between said body and said inner race and having a plurality of openings in which rollers are positioned,
said rollers being outwardly urged by said cam surfaces so as to be squeezed against said body when said inner race rotates with said shaft together as one body, thereby

causing said wheel to rotate together with said inner race, means for restraining rotation of said cage, said restraining means including a plurality of shoes between which a plurality of cantilever projections provided on an innermost portion of said cage are arranged, a shoe receiving member secured to a non-rotatable spindle sleeve which houses said shaft therein and having a receiving surface on which said shoes are slidably received, and an annular spring means urging said shoes against said receiving surface and maintaining said shoes in their proper position, whereby after said shoes and said shoe receiving member are assembled by said spring means, said shoe receiving member is secured to said spindle sleeve, and thereafter said projections of said cage which is assembled within said body between said body and said inner race, are positioned between said plurality of shoes.

5. A method for assembling a free wheel hub mechanism having a body, an inner race, a roller cage including a plurality of cantilever projections, a plurality of shoes, a shoe receiving member, a spindle sleeve and an annular spring means, said method comprising:

assembling said shoes and shoe receiving member and said annular spring means into a first unit with said annular spring means urging said shoes against said shoe receiving member;

mounting said first unit on said spindle sleeve;

assembling said body, said inner race and said roller cage into a second unit; and

positioning said second unit adjacent said first unit with said cantilever projections located between said shoes.

4,226,316

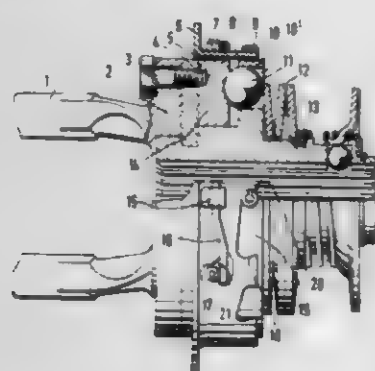
TORQUE LIMITING CLUTCH ASSEMBLY WITH FREEWHEELING ACTION

Hubert Gelsthoft, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany
Filed Jan. 27, 1978, Ser. No. 919,701
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729545

Int. Cl.² F16D 43/20

U.S. Cl. 192—56 R

19 Claims



1. An overrunning clutch assembly for limiting torque transmission therethrough comprising:

a driving member;

a driven member;

shift ring means interposed between said driving and driven member to be axially moveable relative thereto between a driving position, where said shift ring means operates to transmit torque from said driving member to said driven member, and a freewheeling position whereby torque transmission between said driven and said driving member is disengaged, said shift ring means moving to said freewheeling position when a predetermined level of torque transmission through said clutch assembly is exceeded;

track means defining in said shift ring means circumferentially extending indentations;

roller means operatively mounted on one of said driving and driven members in position to engage said track means; said track means including first portions thereof adapted to

be engaged by said roller means when said shift ring means is in said driving position to effect transmission of torque between said shift ring means and said one of said driving and driven members, and second portions thereof enabling freewheeling action between said shift ring means and said one of said driving and driven members whereby said shift ring means is placed in said freewheeling position;

said track means being configured to effect said freewheeling action when torque applied between said one of said driving and driven members and said shift ring means exceeds a predetermined level;

control ring means operatively interposed between said shift ring means and said one of said driving and driven members;

cam means defined on said control ring means;

first follower means on said one of said driving and driven members for engaging said cam means;

second follower means on said shift ring means for engaging said cam means; and

spring means interposed between said shift ring means and said control ring means for urging them toward a given position relative to each other;

said cam means being configured to effect axial movement of said shift ring means relative to the other of said driving and driven members to cause disengagement therebetween as a result of interengagement between said second follower means and said cam means, said interengagement occurring by virtue of engagement of said first follower means with said cam means effected when freewheeling engagement between said roller means and said track means occurs.

4,226,317

BICYCLE HUB

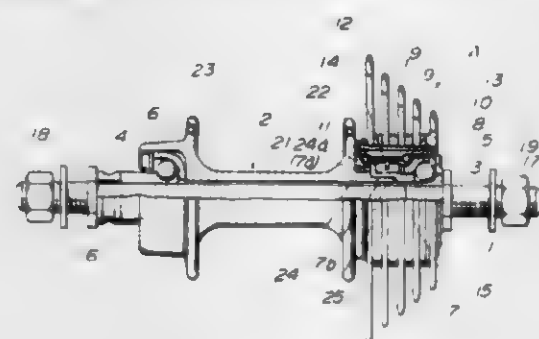
Masashi Nagano, and Koya Sonoi, both of Sakai, Japan, assignors to Shimano Industrial Company, Limited, Osaka, Japan
Filed Sep. 19, 1978, Ser. No. 943,709

Claims priority, application Japan, Sep. 29, 1977, 52/131338[U]

Int. Cl.² F16D 41/00; F16H 11/08

U.S. Cl. 192—64

4 Claims



1. In a bicycle hub having a hub shaft, a hub body comprising: a hub shell and a pair of hub flanges provided at both axial ends of said hub shell, a pair of first and second bearings supporting said hub body rotatably to said hub shaft, and a drive unit incorporated with said hub body for driving said hub body, said drive unit having a frustum-like cone, a cylindrical driving member, at least one sprocket, a pair of bearings for supporting said driving member rotatably to said cone, and a unidirectional rotary transmission inserted between said driving member and said cone, wherein the improvement comprises said hub body having at its one axial end supported by said first bearing a tubular mount extending axially outward from said hub body, said tubular mount having at its outer periphery an external spline extending axially from the same, said cone at said drive unit being provided at the inner periphery of one axial end thereof with an internal spline to be fit with said external spline at said mount, said cone having at its axially intermediate portion the inner periphery in continuation with

said internal spline, said inner periphery having an inner diameter fit to the outer periphery of said tubular extension, at least one of said bearings being screwed to said hub shaft, whereby said drive unit is detachably connected to said hub body, and said drive unit including said cone is spline fit to said tubular mount at the hub body and supported by said tubular extension thereof.

4,226,318

HYDRAULICALLY ACTUATED CONE CLUTCH

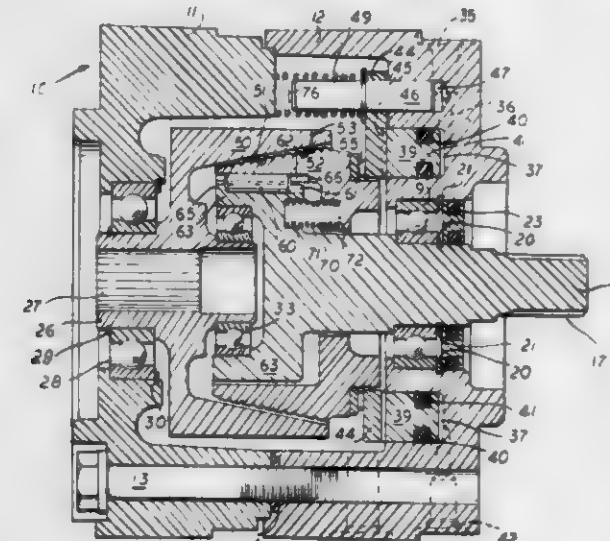
George H. Morgan, South Bend, Ind., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed Oct. 10, 1978, Ser. No. 950,065

Int. Cl.² F16D 25/08

U.S. Cl. 192—85 CA

13 Claims



1. An hydraulic clutch comprising, in combination, an input shaft, a male cone member, interconnector means mounting said male cone member on the input shaft for rotation therewith and for limited axial sliding movement therealong, a female cone member having an open end for receiving the input shaft and male cone member, the female cone member having a conically-shaped, annular wall surrounding the male cone member, and also including a portion shaped to form an output shaft, fluid pressure means including at least one slidable piston for applying sufficient axial pressure to the male cone member to urge the male cone member into engagement with the female cone member, and bearing means for transferring the piston motion to the rotatable male cone member, thereby drivingly coupling the input and output shafts, and means for separating the cone members when the fluid pressure is released.

4,226,319

HYDRAULIC CLUTCH

John W. Euler, and Arthur W. Pear, both of Benton Harbor, Mich., assignors to Lambert Brake Corporation, St. Joseph, Mich.

Filed Nov. 6, 1978, Ser. No. 957,973

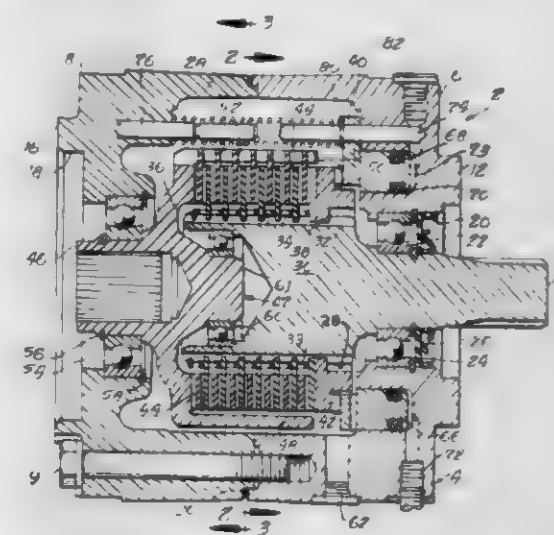
Int. Cl.² F16D 25/08

U.S. Cl. 192—85 CA

8 Claims

1. An hydraulic clutch comprising an input shaft, driving discs radiating outwardly from said shaft, and means mounting said driving discs on said input shaft for rotation therewith and for limited axial sliding movement therealong; a cup having an open end for receiving said input shaft, said cup having an annular wall surrounding a plurality of said driving discs, and cup also including an end opposite to said open end and shaped to form an output shaft coaxial with said input shaft, driven discs radiating inwardly from said annular walls and being disposed in alternating parallel relation with the driving discs, and means mounting said driven discs on said annular wall for rotation therewith and for limited axial sliding movement therealong; piston means for applying sufficient axial pressure to said driving and driven discs to couple them and thereby

drivingly couple the input and output shafts, and means forming a chamber for containing hydraulic fluid and in which said annular wall and said driving and driven discs are located, a first pin, and thrust plate means carrying said first pin for axial,



non-rotational motion and interposed between said driving and driven discs and said piston means, said first pin having an effective length sufficient to engage a stop member and thus limit the axial pressure imposed by the piston means through the thrust plate means on the driving and driven discs.

4,226,320

CENTRIFUGAL CLUTCH CONSTRUCTION

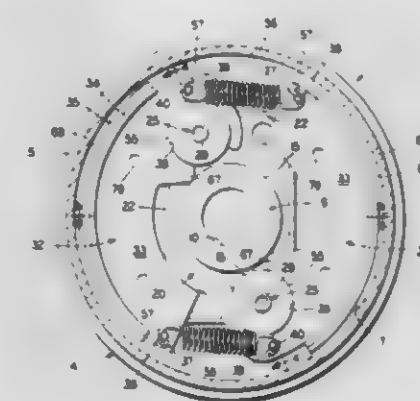
Richard C. St. John, North Canton, Ohio, assignor to Aspro, Inc., Canton, Ohio

Filed May 22, 1978, Ser. No. 907,925

Int. Cl.² F16D 43/14

U.S. Cl. 192—105 CD

5 Claims



1. An improved centrifugal clutch construction adapted to be mounted on a drive shaft, said clutch construction including:

(a) a driven clutch member;

(b) a cylindrical hub having an outer annular shoulder and an internal bore for telescopically receiving the drive shaft therein for rotation of the hub with the drive shaft;

(c) bearing means telescopically mounted on the hub and in abutting engagement with the annular shoulder for rotatably mounting the driven clutch member thereon;

(d) drive flange means mounted in a fixed position on the hub in abutting relationship with the annular shoulder opposite of the bearing means for rotation with the hub;

(e) a pair of pin means mounted on the drive flange means diametrically opposite of each other and extending in an axial direction from the flange means in a cantilever manner;

(f) a pair of arcuate-shaped clutch shoes each having first and second ends pivotally mounted on the drive flange means in end-to-end relationship with respect to each other and movable outwardly towards and against the driven clutch member under the influence of centrifugal

- force from retracted to extended position, said clutch shoes each having a shoe web and an outer shoe table;
- (g) the clutch shoes each having a frictional coupling surface provided on the shoe table and adapted to drivingly engage the driven clutch member when the clutch shoes are in extended position;
- (h) spring means operatively engageable with the second ends of the clutch shoes biasing said clutch shoes toward retracted position;
- (i) a pair of bushing means pivotally mounting the clutch shoes on the pin means, each of said bushing means including telescopically mounted inner and outer tubular members, said outer tubular member being securely mounted on a respective clutch shoe first end with said inner member being telescopically mounted on the pin means, and the clutch shoe pivotal movement occurring between said inner and outer tubular members; and
- (j) a plurality of individual weight plates removably mounted on each of the clutch shoe webs.

4,226,321

SELF-ALIGNING CLUTCH BEARING ASSEMBLY

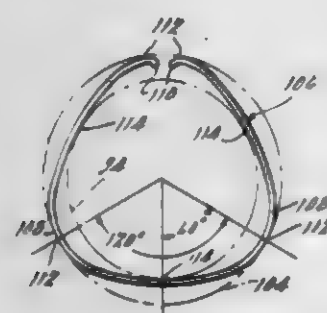
Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 667,077, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 593,627, Jul. 7, 1975, Pat. No. 4,033,440, which is a division of Ser. No. 427,486, Dec. 26, 1973, Pat. No. 3,931,875. This application May 30, 1978, Ser. No. 910,386

Int. Cl.² F16D 13/60

U.S. Cl. 192-110 B

9 Claims



1. A clutch release bearing assembly comprising a first race member defining a first annular raceway and including means defining an annular engaging surface for contacting external clutch release members, a second race member defining a second annular raceway and including means for engaging actuating means for effecting axial shifting movement of said bearing assembly, a plurality of antifriction bearing elements interposed between said first and said second race member and riding in the annular raceways thereof, said second race member formed with a bore extending axially therethrough for receiving a generally cylindrical support member in a radially spaced clearance relationship defining an annular clearance space therebetween, said bearing assembly adapted to be mounted on the support member and a resilient polylobate spring disposed in encircling relationship within said annular clearance space between said bore and the periphery of the support member for supporting said bearing assembly and said annular engaging surface on the support member in yieldable spaced relationship to permit limited deflection of said engaging surface in a plane perpendicular to and in planes angularly tilted with respect to the axis of said support member.

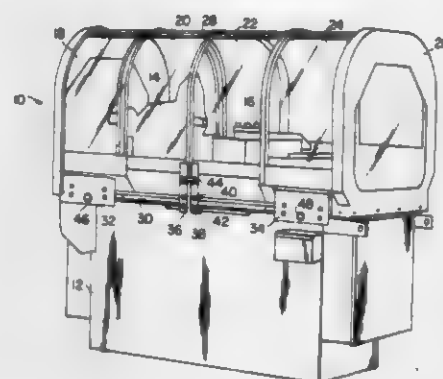
4,226,322
MACHINE TOOL GUARD DOOR ASSEMBLY
John M. Peris, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,397

Int. Cl.² F16P 3/08

U.S. Cl. 192-135

9 Claims



1. A guard door assembly for a machine tool, comprising:
- (a) a support on which a headstock assembly and machine tool turret assembly are mounted and including two spaced horizontal support rods along the front and rear top surface of the support, at least one of which has a central pneumatic passage and is connected to a pneumatic source
- (b) a plurality of transparent movable guard doors slidably mounted on the support rods and enclosing the headstock and machine tool turret assemblies
- (c) operating means for operating the machine tool
- (d) sensing means for sensing when the guard doors are opened
- (e) deactivating means associated with the sensing means for automatically deactivating the operating means when the guard doors are opened, and
- (f) the sensing means having an element which pneumatically co-acts with one of the support rods and which is both inaccessible to the operator and gives no outward appearance of its function.

4,226,323

PRECISION COIN ANALYZER FOR NUMISMATIC APPLICATION

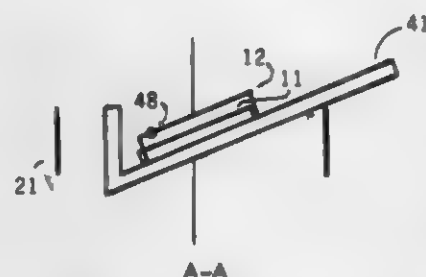
Joseph L. Dautremont, 28 Taxco Ct., Simi Valley, Calif. 93065

Continuation-in-part of Ser. No. 707,891, Jul. 22, 1976, Pat. No. 4,128,158. This application Sep. 8, 1978, Ser. No. 940,349

Int. Cl.² G07F 3/02

U.S. Cl. 194-100 A

11 Claims



1. A means of positioning coins within the field of a substantially cylindrical inductor comprising three substantially plane restraining surfaces and a right circular cylinder having first and second bases; the first and second of said surfaces being portions of planes which intersect in a line parallel to the axis of said cylindrical inductor, the third surface being a portion of a plane which intersects the first base of said cylindrical inductor and proceeding in the direction of the second base, forms a vertex with said first and second planes so that a coin moving down the ramp formed by the third surface is restrained in said vertex.

4,226,324

ARTICLE TURNOVER ASSEMBLY

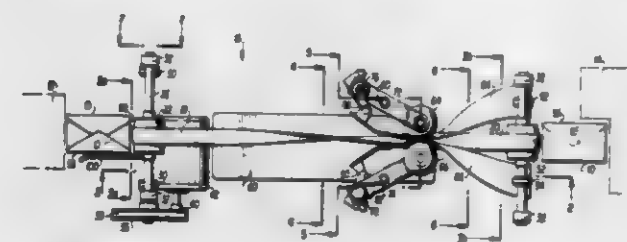
Lester H. Stocker, Phillipsburg, N.J., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed May 8, 1978, Ser. No. 904,120

Int. Cl.² B65G 47/24

U.S. Cl. 198-405

7 Claims



1. An article turnover assembly for transporting flat articles such as envelopes or documents from an entrance position to an exit position while turning the articles, said assembly comprising:

- two crowned entrance pulleys, a first of said entrance pulleys mounted above the second at said entrance position, each entrance pulley having its crown offset to the opposite side as the other;
- two crowned exit pulleys, a first of said exit pulleys mounted above the second at said exit position, each exit pulley having its crown offset to the opposite side as the other;
- two flexible endless belts for transporting articles longitudinally between them as said belts move contiguously from the entrance position to the exit position, said flexible endless belts respectively extending from said first entrance pulley to said second exit pulley and from said second entrance pulley to said first exit pulley; said belts being twisted 180° between said entrance and exit pulleys and each having at least one span contiguous to a corresponding span of the other, said spans traveling from said entrance pulleys to said exit pulleys; and
- a means for driving at least one of said pulleys so that the contiguous belt spans move together in the same direction from said entrance position to said exit position at the same rate of speed.

4,226,325

CONVEYOR LUBRICATING AND WASHING APPARATUS

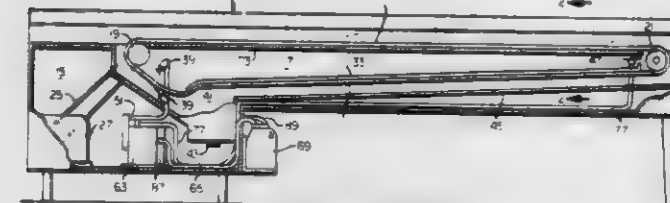
Edward B. Vandas, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Mar. 15, 1979, Ser. No. 20,674

Int. Cl.² B65G 47/22

U.S. Cl. 198-493

8 Claims



1. In a conveyor apparatus having a conveyor belt and a motor selectively enabled by motor control means coupled to input power lines for driving said belt along a slider means and further having first lubricating fluid dispensing means for directing a lubricating mixture of detergent and water at said belt for reducing friction between said conveyor belt and said slider means and second washing fluid dispensing means for directing a washing mixture of detergent and water at said belt for cleansing said belt, each of said fluid dispensing means being coupled to water supply means by respective first and second water lines and to a detergent reservoir, control apparatus comprising:

first electrically controlled valve means interposed in said

- first water line for controlling the flow of water through said first water line from said water supply means to said first fluid dispensing means;
- second electrically controlled valve means interposed in said second water line for controlling the flow of water through said second water line from said water supply means to said second fluid dispensing means;
- pump means having input means coupled to said detergent reservoir and output means coupled to said first and second water lines for delivering detergent to said water lines;
- master switch means coupled to said motor control means and to said first electrically controlled valve means and said pump means, said master switch means being actuable to a first switch position to energize said motor control means and enable said conveyor motor and to enable said pump means and open said first electrically controlled valve means to allow water and detergent to be dispensed from said first fluid dispensing means to lubricate said conveyor belt;
- switch means having first normally open circuit means coupled to said motor control means and second normally open circuit means coupled to said second electrically controlled valve means and said pump means; and
- wash timer means coupled to said master switch means and said switch means for closing said first and second normally open circuits of said switch means for a predetermined time interval after said master switch means is switched from the first switch position to a second switch position,
- said switch means opening said second electrically controlled valve means and energizing said pump means during said predetermined time interval responsive to said wash timer means to allow water and detergent to be dispensed from said second fluid dispensing means to wash said conveyor belt and maintaining said motor control means energized to enable said motor to move said conveyor belt past said second fluid dispensing means.

4,226,326

CONVEYOR TROUGH AND PULL ROD FOR A SHAKER CONVEYOR

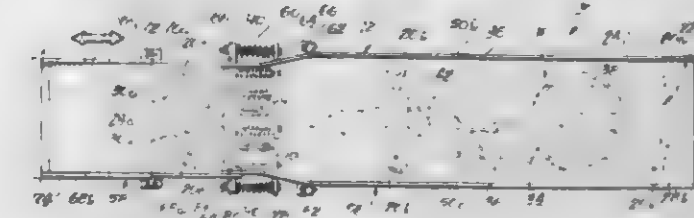
Charles L. Watkins, Chicago, Ill., assignor to Goodman Equipment Corporation, Chicago, Ill.

Filed Jun. 26, 1978, Ser. No. 918,965

Int. Cl.² B65G 27/06

U.S. Cl. 198-758

5 Claims



1. In a shaker conveyor, the combination comprising a conveyor trough defining a discharge end, means supporting said conveyor trough for longitudinal reciprocating movement, and drive means including a drive motor and a pull rod interconnecting said drive motor to said conveyor trough so as to effect reciprocating movement of said trough upon actuation of said drive motor to advance discrete particles therealong in the direction of said discharge end, said drive motor and pull rod being operative to effect movement of said conveyor trough in the direction of said discharge end at a first velocity during which said pull rod is in axial compression followed by reverse movement of said trough at a substantially increased velocity during which said pull rod is in axial tension,
- said conveyor trough having a first trough section defining forward and rearward ends and a second trough section substantially axially aligned with said first trough section

and defining said discharge end and having a receiving end disposed adjacent said forward end of said first trough sections so as to receive particles therefrom, resilient means interconnecting said first and second trough sections in a manner to facilitate both pivotal movement of said second trough section from its said axially aligned relation with said first trough section and longitudinal telescoping movement relative to said first trough section when said discharge end of said second trough section is subjected to a predetermined impact force, said pull rod having first and second axially aligned sections adapted for mutually supporting telescoping relation, and a pawl carried by one of said pull rod sections for releasable interengagement with the other of said rod sections so as to normally maintain said first and second rod sections in predetermined relatively fixed axial relation, said pawl and said other of said rod sections being cooperative to prevent release of said pawl and thereby prevent elongation of said pull rod during movement of said trough in said reverse direction at said increased velocity with said pull rod in axial tension, said pawl being adapted for disengagement from said other of said rod sections to facilitate axial telescoping of said first and second rod sections when subjected to a predetermined axial force therebetween in a direction tending to shorten the overall length of the pull rod.

4,226,327

COMPOSITE PACKAGE

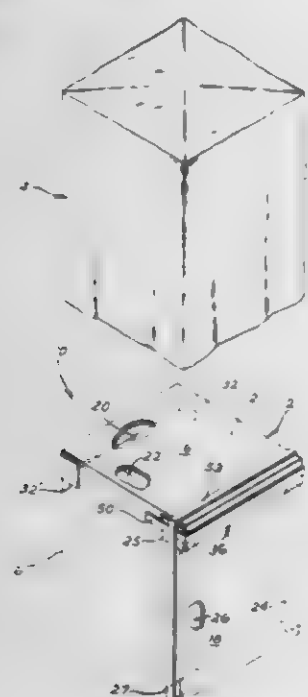
James L. Ballard, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.

Continuation-in-part of Ser. No. 907,527, May 19, 1978, abandoned. This application Mar. 7, 1979, Ser. No. 18,001

Int. Cl.³ B65D 15/00, 65/10, 85/30

U.S. Cl. 206—320

2 Claims



1. A composite package for an appliance comprising:
 - a one-piece body member including a top element positioned on the upper surface of the appliance and a front element positioned against one side wall of the appliance, each of said elements having one edge disposed to intersect with each other, with the elements extending in a substantially perpendicular configuration therefrom;
 - at least two sections are arranged between the elements intermediate the one edge thereof, said two sections being folded to extend from said intersection and reversely bent to provide a support flange integral with said elements being juxtapositioned relative to the outer surface of said front element;
 - a first flange member formed along a second edge portion of

said top element being positioned against another side wall of said appliance opposite said one wall;

a second flange member formed along the bottom edge of said front member being arranged under the bottom wall of said appliance adjacent the front wall thereof so as to position said appliance between said top element and said second flange.

holding means arranged substantially horizontal on said package encompassing said body member in engagement with said flange members and urging said first flange against said appliance and said support flange against said outer surface of said front element for securing said appliance between said first flange and said support flange to form a subassembly of said composite package; and

an organic material sheet encasing said subassembly and said appliance being shrunk thereabout to form a shrink-wrapped composite package to secure said appliance between said top element and said second flange whereby said composite package is lifted through said support flange.

4,226,328

CATHETERIZATION PACKAGE

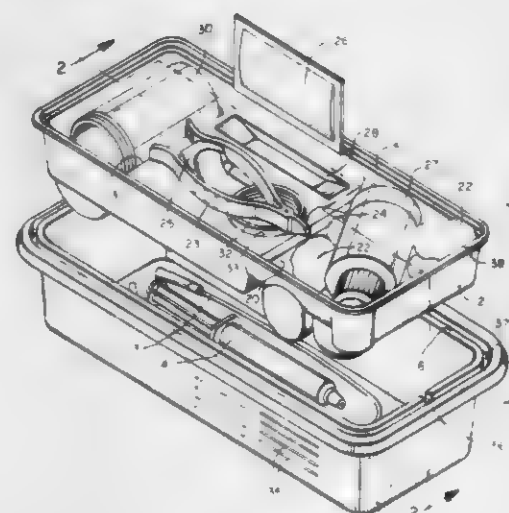
David V. Beddow, Lake Villa, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 9, 1979, Ser. No. 28,516

Int. Cl.³ B65D 81/24

U.S. Cl. 206—364

2 Claims



1. A disposable catheterization package of the type containing components for a catheterization procedure, comprising:
 - an outer tray including side walls and a circumferential rim portion;
 - an inner tray including a circumferential rim portion dimensioned to engage said outer tray rim portion whereby said inner tray is nestingly suspended within said outer tray during storage of said package, said inner tray including a plurality of recesses on the surface thereof for receiving at least a portion of the components contained in the package;
 - said outer tray rim portion including a channel and inner and outer generally flat horizontal flange portions on either side of said channel;
 - said inner tray rim portion including a flat horizontal flange portion and a lip portion upstanding therefrom;
 - said inner flange portion of said outer tray rim and said flange portion of said inner tray rim being disposed for engaging in an abutting relationship when said inner tray is nested within said outer tray;
 - a notch-like recess along said inner flange portion of said outer tray rim for receiving in supporting relationship a portion of a catheter used in the catheterization procedure;
 - said lip portion of said inner tray rim being receivable within said channel of said outer tray rim when said inner tray is

inverted, to provide a closed spill-resistant container between said tray portions for liquid collected during the catheterization procedure.

4,226,329

SANDING DISC CONTAINER

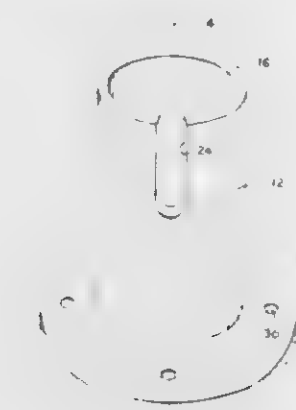
David Knight, 1263 S. 9th St., South Plainfield, N.J. 07080

Filed Jun. 7, 1979, Ser. No. 46,464

Int. Cl.³ B65D 83/08, 85/62

U.S. Cl. 206—372

4 Claims



1. Container means for holding abrasive discs comprising:
 - a cylindrical member, said cylindrical member having a generally cylindrical outer wall, a first end opening and a second end opening;
 - a base member substantially closing said second opening in said cylindrical member;
 - slot means formed in said cylindrical wall, said slot means being formed in said wall to extend longitudinally from said first opening end through a portion of the length of said cylindrical member; and
 - a throughbore formed in said base member to permit access to the interior of said cylindrical member from and through the base member.

4,226,330

RUPTURE LINES IN FLEXIBLE PACKAGES

Robert W. Butler, 912 N. Colorado, Ulysses, Kans. 67880

Continuation of Ser. No. 578,132, May 16, 1975, abandoned.

This application Nov. 1, 1976, Ser. No. 738,164

Int. Cl.³ B65D 33/36, 77/30, 25/08

U.S. Cl. 206—620

4 Claims



1. A container comprising:
 - (a) a pressure rupturable sealed bag containing material and constructed of a flexible thermoplastic sheet film wall having an upper surface and a lower surface, said bag having a heat sealed side;
 - (b) a rupture line extending a substantial distance along an integral extent of said sheet film wall and to said heat sealed side, said rupture line being characterized as an elongated groove having contoured lateral surfaces smoothly blending into said upper surface and into a web portion integral with said sheet film wall, said web portion having a cross-sectional thickness substantially reduced

and weakened in tensile strength from that of the non-groove portions of said sheet film wall and protruding outwardly from said lower surface, said web portion providing a resistance against rupture less than the non-groove portions of said sheet film wall.

(c) whereby application of a predetermined internal pressure to said container will cause the container to rupture along said rupture line for release of the material therein.

4,226,331

HYDRAULICALLY ACTUATED HOIST FOR TRACTORS HAVING A CONVENTIONAL THREE POINT HITCH

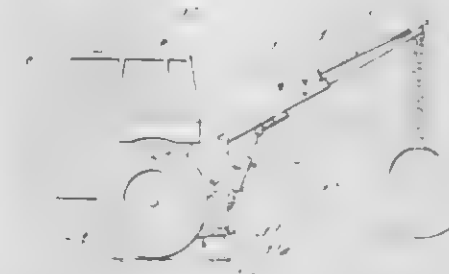
Duane I. Dumond, 2309 Parmenter Rd., Corunna, Mich. 48817

Filed Aug. 8, 1977, Ser. No. 822,536

Int. Cl.³ B66C 23/06

U.S. Cl. 212—258

4 Claims



1. A hydraulically actuated hoist adapted for mounting on a farm tractor having a three point hitch, said hoist comprising, in combination, a base of generally inverted T-shaped configuration and including a horizontally extending portion and a vertically extending portion, strut means extending diagonally between said horizontally extending portion and said vertically extending portion of said base, a telescopic boom including a first box beam section having one end portion thereof pivotally connected to said vertically extending portion of said base, a second box beam section telescopically disposed within said first box beam section and having means fixedly mounted at one end thereof for attaching a load thereto, means for locking said first and second box beam sections in any one of a plurality of selected positions relative to each other, a hydraulic piston and cylinder unit having one end portion thereof pivotally connected to said base and the other end portion thereof pivotally connected to said boom, said piston and cylinder unit being operable to raise and lower said boom, a pair of vertically extending support legs fixed to said horizontally extending portion of said base and projecting downwardly therefrom, an elongate support post pivotally connected to the end portion of said second box beam section, ground engageable pad means secured to the free end portions of said legs and post, said post being adapted to overlie said boom and being pivotable to a vertically extending position whereby said post and said legs cooperate to form a tripodal support for said hoist when said hoist is disconnected from said hitch, and means for releasably connecting said base to said three point hitch.

4,226,332

EQUALIZATION SYSTEM FOR OVERHEAD CRANES

Felim P. McCaffrey, Toronto, Canada, assignor to Hatch Associates Ltd., Toronto, Canada

Continuation of Ser. No. 921,451, Jul. 3, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 98,881

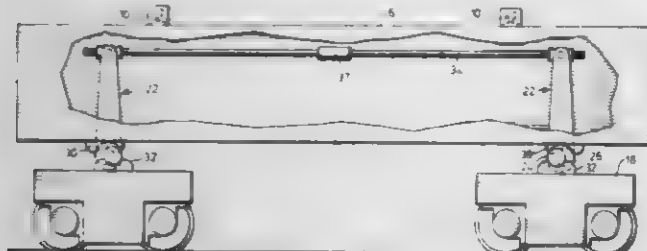
Int. Cl.³ B66C 9/12

U.S. Cl. 212—218

3 Claims

1. An overhead crane comprising a rigid generally rectangular bridge frame, a truck beneath each corner of the frame for supporting the latter on parallel rails of a main runway for longitudinal movement, a trolley carrying hoisting machinery and movable laterally of the rectangular frame, oppositely acting levers forming the connections between the trucks on

one side only of the frame and the frame itself, and a link interconnecting the levers independently of the frame to equalize the loads on the trucks so connected, the levers each having a generally vertically extending lever arm and horizontally spaced longitudinally inner and outer trunnions forming a second longitudinally extending lever arm at the base of said vertically extending lever arm, the bridge frame being sup-



ported by the longitudinally outer trunnions of the two levers, and the trucks supporting the longitudinally inner trunnions of the two levers, the top ends of the vertically extending lever arms being connected by a link extending between the arms, the vertical extent of each vertically extending lever arm being very large compared to the horizontal extent of the longitudinally extending lever arms formed by the spacing of the axes of the trunnions.

4,226,333

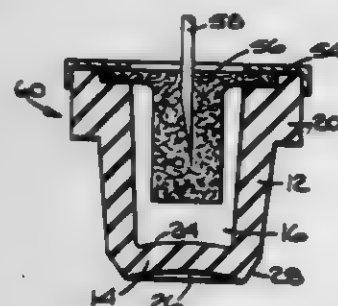
CANNULA PIERCEABLE SELF-SEALING CLOSURE

Edward P. Percarpio, North Haledon, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.
Division of Ser. No. 880,474, Feb. 23, 1978, Pat. No. 4,136,794, which is a division of Ser. No. 729,643, Oct. 5, 1976, Pat. No. 4,111,326, which is a continuation-in-part of Ser. No. 663,921, Mar. 4, 1976, abandoned. This application Sep. 13, 1978, Ser. No. 942,113

Int. Cl.³ B65D 39/04

U.S. Cl. 215-247

16 Claims



1. A cannula pierceable, self-sealing, gas proof closure for sealing an open end of an air evacuated blood collection tube, which comprises:

- (a) a tubular elastomeric body having
 - (i) flexible, elastic sidewalls;
 - (ii) an open first end; and
 - (iii) a closed second end formed by a cannula pierceable, flexible, elastic end wall integral with said sidewalls;
 - (b) a flange disposed radially about the periphery of said sidewalls adjacent to said first end; and
 - (c) a puncturable diaphragm closing the open first end, said diaphragm being a cylinder of absorbent material;
- said end wall having a convex inner surface and a concave outer surface when pressure on inner and on outer surfaces is equal, said tubular body having a diameter which bears a ratio to the height of the body of about 0.8:1 and to thickness of the second end of from 5.4:1 to 12.1:1;

whereby when the closure is emplaced in and sealing an open end of an air evacuated tube, the higher pressure on the convex inner surface of the end wall as compared to the lower pressure (vacuum) exerting itself on the concave outer surface creates a pressure differential on the end wall, flexing and flattening the concave-convex configuration and creating a radial force directed toward the

periphery of the end wall, said force effecting a restraining and sealing force between the closed second end of the elastomeric body and the air evacuated tube.

4,226,334

STOPPER

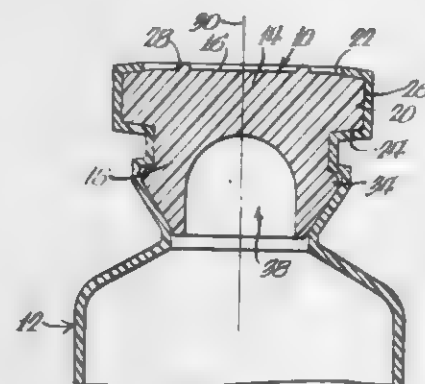
Gerhard H. Weller, South Barrington, and Dieter H. Nagel, Des Plaines, both of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Dec. 14, 1978, Ser. No. 969,184

Int. Cl.² B65D 39/00

U.S. Cl. 215-355

15 Claims



1. A stopper adapted to be held in place in an opening in a molded thermoplastic container which is molded about the stopper in place, said stopper comprising:

- a generally cylindrical lower portion having a longitudinal axis;
- a generally cylindrical upper cap portion of resilient material integral with said lower portion at one end thereof, coaxial therewith, and projecting outwardly from the periphery of said lower portion to define an annular flange thereabove, said flange having a generally cylindrical side surface substantially coaxial with said longitudinal axis;
- said cap portion defining a generally circular central top surface centered about said longitudinal axis and further defining an outwardly beveled peripheral upper surface between said circular central top surface and said cylindrical side surface of said flange; and
- the ratio of the exterior diameter of said flange to the thickness of said flange at the juncture of said flange and said lower portion being less than about 5.

4,226,335

DEVICE FOR DISPENSING FISH EGGS

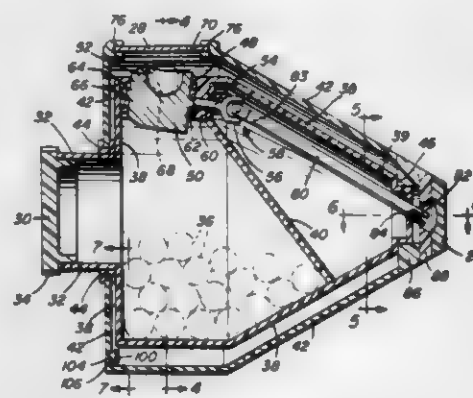
Edward W. Sowards, 160 Ridge Rd., Ben Lomond, Calif. 95005

Filed Aug. 29, 1978, Ser. No. 937,857

Int. Cl.³ B65D 85/30

U.S. Cl. 221-185

12 Claims



1. A device for individual dispensing of a substantially spherical object comprising a container for storing a plurality of objects, the container being rotatable about a horizontal axis

and having an opening for receiving therethrough holding means for selecting and lifting from said plurality of substantially spherical objects, one of said objects for removal through said opening, wherein said holding means includes a recess for holding said one object, said holding means being mounted inside said container by mounting means for travel in a circular path centered on said axis, said mounting means maintaining said recess in an upward direction during said travel.

4,226,336

APPARATUS FOR DISPENSING THE CONTENTS OF A TUBE HAVING A MOVABLE PLATEN

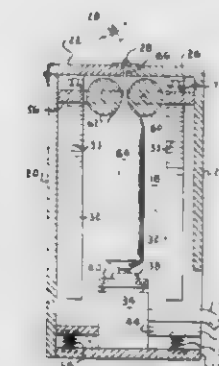
Harold A. Young, 2500 Venice Dr., Schererville, Ind. 46375

Filed Aug. 15, 1979, Ser. No. 66,578

Int. Cl.³ B65D 35/28

U.S. Cl. 222-102

10 Claims



1. A tube compressing apparatus, comprising:

- a housing;
- spout means in said housing fixed at one end thereof, said spout means having means for connecting an open end of a tube;
- clamp means in said housing fixed at the other end thereof, said clamp means operable to hold the sealed end of the tube;
- first rack bar means mounted on a movable platen in said housing for reciprocal movement intermediate said spout means and said clamp means;
- second rack bar means fixed to said housing intermediate said spout means and said clamp means;
- roller support means in said housing intermediate said spout means and said clamp means for compressing the tube connected between said spout means and said clamp means;
- first ratchet means on said roller support means engaging said first rack bar means to move said roller support means in one direction of said reciprocating movement of said first rack bar means; and
- second ratchet means on said roller support means engaging said second rack bar means to prevent said roller support means from moving in the other direction of said reciprocating movement of said first rack bar means.

4,226,337

LAMINATED TUBE FOR COLLAPSIBLE CONTAINERS AND METHOD OF MAKING SAME

Joseph L. Abbott, 109 Primrose Pl., Lima, Ohio 45805

Continuation-in-part of Ser. No. 845,478, Oct. 26, 1977,

abandoned. This application Aug. 11, 1978, Ser. No. 932,220

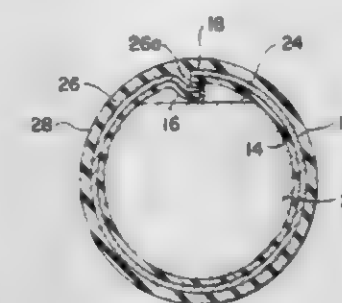
Int. Cl.³ B65D 35/10

U.S. Cl. 222-107

22 Claims

1. A laminated tube having radially inner and outer surfaces and adapted to be used as the body of a collapsible dispensing container comprising, a tubular core having longitudinally extending circumferentially overlapped radially opposed marginal edges and radially inner and outer surfaces, the material of said core providing for said radially opposed marginal edges to be thermally incompatible, said inner surface of said core defining said inner surface of said tube, a seamless sheath of

plastic material surrounding and longitudinally coextensive with said core and bonded to said outer surface of said core, and a bead of plastic material thermally compatible with the material of said sheath and extending therefrom between said



overlapped marginal edges and about the free edge of the radially inner one of said overlapped edges to provide a mechanical bond between said thermally incompatible marginal edges.

4,226,338

LIVE BAIT DISPENSER

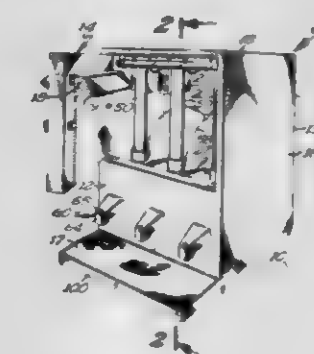
Donald E. Schweim, Mankato, Minn., assignor to King Minnow, Inc., Mankato, Minn.

Filed Jan. 9, 1978, Ser. No. 868,027

Int. Cl.² A01K 97/04

U.S. Cl. 222-162

5 Claims



1. An apparatus for dispensing live bait, the apparatus comprising:

- a water tank;
- a basket for restraining live bait therein, said basket being located in said tank and said basket comprising:
 - means permitting free water flow into and out of said basket when said basket is immersed in water and allowing drainage when said basket is removed from said water;
 - first and second sides;
 - a bottom sloping downwardly from said first side to said second side;
 - a basket bait aperture located in said basket second side adjacent said basket bottom;
- means for lifting said basket from the water, said lifting means having an upper limit of travel;
- a bait dispensing chute comprising:
 - first and second ends;
 - a bottom and two sides, said chute bottom sloping downwardly from said first end to said second end, said bottom of said chute first end being fixed no higher than said

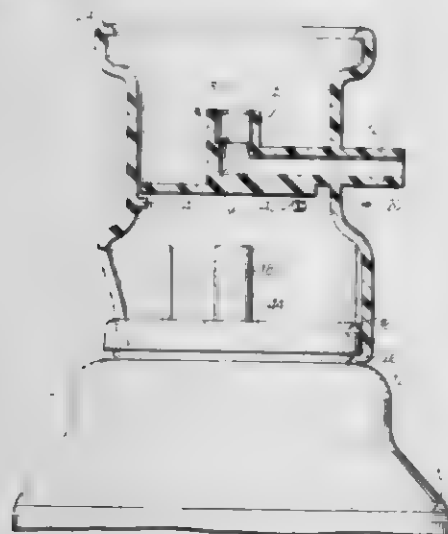
basket bottom second end and said basket bait aperture when said basket is at said travel upper limit; gate means located intermediate said chute ends for selectively impeding passage through said chute, said gate means having open and closed positions; such that when said gate means is in said closed position and said basket is lifted to said upper limit, bait will fall through said basket bait aperture and into said chute thereby filling a bait measuring container of predetermined volume formed by said gate means and the portion of said chute between said gate and said chute first end and such that when said basket is lowered and said gate means moved to said open position, the bait in said predetermined volume will be dispensed.

4,226,339

INVERTIBLE SPRAY DISPENSING SAFETY CAP
Irving Landsman, 3530 Henry Hudson Pkwy., Riverdale, N.Y. 10463, and Mark Landsman, 12 Cranford Dr., New City, N.Y. 10954

Filed Mar. 16, 1979, Ser. No. 20,908
Int. Cl.³ B65D 83/14

U.S. Cl. 222-182



1. A cap invertible for changing a dispensing container, having an actuation means for causing dispensing when depressed, from a use to a storage orientation, comprising a generally cylindrical outer housing, plunger disc movable relative to said outer housing for causing said dispensing, stop means for said plunger disc protruding inwardly from said outer housing, top and bottom lips defining top and bottom openings for connecting said cap to said container in both a use orientation with said stop means inoperative and a storage orientation with said stop means operative respectively.

4,226,340

TISSUE TREATMENT DISPENSER

Louis Troesch, 1590 Anderson Ave., Fort Lee, N.J. 07024

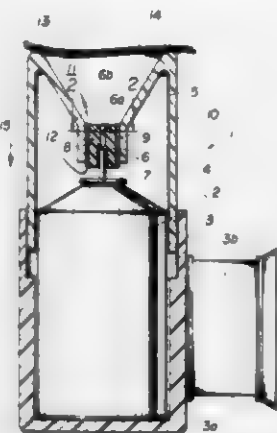
Filed Aug. 15, 1978, Ser. No. 933,802
Int. Cl.³ B65D 83/14

U.S. Cl. 222-183

5 Claims

1. A tissue treatment dispenser for dispensing a treatment fluid from an aerosol emitting container comprising, a bottom housing, a top housing telescopically engaged with said bottom housing and defining therewith an interior cavity, the aerosol emitting container positionable within said interior cavity and including a valve neck, said top housing having a conical portion extending downwardly and inwardly from the top of said housing and defining a conical dispersion space thereabove and a cylindrical portion depending from the bottom of said conical portion, an aerosol emitting nozzle connected in said cylindrical portion at the base of said conical portion and engageable over the valve neck of the aerosol emitting container, said nozzle having a plurality of dispersion channels spaced on the periphery thereof to form a passage for commu-

nicating said interior cavity with said conical dispersion space, said nozzle including a bore therethrough communicating with said valve neck and having a top conical portion for dispersing the aerosol emitted from the aerosol emitting container, said



top housing being movable relative to said bottom housing for displacing said valve neck to actuate aerosol fluid emission through said bore so that tissue to be treated which is positioned over and closes said conical dispersion space receives fluid released through said conical dispersion space.

4,226,341

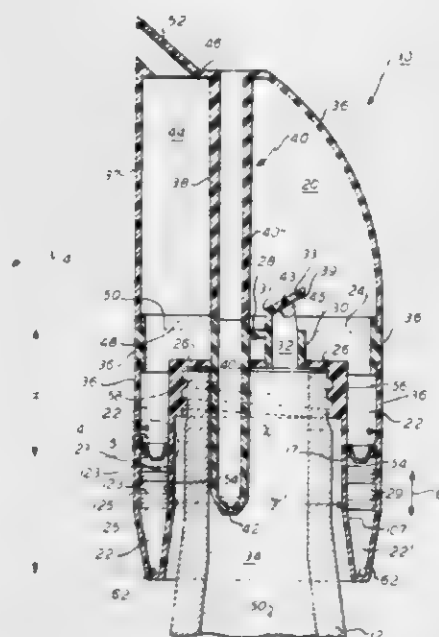
VOLUME ADJUSTMENT DEVICE

Edward J. Towns, Convent Station, and Edward M. Brown, Livingston, both of N.J., assignors to Neil H. Downing, Bedford Hills, N.Y.

Filed Jan. 18, 1978, Ser. No. 870,472
Int. Cl.² G01F 11/26

U.S. Cl. 222-440

8 Claims



1. A volume setting device comprising:
a fluid receptacle having an upstanding side wall and a first bottom wall forming an annular fluid chamber having a predetermined volume,
an annular bottom member having a second bottom wall whose outer diameter is smaller than the diametrical spacing of said side wall,
said bottom member including a tapered resilient side wall circumscribing said second bottom wall and tapering toward said chamber side wall forming a fluid seal with said chamber side wall at the extended edge of the tapered side wall, said resilient side wall being radially inwardly compressed at said edge by said chamber side wall while maintaining said seal with said chamber side wall, said member being sufficiently resilient to permit a gas entrapped between said receptacle and said bottom member

to escape during sliding insertion of said member within said chamber toward said first bottom wall and sufficiently flexible to distort while maintaining its seal with said chamber side wall, said predetermined volume being altered to a given value in accordance with the position of said member in said chamber, and
vent means projecting from the inner face of said chamber side wall, said extended edge engaging said vent means for venting said entrapped gas from between said first bottom wall and said bottom member as said member is inserted toward said first bottom wall.

4,226,342

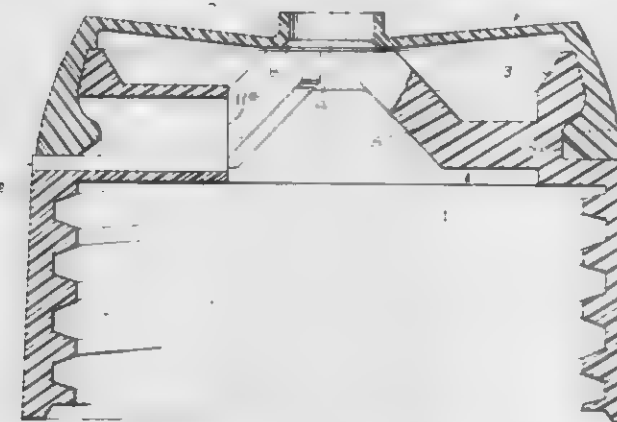
DISPENSING VALVE PARTICULARLY FOR VISCOUS PRODUCTS

Robert H. Laauwe, 237 Green Ridge Rd., Franklin Lakes, N.J. 07417

Filed Dec. 15, 1978, Ser. No. 969,796
Int. Cl.³ B05B 11/04

U.S. Cl. 222-494

10 Claims



1. A dispensing valve having a base comprising a circular rim, means for connecting said rim to a squeeze bottle's mouth, a circular wafer, and spokes connecting with and radiating from the wafer's bottom and extending radially to the rim in a plane below said bottom and positioning the wafer on and normal to the rim's axis, said wafer being thin as compared to its diameter and having a small diameter as compared to the rim's diameter and forming an annular space between the wafer and rim; and a cap comprising an elastically flexible annular diaphragm positioned above said plane and having a central opening with a periphery normally resting on the periphery of said wafer, and a depending flange connected to said rim, said peripheries having substantially mating conical surfaces, wherein substantially the entire conical surfaces contact each other, said wafer having a flat top and bottom, said spokes having inner tips which connect with said bottom only and said bottom being otherwise free from obstructions in a downward direction.

4,226,343

VALVING APPARATUS

James L. Fling, Portland, Oreg., assignor to Custom Systems Associates, Inc., Portland, Oreg.

Filed Aug. 28, 1978, Ser. No. 937,061
Int. Cl.³ B67D 3/04

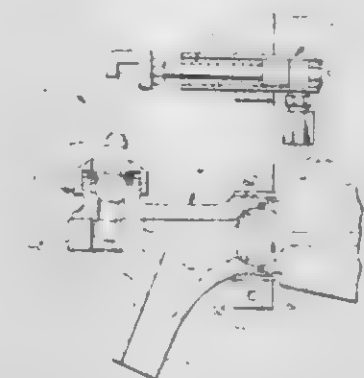
U.S. Cl. 222-504

3 Claims

1. In combination with a fluid-dispensing valve having a plunger movable selectively between opened and closed conditions, said plunger defining a surface which is exposed to and actable upon by fluid flowing through said valve to move said plunger, when such is in a partially opened condition intermediate its closed and opened conditions, to its closed condition, with such movement occurring at substantially the same rate that fluid flows into and through said valve, apparatus useable to move said plunger from its closed toward its opened condition at a first overall rate, and from its opened toward its closed

condition, at a second, substantially slower overall rate, said apparatus comprising,

a pneumatically controlled ram operatively connected to said plunger, operable to move the same from its closed toward its opened condition, at said first rate, upon supply of gas to said ram, at a selected pressure and



spring means operatively connected to said plunger, upon exhaust of gas from said ram, operable to produce shifting of the latter from its closed toward its said partially opened condition, whereupon plunger movement from said partially opened condition toward its closed condition occurs primarily under the influence of fluid acting on said surface.

4,226,344

CONSTANT FLOW VALVE ACTUATOR

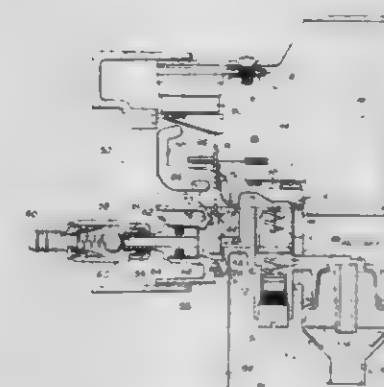
Jack J. Booth; William C. Branch, and Robert P. Kidd, all of Dallas, Tex., assignors to Booth, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 876,001, Feb. 8, 1978. This application Feb. 6, 1979, Ser. No. 10,083

Int. Cl.³ F16K 31/11, 11/16

U.S. Cl. 222-504

8 Claims



1. A mechanism for actuating a lever connected to open a valve for allowing a pressurized fluid to flow therethrough to a nozzle, comprising in combination:

- an arm movable about and depending from a pivot at a position behind and extending below said nozzle,
- first means connected to said arm above said pivot for operating an electrical switch when said arm is rotated about said pivot,
- a solenoid assembly linked to said lever and electrically connected to said switch for opening said valve when said switch is operated, and
- a second means connected to said arm above said pivot for engaging said lever to open said valve when said arm is rotated about said pivot beyond the point at which said switch is actuated for manual operation of said valve in event of electrical failure.

4,226,343

PLASTIC GARMENT HANGERS WITH INTEGRALLY MOLDED CLASPS THEREFOR

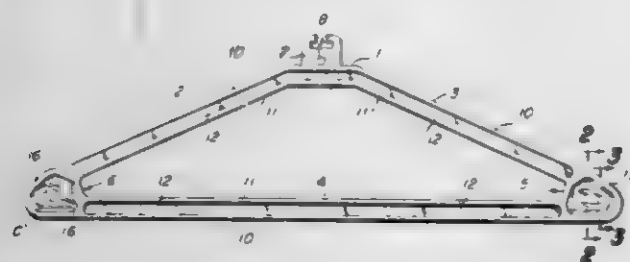
Bela G. Szabo, Carnegie, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.

Filed Jan. 19, 1979, Ser. No. 4,936

Int. Cl.³ A47J 51/097, 51/14

U.S. Cl. 223-91

1 Claim



1. A garment hanger with integrally molded clasps for cooperation therewith formed of hardened plastic material, comprising

- (a) a central head portion with symmetrical lateral arms sloping downwardly therefrom to the opposite ends of the hanger with an integral horizontal bar extending between said ends and forming enlarged surface areas at their junctions,
- (b) said lateral arms, bar and surface areas having thickened marginal edges surrounding continuous webs of lesser thickness delineated by said marginal edges, and
- (c) a generally U-shaped clasp molded in each of said surface areas of a thickness corresponding to that of said marginal edges,
- (d) each clasp being in the form of a pair of elongated substantially parallel bifurcated legs extending from a semi-circular joint with one of the legs extending in general alignment with said bar and of greater length than the other leg, and each of said legs having a smooth outer marginal boundary and an undulating inner marginal boundary,
- (e) each clasp also being separable from the surrounding continuous web of the enlarged surface area by a plurality of spaced frangible tabs extending between the outer marginal boundary of the clasp and the web surrounding it leaving intact a substantial remanent portion of the web,
- (f) said tabs being of a thickness comparable to that of said web and less than that of said clasp to facilitate the separation of said clasp from the web and distributed around the outer marginal boundary of said clasp, including a tab adjacent the free end of each of the legs and a pair of tabs at the semi-circular marginal boundary in proximity to the legs,
- (g) the inner marginal boundaries of the legs being free of any connection with the web adjacent thereto, and said last-mentioned web terminating in a reinforcing nub of a thickness corresponding to that of the clasp or the marginal edges of the hanger.

4,226,346

COMPACT FOLDABLE BOOTJACK WITH POSITIVE LOCKING DEVICE

Posie C. Turner, 815 57th Pl. NE., Fairmount Heights, Md. 20827

Filed Mar. 30, 1979, Ser. No. 25,519

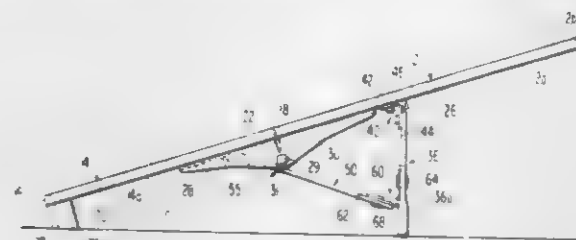
Int. Cl.³ A47J 51/02

U.S. Cl. 223-115

2 Claims

1. A compact, foldable bootjack including an elongated, planar front member and an elongated planar rear member, means for hinge connecting said front and rear members at abutting ends for folding bottom to bottom onto each other and about the hinge connection, a right angle leg member being hinge connected at its upper end to the bottom of the front member forward of the hinge connection between said

members for pivoting from a first position overlying and against the bottom of the front member to a position generally at right angles thereto with its bottom end in contact with an underlying support surface for supporting the front and rear members when in extended position inclined upwardly and forwardly, said front member bearing a V-shaped opening at its end remote from its hinge connection to said rear member to receive the heel of a boot to facilitate removal of the boot from the user's foot, the improvement comprising: a leg member locking bar being pivotably connected at one end to said leg member intermediate of its ends and adjacent the lower end thereof in contact with the support surface and being pivotably



connected at its opposite end to said rear member, rearwardly of the hinge joint between said front and rear members such that when the front and rear members are in extended position, the leg member is generally at right angles to the bottom of the front member, and the locking bar extends generally at right angles to the plane of the leg member to form a highly rigid, triangular support for the open, extended bootjack and to resist forces acting through the bootjack during removal of a boot inserted within the V-shaped opening of the front member, and wherein during folding of the bootjack front and rear members about the hinge axis connecting the same, the front and rear members, the leg member and the locking bar are all folded about their hinge axes into generally parallel coplanar position.

4,226,347

TOOL KIT AND PROTECTIVE CUSHION

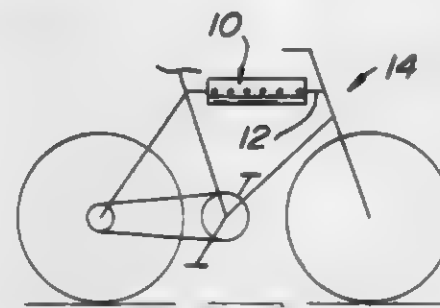
William H. Rice, Bryn Mawr, Pa., assignor to Blavat Advertising, Inc., Erdenheim, Pa.

Filed Apr. 27, 1979, Ser. No. 33,878

Int. Cl.³ B62J 11/00, 27/00

U.S. Cl. 224-35

9 Claims



1. A tool kit and protective cushion for a bar of a bicycle comprising an elongated hollow member, said member being comprised of a resilient material and including a relatively thick wall; said member including means for enabling it to be connected to the bar so that said member fits over the bar to protect the groin and thighs of a rider; a plurality of recesses disposed around the outer wall of said member and extending lengthwise along said member for receiving tools; a portion of said member not including recesses; said portion to be located at the top of the bar to provide a cushion if the rider slips off the seat; an outer cover for said kit, and means for securing said cover to said member to keep tools from falling from said recesses.

4,226,348

AUTOMOBILE TRUNK CONTAINED GROCERY BAG HOLDER

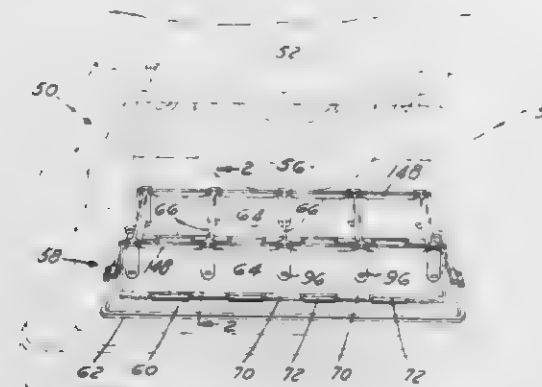
Frank A. Dottor, and Shirley E. Dottor, both of 30000 Maple-grove, St. Clair Shores, Mich. 48082

Continuation-in-part of Ser. No. 721,823, Sep. 9, 1976, abandoned, and Ser. No. 759,252, Jan. 13, 1977, abandoned. This application Sep. 21, 1977, Ser. No. 835,427

Int. Cl.² B60R 5/04

U.S. Cl. 224-42.42

7 Claims



1. A collapsible grocery bag holder for installation in an automobile luggage compartment comprising, in combination: a rectangular, generally flat and flexible base member in the form of a floor mat, said floor mat having an elevated ridge, extending completely around and unbroken within the perimeter of said floor mat, for the containment of spillage occurring therein, said containment ridge being at least equal in height and in width respectively, as the thickness of the said floor mat;

a pair of parallel and longitudinally extending side wall members spaced apart a distance approximately equal to the combined width of said side wall members, and wherein the opposed said side wall members are pivotally attached to said floor mat by means of living hinges, said living hinges, being located between the top of the longitudinal extending sections of the said containment ridge and the bottom of said side wall members, said side wall members thereby being foldable over said floor mat into a generally flat unit, and wherein said side wall members are provided with a series of open ended correspondingly positioned slots, said slots extending upwardly from approximately midway of said side wall members and through the top edges thereof;

a plurality of dividers of relatively rigid material and similarly shaped, for slidable fit by a downward movement into said correspondingly positioned slots provided on said side wall members, said dividers transversely bridging the respective side wall members, forming compartments for the reception therein of filled bags of groceries; and having the opposite ends of each such divider exhibiting in cross section an "H" shaped configuration, formed of two opposed pairs of winged-like sections spaced apart at least the thickness of said side wall members by a centrally located membrane, said membrane approximating dimensionally in length and in width, as the said slots, for slidable fit therein, for supporting said dividers in a suspended position extending no lower than approximately half the depth of said side wall members, leaving the lower portion of said collapsible grocery bag holder unobstructed for accommodating overly stuffed bags of groceries; and wherein the opposed said winged sections straddlingly engage, in the immediate area of said slots, their respective said side wall members, thereby preventing lateral movement thereof, and securing said side wall members in an upright, vertical operative position.

4,226,349

CARTON GRIP

Anthony J. Uccellini, 137 Linda Ln., Palm Beach Shores, Fla. 33404

Filed Jul. 9, 1979, Ser. No. 55,965

Int. Cl.³ B65D 25/28

U.S. Cl. 224-45 P

2 Claims



1. A removable grip for attachment to a fibrous container wall, said grip comprising: a rigid body, said body having a curved hand-engagable base portion; a plate having a plurality of pointed projections disposed therefrom at a predetermined angle pointed upwardly, said plate being attached to said rigid body, said plate and said curved portion of said rigid body having lateral separation to allow the fingers of the user sufficient space therebetween.

4,226,350

POCKET ORGANIZER

Henry Detje, 967 Marion St., Denver, Colo. 80218

Filed Oct. 12, 1978, Ser. No. 950,628

Int. Cl.² A44B 15/00

U.S. Cl. 224-247

6 Claims



1. A pocket organizer comprising: a body having a backing plate and a retainer plate joined at an acute angle to form a resilient V-shaped trough wherein the retainer plate has a free edge opposite from the apex of the trough; said retainer plate having at least one key loop opening formed therein having a trapezoidal slot portion and a circular aperture portion, the slot portion having a relatively longer opening at said free edge and having a relatively shorter opening into said circular portion with substantially smooth side edges convergently connecting the free edge to the circular portion, the circular portion having a first predetermined diameter; said backing plate having a circular cavity therein of second predetermined diameter and positioned such that the normal axis thereto intersects the normal axis of said circular aperture portion; means for attaching said body to another object; and a key loop having a sphere of at least one-quarter inch diameter and larger than said first and second predetermined diameters, suitably sized to be engaged for retention.

tion in and between said circular aperture and said cavity, and having key attaching means connected to the sphere said sphere being retained between the backing plate and retainer plate solely by engagement in said cavity and aperture and suitably sized to pass through said slot portion with resilient flexing of the V-shaped trough, the key attaching means being moveable through substantial arcs both in axial and transverse planes with respect to the V-shaped trough by pivoting of the sphere while engaged in the body.

4,226,351

SKI HOLDING APPARATUS

Peter Biermann, Leonberg, and Manfred Schmidt, Sindelfingen, both of Fed. Rep. of Germany, assignors to Vereinigte Baugeschlagfabriken Griesch & Co. GmbH, Leonberg, Fed. Rep. of Germany

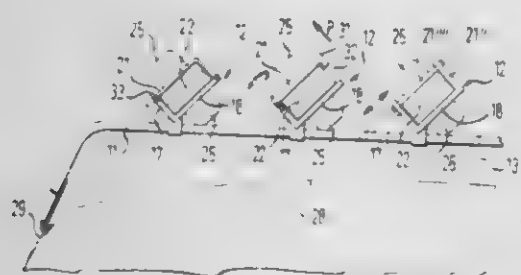
Filed Jun. 29, 1978, Ser. No. 53,383

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830676

Int. Cl.³ B60R 9/04, 9/08

U.S. Cl. 224—325

47 Claims



1. Ski holding apparatus comprising a rack for supporting a plurality of skis substantially parallel to one another in a substantially common plane, there being a plurality of pairs of holders arranged across the rack with the holders of each pair being spaced apart along the rack and being adapted to support at least one ski of a pair of skis at two locations the holders being further adapted to support the skis in an inclined position with the mean transverse plane of the skis arranged at an angle within the range 30° to 60° to said common plane.

4,226,352

CONTINUOUS-ROD MAKING MACHINES

John T. Watson, High Wycombe, England, assignor to Molins Limited, England

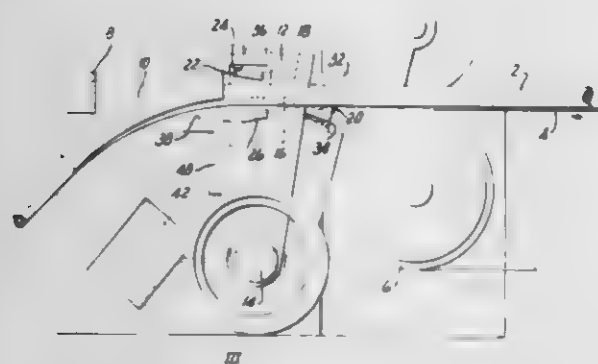
Filed Jan. 9, 1979, Ser. No. 2,091

Claims priority, application United Kingdom, Jan. 13, 1978, 135478/78

Int. Cl.³ B26F 3/00

U.S. Cl. 225—100

12 Claims



1. A continuous rod-making machine, comprising means for conveying a continuous rod along an axial path at substantially constant speed, spaced gripping means on opposite sides of said

path, first moving means for moving said spaced gripping means together and into engagement with a rod on said path to grip said rod, the gripping means being arranged to extend along and engage the rod along part of its length, and second moving means for moving said gripping means in a direction generally lengthwise of the rod and for accelerating said gripping means from rest to a speed in excess of said constant speed such that the leading part of the rod is separated from the remainder of the rod as the respective parts are pulled apart.

4,226,353

FORMS FEED TRACTOR

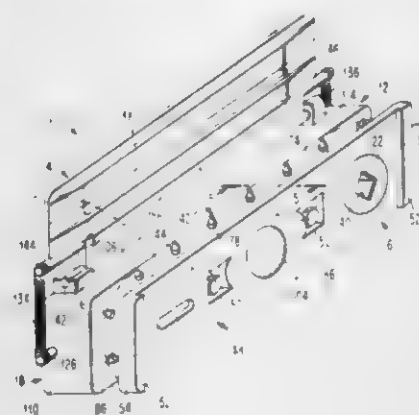
Silvio U. Blaskovic, Highland Beach, and Robert W. Cornell, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,550

Int. Cl.³ G03B 1/30; B65H 17/38

U.S. Cl. 226—74

6 Claims



1. A forms feed tractor mechanism for moving an inserted planar record medium in a given direction, said record medium having a record side and a back side opposite to said record side, said record medium further having perforations along the edge thereof, said forms feed tractor mechanism comprising: a plurality of pins arranged in an endless belt and adapted to engage said perforations;

means adapted to be rotated for moving said endless belt; housing means for containing said endless belt and moving means, said housing means having a top generally coplanar with the back side of said record medium, when inserted, a bottom generally parallel to said top, an inner side and an outer side connecting said top bottom and positioned such that said inner side is beneath said record medium, when inserted, and said outer side is beyond the edge of said record medium, when inserted, a front positioned upstream from said given direction and a back positioned downstream from said given direction, said housing means including door receiving means positioned between the edge of said record medium, when inserted, and said outer side, and spring attachment means positioned on at least one of said front or back in vertical alignment with said door receiving means;

door means including means for pivotably engaging said door receiving means to allow said door to rotate between open and closed positions, spring attachment means positioned between said engaging means and a position on said door, when closed, above the edge of said record medium, when inserted, and means extending from the bottom of said door means at a position to engage the top of said housing means when said door means is closed at a position between said outer side and the edge of said record medium, when inserted, said extending means maintaining a gap of a desired distance between that portion of the bottom of said door means above said record medium and said record medium when said door means is closed; and spring means connected between said spring attachment means of said housing means and said door means.

4,226,354

PORTABLE DISPOSABLE RACK FOR AN AUTOMOBILE

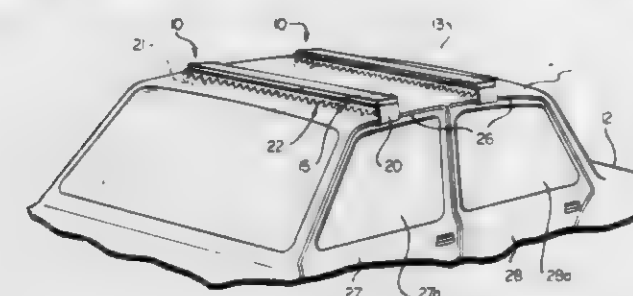
Robert R. Allen, 1512 Arlington La., Schaumburg, Ill. 60193

Filed Feb. 21, 1979, Ser. No. 13,216

Int. Cl.³ B60R 9/04

U.S. Cl. 224—318

9 Claims U.S. Cl. 229—7 S



1. A portable disposable rack adapted to be mounted on an automobile roof for positioning objects thereon, said rack comprising:

an elongate lamination adapted to extend generally horizontally across said automobile from one side thereof to the opposing side thereof, said lamination including, soft, elastically deformable opposing outer layers, and a reinforcing layer laminated between said outer layers, and said reinforcing layer having greater structural rigidity than said outer layers across the narrow width of said elongate lamination and having end portions extending beyond said outer layers for deformable, fastening location between automobile doors or door windows and the corresponding door frames or door window frames.

4,226,355

ICE CREAM HOLDER

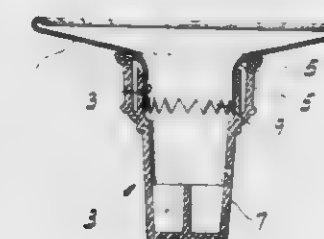
Fred H. Helfrich, Jr., St. Louis County, Mo., assignor to Thomas P. Madden, St. Louis, Mo., a part interest

Filed May 17, 1979, Ser. No. 39,812

Int. Cl.³ B65D 3/06

U.S. Cl. 229—1.5 H

12 Claims



1. An ice cream holder adapted to be inserted in an ice cream cone comprising a thin-wall member of generally funnel shape and open at each of its ends, having a first relatively narrow lower portion adapted to extend down into the cone and to fit relatively snugly therein, and an upper portion flaring outwardly from said lower portion and forming a relatively wide open-mouth receptacle adapted to extend over the upper edges of the cone and laterally outwardly beyond the cone for receiving ice cream therein, the outwardly-flaring portion of said member forming said receptacle being inclined inwardly and downwardly from the periphery thereof toward said lower portion whereby with the lower portion in the cone melting ice cream is funneled down into the cone.

4,226,356

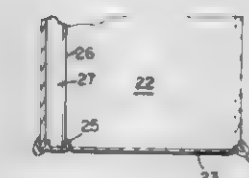
CONTAINER AND DISPENSER STRAW

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Sep. 2, 1977, Ser. No. 830,064

Int. Cl.³ B65D 1/08, 3/00, 5/00

10 Claims



1. A container and dispenser for a liquid held by said container comprising:

a closed container having a circumscribing side wall, a bottom wall connected to said side wall and a top wall secured to the upper end of side wall and serving to seal liquid contents within said container, a drinking straw disposed within said container and having an upper end portion connected to a lower portion by a bendable portion which may be bent without collapsing the wall of said straw, tab means integral with said top wall and removable therefrom, said tab means having at least one longitudinal formation retentively engaging a portion of the length of the upper end of said straw in a manner to permit said straw to be separated from said tab means by a manual pulling force applied between the end of said straw and said tab means, said upper portion of said straw extending in said container at an angle to said lower portion by virtue of the bending of said bendable portion within said container, means for opening said container by pulling said tab means to provide an opening in said top wall, which opening is in line with said straw, wherein said upper portion of said straw is pulled upwardly and passes through said opening and is accessible to the exterior of said container to permit a person holding said container to drink the contents of said container through said straw.

4,226,357

SPACE DIVIDERS

Thomas J. Martin, Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

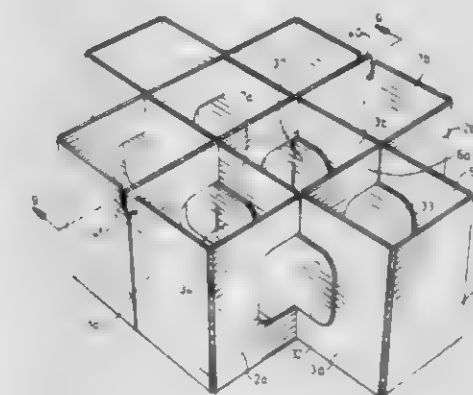
Filed May 30, 1979, Ser. No. 43,751

Claims priority, application Canada, Mar. 5, 1979, 322764

Int. Cl.³ B65D 5/48, 1/36

U.S. Cl. 229—15

9 Claims



1. A space divider for defining six partitioned spaces within

three contiguous walls related together such that one wall is between the other two and defines with them two angles which sum to 180°, the divider comprising:

- a partition equal in length to said one wall,
- a first articulated series of panels attached to one end of the partition,
- a second articulated series of panels attached to the other end of the partition,
- the two series being connected to the partition and to themselves so as to define three partitioned spaces in alignment along said partition and a fourth partitioned space adjacent the middle of said three aligned spaces, whereby two vacant corner areas remain to either side of said last-mentioned space, which corner spaces are completed by said contiguous walls to define a fifth and a sixth partitioned space.

4,226,358

PACKAGING CONTAINER

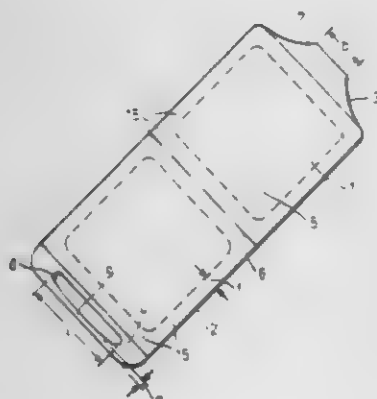
Alexander B. Ottow, Rotterdam, Netherlands, assignor to Internationale Octrooi Maatschappij, Rotterdam, Netherlands
Filed Jan. 9, 1978, Ser. No. 914,169

Claims priority, application United Kingdom, Jun. 30, 1977, 37460/77

Int. Cl.³ B65D 1/00, 5/66, 41/18

U.S. Cl. 229—44 R

1 Claim



1. A packaging container comprising:
first and second halves of a thermoplastic material foldably interconnected and each having a cavity adapted for packaging goods therein,

each of said container halves having a flange extending outwardly from the corresponding cavity and surrounding the periphery of the latter, the flanges of each said container halves being essentially coplanar when said container halves are in an unfolded position and being in face-to-face abutting relationship when said container halves are in a folded, locked position;

a sheet of film sealed to zones on said flanges of each of said container halves for closing the respective cavities; and locking means carried by said flanges for keeping said container halves together in a folded position, said locking means including

- (1) a tongue formed in a section of the flange of said first container half, said tongue being coplanar with said last named flange and having a width dimension "b", said width dimension corresponding with the width of the tongue its points of contact with a receiving opening in which the tongue is to be engaged in said folded, locked position of said container halves,
- (2) said receiving opening formed in a section of the flange of said second container half for matingly receiving said tongue therein, the receiving opening having a length dimension "l" measured in a direction aligned with the width dimension "b", the sections of said flanges of said first and second container halves each having a thickness dimension "d", the ratio

(l-b)/d

being in the range of 20:1 to 30:1,

said receiving opening comprising a narrow longitudinal entranceway in said flange section of said second container half, said narrow entranceway being bounded by a strip of said last named flange section between said narrow entranceway and the outer periphery of said flange section of said second container half, said strip being continuous along the length of said narrow entranceway, said strip of said flange section having a width dimension "a" measured in a direction generally perpendicular to the direction of the length dimension "l" and width dimension "b", the ratio of a/d being in the range of 1.5 to 6, the ratios of said dimensions rendering said locking means sufficiently flexible that no deformation of said zones is caused by flexing said locking means for opening and closing said locking means.

4,226,359

DIRECT DRIVE HIGH SPEED ULTRACENTRIFUGE

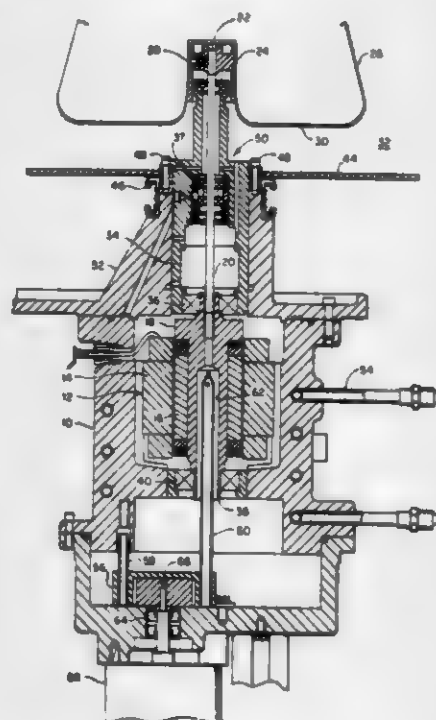
Kenneth E. Jacobson, Fremont, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 14, 1979, Ser. No. 20,387

Int. Cl.³ B04B 9/04

U.S. Cl. 233—24

8 Claims



1. A high speed ultracentrifuge comprising:

- a rotor chamber for receipt of a rotor;
- a drive assembly in driving communication with said rotor within said rotor chamber;
- a housing adjacent said rotor chamber for receipt of said drive assembly, said rotor chamber and said housing being subjected to a vacuum environment when said ultracentrifuge is operating;
- a drive spindle mounted within said drive assembly;
- bearing means mounted on said spindle, said bearing means and said spindle forming a removable unit from said housing and said chamber; and
- vacuum seals mounted adjacent said housing remote from said spindle so that said extraction of said removable unit of said spindle and bearing means will not disturb said vacuum seals.

4,226,360

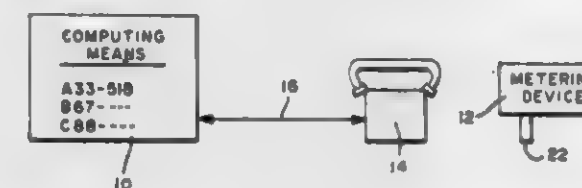
METERING SYSTEM

Luther G. Simjian, Lago Mar Pl., 1750 S. Ocean La., Fort Lauderdale, Fla. 33316

Filed Dec. 19, 1978, Ser. No. 970,995

Int. Cl.³ G06F 15/20; H04M 11/00; H04Q 3/72; G06K 5/00
U.S. Cl. 235—375

10 Claims



1. The method of updating a metering device of the postage meter type or similar type comprising:

- providing a code bearing means having a first and a second code;
- placing said code bearing means into cooperative relation with the metering device for causing said second code to be entered into the metering device;
- transmitting the first code from said code bearing means to a computing means and said computing means being programmed for providing in response to the receipt of said first code a third code which has a predetermined correlation with said second code, and
- entering said third code into said metering device for causing said metering device to be conditioned for updating responsive to said second code and said third code being in predetermined correlation.

4,226,361

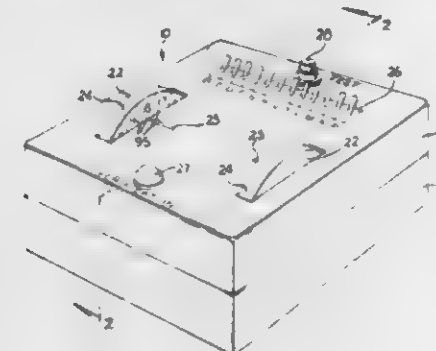
POSITIVE IDENTIFICATION SYSTEM FOR AUTHENTICATING THE IDENTITY OF A CARD USER

Leonard H. Taylor, 14335 Huston St., #207, Sherman Oaks, Calif. 91423

Filed Oct. 27, 1978, Ser. No. 955,319

Int. Cl.² G06K 7/06; G09B 3/00; H01H 43/08; G06K 5/00
U.S. Cl. 235—380

15 Claims



1. A positive identification device for verifying the authenticity of the user of a document coded with visible identification information, where the authorized user of said document has been given a secret code for memorization which corresponds to said visible identification information, said device comprising:

- a. first entering means comprising at least one user dial for manually entering a user code into said device, said user dial having along its outer edge indicia corresponding to said user code;
- b. second entering means comprising at least one operator dial for manually entering said visible identification information into said device, said operator dial having along its outer edge indicia corresponding to said visible identification information;
- c. an indicator;
- d. a power source;
- e. an electrical circuit having an enabled and disabled state, said electrical circuit comprising a plurality of first switches

which are responsive in a predetermined manner to said manually entered user code and which have an on state and an off state, and a plurality of second switches equal in number to said first switches, said second switches each having an on state and an off state, said second switches being responsive in a predetermined manner to said manually entered visible identification information, said first switches and said second switches being respectively wired together so that the state of said electrical circuit becomes enabled only upon the changing of state of said first switches being complementary to the changing of state of said second switches, said electrical circuit being connected with said indicator and said power source, said indicator being responsive to said electrical circuit being enabled, said indicator being activated only if said manually entered user code corresponds to said manually entered visible identification information;

f. first actuating means for actuating said first switches, said first actuating means being controlled in a predetermined manner by said first entering means, said first actuating means having a plurality of first coupling members equal in number to said first switches, each of said first coupling members being coupled to a respective said first switch, said first actuating means further having a first axle and at least one first cylinder having a circular cavity at each of its ends, each of said first cylinder's ends having a rim of narrow width, said first cylinder being rotatably mounted upon said first axle, said first cylinder having upon its surface a plurality of first engaging means for cooperatively engaging with said first coupling members, said first engaging means being arranged in a predetermined manner, said first cylinder being located in close proximity to said first coupling members so that said engaging means can engage said first coupling members, each of said first switches being actuated upon its respective said first coupling members being engaged by said first engaging means, said user dial being rotatably mounted on said first axle, said user dial being secured to said first cylinder, said indicia along the outer edge of said user dial being aligned with said first engaging means in a predetermined manner;

g. a first stressed torque spring, said first stressed torque spring surrounding said first axle, said first stressed torque spring being connected to and positioned between said user dial and said first cylinder when said user dial and said first cylinder are secured to each other, said first stressed torque spring being compressed and twisted so that it propels said user dial and said first cylinder apart and causes them to rotate in opposite directions upon their ceasing to be secured together, thereby preventing the detection of the predetermined manner in which said indicia along the outer edge of said user dial and said first engaging means were aligned with each other;

h. at least one first I-beam, the number of said first I-beams greater than one being equal to the number of said first cylinders greater than two, said first I-beam surrounding said first axle, said first I-beam being positioned adjacent said end of said first cylinder opposite said user dial, said first I-beam having spacers of narrow width disposed along its sides and coincident with said rim of said cylinder opposite to said user dial, said spacers being disposed so that said first cylinder and said user dial are compressed together so that they are secured to each other, but would no longer be secured to each other if said first I-beam is displaced a small distance;

i. second actuating means for actuating said second switches, said second actuating means being controlled in a predetermined manner by said second entering means, said second actuating means having a plurality of second coupling members equal in number to said first switches, each of said second coupling members being coupled to a respective said second switch, said second actuating means further having a second axle and at least one second cylinder having a circular cavity at each of its ends, each of said

second cylinder's ends having a rim of narrow width, said second cylinder being rotatably mounted upon said second axle, said second cylinder having upon its surface a plurality of second engaging means for cooperatively engaging with said second coupling members, said second engaging means being arranged in a predetermined manner, said second rotating member being located in close proximity to said second coupling members so that said second engaging means can engage said second coupling members, each of said second switches being actuated upon its respective said second coupling member being engaged by said engaging means, said operator dial being rotatably mounted upon said second axle, said operator dial being secured to said second rotating member, said indicia along the outer edge of said operator dial being aligned with said second engaging means in a predetermined manner; and

- j. a second stressed torque spring, said second stressed torque spring surrounding said second axle, said second stressed torque spring being connected to and positioned between said operator dial and said second cylinder when said operator dial and said second cylinder are secured to each other, said second stressed torque spring being compressed and twisted so that it propels said operator dial and said second cylinder apart and causes them to rotate in opposite directions upon their ceasing to be secured together, thereby preventing the detection of the predetermined manner in which said markings and said second engaging means were aligned with each other.

4,226,362

HIGH PRESSURE STEAM TRAP

Werner Föller, Stuhl, Fed. Rep. of Germany, assignor to GESTRA-KSB Vertriebsgesellschaft mbH & Co. KG, Bremen, Fed. Rep. of Germany

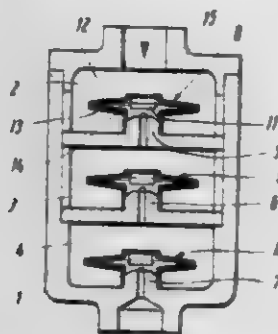
Filed Aug. 16, 1979, Ser. No. 66,991

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836400

Int. Cl.³ F16T 1/02

U.S. Cl. 236—58

2 Claims



1. In a high pressure steam trap of the type which has at least two serially-connected and operated discharge control assemblies, each of which includes a thermal control element which is exposed to the condensate to be discharged, a valve seat, and a throttle element which is actuated by said thermal control element for movement relative to the valve seat, the improvement comprising:

said thermal control elements each comprising an expansion capsule which contains an evaporation liquid, the vapor pressure of the one expansion capsule is higher than the vapor pressure of the evaporation liquid in the successively-disposed expansion capsule downstream therefrom, measured at the same temperature as the one expansion capsule.

4,226,363

STOVE BENCH

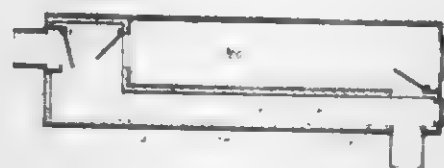
Dana M. Sheldon, 13 Sea St., Camden, Me. 04843

Filed Oct. 20, 1977, Ser. No. 843,717

Int. Cl.³ F24B 7/04

U.S. Cl. 237—54

10 Claims



1. A stove bench comprising a hollow elongated structure having walls defining a duct, having an elongated top horizontal seating surface, and having means defining an inlet and outlet, said inlet and outlet being spaced from one another along the elongated duct whereby air or gas flow to the inlet passes through the duct to the outlet, and flow control means associated with said structure including means for varying flow through the duct, said hollow structure also having a substantially horizontal wall sectioning the duct into an upper primary heat duct for supplying heat to the seating surface and a lower bypass duct that is disposed on the opposite side of the primary heat duct to the seating surface, said upper and lower ducts both extending substantially in parallel and along the bench seating surface, said flow control means including damper means associated with one of said inlet and outlet and means associated with said upper and lower ducts adapted to be either open or closed.

4,226,364

SINGLE CONDUIT AIR CONDITIONING SYSTEM

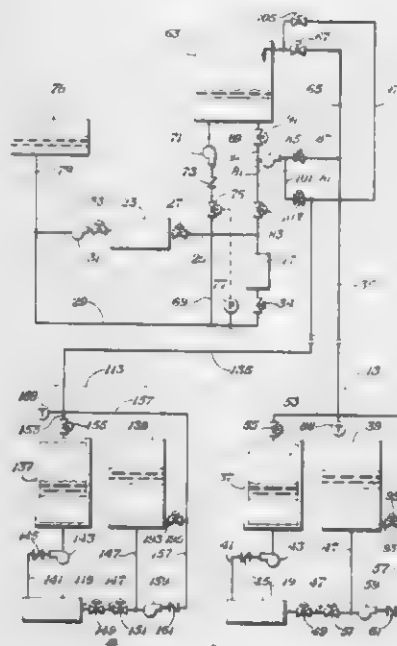
Alfred L. Utesch, P.O. Box 941, Argyle, Tex. 76226

Filed Feb. 5, 1979, Ser. No. 9,610

Int. Cl.³ F24D 3/02

U.S. Cl. 237—63

9 Claims

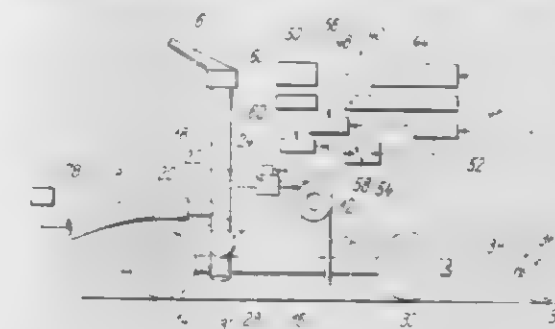


1. In an air conditioning system which utilizes a fluid for transferring energy for air conditioning from a first location to a second location; said system being of the type wherein said fluid is conditioned by a conditioning device at said first location, said fluid is transferred to said second location for exchanging heat with a load, and said fluid is returned from said

second location to said conditioning device at said first location for reconditioning; the improvement which comprises:

- a first storage means for storing said fluid prior to said fluid exchanging heat with said load; said first storage means being disposed at said second location and connected for transmitting fluid to said load;
- a second storage means for storing said fluid after said fluid has exchanged heat with said load; said second storage means being disposed at said second location and connected for receiving fluid from said load;
- a third storage means for storing said fluid after it has been returned to said first location prior to being returned to said conditioning device for reconditioning; said third storage means being disposed at said first location and connected for transmitting fluid to said conditioning device;
- connecting means for joining in a fluid flow relation said conditioning device and said first storage means, and for joining in a fluid flow relation said second storage means and said third storage means; said connecting means comprising a single conduit from said first location to said second location;
- a first pumping means disposed in a fluid pumping relation to said connecting means for pumping said fluid from said conditioning device through said connecting means to said first storage means; and
- a second pumping means disposed in a fluid pumping relation to said connecting means for pumping said fluid from said second storage means through said connecting means to said third storage means.

a flexible water supply hose, one end of which is connectable with a stationary water supply source and another end of which is connected to an irrigation device that is operable to be moved along an irrigation zone and spray water therealong, driving means for advancing the irrigation device along consecutive partial lengths of said irrigation zone, and control means for controlling the operation of said driving means



along each of said partial lengths of the irrigation zone, the improvement comprising measuring means associated with the control means for individually controlling the advance of said irrigation device during each of said partial lengths in response to measurements of both the actual distance travelled and amount of irrigation supplied by said irrigation device to insure that individual irrigation requirements of the respective partial lengths are met.

4,226,367

SQUEEZE BOTTLE DISPENSER

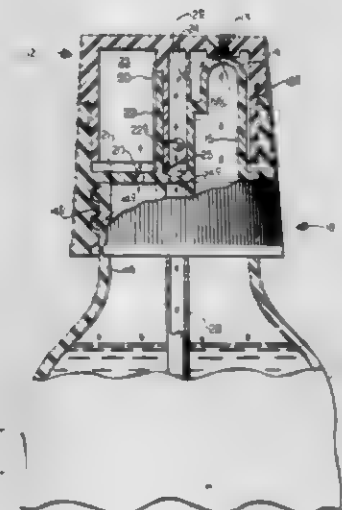
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 11, 1978, Ser. No. 968,639

Int. Cl.² B05B 1/26; B65D 1/32

U.S. Cl. 239—327

23 Claims



- An apparatus for dispensing liquid, comprising:
 - flexible container means for storing said liquid;
 - closure means connectable to said container means;
 - film-forming means connected to said closure means, said film-forming means having first orifice means therein through which gas or air from said container is sprayed;
 - cap means having a generally horizontal top rotatably connected to said closure means, said cap means having second orifice means in said top alignable with said first orifice means;
 - stem means connected to said closure means, said stem means having channel means through which liquid can exit said stem means and strike said film-forming means; and,
 - dip tube means connected to said stem means for conveying said liquid from said container to said stem means.

4,226,365

FUEL DISTRIBUTION VALVE FOR A GAS TURBINE ENGINE

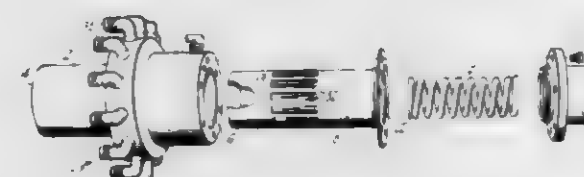
James R. Norris, Bolton; Guy W. Miller; John C. Jamison, both of Vernon, all of Conn., and Ralph D. Ransom, San Clemente, Calif., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 27, 1979, Ser. No. 52,635

Int. Cl.³ A01G 25/02

U.S. Cl. 239—66

6 Claims



1. A fuel distributing valve for directing metered fuel flow from a fuel control controlling the operation of a gas turbine engine to the fuel nozzles of the burner of that gas turbine engine, said fuel distributing valve having a cylindrical casing, a sleeve affixed in a bore of said cylindrical casing having a plurality of spaced circumferential elongated slots of varying widths communicating with corresponding complimentary outlet ports in said casing communicating with said nozzles, a piston in sliding relationship with said sleeve having an annular groove, means for feeding fuel to said annular groove so that the position of said annular groove relative to said elongated slots determines the amount of fuel permitted to enter each of said nozzles.

4,226,366

IRRIGATION SYSTEMS

Gunnar P. Nørtoft, Sejrup, 7323 Give, Denmark

Filed May 25, 1978, Ser. No. 909,521

Claims priority, application United Kingdom, May 27, 1977, 22589/77

Int. Cl.² B05B 3/18

U.S. Cl. 239—69

16 Claims

16. In an agricultural irrigation apparatus of the type having

4,226,368

MULTIPLE VORTEX DRIPPER

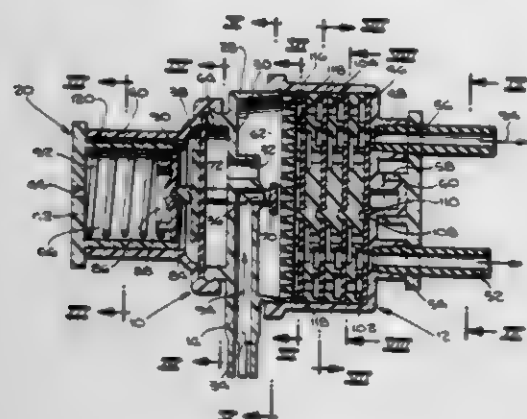
Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Filed Jan. 23, 1978, Ser. No. 871,198

Int. Cl.² B05B 1/30

U.S. Cl. 239-542

9 Claims



1. In a drip irrigation system including a connecting body having an inlet adapted for connection to a source of fluid under pressure and an outlet adapted for connection to an irrigation conduit for conducting a low volume of water to an irrigation site, the improvement for effecting a pressure drop between the inlet and the outlet comprising:

(a) integral pressure regulator means for controlling the pressure of the fluid within the connecting body at a pre-selected pressure communicating with the inlet of the connecting body, said pressure regulator means including means for adjusting said preselected pressure within the connecting body whereby the rate of fluid flow into the irrigation conduit can be adjusted;

(b) first pressure dropping means having a first chamber therein for forming a vortex, an inlet to said first chamber communicating with said pressure regulator means, and an outlet from said first chamber being adapted to form fluid entering said inlet thereto at a first pressure into a vortex whereby said fluid exits said outlet therefrom at a second pressure lower than said first pressure; and

(c) second pressure dropping means having a second chamber therein for forming a vortex, an inlet to said second chamber communicating directly with said outlet of said first pressure dropping means, and an outlet from said second chamber communicating with the outlet of the connecting body, said second chamber being adapted to form fluid entering said inlet thereto at said second pressure directly into a vortex whereby said fluid exits said outlet therefrom at a third pressure lower than said second pressure.

4,226,369

MEANS AND METHOD FOR THE DESTRUCTION OF PARTICLES ENTRAINED IN A GAS STREAM

Thomas E. Botts, Wading River, and James R. Powell, Shoreham, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 17, 1978, Ser. No. 934,552

Int. Cl.³ B02C 19/00

U.S. Cl. 241-1

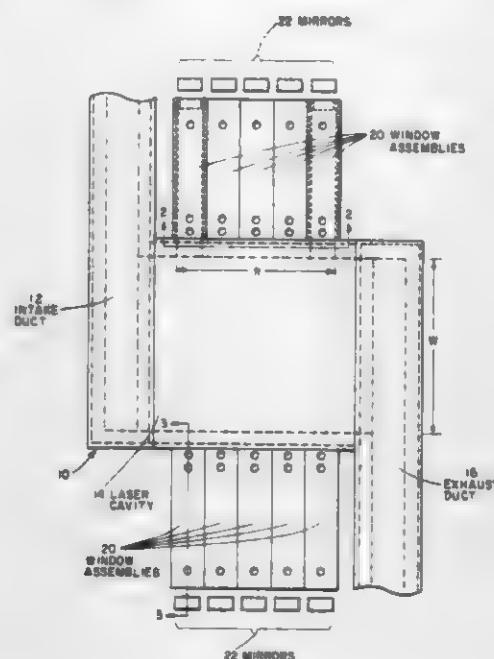
16 Claims

1. A method for the production of a gas stream significantly free of particles larger than about 2 to 5 microns said method comprising the step of:

(a) producing a particulate laden gas stream by the combustion of coal;

(b) passing said particulate laden gas stream through a cavity, said cavity having associated with it laser means for providing illumination of appropriate wavelength and

energy density to destroy particles, and having window means for admitting said laser illumination; and,



(c) exposing a significant portion of said particles to said laser illumination.

4,226,370

SOIL PROCESSING DEVICE AND METHOD

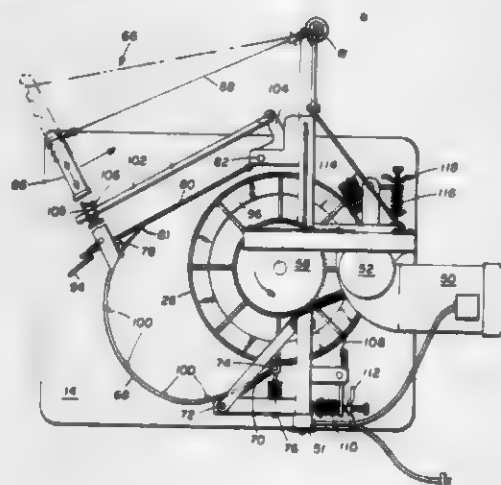
Charles L. Watson, R.R. 7, Paris, Tex. 75460

Filed Feb. 2, 1978, Ser. No. 874,696

Int. Cl.³ B02C 17/02, 4/26

U.S. Cl. 241-30

10 Claims



2. A device for particulating conglomerated materials, which comprises:

a drum mounted for rotation about a substantially vertical axis;

means for effecting rotation of the drum;

said drum including a peripheral wall comprised of screen having a predetermined mesh size;

a substantially horizontal stationary surface positioned adjacent the drum;

an arcuate wall positioned in spaced relationship with the drum on said surface and mounted for movement relative to the drum; and

means for selectively urging said arcuate wall toward the rotating drum to crowd conglomerated materials placed therebetween on the surface into engagement with said drum whereby said materials are sheared by the screen wall into particles,

wherein the arcuate wall includes forward and trailing ends, and further including:

a first pivotally secured plate affixed to the forward end of the arcuate wall and in rolling contact with the periphery of the drum; and

a second pivotally secured plate in rolling contact with the trailing end of the arcuate wall, said wall and first and second plates together with a peripheral portion of the drum defining the enclosure into which the materials to be particulated are placed.

4,226,371

INERT GRINDING AND DIRECT FIRING IN COAL BURNING SYSTEMS

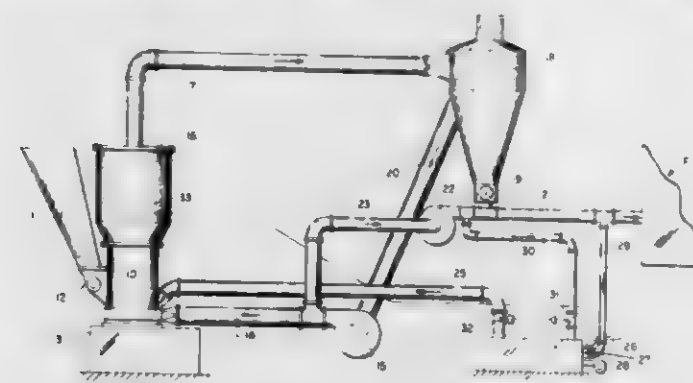
Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Apr. 6, 1979, Ser. No. 27,742

Int. Cl.³ B02C 21/00

U.S. Cl. 241-31

6 Claims



1. Apparatus for grinding a fuel material in an inert atmosphere and transporting the ground fuel material to fire a consuming unit, said apparatus comprising: grinding means for reducing the fuel material to a transportable and combustible size; primary propelling means connected to said grinding means for moving a gaseous transporting medium through said grinding means; separator means connected between said grinding means and said primary propelling means for separating the ground fuel material from the gaseous transporting medium and returning the gaseous transporting medium to said primary propelling means; secondary propelling means connected between said primary propelling means and said grinding means and a consuming unit, said connection between said secondary propelling means and consuming unit having an inlet for receiving ground fuel material from said separator means for movement by the gaseous transporting medium to the consuming unit; inert hot gas producing means having an outlet connected to said grinding means; conduit means connecting said inert hot gas producing means with said connection between said secondary propelling means and the consuming unit for supplying inert gaseous transporting medium and ground fuel material to be used in said inert hot gas producing means.

4,226,372

DEVICE FOR THE DESTRUCTION OF MICROFILM AND SIMILAR DATA CARRIERS

Gerhard Wigand, Enzstrasse 17, 7140 Ludwigsburg, Fed. Rep. of Germany

Continuation of Ser. No. 792,098, Apr. 29, 1977, abandoned.

This application Oct. 10, 1978, Ser. No. 949,404

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641370

Int. Cl.³ B02C 18/22

U.S. Cl. 241-34

21 Claims

1. A shredding device adapted for the destruction of microfilm and similar information carriers with microimage impressions, the device comprising in combination:

a main frame;

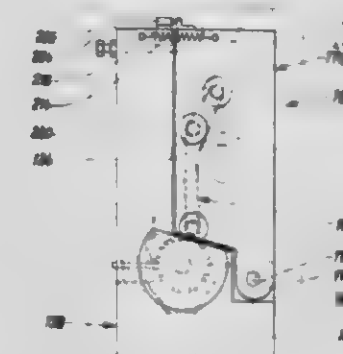
a shredding cutter with a power drive, the cutter being rotatably supported by the main frame and having the general shape of a milling cutter with a plurality of angularly spaced longitudinal cutting edges arranged on its periphery;

a first stationary cutting edge supported by the main frame so as to cooperate with the rotating cutting edges of the

shredding cutter to define a first cutting position there-with; and

a strip feeding unit operable to feed and guide information carrier material to said first cutting position, the strip feeding unit being supported by the main frame and comprising:

a stationary guide plate having a guide surface oriented substantially radially with respect to the shredding cutter and leading to said first cutting position, where the guide plate carries said first stationary cutting edge;



means for forcibly advancing strip material along the stationary guide plate, towards the first cutting position, said strip advancing means including a plurality of rotating strip advancing members and a drive therefor, at least some of said members being arranged side-by-side and spaced apart in a direction transverse to the direction of strip advance, and each of said members forming a strip feed gap with the guide plate; and

a feeding unit frame supporting the strip advancing means, including means operable to retract the strip advancing members in a direction away from the guide plate, for access to the strip feeding gaps.

4,226,373

FEED TUBE PROTECTOR FOR A FOOD PROCESSOR

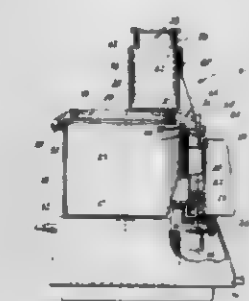
James E. Williams, Stamford, Conn., assignor to Wilson Research & Development, Inc., Greenwich, Conn.

Filed Mar. 5, 1979, Ser. No. 17,822

Int. Cl.³ B02C 18/12

U.S. Cl. 241-37.5

21 Claims



1. In a food processor of the type including a housing containing an electric motor drive and control means for rendering said motor drive inoperative unless said control means is actuated, a bowl mountable on said housing for enclosing a rotatable tool within said bowl driveable by tool drive means when said motor drive is rendered operative by actuation of said control means, a removable cover adapted to be positioned on said bowl, with a feed tube mounted on said cover forming a passageway for feeding food items through said cover into said bowl, and in which a food pusher can be plunged into said passageway for pushing food items toward the rotating tool, the novel safety apparatus comprising:

an outer sleeve nestable in a predetermined position around the exterior of said feed tube;

said food pusher being captured in telescoping relationship with respect to said outer sleeve for enabling said food

pusher to be moved longitudinally within said outer sleeve;
 said captured food pusher being in alignment with the interior of said outer sleeve for causing said food pusher to become aligned with said food passageway and to be plungeable into said food passageway only when said outer sleeve is nested around said feed tube; and
 said control means in the food processor being actuated only when said outer sleeve is properly nested in said predetermined position around said feed tube and only when said cover is properly positioned on said bowl, thereby inherently causing said food pusher to block access through said passageway into the bowl whenever the motor drive is actuated for rotating the food processing tool in the bowl.

4,226,374

TWO LEVEL FEED TUBE FOR FOOD PROCESSOR

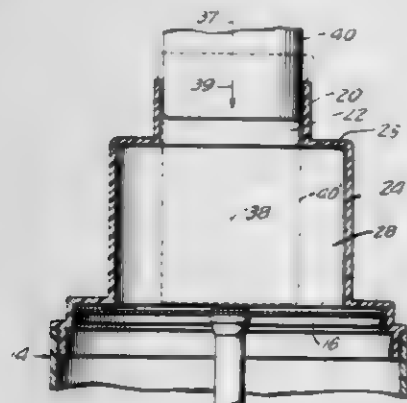
Barbara Kafka, New York, N. Y., assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Apr. 27, 1979, Ser. No. 33,979

Int. Cl.³ B02C 18/22

U.S. Cl. 241—37.5

4 Claims



1. For use in the cover for a food processor of the type having a working bowl for enclosing a rotary food processing tool which is adapted to rotate within said bowl, said cover being removable and being adapted to be locked on said bowl and having a feed tube mounted thereon forming a passageway for feeding food items through said cover into said bowl, and in which a food pusher can be plunged into said passageway for pushing food items toward the rotary food processing tool, a novel feed tube comprising:

- an integral two level feed tube mounted on said cover having a lower tube portion forming a lower passageway with a first cross-sectional area,
- an inwardly extending flange at the top of said lower tube portion,
- an upper tube portion mounted on said flange, said upper tube portion forming an upper passageway therethrough having a second cross-sectional area which is less than the cross-sectional area of said lower passageway, thereby providing a smaller upper food passageway in series with a larger lower food passageway, said food pusher being plungeable through said upper and lower passageways for pushing food items toward the rotary food processing tool.

4,226,375

REDUCTION MILL

Wallace C. Cameron, San Pedro, Calif., assignor to Copper Alloys Corp., Beverly Hills, Calif.

Filed Dec. 21, 1978, Ser. No. 972,028

Int. Cl.³ B02C 13/284

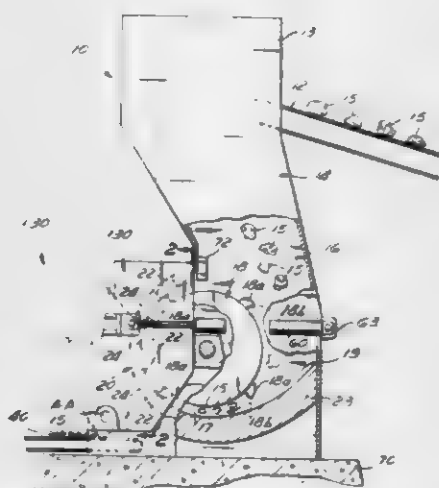
U.S. Cl. 241—88.4

12 Claims

1. In a reduction mill for material comminuted having upper inlet means for said material, rotary hammer means mounted, in a mill cage zone, for rotation below said inlet means, a grate

housing, and side outlet means to receive and discharge said comminuted material, the improvement which comprises:

- a grate assembly, removably mounted within said grate housing, having openings mounted in a side position of discharge with respect to a vertical plane passing through the axis of rotation of said rotary hammer means, said grate assembly comprising a plurality of screen bars having spaced projections formed along the length thereof, alternating with a plurality of cutter bars to form discharge openings alternating with cutting edges, said grate assembly coacting in a first position, with said rotary hammer means to cause said material to be comminuted



and passed through said discharge openings in said grate assembly and through said side outlet means;
 pivot means for pivotally disengaging both said grate housing, and said grate assembly removably mounted therein, from said first position of coaction with said mill cage zone about a common pivot axis located at the lowermost portion of said grate housing whereby exposure of said entire grate assembly for access and inspection is readily obtained; and
 power means for pivotally disengaging said grate housing together with said grate assembly from said first position of coaction to said second position of disengagement.

4,226,376

AMPULE BREAKER

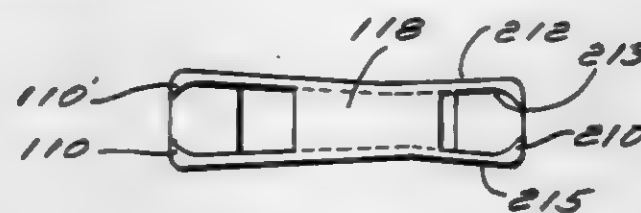
Frederick W. Pfeiffer, 1152 Barbara Dr., Cherry Hill, N.J. 08003

Filed Oct. 12, 1978, Ser. No. 950,812

Int. Cl.³ B02C 19/00

U.S. Cl. 241—99

2 Claims



1. An ampule breaker comprising a one piece structure having two sides and two ends, each of said ends having two fulcrum surfaces extending inwardly from each of said sides, the fulcrum surfaces at one end being closer together than the fulcrum surfaces at the other end for breaking engagement with different size ampules at the different ends, said sides having internal contoured surfaces converging toward each other away from said fulcrum surfaces with the internal contoured surfaces adjacent to said one end being closer together than the internal contoured surfaces adjacent to said other end for bearing engagement with different size ampules adjacent to different ends, and retaining means for retaining a fixed relationship between each of said fulcrum surfaces and the internal contoured surfaces.

4,226,377

GLASS BREAKING MACHINE

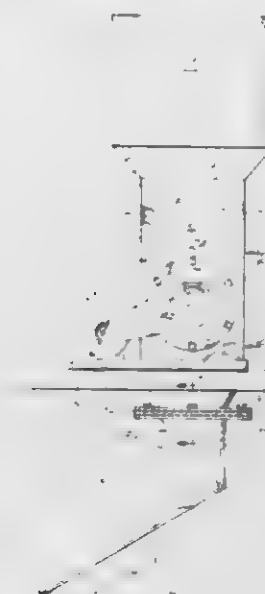
Harold E. Shelton, 1820 - 53rd St., Albany, Oreg. 97321

Filed Nov. 6, 1978, Ser. No. 958,210

Int. Cl.³ B02C 13/04, 13/286

U.S. Cl. 241—99

4 Claims



1. A glass breaking machine for sorting different colored glass and comprising,
 a bin for reception of glass to be broken,
 a hammer mill housing below said bin,
 a hammer mill disposed below said bin and journaled within said hammer mill housing, said hammer mill including multiple series of hammers with each series radially spaced from the hammer mill axis of rotation, said hammer mill including a main shaft,
 said hammer mill housing defining an opening of a size permitting outward axial passage of the hammer mill for servicing purposes, a closure plate removably affixed to the hammer mill housing and normally closing said opening, and bearing means on said closure plate for the hammer mill main shaft, additional bearing means on said hammer mill housing opposite the first mentioned bearing means with the bearing means jointly supporting said main shaft,
 a discharge chute, and
 means swingably coupling said chute to the housing lower end whereby said chute may be manually arcuately positioned for the discharge of broken glass into one of several receptacles each containing glass of one color.

4,226,378

METHOD AND APPARATUS FOR WINDING HOLLOW FILAMENTS

James A. Fitzgerald, McHenry; Clinton V. Kopp, Barrington, and Freddie L. Washington, Waukegan, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 13, 1976, Ser. No. 658,143

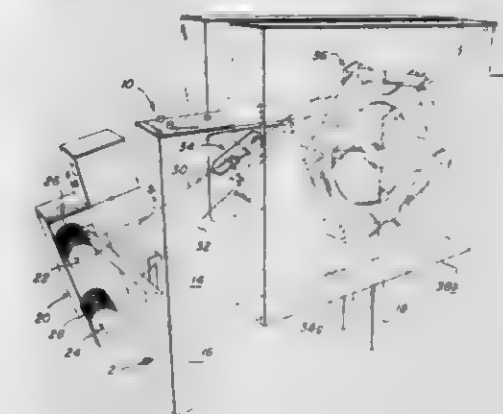
Int. Cl.³ B01D 13/00; A61M 1/03; B65H 54/02, 54/28

U.S. Cl. 242—18 G

19 Claims

1. A method for preparing a hollow, substantially continuous, semipermeable filament bundle for use in a hollow fiber dialyzer; which bundle includes a plurality of substantially-equal-length, open-ended fibers formed from said continuous filament, comprising the steps of:
 providing at least one spool of said filament;
 unwinding said filament from said spool;
 winding said filament onto a take-up reel and shaping said filament winding into the general form of a polygon with filament support assemblies positioned at the corners thereof, each filament support assembly comprising a pair of spaced support members upon which said filament

windings rests, whereby said filament forms a plurality of elongated sections, each having a multiplicity of windings; grasping each of said sections; and



cutting said filaments adjacent said support means so as to form a plurality of open-ended filament bundles.

4,226,379

LOOM STORAGE FEEDER IMPROVEMENT

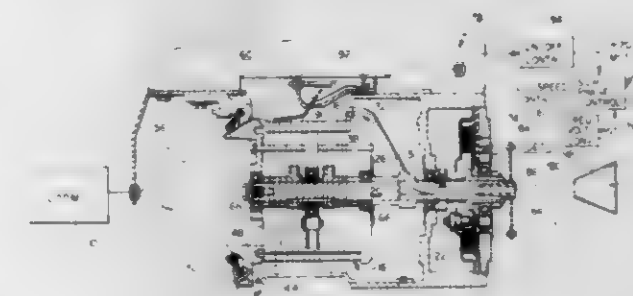
Charles W. Brouwer, E. Greenwich, and Rene J. Valois, Woonsocket, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Continuation-in-part of Ser. No. 952,501, Oct. 18, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,984

Int. Cl.³ B65H 51/20

U.S. Cl. 242—47.01

9 Claims



1. A strand feeding system between a strand supply and utility means such as a textile machine requiring strand to be fed at a first predetermined average rate during operation of the utility means comprising, a feeding device arranged to receive said strand from said supply and have the strand wrapped thereon for discharge thereafter to said utility means, a balloon of strand being formed in the zone intermediate the strand supply and the feeding device during advance of the strand to the feeding device, a variable speed drive motor for operating said feeding device to withdraw said strand from said supply, an on-off circuit for controlling current flow to said motor to prevent excess accumulation of strand on said drum, speed control means programmed to establish a constant driven speed of said motor in response to input feedback data, selectively adjustable input means coupled to said speed control means to advance said strand from said supply to said feeding device at a second predetermined average rate which is slightly higher than said first predetermined average rate, and detector means for sensing accumulation of strand on said feeding device and operable to activate said on-off circuit to interrupt current flow to said motor when the strand accumulation on said feeding device exceeds a preselected amount, said on-off circuit being operated at a frequency and duration to maintain said balloon during intervals when current flow to said motor is off.

4,226,380

FABRIC UNROLLING DEVICE

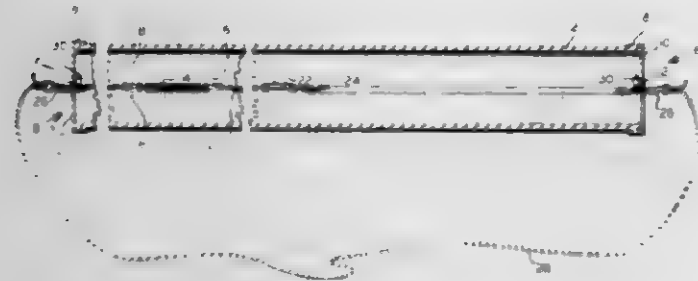
John W. Gay, Westminster, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1979, Ser. No. 7,522

Int. Cl.³ B65H 75/02

U.S. Cl. 242—55

6 Claims



1. A device for unrolling a roll of fabric or the like supported on a roll core, said device comprising a pair of end caps adapted to fit over the opposite ends of the roll core, a spring means adapted for being passed through said roll core and attached to the end caps to put tension on the end caps so that the roll core is clamped between said two end caps, spring attachment means for securing said spring means to said end caps, handle attachment means adapted to be secured to the end caps and adapted to allow the end caps to rotate relative to said handle attachment means, and handle means secured to said handle attachment means wherein said spring means is a spring having each end connected to a chain, said end caps each have a hole through which the chain can be passed, said spring attachment means comprises a stop means which will limit the extent that the chain can be pulled outward through the hole in the end caps and swivel means which will prevent the chain from being pulled back into the roll core, and said handle attachment means comprises a loop on said swivel means.

4,226,381

TAPE REEL

Tetsuo Katata, Kawaguchi, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan

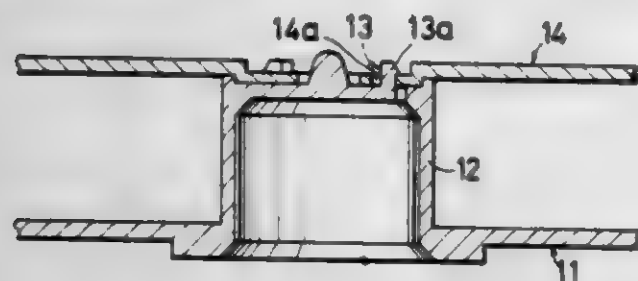
Filed Mar. 1, 1979, Ser. No. 16,730

Claims priority, application Japan, Mar. 4, 1978, 53-27899[U]

Int. Cl.³ B65H 75/18

U.S. Cl. 242—71.8

6 Claims



1. A tape reel comprising:
a lower reel member including a disc-like portion and integral therewith a cap-like hub extending upwardly and including an integral upper end surface, flexible protrusions projecting upwardly from said upper end surface of said hub and having claw-shaped heads, and
a disc-like upper reel member having holes axially disposed therein, there being respective surfaces adjacent said holes for catching said claw-shaped heads, whereby said lower and upper reel members can be assembled and tightly fixed to each other by snap fitting said protrusions formed on said hub of said lower reel member into said holes formed on said upper reel member.

4,226,382

CATCHING AND HOLDING THE TERMINAL END OF A TAPE IN A TAPE REEL

Koji Watanabe, Niiza, Japan, assignor to Nifco Inc., Yokohama, Japan

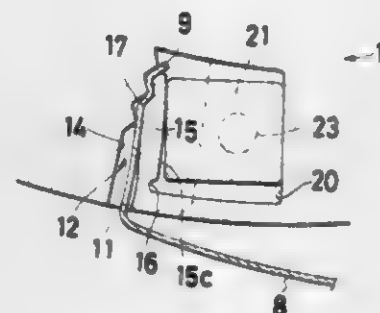
Filed Aug. 13, 1979, Ser. No. 65,819

Claims priority, application Japan, Aug., 1978, 53/109438

Int. Cl.³ B65H 75/28

U.S. Cl. 242—74

7 Claims



1. A means for catching and holding the terminal end of a tape in a tape reel comprising:
a slot which opens on the circumference of the hub of the tape reel and extends into the hub body, said slot being defined by a stationary side wall and a cantilevered side wall;
a vacant space behind the cantilevered wall;
a wedge for insertion into the vacant space;
whereby the terminal end of the tape is caught and held between the cantilevered wall and the stationary wall when the wedge is driven into the vacant space to push the cantilevered wall against the stationary wall.

4,226,383

SUPPORT DEVICE AND FLANGE ATTACHMENT MEANS FOR CABLE DRUMS

Homer C. Douglas, Kansas City, Kans., assignor to Cable Caddy, Inc., Lenexa, Kans.

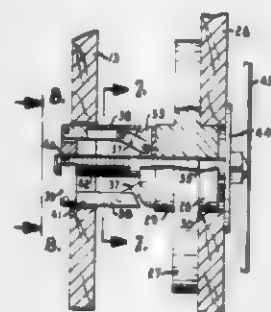
Division of Ser. No. 861,108, Dec. 16, 1977, Pat. No. 4,176,801.

This application Jun. 4, 1979, Ser. No. 45,125

Int. Cl.³ B65H 75/14

U.S. Cl. 242—77

7 Claims



1. Apparatus adapted for attachment to a drum having a damaged flange on one end thereof, with the damaged flange presenting a substantially central opening therein and an inaccessible inner surface surrounding the opening, said apparatus comprising:
an undamaged flange presenting a generally circular periphery and substantially equal in size to the damaged flange;
an expansible and contractable connector device having a contracted position wherein said device is small enough to pass through the central opening of the damaged flange, and an expanded position wherein said device is too large to pass through the central opening;
means coupling said connector device with said undamaged flange whereby said connector device may be inserted through the central opening of the damaged flange to position the damaged and undamaged flanges in proximity to one another; and

means operable from the side of said undamaged flange remote from the damaged flange to effect movement of said connector device from the contracted position to the expanded position:

4,226,384

FISHING REELS WITH A LEVEL-WIND MECHANISM

Jarding U. Karlsson, Svängsta, Sweden, assignor to ABU Aktiebolag, Sweden

Filed Aug. 22, 1979, Ser. No. 68,798

Int. Cl.³ A01K 89/04, 89/015

U.S. Cl. 242—84.42

8 Claims



1. A fishing reel having a frame, a rotatable line spool and a level-wind mechanism which comprises a rotatable involute screw and a movable line-laying member geared to said involute screw and reciprocal in a linear movement parallel to the axis of the line spool by rotation of said involute screw, and drive means comprising a hand crank and a transmission means for rotating said line spool in a first direction for the retrieval of the fishing reel on the line spool, said line spool being rotatable in a second, opposite direction, driven by the fishing line, such as during a cast, said transmission means comprising disengageable clutch means and gear means connected between said line spool and said involute screw for rotating the latter, to distribute the fishing line on the line spool when said line spool is rotated in said first direction during the retrieval of the fishing line, delayed operation arresting means having a rotatable first member connected and disposed for rotation by said gear means, a second member fixed in relation to the frame of the reel, and a delayed-action arresting third member which is movable between a first position and a second, arresting position, and which, in said first position, permits rotation of said first member for permitting rotation of said involute screw in said first direction by said line spool by the intermediary of said gear means, whereas said third member in said second, arresting position, arrests said rotatable first member thereby locking said gear means and said involute screw against rotation, said third member, by rotation of said first member when rotation thereof in said second direction is initiated by said line spool, being movable from said first to said second, arresting position in such timed relationship with the rotational movement of said involute screw and the linear movement of said line-laying device that said delayed-action arresting third member arrives at said second, arresting position substantially as soon as said line-laying device arrives at a central position in relation to said involute screw, whereby said level-wind mechanism is, during each casting operation, arrested with said line-laying device positioned substantially in said central position, said disengageable clutch connected between said line spool and gear means having disconnecting means for disconnecting said line spool from said gear means when the former is rotated in said second direction and the latter is arrested by said delayed-action arresting means.

4,226,385

RETRACTOR FOR SAFETY BELTS

Hermann Meiller, Amberg; Horst Hocke, Mimbach; Otto Kunst, Michael-Poppenricht, and Paul Hartl, Amberg, all of Fed. Rep. of Germany, assignors to Messrs. Willibald Grammer, Amberg, Fed. Rep. of Germany

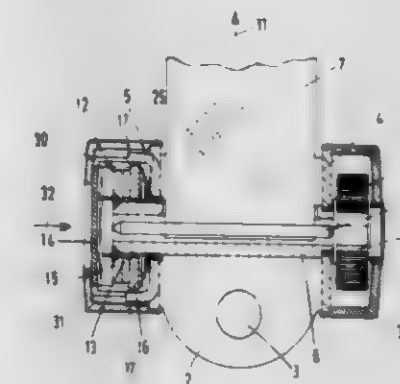
Filed Aug. 25, 1978, Ser. No. 936,686

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738312

Int. Cl.³ A62B 35/00; B65H 75/48

U.S. Cl. 242—107.4 R

8 Claims



1. A retractor for a safety belt, comprising: a housing having a housing wall, a winding shaft having one end journaled in said housing wall so as to be non-displaceable axially of said shaft, a retracting spring acting on said shaft, for winding up the safety belt to be fastened to it, detent means between the housing and winding shaft and including a detent disk provided with detent elements distributed over its periphery, and being fixed to said winding shaft, and also including a counter-detent disk mounted so as to be axially displaceable on the winding shaft between the detent disk and said housing wall and having at least one counter-detent element and notches, means securing said counter-detent disk against rotation, said securing means being connected to the housing wall and extending from the housing wall approximately parallel to the winding shaft and engaging said notches in the counter-detent disk, a spring for forcing said counter-detent disk into locking engagement with said detent disk, said spring being provided between the counter-detent disk and the housing wall, and an actuating member for actuating said axially displaceable counter-detent disk for releasing said spring, said actuating member forming a pushbutton displaceable axially to the winding shaft and overreaching the detent disk in a caplike manner and having a lip gripping the counter-detent disk.

4,226,386

TAPE RECORDING/REPRODUCING TRANSPORT SYSTEM, PARTICULARLY FOR LONGITUDINAL VIDEO TAPE RECORDING

Horst Rubl, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jun. 20, 1979, Ser. No. 50,319

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829047

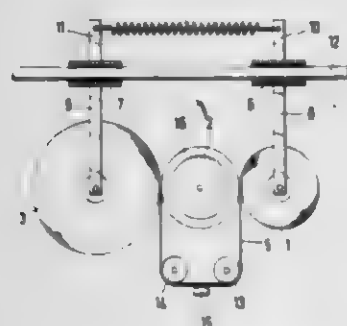
Int. Cl.³ G03B 1/04; G11B 15/32

U.S. Cl. 242—192

9 Claims

1. Tape recording/reproducing transport system having a drive roller means (2);
a tape take-up storage winding (1) rotatable about a take-up axis;
a tape pay-out storage winding (3) rotatable about a pay-out axis, parallel to said take-up axis,
said storage windings being movably located radially adjacent the drive roller means (2) to permit movement of said axes of rotation relative to the axis of rotation of the drive roller means;
spring means (4) providing a spring force and pressing said

storage windings with essentially equal force against the drive roller means, and means (6, 7, 10, 11, 12) providing an additional changeable force to the respective storage winding against the drive roller means, and comprising, in accordance with the invention,



tilting torque force means (6, 7, 12) acting on both said storage winding means and, in operation, generating a friction force acting counter the force of the spring means (4) pressing the pay-out storage winding means (3) against the drive roller means (2) and further generating a friction force acting in the sense of the force exerted by the spring means (4) to increase the force of engagement of the take-up winding means (1) with the drive roller means (2).

4,226,387

MULTIPLYING FISHING REEL WITH LEVEL-WIND CARRIAGE

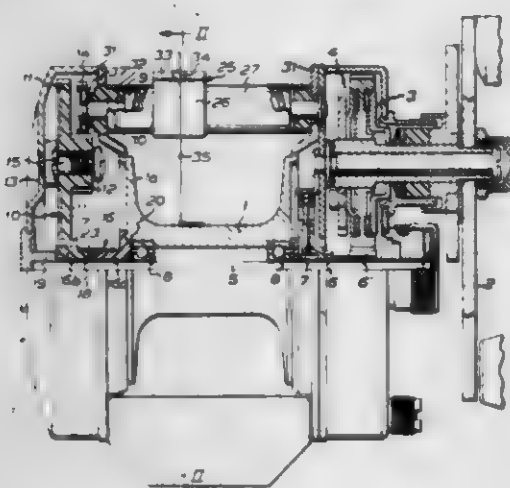
Jarding U. Karlsson, Svängsta, Sweden, assignor to ABU Aktiebolag, Sweden

Filed Nov. 20, 1978, Ser. No. 961,904

Claims priority, application Sweden, Nov. 28, 1977, 7713419 Int. Cl.³ A01K 89/02, 89/04

U.S. Cl. 242-212

1 Claim



1. A multiplier fishing reel comprising a frame; a line spool rotatably supported by said frame; a hand crank and a first transmission between said hand crank and said line spool for rotating the latter by means of said hand crank for the retrieval of a fishing line on said line spool; a level wind mechanism including an evolute screw member having an endless thread and mounted rotatably in said frame, a second transmission connected between said line spool and said screw member for rotating the latter by means of said hand crank via said first transmission and said line spool, a tubular guide member which partly encompasses said screw member and is rotatably mounted in said frame for rotational movement about the longitudinal axis of said screw member, a slide member which is mounted on said tubular guide member for sliding movement therealong and to be rotated therewith, said slide member having means in engagement with said endless thread of said screw member to be driven by the latter in a reciprocal movement along said tubular guide member when said screw mem-

ber is rotated, a level-wind arm supported by said slide member and having an outer end with means forming an open fishing line catching and guiding groove; said slide member being pivotable about the longitudinal axis of said screw member by rotation of said guide member for pivoting said arm between first and second angular positions, said first position being a normal operating position for catching the line into said groove and for levelling the line on said line spool when the latter is rotated by said hand crank for retrieval of the line on said spool, and said second angular position being an inoperative position in which the fishing line is permitted to go free from said arm for easy running out from said line spool during casting, stop position determining means defining stop positions in opposite angular directions for said arm in said first and second angular positions thereof, and returning means connected between said second transmission means and said guide member for rotating the latter in one direction for returning said slide member with said arm from said second to said first angular position when said screw member is rotated by means of said hand crank in a direction for the retrieval of the line on said spool, said returning means being a frictionally acting coupling means which comprises first and second cooperating frictional clutch members, said first frictional coupling member being rotatable by said second transmission from said hand crank via said first transmission and said line spool when said first clutch means is engaged, said second frictional clutch member being connected to said rotatable guide member and positioned in sliding frictional engagement with said first frictional clutch member, said frictional clutch members being able to slip in relation to each other after rotating said guide member a sufficient angle to return said arm to said first position, which is a stop position, and said slide member with said arm being adapted to be pivoted to said second position automatically when said first clutch means is disengaged and a cast is initiated, said frame including opposite frame members having coaxial openings and bearings therein, said screw member having opposite ends journaled in said bearings, said bearings having means which project into opposite ends of said tubular guide member and forming supporting means for the latter in relation to said frame, a gear wheel which forms part of said second transmission supported on one end of said screw member in a position outwardly of the corresponding one of said bearings, a spring washer mounted between and in sliding frictional engagement with one end of said gear wheel and the adjacent end of said corresponding one of said bearings for transmitting drive torque from said gear wheel to said guide member through said corresponding one of said bearings.

4,226,388

TOY PARACHUTE RELEASABLE FROM A KITE STRING

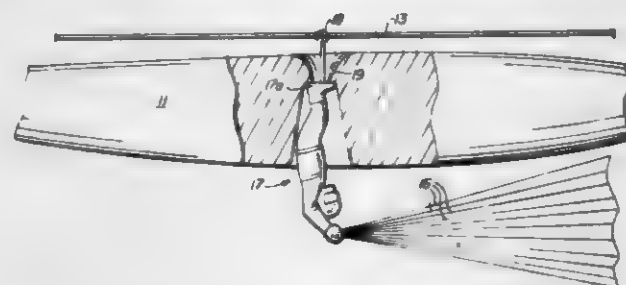
Bill W. Tilghman, 5604 W. Palo Verde Ave., Glendale, Ariz. 85302

Filed Jun. 22, 1979, Ser. No. 50,987

Int. Cl.³ B64C 31/06; A63H 27/08

U.S. Cl. 244-155 R

1 Claim



1. In combination with a toy parachute for being attached to and traveling up a kite string with the wind and for being released from said string for free flight to the ground, said toy parachute including, a weight, a parachute having a canopy and a plurality of shroud lines, said shroud lines being separately attached to said canopy

at their upper ends and attached to said weight at their lower ends, carrier means, connected to said weight, for movably engaging said kite string, and means for releasing said carrier means from said string into the air for free flight to the ground,

a device for flight, comprising,

(a) at least one member having

(i) surfaces generally shaped, contoured and dimensioned such that movement of said device through the air provides aerodynamic lift for said device, and

(ii) an aperture sized to permit said carrier means to pass therethrough and engage said string, and

(b) means contacting said weight when said carrier means is engaging said string for preventing passage of said weight through said aperture,

said device responsive when said carrier means is released from said string into the air to allow said carrier means to pass through said aperture, and to disengage said weight from said device such that said device and said toy separately free flight to the ground.

4,226,349

GOLF BAG SUPPORT STAND

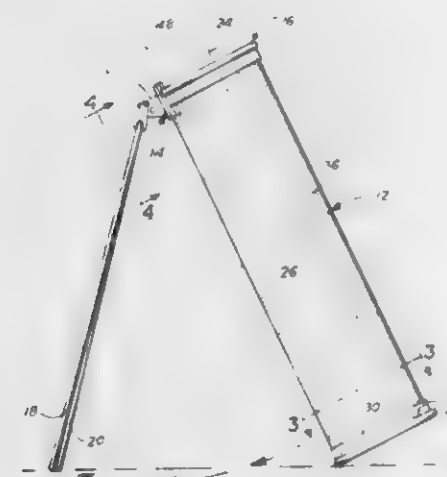
Otto Neth, 7321 Corregidor Rd., Vancouver, Wash. 98664

Filed Jun. 26, 1978, Ser. No. 919,425

Int. Cl.² A63B 55/00

U.S. Cl. 248-96

1 Claim



1. A support stand for supporting an elongate bag such as a golf bag or the like, comprising

a mounting member adapted to be attached to an upper portion of said bag, said member having inner and outer clamp sections and means for clamping said sections tightly against inner and outer surfaces of the bag,

first and second legs mounted on said member for swinging in first and second planes, respectively, toward and away from said bag when said member is attached thereto,

means producing swinging of said second leg through a defined angle within its plane as said first leg is swung through a defined, proportionately smaller angle within its plane, said producing means including a guide member pivotally mounted on said mounting member for swinging toward and away from said bag, when said mounting member is attached thereto, said guide member having an elongate substantially linear slot, the axis of which is asymmetric with respect to said first and second planes, through which slot upper portions of said legs are received for shifting therealong,

a disc pivotally mounted on said mounting member from which one of said legs extends, said disc including a pair of notches formed thereon,

detent means connected to said mounting member including a flexible arm provided with a detent operable for releasably locking said legs in their extended and retracted

positions by engaging a selected notch formed on said disc, and a third leg attached to said mounting member and positioned to extend into the bag, substantially parallel to the longitudinal axis thereof, when said mounting member is attached to the bag.

4,226,390

MOUNTING DEVICE

Christopher L. Steggall, London, England, assignor to Medishield Corporation Limited, London, England

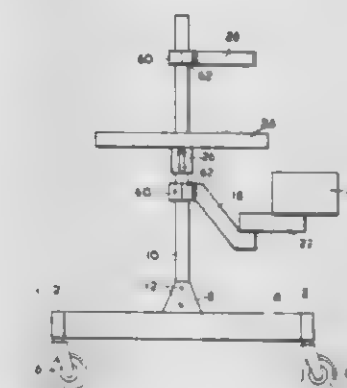
Filed Nov. 2, 1978, Ser. No. 957,106

Claims priority, application United Kingdom, Nov. 7, 1978, 46301/78

Int. Cl.² A47G 29/00

U.S. Cl. 248-124

6 Claims



1. A device for rotatably mounting an arm on a substantially vertical column comprising a split ring encircling the column at a chosen location along its length and secured thereto; a split clamp embracing said split ring encircling said column and capable of rotative movement about the split ring and column; and means for securing a support on at least one element of said split clamp.

4,226,391

CHAIR SUPPORT

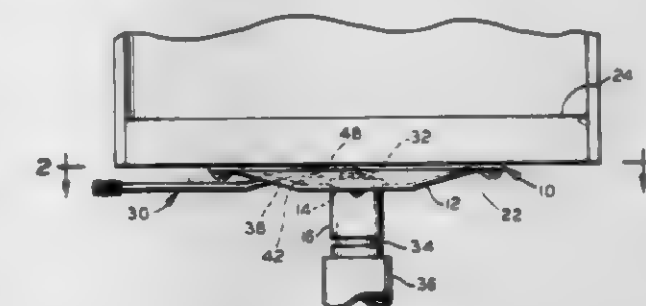
Henry B. Keultjes, Mansfield, Ohio

Filed Apr. 2, 1976, Ser. No. 673,127

Int. Cl.³ F16M 11/00

U.S. Cl. 248-176

2 Claims



1. A support for fixing the seat of a chair to the top of a spindle having a locking taper thereon, said support comprising: a plate the center portion of which is dished downwardly below a peripheral portion extending around its side edges, said peripheral portion extending around its side edges, said peripheral portion providing a bearing surface to receive a chair seat, said center portion having a hole therethrough, a stiff sleeve the top end of which extends through said hole with the opening through said sleeve being positioned generally perpendicularly to said peripheral side edge portion of said plate, said opening of said sleeve having a taper that opens downwardly for locking engagement with the top end of a spindle, and said sleeve being of a thicker material than that of said plate, a continuous vibration transmitting ring weld be-

tween said sleeve and said plate, and whereby a sharp lateral blow on said sleeve produces vibration from the sleeve into said plate and back to the sleeve to help unlock the sleeve from a spindle received therein.

4,226,392

THREE DIMENSIONAL FINE FOCUS DETECTOR MOUNT

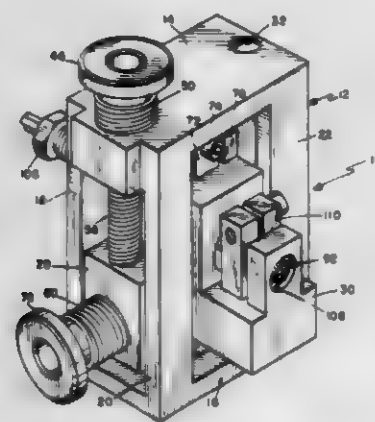
Roberto W. Healy, Los Angeles, Calif., assignor to General Dynamics Corporation Pomona Division, Pomona, Calif.

Filed Jun. 5, 1978, Ser. No. 912,788

Int. Cl.³ F16M 11/04

U.S. Cl. 248—178

12 Claims



1. A three dimensional focusing mount comprising: a housing of generally open sided box construction, movable mounting means including a vertical adjusting block slidably mounted for vertical movement on guide means within said housing, a horizontal adjusting block slidably mounted in said vertical adjusting block for horizontal movement relative thereto, adjusting means for adjusting said mounting means in three directions relative to the base member, said adjusting means including first differential adjusting means for movement of said vertical adjusting block along a vertical path relative to said base member, and second differential adjusting means for movement of said horizontal adjusting block along a first horizontal path relative to said vertical adjusting block; a mounting sleeve for mounting a focusing element adjustably mounted on said horizontal adjusting block for movement along a second horizontal path, said second horizontal path being at a right angle to said first horizontal path, and angular adjusting means for angular adjustment of said mounting sleeve about an axis extending along said second horizontal path.

4,226,393

SNAP-IN LOCKING DEVICE FOR ELECTRICAL WIRING DEVICE BOXES

Jack A. Rardin, and Byron C. Rardin, both of 617 18th St., Charleston, Ill. 61920

Filed Apr. 12, 1979, Ser. No. 29,497

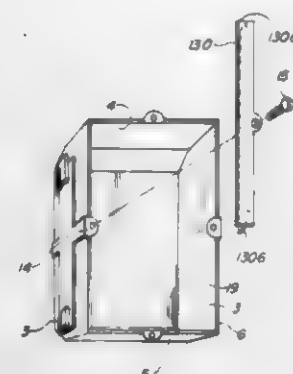
Int. Cl.³ A47B 96/06

U.S. Cl. 248—205 R

21 Claims

1. A locking device for an electrical wiring device box, comprising a base lying in a first base plane for positioning against a wall of said wiring device box, said wall of said wiring device box having a front edge bordering an open front wall of said wiring device box and a rear edge bordering a rear wall of said wiring device box, first frictional grip means extending from said base to frictionally grip a front edge portion of said wall of said wiring device box when said locking device is mounted thereon, second frictional grip means extending from said base to frictionally grip a rear edge portion of said wall of said wiring device box when said locking device is mounted thereon, and resilient arm means extending from said base, said resilient arm means including a first end portion

secured to said base and a second free end portion normally spaced apart outwardly from said first base plane and capable of being flexed inwardly toward said base plane, said second



free end portion of said resilient arm means being closer to said front edge of said wiring device box than said first end portion when said locking device is mounted on said wiring device box.

4,226,394

ADJUSTABLE MOUNTING ARRANGEMENT FOR HOOKS AND THE LIKE

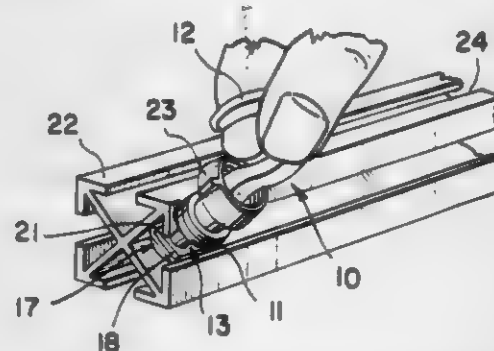
Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.

Filed Oct. 18, 1978, Ser. No. 952,262

Int. Cl.² A47F 5/00

U.S. Cl. 248—225.1

18 Claims



1. A cap member selectively engageable with a hollow slotted element, comprising: an external threaded portion having a generally cylindrical cross-section with the threads thereof having a given axis of symmetry through the center of curvature thereof; a sector-shaped shank portion adjacent said threaded portion and having flat and curved surface parts parallel to said axis, with said flat part relatively close to said axis and the major portion of said curved part relatively remote from said axis; and a lead portion adjacent said shank portion, said lead portion comprising (i) a mounting part having a regular polygonal cross-section perpendicular to and symmetrically disposed about said axis for engaging said slot, and (ii) a rounded end part, said end part cooperating with said mounting part to form a plurality of shoulders for retaining said member in said slot; and an internally threaded cap for threadably engaging said threaded portion of said member.

4,226,395

OUTER CORNER EDGE HOLDER

Pitts N. Bellinger, 5465 Crown Ave., Charleston, S.C. 29406

Filed Apr. 12, 1979, Ser. No. 29,290

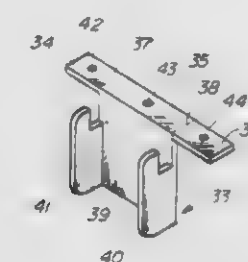
Int. Cl.³ A47M 1/10

U.S. Cl. 248—263

3 Claims

1. A holder for supporting a rod on a corner of a structure comprising:

- (a) securing means attached to the outer edge of said corner;
- (b) a front support section attached to said securing means and extending over a portion of the outer facing of said corner; and
- (c) a rod support section attached to said front support section operative to have said rod attached thereto; whereby said rod is supported on said holder by said holder being secured to said outer edge of said corner, thereby not defacing, with said securing means, said outer facing



of said corner of said structure with securing means; wherein said securing means comprises a top support section secured to said front support section, said top support section comprising a center section and two outer sections, each separated from said center section by a tearing edge; whereby either one of said two outer sections may be removed in order to utilize said holder on either side of said structure.

4,226,396

UNIVERSAL SHADE BRACKET

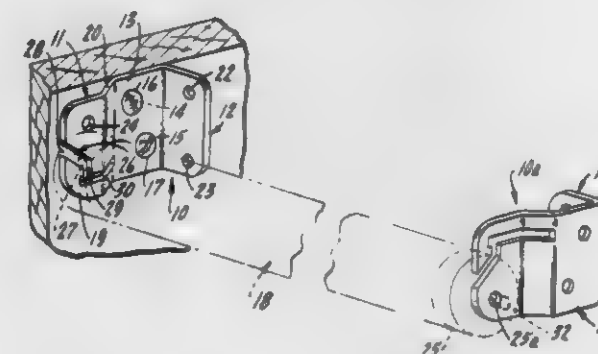
Michael J. Bowers, Cedarville, Ill., assignor to Newell Companies, Inc., Freeport, Ill.

Filed Mar. 21, 1979, Ser. No. 22,425

Int. Cl.³ A47H 1/10; E06B 9/17

U.S. Cl. 248—268

2 Claims



1. A one-piece, universal shade mounting bracket capable of supporting either end of a window shade assembly from a base structure whose mounting surface is above, perpendicular to, or vertically parallel to the axis of said window shade assembly, said bracket including an elongated first body section, said elongated body section being substantially longer than it is wide, and substantially wider than it is thick, a second body section, said second body section extending generally perpendicularly outwardly from the elongated first body section at one end of said elongated first body section, the thickness of said second body section being dimensionally substantially less than its length or width, each of said body sections having aperture means therein constructed and arranged to receive fastening means for securing the bracket to a base structure whose mounting surface is above, perpendicular to, or vertically parallel to the axis of said window shade assembly, the end of the elongated body section opposite the end of said elongated body section which is integral with the

second body section having first and second pin receiving apertures, one of said pin receiving apertures being constructed and arranged to loosely, but restrainedly, receive the round end of a window shade assembly, the other of said pin receiving apertures being constructed and arranged to receive the flattened pin of a window shade assembly, said pin receiving apertures being so arranged that the flattened pin of the window shade assembly is always disposed in a vertical position irrespective of the orientation of the base surface to which the bracket is fastened.

4,226,397

PACKAGE SUPPORTING ASSEMBLY MEANS

Robert F. Carlson, Lafayette, N.J., assignor to Stretch Wrap, Inc., Cedar Grove, N.J.

Division of Ser. No. 900,872, Apr. 28, 1978, Pat. No. 4,166,348.

This application Feb. 12, 1979, Ser. No. 11,492

Int. Cl.³ E04G 3/00

U.S. Cl. 248—274

1 Claim



1. A package supporting assembly for a machine for wrapping a package including,
 - a. back plate means having connecting means thereon,
 - b. guide rail means connected to said back plate means,
 - c. at least two elongated arms slidably mounted on said guide rail means for movement towards and away from each other,
 - d. each of said elongated arms includes a hub portion,
 - e. said hub portion having a bore therethrough for slidably mounting the same on said guide rail means, and
 - f. means for holding and locking each of said respective elongated arms in any position the same are set on said guide rail means includes,
 1. a resilient flat member connected adjacent the lowermost end of the back plate and disposed to engage the hub portion of the respective elongated members, and
 2. a locking assembly connected to the back plate means operable to move the resilient flat member into locking engagement with said hub portion when the elongated arms are in a given setting to release the same to permit the position of the elongated arms to be changed.

4,226,398

FURNITURE SWIVEL

Elmer C. Freber, St. Louis, Mo., assignor to Marquette Tool and Die Company, St. Louis, Mo.

Filed Jan. 15, 1979, Ser. No. 3,107

Int. Cl.² F16M 13/00; A47C 1/02

U.S. Cl. 248—415

19 Claims

1. In combination with a piece of furniture having two components that swivel relative to each other about an axis, an improved swivel unit between the components, said swivel unit comprising a first plate attached to one of the furniture

components and having a cross wall and a generally axially directed flange at the periphery of the cross wall with the flange being concentric to the axis; a bearing set into the first plate such that it lines the inwardly presented surface of the flange and the adjoining surface of the cross wall; a second

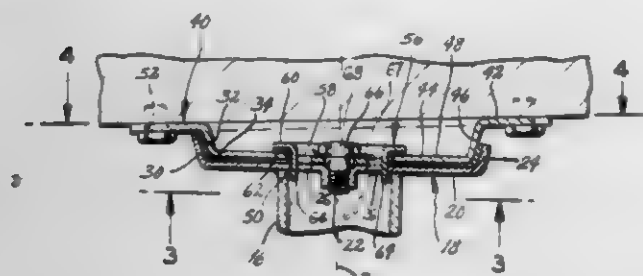


plate overlying the first plate and being attached to the other furniture component, the second plate having a hub that projects toward the first plate and bears against the bearing such that the bearing takes both axial and radial loading; and retaining means for preventing separation of the first and second plates.

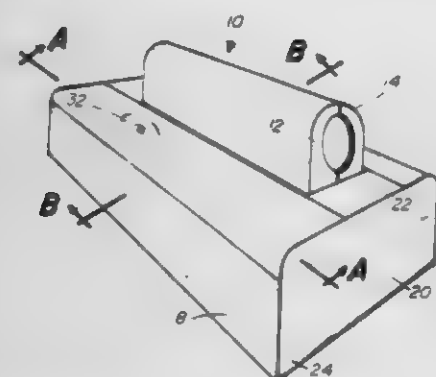
4,226,399

GUN BARREL LOCK

George H. Henderson, 1098 Meadow Dr., Lennon, Mich. 48449
Continuation-in-part of Ser. No. 926,494, Jul. 20, 1978. This application Nov. 16, 1978, Ser. No. 961,132
Int. Cl.² A47B 96/06; A47F 7/00

U.S. Cl. 248—353

7 Claims



1. A gun barrel locking mechanism comprising: a pair of opposed jaws, adapted to matingly abut, the jaws being configured to encircle the barrel of a gun when in mating abutment; at least one pivot, the pivot mounting one jaw thereon such that at least one jaw is pivotally rotatable toward the other jaw,

first means for locking the pivotally rotatable jaw against rotation when jaws are in mating abutment, said first means for locking comprising: a housing associated with the pivotal jaw; a leaf spring attached at one end to said housing; the free end of said leaf spring biased toward said jaw; and wherein the jaw has an indentation therein which received the leaf spring upon mating abutment of the jaws, the leaf spring preventing rotation of the pivotal jaw when in said indentation.

4,226,400

GUIDE MEANS FOR HONING AND LIKE MACHINES

Frank E. Vanderwal, Jr., St. Louis County, Mo., assignor to Sunnen Products Company, St. Louis, Mo.
Filed Dec. 15, 1978, Ser. No. 969,675
Int. Cl.² F16M 1/00, 3/00

U.S. Cl. 248—646

10 Claims

1. Means for accurately locating and supporting two rail members in spaced parallel relationship comprising a base structure having spaced substantially parallel first and second

upwardly extending wall portions, means mounted on said first wall portion including a plurality of spaced rail support members each having an upwardly facing surface formed thereon for engaging an associated one of the spaced rail members to be supported thereby, means mounted on the second upwardly extending wall portion for engaging and supporting the other of said rail members in spaced parallel relation to the aforesaid rail member, said means including an elongated wall member and means fixedly attaching said elongated wall member to said second upwardly extending wall portion to extend substantially along the length thereof, shim means positioned



between said elongated wall member and said second upwardly extending wall portion at selected locations therealong to compensate for imperfections in the alignment thereof, a plurality of rail support members attached to said elongated wall member at spaced locations therealong, each of said rail support members having a rail engaging upper surface formed thereon, and spaced threaded adjustment members located along said second wall portion and adjustable therein to pre-determinably space the elongated wall member and the rail engaging members thereon transversely relative to the second wall portion.

4,226,401

HYDRAULIC FLOOR JACK

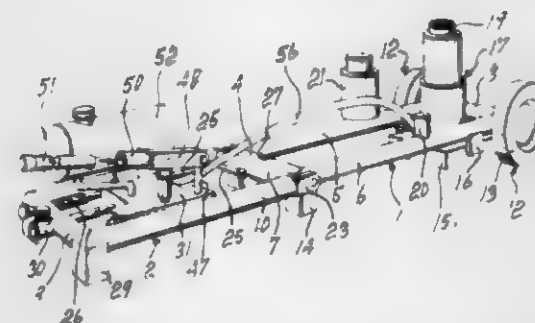
Firmin Coulombe, P.O. Box 142, Grosses-Roches, Cte Matane, Quebec, Canada (G0J 1K0)

Filed Oct. 10, 1979, Ser. No. 83,403

Int. Cl.² B60P 1/00

U.S. Cl. 254—2 B

6 Claims



1. A hydraulic floor jack comprising an articulated frame including a front and a rear frame sections hinged one to the other, flexible tire wheel means attached to the front frame section and rollably supporting the same, a locking device connected to said frame and operatively locking the rear frame section in selected angular elevation relative to the front frame section, a rigid base fixed to said front frame section adjacent a predetermined limited height for engagement with the ground upon flexing of any tire of the flexible tire wheel, an hydraulic cylinder secured upright on said base, an hydraulic fluid supply mounted on the frame, and a pump secured to the rear frame section, connected to the hydraulic fluid supply and to the hydraulic cylinder and selectively supplying hydraulic fluid under pressure to the hydraulic cylinder upon selective actuation thereof.

4,226,402

POST PULLER

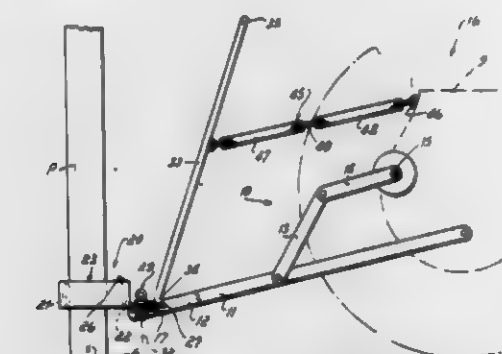
James E. Muth, 5050 Athens-Boonesboro Rd., Rte. 7, Lexington, Ky. 40511

Filed Apr. 16, 1979, Ser. No. 30,692

Int. Cl.² B66F 1/02

U.S. Cl. 254—30

17 Claims



1. Apparatus for use with a three-point tractor hitch having a draw bar means being upwardly movable and being rotatable about a substantially horizontal first axis, said apparatus for pulling posts upwardly from the ground and comprising:

a U-shaped, three-sided post grapple having two opposing jaws connected together and defining a grapple open at one end, pivot mounting means extending outwardly from one of said jaws for pivotally mounting said grapple to said draw bar means for pivoting about a second axis perpendicular to said first axis, and

handle means attached to said pivot mounting means on an opposite side of said second axis from said grapple, said handle means extending upwardly from said pivot mounting means to permit manual pivoting of said grapple about both said first axis and said second axis, whereby said jaws are operable to engage a post, pivoting said grapple about said first axis, and pull said post from the ground when said draw bar is moved upwardly.

4,226,403

OVERLOAD PROTECTION DEVICE IN AIR-OPERATED LIFTING DEVICES

Stefan H. G. Schörling, Linköping, Sweden, assignor to Atlas Copco Aktiebolag, Nack, Sweden

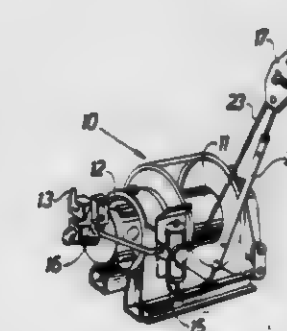
Filed Nov. 17, 1978, Ser. No. 961,885

Claims priority, application Sweden, Nov. 25, 1977, 7713335

Int. Cl.² B66D 1/48

U.S. Cl. 254—273

7 Claims



1. In an overload protection device for preventing excess of allowed workload in air-operated lifting devices, such as winches, which comprise a drum (11) for carrying a wire (23) wound therearound, a motor (12) supplied by a compressed air source (14) for driving the drum, a control valve (13) for controlling the supply of compressed air to the motor, and a braking device (22) associated with the drum (11), said braking device being supplied with compressed air for releasing thereof

upon actuation of the control valve (13), the improvement comprising:

a main valve (24) connected between the motor (12) and the compressed air source (14), and a load sensing device (17) which is arranged to adjust the main valve (24) by an air signal so as to stop the motor (12) due to overloading, the braking device (22) being adapted to be applied by venting through the main valve (24) upon an adjustment of the main valve (24) caused by the load sensing device (17).

4,226,404

UNIVERSAL LONG STROKE PUMP SYSTEM

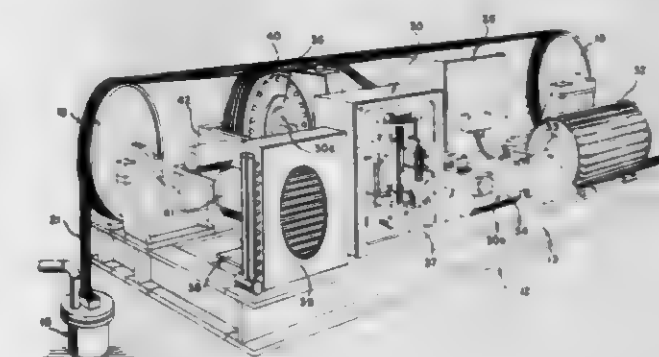
Rene J. L. Zens, Houston, Tex., assignor to Michael P. Breston, Houston, Tex., a part interest

Filed Mar. 7, 1977, Ser. No. 775,065

Int. Cl.² B66C 23/72

U.S. Cl. 254—359

27 Claims



1. In a long-stroke pumping apparatus comprising: a rotatable drum, a pair of rotatable sheaves, traction cable means drivingly connected to said drum for transmitting the torque produced by said drum, cable connector means connected to one end of said traction cable means which is guided over one sheave into an oil well, a counterweight assembly connected to the other end of said traction cable means which is guided over the other sheave into a counterweight well, reversible power means for rotating said drum a number of turns in one angular direction and then in an opposite angular direction during one long cycle of pumping operation; the improvement wherein said reversible power means includes a hydraulic system having a hydraulic control network and a hydrostatic transmission, said transmission including: a prime mover, a variable-delivery hydraulic pump driven by said prime mover, and a reversible hydraulic motor powered by said pump and being directly coupled to said drum; and load cable means coupled to said cable connector means through said one sheave and to said counterweight assembly through said other sheave, said load cable means being drivingly unconnected to said drum.

4,226,405

MECHANICAL SAFETY DEVICE FOR A WINCH

Guy S. R. Roodt, 6, rue Jules Gouchault, 45100 Orleans, France

Filed Mar. 29, 1979, Ser. No. 25,022

Claims priority, application France, Apr. 14, 1978, 78 11058

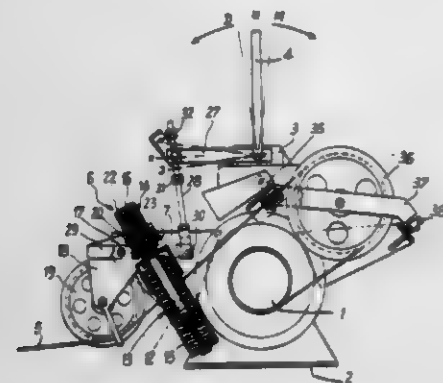
Int. Cl.² B66D 1/00

U.S. Cl. 254—335

10 Claims

1. A safety device for a winch having a rotatable drum on which cable means are arranged to be wound and unwound, the safety device comprising two spaced longitudinal elements between which said drum is arranged, each said longitudinal element extending away from the drum in the same direction, at least one telescopic sleeve pivotally connecting the longitudinal elements, a first transverse element connecting the longitudinal elements, a calibrated spring being received within said telescopic sleeve, a second transverse element connecting the longitudinal elements, a yoke pivotally mounted on said second transverse element, a guide pulley for the cable means carried by said yoke, and an articulated linking member cou-

pling said yoke to said telescopic sleeve and arranged to transmit to said sleeve the force exerted on the yoke by the tension



of said cable means such that, when the tension of said cable means exceeds a predetermined value the spring causes the yoke to pivot.

4,226,406

APPARATUS FOR THE COMPLEX CONTINUOUS PROCESSING OF POLYMETALLIC RAW MATERIALS

Jury F. Frolov, ulitsa Muranovskaya, 11, kv. 29, Moscow; Jury F. Piljukov, ulitsa Nemirovicha-Danchenko, 163, kv. 6, Novosibirsk; Vladimir S. Cherednichenko, ulitsa Zorge, 269, kv. 79, Novosibirsk; Gennady I. Orlov, ulitsa Vatutina, 27, kv. 20, Novosibirsk; Igor N. Kurapin, prospekt K. Marka, 3, kv. 52, Novosibirsk; Rosa I. Shabalina, ulitsa Udaltsova, 4, kv. 26, Moscow; Mark M. Lakernik, Strastnoi bulvar, 13a, kv. 32, Moscow; Alexandr F. Gavrilenko, Yaroslavskaya ulitsa, 1/9, kv. 71, Moscow; Anatoly A. Yakovenko, bulvar Rainisa, 14, korpus 2, kv. 73, Moscow; Alla K. Elkina, Ljuberetsky raion, poselok Kosino, ulitsa Polevaya, 11, Moskovskaya oblast; Anatoly I. Golovachev, Otkrytoe shosse, 6, korpus 4, kv. 48, Moscow; Tatyana S. Egorova, ulitsa Mescheryakova, 2, kv. 9, Moscow; Jury M. Vlasov, ulitsa Dosova, 12, kv. 52, Istra Moskovskoi oblasti, all of U.S.S.R.; Matvei Y. Smelyansky, deceased, late of Moscow, U.S.S.R., and by Faina S. Zeltchenko, administrator, Uralskaya ulitsa, 6, korpus 5, kv. 107, Moscow, U.S.S.R.

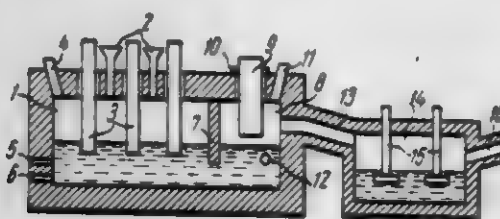
Division of Ser. No. 751,067, Dec. 16, 1976, Pat. No. 4,141,721.

This application Dec. 8, 1978, Ser. No. 967,608

Int. Cl.² H05B 7/18

U.S. Cl. 266-148

4 Claims



1. An apparatus for continuously processing complex, non-ferrous metallic compositions comprising a melting chamber for the melting of said compositions and accumulation of the corresponding metal oxides, said melting chamber being provided with means for charging non-ferrous metallic material which is heated to form a melt, and means for removing selected layers of the melt as they stratify according to their specific weights; a reducing-sublimating chamber communicating with said melting chamber to reduce and sublime the non-ferrous materials, said reducing-sublimating chamber also communicating with a gas duct and a chamber for condensation of the sublimated metal vapors, the lining of said reducing-sublimating chamber having at least one plasmatron built therein, said plasmatron having a nozzle permanently immersed in the melt adapted to inject thereinto a plasma jet capable of agitating and simultaneously reducing said melt, said reducing-sublimating chamber provided with means for

charging coke on the surface of the melt also including an outlet for removing a melted slag, poor in non-ferrous metals.

4,226,407

METALLURGICAL LANCE DESKULLER

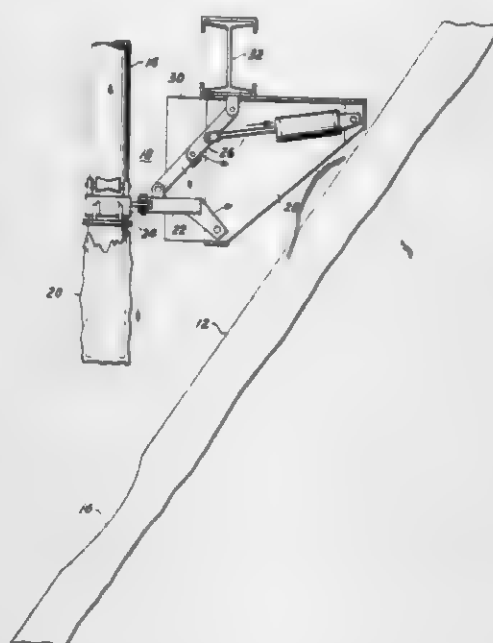
Richard J. Reinbold, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 26, 1979, Ser. No. 24,282

Int. Cl.³ C21C 5/30, 5/32

U.S. Cl. 266-226

12 Claims



1. In combination with a metallurgical lance and a metallurgical furnace an apparatus for removing a skull adhering to the metallurgical lance comprising

- (a) positioning means secured to a supporting member,
- (b) a main arm fixed to the positioning means,
- (c) two jaw arms pivotally attached to the main arm,
- (d) activating means mounted on the main arm for providing movement to each jaw arm to close the jaw arms about the lance,
- (e) a guide roller rotatably mounted on each jaw arm in a position such that the guide rollers contact the surface of the lance when the jaw arms close about the lance, and
- (f) a scraper blade attached to each jaw arm in a position on the jaw arms relative to the roller such that the scraper blade is spaced from the surface of the lance when the roller contacts the surface of the lance.

4,226,408

HYDRAULIC SHOCK ABSORBER FOR VEHICLES

Takao Tomita, Niiza, and Isamu Morita, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1979, Ser. No. 5,970

Claims priority, application Japan, Feb. 1, 1978, 53-10949[U];

Feb. 3, 1978, 53-12513[U]; Feb. 3, 1978, 53-12515[U]

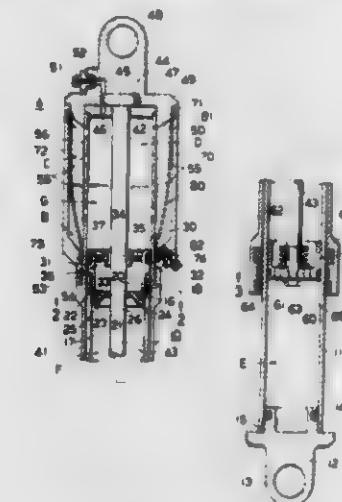
Int. Cl.² F16F 9/08, 9/342

U.S. Cl. 267-64 B

17 Claims

1. A hydraulic shock absorber for vehicles, comprising: an inner tube and an outer tube, said inner and outer tubes being telescopically fitted together; a tapered rod supported by said outer tube and extending vertically and axially therefrom, the diameter of said tapered rod progressively decreasing from a proximal end thereof to a distal end thereof; said inner tube including a partition member having a hole through which said tapered rod substantially loosely extends; an orifice angularly defined between said rod and said hole and variable in response to relative movement of said rod and hole;

a piston provided on the distal end of said rod, and slidable with respect to said inner tube; a lower chamber defined below said piston, and a central chamber defined above said piston and below said partition member; said piston being provided with a valved portion adapted to open when said tubes relatively move in one direction to permit substantially full communication between said lower chamber and said central chamber, and adapted to operate to gain a damping force when said tubes relatively move in the opposite direction; said piston including a spacer which spaces said valved portion from a lower surface of said partition member when they abut against each other; a spacer member separate and distinct from said partition member disposed at an upper end of said inner tube and supported by said partition member for supporting



thereon means for breaking up air bubbles passing upwardly and downwardly through said spacer member; a tubular holder coaxially disposed around an upper outer peripheral portion of said outer tube and having a diameter larger than the diameter of said outer tube; a partition membrane substantially vertically disposed between said holder and said outer tube and mounted substantially coaxially therewith, said partition membrane being fabricated of a substantially flexible and resilient material and being disposed so as to divide a space defined between said holder and said outer tube into a high-pressure gas chamber outside of said membrane and a low-pressure gas chamber inside of said membrane; and an upper portion of said outer tube being provided with a number of apertures through which said low-pressure chamber communicates with an upper space within said outer tube.

4,226,409

MULTIPLE CLAMP AND INDEXABLE ANVIL THEREFOR

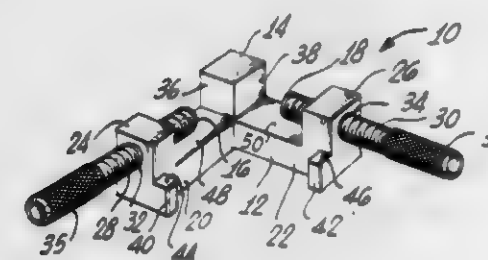
Arthur W. Hanna, 9706 Wheatland Ave., Sunland, Calif. 91040

Filed Nov. 6, 1978, Ser. No. 957,888

Int. Cl.³ B25B 1/20

U.S. Cl. 269-41

7 Claims



1. A clamping device comprising: an L-shaped base including a pair of arms each having a

generally flat upper surface for engaging a workpiece, said arms being disposed at a right angle to one another in a generally horizontal plane; a fixed jaw upstanding from said base at the intersection of said arms, said jaw having a generally flat vertical clamping surface facing in the direction of each of said arms; a screw supporting post upstanding from the distal end of each of said arms, each of said posts having a threaded aperture therethrough parallel to said arm and directed toward said fixed jaw; a threaded screw received in each of said apertures and arranged to cooperate therewith for holding a workpiece against said fixed jaw; and a supporting tab extending from each of said arms generally adjacent said screw supporting post and in a direction parallel to the other of said arms, each of said screw supporting posts having a side surface that is coplanar with the clamping surface of said fixed jaw facing in the direction of the other of said arms, and each of said supporting tabs having an upper surface that is coplanar with the upper surface of the other of said arms, whereby said screw supporting post and said tab of one arm provide support and alignment for the workpiece held in the other of said arms.

4,226,410

STACKING SYSTEM FOR FANFOLD PAPER AND THE LIKE

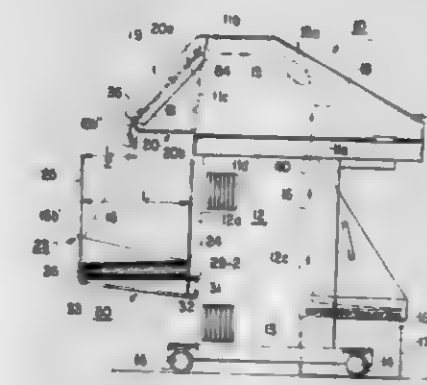
Robert A. McIntosh, Sr., Nashua; Richard G. Bernier, Derry, both of N.H., and David A. Estabrooks, Andover, Mass., assignors to Centronics Data Computer Corporation, Hudson, N.H.

Filed Apr. 20, 1978, Ser. No. 898,418

Int. Cl.³ B65H 45/101

U.S. Cl. 270-61 F

14 Claims



1. Apparatus for fanfolding transversely perforated elongated sheets of material, comprising: an inclined chute having a substantially flat upper surface over which the sheets pass from an upper end of said chute to a lower end thereof; and a guide member having an elongated upper portion resting on said upper surface of said chute and a lower portion attached to said upper portion and terminating at a free end which extends beyond said lower end of said chute, said upper portion of said guide member being freely movable away from said upper surface of said chute in response to contact by a sheet passing between said guide member and said chute, said lower portion of said guide member being movable with said upper portion of said guide member, said free end of said lower portion of said guide member having a curved contour selected so that said guide member is generally concave relative to said lower end of said chute so as to temporarily impart a similar concave shape to the sheets after they pass said lower end of said chute, thereby facilitating the formation of inside folds in the sheets about the transverse perforations therein, said free end of said lower portion of said

guide member having a resiliency selected so that said free end temporarily yields in response to contact by the sheets, thereby inhibiting the improper formation of outside folds in the sheets about the transverse perforations therein as a result of the concave shape imparted to the sheets by said free end.

4,226,411

PLAYGROUND APPARATUS

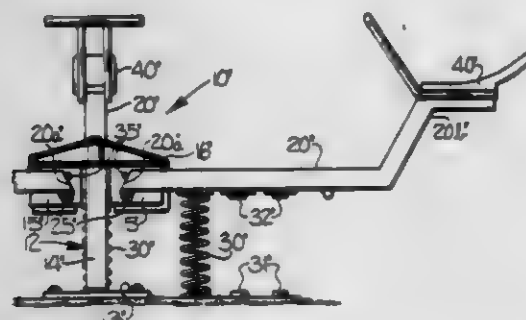
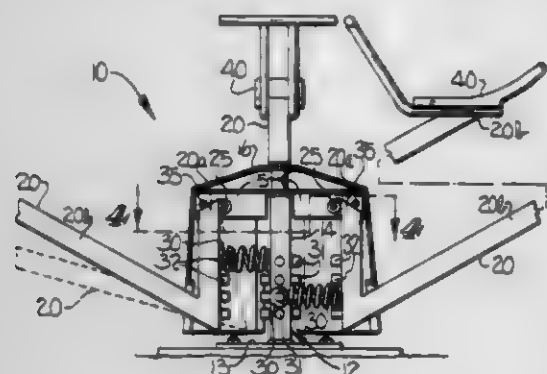
Ray G. Manns, Rte. 5, Box 104, Lincolnton, N.C. 28092

Filed Oct. 2, 1978, Ser. No. 947,492

Int. Cl.³ A63G 11/00

U.S. Cl. 272-55

10 Claims



1. Playground apparatus of the teeter-totter or seesaw type which is characterized by a construction providing for a freedom of downward movement under the weight of a rider against a spring bias and ready adjustability of such spring bias for different size and weight riders, said apparatus comprising: a stationary support means comprising a generally horizontally positioned base means, a generally vertically extending post means secured at a lower end thereof to said base means and extending upwardly from said base means, and at least one generally horizontally extending support arm secured at an inner end thereof to generally an upper end of said post means and extending outwardly from said post means;

at least one movable rocker arm having a rider supporting unit secured to an outer end of said rocker arm for receiving a rider;

pivot means mounting said rocker arm on said support arm of said support means for freedom of generally up and down movement of said rocker arm and rider supporting unit without interference during such movement with said post means of said support means;

spring biasing means operatively positioned between said rocker arm and said support means for compressing and elongating during movement of said rocker arm and rider supporting unit under the weight of the rider; and

adjustment means for said spring biasing means comprising a plurality of separate, spaced-apart, serially-arranged means positioned along a portion of said rocker arm for individually, separately and releasably receiving and operatively positioning and retaining one end of said spring biasing means, and a plurality of separate, spaced-apart, serially-arranged means positioned along a portion of said stationary support means which is substantially parallel to the portion of said rocker arm having said spring positioning and retaining means thereon and positioned in opposed facing relationship to said spring positioning and retaining means on said rocker arm for individually, separately and

releasably receiving and operatively positioning and retaining the other end of said spring biasing means, whereby, said spring biasing means may be selectively positioned and retained between separate mating pairs of respective spring positioning and retaining means on said rocker arm and said support means for adjusting said biasing means to increase or decrease the biasing force thereof for different size and weight riders.

4,226,412

HAND EXERCISER

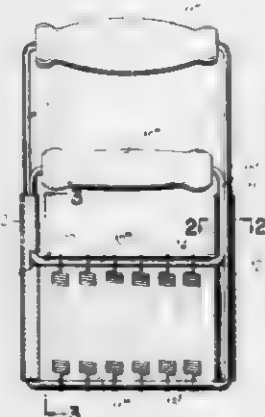
Louis Panepinto, Hillsdale, N.J., assignor to AMF Incorporated, White Plains, N.Y.

Filed Sep. 16, 1977, Ser. No. 833,833

Int. Cl.³ A63B 21/30

U.S. Cl. 272-68

2 Claims



1. In a hand grip exerciser comprising a pair of parallel hand grips, and a pair of generally U-shaped members connected to the grips, one of the U-shaped members being shorter than and positioned within the other, and resilient means spanning the spaced bite portions of said U-shaped members; the improvement of a long sleeve surrounding both legs of said U-shaped members for about the total length of the legs of the shorter of said U-shaped members and in addition surrounding about the total length of that portion of the legs of the longer of the two members positioned between said spaced bite portions, and a slot in each of said sleeves at the juncture of the legs and bite of said shorter member.

4,226,413

WHEEL MOUNTED WALKER WITH FOOT PEDAL BRAKE

Wilma J. Daugherty, 9282 Chapman Ave., Garden Grove, Calif. 92641

Filed Nov. 8, 1978, Ser. No. 958,782

Int. Cl.³ A61H 3/04

U.S. Cl. 272-70.4

5 Claims

1. A walker for providing support for a person who is standing or walking comprising:

a rigid frame surrounding and defining a space in which said person can stand, said frame comprising a generally U-shaped horizontal lower member open at the rear, a generally U-shaped horizontal upper member open at the rear, a cross-piece that subtends the distance from one side of the lower member to the other, a generally horizontal strut that projects rearwardly from the center of said lower member to said cross-piece, and a plurality of vertical members extending downwardly from said upper member, one of said vertical members being connected to said strut;

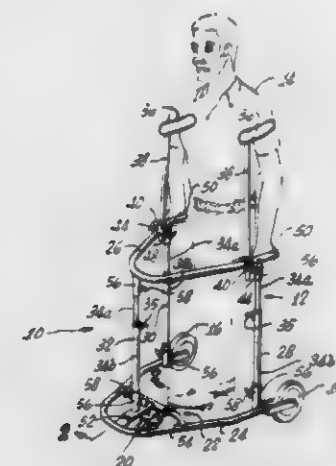
support means attached to said upper member for supporting said person;

a pair of trailing wheels rotatably attached to said frame and disposed on opposite sides of said space;

a wheel bracket centered with respect to said trailing wheels

and disposed at the front of said space, said bracket including a substantially vertical shaft by which it is pivotally attached to said strut;

a lead wheel rotatably attached to said bracket; and



brake means for applying a braking force to said lead wheel, said brake means including a pedal for actuation thereof, said pedal extending from said wheel bracket beneath and past said cross-piece at a height that permits engagement thereof by the toe of said person's foot without lifting the heel of said foot.

4,226,414

WEIGHT EXERCISE DEVICE

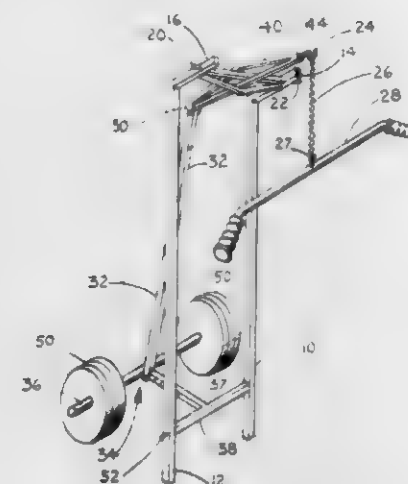
Matthew Coffaro, 4190 Sierra Chapita, Tucson, Ariz. 85715, and Ronald L. Pelton, 7402 E. Thirty-Eighth St., Tucson, Ariz. 85730

Filed Apr. 20, 1978, Ser. No. 898,091

Int. Cl.³ A63B 23/00

U.S. Cl. 272-117

8 Claims



1. A weight exercise device comprising an interacting pair of normally unstable standing, upright, elongated and spaced apart parallel legs having at each of their top ends thereof attached at right angles thereto a horizontal leg extension means; a lever assembly having two ends, said lever assembly also defining transverse cross bar means, said cross bar means pivotally attached to said legs, said leg extension means receiving said cross bar means to provide a fulcrum for said lever assembly; weight assembly means operably attached to a first end of said lever assembly; and operator holding means operably attached to the second end of said lever assembly whereby the unstable standing legs achieve stability when the operator grasps and pulls the operator holding means and thereby causes interaction of the legs, lever assembly, weight assembly means, and operator holding means to perform exercises.

4,226,415
UNIVERSAL EXERCISE APPARATUS FOR PERFORMING HAMSTRING FLEX AND OTHER EXERCISES

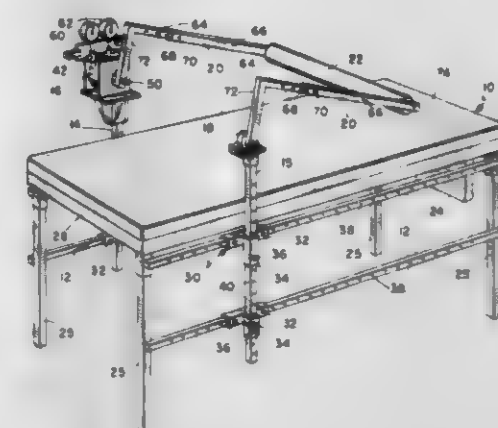
Nathaniel Wright, 11247 Zorita Ct., San Diego, Calif. 92124

Filed May 14, 1979, Ser. No. 38,435

Int. Cl.³ A63B 21/00

U.S. Cl. 272-130

8 Claims



1. An exercise apparatus comprising a table having a longitudinal dimension; a set of rails disposed longitudinally on opposite sides of the table; a set of posts on opposite sides of the table adjustable supported on the rails for longitudinal movement along the rails and for vertical movement extending above the rails; means for securing the posts in a fixed position on the rails; a rotary means supported on one of the posts for providing a predetermined constant resistance to rotary motion about its axis in a given direction; a bearing supported on the post on the opposite side of the table from and axially aligned with the rotary means; a pair of parallel arms respectively coupled to the bearing and the rotary means; and a cross bar coupled between the arms at a distance from the common axis of the bearing and the rotary means for enabling a person to exercise his muscles by contacting the cross bar and forcing the cross bar to move against the constant resistance provided by the rotary means.

4,226,416

BASKETBALL PRACTICE ASSEMBLY

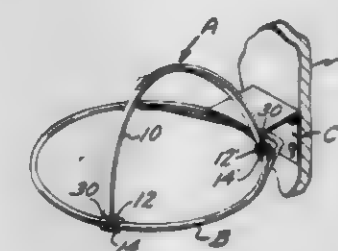
Robert F. Callanan, 2359 Chestnut Ave., Long Beach, Calif. 90806

Filed Jun. 11, 1979, Ser. No. 47,286

Int. Cl.³ A63B 63/08

U.S. Cl. 273-1.5 A

4 Claims



1. In combination with an elevated horizontal basketball hoop that extends forwardly from a vertical back board, a practice assembly that may be removably secured to said hoop to improve the accuracy of a user in arching a basketball through said hoop, said practice assembly including:

a. a dimensionally stable arcuate member of generally semi-elliptical shape that has first and second free ends that are

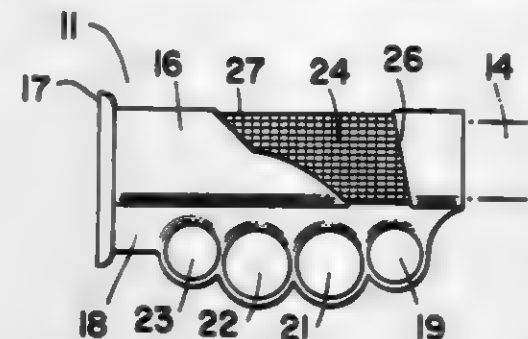
spaced from one another a distance substantially less than the interior diameter of said hoop;

b. first and second clamps of inverted U-shape transverse cross-section that may extend downwardly over circumferentially spaced sections of said hoop;

c. first means for permanently affixing said first and second free ends of said arcuate member to said first and second clamps in such a manner that said arcuate member extends upwardly above said hoop and inwardly towards the center thereof, said arcuate member and hoop cooperating to define a generally semi-elliptical upwardly extending space of substantially greater area than the transverse cross section of a conventional basketball, and said upwardly extending space so related to the space within said hoop that said basketball will fall downwardly through said hoop by gravity if it passes through said upwardly extending space; and

d. second means mounted on said first and second clamps for removably holding said clamps on said hoop, with said second means permitting said practice device to be selectively disposed of either directly in front of said backboard to practice free throws or at an angle of up to ninety degrees to the right or left thereof to practice side shots.

therealong, a plurality of finger receiving holes extending through said web portion and spaced longitudinally in closely



adjacent fashion, said holes being variably radially spaced from the axis of said tubular member.

4,226,417

CARPET BELT

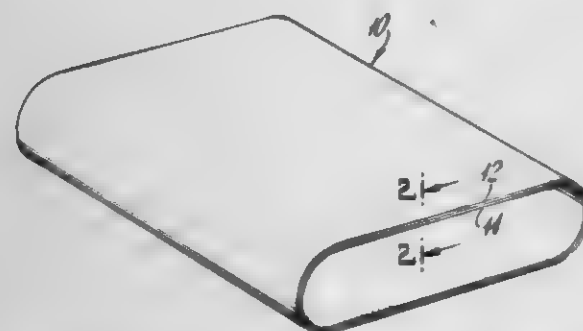
Thomas M. Camilleri, 277 Avenue W, Brooklyn, N.Y. 11223

Continuation-in-part of Ser. No. 712,182, Aug. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 594,194, Jul. 9, 1975, abandoned. This application Jun. 5, 1978, Ser. No. 912,391

Int. Cl.³ A63D 5/02, 5/08

U.S. Cl. 273-43 R

13 Claims



1. In an automatic pinspotter machine having a carpet belt for conveying pins from the end of the lane to the pin elevator wheel and a motor to drive cylinders on which the carpet belt is mounted, the pin elevator wheel having a housing surface adjacent the carpet belt, the improvement wherein the pin contacting surface of the carpet belt comprises a soft, flexible, elastomeric material having a durometer hardness of from about 30 to about 75 capable of embedding therein a hard object without being torn and of firmly wedging the hard object between the carpet belt and the housing surface of the pin elevator wheel.

4,226,418

GAME RACKET HAND GRIP

Ronald S. Balfour, 1061 Beach Park Blvd., #309 Foster City, Calif. 94404

Filed Nov. 20, 1978, Ser. No. 962,379

Int. Cl.³ A63B 49/08

U.S. Cl. 273-75

8 Claims

1. In a game racket which includes a racket head and a handle extending therefrom; a hand grip comprising a tubular member secured to the distal end of said handle in axial alignment therewith, a rigid web portion extending generally radially from said tubular member and extending longitudinally

4,226,419

STRATEGY GAME

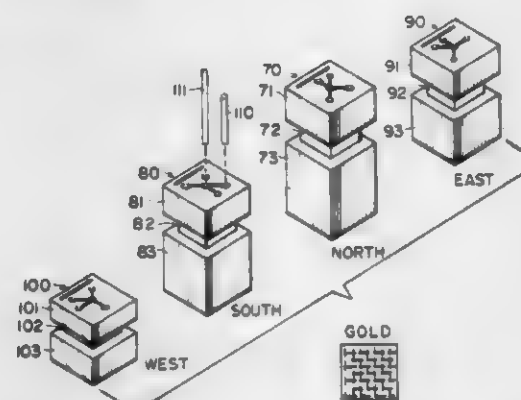
Neal R. Wooden, 515 Paumakua Pl., Kailua, HI. 96734

Filed Sep. 5, 1978, Ser. No. 939,823

Int. Cl.³ A63F 3/02

U.S. Cl. 273-260

6 Claims



1. A strategy game comprising a playing board with 64 squares, 2 sets of playing pieces, wherein each set of playing pieces includes four rectangular shaped playing pieces of varying heights, each piece has a head, a neck, and a body, in the head of each piece are a central opening, four lines radiating outwardly from the central opening, an opening at the end of each line, and an orientation line, the four lines are vectors which indicate how the piece may be moved on the playing board, the movement of each piece differs from the movement of every other piece, means to register a score on a playing piece, means to designate a special playing piece, and means to mark a restriction of movement of the playing pieces.

4,226,420

BINGO GAME FOR THE NON-BRAILLE BLIND

Dorothy L. Corday, 48 Gilbert Ct., Wilmington, Del. 19713

Filed Jul. 30, 1979, Ser. No. 61,654

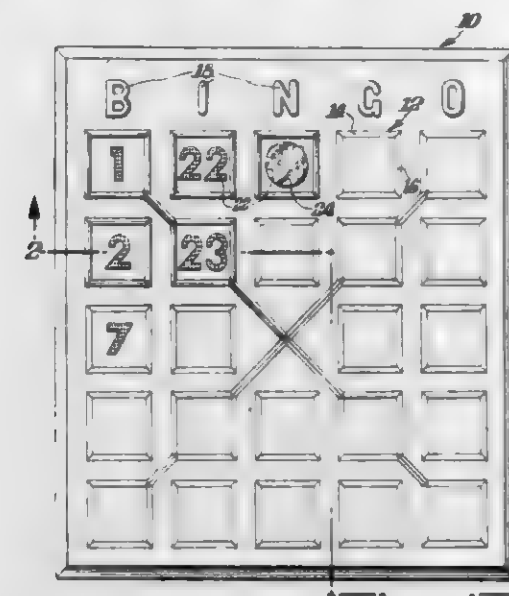
Int. Cl.³ A63F 3/00

U.S. Cl. 273-269

4 Claims

1. A bingo game apparatus for the blind comprising:
(a) A players' board having spaced positions outlined by ridges and within the positions raised numbers wherein the raised numbers consist of tactile material in the form of either hooked nap or looped nap;

(b) A marker piece having cooperating looped nap or hooked nap adapted to attach to the tactile material which



forms the raised numbers whereby non-braille blind people may participate in playing bingo.

4,226,421

BRIDGE-LINKING TABLE GAME

Takeshi Shimizu, Yashiohshi, Japan, assignor to Kabushikikaisha Anoa, Tokyo, Japan

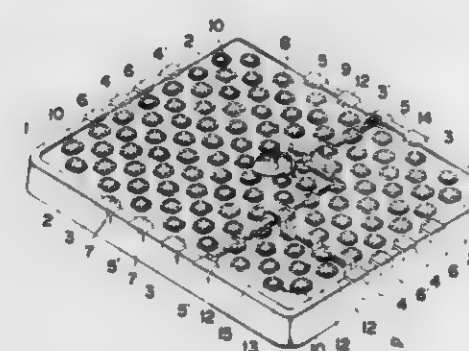
Filed Dec. 14, 1978, Ser. No. 969,326

Claims priority, application Japan, Aug. 28, 1978, 53-116686[U]

Int. Cl.³ A63F 3/00

U.S. Cl. 273-275

3 Claims



1. A table game comprising:

a game board having a four sided playing area, said playing area surrounded by a frame;
a plurality of start marks mounted on each side of the frame, each said start mark having a pair of holes disposed therein;
a plurality of goal marks mounted on each side of the frame, each of the goal marks corresponding to a start mark with corresponding goal and start marks mounted in alignment on opposite sides of the frame, and each said goal mark having a pair of holes disposed therein;
a plurality of islands each having a center, mounted in rows on the base inside the frame, with said centers aligned and said centers spaced equal distances apart, each said island having four pairs of holes disposed therein, each said pair of holes disposed on a side of a square having a center coincident with the center of the island, such that a fixed distance between two adjacent pairs of holes disposed on any adjacent islands is the same, a plurality which is less than all of said rows including and in alignment with corresponding goal and start marks, said islands in said plurality of rows being disposed inside said frame such that a distance from a pair of holes on any start mark or goal mark to an adjacent pair of holes

on an adjacent island in a same row as said start mark or goal is equal to said fixed distance;

a plurality of playing pieces each having a length such that said playing pieces may be placed to connect adjacent islands in a same row and to connect a goal mark or a start mark to an adjacent island,

each said playing piece having a bottom from which four spaced pegs extend downwardly, said pegs being of a diameter receivable by said holes in said islands and said start and goal marks, said pegs disposed on said pieces such that each playing piece may be placed in said holes to connect adjacent islands or an island and an adjacent start mark or goal mark by at least one fixed distance, said playing pieces comprised of a plurality of different types;

an upwardly extending pylon integrally mounted at a center of said game board;

a disc rotatably mounted on said pylon, said disc having sectors marked thereon designating different playing piece types and a mode of play; and

a marker on said game board adjacent said disc to indicate a particular disc sector after said disc is rotated by a player.

4,226,422

FLYING SAUCER SIMULATION GAME

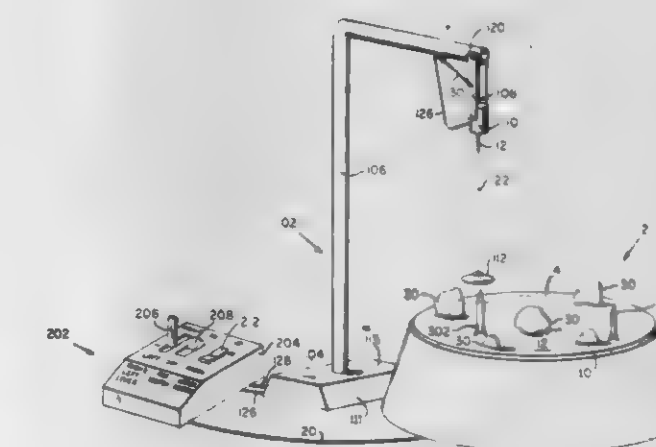
John A. Belli, 75 Elizabeth St., Fitchburg, Mass. 01420

Filed Jul. 13, 1978, Ser. No. 924,134

Int. Cl.³ A63F 9/00

U.S. Cl. 273-368

11 Claims



9. A game device comprising:

(a) a support assembly comprising a support member, a reversible motor having a drive shaft, means for attaching said motor to said support member, a symmetrical object, and a string capable of winding on itself when one end thereof is rotated about its center axis, one of said string being attached to said object, the other end of said string being attached coaxially to said drive shaft, said motor being adapted to rotate said drive shaft fast enough to cause said string to wind on itself and raise said object vertically toward said motor when said motor is energized while oriented so that said drive shaft extends vertically downward toward said object; and

(b) means for selectively energizing said motor, said means including switch means for energizing said reversible motor so as to cause said reversible motor to rotate said shaft in one direction or the other.

4,226,423

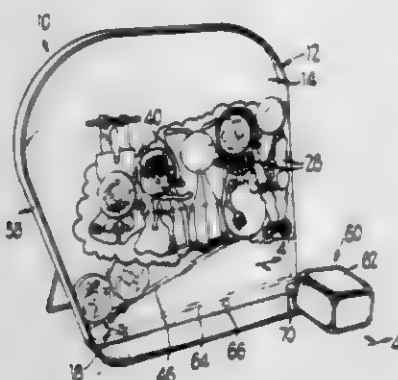
GAME HAVING ILLUSTRATION-BEARING PROJECTILE

Donald F. Nix, Hanover Park, and Howard J. Morrison, Deerfield, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,800
Int. Cl.³ A63F 7/02

U.S. Cl. 273-397

12 Claims



1. A game apparatus, comprising:
 - a housing;
 - means defining a front playing surface wall and a projectile receiving station disposed therebehind, said front playing surface wall bearing an incomplete illustration and having a missing portion of said illustration;
 - a projectile bearing an illustration capable of completing the missing portion of the illustration on said front playing surface wall when projected into said projectile receiving station;
 - means for orienting the illustration on said projectile with respect to the illustration on said front wall; and
 - launching means for launching said illustration bearing projectile into said projectile receiving station.

4,226,424

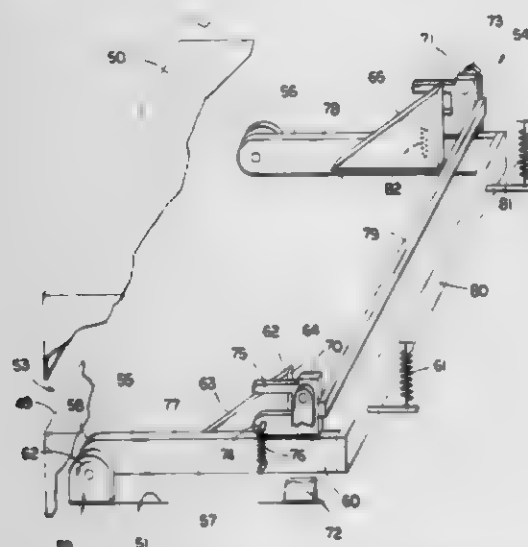
PLAYER LATCHING AND UNLATCHING MECHANISM FOR VIDEO DISC HOLDER

Geoffrey W. Gordon, 314 Arbutus St., Bloomington, Ind. 47401
Filed Apr. 27, 1979, Ser. No. 34,173

Int. Cl.³ G11B 25/04

U.S. Cl. 274-9 B

12 Claims



7. A latch mechanism for operation with a holder in a caddy comprising:
 - a frame;
 - a first latch having a first end and a second end with said first end pivotally mounted to said frame, said latch having a wedge-shaped hook extending upwardly therefrom in a direction from said first end toward said second end to engage said holder;
 - first spring means mounted on said frame and connected to

- said second end to urge said hook upwardly in a given plane;
- a first pryor pivotally mounted to said frame to move parallel to said given plane and having a finger extending in a direction from said second end toward said first end, said pryor contacting said latch and moving said latch from said holder when said caddy is reinstalled on said holder while moving said pryor; and
 - a second spring connected to and between said latch and pryor to urge said latch and pryor together.

4,226,425

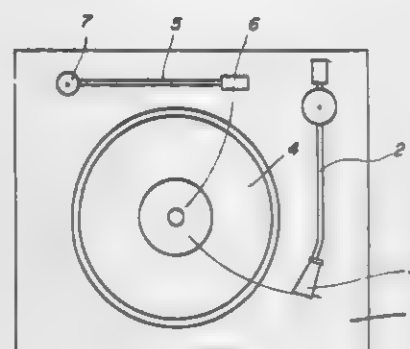
NONRECORDED SECTION DETECTION IN AN AUTOMATIC RECORD

Hiromi Juso, Gose, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1978, Ser. No. 946,854
Int. Cl.³ G11B 17/06

U.S. Cl. 274-15 R

14 Claims



1. An automatic record player comprising:
 - a tonearm;
 - a pickup cartridge mounted on a tonearm;
 - a first drive mechanism for rotating said tonearm to place said pickup cartridge at a desired position;
 - cartridge position detection means for detecting a current address of said pickup cartridge;
 - a nonrecorded section detection sensor for detecting a non-recorded section provided between two adjacent tracks recorded on a disc;
 - a sensor arm for supporting said nonrecorded section detection sensor;
 - a second drive mechanism for rotating said sensor arm to scan the disc surface by said nonrecorded section detection sensor;
 - a nonrecorded section position information storing means for storing an address of said nonrecorded section detected by said nonrecorded section detection sensor; and
 - adjusting means for adjusting the initial contents of said nonrecorded section position information storing means.

4,226,426

SEMI-UNITIZED SHAFT SEAL

Edward J. Messenger, Longview, Tex., assignor to Garlock Inc., Longview, Tex.

Continuation-in-part of Ser. No. 664,625, Mar. 8, 1976. This application Feb. 26, 1979, Ser. No. 14,926

Int. Cl.³ F16J 15/32; B16D 53/00

U.S. Cl. 277-37

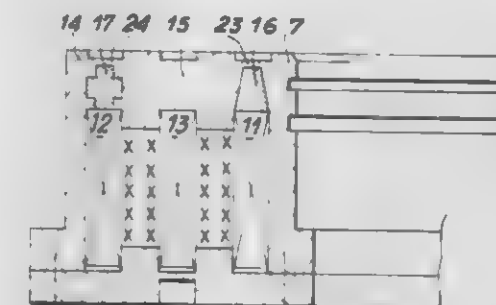
18 Claims

1. A two-part, separable, semi-unitized shaft seal for providing a seal between a housing bore and a relatively rotatable shaft extending through the bore, said seal comprising:
 - (a) a wear sleeve including a radially inner cylindrical portion and a radial flange extending radially outwardly from the axially outer end of said cylindrical portion, said cylindrical portion having an I.D. adapted to press fit onto a shaft and having an O.D. wear surface for the below-recited sealing lip; and
 - (b) a sealing member movable axially onto and off of said

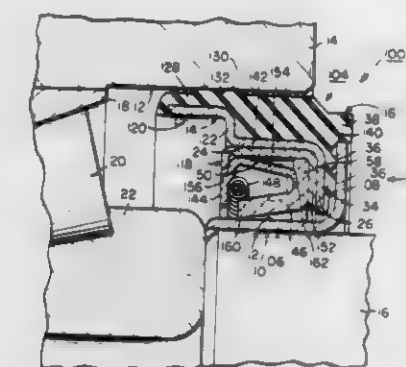
wear sleeve and assembled onto said wear sleeve in separable, semi-unitized relationship relative thereto, said sealing member including a retainer ring, an elastomeric body bonded to said retainer ring, and a sealing element cartridge press-fitted into said retainer ring,

- (1) said retainer ring including a radially outer cylindrical portion connected to an intermediate radial flange connected in turn to a radially inner cylindrical portion connected in turn to a radially inner radial flange extending radially inwardly from one end of said inner cylindrical portion,
- (2) said elastomeric body including a layer of elastomer bonded to the O.D. surface of said outer cylindrical portion of said retainer ring and being adapted to form an interference fit in a housing bore, and said elastomeric body also including an elastomeric bumper member bonded to the axially outer radial surface of the axially outermost of said radial flanges of said retainer ring and extending axially outwardly therefrom into

position in which said member is coupled with said rotor under the action of magnetic attraction forces, the magnetic attraction system being such as to have an external portion defining a face which can be coupled with the rotor under the action of



the magnetic attraction forces, wherein said external portion of the magnetic attraction system is uniformly constructed of magnetic material and comprises at least one annular portion of small thickness which defines a magnetic shunt having high reluctance.



contact with the axially inner radial surface of said radial flange of said wear sleeve, for axially locating said sealing member relative to said wear sleeve and for aiding in preventing dirt from passing inwardly to the below-recited sealing lip.

- (3) said sealing element cartridge comprising a radially outer case, a radially inner case, locked inside said outer case by crimping and a leather sealing element locked between said outer and inner cases and having a sealing lip in sealing contact with said O.D. wear surface of said wear sleeve, said outer case having a radially outer cylindrical portion having an O.D. surface that is press-fitted into the I.D. surface of said inner cylindrical portion of said retainer ring, whereby said sealing member is movable axially, with respect to said wear sleeve, away from and out of contact with said wear sleeve and with said sealing lip being slidable axially off of said O.D. wear surface, for disassembling said two part separable, semi-unitized shaft seal.

4,226,427

MAGNETIC-CONTROL CLOSURE SYSTEM

Claude Duquenne, La Garenne, and Andre Mondy, Asnieres, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France

Filed Jan. 9, 1979, Ser. No. 2,018

Claims priority, application France, Jan. 12, 1978, 78 01299
Int. Cl.³ F16J 15/34

U.S. Cl. 277-80

7 Claims

1. A magnetic-control closure system for the rotor of a rotating machine which transports a noxious fluid, constituted by an annular seal located in a plane at right angles to the axis of rotation of the machine, said seal being clamped in the active position thereof between on the one hand stationary knife-edges formed on the rotor for this purpose and on the other hand movable knife-edges carried by an annular support member which is capable of moving along the axis of the machine, in which the movable support member moves under the action of a magnetic attraction system between an inactive position in which said member is separated from the rotor and an active

position in which said member is coupled with said rotor under the action of magnetic attraction forces, the magnetic attraction system being such as to have an external portion defining a face which can be coupled with the rotor under the action of

1. A seal and groove assembly in combination with a pair of members to be sealed against the movement of fluid therebetween, said assembly comprising
 - (a) a lateral groove in one of said members having defining side and bottom walls and having an opening directed toward said other member,
 - (b) a flexible seal having opposite ends,
 - (c) said seal being mounted in said groove and having one seal end portion thereof projecting through said opening for end sealing engagement with said other member,
 - (d) said seal having a sinuous-like portion between its ends arranged to be flexed toward a straightened condition upon being subjected to a pressurized fluid to cause said one seal end portion to forcefully seal against said other member,
 - (e) and at least one longitudinally extending fluid escape port in said enlarged head to drain any trapped downstream fluid.



4,226,428

FLEXIBLE SEAL AND GROOVE ASSEMBLY

George J. Paptzun, 14655 NW. West Union Rd., Portland, Oreg. 97229

Filed Jul. 13, 1978, Ser. No. 924,168

Int. Cl.³ F16J 15/36

U.S. Cl. 277-94

13 Claims

4,226,429

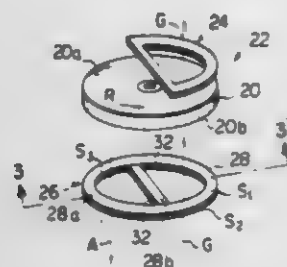
FLUID SEAL FOR USE IN ROTARY REGENERATOR
Hideo Sato, and Osamu Kobayashi, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 13, 1978, Ser. No. 969,033

Claims priority, application Japan, Dec. 15, 1977, 52/151028

Int. Cl.³ F16J 15/34

U.S. Cl. 277-96.2



1. A rubbing contact fluid seal for use on the hot side in the rotary regenerator portion of a gas turbine engine, which portion includes a rotatable annular matrix, said seal comprising:

- a seal member made of carbon base material, said seal member having first and second surfaces, said first surface being contactable with the rotatable radial face on the hot side of said rotatable annular matrix, said second surface being directly contactable with hot exhaust gases before they pass through the matrix and with hot intake air after it passes through the matrix; and
- a heat-resistant layer formed on said second surface, allowing the major part of said first surface of carbon base material to be exposed as it is for rubbing contact with the hot side radial face of the rotatable annular matrix.

4,226,430

TWO-PIECE OIL CONTROL RING

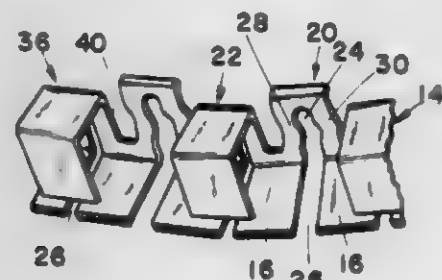
Kenneth J. Nisper, Muskegon, Mich., assignor to Muskegon Piston Ring Company, Muskegon, Mich.

Filed Dec. 5, 1978, Ser. No. 966,768

Int. Cl.³ F16J 9/20

U.S. Cl. 277-139

11 Claims



1. A spacer-expander adapted for use with a parted rail ring and including an integral cylinder wall engaging lower rail, comprising:

- a plurality of circumferentially spaced segments defining said lower rail;
- a plurality of circumferentially spaced legs, said legs being divided into pairs with one leg of each pair extending axially from one segment and the other leg of the pair extending axially from the next adjacent segment;
- a plurality of webs, each web interconnecting the legs at their axial top edges and defining therewith a plurality of spring members; and
- a plurality of L-shaped in section members interconnecting the legs of the remaining pairs of legs, said members each including a solid radially outwardly extending portion defining a rail seat adapted to support the parted rail ring and a solid axially and downwardly extending portion defining a pressure leg terminating in closely spaced relationship and axially above a pair of adjacent segments and

dimensioned to permit limited flexing of said segments, whereby the radial tension exerted on the rail ring is greater than the radial tension exerted on the spaced segments defining the lower rail.

4,226,431

SEALING DEVICE FOR SCREW THREADS

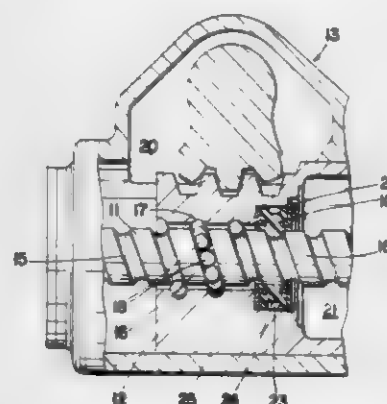
Jerry G. Jelinek, La Habra, and Orville J. Bain, Van Nuys, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 884,862, Mar. 9, 1978, Pat. No. 4,159,118. This application Oct. 30, 1978, Ser. No. 955,996

Int. Cl.³ F16J 15/16; F16H 55/22

U.S. Cl. 277-165

13 Claims



1. A sealing device for sealing between first and second telescoped parts, said device comprising an annular elastomeric member having inner and outer peripheral surfaces, said inner peripheral surface being arranged for sealing engagement with one of said parts and including an axially extending sealing surface and a radially inwardly extending sealing projection, said sealing projection extending through an arc of predetermined circumferential extent, a relatively rigid axially extending support disposed in radially outward alignment with said axially extending sealing surface, said support being discontinued for a predetermined circumferential extent at a location in radially outward alignment with said projection, and said circumferential extent of said discontinuity being substantially as great as said circumferential extent of said sealing projection.

4,226,432

DEVICE FOR SEALING ELECTRIC WIRES

Keiichi Nakamizo, Himeji, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

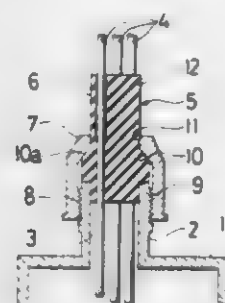
Filed Jan. 22, 1979, Ser. No. 5,136

Claims priority, application Japan, Jan. 31, 1978, 53-10887[U]

Int. Cl.³ F16J 15/10

U.S. Cl. 277-212 F

6 Claims



4. A sealing member for sealing electric wires and adapted to be used with a cap screw having a hole therethrough, said sealing member being relatively flexible and elastic and having therein axial bores through which the wires are adapted to extend, said sealing member including a base portion and an extension portion extending from said base portion, each of

said bores extending through both said base portion and said extension portion,

each of said bores having a small diameter portion in said base portion for tightly receiving a portion of a wire of given diameter and each of said bores having a larger diameter portion in said extension portion for loosely receiving another portion of such wire, and said small and larger diameter portions of said bores being interconnected by a conical wall portion of said bores.

4,226,433

QUICK CHANGE TOOL HOLDER

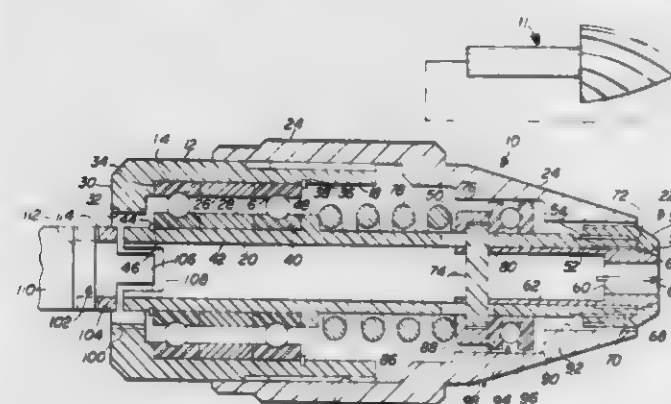
Josef J. Dancsik, 37970 Pointe Rosa, Mt. Clemens, Mich. 48045

Filed Feb. 26, 1979, Ser. No. 15,328

Int. Cl.³ B23B 31/10

U.S. Cl. 279-51

2 Claims



1. A quick change tool holder comprising:

- a stationary housing;
- a quill rotatably supported by the housing;
- a collet rotatably engaged by the quill;
- the collet adapted to releasably engage a tool while rotating;

the housing comprising an inner end and an outer end, a central bore beginning at the outer end, said bore terminating at a bottom wall, a through bore of reduced diameter through the bottom wall forming a shoulder;

a pair of spaced apart bearings held in spaced relationship by a sleeve, supported by the central bore, a first bearing outer race abutting the shoulder at an inner end, a retaining ring abutting a second bearing outer race at an outer end, said retaining ring engaging a groove in the central bore to longitudinally position said spaced apart bearings within the housing;

the quill comprising a tubular member including an inner end, an outer end, an outer diameter and a longitudinal bore, said outer diameter engaging a bore of the spaced apart bearings, a retaining ring abutting an inner end of an inner race of said first bearing, a groove in the outer diameter spaced from the inner end thereof to engage said retaining ring, a raised diameter shoulder integral with the tubular member, an inner wall of the raised diameter shoulder engaging an outer end of an inner race of said second bearing to longitudinally position the quill, a transverse slot spaced longitudinally toward the outer end from the raised diameter shoulder, an enlarged bore at the outer end of said quill, and a threaded portion along the outer diameter of the quill extending inward a distance from the outer end;

the collet comprising an inner member and an outer member, the inner member having a diameter slidably engagable with the longitudinal bore, a tool engaging bore extending inward from an outer end, an enlarged bore extending longitudinally from an inner end thereof to the tool engaging bore, one or more tool engaging segments formed by a plurality of longitudinal slits extending from the outer end of the inner member along the tool engaging diameter and along the enlarged diameter a distance terminating short of an inner end thereof, the segments biased outward forming an enlarged tool engaging bore, the segments

including a tapered outer end, said outer member comprising a threaded bore extending along the inner end thereof to threadingly engage the quill threaded portion, a tapered bore at the outer end thereof complementary to the tapered end, whereby longitudinal movement of the inner member toward the outer end engages the tapered outer end of the segments with the tapered bore biasing the segments to a tool engaging diameter to fixedly engage a shank of a tool;

a cross-pin slidably engaging the inner member and the transverse slot extending radially past the outer diameter a distance;

a spring seat comprising an inner diameter slidably engaging the quill outer diameter, a pair of radially opposed slots along an outer end thereof to nestingly receive the cross-pin, an outer diameter enveloping the cross-pin, an inner end engaging an outer end of a spring;

said spring slidably enveloping the quill outer diameter, an inner end thereof abutting an outer face of the raised diameter shoulder, and the outer end thereof biased against said spring seat; and

the spring seat abutting the cross-pin whereby the spring biasing force is transmitted to the inner member biasing the tapered end longitudinally outward against the tapered bore, and biasing the segments and the engaging diameter radially inward to engage the shank of the tool.

4,226,434

HAND TRUCK

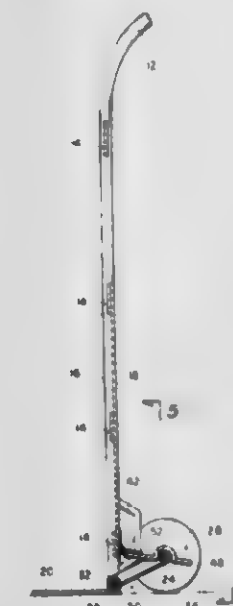
Benjamin J. Hill, 12115 E. 21st Ct., Tulsa, Okla. 74129, and Norman L. Wagon, 8511 E. 122nd St. S., Bixby, Okla. 74008

Filed Aug. 21, 1978, Ser. No. 935,331

Int. Cl.³ B62B 1/12

U.S. Cl. 280-47.21

1 Claim



1. A hand truck for lifting and moving heavy objects on a floor surface;

a frame having spaced apart handles at the upper end, and having a forward and rearward surface;

a toe plate affixed to the lower end of and extending generally normal of the forward surface of said frame, the toe plate and frame rearward surface forming a pivot junction, the toe plate being adapted to be positioned under an object to be lifted and moved, the pivot junction non-slidably engaging the floor surface when said frame is pivoted rearwardly;

a pair of spaced apart wheels rotatably supported by an axle; axle arm means affixed to said axle at the outer end and pivotally affixed at the inner end to said frame rearward surface adjacent and above said pivot junction whereby said wheels are pivotally supported to said frame, the axle

always being parallel said pivot junction, the wheels thereby always remaining on the floor surface; support brackets affixed to and extending rearwardly from said frame rearward surface above said pivot junction, said axle engaging the support brackets when said frame is pivoted rearwardly sufficient to pivot said toe plate about said pivot junction at least 15° and not more than 35° relative to the floor surface, whereby further rotation of said frame serves to lift said pivot junction and thereby a load supported on said toe plate off the floor surface; and a gravitationally actuated catch arm pivotally attached to said frame rearward surface at its inner end above said axle arm, the catch arm outer end having an upwardly extending integral U-shaped hook portion which slidably receives said axle when said frame is in an upright position, said hook portion being disengageable from said axle by upward pivotal movement of the catch arm outer end, said catch arm sliding on said axle when said frame is pivoted rearwardly.

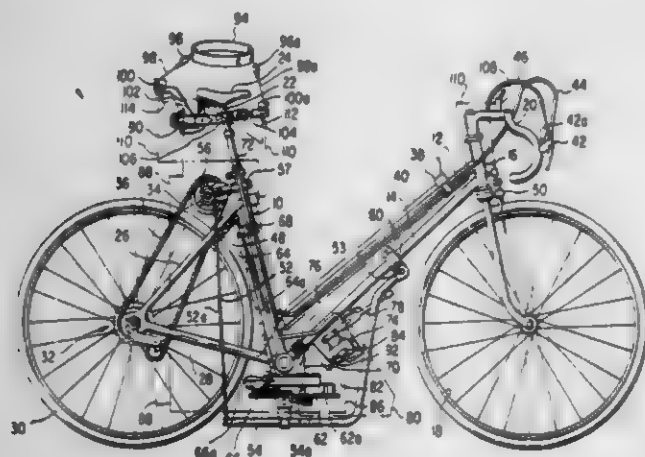
4,226,435

BICYCLE SEAT ADJUSTABLE DURING RIDE

Boris Efros, 920 N. Stanley Ave., Los Angeles, Calif. 90046
Division of Ser. No. 774,620, Mar. 4, 1977, Pat. No. 4,161,328.
This application Apr. 23, 1979, Ser. No. 32,645
Int. Cl.³ B62K 19/36, 23/08

U.S. Cl. 280—283

13 Claims



9. A control mechanism for controlling the height of a bicycle seat, comprising:
a seat;
lever means;
means for coupling said lever means to at least one of the pedals of said bicycle; and
means coupled to said lever means and to said bicycle seat for controlling the height of said bicycle seat, whereby said seat of said bicycle can be controlled by the foot of the rider.

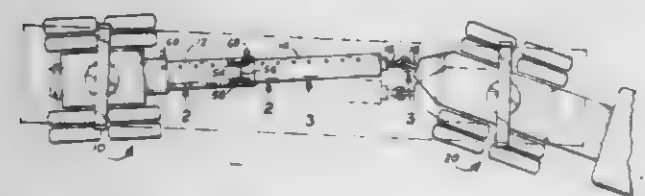
4,226,436

APPLICATION FOR LOCKING DEVICE FOR TELESCOPING REACHES OF LOGGING TRAILERS

Jack D. Donaldson, 134 Beville Rd., Chehalis, Wash. 98532
Filed Jul. 24, 1978, Ser. No. 927,728
Int. Cl.³ B62D 53/00

U.S. Cl. 280—404

5 Claims



1. In combination with the elongated inner and outer hollow telescoping reaches of the trailer of a logging truck-trailer

combination, wherein the outer cross sectional dimensions of the inner reach are slightly smaller than the inner cross sectional dimensions of the outer reach, a device for securing said telescoping reaches together releasably against longitudinal displacement, comprising:

- (a) a transverse plate secured to and extending across the inner reach adjacent the inner end thereof,
- (b) an elongated support member secured at one end to the transverse plate and extending therefrom in the direction and on the longitudinal axis of the inner end of the inner reach,
- (c) laterally expansible and contractable friction means having a central longitudinal opening receiving the support member therethrough, the friction means including gripping means disposed for releasable engagement with the inner side walls of the outer reach, the friction means comprising
 - (1) a resiliently expansible and contractable fluid pressure chamber member having a central longitudinal opening receiving the support member therethrough,
 - (2) longitudinally spaced chamber containing members one at each end of the chamber member secured releasably to the support member against longitudinally outward displacement,
 - (3) a plurality of peripherally spaced brake shoe members freely abutting the outer surfaces of the chamber member and having friction surfaces arranged to releasably engage the inner surfaces of the outer reach,
 - (4) guide studs extending longitudinally from the opposite ends of the brake shoe members, and
 - (5) guide slots in the chamber containing members freely receiving and guiding the guide studs therein,
- (d) connecting means securing the friction means to the support member whereby expansion and contraction of the gripping means locks the inner and outer reaches together releasably against relative longitudinal movement, and
- (e) operating means connected to the friction means for expanding and contracting the gripping means from a remote station.

4,226,437

AXLE-LOAD DISTRIBUTING APPARATUS

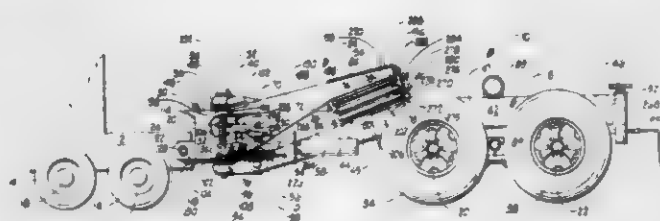
Curtis A. Trudeau, Elk Point, S. Dak., assignor to CMI Corporation, Oklahoma City, Okla.

Filed Aug. 6, 1979, Ser. No. 63,909

Int. Cl.³ B62D 61/12

U.S. Cl. 280—405 R

40 Claims



1. An axle load-distributing apparatus for a vehicle having a frame mounted on wheel supported axles, said axle load-distributing apparatus comprising:

- a lower frame having a forward end and an opposed rearward end;
- at least one transverse load distributing axle mounted on said lower frame;
- a plurality of wheels bearingly mounted on said axle;
- hitch means pivotally connected to the forward end of said lower frame for connecting said lower frame to the motor vehicle and for providing said lower frame with a horizontal lateral swinging movement and a vertical movement with respect to said hitch means;
- a cantilever having a forward end and an upwardly inclined

rearward end, the forward end of said cantilever being rigidly mounted to said hitch means for preventing vertical movement of said cantilever with respect to said hitch means and the forward end of said cantilever being pivotally connected to said hitch means for providing a horizontal lateral swinging movement of said cantilever with respect to said hitch means, the upwardly inclined rearward end of said cantilever extending upwardly over said lower frame means in a spaced relationship with said lower frame means;

first pneumatic means operatively disposed between the rearward end of said cantilever and said lower frame so that in an activated position said first pneumatic means causes a downward force to be applied to said lower frame transferring a portion of the load on the rear axles of the vehicle to said load-distributing axle mounted on said lower frame; and

tracking means interconnecting said cantilever and said hitch means for detecting changes in the angular relationship between the longitudinal axis of the motor vehicle and the longitudinal axis of said axle load distributing apparatus, said tracking means operatively connected to said first pneumatic means for at least partially deactivating said first pneumatic means when a predetermined angular relation between the longitudinal axis of the motor vehicle and the longitudinal axis of the axle load distributing apparatus is detected by said tracking means and for reactivating said first pneumatic means when the axle load distributing apparatus returns to a normal tracking position.

4,226,438

TRAILER HITCH GUIDE

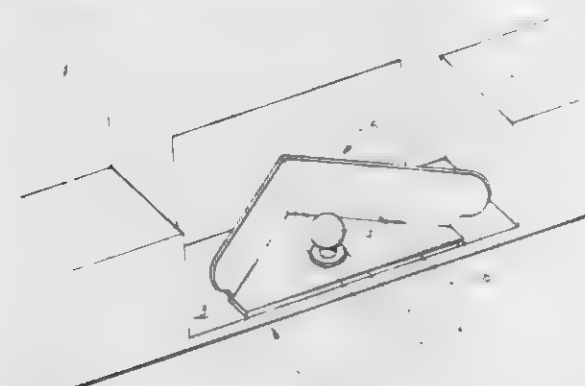
Walter L. Collins, 10225 A. Synott Rd., Sugarland, Tex. 77478

Filed Jan. 11, 1979, Ser. No. 2,697

Int. Cl.² B60D 1/00

U.S. Cl. 280—477

7 Claims



- 1. A trailer hitch assembly for a draft vehicle comprising a draft member adapted to be supported at the rear end of said vehicle,
- a ball connector member supported in an upright position on said draft member and rigidly secured thereon,
- a guide member supported on said draft member and surrounding said ball connector member on the sides and rear thereof and having sidewalls positioned to guide a trailer hitch member into centered relation relative to said ball connector member during assembly of the hitch connection, and
- said guide member comprising a unitary piece having a base plate and a pair of upstanding sidewalls,
- said sidewalls each forming a right dihedral angle with said base plate, and said sidewalls meeting at a point rearward of said ball connector member in an obtuse dihedral angle, the ends of said sidewalls extending forwardly of said ball connector member and having curved end edges having a curved relieved portion permitting greater angular movement of the hitch.

4,226,439

SAFETY SKI-BINDINGS

Bernhard Kirsch, Im Litzelholz 23, 5500 Trier-Biewer, Fed. Rep. of Germany

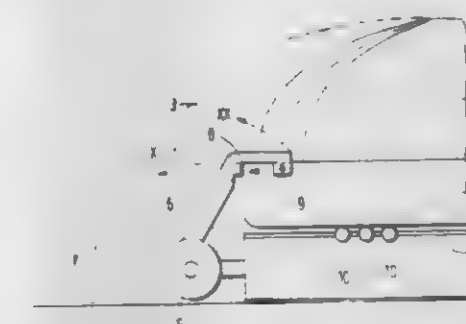
Filed Jun. 26, 1978, Ser. No. 919,180

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728917; Jun. 27, 1977, 2728918; Dec. 31, 1977, 2759144; Dec. 31, 1977, 2759145

Int. Cl.² A63C 9/08

U.S. Cl. 280—628

57 Claims



- 1. In a safety ski binding for releasably holding a ski boot on a ski, a heel binding normally holding the heel portion of the ski boot on the ski, and a front binding including:
- toe clamp means having a first portion engageable with the toe portion of the ski boot for normally deterring forward movement of the ski boot lengthwise of the ski;
- pivot means mounting said toe clamp means for swinging about an axis extending generally transversely of the ski and below the plane of the bottom of the ski boot sole between a boot-securing position in which said toe clamp means hold the toe portion of the ski boot in predetermined position relative to the ski and a released position in which said toe clamp means free the toe portion of the ski boot from the ski enabling substantial forward sliding movement of the ski boot along the ski; and
- locking means for normally maintaining said toe clamp means in boot-securing position but automatically shiftable for swinging of said toe clamp means into released position by the ski boot exerting on said toe clamp means a forward directed force in excess of a predetermined force.

4,226,440

ADAPTER DEVICE FOR LOWERING THE FRONT END OF A VEHICLE

Thurman P. Chappell, 6171 Montgomery Pl., San Jose, Calif. 95135, and Fredrick J. Chantler, 671 La Sierra Way, Gilroy, Calif. 95020

Filed Nov. 29, 1978, Ser. No. 964,648

Int. Cl.³ B60G 11/14

U.S. Cl. 280—660

4 Claims



- 1. An adapter device for integral incorporation into the front

suspension of a motor vehicle to lower the front end of said motor vehicle with respect to the road, said motor vehicle being of the type employing a control arm pivotally connected at its inner end to the frame of the vehicle and pivotally connected at its outer end to a front wheel of said vehicle by means of a ball-joint assembly extending therebetween; said adapter device comprising:

a spacer means, for mechanical interposition in series with said ball-joint assembly between said control arm and said wheel, to lower said control arm with respect to said wheel, fastening means on one end of said spacer means to securely connect said spacer means to one end of said ball-joint assembly to form therebetween a mechanical unit, the other end of said ball-joint assembly and the other end of said spacer means being adapted to permit interconnection of said mechanical unit between said control arm and said wheel.

4,226,441

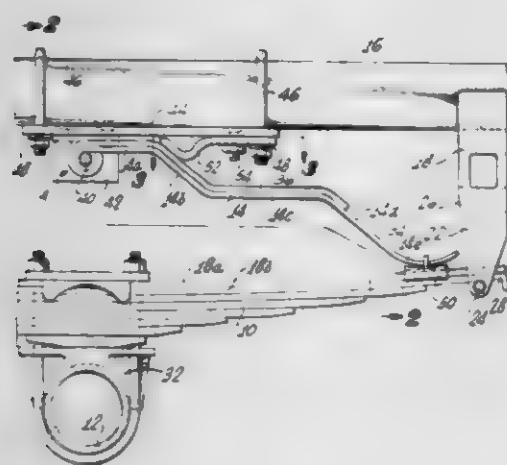
AUXILIARY VEHICLE SPRING FOR LIGHTLY LOADED CONDITIONS

Albert J. Lampert, San Clemente, Calif., assignor to Cambria Spring Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 783,661, Apr. 1, 1977, Pat. No. 4,175,772. This application Mar. 30, 1978, Ser. No. 891,847
Int. Cl.³ B60G 11/04

U.S. Cl. 280—718

3 Claims



1. A suspension system for a vehicle comprising:
a main leaf spring connected to at least one axle of said vehicle;
hanger means attached to said vehicle for retaining said mainspring while permitting vertical travel thereof within a predetermined range;
an auxiliary spring disposed between said frame and said mainspring to downwardly bias said mainspring toward the lower limit of said range of travel, said auxiliary spring comprising a first auxiliary leaf extending continuously along and beneath said frame toward said hanger and a second auxiliary leaf coextensive with a portion of said first auxiliary leaf;
an attachment plate underlying a portion of said frame;
clamp means for securing said attachment plate to said frame;
a spacer supported by said attachment plate between said frame and said auxiliary spring;
spring securement means for pivotally attaching said auxiliary spring to said frame at location spaced horizontally from said hanger means, said spring securement means comprising a pin extending crosswise with respect to said frame and an eye formed by said first and second auxiliary leaves that surrounds said pin; and
a slider plate secured to said first auxiliary leaf that slidably engages said mainspring, said slider plate including an anti-friction liner;
said auxiliary spring having a spring rate substantially lower than that of said mainspring, whereby said vehicle rides on

said auxiliary spring when lightly loaded but rides on said mainspring when heavily loaded.

4,226,442

WATER INSENSITIVE IMAGE RECEPTOR COATING
Gene D. Carlson, Ankang, and Gerry H. Ehrhardt, Des Moines, both of Iowa, assignors to Frye Copysystems, Inc., Des Moines, Iowa

Filed Apr. 27, 1979, Ser. No. 34,029

Int. Cl.³ B41M 5/22

U.S. Cl. 282—27.5

3 Claims



1. A pressure responsive receptor sheet for chemical type transfer media adapted to produce a moisture insensitive transferred image comprising
planar sheet material having a nontransferable image receptor coating layer disposed on one surface thereof, said nontransferable image receptor coating layer comprising the solid residue of an applied homogenous liquid mixture of an evaporable liquid carrier, a hydrophobic resinous binder material selected from the group consisting of polyvinyl butyral, polyvinylacetal and polyvinyl formal, opacifier-filler material and organic dyestuff dye precursor chromogenic reagent material distributed there-within.

4,226,443

MULTI-MONTH CALENDAR

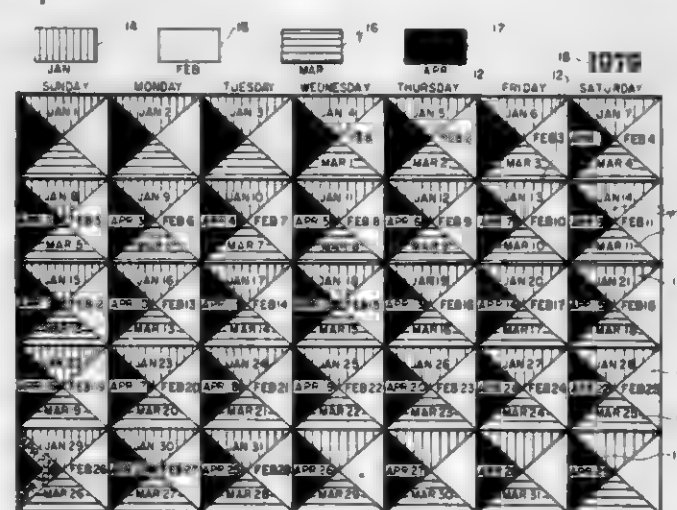
William T. Brown, Fayetteville, N.C.

Filed Jul. 17, 1978, Ser. No. 925,278

Int. Cl.² B42D 5/04

U.S. Cl. 283—2

6 Claims



1. An improved calendar comprising: a plurality of day blocks arranged in rows seven across and five down to give a total of thirty-five blocks within the confines of a rectangular space; at least two different colored date divisions within each day block, each of said color division of each day block being substantially identical to a color division in each of the other day blocks; and equi-sized numeral indicia indicating successive calendar days displayed in successive adjacent same color divisions whereby a multi period calendar is provided within the normal space and sight of a single period calendar.

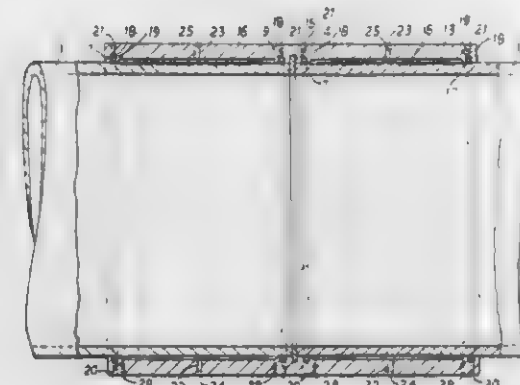
4,226,444

PIPE JOINTS

Thomas W. Bunyan, London, England, assignor to Pilgrim Engineering Developments Limited, London, England
Division of Ser. No. 771,091, Feb. 23, 1977, Pat. No. 4,153,656.
This application Dec. 26, 1978, Ser. No. 973,459
Int. Cl.² F16L 13/10

U.S. Cl. 285—21

7 Claims



1. A joint comprising:

a coupling sleeve;

a pipe end, said coupling sleeve fitting closely but with clearance around the pipe end; means for closing the ends of said clearance space between said pipe end and said sleeve, said means comprising grooves in said sleeve at each end of said clearance space, hollow sealing rings located in said grooves, and a hardenable composition injected in said sealing rings inflating said sealing rings so as to span said space between said sleeve and said pipe end; a layer of hardenable composition set under pressure substantially greater than atmospheric filling said clearance space and in intimate contact with said pipe end and said coupling sleeve so that when the interior of the pipe is at atmospheric pressure the pipe end is pre-stressed radially inwardly, the layer of hardenable composition extending substantially over the whole of the interface between the pipe end and the coupling sleeve.

4,226,445

HOSE AND PIPE COUPLING

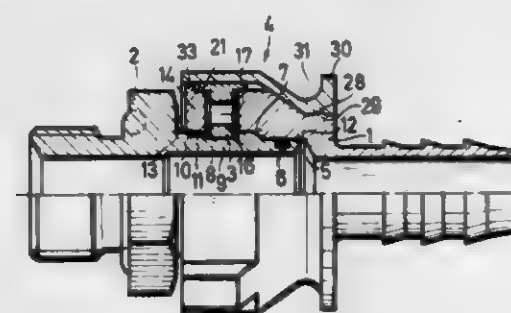
Dieter Kramer, Lindlar, Fed. Rep. of Germany, assignor to Armaturenfabrik Hermann Voss GmbH & Co., Wipperfurth, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,066

Int. Cl.² F16L 35/00

U.S. Cl. 285—39

6 Claims



1. In a hose and pipe coupling having a coupling head and a nozzle which can be inserted into said coupling head, and which is lockable therewith by a locking element, wherein the locking element comprises a spring-elastic ring having a slit and onto which are formed two oppositely-directed, arcuate spring arms which surround and embrace the coupling head and wherein the coupling head has a slot-like circumferential opening and an internal annular groove for the partial reception of the spring-elastic ring, the nozzle at its coupling side being provided with an annular groove for at least partially

receiving the spring-elastic ring in the inserted position of the nozzle, the improvement comprising:

a protective cap displaceably arranged on said coupling head and over said elastic ring after said nozzle and said coupling head are coupled together, wherein said elastic ring includes a gripping knob formed at the outermost end of each of the spring arms thereof, and wherein said protective cap is provided with radially-outwardly-protruding internal chambers for receiving said knobs, said protective cap also having formed therein an internal annular groove on an end portion thereof distal to said nozzle which is engageable with an annular shoulder provided on said coupling head, when said cap is fully retained on said coupling head so that said internal chambers will be in proper position for receipt thereon of said gripping knobs.

4,226,446

HOSE COUPLING

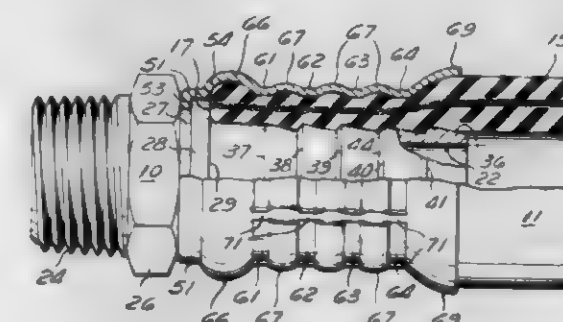
George C. Burrington, Wickliffe, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 20, 1978, Ser. No. 962,071

Int. Cl.² F16L 33/20

U.S. Cl. 285—256

6 Claims



1. A hose end assembly comprising a metal hose coupling and a flexible, nonmetallic hose having an inner bore and an outer surface, said hose coupling including an insert member having an insert portion within said hose bore and a fitting portion to connect said hose end assembly with another part, said hose end assembly including a sleeve member extending over the outer surface of said hose for an axial length substantially coextensive with the insert portion within said hose bore, said sleeve member being deformably secured to said insert member intermediate said insert portion and said fitting portion, said sleeve member and said insert portion defining a radially extending abutment in engagement with the end of said hose, said insert having at least three annular ridges of uniform axial spacing on its surface in contact with said hose bore, said annular ridges being interspaced by annular grooves, said annular grooves having a relatively shallow inward slope on their outer sides, said sleeve member having a wall portion of substantially uniform wall thickness extending over said hose and being deformed radially inward at at least three annular crimp zones of uniform axial spacing to deform the hose portion radially inward of the crimp zone, the spacing between said crimp zones being slightly greater than the spacing between said annular ridges, said outermost crimp zone and said outermost annular ridge adjacent the end of said hose being in axial alignment, each successive crimp zone being spaced progressively further inwardly from each successive annular ridge and opposite a shallow inward slope whereby said hose is compressed radially to the greatest degree at said outermost crimp zone and is compressed a progressively lesser degree at each of the successive crimp zones progressing inwardly away from the end of the hose.

4,226,447 SWIVEL APPARATUS

Cicero C. Brown, deceased, late of Houston, Tex. (by Joe R. Brown, executor), assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Jan. 9, 1976, Ser. No. 647,759
Int. Cl.³ F16L 37/18; B25D 17/14

U.S. Cl. 285-316

11 Claims



1. Swivel apparatus for use with well drilling systems comprising:

- (a) an upper stationary section;
- (b) a lower rotatable tubular section adapted to receive one end of a pipe joint and having radially movable latch means therein for engagement with said pipe joint end;
- (c) means for supporting said upper and lower sections for limited vertical movement above a well hole;
- (d) said lower section including cam means longitudinally movable, relative to said latch means, from an inoperative position to an operative position camming said latch means from a first position, permitting free entry of said pipe joint end into said lower section, to a second position latching said pipe joint end in said lower section, said latch means being carried on a first tubular sleeve, said cam means being carried on a second tubular sleeve, and said tubular sleeves being axially movable relative to each other to effect said camming of said latch means into said second position;
- (e) means operatively associated with said cam means for selectively retaining said cam means in said inoperative position independently of said pipe joint end comprising interengaged formations projecting as to one of said sleeves and receiving as to the other for preventing non-rotative relative longitudinal movement but permitting relative rotation of said sleeves from said inoperative position; and
- (f) biasing means carried by said lower section biasing said camming means toward said operative position.

4,226,448

HEAT-RECOVERABLE METALLIC COUPLINGS

Harry C. Broyles, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

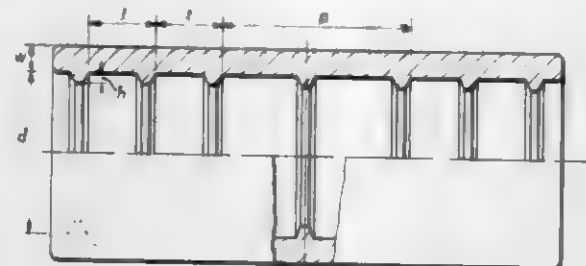
Continuation-in-part of Ser. No. 869,720, Jan. 16, 1978, abandoned. This application Jan. 16, 1979, Ser. No. 3,990
Int. Cl.² F16L 25/00

U.S. Cl. 285-381

21 Claims

1. A coupling which comprises a hollow, generally tubular metal member which is heat-shrinkable in the radial direction and is provided on its inner surface with at least three teeth in the form of radially extending rings, the distance (t) between

corresponding points on any pair of adjacent teeth having a value which is less than $0.95d$ and less than $4w$, where d is the internal diameter of that portion of the tubular member between the teeth, and w is the wall thickness of that portion of the tubular member between the teeth, the distance from the



center of the member to the tooth nearest the center of the member being from 0 to $0.3d$, there being at least one tooth either side of the tooth nearest the center of the member, and the distance (p) between corresponding points on the two teeth adjacent the tooth nearest the center of the member having a value which is more than the smaller of $0.4d$ and $3w$.

4,226,449 PIPE CLAMP

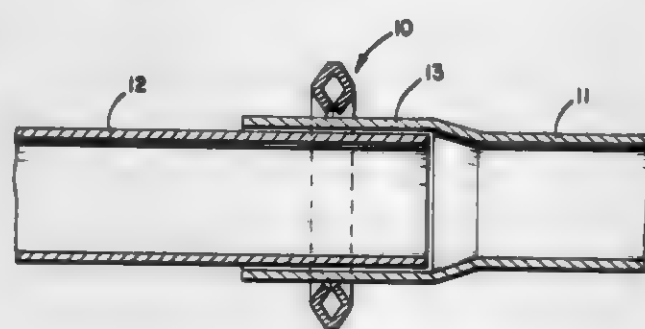
Richard O. Cole, Newbury Park, Calif., assignor to American Machine & Hydraulics, Newbury, Calif.

Filed May 29, 1979, Ser. No. 43,173

Int. Cl.³ F16L 13/14

U.S. Cl. 285-382.2

1 Claim



1. A pipe clamp made up of yieldable material folded to form a toroid, the cross section of the generating closed curve for the toroid being of rhombic shape with diagonally opposite acute vertices defining the outer and inner circular peripheries of the toroid, the outer periphery constituting a fold line and the inner periphery constituting adjacent annular edges of the folded material, the remaining vertices of the rhombus constituting obtuse angles extending annularly to define opposite sides of the toroid, whereby a squeezing force applied to the opposite sides of the toroid will flatten the rhombus shape, resulting in yielding of the material such that the circular inner periphery circumferentially contracts, whereby said clamp can be positioned to surround telescoped pipe ends and thence squeezed to contract said inner periphery to thereby annularly clamp the pipe ends into secure connected relationship.

4,226,450 GATE LATCH

Kenneth G. Kerr, Timboon, Australia, assignor to Ada M. Kerr; Alan G. Kerr, both of Timboon; Keith E. Kerr, Cobden; Bruce K. Kerr and Colin F. Kerr, both of Timboon, all of, Australia
Filed Aug. 25, 1978, Ser. No. 936,727

Claims priority, application Australia, Aug. 25, 1977, PD1379; Oct. 21, 1977, PD2149

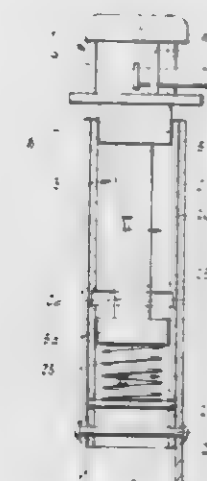
Int. Cl.³ E05C 3/40

U.S. Cl. 292-59

9 Claims

1. A gate latch comprising a tubular support, a latch member having a shaft portion mounted within said tubular support for

rotation therein and a latch portion extending axially outwardly from said shaft portion having at least three peripheral adjacent projections being equispaced from each other and extending axially outwardly from said shaft portion, a complementary gate locking bar extending from a gate having locking



means at its free end to engage the latch portion within the space defined by said at least three adjacent projections to lock the gate relative to said tubular support, said projections being so equispaced such as to permit entry between adjacent projections of the complementary gate locking bar.

4,226,451 SAFETY LATCH

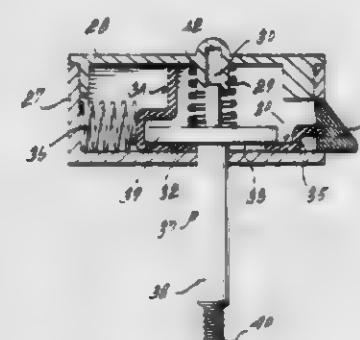
Hilaire Gingras, 475 Côte Joyeuse (P.O. Box 1328), St. Raymond, Portneuf County, Canada

Filed Oct. 27, 1978, Ser. No. 955,316

Int. Cl.² E05C 1/16

U.S. Cl. 292-169.21

2 Claims



1. A safety latch comprising an elongated housing having means to secure said housing to a door, window and the like closure pivotally mounted in a frame with an end wall of said housing coinciding with an edge of said closure, a bolt member having a latching outer end portion extending through an aperture in said end wall, said bolt member slidably mounted in said housing for movement longitudinally thereof between a protruding latching position and a retracted unlatching position, first spring means in said housing biasing said bolt member towards latching position, said latching outer end portion having a bevelled outer end face oriented so that, by engaging said frame, it will cause retraction of said bolt member upon closing of said closure, said bolt member including a flat base portion slidable against the internal surface of one longitudinal wall of said housing, and having an elongated slot extending longitudinally of said housing, said bolt member including an abutment plate portion extending transversely of said housing and of said base portion and remote from said end wall relative to said elongated slot, said abutment plate portion including a first part adjacent said base portion and a second part spaced from said base portion transversely of said housing, said first part being more distant from said end wall than said second part, an operating stem protruding from and extending transversely of said housing through said one longitudinal wall of said housing and through said elongated slot and mounted for

rotation and for axial movement relative to said housing, an ellipsoidal cam fixed to said stem at its center and located within said housing intermediate said end wall and said abutment plate portion, second spring means in said housing biasing said stem outwardly of said housing to a first axial position in which said cam registers with said first part of said abutment plate portion, said stem movable against the bias of said second spring means inwardly of said housing to a second axial position in which said cam registers with said second part of said abutment plate portion, said cam clearing said first part in all rotated positions of said stem and cam, said cam clearing said second part only in rotated positions of said stem and cam wherein the longer axis of said cam extends transversely of said housing, whereby rotation of said stem while in said second axial position causes said cam to engage said second part and retract said bolt member to unlatching position against the bias of said first spring means.

4,226,452 LATCH

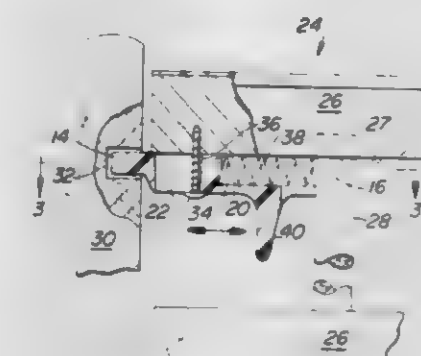
Ronald R. Hoffman, Morgantown; Rex E. Payne, Jr., and David Saint, both of Elverson, all of Pa., assignors to Port-A-Crib, Inc., Hallam, Pa.

Filed Feb. 1, 1979, Ser. No. 8,629

Int. Cl.² E05C 1/04

U.S. Cl. 292-175

10 Claims



1. A latch comprising a one-piece latch member having a tongue on one end for entry into a cavity, the other end of said member having a pair of generally parallel arms extending therefrom, a support having a reaction surface generally perpendicular to a mounting surface of said support, said reaction surface being between said arms, a spring means extending between said reaction surface and said latch member, said latch member having a slot elongated in a direction generally perpendicular to said reaction surface, a single fastener extending through said slot, said fastener guiding said latch member for reciprocal movement and securing said member to said mounting surface of said support, the length of said slot and the length of said arms being proportioned so that said reaction surface is between said arms at all times and guides said latch member for reciprocal movement, an end wall of said slot disposed at a small angle with respect to the longitudinal axis of said fastener so that said spring biases said latch member into contact with said mounting surface.

4,226,453

PIVOTING ARM DOOR LOCK MECHANISM

Gene V. Robertson, 1906 Esther Dr., Carlisle, Pa. 17013

Filed Feb. 6, 1979, Ser. No. 9,767

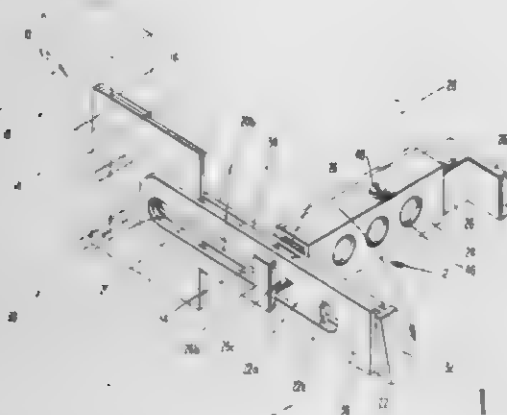
Int. Cl.³ E05C 17/16

U.S. Cl. 292-268

7 Claims

1. A door safety lock mechanism comprising:
(a) a slotted arm pivotally attached to a door jamb, said slotted arm comprising a pair of arm members affixed together, and said arm members having aligned slots therein;
(b) a slidable bolt attached to a door adjacent said slotted arm such that the longitudinal axis of the bolt is coincident

with the pivoting axis of the slotted arm, the dimensions of a portion of the bolt being such as to pass through the slot when the arm is in a first position, and being prevented from passing through said slot when the arm is in a second position; and



(c) means attached to said pivoting arm to engage said bolt and thereby lock the door in a partially open position, said means engaging said bolt being pivotally attached between said arm members.

4,226,454

LOCK FOLLOWER, PARTICULARLY A HANDLE OR PRESSURE FOLLOWER, AND A METHOD OF MANUFACTURING THE SAME

Erik R. Tranberg, Eskilstuna, and Bo G. Widen, Torshälla, both of Sweden, assignors to GKN-Stenman AB, Eskilstuna, Sweden

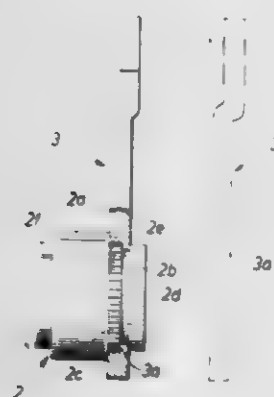
Filed Mar. 7, 1978, Ser. No. 884,444

Claims priority, application Sweden, Mar. 8, 1977, 7702601

Int. Cl.² E05B 3/08; F16B 7/00

U.S. Cl. 292-336.5

2 Claims



1. A lock follower, particularly a handle or pressure follower, comprising:

- (a) an elongated arm member punched from sheet-metal material and having a circular hole through one end thereof initially of a first diameter,
- (b) a cylindrical hub member having a central, axial bore extending therethrough and including, in axial succession:
 - (1) a first bearing portion having a diameter substantially equal to said first diameter,
 - (2) a recessed peripheral groove having a diameter less than said first diameter,
 - (3) an axially toothed anchoring and displacement portion having a diameter greater than said first diameter, and
 - (4) a main portion having a diameter greater than that of said anchoring and displacement portion to define an upstanding shoulder therebetween,
- (c) the thickness of the arm member proximate its through hole being substantially equal to the combined axial length of the groove and the anchoring and displacement portion, and
- (d) the arm and the hub member being press-fitted together

with the arm abutting the shoulder of the main portion, the bearing portion extending out from the arm hole, and the sheet-metal material of the arm being flow displaced by the anchoring and displacement portion to surround its axial teeth and substantially fill the groove, thereby rigidly joining the arm and hub member together and preventing any relative axial or circumferential movement therebetween.

4,226,455

LOCKING DEVICE FOR RAISABLE VENETIAN BLIND

Petrus J. Hennequin, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Netherlands Antilles

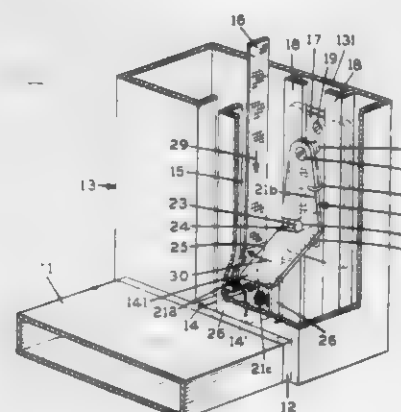
Filed Jun. 19, 1978, Ser. No. 917,117

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744930

Int. Cl.² E05C 15/00

U.S. Cl. 292-345

7 Claims



1. In a locking device for a raisable venetian blind having a side housing, a bottom rail, and a flexible lifting member engaging the bottom rail for raising and lowering the same, the improvement comprising an end piece on the bottom rail extending into said housing for vertical movement with said bottom rail along a path of travel, a latch pivoted in said housing, said latch being movable between a first position in which at least a portion thereof is positioned in said vertical path of travel of said end piece and a second position in which said end piece may pass thereby, said latch being positioned to be engageable with said flexible member, and the position and movement of said latch being at least in part determined by the tension or lack thereof in said flexible member when engaged with said latch.

4,226,456

CONTAINER AND CONTAINER LID

John C. Barnett, R.D. 5, Box 5309, Lake Ariel, Pa. 18436

Filed Jan. 15, 1979, Ser. No. 3,292

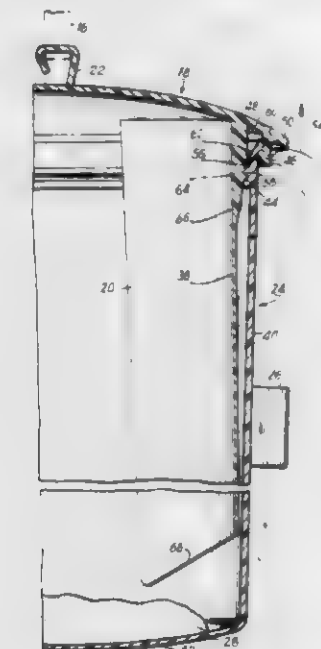
Int. Cl.³ A01K 29/00; A47L 13/52

U.S. Cl. 294-1 B

12 Claims

1. A container lid with integral scoop which comprises a disc-shaped member, means about the perimeter of said disc-shaped member for securing said disc-shaped member to the circular top free edge of an open cylindrical container, said disc-shaped member having an annular channel adjacent its perimeter, said perimeteral securing means including at least an inwardly facing outer circular protuberance adjacent the outer

side of said annular channel in said disc-shaped member, and a curved scoop means, said curved scoop means depending from



an annular inner portion of said disc-shaped member adjacent said annular channel.

4,226,457

MULTIPLE POSITIONABLE HAND TOOL HOLDER

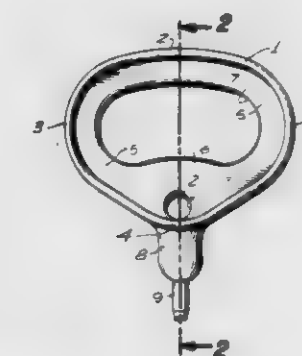
Jeffrey G. Shutt, 516 N. Vista Bonita, Glendora, Calif. 91740

Filed May 22, 1979, Ser. No. 41,500

Int. Cl.³ B65G 7/12

U.S. Cl. 294-15

3 Claims U.S. Cl. 294-99 R



1. A manual oscillatable cutter tool, comprising:
 - a. an annular web dimensioned to be received in a user's hand;
 - b. an annular peripheral rim at the radially outer margin of the web and extending laterally therefrom;
 - c. a tubular stem extending radially outwardly from the rim;
 - d. a tubular cutter extending from within the tubular stem and having a cutting edge at its outer end;
 - e. The tubular stem including a radially inwardly extending passageway extending through the web to form a pellet outlet.

4,226,458

LIFTING TACKLE FOR FILLED SACKS

Fritz Achelpohl, and Konrad Tetenborg, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,522

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1977, 2743208

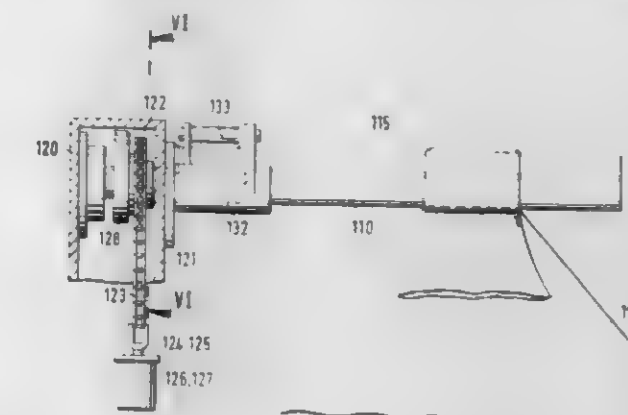
Int. Cl.² B66C 1/42

U.S. Cl. 294-88

9 Claims

1. Apparatus for lifting a filled sack, comprising a frame, a pair of clamping bars about which a gathered and flattened end of the sack is slung, and means for mounting said bars on said frame, the pair of clamping bars being rotatable about an axis

parallel to the bars from an initial spaced apart position to a terminal position in which the end of the sack is clamped tight between the bars, one of the clamping bars being displaceable towards the other in parallel relationship, the clamping bars



(10, 15); (110, 115) being held in their respective mounting means (4, 120, 121) only on one side such that they form parallel cantilever arms, one of said clamping bars moving toward and rotating about the other of said clamping bars during rotation of the bars from the initial to the terminal position.

4,226,459

GELATIN CAPSULE HOLDER

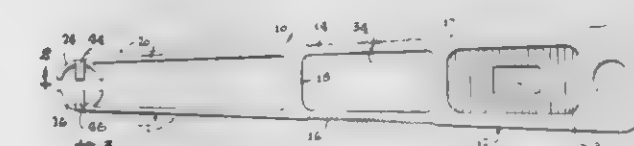
John C. Natalicio, 2600 Griffith Park Blvd., Silverlake, Calif. 90039

Filed Dec. 18, 1978, Ser. No. 970,455

Int. Cl.³ B25B 9/02

3 Claims U.S. Cl. 294-99 R

7 Claims



5. A one-piece holder integrally formed of a resilient plastic synthetic polymer composition material for holding a portion of a gelatin capsule for the filling thereof, said holder comprising:

- a rear handle end;
- a pair of arms substantially parallel to each other and extending forward from said handle end, each of said arms having a finger grip portion adjacent said handle end and then having a cantilever portion extending forward from said finger grip portion to form a bifurcated front end;
- a flexure hinge joining said arms at the forward ends of their finger grip portions whereby manual squeezing of said finger grip portions toward each other causes said cantilever portions to openly diverge;
- each of said cantilever portions having a forward jaw end, a jaw formed on each of said jaw ends cooperating with each other and being shaped to engage and retain a portion of a gelatin capsule therebetween, each of said jaws comprising a pair of fingers forming an arcuate segment tangential to said jaw end of said cantilever portion and defining a substantially circular bottom opening for receiving such gelatin capsule portion, each said jaw having a stop portion extending upward and parallel to each other above said fingers and then curved toward each other so as to face each other and cooperatively form a rounded configuration substantially matching the closed end of the capsule portion to retain said capsule portion within said jaws during capsule filling operations, said jaws being normally spaced apart a distance barely less than the width of such capsule so that, when holding such

capsule therebetween, said arms impose on said jaws a non-crushing force with respect to said capsule.

4,226,460

LONG-DISTANCE TRUCK CABIN

Werner Schmidt, Vogelloh 54, 8000 Munich 50, and Walter Scholz, Trivastr. 3/0, 8000 Munich 19, both of Fed. Rep. of Germany

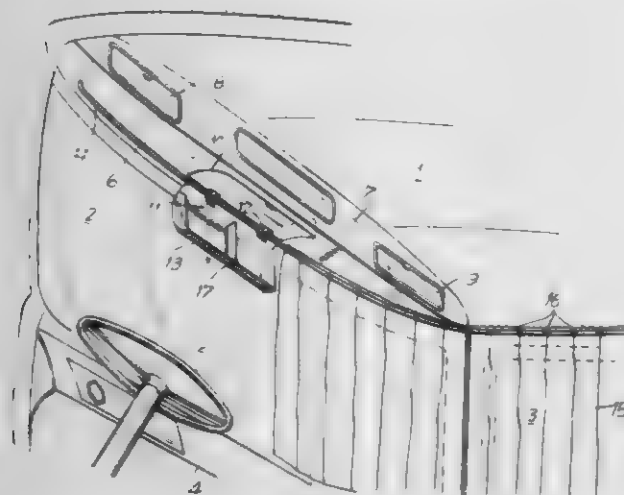
Filed Aug. 29, 1978, Ser. No. 937,867

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 7727143

Int. Cl.³ B60R 5/00

U.S. Cl. 296—37.7

8 Claims



1. A long-distance truck cabin comprising: windshield means; bin means above said windshield means in an angular space between a roof and front wall of said truck cabin; a horizontal bottom and a rear end wall confining said bin means; sliding curtain means at the front wall and side walls of said truck cabin for covering side windows and said windshield means; continuous curtain runner means for suspending said curtain means; compartment means in a recess in said horizontal bottom in substantially the center of said cabin; said compartment means having an opening in a downward direction; said compartment means having cover means pivotally supported by horizontal hinge means; said continuous curtain runner means extending across said opening whereby said curtain means may be stored in said compartment means when not in use.

4,226,461

FASTENING ARRANGEMENT FOR REMOVABLE STORAGE SERVICES

Sabet Ackel, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

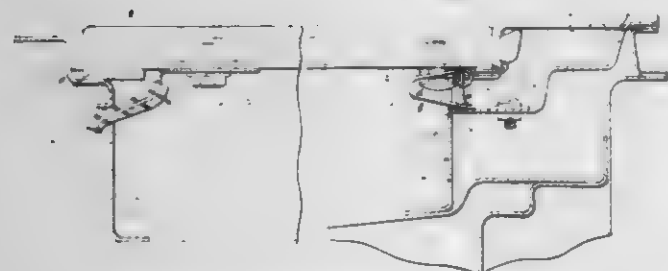
Filed Sep. 13, 1978, Ser. No. 941,909

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741540

Int. Cl.³ P60R 5/04

U.S. Cl. 296—37.14

19 Claims



1. A fastening arrangement for a removable cargo floor

provided with a covering in a vehicle, the cargo floor being adapted to rest on a mounting frame means formed at least in part of vehicle bearer members, characterized in that the fastening arrangement includes fastening means for locking the cargo floor in a vertical direction and for retaining the cargo floor in a horizontal position so that a covering pulled over all edges of the cargo floor abuts under pressure at a vertically extending frame part of a mounting frame means also provided with a covering, fastening means includes at least one lug means adapted to be mounted on the cargo floor for engagement under prestress into a guide opening of a mounting frame means of a vehicle and at least one detent means adapted to be arranged on the cargo floor oppositely to said lug means.

4,226,462

CAR DOOR TRANSFER SEAT FOR HANDICAPPED PERSONS

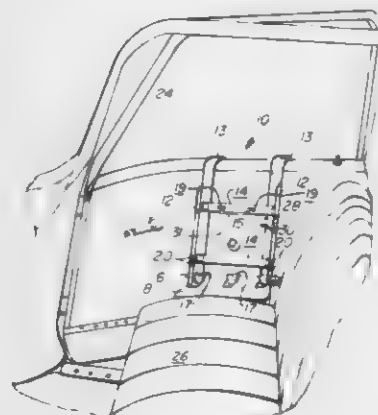
Gabriel Wellett, 22797 Rosalind Ave., East Detroit, Mich. 48021

Filed Aug. 31, 1978, Ser. No. 938,464

Int. Cl.³ B60N 1/02

U.S. Cl. 296—68

6 Claims



1. A car door transfer seat for handicapped persons comprising: a support attached to the inside surface of a car door; a seat horizontally supported by said supports at a level of the front seat; a handle attached the support for aiding handicapped persons in entering and leaving the vehicle; sides of the seat curving forward to present an edge approximately perpendicular to the car axis when the door is open; and an end of the seat opposite the hinge shaped to abut an end of the car seat when the seat is in its down position and the door is moved toward a closed position.

4,226,463

WINDSHIELD MOUNTING ASSEMBLY

Lawrence J. Gager, Jr., P.O. Box 16212, Jacksonville, Fla. 32216

Filed Oct. 2, 1978, Ser. No. 947,513

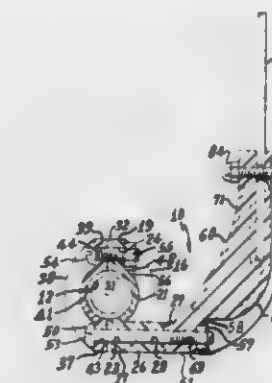
Int. Cl.³ B62J 17/00

U.S. Cl. 296—78.1

22 Claims

1. A windshield mounting assembly comprising a handlebar clamp including a closeable opening having an axis extending therethrough, an element extending laterally outwardly of said handlebar clamp, an elongated windshield mounting member having an inner end portion adjacent to said element and extending laterally of said axis a single, connecting means for movably attaching said mounting member inner end portion to said element and for selectively closing said opening, said

mounting member further including an outer end portion having bifurcated legs defining a plane therebetween extending



generally parallel with said axis and adapted to receive an outer edge portion of a windshield therebetween.

4,226,464

ARM REST SHAPED TO INCLUDE A THROUGH GRIP OR HAND GRIP WITH HOLLOW MOLDED BODY

Joachim Janz, Wuppertal, and Bodo Mentsel, Velbert, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Neuentreich, Fed. Rep. of Germany

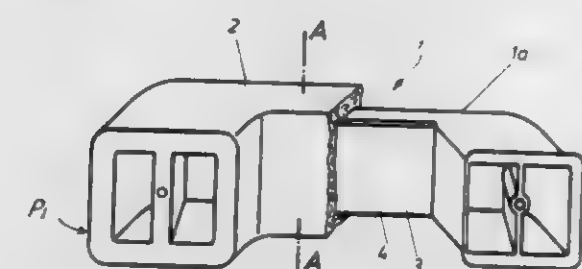
Filed Oct. 5, 1977, Ser. No. 839,648

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1976, 2645463

Int. Cl.² B60J 9/00

U.S. Cl. 296—153

5 Claims



1. A through grip arm rest for a vehicle, or the like, comprising: a supporting reinforcement insert having extending portions effecting attachment planes; said insert being a hollow body which is hollow from one said attachment plane of said arm rest to the other attachment plane thereof and being molded with an open section intermediate said extending portions and a cover closing said open section to complete said insert, including a padded outer layer around said insert.

4,226,465

LOAD SUPPORTING FRAME ASSEMBLY

William L. McCullough, 2099 Helena Rd., Winterhaven, Fla. 33880

Filed Nov. 20, 1978, Ser. No. 962,065

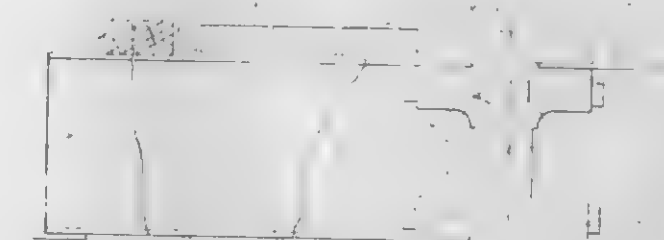
Int. Cl.³ B62D 21/02

U.S. Cl. 296—182

12 Claims

1. A load supporting frame assembly comprising, in combination, a pair of longitudinally extending transversely spaced main beams, a plurality of central transverse members extending between said main beams in longitudinally spaced relationship along said main beams and a plurality of transverse outboard members outwardly extending from said main beams in longitudinally spaced relation along said main beams, a longitudinally extending side rail secured to the extending ends of said transverse outboard members, said main beams having a generally I-shaped configuration and comprising a vertically disposed web having an upper edge and a lower edge, an upper flange formed by a pair of angle members each having a pair of

flanges perpendicular to each other and secured back-to-back to the web at the web upper edge by one flange each whereby the other flanges fall in a common plane, and a lower flange formed by at least one angle member having a pair of flanges perpendicular to each other secured to the web at the web lower edge by one flange whereby the other flange is in a plane in proximity to said lower edge, a connector for detachably



securing said transverse central members and said transverse outboard members to said main beams comprising a planar base adapted to abut the beam web, and one of said angle member flanges or said connector planar bases having a key formed thereon and the other having a mating keyway formed therein whereby the angle members, connectors and transverse members are self-aligning with each other when assembled and secured together.

4,226,466

TRUCK, ESPECIALLY A LARGE CAPACITY VEHICLE OR TRACTOR SEMI-TRAILER COMBINATION

Hans Moll, Augsburg, and Klaus Flesche, Wiesbaden, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nürnberg, Fed. Rep. of Germany

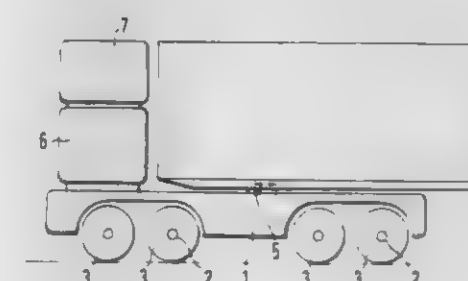
Filed Sep. 28, 1978, Ser. No. 946,790

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2741125

Int. Cl.³ B62D 27/00

U.S. Cl. 296—190

10 Claims



1. A truck, especially large capacity vehicles and tractor semi-trailer combinations, comprising in combination:

a motor-steering unit;
a payload carrier connected to said motor-steering unit;
at least one lower vehicle control cab secured to said motor-steering unit; and
at least one additional upper expandable and foldable cab structure variable in height adaptable to height of said payload carrier for reduction of air resistance, said at least one lower vehicle control cab and said at least one additional upper structure respectively being in the form of separate interconnected units arranged on top of one another, the lowermost respective unit being mountable on said motor-steering unit.

4,226,467

FOLDABLE CANTILEVERED PLAYSEAT

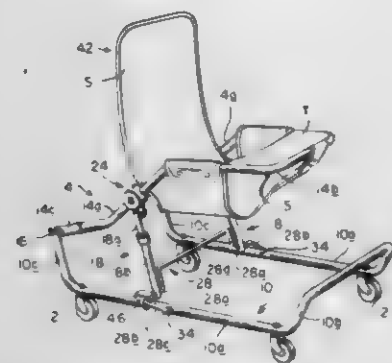
Robert J. Boudreau, Bedford, Pa., assignor to Hedstrom Co., Bedford, Pa.

Filed Jul. 23, 1979, Ser. No. 59,895

Int. Cl.² A47D 13/04

U.S. Cl. 297-5

7 Claims



1. A child's playseat comprising a base, a generally U-shaped seat-supporting frame member having two legs connected by a bight, means for pivotally connecting the free ends of the legs to the base, a generally U-shaped bail, means for pivotally connecting the opposite ends of the bail to the base below said frame member legs, a pair of telescoping struts having corresponding first ends pivotally connected to the frame member legs intermediate their ends and corresponding second ends pivotally connected to the bail, said bail having a position in overcentered engagement with the base when the seat is erect, means for biasing the struts toward their extended positions so that the bight of the seat-supporting frame member is positioned above the base, and seat structure suspended from the seat-supporting frame member.

4,226,468

WALL-CLEARING RECLINER

Carl B. Johnson, Pontiac, Ill., assignor to Pontiac Furniture Industries, Inc., Pontiac, Ill.

Filed Mar. 13, 1978, Ser. No. 885,585

Int. Cl.² A47C 1/02; A61G 15/00

U.S. Cl. 297-84

18 Claims



1. In a wall-clearing reclining chair having a normally stationary base for supporting the chair on a floor; a chair body comprising a seat and backrest supported on an included carriage which is mounted on said base for forward and rearward movement thereon between a rearward upright sitting position and a forward position permitting unobstructed recline of the backrest; and a retractable footrest supported on said chair body for forward and rearward movement thereon between a retracted position and an extended position in front of the seat of the chair:

means further interconnecting the chair body, the footrest, and the base to effect said forward and rearward movement of one of the chair body and the footrest by the corresponding movement of the other,

means connected to at least one of said carriage and footrest to store energy upon said rearward movement and to bias them for said forward movement upon the release of said energy, and

means operable by the occupant of the chair to release the stored energy to drive the carriage and footrest forward.

4,226,469

RECLINER CHAIR WITH WALL-AVOIDING ACTION

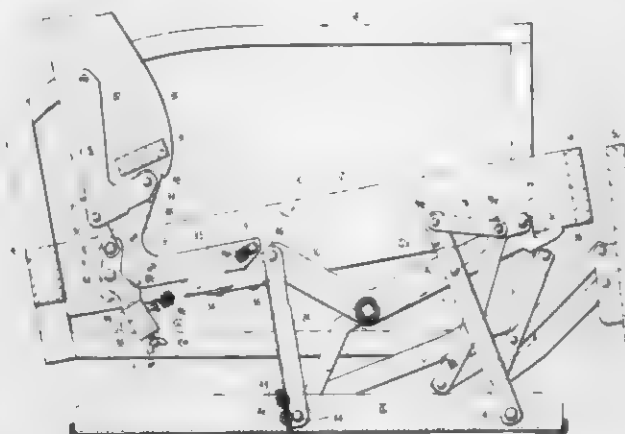
Walter C. Rogers, Jr., Denton, and David S. Hoffman, High Point, both of N.C., assignors to Royal Development Company, Inc., High Point, N.C.

Filed Jan. 23, 1979, Ser. No. 5,810

Int. Cl.³ A47C 1/02

U.S. Cl. 297-85

16 Claims



1. In a recliner chair having a seat, a base, front and rear seat mounting links both pivotally connected to the base and both pivotally connected to the seat to mount the seat for movement relative to the base between normal and reclining positions, a footrest, a footrest linkage mounting the footrest to the seat for movement between a retracted position adjacent the seat and an extended position projected forwardly from the seat, the footrest linkage including a footrest mounting link having one end pivotally connected to the seat, and manual means for actuating the footrest linkage to move the footrest between the extended and retracted positions thereof, the manual actuating means including linkage connected to the footrest linkage for operating the same between said positions thereof; the improvement comprising an extension of said front seat mounting link projecting above the pivotal connection of the front seat mounting link to the seat, and a seat actuating link having one end portion pivotally connected to said footrest mounting link and having an opposite end portion pivotally connected to said extension of said front seat mounting link such that when the footrest is moved to the extended position, said seat actuating link will pivot said front mounting link about its pivotal connection to the base to move the seat forwardly relative to the base into an inclined position forwardly of the base.

4,226,470

CONVERTIBLE COUCH OR CHAIR

Franz Wittmann, Etsdorf, and Franz Mitterbauer, Hadersdorf, both of Austria, assignors to Franz Wittmann Kommanditgesellschaft, Etsdorf, Austria

Filed Mar. 21, 1979, Ser. No. 22,477

Int. Cl.² A47C 13/00, 17/00

U.S. Cl. 297-108

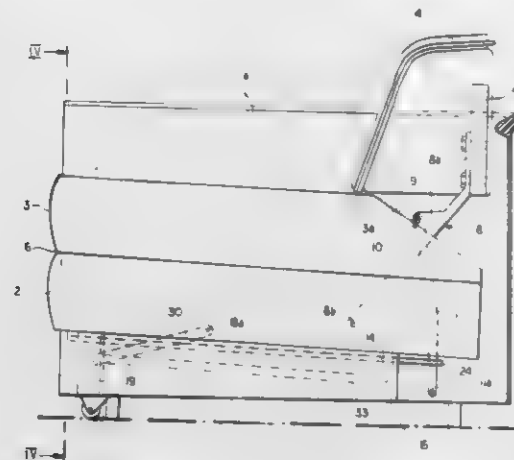
9 Claims

1. A convertible seating unit comprising:
a main frame adapted to stand on the floor;
a seat frame displaceable on said main frame between a rear sitting position over said main frame and a forward reclining position at least partially in front of said main frame;
a seat on said main frame;
a back;
means interconnecting said back, seat frame, and main frame for automatically displacing said back between an up position above said seat and a down position generally level with and behind said seat on displacement of said seat frame respectively between said rear sitting position and said forward reclining position, said means including:
a pair of links each having one end pivoted on said seat frame and another end pivoted on said main frame, said one ends being behind said other ends in said sitting position and

being in front of said other ends in said reclining position;
a forwardly upwardly inclined guide on said main frame;
and
a predetermined distance above said surface at said pivot axis, said device comprising:

a spacing element having a first side defining a linear magnitude approximately equal to the distance between said outside surfaces of said stationary element of said rocking chair;

a first stop means having a height approximately equal to the



a formation on said seat frame engaged in said guide and displaceable therealong on displacement of said seat frame between said sitting and reclining positions.

4,226,471

ASSEMBLY TRANSFORMABLE INTO FURNITURE

Ernst Zaugg, Luegisdorf, Oberlangenegg, CH-3611 Suederen, Switzerland

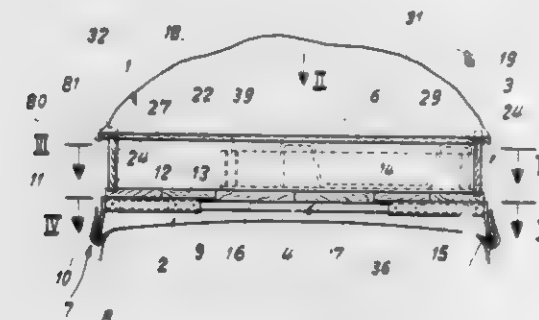
Filed Apr. 11, 1979, Ser. No. 29,032

Claims priority, application Switzerland, Apr. 14, 1978, 3993/78

Int. Cl.² A47C 13/00

U.S. Cl. 297-118

23 Claims



1. An assembly adapted for transport on a vehicle and being transformable into furniture, the furniture including at least a table, and a bench,

comprising in combination:

a frame including a plurality of tubular elements which may be assembled one to another, to form carrying elements of the table and the bench of said furniture, and

a transport case, including a cover member therefor doubling as a table top of the table, and first and second groups of plates forming a floor member of said case, said first group of plates doubling as a backrest of said bench, said second group of plates doubling as a sitting portion of said bench.

4,226,472

UNATTACHED BASE FOR ROCKING CHAIRS

Eldon R. Mathis, 2216 SW. 63rd St., Oklahoma City, Okla. 73159

Filed Jan. 22, 1979, Ser. No. 5,335

Int. Cl.² A47C 3/02

U.S. Cl. 297-270

5 Claims

1. A device for placing under a rocking chair to prevent the rocking thereof, which rocking chair has a stationary element for supporting said chair on a surface, said stationary element having oppositely disposed outside surfaces, and which rocking chair also has a frame disposed over, and in pivotable engagement with, along a pivot axis, said stationary element at

predetermined distance said frame is above said surface and extending perpendicularly from said first side of said spacing element; and

a second stop means having a height approximately equal to the predetermined distance said frame is above said surface and extending perpendicularly from said first side of said spacing element in spaced relation to said first stop means at a distance defined by said linear magnitude.

4,226,473

RECLINING CHAIR

Carl B. Johnson, Pontiac, Ill., assignor to Pontiac Furniture Industries, Inc., Pontiac, Ill.

Filed Mar. 13, 1978, Ser. No. 885,586

Int. Cl.² A47C 1/02

U.S. Cl. 297-316

3 Claims

1. In a reclining chair having a base, a seat, a backrest, and linkage means at each side of the chair interconnecting said backrest and seat and mounting the same on said base for movement relative thereto and to each other from a sitting position to a reclining position,

the improvement wherein said linkage means includes a pair of seat-supporting links each pivoted to the base and to the seat on centers spaced from front to rear thereon to constitute therewith a four-bar linkage in which said links are inclined upwardly and rearwardly from the base to the seat in said sitting position,

the backrest being pivoted to the seat, and said linkage means including a third link pivoted to the base and extending upwardly therefrom to a pivotal connection to the backrest spaced rearwardly from the pivotal connection of the backrest to the seat when the chair is in sitting position,

the pivotal connection of the backrest to said third link constituting a shiftable fulcrum enabling the backrest upon recline to lift the seat, and to follow the seat forwardly of

the base as the seat is lifted by the rearward rotation of the backrest into said reclining position, the said upward and rearward inclination of the seat-supporting links being maintained in all positions of the chair between said sitting and reclining positions so as to effect the return of the chair to the sitting position by the weight of the occupant as the occupant sits up to remove the force of his back against the backrest.

4,226,474

SAFETY VEST

Dorothy G. Rupert, 1265 Franklin La., Buffalo Grove, Ill. 60090, and Frieda A. Stobberingh, Prospect Heights, Ill., assignors to Dorothy Gloria Rupert, Buffalo Grove, Ill.
Filed Jun. 18, 1979, Ser. No. 49,420
Int. Cl.³ A47C 31/00

U.S. Cl. 297—484

12 Claims



1. A safety vest for releasably holding a person in a seat, which comprises a pair of shoulder straps extending over the shoulders down the front and back of the person to about waist level, a waist strap at about waist level traversing around the waist crossing the shoulder straps at the front of the person and terminating at the shoulder straps at the back of the person, means fastening said waist strap to the shoulder straps at the crossings and at the back of the person, said shoulder straps being spaced apart at the front of the person and converging over the shoulders of the person and into edge-to-edge relation at the back of the person, slide fastener closure means at the back of the person along upright adjacent edges of said shoulder straps for closing the vest in wearing position on the person, and means at the upper portions of the shoulder straps and the side portions of the waist strap adapted to receive anchoring elements associated with the seat to hold the person in the seat.

4,226,475

UNDERGROUND MINERAL EXTRACTION

Robert A. Froesch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Charles G. Miller, Pasadena, and James B. Stephens, La Crescenta, both of Calif.

Filed Apr. 19, 1978, Ser. No. 897,832

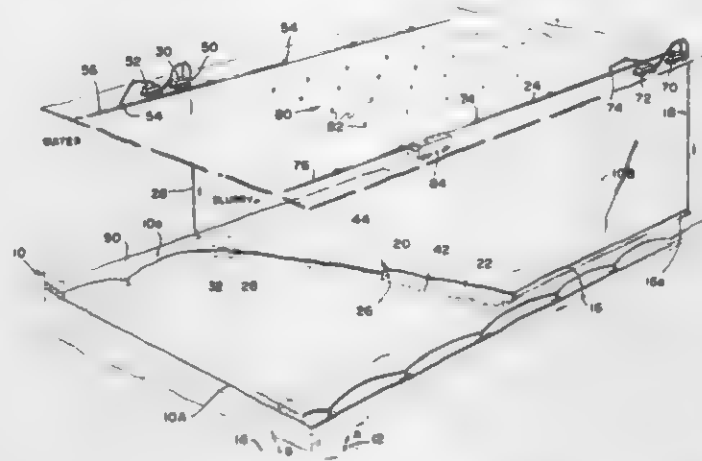
Int. Cl.³ E21C 25/60, 5/00

U.S. Cl. 299—13

20 Claims

1. A method for extracting a mineral from the ground comprising:
applying a stream of liquid under pressure through a conduit having a nozzle directed at the mineral; and
introducing a material to flow with said stream in said conduit and out through said nozzle, which is liquid under the pressure of said stream but which rapidly becomes a gas

when the surrounding pressure is reduced below a critical pressure for that material, with the environment between



the nozzle and mineral being at a pressure below said critical pressure.

4,226,476

CONTINUOUS MINER WITH IMPROVED ROOF-TO-FLOOR ANCHORING CANOPY UNITS FOR ADVANCING AND TURNING MACHINE AND INSTALLING ROOF BOLTS

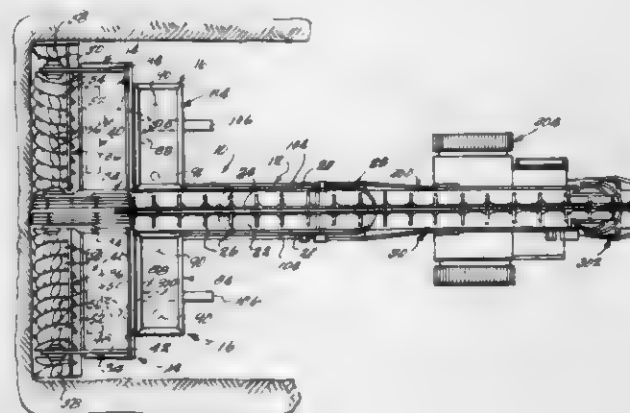
Jack R. Fairchild, Beckley; Joseph V. Lagowski, Mabscott, and James W. Gordon, Bluefield, all of W. Va., assignors to Fairchild Incorporated, Raleigh, W. Va.

Filed Nov. 28, 1977, Ser. No. 855,467

Int. Cl.² E21C 29/22

U.S. Cl. 299—31

32 Claims



1. A continuous mining machine comprising power driven cutting and conveying means operable when moved with respect to a working face of a mine seam including horizontal movement in a direction inwardly of the working face to remove the material from a section of the mine seam inwardly of the working face and to convey the same away from the working face, said cutting and conveying means including an elongated conveyor assembly extending in a direction generally in alignment with the direction of horizontal movement so as to receive removed material at its forward end and convey the material away from the working face to the rearward end thereof, and a pair of cutting and conveying mechanisms extending laterally outwardly from opposite sides of said conveyor assembly and being operable to convey the removed material laterally toward the forward end of said conveyor assembly, each of said cutting and conveying mechanisms including a mine floor engaging assembly, a rotary auger cutter, a mounting arm assembly rotatably supporting said rotary auger cutter for rotational movement about a lateral horizontally extending axis generally parallel to the working face, means mounting said mounting arm assembly on said floor engaging assembly for pivotal movement about an axis parallel with the axis of rotation of said rotary auger

cutter, power means carried by said floor engaging assembly operatively connected with said rotary auger cutter for effecting rotation of said rotary auger cutter about the rotational axis thereof, and means between said mounting arm means and said floor engaging assembly for effecting a raising and lowering pivotal movement of said rotary auger cutter about the pivotal axis of said mounting arm assembly,

a pair of separate mine floor engaging structures disposed on opposite sides of said conveyor assembly rearwardly of said pair of cutting and conveying mechanisms, mine roof engaging means disposed above each of said mine floor engaging structures,

means mounting each of said mine roof engaging means for vertical movement with respect to the associated floor engaging structure,

means mounting each of said floor engaging structures for relative horizontal movement with respect to the associated cutting and conveying mechanism, and

power operated means for (I) effecting vertical movements of each of said roof engaging means with respect to the associated floor engaging structure and (II) effecting relative horizontal movement between each floor engaging structure and associated cutting and conveying mechanism so that (A) successive sections of the mine seam can be removed by successive operative cycles, each of which includes (1) an upward movement of both of said roof engaging means into an operative position of engagement with the mine roof to thereby provide an anchored relationship of both of said floor engaging structures between the mine floor and roof, (2) generally simultaneous horizontal movement of both of said cutting and conveying mechanisms with both of said floor engaging structures disposed in said anchored relationship through forces resisted by said anchored relationship, (3) a downward movement of each of said roof engaging means out of said operative position, and (4) horizontal movement of each of said mine floor engaging structures with respect to the associated cutting and conveying mechanism with the associated mine roof engaging means disposed out of said operative position in a direction and to an extent generally equal to the horizontal movement of said cutting and conveying means, (B) the continuous mining machine can be moved through a 90° turn by an operative cycle with includes (1) an upward movement of one of said roof engaging means into an operative position of engagement with the mine roof to thereby provide an anchored vertical pivot relationship of the associated floor engaging structure between the mine floor and roof and (2) a repetitive series of successive movements of the floor engaging structure and the other roof engaging means associated therewith which includes (a) upward movement of said other roof engaging means into an operative position of engagement with the mine roof to thereby provide an anchored relationship of said other floor engaging structure between the mine floor and roof, (b) horizontal movement of the cutting and conveying mechanism associated with said other floor engaging structure with the latter disposed in said anchored relationship through a force resisted by said anchored relationship so as to move the entire machine about the anchored vertical pivot relationship provided by said one floor engaging structure, (c) downward movement of said other roof engaging means out of said operative position, (d) horizontal movement of said other mine roof engaging structure with respect to the associated cutting and conveying mechanism with said other mine roof engaging means disposed out of said operative position.

4,226,477

DEVICE FOR REMOVING THE EARTH GENERATED BY TUNNELING

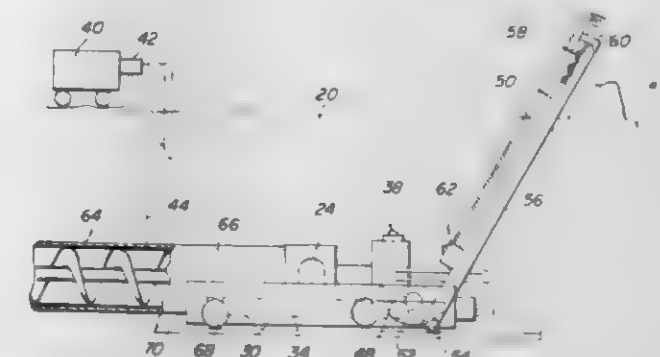
Anastasio Capoccia, 48001 West Rd., Wixom, Mich. 48096

Filed Jan. 10, 1979, Ser. No. 2,355

Int. Cl.² E21C 35/20; E21D 9/12

U.S. Cl. 299—56

8 Claims



1. A device for removing the loose earth generated by a tunneling means comprising:
said tunneling means having a discharge aperture disposed at one end thereof;
a first conveyor means for receiving and conveying said loose earth generated by said tunneling means, said first conveyor means having a multiplicity of first input apertures disposed opposite the path of said discharge aperture of said tunneling means such that successive ones of said first input apertures are disposed in proximity with said discharge aperture of said tunneling means to receive loose earth therefrom as said tunneling means advances; and
a second conveyor means for consuming said loose earth from first conveyor means and translating said loose earth to a receiving area.

4,226,478

WIRE SPOKE WHEEL

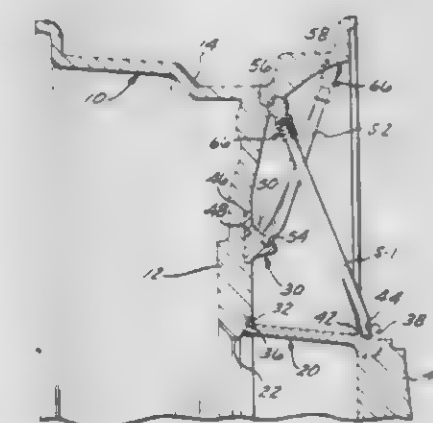
Raymond C. Brown, Tarzana, Calif., assignor to Superior Industries International, Inc., Van Nuys, Calif.

Filed Aug. 7, 1978, Ser. No. 931,755

Int. Cl.² B60B 7/00

U.S. Cl. 301—37 SS

9 Claims



9. In a vehicle wheel construction having a solid and one-piece integral wheel body that includes a radially extending bolt-on flange which merges into a tire-receiving rim;
a plurality of replaceable spokes extending between radially inner and outer points on said wheel body, the outer end of each said spoke being threaded;
a plurality of recesses spaced circumferentially around said wheel body, said recesses each removably receiving the inner end of one of said spokes;
a plurality of non-apertured cup shaped sockets spaced circumferentially along the peripheral surface of said

wheel body axially of and facing toward said recesses; and,
a mounting member threadedly carried by the outer end of each of said spokes and including a ball rotatably and removably disposed within one of said sockets, said mounting member also being formed with tool-receiving flats inwardly of said ball for imparting rotation to said mounting member, with said spokes being releasably retained within said sockets by rotating said mounting members upon said spokes to thereby vary the effective length of said spokes and place said spokes and their mounting members in longitudinal compression, said non-apertured cup shaped sockets having said mounting member balls matingly inserted therein.

4,226,479

WIRE SPOKE AUTOMOTIVE WHEEL

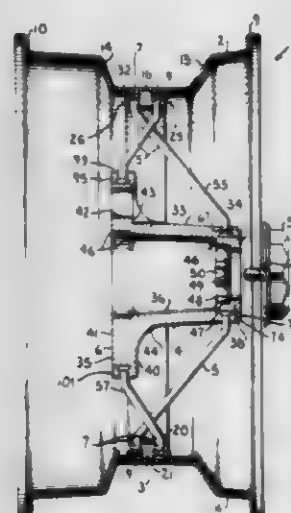
Richard G. Weld, Independence, Mo., assignor to Weldwheels, Inc., Kansas City, Mo.

Filed Jun. 23, 1978, Ser. No. 918,606

Int. Cl.³ B60B 1/06

U.S. Cl. 301-67

13 Claims



2. In a spoked automotive wheel wherein spokes extend into bores, the improvement comprising the combination of:

- an annular spoke receiving member having an outer surface and spaced bores extending circumferentially therearound,
- a plurality of metallic wheel spokes respectively having ends with an end surface extending at least a substantial distance thereacross, said spoke ends being inserted within said bores a distance substantially less than the axial length of said bores, creating open, weld wire receiving cavities having a depth extending from said outer surface to said end surface, said cavities respectively being located adjacent and outwardly of said spoke end surfaces and bounded by said end surfaces and a portion of the inner surface of said bores extending outwardly thereof, and
- metallic wire bead weld formations contained within said cavities and fusedly joined respectively to said spoke end surfaces and to said bore inner surface portions,
- said weld formations roughly constituting weld metal plugs which substantially laterally fill said cavities and blend with said end surfaces and said bore inner surface portions, thereby securely anchoring said spoke ends at a position partially within said bores against relative movement within said bores between said spokes and spoke receiving member due to automotive vehicle induced forces acting on said spokes.

4,226,480

BRAKE PRESSURE CONTROL DEVICE OF DECELERATION RESPONSIVE TYPE

Tomoyuki Nogami, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

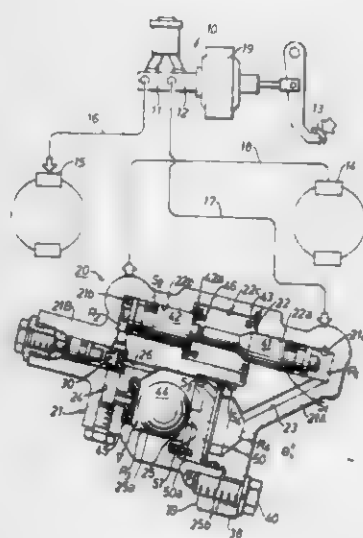
Filed Mar. 13, 1979, Ser. No. 20,097

Claims priority, application Japan, May 29, 1978, 53-64171

Int. Cl.² B60T 8/14, 8/24, 8/26

U.S. Cl. 303-24 C

3 Claims



1. A brake pressure control device for installation in a vehicle braking system between a master cylinder and a wheel brake cylinder, the control device including:

- a first housing section having an inlet port for connection to a master cylinder and provided at its inner end face with an annular protrusion in communication with said inlet port;
- a second housing section having an outlet port for connection to a wheel brake cylinder and provided at its inner end face with a stepped inner bore in communication with said outlet port, said first and second housing sections being fitted to each other at their inner end faces such that said annular protrusion is mated within a large diameter portion of said inner bore to provide a valve chamber; and
- a cut-off valve including a valve seat provided on the side wall of said inner bore to permit the flow of fluid between said valve chamber and said outlet port and inertia-controlled valve element housed within a small diameter portion of said inner bore to cooperate with said valve seat and moving toward said valve seat to interrupt the flow of fluid from said valve chamber to said outlet port when said valve element is subjected to a deceleration in excess of a predetermined value, wherein

the improvement comprises:

- a partition member disposed within the large diameter portion of said inner bore to subdivide the interior of said valve chamber into front and rear chambers and receiving said valve element at its front face, said partition member being provided with a fluid passage communicating said rear chamber into said front chamber and being fixed in a predetermined position by abutment of its front face with the stepped portion of said inner bore and
- an annular seal member of resilient material interposed between the back face of said partition member and the inner end of said annular protrusion such that said partition member is resiliently urged into said fixed predetermined position abutting against the stepped portion of said inner bore.

4,226,481

SPRING-LOADED BRAKE DEVICE FOR RAILWAY VEHICLES

Hans Pöllinger, and Paul Lohmeier, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

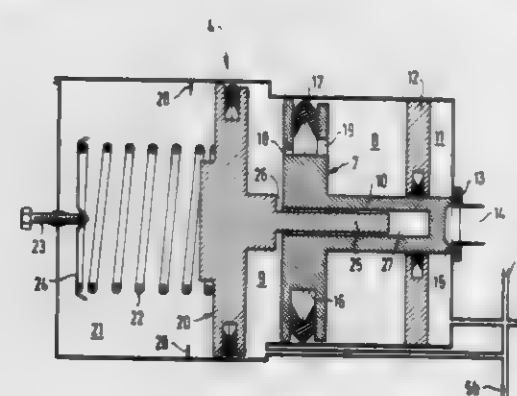
Filed Apr. 14, 1978, Ser. No. 896,570

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717560

Int. Cl.² B60T 17/04

U.S. Cl. 303-82

14 Claims



1. A venting valve for a spring-loaded brake device particularly in a railway vehicle and connected to a brake line to which is further connected a spring-loaded brake cylinder and a brake valve to control pressure in the brake line, said venting valve comprising means in said venting valve for opening a passage from the brake line to the atmosphere only when the pressure in the brake line is decreased from a brake release level to a level at which the brake cylinder effects contact between braking surfaces but before a braking force is applied, said passage being otherwise closed at the brake release level and after contact of the braking surfaces is effected such that the brakes are applied with a force proportional to the decrease in the brake line pressure and the venting valve exerts no influence in any subsequent control of the braking action.

4,226,482

BRAKE ACCELERATOR FOR A FLUID PRESSURE BRAKE SYSTEM

Georg Stäble, and Josef Hintner, both of Munich, Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 759,044, Jan. 13, 1977, abandoned. This application Apr. 27, 1978, Ser. No. 900,583

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647283

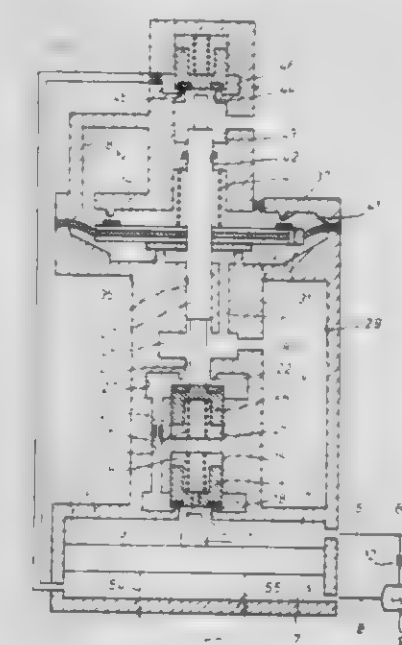
Int. Cl.³ B60T 17/04

U.S. Cl. 303-82

11 Claims

1. A brake accelerator for a fluid pressure brake system having a brake line and an auxiliary chamber with a throttle connection to said brake line, and comprising first means for defining a first chamber having a first piston movable therein between first and second positions, said first piston defining on one side thereof a first sub-chamber connected to the brake line and on the other side thereof a second sub-chamber connected to said auxiliary chamber, said first piston being in the first position when a pressure equilibrium exists in the first and second sub-chambers during release position of the brakes and being in the second position when the pressure in said second sub-chamber is greater than in said first sub-chamber during a service braking operation, a control piston movable in a second chamber between first and second positions, said control piston defining on one side thereof a third sub-chamber and on the other side thereof a fourth sub-chamber, first passage means between said third sub-chamber and the first sub-chamber, a first valve in said first passage means operable between positions to open and close said first passage means with respect to said first sub-chamber, a second valve connecting said first passage means to said third sub-chamber when said second

valve is in an open position, means for defining a first control chamber communicating with said first passage means, a third valve in said first passage means between said first valve and said first control chamber and movable between open and closed positions, second passage means in connection with said first passage means for drawing off pressure fluid from said first control chamber through said first passage means and said third sub-chamber to the atmosphere, third passage means communicating with said second sub-chamber, a fourth valve in said third passage means and movable between open and closed positions, second means connected to said third passage means for venting pressure fluid from said second sub-chamber when said fourth valve is open, third means for opening said first valve when said first piston is in its second position, fourth means for opening said third valve and for closing said second and fourth valves when said control piston is in its first position,



tion, said fourth means closing said third valve and opening said second and fourth valves when said control piston is in its second position, pressure fluid entering said first control chamber from the brake line upon opening of said first valve when a decrease in pressure occurs in said brake line to increase pressure in said first control chamber such that the increased pressure acts upon said control piston in conjunction with said fourth means to open said second and fourth valves and to close said third valve whereby pressure fluid is drawn off to the atmosphere from said first control chamber and said second sub-chamber, said control piston in conjunction with said fourth means closing said second and fourth valves and opening said third valve when the pressure in said first control chamber drops below a predetermined value so that a limited quantity of pressure fluid is drawn from said brake line and a predetermined pressure relationship is maintained on both sides of said first piston during a service braking operation.

4,226,483

HYDROSTATIC BEARING COMPONENT

Hironori Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1978, Ser. No. 952,980

Claims priority, application Japan, Oct. 21, 1977, 52-126503

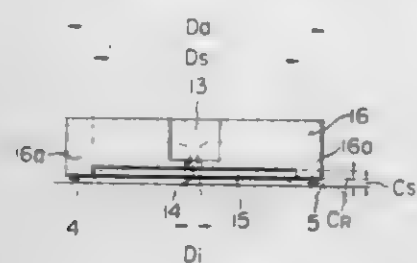
Int. Cl.³ F16C 7/04, 32/06

U.S. Cl. 308-9

7 Claims

1. Hydrostatic bearing component, comprising first and second relatively movable members, said first movable member having a recess defined therein by stepped means at a side facing said second member, at least one orifice open to said recess, and a pressure supply communicating with said orifice, a ratio (β) of a gap C_1 between said stepped means and said second member to a gap C_2 between the bottom surface of said

recess and said second member ($\beta = C_s/C_R$) being in a range of between 0.2 and 0.7 when pressurized fluid is supplied to said pressure supply, and wherein a value λ defined by $(\ln$



$D_0/D_s)/(\ln D_s/D_i)$, where D_0 is a diameter of said first member, D_s is a diameter of said recess, and D_i is a diameter of said orifice, is in a range of between 0.02 and 0.06.

4,226,484

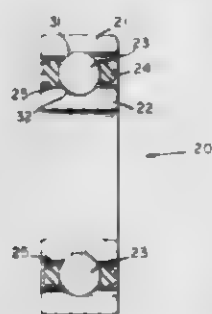
BEARING RETAINER

Franklyn A. Glassow, Redondo Beach, and Arthur C. Cunningham, Mission Viejo, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 20, 1978, Ser. No. 972,120

Int. Cl.³ F16C 33/38

U.S. Cl. 308—201



1. A ball bearing retainer comprising:

an annular body of open pore microporous foamlike material for storing lubricant, said annular body having a plurality of openings therein for receiving bearing balls and at least one projection on at least one circumferential surface thereof for contacting at least one circumferential surface of a bearing ring, said openings being sized to have an interference fit with said bearing balls, said projection being sized to have an interference fit with said bearing ring.

4,226,485

BEARING ASSEMBLY WITH THERMAL ADAPTOR

Francois C. Pruvot, Pully, Switzerland, assignor to F. Jos. Lamb Company, Warren, Mich.

Filed Oct. 12, 1978, Ser. No. 950,802

Claims priority, application Switzerland, Oct. 17, 1977, 12656/77

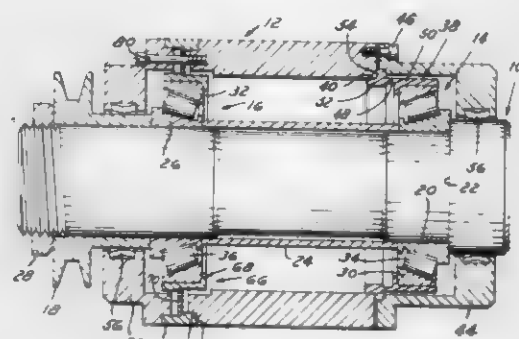
Int. Cl.³ F16C 35/077

U.S. Cl. 308—207 R

30 Claims

1. In a machine having a shaft rotatably supported in a housing by a pair of axially spaced antifriction bearings with radially compressed rolling elements between an inner face mounted on the shaft and an outer race supported by the housing, means for maintaining a substantially constant preload on the bearings, comprising a thermal adaptor disposed between said outer race of each of said bearings and said housing, said thermal adaptor comprising a first portion supported by the housing, a second portion which supports the outer race of the bearing radially and axially in a good heat conducting relationship so that the heat generated in the outer race is transmitted readily by conduction to said second portion of said thermal adaptor, and a third portion interconnecting said first portion and said second portion, said third portion being radially rigid

and forming a relatively non-conductive thermal barrier between the first and second portions of the thermal adaptor, the configuration of each outer race, the second portion of each thermal adaptor and the rolling elements being such that the temperature rise of the outer race and the second portion of each thermal adaptor is related to the temperature rise of the



4,226,486

CONVERTIBLE TABLE STRUCTURE FOR SEWING MACHINES

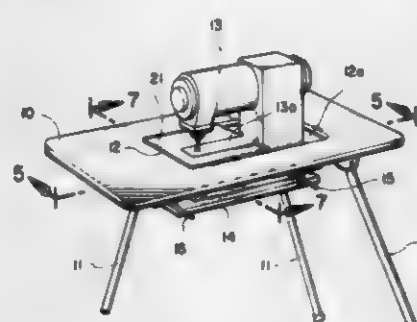
Kent S. Roberts; Brent J. Roberts, and Fredrick D. Roberts, all of American Fork, Utah, assignors to Roberts Mfg., Inc., American Fork, Utah

Filed Dec. 29, 1978, Ser. No. 974,332

Int. Cl.² A47B 81/00; D05B 75/00

U.S. Cl. 312—21

10 Claims



1. A convertible table structure providing support and dual working surfaces for an open-arm or portable type of sewing machine, comprising an apertured platform having a work top and an underside, the aperture therein being of a size to accommodate the working portions of the sewing machine; a platform section adapted to receive thereon a sewing machine and being of size normally fitting closely within the aperture in the platform proper coplanar with the platform work top, said platform section being movable from the normal, coplanar position to a position below the work top, so a sewing machine mounted thereon is placed in suitable working position with respect to the work top, and vice versa, so as to re-establish the coplanar relationship between platform section and platform proper; elongate, parallel motion, link means movably attaching said platform section to said platform proper, so as to minimize horizontal movement of the platform section in moving vertically from coplanar position to lowered position and vice versa; means attached to the underside of the platform for moving said platform section between its said normal, coplanar position and a lowered position and vice versa, said means for moving the platform section being adapted to limit the extent of downward movement of said link means so as to minimize horizontal movement of the platform section as it is lowered

and raised and so as to support the platform section in a maximum lowered position; and means for supporting the platform proper at a convenient working level.

4,226,487

APPARATUS FOR THE DISPLAY AND DISPENSING OF MERCHANDISE

Hermann Hirsch, Karnten, Austria, assignor to Hermann Hirsch Leder- und Kunststoffwarenfabrik, Klagenfurt, Austria

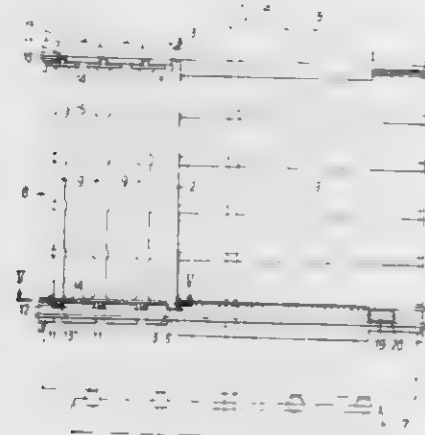
Filed Apr. 13, 1978, Ser. No. 896,337

Claims priority, application Austria, Apr. 15, 1977, 2674/77

Int. Cl.² A47F 1/00

U.S. Cl. 312—42

6 Claims



1. Apparatus for the display and dispensing of merchandise, comprising a stationary support, at least one vertically disposed merchandise carrier for displaying merchandise and from which merchandise can be selectively removed, means mounting said carrier for horizontal sliding movement on and relative to said support between extended and retracted positions in which the merchandise on said carrier is respectively displayed and stored, slide means mounted on said support for movement relative to said support and normally preventing detachment of said carrier from said support, said slide means being selectively manipulable to permit detachment of said carrier from said support, said slide means including a stop normally positioned in the path of a portion of said carrier to permit partial removal of said carrier from said support but to prevent complete removal of said carrier from said support, said stop moving out of the path of the carrier upon selective manipulation of said slide means to permit complete removal of said carrier from said support, the portion of said carrier that contacts said stop being disposed at one end of the carrier, and means disposed at the other end of the carrier to prevent removal of merchandise from the carrier from said other end of the carrier, whereby merchandise can be removed from the carrier only when the carrier is removed from the support.

4,226,488

FURNITURE FRAME

Rod G. Vincent, 124 E. Putnam Ave., Greenwich, Conn. 06830

Filed Apr. 2, 1979, Ser. No. 26,057

Int. Cl.² A47B 43/00

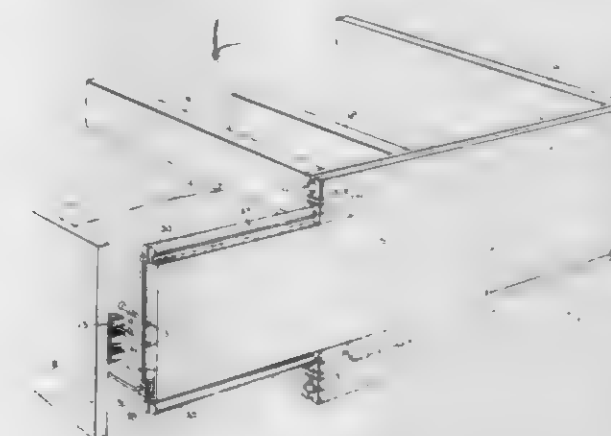
U.S. Cl. 312—257 R

17 Claims

1. A furniture frame comprising

a base frame;
a top frame;
a drawer slidably mounted between said base frame and said top frame, said drawer including a pair of vertical sides, each said side being hollow and having a longitudinal groove extending from a front end towards a rear end to an intermediate point at each of an upper edge and a lower edge; and
a pair of divider frames, each said divider frame including a U-shaped member having a pair of horizontal legs each slidably mounted in a respective one of said base frame and said top frame and a vertical leg extending through a

respective one of said sides in slidable relation to said grooves of said respective side and a vertical bar remov-



ably secured in said horizontal legs to the rear of said respective side.

4,226,489

DOOR SEAL ASSEMBLY

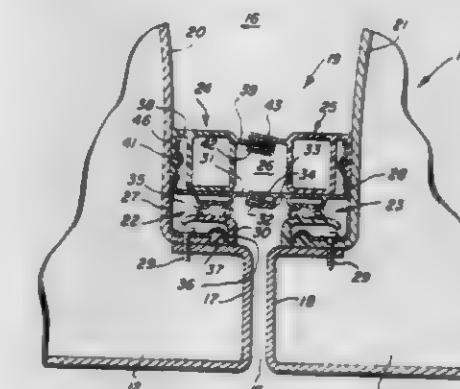
Charles W. Haag, Center Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 14, 1979, Ser. No. 38,574

Int. Cl.³ E06B 7/16; E05C 7/04; F25D 11/00

U.S. Cl. 312—296

19 Claims



9. In a refrigeration apparatus defining a refrigerated chamber and having a door assembly having first and second pivotally mounted doors defining vertically extending juxtaposed edge portions in a closed arrangement of the doors across the chamber, a pair of vertically extending dikes carried one each on said doors to extend rearwardly from said edge portions in spaced relationship to each other in said closed arrangement, the improvement comprising:

a pair of mounting means;
an outer, first pair of seals having a relatively rigid mounting portion mounted one each by said mounting means to said doors and a flexible sealing portion extending therefrom into overlapped sealed engagement with each other in said close arrangement of the doors;
an inner, second pair of seals having a relatively rigid mounting portion mounted one each by said mounting means to said dikes and a flexible sealing portion extending therefrom into sealed engagement with each other inwardly of said first pair of seals in said closed arrangement of the doors, said first and second pairs of seals defining a substantial dead air space within said refrigerated chamber adjacent said doors, thereby providing an effective thermal and moisture barrier when said doors are in said closed arrangement.

4,226,490

STABILIZING ARRANGEMENT FOR MOVABLY MOUNTED DRAWER OR RACK

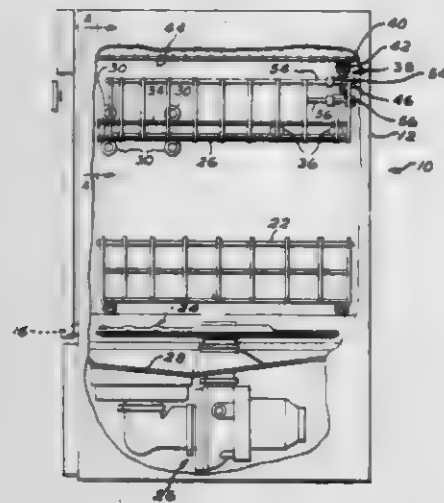
Thomas E. Jenkins; Thomas M. Hahn, and Donald S. Cushing, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 4, 1978, Ser. No. 930,948

Int. Cl.² A47B 88/00

U.S. Cl. 312—331

12 Claims



1. A motion stabilizing arrangement for a member mounted for guided relative translational movement with respect to a supporting structure along a fixed line of movement and in a fixed orientation with respect to said supporting structure, said arrangement including:

- a stabilizer axle;
- means rotatably mounting said stabilizer axle on said member, with said stabilizer axle extending in a direction normal to the line of movement of said member;
- a pair of equal diameter friction rollers each connected to said stabilizer axle to rotate together therewith at spaced points along said stabilizer axle;
- fixed guide surface means, including a surface portion disposed opposite each of said friction rollers on one side of said member and extending parallel to the line of movement of said member and the axis of said stabilizer axle;
- means mounting said stabilizer axle for relative translational movement with respect to said member towards and away from said surface portions;
- bias means acting on said stabilizer axle urging said friction rollers away from said member and into engagement with said fixed guide surface;
- support means supporting the other side of said member during said translational movement and absorbing the reaction force created by said bias means;
- whereby said friction rollers in engagement with said guide surface constrain said movement of said member along said line of direction in a fixed orientation with respect to said supporting structure and said support means is preloaded by said bias means.

4,226,491

ELECTRONIC DEVICE HAVING A PRINTED CIRCUIT BOARD UNIT THEREIN

Kazuo Kazama, Kawasaki; Akira Oka; Masayoshi Shigihara, both of Tokyo, and Suetoshi Shinbashi, Yokohama, all of Japan, assignors to Fujitsu Limited, Japan

Filed Apr. 27, 1979, Ser. No. 33,896

Claims priority, application Japan, Apr. 28, 1978, 53/58960[U]

Int. Cl.³ H05K 1/07

U.S. Cl. 339—17 LM

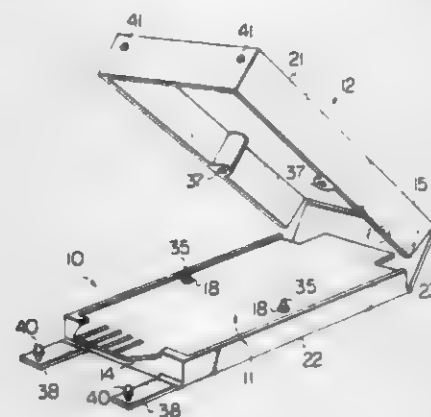
8 Claims

1. An electronic device for use in a communication system unit, said unit including a mounting chassis having a plurality of compartments, each compartment comprising means for receiving said electronic device and an electrical connector for

making electrical connection thereto, said electronic device comprising:

a printed circuit board unit including a printed circuit board, said board being provided at one end with an integral electrical connector for engagement with said electrical connector of a respective one of said chassis compartments and at the opposite end with an integral handle for use for the insertion and removal of the electronic device into and from the chassis, and

cover means for containing said printed circuit board unit with said electrical connector and said handle projecting out from said cover means, said cover means being adapted to serve as guide means for insertion of the electronic device into the respective mounting chassis compartment and for positioning said circuit board within said cover means, said cover means being constructed from a single member, said single member comprising



first and second cover portions, flexible hinge means for permitting said cover portions to be pivotally moved with respect to each other between open and closed positions of said cover means, supporting seats formed on the inside of said cover portions for securely holding said printed circuit board unit when said cover means is in the closed position, and locking means for retaining said cover means in the closed position, said locking means comprises a locking pin formed on the supporting seats on one of said cover portions, each said locking pin being adapted to pass through a hole formed in the printed circuit board for snap engagement with a hole formed in the other supporting seat on the other of said cover portions when said cover means is in the closed position.

4,226,492

ELECTRICAL INTERCONNECTION APPARATUS

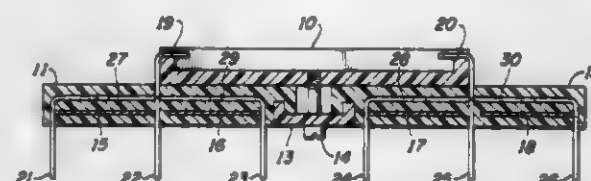
Subhash R. Deo, Naperville, and Chester C. Faudskar, Wheaton, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 30, 1979, Ser. No. 61,753

Int. Cl.³ H05K 1/08

U.S. Cl. 339—17 CF

1 Claim



1. Electrical interconnection apparatus for adapting the terminal pattern of a first electrical component of first spacings to the terminal pattern of a second electrical component of second, greater spacings comprising an electrically insulative platform for supporting said first component, a row of n groups of terminals plus one terminal arranged on one side of said platform corresponding to said terminal pattern of said first component, each of said groups including three terminals,

an insulative lead frame block mounted on the underside of said platform, a first row of $n+1$ terminal pins having said second spacings extending from said lead frame block aligned with said row of n groups of terminals, a second and third row of $n+1$ terminal pins each having said second spacings extending from said lead frame block on respective sides of said first row of terminal pins, first electrical conducting means for connecting the first terminals of each of said n groups of terminals and said one terminal to successive pins of said first row of terminal pins, second electrical conducting means for connecting the second terminals of each of said n groups of terminals and said one terminal to successive pins of said second row of terminal pins beginning with the first pin of said last-mentioned row, third electrical conducting means for connecting the third terminals of each of said n groups of terminals and said one terminal to successive pins of said third row of terminal pins beginning with the second pin of said last-mentioned row, and means for determining the impedance of said second and third electrical conducting means comprising first and second ground plane elements supported by said lead frame block between said first and second row of terminal pins and said first and third row of terminal pins, respectively, said first ground plane element being connected to the last terminal pin of said second row of pins and said second ground plane element being connected to the first terminal pin of said third row of pins.

4,226,493

TERMINAL BLOCK WITH FUSE GUARDS AND IDENTIFICATION SURFACE

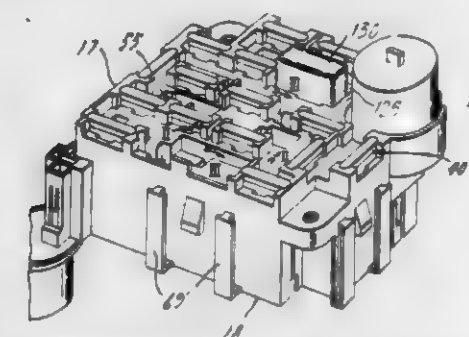
Thomas M. Cairns, Birmingham; John H. Dewar, Grosse Ile, and Emmons F. Sumner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,473

Int. Cl.³ H01R 13/631

U.S. Cl. 339—66 M

2 Claims



1. A fuse terminal block assembly for an automotive electrical system, said fuse terminal block assembly having a terminal block with a passage for receiving a blade contact of a fuse, said passage including a fuse holder for contacting the blade contact of a fuse;

a support means extending above the top surface of said passage so as to partially surround a fuse inserted into said passage thus providing protection against accidental removal of the fuse from said passage and yet exposing a portion of said fuse to facilitate intentional removal of the fuse from said passage;

an identification surface extending generally perpendicular to the direction of extension of said support means, said identification surface extending generally laterally away from the top opening of said passage for providing a surface for displaying information about the fuse to be placed in said passage; and

a cavity in said terminal block and a connector body insertable in said cavity, said connector body being adapted to receive a fuse, said cavity being adapted for receiving a circuit breaker thus increasing the versatility of said terminal block, said connector body having an opening aligned with said passage for receiving a fuse, said connector body including said support means and further including connection means for coupling said connector body to the remainder of said terminal block, said connector body

4,226,494

CIRCUIT PANEL CONNECTOR

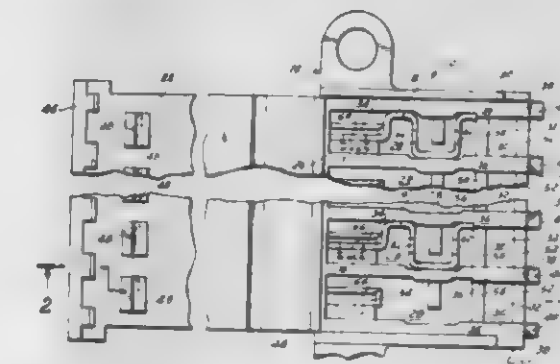
Charles F. Mazzeo, Scotch Plains, and Catherine K. Cotler, Cranford, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,087

Int. Cl.² H01R 13/58

U.S. Cl. 339—103 R

15 Claims



1. A circuit panel connector for electrically connecting a circuit panel, such as a printed circuit board, with an insulated wire, said panel connector comprising a one-piece connector body of dielectric material having a main portion and a cover portion, said main portion including a socket for receiving said panel, a rear wall, a floor, a pair of spaced side walls each unitary with said rear wall and with said floor and providing said main portion with a cell, an opening in open communication with said cell and with said socket, at least one of said side walls having a corner remote from said rear wall and from said floor and provided with a projection having an eave confronting said floor, said cover portion hingedly connected to said rear wall along an edge thereof remote from said floor and movable between an open position in which said cover portion does not cover said cell and a closed position in which said cover portion covers said cell, said cover portion having latching and strain relief resilient projection means, said latching projection means having a configuration adapted for latching interengagement with said eave to hold said cover portion in said closed position and said strain relief projection means located closer to said rear wall than said latching projection means and adapted, when said cover portion is in the closed position, to engage the insulation of a wire in said cell and undergo resilient flexure as said cover portion is moved to the closed position and said strain relief projection means engages the insulation of said wire in said cell, to provide strain relief.

4,226,495

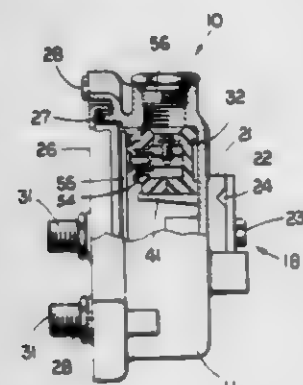
CABLE SYSTEM SUBSCRIBER TAP WITH ROTATING CENTER CONDUCTOR SEIZURE APPARATUS AND SPIRAL CONTACT AND METHOD FOR USING SAME
Robert J. Palle, Phoenix; Sidney R. Smith, Glendale; Kanton D. Rockwell, Phoenix; and Charles F. Napier, Sun City, all of Ariz., assignors to Texscan Corporation, Indianapolis, Ind.

Filed Apr. 27, 1979, Ser. No. 34,465

Int. Cl.³ H01R 9/10, 17/04

U.S. Cl. 339—122 R

43 Claims



1. A seizure apparatus for mechanical and electrical connection to the center conductor of a coaxial cable comprising:
 - (a) a rod-like, conductive seizure clamp, said clamp including:
 - (1) a first radial bore therein;
 - (2) a second radial bore tapped and intersecting said first bore; and
 - (3) a threaded seizure screw mating with said second bore to secure the center conductor of a coaxial cable inserted in said first bore;
 - (b) a supportive, insulating structure with said clamp rotatably held therein, said structure including a plurality of openings to said clamp; and
 - (c) means for alternately seizing with said clamp center conductors of differing orientation to said structure by rotating said clamp to align with different ones of said openings in said structure and without disassembly thereof or removal of said seizure screw from said clamp.

4,226,496

CIRCUIT BOARD EDGE CONNECTOR

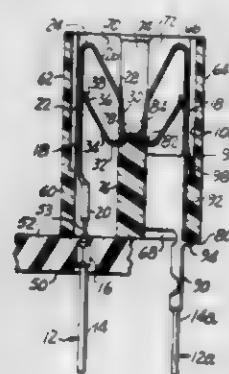
Arvin L. Langham, Canoga Park, Calif., assignor to Elfab Corporation, Dallas, Tex.

Division of Ser. No. 384,776, Aug. 9, 1973, Pat. No. 4,094,573. This application Apr. 21, 1978, Ser. No. 896,635

Int. Cl.³ H01R 13/42; H05K 1/07

U.S. Cl. 339—176 MP

17 Claims



1. An edge connector for a circuit board comprising: a plurality of contact terminals each having a contact head, each of said contact heads including a loop portion; an insulative housing comprising a shell having oppositely disposed outer longitudinal walls and a bottom surface, a member between each of said walls forming cavity means between said member and each respective outer wall, the bottom of each of said

cavity means being open, said member having an upper surface portion facing upwardly into each of said cavity means, said shell having an opening above said member to receive a circuit board for insertion along a predetermined axis so that said contact heads establish electrical contact to respective portions on such circuit board, said upper surface portion being substantially normal to said predetermined axis; and mounting means fixedly positioning each respective contact terminal with respect to the bottom surface of said shell, said mounting means comprising flange means on each of said contact terminals, said flange means being in abutting engagement with said bottom surface of said shell; and each of said loop portions continuously engaging an edge of the upper surface portion of said member for all operational conditions of the connector to bias said housing against said mounting means.

4,226,497

BATTERY TERMINAL HARNESS HAVING IMPROVED FASTENING MEANS FOR PREVENTING APPLICATION OF REVERSE POLARITY VOLTAGE

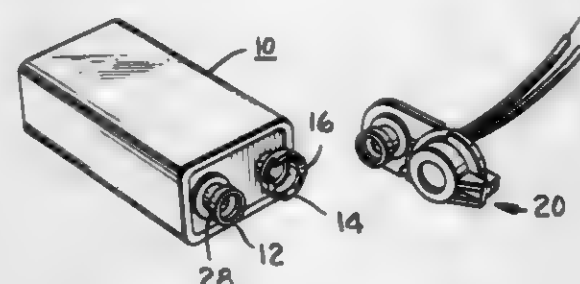
Samuel Polonsky, Monroe, and Edward V. Pomponio, Beacon Falls, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,550

Int. Cl.³ H01R 13/64

U.S. Cl. 339—184 M

4 Claims



1. An improved battery terminal harness for connection to a battery having a first terminal coupled to a first polarity of the battery and a second terminal coupled to a second polarity of the battery, the second terminal having at least one dimension substantially larger than the corresponding dimension of the first terminal, said improved battery terminal harness comprising:

an insulating support member having an opening therein; a first terminal connector mounted on said support member and adapted to electrically mate with the first terminal of a battery; a second terminal connector mounted on said support member and adapted to electrically mate with the second terminal of a battery; an insulating cover member covering said first terminal connector, said cover member having an opening therein, the configuration of said opening in said cover member being such that the first terminal of the battery is sufficiently small to pass therethrough to mate with the first terminal connector and the second terminal of the battery is too large to pass therethrough to contact said first terminal connector; and fastening means comprising: a tab member connected to said cover member and extending across said opening in said support member, said tab member having an opening therein aligned with said opening in said support member when said cover member is covering said first terminal connector; and electrical leads connected to said first and second terminal connectors and passing through said aligned openings in said tab member and said support member to secure said cover member in position over said first terminal connector;

whereby inadvertent reverse polarity contact of said battery terminal harness to the battery terminals is prevented.

4,226,498

WATERTIGHT WALL FEEDTHROUGH FOR ELECTRICAL GROUND

Werner Hauff, In den Stegwiesen 18, 7922 Herbrechtingen, Fed. Rep. of Germany

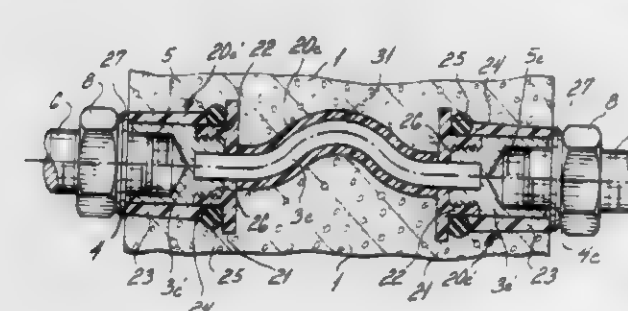
Filed Mar. 15, 1978, Ser. No. 886,822

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 7711895; Jun. 14, 1977, 2726672

Int. Cl.³ H01R 13/52

U.S. Cl. 339—205

10 Claims



1. An electrical feedthrough fitting and grounding assembly comprising:
 - a cast wall having a pair of faces; respective electrically conductive end pieces embedded in said cast wall and having ends lying at said faces, each end having an outwardly open blind bore exposed at the respective face;
 - a deformable and electrically conductive middle piece extending between and electrically interconnecting said end pieces;
 - an electrically insulating sleeve having a middle sleeve part surrounding said middle piece and a pair of end sleeve parts respectively surrounding said end pieces except at said ends thereof; and
 - respective terminal screws threaded into said bores.

4,226,499

ELECTRICAL CONTACT

Gerhard Bauerle, Willsbach, Fed. Rep. of Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 789,954, Apr. 22, 1977, Pat. No. 4,109,993, which is a continuation of Ser. No. 675,329, Apr. 9, 1976, abandoned. This application Jun. 13, 1978, Ser. No. 915,331

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1975, 2515813

Int. Cl.³ H01R 13/12

U.S. Cl. 339—258 R

11 Claims



1. An electrical contact comprising: a terminal post at one end; a spring contact at the other end; and an intermediate contact segment joining said terminal post and said spring contact; said spring contact including a first contact portion extending from said intermediate contact segment substantially parallel to said terminal post, a first return bend portion, a

second contact portion extending from said first return bend portion substantially parallel to said first contact portion, a second return bend portion, a third contact portion extending from said second return bend portion substantially parallel to said second contact portion, said first and second contact portions defining a plane disposed at an angle to a second, distinct plane defined by said second and third contact portions, said second and third contact portions defining a contact receiving spring member located substantially in line with said terminal post.

4,226,500

SCANNING OPTICAL SYSTEM WITH REFLECTIVE LENS

Kazuo Minoura, Yokohama, and Masamichi Tateoka, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

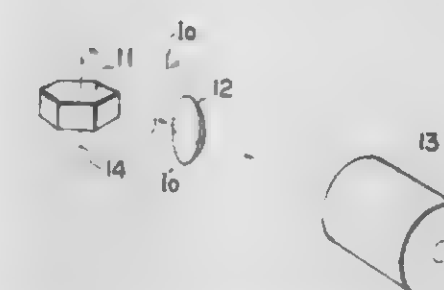
Filed Dec. 7, 1978, Ser. No. 967,397

Claims priority, application Japan, Dec. 7, 1977, 52/146963

Int. Cl.² G02B 27/17, 17/08

U.S. Cl. 350—6.1

5 Claims



1. A scanning optical system comprising: scanning means for deflecting a light beam in a predetermined direction; a scanning surface scanned by said scanning means; and an image forming optical system disposed between said scanning means and said scanning surface, said optical system having at least one single lens having its first surface facing said scanning surface and its second surface facing said scanning surface, both of said first and second surfaces being divided into a light-transmitting area and a light-reflecting area.

4,226,501

FOUR MIRROR UNOBSERVED ANASTIGMATIC TELESCOPE WITH ALL SPHERICAL SURFACES

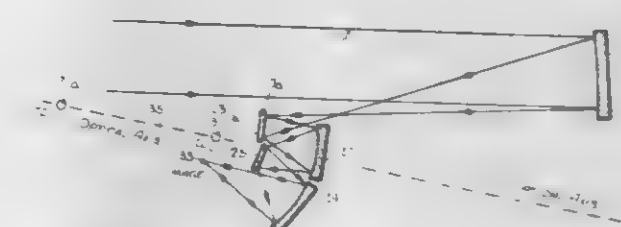
David R. Shafer, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 12, 1978, Ser. No. 950,647

Int. Cl.² G02B 17/06

U.S. Cl. 350—55

8 Claims



1. An all spherical telescope optical system comprising: (a) a first mirror system comprising a first, concave spherical mirror and a second, convex spherical mirror having a common center of curvature the ratio of the radius of said first, concave mirror to said second, convex mirror being approximately $\sqrt{5}+1:\sqrt{5}-1$, said first mirror arranged to intersect input rays of collimated light and to direct them to said second mirror, said first and second mirrors

arranged off axis so as to not obstruct the light path to said first mirror; and

- (b) a second mirror system comprising at least a third, concave spherical mirror and a fourth, convex spherical mirror having a common center of curvature, the radius of said third mirror being approximately twice the radius of said fourth mirror, said third mirror positioned to intersect light reflected from said second mirror and to reflect it to said fourth mirror, said fourth mirror reflecting light back to said third mirror from which it is reflected to form a real image, the optical axis of said system being defined by a line between the centers of curvature of said first and second systems.

4,226,502

SELF-CONTAINED SOLAR TRACKING DEVICE

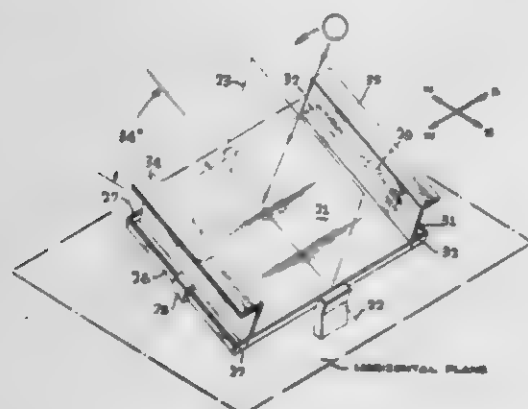
Thomas Gunzler, 16149 Sherman Way, Van Nuys, Calif. 91406

Filed Jul. 24, 1978, Ser. No. 927,349

Int. Cl.² F24J 3/02

U.S. Cl. 350-83

29 Claims



1. In an apparatus including a passive body having a predetermined generally north-south oriented tracking plane associated therewith, said body being suspended for rotation about a primary pivotal axis lying in said tracking plane in close proximity to the center of mass of said body and inclined with respect to the local gravitational vector, self-contained, self-regulating solar energy-operated tracking means for rotating said body about said axis and maintaining said tracking plane in substantially continuous alignment with the apparent instantaneous position of the sun during successive diurnal transits thereof, said tracking means comprising:

at least one balance mass movably attached to said body and reciprocable between a first limit position and a second limit position spaced from said tracking plane and lying in a control plane containing said primary pivotal axis and oriented substantially orthogonally to said tracking plane; heat-sensitive primary positioning means acting on said balance mass and moving said balance mass between said first and second limit positions in response to direct solar radiation impinging on said primary positioning means;

shielding means associated with said body, alternately shielding said primary positioning means from direct solar radiation when said tracking plane is substantially aligned with the apparent instantaneous position of the sun, and exposing said primary positioning means to direct solar radiation when said tracking plane is not so aligned, whereby said body is urged to rotate about said primary pivotal axis in the direction of the apparent diurnal motion of the sun.

4,226,503

BLOOD BANK MICROSCOPES WITH OSCILLATING VESSEL SUPPORT MEANS

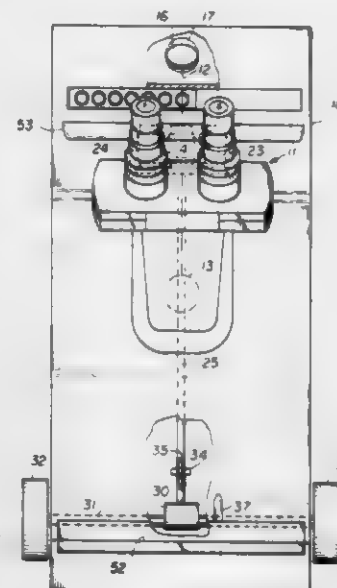
Carlos A. Irazoqui, New York, and Emil A. Scordato, Bronxville, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,631

Int. Cl.² G02B 21/24, 7/04

U.S. Cl. 350-87

9 Claims



1. A reverse microscope for viewing a fluid specimen through the fluid supporting surface of a specimen vessel, said microscope comprising, pivotally mounted means adapted to support a specimen vessel in the focal plane of the microscope optics, means located relative to said vessel support means for illuminating from above a fluid specimen supported by said vessel support means, optical means adapted to be focused on a fluid specimen supported by said vessel support means for viewing the specimen from below, and means for oscillating said vessel support means to cause a fluid specimen in a specimen vessel to flow back and forth through the focal point of the microscope optics.

4,226,504

PROTECTION OF OPTICAL FIBERS

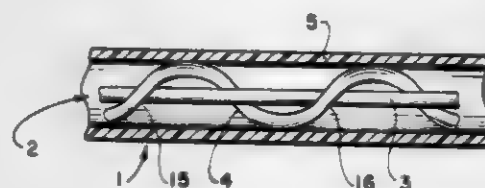
Robert A. Bellino, Windham Center, Conn., assignor to Akzona Incorporated, Asheville, N.C.

Filed Mar. 15, 1976, Ser. No. 666,730

Int. Cl.³ G02B 5/14

U.S. Cl. 350-96.23

8 Claims



1. A fiber optic communication system comprising: a core, said core including at least one glass fiber optic rod and at least one soft, cushiony shock absorbant thread; said rod providing a low loss optical communications channel independent of the remainder of said core; said at least one soft, cushiony shock absorbant thread being substantially spiralled about and being in contact with said fiber optic rod; the contact between said thread and said rod being nonperpendicular to the longitudinal axis of said rod; a jacket covering said core whereby said fiber optic rod is protected from mechanical stress by said soft, cushiony shock absorbant thread.

4,226,505

HOLDING DEVICE FOR A LENS OF AN INTERCHANGEABLE LENS ASSEMBLY

Shigeru Hashimoto, Yokohama; Akira Masuda; Katura Mochizuki, both of Kawasaki; Akira Satoh, Ohme; Koshi Takeuchi, Kawasaki, and Teruhisa Oda, Sagami-hara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 722,560, Sep. 13, 1976, Pat. No. 4,152,064.

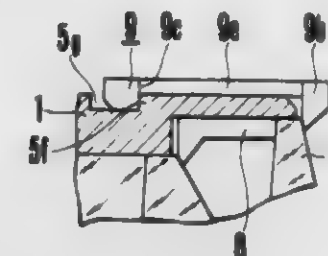
This application Sep. 6, 1978, Ser. No. 940,083

Claims priority, application Japan, Sep. 18, 1975, 50/112867; Sep. 22, 1975, 50/114439; Sep. 25, 1975, 50/115782; Sep. 30, 1975, 50/117985

Int. Cl.³ G02B 7/02

U.S. Cl. 350-252

4 Claims



1. A lens holding device comprising, in combination: a lens element defining an optical axis and having a cylindrical outer circumferential plane; a holding member to hold said lens element, said holding member including a cylindrical part fitted with the outer circumference of said lens element, a receiving portion on a radially inner side of said cylindrical part to receive one surface of said lens element and one stepped portion on a radially outer side of said cylindrical part and axially located toward one side thereof; a flexible retaining ring fitted on said holding member to retain said lens element at said holding member, said retaining ring including a pressing part which is provided at one end of said retaining ring and which contacts said lens element on a side thereof facing away from said side where said stepped portion is located, and an engagement part engaging against the stepped portion of said holding member; said lens element being pressed toward the receiving portion by the elasticity of said retaining ring when said engagement part engages with the stepped portion of said holding member with said lens element being thus so retained within the holding member as to prevent shifting thereof in the direction of the optical axis.

4,226,506

SWIVELING SOLAR REFLECTOR WITH MULTIPLE REFLECTING ELEMENTS SUPPORTED BY PREFABRICATED CAMBERED MEMBERS

Robert H. Auger, Le Vesinet, France, assignor to Saint-Gobain Industries, Paris, France

Filed Apr. 5, 1979, Ser. No. 27,476

Claims priority, application France, Apr. 10, 1978, 78 10508; Nov. 10, 1978, 78 31808

Int. Cl.³ G02B 7/18

U.S. Cl. 350-292



1. A solar reflector having a plurality of contiguous rectan-

gular reflector panels and a supporting framework for the panels adapted to be connected to a rigid rotatable member which is rotatable with respect to a fixed base and which includes girders following the curvature of the reflector, and where the framework includes a plurality of joists formed by parallel extending beams having cambered members following the curvature of the reflector joined thereto and supporting the long sides of the panels and the beams extending transversely to and being connected to the girders, the improvement comprising in that said joists are identical, in that a pin integrally connects each beam of a joist with a girder, in that a housing for each pin is contained within each girder and in that a longitudinal adjusting means is included for longitudinally moving each said pin with respect to a girder to provide adjustment of a beam with respect to a girder and the rigid rotatable member.

4,226,507

THREE ACTUATOR DEFORMABLE SPECIMEN

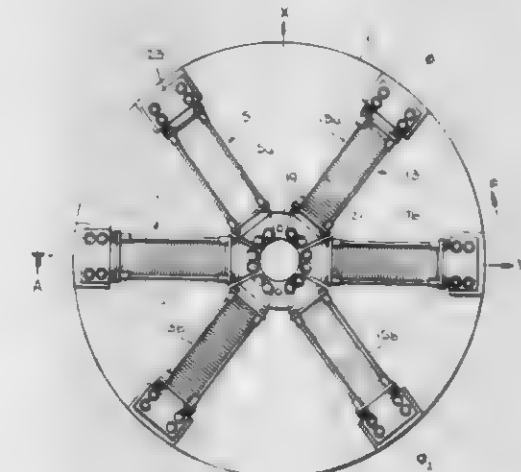
Anthony N. Fuschetto, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 9, 1979, Ser. No. 55,870

Int. Cl.³ G02B 5/10, 7/18

U.S. Cl. 350-295

13 Claims



1. A three actuator deformable specimen comprising: (a) a planar deformable specimen having a central axis and six attachment points arranged in pairs on diameters of a circle drawn from said axis; (b) a floating block aligned with said axis; (c) first, second and third actuators disposed along said diameters, each actuator split into two parts and having a first portion extending between said central block and one of said attachment points on a diameter and the other part extending from the opposite side of said block to the other attachment point on said diameter.

4,226,508

VIEWING AND ANGLING DEVICE FOR ICE FISHING

Dennis C. Michaels, Buffalo, and Michaels, John W., Chanhassen, both of Minn., assignors to D.J.L.J., Inc., Buffalo, Minn.

Filed Feb. 12, 1979, Ser. No. 11,116

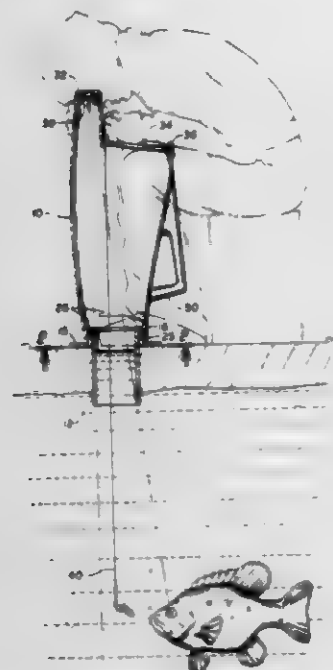
Int. Cl.³ G02B 5/02

U.S. Cl. 350-319

4 Claims

1. A device for viewing objects in water located below a hole in a layer of ice covering a body of water, said device comprising: a housing portion having a base for engaging the ice around said hole, a viewing port and a lower port, said viewing port and lower port located along a substantially vertical sight line through said housing portion; and a substantially opaque tubular member, open at both ends, connected to said lower port and extending below the base of said housing, the substantially vertical sight line of

said housing portion passing through said tubular member, and said tubular member being of sufficient length that at least a portion of said tubular member may be extended



through said hole in the ice covering said body of water to minimize the amount of stray light impinging upon the optical path along said vertical sight line.

4,226,509

DISPLAY DEVICE COMPRISING A LIQUID DISPLAY MEDIUM

Jacobus H. Jacobs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1978, Ser. No. 968,900

Claims priority, application Netherlands, Jan. 10, 1978, 7800175

Int. Cl.³ G02F 1/13

U.S. Cl. 350-343

7 Claims



1. A display device comprising a liquid display medium between two supporting plates and having a filling aperture which is sealed by means of a sealing member of an elastic material, characterized in that the sealing member is of an elastic material and extends through an aperture which is narrower than the cross-section of the elastic material in the stress-less condition, and that both ends of the sealing member are situated on the outside of the device.

4,226,510

SOUND MODULE FOR MOTION PICTURE CAMERAS

Thomas A. Svatek, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,950

Int. Cl.³ G03B 31/04

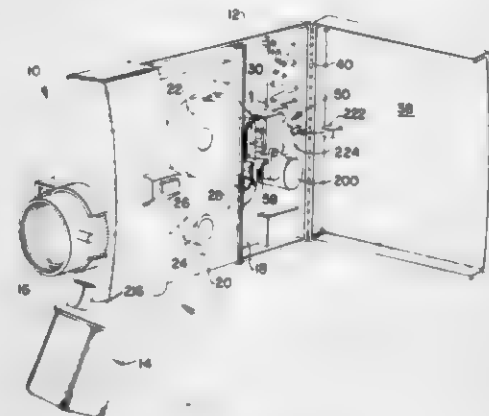
U.S. Cl. 352-31

14 Claims

1. In a motion picture camera adapted to receive a multi-purpose cassette containing a photographic film strip and a separate audio tape, the camera having a body to support components operative to advance the film strip incrementally past a photographic station for the exposure of the film strip to successive image frames, a sound module to establish an audio station separate from said photographic station and for record-

ing sound signals on the audio tape, said sound module comprising:

a mounting plate;
vibration damping means to secure said mounting plate to the camera body;
a transducing head having a tape engaging face;
a head housing to rigidly support said transducing head;
means to secure said head housing to said mounting plate;
an audio tape drive capstan rotatably supported by said mounting plate;
means for rotatably driving said capstan;
a pinch roller pivotally supported by said mounting plate for movement between a retracted position spaced from said capstan and an operative position against said capstan;



a tape guide shoe slidably supported by said head housing for movement between a retracted position spaced from said transducing head and an operative position in close proximity to the face of said transducing head;
a fixed tape guide supported by said head housing adjacent to said transducing head for positioning the audio tape transversely in relation to said transducing head;
yieldable means for biasing said pinch roller and said guide shoe toward the respective operative positions thereof;
and
cam means for moving said pinch roller and said guide shoe to the respective retracted positions thereof.

4,226,511

FILM STRIP/AUDIO TAPE ARRANGEMENT FOR AUDIO-VISUAL CASSETTE

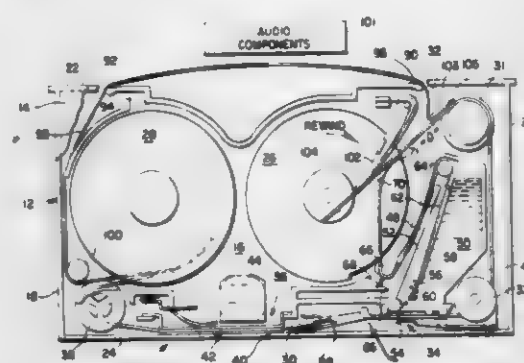
Joseph H. Wright, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,947

Int. Cl.³ G03B 23/02

U.S. Cl. 352-72

2 Claims



1. A multipurpose audio-visual photographic film handling cassette of the type having a strip of photographic film to be exposed and processed without removal from the cassette, the film being connected at opposite ends to supply and takeup spools for advancement from one of said spools to the other, the cassette including processing means initially sealed by a tear tab which may be removed by advancement thereof upon completion of film exposure so as to release reservoir-con-

tained processing fluid for deposit on the film strip, the tear tab including a latching formation at a free end thereof configured to pass through and interlock with a necked-down aperture provided in the film strip, the aperture being located near the end of the film strip attached to the supply spool; the cassette further including an audio tape interwound with the film strip upon the supply and takeup spools for advancement from one of said spools to the other along with the film strip; the improvement wherein the audio tape is coupled to the film strip at a given point, at the supply spool end of the film strip, further along the length of the supply end of the film strip than the location of the pull strip engaging aperture so that no audio tape lies adjacent the film strip aperture during the engagement of the pull strip with the aperture.

4,226,512

FILM PROJECTION SYSTEM

Hendrik v. Oosten, Leiden, and Willem J. P. A. Verbeek, 's-Gravenhage, both of Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

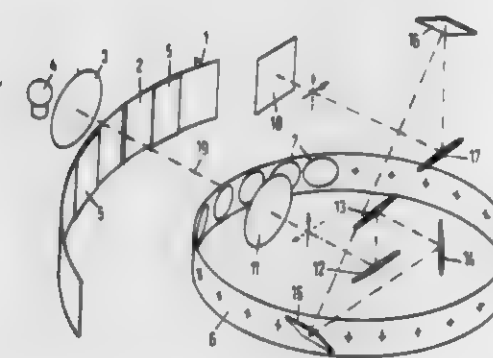
Filed Sep. 1, 1978, Ser. No. 938,761

Claims priority, application Netherlands, Sep. 6, 1977, 7709798; Jun. 9, 1978, 7806311

Int. Cl.³ G03B 21/00, 41/04

U.S. Cl. 352-115

8 Claims



1. A film projection system for use, inter alia, in an arrangement for editing films, which projection system includes a curved path for guiding a film, a light source for illuminating the film, a rotatable optical system and a projection screen, characterized in that said rotatable optical system comprises an endless support carrying a plurality of uniformly spaced identical object lenses, whose front nodal points are spaced apart a distance substantially equal to the centre-to-centre distance of two adjacent film frames and whose front nodal points are positioned along a circular path a portion of which has from said curved film guiding path a distance substantially equal to the focal distance of said object lenses; said object lenses having optical axes which converge at one point on the axis of rotation of the rotatable optical system; in said portion of said support, N object lenses of said object lenses simultaneously coact with N associated film frames, in which N is any integer or fraction greater than the unit; the plurality of parallel beams emanating from said N object lenses being projected and brought into superimposition on the projection screen by means of one projection lens; said projection system being such as to produce respective rotational velocities of the film in said curved path and said object lenses in said circular path which are substantially inversely proportional with respect to the radius vectors of said paths.

4,226,513

EXPOSURE DEVICE FOR MAKING A STRIPE SCREEN ON A FACEPLATE OF A COLOR CATHODE RAY TUBE

Takatoshi Shimomura, and Kumio Fukuda, both of Fukaya, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

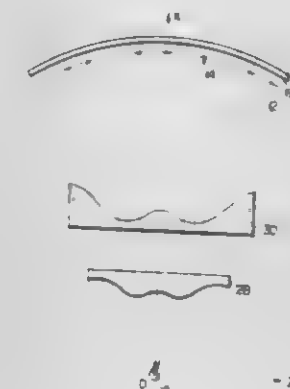
Filed Dec. 8, 1977, Ser. No. 858,814

Claims priority, application Japan, Dec. 11, 1976, 51-148305

Int. Cl.³ G03B 41/00; G03C 5/00

U.S. Cl. 354-1

5 Claims



1. An exposure device for making a stripe screen on a panel section of a color cathode ray tube, said panel section including a shadow mask having a large number of slit apertures therein, said device comprising:

an elongated light source;
table means having an opening for allowing the passage of light emitted from said source and a mounting section for mounting said panel;
a first correction lens disposed between said source and said panel, said first lens having a central portion through which the optical axis of the lens passes and an outlying portion, said outlying portion including means for refracting light from said source toward said axis, forming a first virtual image, the center of the longitudinal axis of said first image being displaced in a first direction from the center of the longitudinal axis of said light source, and the longitudinal axis of said first image being inclined with respect to said light source; and
a second correction lens disposed between said first lens and said panel, said second lens having a central portion through which the optical axis of the lens passes and an outlying portion, said outlying portion including means for refracting light having passed through said first lens away from said axis, forming a second virtual image, the center of the longitudinal axis of said second image being displaced in a second direction opposite said first direction from the center of the longitudinal axis of said first image, to correct the displacement of the image of said light source and project the image of said light source on to the faceplate along the locus of electron beams passing in said color cathode ray tube.

4,226,514

ELECTROGRAPHIC PHOTOCOMPOSING MACHINE

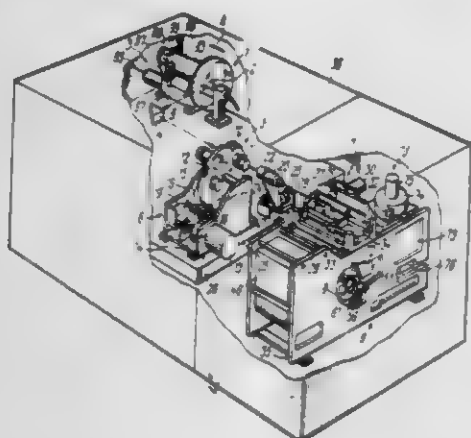
Igor V. Anfilov, ulitsa Udaltsova, 12, kv. 136, Moscow; Jury V. Abramov, ulitsa Petra Alexeeva, 113, Tula; Geny S. Ershov, prospekt Energetikov, 46, korpus 1, kv. 72, Leningrad; Valentin G. Bogomolov, ulitsa Malaya Andronievskaya, 7/17, kv. 1, Moscow; Eduard A. Kaidashko, prospekt Lunacharskogo, 68, korpus 2, kv. 82, Leningrad; Jury B. Remizov, ulitsa Zelenogradskaya, 21, korpus 2, kv. 193; Anatoly L. Rozhenko, ulitsa Lavochkina, 6, korpus 2, kv. 215, both of Moscow, and Genady P. Suvorov, prospekt K. Marxa, 70, kv. 81, Leningrad, all of U.S.S.R.

Filed Sep. 4, 1979, Ser. No. 72,555

Int. Cl.³ G03B 15/00, 17/06; G03G 15/00

U.S. Cl. 354—7

4 Claims



1. An electrographic photocomposing machine comprising:
 - a rotary type carrier;
 - a flashtube of said rotary type carrier, having a control unit;
 - a photographic unit arranged downstream of said type carrier along the beam from said flashtube;
 - a line forming mechanism arranged downstream of said photographic unit along the beam from said flashtube;
 - a drive of said line forming mechanism, which is essentially a start-stop mechanism;
 - an electric pulse generator of said drive of said line forming mechanism;
 - a switch of said drive of said line forming mechanism, having an input; a control input and an output, said input being connected to said electric pulse generator of said drive of said line forming mechanism;
 - an electrophotographic section arranged downstream of said line forming mechanism along the beam from said flashtube;
 - a cylindrical intermediate image carrier of said electrophotographic section, optically associated with said line forming mechanism;
 - a drive of said intermediate image carrier, which is essentially a start-stop mechanism;
 - an electric pulse generator of said drive of said intermediate image carrier;
 - a switch of said drive of said intermediate image carrier, having an input, a control input and an output, said input being connected to said electric pulse generator of said drive of said intermediate image carrier;
 - a step motor of said drive of said intermediate image carrier, connected in series with said output of said switch of said drive of said intermediate image carrier;
 - a computer unit having a first, second, third, fourth and fifth outputs, said first output of said computer unit being connected to said control input of said switch of said drive of said line forming mechanism, said second output being connected to said control unit of said flashtube, and said third output being connected to said control input of said switch of said drive of said intermediate image carrier;
 - a charging device of said electrophotographic section, arranged in direct proximity to said intermediate image

- carrier, in the latent image forming zone, and having a lamp for exposure of said intermediate image carrier;
- a latent image developing device of said electrophotographic section, contiguous to the surface of said intermediate image carrier and arranged in the direction of its rotation downstream of said charging device;
- a powder image transferring device of said electrophotographic section, provided with a paper feed system having a paper web and a drive, said powder image transferring device ensuring mechanical contact between said paper web and said intermediate image carrier and being arranged downstream of said intermediate image carrier in the direction of its rotation, said paper web having a first side onto which the powder image is transferred and a second side opposite to the first;
- heaters of said electrophotographic section, arranged near said paper web at its first side, downstream of said powder image transferring device in the direction of motion of said paper web, and having a neutral wire;
- a self-contained means for contact heating of said paper web of said electrophotographic section, arranged at the second side of said paper web opposite said heaters;
- a means for air cooling of the powder image of said electrophotographic section, arranged opposite said heaters level with said paper web;
- a unit for pulsed actuation of said heaters of said electrophotographic section, having an input, a first and second outputs, said first output of said unit being connected to said heaters and said second output being connected to said means for air cooling of the powder image;
- a cyclic counter of pulses of said drive of said intermediate image carrier of said unit for pulsed actuation of said heaters, having an input which serves as the input of said unit for pulsed actuation of said heaters and an output;
- a switch of said unit for pulsed actuation of said heaters, having an input, a first and second outputs, said input of said switch being connected to said output of said cyclic pulse counter, said first and second outputs of said switch serving as the first and second outputs, respectively, of said unit for pulsed actuation of said heaters;
- a unit for fixing the powder image on the paper of said electrophotographic section, comprising said heaters, said self-contained means for contact heating of said paper web, said means for air cooling of the powder image, and said unit for pulsed actuation of said heaters;
- a device for cleaning of said intermediate image carrier of said electrophotographic section, arranged downstream of said powder image transferring device in the direction of rotation of said intermediate image carrier.

4,226,515

PHOTOGRAPHIC CAMERA

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 824,415, Aug. 15, 1977, which is a division of Ser. No. 529,904, Dec. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 428,454, Dec. 26, 1973, abandoned. This application Jun. 28, 1979, Ser. No. 53,050

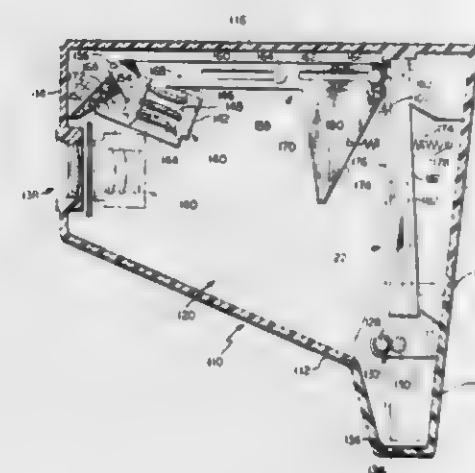
Int. Cl.³ G03B 5/00, 7/24

U.S. Cl. 354—21

5 Claims

1. Photographic apparatus of the self-developing type for use with film units requiring an even number of geometrical reversals and with film units requiring an odd number of geometrical reversals to provide a geometrically non-reversed positive image in the film unit, comprising:
 - means for locating a film unit in position for exposure;
 - pressure-applying means including at least two juxtaposed members for spreading a processing fluid across a photosensitive layer of the film unit as it is moved therebetween subsequent to exposure;
 - lens means for geometrically reversing an image of a subject along two orthogonal axes;

- optical means for geometrically reversing the image of the subject along only one of said orthogonal axes;
- means for changing the relative position of said lens means and said optical means between a first orientation wherein said lens means and said optical means are in optical alignment with each other when the film unit requires an odd number of geometrical reversals and a second orientation



wherein said lens means and said optical means are out of optical alignment with each other when the film unit requires an even number of geometrical reversals; and means coupled to said changing means and responsive to the loading of a cassette containing a film unit of the type requiring an even number of reversals for automatically moving said optical means from said first orientation to said second orientation.

4,226,516

CAMERA AND VIEWFINDER DISPLAY DEVICE

THEREFOR

Tokuichi Tsunekawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

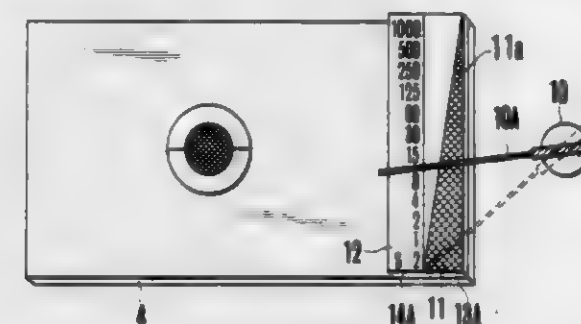
Filed Oct. 10, 1978, Ser. No. 949,554

Claims priority, application Japan, Oct. 14, 1977, 52-123353

Int. Cl.³ G03B 17/18

U.S. Cl. 354—60 E

10 Claims



9. A camera comprising:
 - (a) a timer circuit for controlling the shutter time; and
 - (b) display means for displaying the progress of exposure time based on the output of said timer circuit, said display means being arranged to operate when said shutter time is longer than a predetermined length of time.

4,226,517

CAMERA DEVICE

John S. Skarman, Corona del Mar, Calif., assignor to A 1000 Words Incorporated, North Hollywood, Calif.

Filed Apr. 30, 1979, Ser. No. 34,425

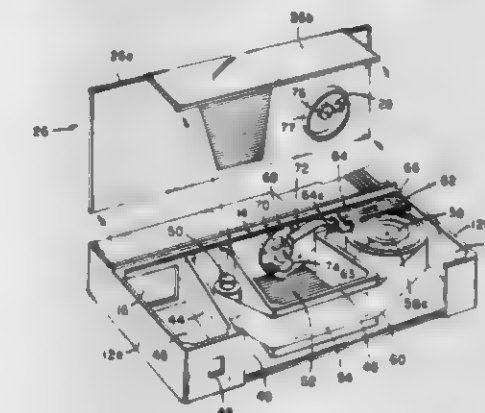
Int. Cl.³ G03B 29/00, 9/26, 17/36, 17/42

U.S. Cl. 354—75

9 Claims

1. A preloaded automatic film advance camera adapted to facilitate factory reloading and redistribution, comprising:
 - a one piece molded plastic body including:

- (a) walls defining viewfinder, film supply, film exposure and film take-up areas;
- (b) front and rear viewfinder openings;
- (c) an aperture for providing a picture taking light path within the film exposure area;
- (d) a film supply member in the film supply area, and
- (e) a spool support shaft in the film take-up area,
- a lens covering the aperture;
- a hollow cylindrical film take-up spool, rotatably supported on the support shaft and having a spiral groove on its top, said groove having a plurality of locking projections;
- a pretensioned drive spring, attached to and disposed within said spool, for rotating the spool;
- a supply of photographic film connected between the film supply post and the film take-up spool and passing by said film exposure area;
- a locking spring attached to said body within the film take-up area, said locking spring including a downwardly extending finger extending into said spiral groove, said finger being normally biased against one of said locking projections so as to prevent the drive spring from rotating the take-up spool;



- a shutter plate normally covering said aperture;
- a two position shutter trigger arm pivotally secured to the body;
- a shutter spring connected between the shutter plate and the trigger arm;
- a shutter lever connected to the trigger arm for moving the trigger arm from its first position to its second position, thereby causing the shutter to be tripped by the action of the shutter spring;
- a reset spring located in the body which automatically forces the trigger arm back from its second position to its first position when the shutter lever is released and temporarily lifts the finger of the locking spring out of engagement with one of the locking projections so as to enable the drive spring to rotate the take-up spool until the finger engages the next locking projection in the spiral groove, said reset spring thereby causing both the shutter plate to be reset by the action of the shutter spring and the film to be advanced automatically after the shutter lever is released; and
- a removable cover attached to the top of the body.

4,226,518

PHOTOGRAPHIC CAMERA HAVING LONG FOCAL LENGTH OBJECTIVE

Ferdinand Kellner, Spittelmüllerstr. 6, 8940 Memmingen, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,119

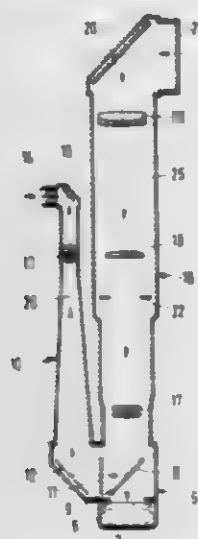
Int. Cl.³ G03B 17/48, 19/12, 17/00

U.S. Cl. 354—79

5 Claims

1. Portable photographic camera apparatus comprising a tubular objective of long focal length having a light-admitting end and a film carrier end, a tubular viewfinder having a junction with said objective between said film carrier end and said light-admitting end, said viewfinder being positioned adjacent said objective, said viewfinder and said objective having paral-

1el longitudinal axes throughout most of their lengths, said viewfinder extending from said junction towards said one end of said objective and terminating in an eyepiece located longitudinally between said carrier end and said light-admitting end



of said objective, and a light deflecting mirror means at the junction between said objective and said viewfinder for directing light rays from said light-admitting opening to said eyepiece.

4,226,519

SELF-DEVELOPING FILM PACK WITH IMPROVED SPREAD CONTROL STRUCTURE

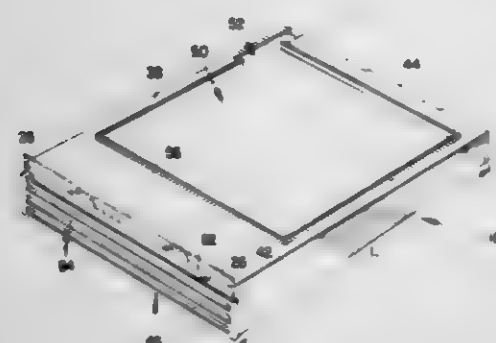
Theodore Gervais, Burlington, and Thomas P. McCole, South Natick, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 2, 1979, Ser. No. 26,200

Int. Cl. G03B 19/10, 17/50, 17/02; G03C 1/48

U.S. Cl. 354-174

6 Claims



1. An improved photographic film pack for use in a self-developing camera, said pack including a container having a pair of generally opposed, substantially planar walls joined by a peripheral section including opposed leading and trailing end walls, one of said planar walls having a film exposure aperture therein and providing a forward wall of said container as viewed with respect to scene exposure, said opposed planar wall providing a rear wall of said container, at least one film unit locatable in a forwardmost position within said container with its image forming area adjacent to and in substantial registration with said exposure aperture, said leading end wall having a film exit slot therein adjacent said forward wall and through which the forwardmost film unit is advanced from said container into operative relation with camera pressure applying means for distributing a processing fluid within the film unit as the film unit is advanced from the container, said pack further having spread control means including at least one spread control surface located on the interior side of a leading end of said forward wall of said container adjacent said film exit slot for additionally controlling fluid distribution by applying pressure to a selected portion of the film unit's image area, said container having a predetermined longitudinal dimension L, as measured between the lower exterior surfaces of

said leading and trailing end walls adjacent said rear wall, the camera also including means for receiving and supporting said film pack therein with said film exit slot in operative facing relation to said camera pressure applying means so that said forwardmost film unit may be advanced through said exit slot to said pressure applying means, said pack receiving and supporting means including at least a trailing end stop longitudinally spaced rearwardly from said camera pressure applying means by a distance greater than L and against which said trailing end wall of said container abuts for locating the container longitudinally at an operative position in said camera, when so located said lower exterior portion of said leading end wall of said container lying in an imaginary plane substantially normal to a camera focal plane and being located at a distance approximating L from said trailing end stop, the improvement wherein at least a portion of said spread control surface on said leading end of said container forward wall extends beyond said lower exterior surface of said leading end wall of said container such that this portion of said spread control surface extends in said camera beyond said imaginary plane toward said camera pressure applying means so as to provide said additional controlling of said processing fluid by applying the compressive pressure to the selected portion of said film unit image area in closer relation to said camera pressure applying means than said imaginary plane while retaining said longitudinal location of said container in said camera and wherein said camera pressure applying means and said spread control means are positioned relative to each other and suitably configured so as to modify the distribution of the processing fluid to be a substantially uniform wave front and thereby significantly improve the efficiency of fluid distribution to enable the use of a minimum volume of processing fluid.

4,226,520

SHOCK RESISTANT LENS DEVICE

Kyozo Uesugi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

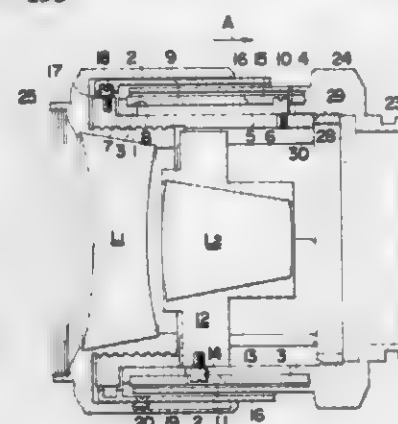
Filed Feb. 28, 1979, Ser. No. 16,455

Claims priority, application Japan, Mar. 3, 1978, 53-24774

Int. Cl. G02B 15/14; G03B 3/00

U.S. Cl. 354-195

28 Claims



1. A zoom lens comprising a camera mountable barrel section, front and rear lens mounts axially movable in said barrel section, a rotatable cylindrical cam carried by and restricted against longitudinal movement relative to said barrel section and having a first track, a first follower longitudinally movable with said front mount and slidably engaging said first track, said zoom lens being characterized in the provision of a first stop section longitudinally movable with said front mount and a second stop section stationary relative to said barrel section, and in the path of movement of said first stop section and abutting said first stop section when said front mount is at the rearmost position thereof with said first follower being forward of the rear end of said track whereby the axial component of an impact imparted to said front mount bypasses said follower and track and is transmitted directly to said barrel section.

4,226,521

CAMERA APERTURE CONTROLLING BRAKE

Masahiro Kawasaki, Tokyo, and Yukio Takaoka, Asaka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 973,284

Claims priority, application Japan, Dec. 27, 1977, 52/178890[U]

Int. Cl. G03B 9/06

U.S. Cl. 354-271

6 Claims



1. In an aperture auxiliary brake control device in a camera having a speed showing device operating association with a lens stopping-down operation, and the operation of said speed slowing device being terminated by interrupting a supply of current to an aperture control magnet to selectively employ various modes of operation including a shutter priority automatic exposure mode, the improvement comprising: a brake section for braking a brake disc secured to a part of said speed slowing device by interrupting the supply of current to an auxiliary brake magnet; and an auxiliary brake magnet control circuit, wherein in the shutter priority automatic exposure mode said brake disc is actuated prior to the operation of said speed slowing device being terminated, and in other modes of operation the supply of current to said auxiliary brake magnet is interrupted following a predetermined period of time required to stop down the lens to a minimum aperture value thereof, whereby an auxiliary brake is selectively applied.

4,226,522

IMAGING DEVICE

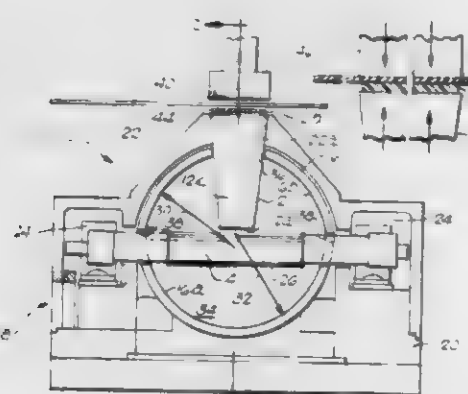
Gerald F. Marshall, Grosse Pointe Woods, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 17, 1978, Ser. No. 961,691

Int. Cl. G03B 27/54

U.S. Cl. 355-1

10 Claims



1. Device for flash imaging at an imaging film plane an imaging film having a layer of an energy dispersible image forming material thereon, comprising: an energy source capable of emitting electromagnetic energy of an intensity sufficient to cause dispersion of the energy dispersible image forming

material on the imaging film, an imaging mask at the imaging film plane for enabling electromagnetic energy from said energy source to be applied therethrough in a preselected pattern to the imaging film having the layer of an energy dispersible image forming material thereon, and electromagnetic energy collecting means associated with the energy source, said energy collecting means including a single, solid, one-piece, elongated, electromagnetic energy transmitting body for intercepting and transmitting electromagnetic energy directly from said energy source to the imaging mask, said body having an energy entrance facet and an energy exit facet each of which lies in a plane which is substantially parallel to the plane of the other and substantially transverse to the longitudinal axis of the energy transmitting body, said energy transmitting body further having opposed pairs of non-parallel side facets which diverge in the direction of the energy exit facet of the energy transmitting body, the spacing of the energy entrance and exit facets with relation to one another and the angle of inclination of the opposed pairs of side facets of the energy transmitting body with relation to the longitudinal axis thereof being such as to direct, collimate and shape the electromagnetic energy passing through the energy transmitting body and the imaging mask in a manner to provide maximum utilization and substantially uniform distribution of the electromagnetic energy at the imaging film plane whereby substantially the full intensity of the directed, collimated and shaped electromagnetic energy is applied to the imaging film through the imaging mask thereby enabling rapid and substantially uniform dispersion of the energy dispersible image forming material on the film to be attained in a preselected pattern.

4,226,523

IMAGING DEVICE

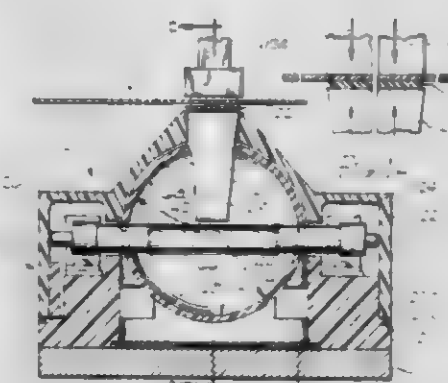
Herbert C. Ovshinsky, Oak Park, and Gerald F. Marshall, Grosse Pointe Woods, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Nov. 17, 1978, Ser. No. 961,692

Int. Cl. G03B 27/54

U.S. Cl. 355-1

14 Claims



1. An imaging device for flash imaging, through an imaging mask at an imaging film plane, a dry-process imaging film having a layer of an energy dispersible image forming material on a surface thereof, comprising: an energy source capable of emitting electromagnetic energy of an intensity sufficient to cause dispersion of the energy dispersible image forming material on the imaging film, an imaging mask at the imaging film plane for enabling electromagnetic energy from the energy source to be applied therethrough in a preselected pattern to the imaging film having the layer of an energy dispersible image forming material on a surface thereof, electromagnetic energy collecting means associated with the energy source, said energy collecting means including energy transmitting means adapted to provide a direct path between the energy source and the imaging mask and serving to collect, direct, collimate and shape the energy emitted by the energy source to provide maximum utilization and substantially uniform area distribution of the electromagnetic energy at the imaging film

plane, said energy collecting means further including energy intercepting and reflecting means for receiving at least a portion of the energy source and the energy transmitting means and for directing electromagnetic energy from the energy source in the direction of the energy transmitting means, and support means for maintaining the energy transmitting means and the energy intercepting and reflecting means of the energy collecting means in a predetermined position with relation to one another, the energy source, and the imaging mask at the imaging film plane whereby substantially the full intensity of the directed, collimated and shaped electromagnetic energy is applied to the imaging film through the imaging mask to attain rapid and substantially uniform dispersion in a preselected pattern of the energy dispersible image forming material on the imaging film.

4,226,524

MAGNETIC BRUSH DEVELOPMENT APPARATUS FOR AN ELECTROSTATIC COPIER

Makoto Hashimoto, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

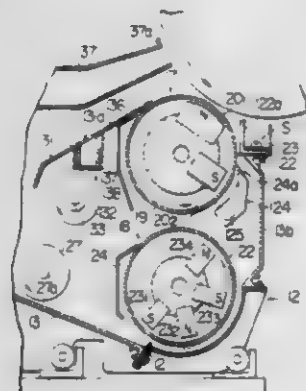
Filed Nov. 8, 1978, Ser. No. 958,725

Claims priority, application Japan, Nov. 19, 1977, 52-139139; Nov. 21, 1977, 52-139756

Int. Cl.² G03G 15/00, 15/09

U.S. Cl. 355-3 DD

10 Claims



1. In a magnetic brush development apparatus of the type comprising a plurality of magnetic rollers, each of which comprises a non-magnetic rotary sleeve and magnetic field generating means disposed in said non-magnetic rotary sleeve, and each of which successively transfers therebetween a magnetic developer carried on the surfaces of said sleeves for developing a latent electrostatic image on a photoconductor, wherein the improvement comprises means for forming a uniform magnetic brush comprising:

a developer regulating means for regulating the quantity of said magnetic developer on a first magnetic roller of said plurality of magnetic rollers by removing excess developer from the surface of the sleeve of said first roller, which first roller is disposed in close proximity to said photoconductor for transferring developer to and developing said latent electrostatic image;

a second magnetic roller of said plurality of rollers; rotatable in the same direction as said first magnetic roller for supplying said magnetic developer to said first magnetic roller in a transfer region and disposed with a predetermined space between it and said first magnetic roller such that the excess developer removed by said developer regulating means is received on the surface of the sleeve thereof upstream of said transfer region for resupplying said developer to said region; and

said magnetic field generating means disposed in said first magnetic roller and said second magnetic roller are arranged so as to overlap the respective magnetic forces thereof in said transfer region in such manner as to remove an excessive amount of said magnetic developer from said region, through said space between said first and second

magnetic rollers, on said sleeve of said second magnetic roller.

4,226,525

ELECTROSTATIC COPYING MACHINE

Koji Sakamoto, Seiichi Miyakawa, and Susumu Tatsumi, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

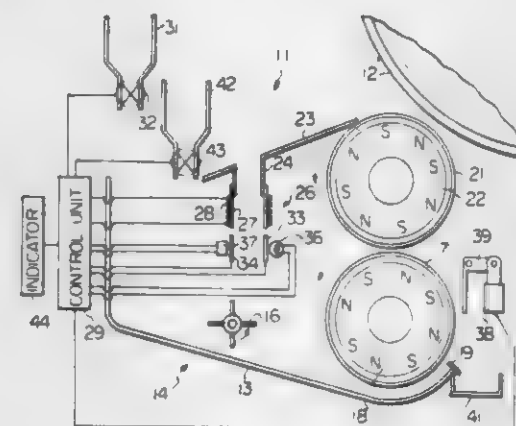
Filed Oct. 18, 1977, Ser. No. 843,108

Claims priority, application Japan, Oct. 19, 1976, 51-125388; Nov. 18, 1976, 51-138977; Nov. 18, 1976, 51-138978

Int. Cl.³ G03G 15/00

U.S. Cl. 355-14 D

8 Claims



1. In an electrostatic copying machine including a photoconductive member and a developing unit for applying a powdered developing substance to the photoconductive member, the developing substance including carrier particles and toner particles, the improvement comprising:

first sensor means operatively connected to the developing unit for measuring the toner density of the developing substance in the developing unit;

second sensor means operatively connected to the developing unit for measuring the developing ability of the developing substance; and

control means connected to the first and second sensor means for calculating the difference between the measured toner density and developing ability and producing a signal when the difference exceeds a predetermined value, the control means comprising means for maintaining one of the toner density and the developing ability constant.

4,226,526

TRANSPORT AND POSITIONING MECHANISM

Harry A. H. Spence-Bate, Morley, Australia, and Timothy Bain-Smith, Charing, England, assignors to Harry Arthur Hele Spence-Bate, Morley, Australia

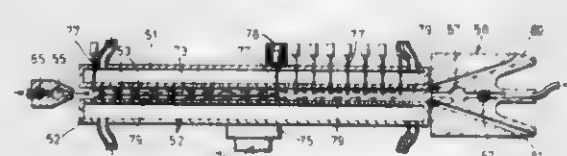
Continuation-in-part of Ser. No. 838,724, Oct. 3, 1977, Pat. No. 4,176,947. This application May 31, 1979, Ser. No. 44,316

Claims priority, application United Kingdom, Oct. 4, 1976, 41118/76; Jun. 30, 1978, 25103/78

Int. Cl.³ G03B 27/42, 27/62

U.S. Cl. 355-53

18 Claims



1. A circuit board processing mechanism comprising two opposed plates, means for maintaining a cushion of gas on one of said plates to support a circuit board in a plurality of X and Y positions relative to a process axis intersecting said plates, said means comprising ducts formed in at least one plate and

arranged to direct a flow of gas for said cushion towards a space between the plates into which a said board is insertable, means for performing work on said board, said means located at the process axis, and means for moving the board across the plate to any of the plurality of X and Y positions.

4,226,527

ANTI-STROBING FILTERS

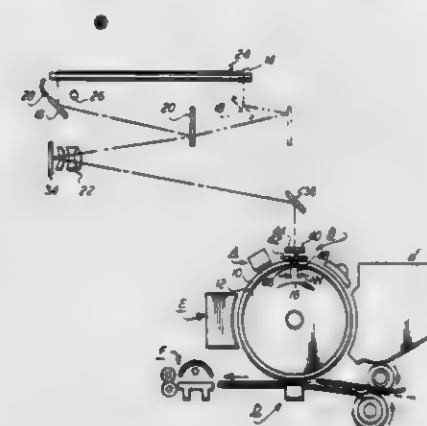
William L. Lama, Webster, and Ned J. Seachman, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1979, Ser. No. 63,227

Int. Cl.³ G03G 15/22; G03B 27/76

U.S. Cl. 355-71

12 Claims



1. A machine having a document supported for illumination, a light source illuminating the document, with an irradiance defined as a function of time, $H_2(t)$ and having a fundamental frequency f_0

an optical path, the irradiance projected along the optical path

a photoreceptor moving at a predetermined speed v ;

an aperture plate defining an aperture disposed near the photoreceptor, the irradiance profile at the photoreceptor being defined by the function $H = H_1(x)H_2(t)$ where $H_1(x)$ is the spatial irradiance profile across the photoreceptor, and

a transmission filter disposed near the aperture plate along the optical path wherein the transmission filter has transmission characteristics such that the Fourier transform of the function $H_1(x)$ evaluated at the lamp frequency f_0 equals zero.

4,226,528

PHOTOGRAPHIC ENLARGING EASEL

Walter Kremer, Bergneustadt, Fed. Rep. of Germany, assignor to Johannes Bockemuehl, Gummersbach-Derschlag, Fed. Rep. of Germany

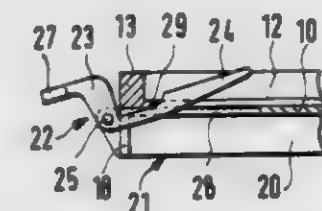
Filed Nov. 30, 1978, Ser. No. 964,940

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754193

Int. Cl.³ G03B 27/58

U.S. Cl. 355-74

2 Claims



1. A photographic easel for holding photographic paper and the like, comprising a supporting member having a supporting surface which is arranged so that photographic paper can be placed on said supporting surface from outside; and ejecting means associated with said supporting member and movable relative to the latter between an operative position in which said ejecting means projects outwardly of said supporting surface in a direction transverse to the latter whereby the

laminar material placed on said supporting surface is lifted from the latter, and an inoperative position in which said ejecting means fails to project outwardly of said supporting surface in said transverse direction, the ejecting means including an ejecting member which has two arms and is pivotable about an axis between said operative and inoperative positions, said ejecting member having a first arm located in the region of said supporting surface and a second arm arranged to be urged in two opposite directions, so that when said second arm is urged in one of said opposite directions said ejecting member is pivoted about said axis to said operative position whereby said first arm projects outwardly beyond said supporting surface in said transverse direction and lifts the laminar material therefrom, and when said second arm is urged in the other opposite direction said ejecting member is pivoted to said inoperative position whereby said first arm does not project outwardly beyond said supporting surface in said transverse direction, and the supporting surface having a cut-out, said first arm of said ejecting member being movable between said operative and inoperative positions through said cut-out of said supporting surface.

4,226,529

VIEWING SYSTEMS

Herbert A. French, Emsworth, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

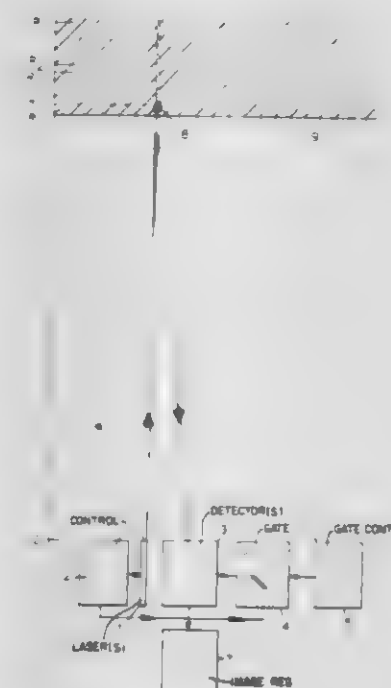
Filed Apr. 12, 1977, Ser. No. 787,042

Claims priority, application United Kingdom, Apr. 21, 1976, 16167/76

Int. Cl.³ G01B 11/26; H04N 7/00

U.S. Cl. 356-5

9 Claims



1. A laser-assisted viewing system including at least one laser arranged for repetitive pulsing, at least one detector to detect laser pulses after reflection or scattering from a scene, detector signal gating means to define two range intervals within the scene for viewing by the said system, means to register an image of any defined range interval, and switching means to repetitively interleaf said two defined range intervals from which the registered images are received whereby a target within a first of said two defined range intervals is alternately detected by reflection of transmitted energy and in silhouette by backscattering of transmitted energy.

4,226,530

METHOD AND DEVICE FOR INDICATING HEADLIGHT ALIGNMENT

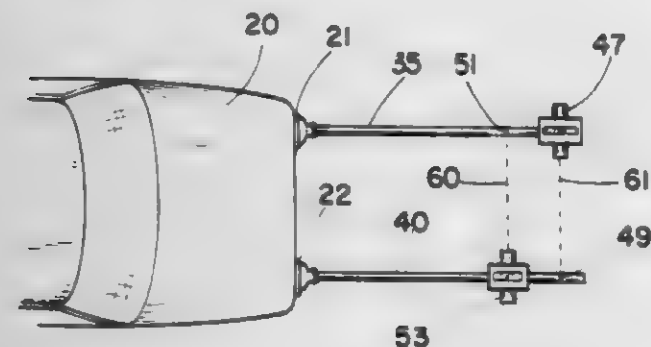
Gilbert R. Broom, 11 Willow La., Schererville, Ind. 46375

Filed Oct. 10, 1978, Ser. No. 949,653

Int. Cl.³ G01J 1/00

U.S. Cl. 356—121

2 Claims



1. A device for indicating alignment of a pair of headlights each with a forward-looking face comprising:

a first elongated member mountable cantileveredly to the forward-looking face of one headlight of a pair of headlights;

a second elongated member mountable cantileveredly to the forward-looking face of the other headlight of said pair of headlights;

mounting means operable to mount said first elongated member and said second elongated member to the forward-looking faces of said pair of headlights;

headlight vertical aim indicating means cooperatively associated with said first elongated member and said second elongated member being operable to indicate presence of said first elongated member in a horizontal plane and presence of said second elongated member in a horizontal plane;

first headlight lateral aim indicating means on said first elongated member and cooperatively associated with said second elongated member being operable to indicate lateral alignment of said second elongated member relative to said first elongated member;

second headlight lateral aim indicating means on said second elongated member and cooperatively associated with said first elongated member being operable to indicate lateral alignment of said first elongated member relative to said second elongated member;

said second elongated member has a first lateral aim mark thereon spaced from said mounting means a first distance; said first headlight lateral aim indicating means includes a sight-line scope on said first elongated member and spaced from said mounting means a distance equal to said first distance for visual observation of said mark;

said first elongated member has a second lateral aim mark thereon spaced from said mounting means a second distance; and

said second headlight lateral aim indicating means includes a sight-line scope on said second elongated member and spaced from said mounting means a distance equal to said second distance for visual observation of said second mark;

each sight-line scope includes a tube through which a person looks with each tube fixedly mounted to a separate one of said elongated members and extending generally perpendicularly thereto, said first elongated member has a distal end with a sight-line scope positioned thereat and with said second lateral aim mark located on said first elongated member but remotely from said distal end, said second elongated member has a second distal end with said first lateral aim mark positioned thereat and with a sight-line scope located on said second elongated member but remotely from said second distal end.

4,226,531

DISPOSABLE MULTI-CUVETTE ROTOR

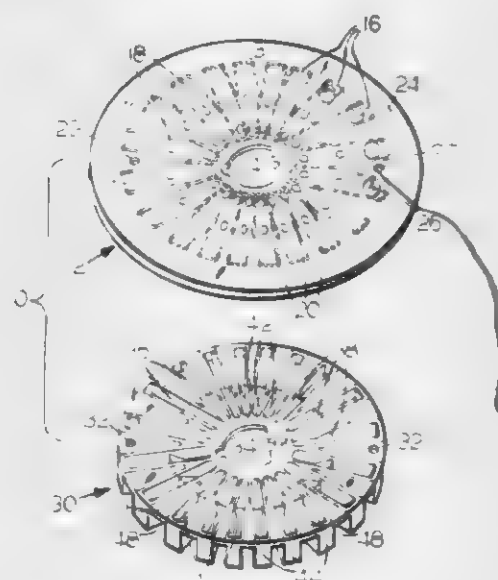
Thomas O. Tiffany; Gilbert B. Manning, both of Spokane; Phillip C. Thayer, Nine Mile Falls, and Chris M. Coelho, Veradale, all of Wash., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Aug. 29, 1977, Ser. No. 828,609

Int. Cl.³ G01N 1/10

U.S. Cl. 356—246

8 Claims



1. A disposable multi-cuvette rotor for use in an analytical photometer comprising

a one piece body member of injection molded transparent material that has a planar upper surface and defines a circumferential array of spaced, elongated, radially extending recesses, said planar upper surface defining the upper edge of each of said recess,

each said recess defining a first chamber and a second chamber disposed radially outward from said first chamber, and separator structure integral with said body member between said first and second chambers, said separator structure including a ramp surface that is inclined with respect to said planar upper surface and that forms the radial outer boundary of said first chamber and a vertical surface that extends perpendicularly to said planar upper surface and that forms the radial inner boundary of said second chamber, a first optical window integral with said body member in the bottom wall of said second chamber, and a further integral optical window in the radial outer wall of said second chamber, the inner surface of each said further optical windows extending perpendicular to said planar upper surface

the upper surfaces of all of said optical windows being parallel to and spaced the same predetermined distance below said planar upper surfaces; and

a one piece cover member of injection molded transparent material that has a planar lower surface parallel to and immediately adjacent said planar upper surface of said body member with a continuous seal extending around each said recess between said upper and lower surfaces to define an analytical cuvette,

a first circumferential array of ports in said cover member aligned with corresponding first chambers of said circumferential array of recesses in said body member,

a second circumferential array of ports in said cover member disposed radially outward from said first array of ports and aligned with corresponding second chambers of said circumferential array of recesses in said body member, and

a circumferential array of second optical windows integral with said cover member and disposed radially outward from said second array of ports and aligned with corresponding first optical windows, the lower surface of each said second optical windows being parallel to said planar lower surface of said cover member such that each pair of

opposed aligned surfaces of corresponding first and second optical windows are parallel and define an optical path of precise and stable path length, the lengths of said optical paths in all of said second chambers being the same.

4,226,532

DEVICE FOR GRANULOMETRIC ANALYSIS OF PARTICLES IN FLUIDS

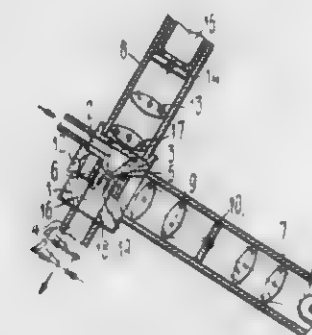
Viktor A. Berber, ulitsa Shelkovichnaya, 184, kv. 65; Evgeny S. Pervushin, ulitsa Shelkovichnaya, 182, kv. 71; Khafiz M. Murtazin, ploshad Degtyarnaya, 6 Internatsionalny proezd, 20, and Vladimir G. Kholin, ulitsa Shelkovichnaya, 184, kv. 53, all of Saratov, U.S.S.R.

Filed Jul. 12, 1978, Ser. No. 924,100

Int. Cl.³ G01N 15/02

U.S. Cl. 356—336

4 Claims



1. A device for granulometric analysis of particles contained in fluids, comprising: a feeding channel having an inlet and an outlet; a nozzle arranged at said outlet of said feeding channel; a receiving channel having an inlet and an outlet; its inlet communicating through said nozzle with said outlet of said feeding channel; said feeding and receiving channels being intended to contain a fluid pumped therethrough; said receiving channel having aligned windows formed therein for exposing the fluid to a light flux and arranged on opposite sides of the channel; a lighting means whose optical axis is spaced from and extends at an angle to the axis of said windows, said windows being positioned in a portion of said receiving channel closely spaced from said nozzle so that the optical axis passes through fluid flowing in a diverging flow path; a third window formed in one of said channels, intended to receive light reflected from particles contained in the fluid in the diverging flow path; a light-sensitive means whose optical axis extends through the point of intersection of the axis of said nozzle and the optical axis of said lighting means, said light-sensitive means being arranged opposite to said third window; the ratio between the diameters of an outlet of said nozzle and said receiving channel being in the range of $\frac{1}{4}$ to $\frac{1}{7}$.

4,226,533

OPTICAL PARTICLE DETECTOR

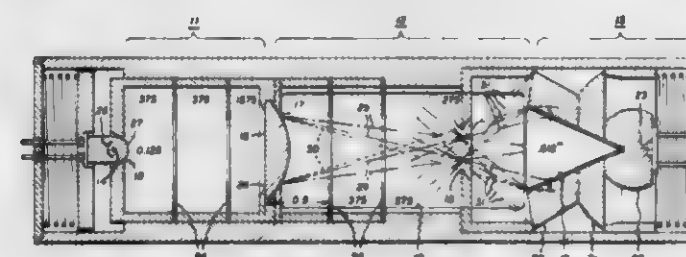
Lawrence R. Snowman, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 757,605, Jan. 7, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,431

Int. Cl.³ G08B 17/10

U.S. Cl. 356—338

6 Claims



1. A particle detector of optimized optical efficiency having

restricted axial dimensions and using a dark field optical system in which a gaseous sample is illustrated and forward scattered light is collected in a zone centered about, but excluding on-axis light, and sensed to detect the presence of suspended particles in the sample, comprising:

A. a measurement chamber into which a gaseous sample is admitted, said chamber containing an entrance aperture, a zonal exit aperture containing a central stop, and an internal aperture, said chamber otherwise excluding light, said apertures and stop being perpendicular to the detector axis and centered thereon;

B. beamforming means comprising:

(1) a narrow band light source,

(2) a lens at said entrance aperture for projecting a beam of light from said source along said axis for illuminating suspended particles present in said chamber, said lens imaging said source in the plane of said internal aperture to a size smaller than said internal aperture to preclude beam impingement and to allow beam interception by said central stop, said beamforming lens being of an aspheric design calculated to correct spherical aberration for a point source at predetermined object and image distances and produce a sharp image of said light source;

C. said entrance aperture, said internal aperture and said central stop being arranged to prevent light scattered from said beamforming lens from impinging on said zonal aperture;

D. an output lens arranged in said zonal aperture for collecting scattered light, said output lens being blocked to the rays of said beam or scattered by said beamforming lens, but collecting forward scattered light when airborne scattering particles are in said measurement chamber, said output lens being a three element annular lens of high power having at least one aspheric surface calculated to correct spherical aberration for a point source at predetermined object and image distances and produce a sharp image of scattering particles present in said internal aperture, the central region of the more powerful face of each element of said output lens being truncated approximately to the obscuring diameter of said central stop to reduce the axial extent of said output lens, and

E. a light detector for sensing the scattered light collected by said output lens, said image of scattering particles being focused upon said light detector and being of the approximate size of said light detector,

said aspheric lenses permitting large numerical apertures and short focal lengths for maximum optical efficiency within a given axial dimension.

4,226,534

MICROPOLARIMETER

Julius A. Kuck, Coa Cob, Conn., assignor to Fairfield University, Fairfield, Conn.

Filed Nov. 13, 1978, Ser. No. 959,885

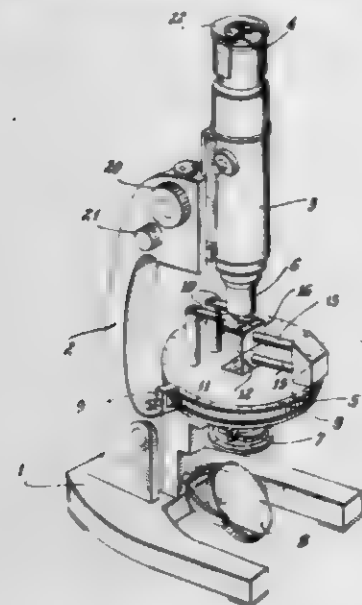
Int. Cl.³ G01N 21/03, 21/21, 21/23

U.S. Cl. 356—367

5 Claims

1. A micropolarimeter comprising in combination a polarizing microscope provided with a conventional light source, microscope elements, rotating stage, polarizer, and analyzer, and a null point indicator, the microscope being adjusted to pass polarized light through the conventional opening in the stage and up through the microscope proper, a measuring element comprising two short capillary tubes mounted in two 45° prisms and one double 45° prism, the double 45° prism being oriented so that light entering a face is reflected at right angles and again at right angles back through the same face, the prisms having holes in their faces aligned with the hole from the face of the first prism to a hole in the face of the double prism and the second hole in the face of the double prism being aligned with the hole in the second 45° prism, capillary tubes of diameter to fit snugly in the holes and mounted to form an assembly with the capillaries parallel, and

parallel to the microscope stage, the prisms being oriented so that the first 45° prism is over the opening in the stage and the second 45° prism is aligned with the microscope, whereby polarized light passes up into the first 45° prism, is reflected at right angles through the first capillary tube, then reflected



twice in the double 45° prism and returned through the second capillary tube to the second 45° prism said null point indicating device is an anisotropic crystal mounted in a liquid on the upper face of said second 45° prism in the path of said light from said second capillary tube and reflected by said second 45° prism.

4,226,535

OBJECT MEASURING METHOD AND APPARATUS
Knut Heitmann; Eckart Schneider, both of Wetzlar, and Herbert Lüsser, Braunfels, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

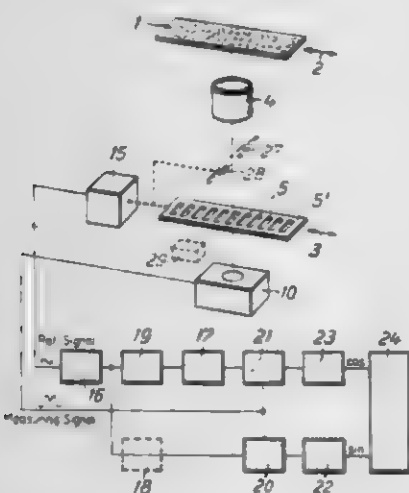
Filed Aug. 8, 1978, Ser. No. 931,959

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736583

Int. Cl.² G01B 11/14; H01J 39/12

U.S. Cl. 356—373

21 Claims



1. Apparatus for measuring the movement of an object comprising:

- (a) an optical imaging device for producing an image of said object;
- (b) a grating structure positioned to receive the image of said object produced by said imaging device;
- (c) drive means for producing a periodic relative movement between said grating structure and the image formed thereon;
- (d) means for generating reference signals corresponding to said periodic relative movement;
- (e) photoelectric receiving means positioned for receiving light from said grating structure corresponding to the

image thereon, said photoelectric receiving means producing electrical rotating field signals;

- (f) a control circuit connected for receiving said reference signals and said electrical rotating field signals for producing control signals indicative of the movement of said object with respect to a direction of movement at least approximately parallel to said relative movement; and
- (g) a bi-directional counter connected to receive said control signals for indicating the movement of said object.

4,226,536

ELECTRO-OPTICAL CONTOUR MEASURING SYSTEM

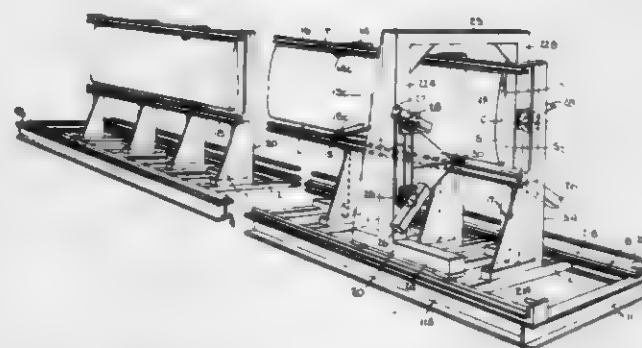
Marc G. Dreyfus, 4 Arnold St., Old Greenwich, Conn. 06870, and Arnold Pellman, 30 Colony Ct., Stamford, Conn. 06905

Filed Feb. 23, 1979, Ser. No. 14,855

Int. Cl.³ G01B 11/24

U.S. Cl. 356—376

12 Claims



1. A system for accurately and rapidly measuring the surface contour of a shaped object, said system comprising:

- A. a fixture for stably supporting said object with respect to a reference axis extending in a given direction;
- B. a carriage movable in said direction on a track in a straight line path parallel to said reference axis, said carriage having a structural beam which extends at right angles to said axis and faces the surface of the object to be measured;
- C. a triangulation rangefinder assembly borne by said carriage beam and constituted by a pivotally-mounted light beam illuminator and a pivotally-mounted automatic tracker, said illuminator and said tracker being rotatable about spaced pivot points on said carriage beam, the line extending between said pivot points representing a triangulation baseline having a known value;
- D. motor means to advance said carriage in incremental steps along said track from one end of said object to the other; said carriage in the course of its movement along said track being subject to displacements which slightly distort the orientation of the rangefinder relative to the surface of the shaped object being measured;
- E. means to render said assembly operative at each step position of said carriage to cause said illuminator to swing through a sector wherein said light beam impinges on said surface to produce a luminous spot thereon that scans in a path normal to said reference axis from one edge of the object to the other and to cause said tracker in response to the light reflected from said surface to follow said scanning spot;
- F. means operatively associated with said illuminator and tracker to determine the changing angular values assumed by the illuminator and by the tracker in the course of each tracked scan to produce values representative thereof;
- G. calibration means intercepted by said scanning spot and mechanically independent of the carriage for sensing said distortions in the range finder assembly orientation relative to the surface being measured resulting from stepping of said carriage along said track to produce correction values therefor; and
- H. a computer having said known baseline value stored therein and responsive to said changing angular values and to said correction values to compute by triangulation

the changing position of said spot on said surface in the course of a tracked scan and to thereby provide a contour reading of each scan, whereby the contour of the entire surface is determined upon the completion of carriage advance from one end of the object to the other.

4,226,537

ANALYTICAL CENTRIFUGE WITH IMPROVED SIGNAL/NOISE RATIO

Edward E. S. Colley, Redhill, England, assignor to Fisons Limited, London, England

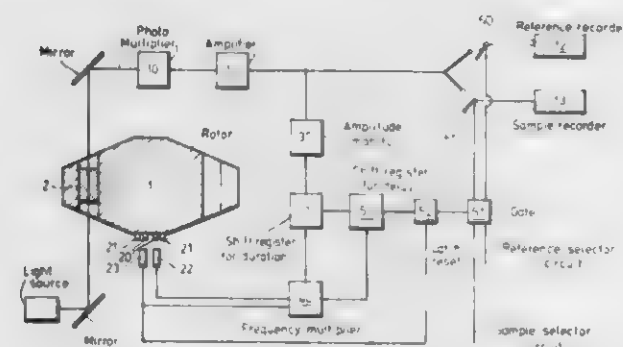
Filed Mar. 30, 1979, Ser. No. 25,323

Claims priority, application United Kingdom, Apr. 15, 1978, 14877/78

Int. Cl.³ G01N 21/01

U.S. Cl. 356—427

9 Claims



1. A centrifuge assembly provided with means for determining the speed of angular rotation of the rotor and the angular orientation of the rotor and for measuring a characteristic of a material in a cell carried by the rotor characterised in that it is provided with means for comparing the amplitude and duration of signals generated from a cell being scanned with a desired amplitude and with the angular length of the cell being scanned and for rejecting signals which are of smaller amplitude and of shorter angular duration than the signals expected for the cell being scanned.

4,226,538

DEVICE FOR DETECTING IRREGULARITIES IN A MOVING SHEET MATERIAL

Walter P. Van Beeck, Sinaal, Belgium, assignor to AGFA-GEVAERT N.V., Mortsel, Belgium

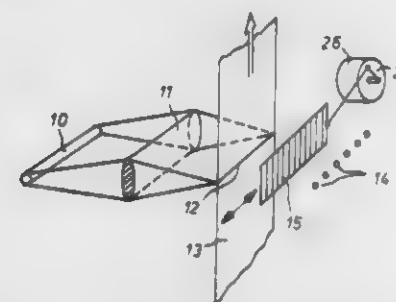
Filed Jun. 29, 1978, Ser. No. 920,196

Claims priority, application United Kingdom, Jul. 1, 1977, 27672/77

Int. Cl.² G01N 21/32

U.S. Cl. 356—430

11 Claims



1. A device for detecting speck and streaklike irregularities in a moving sheet material, comprising a source for directing electromagnetic energy across at least a portion of the width of the material, a row of stationarily mounted radiation responsive photo-cells, each having a common predetermined length of field parallel to said row, that are substantially uniformly spaced transversely across the path of the sheet material to receive radiation from said source after modulation of said radiation by the moving sheet material, a grating arrangement disposed in the path of the radiation

to said photocells and serving to intercept and transmit radiation from linear periodically alternating areas in a direction parallel with the photocell row, and means for displacing said grating arrangement to reverse the areas of transmission and interception, the linear periodicity of the grating being equal to 1/X times said field length of a photocell, wherein X is an integer at least equal to 5.

4,226,539

CYLINDRICAL BODY APPEARANCE INSPECTION APPARATUS

Yasuo Nakagawa; Hiroshi Makihiro, both of Yokohama, and Toshimitsu Hamada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 22, 1977, Ser. No. 863,345

Claims priority, application Japan, Dec. 24, 1976, 51/154883; Dec. 24, 1976, 51/154884; Apr. 8, 1977, 52/39508

Int. Cl.² G01N 21/48

U.S. Cl. 356—445

17 Claims



1. A cylindrical body appearance inspection apparatus comprising:

- a cylindrical surface appearance detecting device including rotating means for rotating a cylindrical body to be inspected around an axis thereof at a constant speed, and detecting means for optically detecting reflected light indicative of a surface condition of a small width base line band area, which is parallel to the axis of said cylindrical body, of a cylindrical surface of said cylindrical body being rotated by said rotating means and for repeating the sampling detection of the band area as the cylindrical body rotates to scan the entire surface of the cylindrical surface to thereby produce an image signal for each sampling;
 - an end surface appearance detecting device including first transporting means for transporting a plurality of cylindrical bodies sequentially with axes thereof being arranged in parallel to each other, detecting means arranged to face the opposite end surfaces of the cylindrical body transported by said first transporting means for optically detecting reflected light indicative of a surface condition of small width band areas on the opposite end surfaces extending in the direction transverse to the direction of transport of the cylindrical bodies and for repeating the sampling detection of the opposite end surfaces as the cylindrical body is transported to scan the entire area of each of the opposite end surfaces to thereby produce an image signal for each sampling;
 - second transporting means for transporting the cylindrical body between said cylindrical surface appearance detecting device and said end surface appearance detecting device from one to the other; and
 - test means for determining pass or fail or grade of any defect pattern which exists on the surface of the cylindrical body based on said image signals derived from said cylindrical surface appearance detecting device and said end surface appearance detecting device;
- whereby the appearance of the cylindrical surface and the

opposite end surfaces of the cylindrical body is automatically and optically inspected and wherein said detecting means of said end surface appearance detecting means includes an optical system for projecting collimated light beams onto the opposite end surfaces from opposite directions which are oblique and a solid-state image pickup device having photosensing elements arranged in at least one line with their photosensing surfaces arranged in parallel to the end surfaces to sense light rays reflected from the end surfaces of the cylindrical body in the direction transverse to the direction of transportation of the cylindrical body by said first transporting means.

4,226,540

METHOD FOR THE CONTACTLESS DETERMINATION OF FEATURES OF MEAT QUALITY

Hans M. Barten, Friedberg, and Frieder K. H. Pfister, Augsburg, both of Fed. Rep. of Germany, assignors to Pfister GmbH, Fed. Rep. of Germany

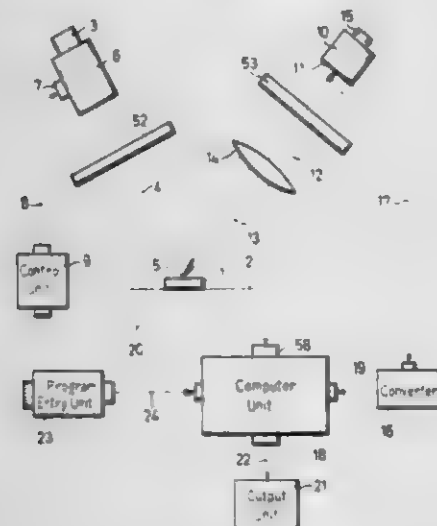
Filed Jun. 26, 1978, Ser. No. 919,872

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728717

Int. Cl.³ G01N 21/55

U.S. Cl. 356-445

4 Claims



1. A method for contact-free analysis of fat/meat quality of a meat product, comprising the steps of:
radiating the meat product with a scanning light source which creates a moving point of light on the meat product;
detecting continuous radiation emanating from the moving point of light on the test object and periodically converting a detected continuous radiation into definite radiation values corresponding to the point of light at scanned locations on the test object;
providing reference values which are known radiation values corresponding to fat and meat portions of a reference meat product;
comparing the reference values to the definite radiation values to create a first group of the definite values corresponding to fat portions and a second group of the definite values corresponding to meat portions of the meat product; and
comparing the two groups of values to determine fat/meat quality.

4,226,541 METHOD AND APPARATUS FOR SUPPRESSING THE EFFECTS OF SURFACE LIGHT SCATTER IN OPTICAL REFLECTIVE SCANNING SYSTEM

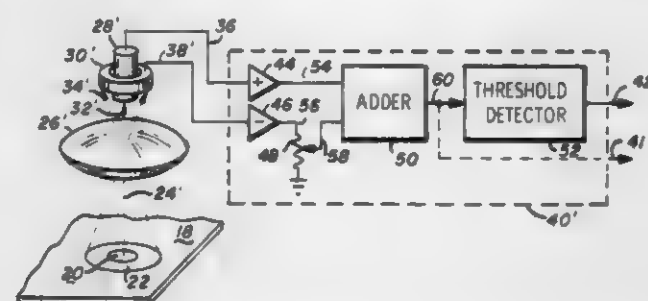
James G. Tisue, 7 Morning Sun Ct., Mountain View, Calif. 94043

Filed Aug. 11, 1978, Ser. No. 933,064

Int. Cl.² G01N 21/22; G06K 7/14

U.S. Cl. 356-446

16 Claims



1. A method of determining the data state of a selected area of a surface independent of the surface light back-scatter effect, comprising the steps of:

illuminating a selected area of a solid surface with a focused beam which directly projects light only on said selected area;
detecting the intensity of the light appearing to emanate from said selected area and generating a first electrical signal proportional thereto;
detecting the intensity of any light appearing to emanate from an area of said surface adjacent said selected area and upon which said focused beam does not directly project light and generating a second electrical signal proportional thereto; and
subtracting at least a portion of said second electrical signal from said first electrical signal to produce a compensated analog signal representing the actual reflectivity of said selected area.

4,226,542

CEMENT SLURRY RECLAMATION SYSTEM AND METHOD

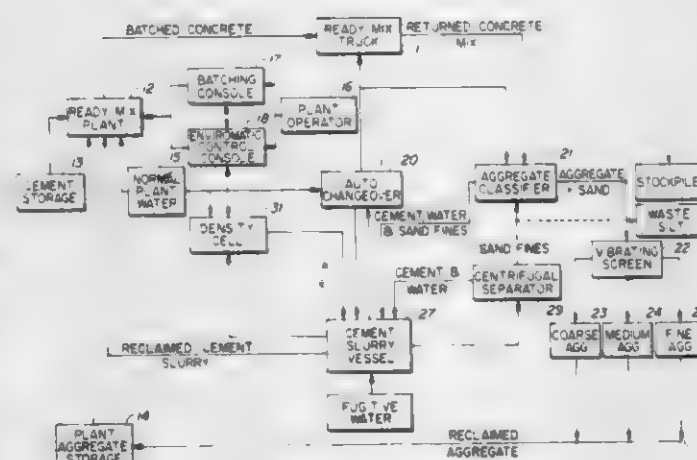
Melvin L. Black, and Robert C. Bowen, both of Pacifica, Calif., assignors to Weigh-Tech, Inc., Pacifica, Calif.

Filed Apr. 5, 1979, Ser. No. 27,328

Int. Cl.³ B28C 7/04

U.S. Cl. 366-17

61 Claims



1. In a method of manufacturing concrete in which a slurry is formed by mixing returned concrete and water in a vessel and wherein said slurry is selectively added to fresh concrete mix, the improvement comprising the steps of:

(a) providing a slurry vessel having a volume sufficiently great to accommodate a predetermined fractional portion of the total average volume of water used to produce fresh

concrete during a predetermined production period, said fractional portion being less than unity;
(b) depositing aggregate-less returned concrete in said vessel during a production period;
(c) determining the specific gravity of said slurry during the next succeeding production period; and
(d) withdrawing said slurry from said vessel for admixture to fresh concrete mix at a rate selected in accordance with said specific gravity so that substantially all of the slurry is consumed within said next succeeding production period.

4,226,543

MIXING HEAD, ESPECIALLY FOR REACTIVE COMPONENTS SUCH AS THOSE IN THERMOSETTING SYNTHETIC RESINS

Klaus Schlüter, Munich, Fed. Rep. of Germany, assignor to Krauss-Maffei AG, Munich, Fed. Rep. of Germany

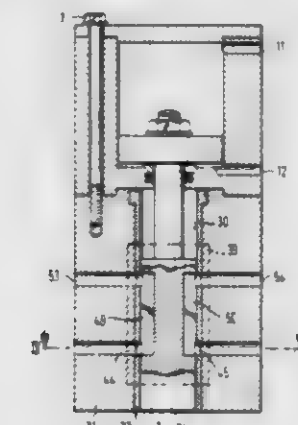
Filed Apr. 10, 1979, Ser. No. 28,825

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2815944

Int. Cl.³ B01F 15/02; B01J 19/02

U.S. Cl. 366-159

5 Claims



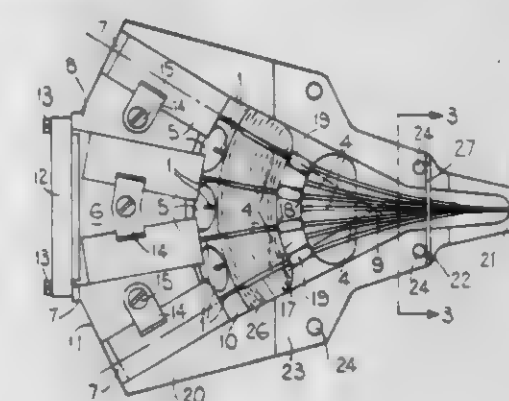
1. A mixing head for at least two flowable components, comprising:

housing means including means defining an internally located axially extending bore, means defining at least one pair of inlet ports opening into said bore transversely and connected to respective sources of said components, means defining at least one pair of return ports opening into said bore at a location axially spaced from said inlet port means, said return ports being connectible to respective reservoirs of said components and means defining an axial outlet located at the downstream end of said bore means for discharge of a mixture of said components delivered by said inlet ports;
means forming an elastic wall along said bore and having a variable inner diameter;
a control plunger axially shiftable in contact with said wall between a first position wherein said mixture is expressed through said outlet and a second position wherein said plunger is retracted from said outlet and said inlet ports open into a mixing chamber formed within said wall between said plunger and said outlet, said plunger being formed with a pair of bypass passages angularly spaced apart around said plunger and axially extending to connect each inlet port with a respective return port in said first position of said plunger, the elastic wall bearing upon said plunger between said passages for sealing said components against mixture between said plunger and the wall, said means forming said wall including a thin-walled elastic sleeve received in said bore, said housing means being formed between said passages with at least one pressurizable compartment closed by said sleeve, and means for pressurizing said compartment to deform said sleeve against said plunger at least between said return ports.

4,226,544
WIRE PRINTING HEADS
Keith B. Davenport, Sandhurst, and Ronald N. Piper, Whitton, both of England, assignors to Data Recording Instrument Company Limited, Staines, England
Continuation of Ser. No. 806,778, Jun. 15, 1977, abandoned.
This application Sep. 29, 1978, Ser. No. 947,071
Int. Cl.³ B41J 3/12

U.S. Cl. 400-124

2 Claims



2. A wire printer head including
a body member;
a plurality of printing wires, a first end of each wire effective for printing and a second end opposite said first end;
a wire guide on said body member supporting said wires adjacent said first ends in closely spaced relationship;
a support member on said body member;
a plurality of solenoids mounted on said support member in an arcuate formation and each including an armature;
said wires extending in a plurality of diverging curves from said wire guide to said solenoids and the second ends of the wires each being secured to the armature of a different one of the solenoids respectively;
a plurality of curved tubes; each wire extending through a different one of said tubes and each tube being preformed to a curvature substantially corresponding to the curve of the wire extending therethrough;
a tube guide plate on the body member adjacent the wire guide effective to locate one end of each of said tubes in alignment with the smooth curve of the wire extending therethrough; and
a further support member on the body member spaced from the tube guide plate and extending adjacent the tubes, said further support member having a plurality of open ended slots receiving the tubes, each of said slots being sufficiently large in depth and width to ensure that the tubes extend in positions relative to the further support member determined by the wires extending therethrough without constraint from the further support member and the tubes being secured in said positions relative to the further support member, one in each slot, by a casting of adhesive material in each slot.

4,226,545

ELECTROMAGNETIC DRIVE FOR RECORDING PINS IN A MATRIX PRINTER

Klaus Brandenburg, Kirchen-Wehbach; Hermann Richter, and Wendelin Weber, both of Siegen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,226

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746601

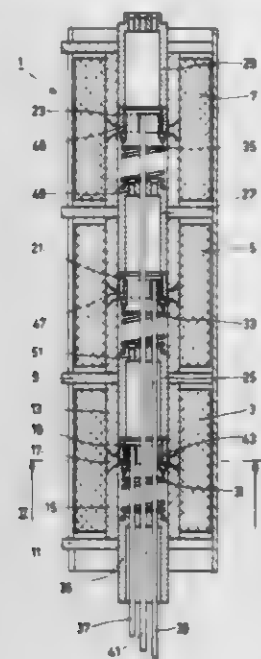
Int. Cl.³ B41J 3/10

U.S. Cl. 400-124

2 Claims

1. An electromagnetic drive for a recording pin in a matrix printer, comprising a cylindrical excitation coil which is arranged on a yoke and inside of which a cylindrical armature is displaceable, a recording pin being connected to said armature by means of a clamping sleeve which includes means for bias-

ing said clamping sleeve against the inner wall of the armature and which encloses the recording pin in a clamping manner, said clamping sleeve comprises an indentation which extends



radially towards the center of said cylindrical armature and which encloses the recording pin in a clamping manner said indentation being spaced from said means for biasing.

4,226,546

PRINTER CONTROL SYSTEM

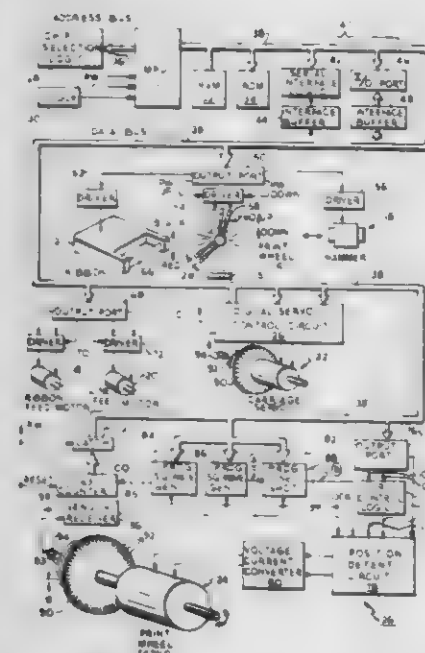
Mark H. Hoffman, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Filed Dec. 6, 1978, Ser. No. 967,090

Int. Cl.³ B41J 1/30; G05B 19/24

U.S. Cl. 400—144.2

20 Claims



13. A device for controlling the velocity of a driven member, said device comprising means for indicating the present velocity of said member, means for indicating the desired velocity of said member, data storage means for storing values of acceleration corresponding to various values of the difference between said velocities in order to change the present velocity to said desired velocity during a predetermined period of time, and means for delivering signals corresponding to selected ones of said values of acceleration to a drive source to accelerate or decelerate said member.

4,226,547
PRINTING CARTRIDGE

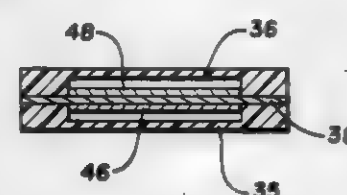
Franklin C. Bradshaw, St. Paul; Thomas P. Connoy, Lino Lakes, and Michael W. Paque, Stillwater, all of Minn., assignors to Kroy Industries Inc., Stillwater, Minn.

Filed Jul. 7, 1978, Ser. No. 922,565

Int. Cl.³ B41J 15/04, 32/00

U.S. Cl. 400—613

28 Claims



1. A printing cartridge for supplying tape and ribbon in a printing apparatus having a printing station, said printing cartridge comprising:

- a cartridge housing;
- a spool of image carrying tape rotatably supported within said housing;
- a spool of printing ribbon rotatably supported within said housing;
- a guide means comprising an elongated guide member integrally joined with said cartridge housing and extending outwardly therefrom for guiding said tape and ribbon, one above the other such that a first flat face of said tape is in face-to-face registration with a first flat face of said ribbon, from said cartridge toward the printing station of said printing apparatus;
- means within said guide means for creating a drag on said tape and ribbon for resisting free movement of said tape and ribbon through said guide means; and
- means for maintaining separation between said first flat faces of said tape and ribbon during the passage thereof through a substantial portion of the length of said elongated guide member.

4,226,548

PARTS CLEANING APPARATUS

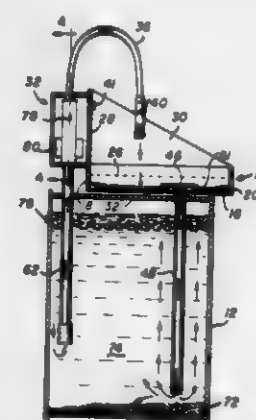
Kuno W. Reith, San Francisco, Calif., assignor to Steam Stores, Inc., Saratoga, Calif.

Filed Aug. 21, 1978, Ser. No. 935,631

Int. Cl.³ B08B 3/02, 3/10

U.S. Cl. 401—188 R

8 Claims



1. A parts cleaning apparatus for use in cooperation with a fluid container at least partially filled with a solvent, comprising:

- a tray means disposed on top of said container and including a base portion provided with a drain hole, and four upwardly extending wall portions including a rear wall portion, a front wall portion and two side wall portions;
- screen means disposed over said base portion;
- a rear splash shield attached to said rear wall portion and extending upwardly from said base portion;
- pumping means including

a substantially vertical sedimentation tube means having a first intake port and a first output port;

a magnetic pump means having a second intake port coupled to said first output port, and having a second output port, whereby said pump draws solvent through said sedimentation tube and into said second intake port and ejects the solvent from said second output port;

an output manifold disposed below said first intake port and above said second intake port and having a third intake port coupled to said second output port, and a third output port;

drain pipe means having a first end disposed through the drain hole of said base portion and having a second end disposed proximate the bottom of said container;

a U-shaped ridge means formed around said drain hole of said base portion for restricting fluid flow about said drain hole;

a cover means having a rectangularly-shaped top portion and three downwardly depending side portions, said cover means being adapted to cover said U-shaped ridge means and said drain hole, whereby sediment is restricted from flowing out of said drain hole by the cooperation between said ridge means and said cover means;

intake pipe means having a first end connected to said first intake port and having a second end disposed within the solvent of said fluid container, the second end of said intake pipe means being further from the bottom of said container than said second end of said drain pipe means;

first flexible hose means connected at a first end to said third output port; and

hollow brush means connected to a second end of said first flexible hose means, whereby solvent may be drawn from said container through said intake pipe, pumped through said flexible hose means and out of said hollow brush means by said pumping means to clean a part, after which the solvent drains through said screen means and down said drain pipe back into said container.

4,226,549

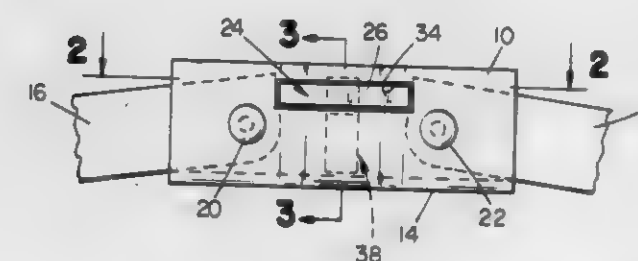
LOCKING HINGE JOINT

Richard L. Batt, Gardner, Mass., assignor to Collier-Keyworth Company, Gardner, Mass.

Filed Mar. 30, 1979, Ser. No. 25,328

Int. Cl.² F16C 11/10

U.S. Cl. 403—92



4. A locking hinge joint comprising a bracket of U-shaped cross-section having a closed margin and open ends and an open side,

a first arm pivotally mounted within said bracket adjacent one end thereof,

a second arm pivotally mounted within said bracket adjacent the opposing end thereof,

said arms having lateral margins,

each arm being mounted to pivot to and from a first over center position in which it extends outwardly through an end of said bracket with its lateral margin bearing against the closed margin of said bracket in said over center position, and a second position in which it extends outwardly through the open side thereof, said arms and bracket being constructed and arranged so that the arms pass through

dead center in moving to and from said first and second positions,

a locking element mounted on said bracket between the pivot mountings of said arms for movement transversely of said bracket to and from a first position in which it blocks pivotal movement of both said arms from their first position and a second position in which said arms are free to pivot.

4,226,550

REINFORCED PLASTIC YOKE

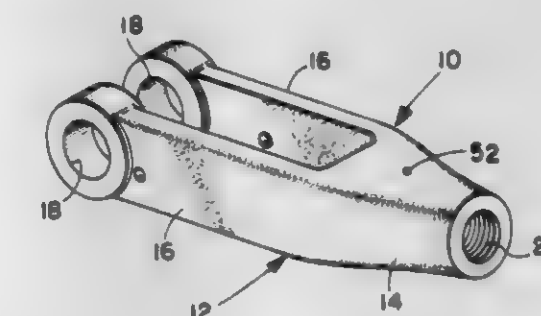
Kenneth S. Kupeck, and Rudolph F. Piecuch, both of Seven Hills, Ohio, assignors to Edward W. Daniel Company, Cleveland, Ohio

Filed Sep. 18, 1978, Ser. No. 943,002

Int. Cl.³ F16C 11/00

U.S. Cl. 403—157

23 Claims



20. A reinforced plastic yoke for coupling opposed load members for transmission of axial tensile loads, said yoke comprising a plastic body having a collar portion at one end and a pair of spaced longitudinally extending portions integral with said collar portion, said collar portion having means for connecting same to one load member and said longitudinally extending portions having means for connecting same to the other load member, and one piece metal insert means embedded in said collar portion and longitudinally extending portions for reinforcing same, said insert means extending between said means for connecting to increase the strength of said plastic body along the effective load bearing length thereof.

4,226,551

CONNECTOR SYSTEM FOR ELONGATE MEMBERS

Harry Beasley, 164 Maidenway Rd., Paignton, Devon, England

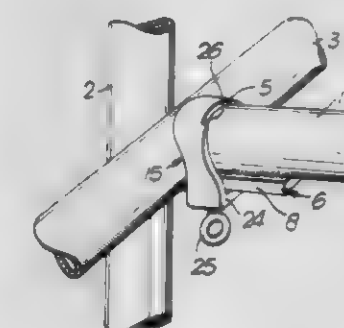
Filed Jan. 3, 1979, Ser. No. 997

Claims priority, application United Kingdom, Jan. 10, 1978, 823/78

Int. Cl.² F16D 1/00, 3/00; F16G 11/00

U.S. Cl. 403—219

6 Claims



1. A connector system for interconnecting three elongate members comprising:

- a first elongate member;
- a support bracket attached at one end of said first elongate member;
- engagement means on said bracket engaged with a second elongate member; and
- a bearing face on said bracket engaged by a third elongate member

member when the latter is located between the second member and the said end of the first member, wherein the improvement comprises:

a collar element receiving the one end of said first member and having a retaining part which fits over the bracket and a wedge part which is engaged between said third member and the said one end of the first member, the axis of the collar being substantially parallel to that of the first member, and

a screw-threaded clamping bolt threaded in the retaining part and engaging the opposite face of the bracket from said bearing face,

whereby upon the tightening of the bolt against the bracket the wedge part of the collar is drawn between the third member and the said one end of the third member to clamp said members relatively to each other.

4,226,552

ASPHALTIC PAVEMENT TREATING APPARATUS AND METHOD

Frank F. Moench, P.O. Box 6484, Station B, Albuquerque, N. Mex. 87107

Continuation of Ser. No. 747,295, Dec. 3, 1976, abandoned. This application May 17, 1978, Ser. No. 906,450

Int. Cl.² E01C 23/12

U.S. Cl. 404—92

29 Claims



1. In apparatus for reconditioning asphaltic pavement for road surfacing and the like, a combination comprising: a frame supported on wheels for vehicular movement over a ground surface;

an elongated, generally cylindrical housing on said frame mounted for rotation about a longitudinal axis forming an inner chamber elevated above the ground surface having a material inlet at one end and a material outlet at the opposite end through which a loose asphalt-aggregate mixture delivered to said material inlet passes and is discharged through said material outlet, said chamber having a gas inlet at one end and a gas outlet opposite the gas inlet to pass gas through said chamber;

drive means operatively associated with said housing for rotating said housing about its longitudinal axis; means for picking up said mixture from the ground surface while moving relative to the ground surface and delivering said mixture to said material inlet;

heating means operatively associated with said housing for heating gases passed through said gas inlet in heat exchange relation to said mixture and out said gas outlet to heat said mixture as said mixture is tumbled in said housing for uniformly, simultaneously heating and mixing said mixture;

means movable with said heating means and operatively associated with said housing for adding a conditioner replacing at least some of the ingredients lost by oxidation of the asphaltic pavement to said heated mixture; and

mixing apparatus on said frame for thoroughly and intimately mixing the conditioner and picked-up mixture independently of the ground surface while confined in a mixing chamber supported above the ground surface, said chamber having a bottom wall over which the conditioned mixture is moved above the ground surface between an inlet and an outlet and further having paddle blades disposed in an axially spaced and radially extending arrangement above the bottom wall between the inlet and outlet, to form a reconditioned mixture of a composition and consistency suitable for being rolled into a new mat of asphaltic pavement while moving relative to the ground surface,

said converting, picking up and mixing being coordinated in

movement with one another relative to the ground surface.

4,226,553

SLIDE GATES FOR WATER AND SEWAGE TREATMENT PLANTS

George E. Whippe, Athol, and Richard J. Barger, Buckland, both of Mass., assignors to Whippe, Inc., Athol, Mass.

Filed Feb. 23, 1979, Ser. No. 14,730

Int. Cl.² E02B 7/36

U.S. Cl. 405—106

12 Claims



1. A slide gate mechanism adapted for mounting in functional relation with an opening in a wall, said gate comprising a rear frame assembly having first and second frame members for disposition along the sides of said opening and at least a third frame member extending between said first and second members for disposition along the bottom of said opening, a front frame assembly having first and second gate guide members for disposition along said first and second frame members and at least a fourth member extending between and interconnecting said first and second gate guide members, a gate assembly located between said first and second gate guide members, means associated with said first and second gate guide members for slidably engaging opposite edges of said gate assembly so that said gate assembly may be moved relative and parallel to said first and second gate guide members, and operating means carried by said front frame assembly and connected to said gate assembly and operable to selectively move said gate assembly in one direction or an opposite direction relative to said gate guide means so that said gate may be disposed in blocking or unblocking relation with said opening, and at least one resilient seal supported by at least one of said first, second and third frame members and slidably engaging said gate assembly, said at least one seal being disposed and constructed so that a first portion thereof is engaged by said gate assembly and a second portion thereof is deflected away from said gate assembly when said first portion thereof is engaged by said gate assembly.

4,226,554

METHOD AND APPARATUS FOR ABSORBING DYNAMIC FORCES ON STRUCTURES

John K. Vandiver, Lexington, Mass., and Shuhei Mitome, Kamakura, Japan, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 23, 1978, Ser. No. 908,873

Int. Cl.² E02B 1/00

U.S. Cl. 405—195

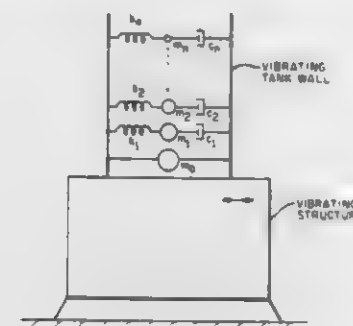
8 Claims

1. In a fixed structure that exhibits a dynamic response to wind, water and/or seismic excitation, the improvement which comprises: means for damping said dynamic response comprising a storage tank containing a liquid with a free surface, said storage tank being positioned on and supported by said structure, the shape of said tank and the nature of the liquid being

such as to effect a ratio of the uncoupled fundamental mode of the natural frequency of the tank containing liquid to the un-

preventing water-leaking ground from water leakage comprising the steps of

injecting a blend of water glass type grout thereinto, wherein said blend comprises a non-alkaline aqueous solution of silicic acid which is obtained by



coupled fundamental mode of the natural frequency of the structure and the empty tank of between about 0.8 and 1.1.

4,226,555

MOORING SYSTEM FOR TENSION LEG PLATFORM

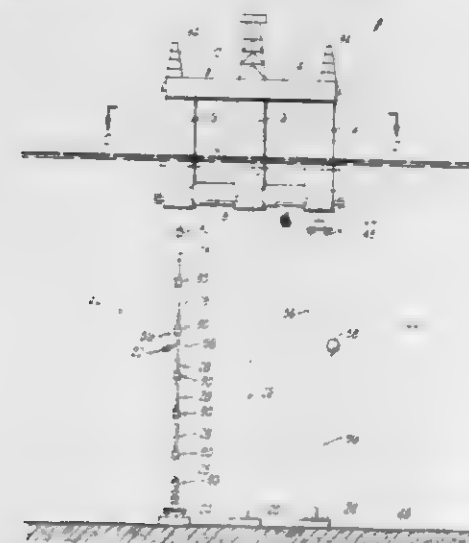
Henry A. Bourne, Jr., and Mamdouh Salama, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Dec. 8, 1978, Ser. No. 967,653

Int. Cl.² E02B 17/00; B63B 35/44

U.S. Cl. 405—224

30 Claims



1. A mooring system for a tension leg platform, comprising: a tension leg, including a plurality of tubular leg elements having threaded connections between adjacent leg elements;

a means for connecting an upper end of said tension leg to said tension leg platform;

a means for connecting a lower end of said tension leg to an anchor means connected to the ocean floor, said lower end connecting means being hydraulically actuated; and a means for communicating a hydraulic actuating signal from said tension leg platform to said lower end connecting means, said communicating means including an inner cavity of said tension leg.

4,226,556

INJECTION PROCESS AND INJECTION APPARATUS FOR SOLIDIFYING A GROUND

Kenji Kayahara, Yokohama, Japan, assignor to Kyokado Engineering Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 855,463, Nov. 28, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 942,892

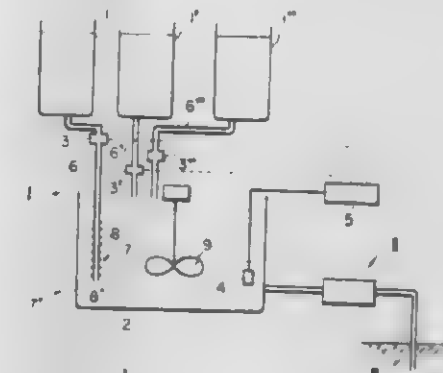
Claims priority, application Japan, May 16, 1977, 52-56075

Int. Cl.² E02D 3/14

U.S. Cl. 405—263

17 Claims

1. An injection process for the solidifying of a soft ground or



mixing water glass into an aqueous solution of an acidic reactant so as to remove alkali from said water glass, said non-alkaline aqueous solution of silicic acid being prepared to meet both of the following conditions A and B: A. the pH value thereof is 5 or less; and B. a value of

$$\frac{H+}{[SiO_2]^n}$$

is 1×10^{-3} or less; where $[H+]$ is the molar concentration of hydrogen ions, $[SiO_2]$ is the molar concentration of silicon dioxide, and n is the molar ratio of said water glass, thereby solidifying the ground in sufficient strength without forming blocks of silica.

4,226,557

INJECTION PROCESS AND INJECTION APPARATUS FOR SOLIDIFYING A GROUND

Kenji Kayahara, Yokohama, Japan, assignor to Kyokado Engineering Co., Ltd., Tokyo, Japan

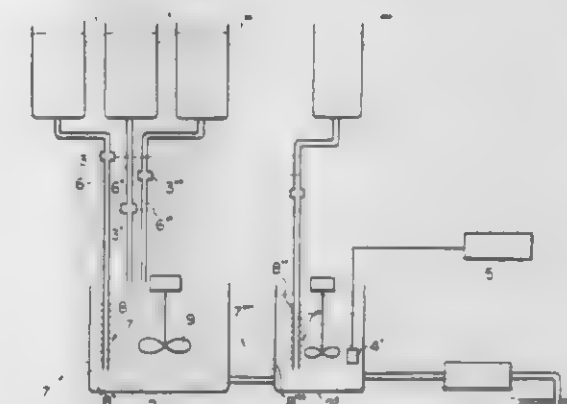
Division of Ser. No. 942,892, Sep. 18, 1978, which is a continuation-in-part of Ser. No. 855,463, Nov. 28, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,655

Claims priority, application Japan, May 16, 1977, 52-56075

Int. Cl.² E02D 3/14; G05D 7/00; B01J 19/18, 19/26

U.S. Cl. 405—269

5 Claims



1. An injection apparatus for solidifying a soft ground or preventing water-leaking ground from water leakage by injecting a blend of water glass type grout thereinto, wherein said blend comprises a non-alkaline aqueous solution of silicic acid which is obtained by mixing water glass into an aqueous solution of an acidic reactant so as to remove alkali from said water glass, said non-alkaline aqueous solution of silicic acid being prepared to meet both of the following conditions A and B: A. the pH value thereof is 5 or less; and B. a value of $H+/(SiO_2)^n$ is 1×10^{-3} or less;

where $(H+)$ is the molar concentration of hydrogen ions, (SiO_2) is the molar concentration of silicon dioxide, and n is the molar ratio of said water glass, said apparatus comprising a mixing mechanism for preparing a non-alkaline aqueous solution of silicic acid, an injection pipe mechanism to be provided in the ground for injecting said aqueous solution therein, and a conveying mechanism interposed between said mixing mechanism and said injection pipe mechanism for conveying said aqueous solution from said mixing mechanism to said injection pipe mechanism, in which said mixing mechanism comprises: material containers for containing materials for preparation of said non-alkaline aqueous solution of silicic acid; a mixing container connected through pipes to said material containers, said mixing container being adapted to prepare said non-alkaline aqueous solution of silicic acid by adding and mixing water glass into aqueous solution of silicic acid; a supplying mechanism provided in each of said pipes, for supplying said materials in said material containers to said mixing container, thereby to prepare the non-alkaline aqueous solution of silicic acid by adding and mixing water glass into aqueous solution of silicic acid in the mixing container.

4,226,538

CONTROL SYSTEM

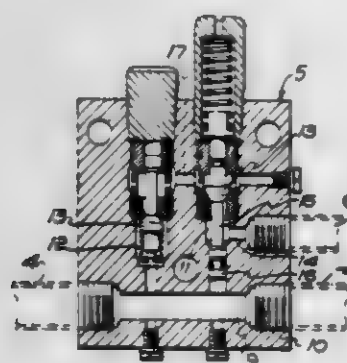
Lewis R. B. Bower; Philip W. Dudley, and John C. Smith, all of Wakefield, England, assignors to Fletcher Sutcliffe Wild Limited, Wakefield, England

Filed Feb. 16, 1979, Ser. No. 12,853

Int. Cl.³ E21D 23/12

U.S. Cl. 405—302

5 Claims



1. A mine roof support control system comprising at least one hydraulically powered, self-advancing mine roof support, at least one hydraulically extensible chock leg forming part of said mine roof support, a high pressure fluid line, a fluid supply line extending from said high pressure line to said support, a main valve, an auxiliary valve interposed between said main valve and said chock leg(s), a bypass line connected to said high pressure line in advance of said main valve and extending to said auxiliary valve, said auxiliary valve being so constructed as to open upon sensing a predetermined pressure and to close upon sensing a higher predetermined pressure.

4,226,559

ROCK BOLTING APPARATUS

Sören P. Prebensen, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Aug. 31, 1978, Ser. No. 938,357

Claims priority, application Sweden, Aug. 31, 1977, 7709760

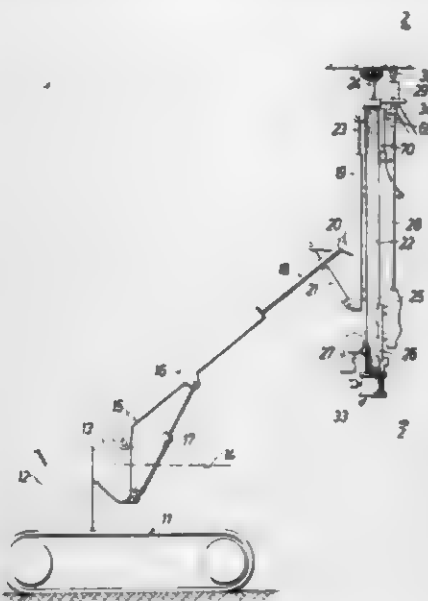
Int. Cl.³ E21D 20/00

U.S. Cl. 405—303

12 Claims

1. Rock bolting apparatus comprising:
a rock drill (25) and a bolt setting machine (31), both of which are mounted to be laterally power displaceable to an from their position for operation and are axially power feedable;
a magazine (37) for rock bolts, the rock bolts (46) being power displaceable to an operating position in alignment with a borehole made by the rock drill;
a magazine (38) for plates in which the plates (55) are stored

separated from the rock bolts (46), said plates having a rock bolt receiving opening therein and said plate magazine (38) being located at the front end of the bolt magazine (37); and
a centralizer for centralizing a rock bolt (46) during insertion



of a rock bolt in the borehole, the centralizer comprising a holder (59) for a plate (55) that is to be used with the rock bolt, and means (60, 62, 63) for locating said holder (59) relative to the borehole such that the opening of said plate is aligned with said borehole so that the plate with its bolt receiving opening will centralize the rock bolt.

4,226,560

TOOLHOLDER ANVIL SEAT FOR INDEXABLE INSERTS

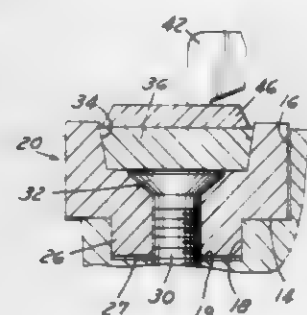
Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Dec. 26, 1978, Ser. No. 973,135

Int. Cl.³ B26D 1/12

U.S. Cl. 407—101

1 Claim



1. In a toolholder combination for use with pellet type, polygonally shaped, throwaway cutting inserts which includes a removable anvil seat secured to the holder body having a recess to receive a cutting insert, that improvement which comprises:

- a circular pocket having a first diameter formed in said toolholder body and having a flat base surface and straight enclosing walls parallel to the axis of the pocket and a concentric circular well having a diameter less than said first diameter formed in said base surface within the walls of said pocket below said base surface,
- an anvil seat disposed on said toolholder having an insert recess in the top thereof and having first circular outer walls complementary to and interfitted with said enclosing walls of said circular pocket, an annular base surface to seat on said flat base surface of said pocket, and a circular depending projecting below said annular base surface to insert into and interfit into said well to positively and

selectively locate said seat on said toolholder at a desired lead angle,

- (c) means to locate the desired orientation of said anvil seat in said well, and
- (d) means to locate and retain said anvil seat in the desired orientation on said toolholder in conjunction with said last named means to maintain the desired orientation of said anvil seat comprising a screw on an axis concentric with that of said circular pocket having a head countersunk into the bottom of said insert recess and a threaded shank extending into said toolholder body through said circular depending projection.

4,226,561

MILLING MACHINE FOR USE IN RESTRICTED RECESSES

Francesco C. Ramusino, Milan, Italy, assignor to Innocento Santeustacchio S.p.A., Brescia, Italy

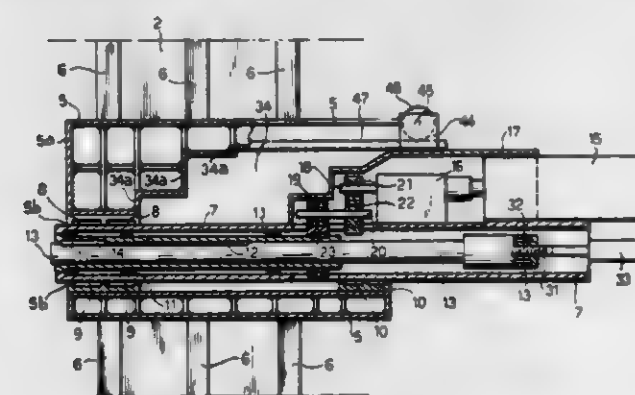
Filed Mar. 20, 1978, Ser. No. 888,240

Claims priority, application Italy, May 27, 1977, 24063 A/77

Int. Cl.³ B23C 5/26; B23Q 5/22

U.S. Cl. 409—232

4 Claims



1. In a milling machine including a base, an upright element which is horizontally adjustable along said base, a clamping platform disposed adjacent the base, a machine head which is vertically adjustable along the upright element, a tubular ram mounted in the machine head, said tubular ram being adjustable transversely to the upright element, toward and away from the clamping platform, a milling tool spindle adapted to rotate around its longitudinal axis, said milling tool spindle being rotatably supported in the tubular ram with which it is integral in translation, and a drive means for rotating the milling tool spindle and for integrally moving the ram and spindle toward and away from the clamping platform, the improvement which comprises integrally mounting the drive means which is utilized for rotating the milling tool spindle on the tubular ram on the inside of a housing which is integrally connected to said tubular ram, said machine head being provided with a cavity which is open at the end opposite to the wall end facing the clamping platform and extends along the longitudinal direction of displacement of said tubular ram for a distance not less than the traveling distance of the ram with respect to the machine head, said cavity being provided with a cross section which allows the movement of the driving means and respective housing on the inside thereof, said machine head being provided with an aperture located in the end wall facing said clamping platform for passage of the operative end of the tubular ram, the inner sides of the aperture being provided with first guide means for receiving said operative end of the tubular ram and second guide means for the displacement of the tubular ram, said second guide means provided between at least one inside wall of said cavity and the counterfaced wall of said housing which is integrally connected to the tubular ram, said second guide means longitudinally extending over a length greater than that of the first guide means provided at the inner sides of said aperture.

4,226,562

TOOLHOLDER

Herbert Schmid, Renningen, and Ernst Schmid, Ditzingen, both of Fed. Rep. of Germany, assignors to Schmid-Kosta KG, Renningen, Fed. Rep. of Germany

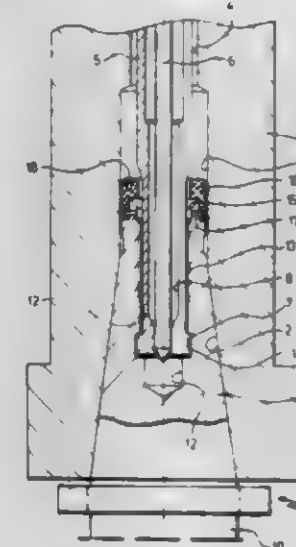
Filed Sep. 11, 1978, Ser. No. 941,356

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741810; Dec. 13, 1977, 2755393

Int. Cl.³ B23C 5/26

U.S. Cl. 409—233

8 Claims



1. In a spindle-to-toolholder attaching and detaching mechanism for machine tools having a spindle comprised of an externally threaded draw bar for threaded attachment within a bore of a toolholder or a spindle provided with a chucking means having a radially expandable and contractable draw member provided along a peripheral edge thereof with a radially outwardly extending projection and a tension rod means for radially expanding said draw member, said tension rod being axially movable with respect to said draw member and said spindle, a toolholder selectively attachable to and detachable from either of said machine tool spindles, said tool holder comprising a centrally extending bore means for receiving either said externally threaded draw bar or said chucking means, said bore means being provided with an outwardly, radially extending annular groove so located and of a dimension sufficient to engage the radially outwardly extending projection of said draw member when said chucking means is inserted in said bore and said tension rod means is axially actuated to radially expand said draw member thereby securing said toolholder in said spindle, said groove being further located and of a dimension sufficient to allow said projection to be disengaged therefrom upon axial deactivation of said tension rod means to radially contract said draw member and wherein said bore means further includes a threaded section of a compatible dimension with said externally threaded draw bar such that said externally threaded draw bar is threadably attachable therein, said mechanism allowing said toolholder to be readily attachable to and detachable from said spindle, regardless of which spindle is employed.

4,226,563

AUTOMATIC ARTICLE-LAYING APPARATUS

Kouetsu Horikawa; Kiyosuke Mori, and Yukito Ito, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,980

Claims priority, application Japan, Feb. 16, 1978, 53-15928

Int. Cl.³ E04G 21/14

U.S. Cl. 414—10

5 Claims

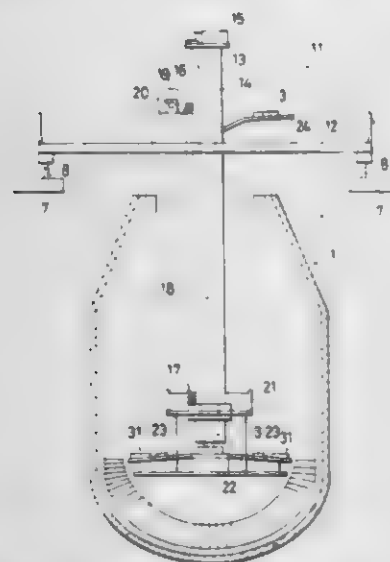
1. An automatic article-laying apparatus, which is adapted to be positioned next to the terminal end of a horizontally rotatable conveyor and comprises:

horizontally rotatable conveying means adapted to be posi-

tioned next to said conveyor, said conveying means carrying article holding means that projects sideward, below the plane on which an article is conveyed, so as to contact the side of the previously laid article;

driving means for horizontally rotating said rotatable conveying means;

means for pushing the article transversely, positioned close and parallel to said rotatable conveying means, said trans-



verse pushing means being adapted to push the article away from said rotatable conveying means, at right angles to the traveling direction thereof and toward said article holding means; and

means for pushing the article longitudinally, positioned behind said article holding means and along said rotatable conveying means, said longitudinal pushing means being adapted to push the article, delivered from said rotatable conveying means, in the traveling direction thereof.

4,226,364

APPARATUS FOR FEEDING GLASS BATCH MATERIALS INTO A GLASS MELTING FURNACE
Shiro Takahashi, Yokohama, and Yoshihiro Tsuchimoto, Funabashi, both of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

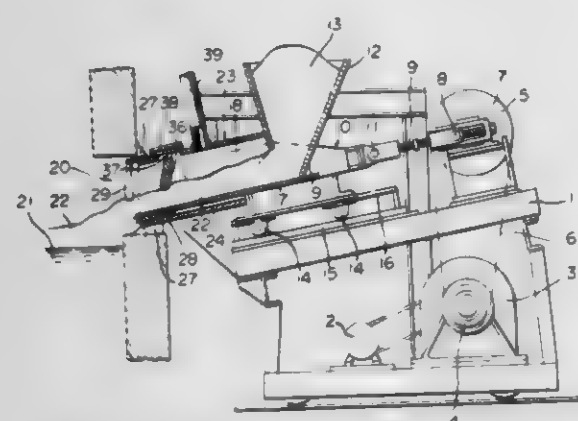
Filed May 17, 1978, Ser. No. 907,014

Claims priority, application Japan, May 24, 1977, 52-59432; Jun. 14, 1977, 52-69429

Int. Cl.³ C03B 3/00

U.S. Cl. 414-166

9 Claims



1. In a blanket feeder type apparatus for feeding glass batch materials into a glass melting furnace including a batch feeding opening, said apparatus comprising a hopper for receiving glass batch materials; a batch feeding trough disposed near an outlet of the lower part of the hopper to receive the glass batch materials flowed from the hopper; and a driving means for forwardly moving the batch feeding trough to a batch feeding opening of the glass melting furnace and for backwardly moving it to perform reciprocal movement, an improvement which comprises a sealing case having an outlet adjacent said batch

feeding opening and extending from the hopper to said batch feeding opening of the glass melting furnace to cover the batch feeding trough; a shelter plate made of heat resistant material which is suspended from the upper end of said outlet of the sealing case so as to contact with the glass batch layer feed into the glass melting furnace; a swingable damper plate having a rear in a direction opposite said glass melting furnace, pivotally fitted to the upper part of the inside of the sealing case and having a lower edge being contacted with a glass batch layer on the batch feeding trough; and a positive pressure keeping means adapted for keeping the pressure in a space in said rear of the damper plate of the sealing case higher than that of an atmosphere in the glass melting furnace.

4,226,565

ENSILAGE STORING APPARATUS

Xaver Lipp, Hohenstaufenstrasse 30, D 7090 Ellwangen, Fed. Rep. of Germany

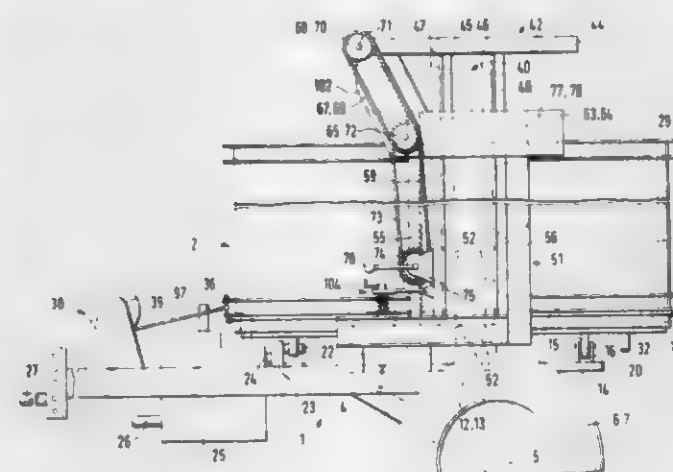
Filed Nov. 16, 1978, Ser. No. 961,276

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2753288; Sep. 1, 1978, 2838149

Int. Cl.³ A01F 25/00

U.S. Cl. 414-467

12 Claims



1. An apparatus for storing and transporting fodder and the like comprising

a storage tank having a side wall, a top wall and a bottom wall at least one of the walls being separable and wherein the top wall is openable to permit filling of the tank with fodder;

a vehicle having a frame; and

means on said vehicle for releasably supporting said tank for filling and transporting, said means including

tiltable support means for tilting said tank about a horizontal tilting axis;

means including a drive mechanism for rotating said tank about a vertical axis;

pressure roller means insertable into the upper end of said tank for compacting fodder therein as said tank is being filled;

vertically movable means for releasably supporting said pressure roller means and for elevating said pressure roller means as said tank is filled with fodder compacted thereby;

said pressure roller means being removable from said tank and from said vertically movable means after filling of said tank.

4,226,566

BEET HARVESTING MACHINE

Gale E. Maust, 8669 Pigeon Rd., Bay Port, Mich. 48720

Filed Mar. 30, 1978, Ser. No. 891,613

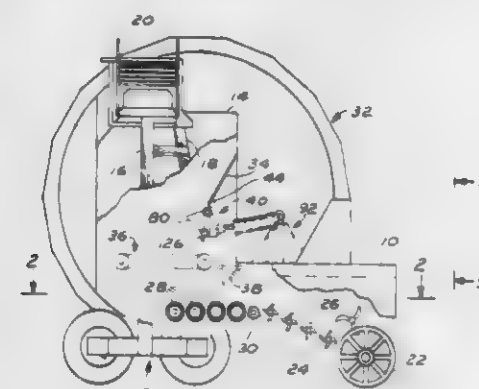
Int. Cl.² B60P 1/36, 1/40

U.S. Cl. 414-519

22 Claims

1. In a beet harvesting machine of the type in which beets are

dug, freed of dirt, and elevated to a truck or a holding tank, in which the holding tank has a backwardly and downwardly sloping front wall which terminates above a horizontal conveyor which, when actuated, functions to remove beets from said holding tank, the combination therewith in which the bottom portion of the front wall has the uppermost edge thereof hinged on a horizontal axis lying substantially in the plane of said front wall to provide a planar-form gate which, in its normal position, lies in the plane of said front wall and which is adapted to swing forward and backward from its



normal position in the plane of said front wall to a forward position where it forms an acute angle with the vertical plane through said axis, and in which means is provided for moving said gate from one extreme position to the other and holding it in either position or in any intermediate position whereby, when said gate is moved to a vertical position, the clearance between the bottom of said gate and the top of said horizontal conveyor is reduced to a minimum and, when it is moved from that position to the extreme forward position, the clearance is maximized.

4,226,567

APPARATUS FOR HANDLING BOBBINS

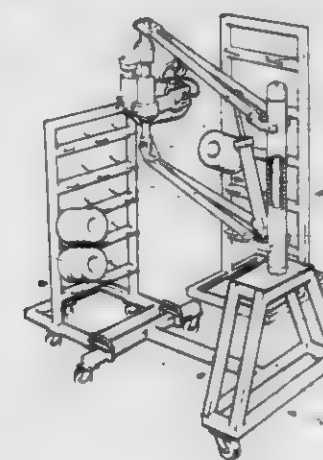
Laurence S. Van Orsdale, Jr., Taylors, S.C., assignor to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Filed Jun. 9, 1978, Ser. No. 914,019

Int. Cl.³ B66C 1/66; B65H 67/00

U.S. Cl. 414-555

14 Claims



1. Bobbin-handling apparatus comprising a frame, an upright elongate member, means pivotally mounting said upright member on said frame for pivotal movement about a generally vertical axis, a bobbin-engaging unit, linkage means connecting said engaging unit and said upright member to enable generally vertical movement of said engaging unit with respect to said upright member, said linkage means including two generally parallel links pivotally connected to spaced portions of said upright member, an outer member pivotally connected to outer end portions of said links and spaced from said upright elongate member, said engaging unit being carried by said outer member, and a bracket carried by said outer member and

pivotally connected to said bobbin-engaging unit to enable said engaging unit to pivot about a generally vertical axis.

4,226,568

PALLET POSITIONER

Alfred W. Christian, Woodstock, Canada, assignor to Hydrotile Canada Limited, Woodstock, Canada

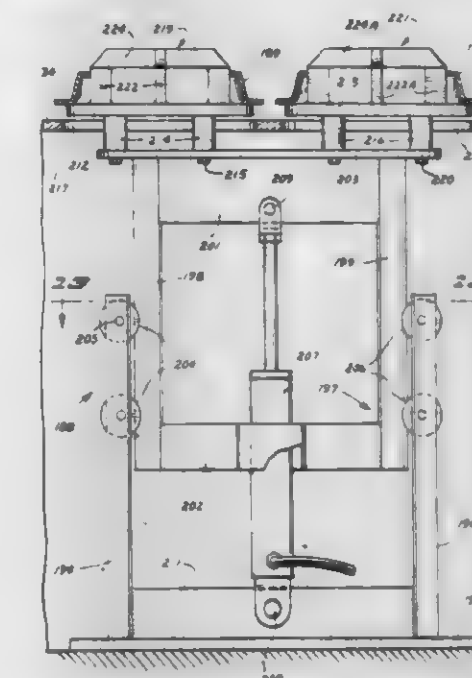
Division of Ser. No. 753,526, Dec. 12, 1976, Pat. No. 4,118,165.

This application Jun. 30, 1978, Ser. No. 920,816

Int. Cl.³ B23B 21/00

U.S. Cl. 414-589

17 Claims



1. A pallet positioner for locating pallets in selected positions on a turntable comprising: a movable frame, support means movably supporting the frame for movement between first and second positions, means connected to the frame operable to selectively move said frame to the first and second positions, a pair of tables mounted on the frame, and a pallet guide and positioning structure mounted on each table to locate a pallet on the turntable, said frame movable to the first position to locate the pallets in selected positions relative to the turntable.

4,226,569

WAFER LOADING AND POSITIONING DEVICE

René Gerard, and Michel Lacombe, both of Paris, France, assignors to Thomson-CSF, Paris, France

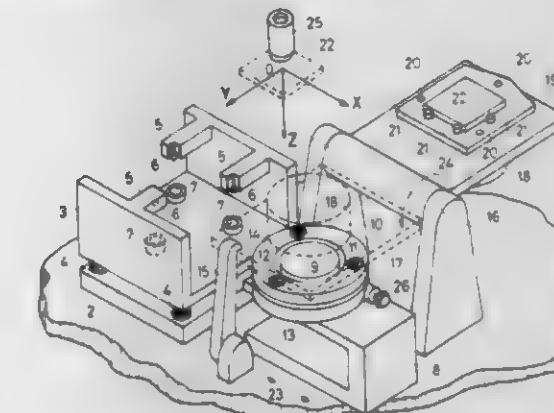
Filed Apr. 17, 1978, Ser. No. 897,537

Claims priority, application France, Apr. 20, 1977, 77 11909

Int. Cl.² F23Q 3/04; F25B 11/00

U.S. Cl. 414-737

15 Claims



1. A loading device for positioning a body having a flat face in a position such that said flat face coincides with a mechanically indexed reference plane, said device comprising: a mounting frame carrying mechanical indexing means defining said reference plane, a levelling stage for supporting said body,

and fitting means for setting down said flat face in said position; said levelling stage comprising a base member, and a flat topped supporting member; said base member being provided with a cylindrical bore, and said supporting member having a spherical bearing surface slidably mounted within said cylindrical bore, said supporting member and said base member being clampable in fixed relation to each other; said levelling stage further comprising repulsion means for pushing said supporting member away from the bottom of said base member, and straining means, acting on one of said members for controlling the amount of clamping thereof.

4,226,570

BLOCKER FOR MAGNETIC DISKETTE GRIPPER

Joseph J. Holecsek, Kanson; William B. Plummer, Rochester; Clarence R. Schwiters, Rochester, and Michael N. Zell, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

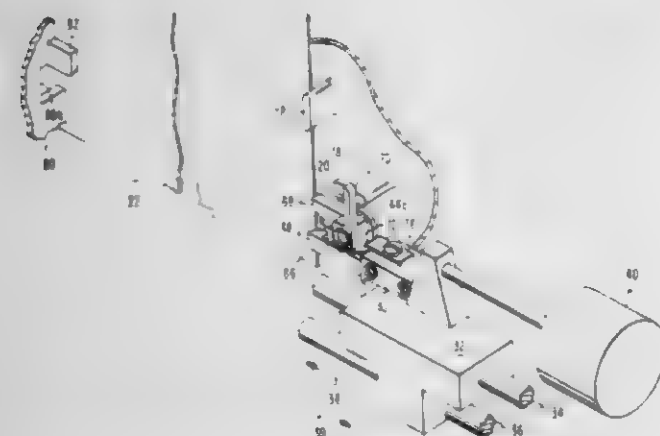
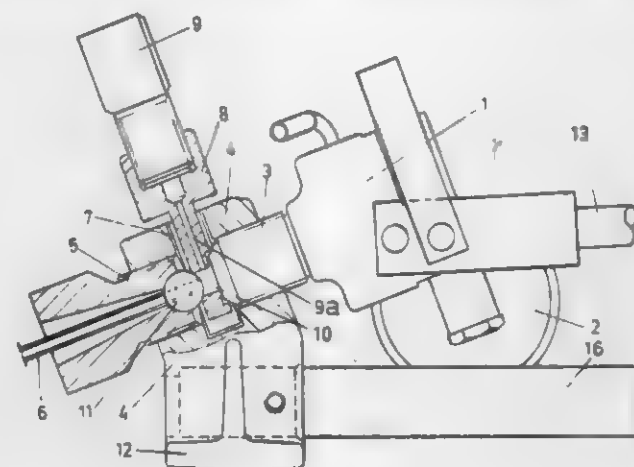
Filed Jan. 29, 1979, Ser. No. 7,133

Int. Cl.³ G11B 17/22

U.S. Cl. 414-751

9 Claims

of the pump can be selectively chosen in relation to said attachment and connecting member.

**1. A gripper assembly including:**

a pair of clamp jaw portions movable toward and away from each other and resilient means urging said jaw portions together whereby they may be moved onto an article to embrace and frictionally grip the article between them,

and
a blocker movable with respect to said jaw portions blocking entrance of an article between said jaw portions in one position of the blocker and allowing such entry of an article between said jaw portions in another position of the blocker.

4,226,571

PRESSURE OIL INJECTOR

Sture Östling, and Stig Persson, both of Katrineholm, Sweden, assignors to Aktiebolaget SKF, Goteborg, Sweden

Filed Oct. 4, 1978, Ser. No. 948,419

Claims priority, application Sweden, 1977, 7711968

Int. Cl.³ F04B 21/00

U.S. Cl. 417-63

8 Claims

1. A pressure oil injector assembly comprising an attachment and connecting member (4) having connecting means for a pump housing of a pressure medium pump (1) and a pressure pipe (6), the high pressure part of the pump being in communication with the pressure pipe, means for connecting the pump housing and the pressure pipe to the attachment and connecting member including threaded dowels (3, 5) which engage in threaded bores in said attachment and connecting member, said bores being opposed to each other, an insertable member adapted to seat in an aperture in said attachment and connecting member located between said threaded bores, said dowels adapted to be threaded toward one another in said bores to lock said insertable member therebetween, said threaded bores being arranged in a predetermined manner so that said one dowel connected to said pump may be selectively positioned in

4,226,572
VALVE ASSEMBLY FOR A MULTI-CYLINDER SWASH PLATE TYPE COMPRESSOR

Shozo Nakayama; Mitsuhiro Hattori, and Makoto Ono, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

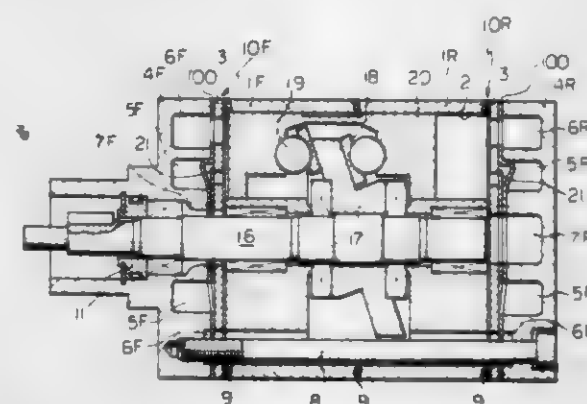
Filed Jan. 24, 1979, Ser. No. 6,130

Claims priority, application Japan, Feb. 10, 1978, 53-14433

Int. Cl.³ F04B 1/18

U.S. Cl. 417-269

6 Claims



1. A valve assembly for a multi-cylinder compressor of the type having: a pair of axially combined cylindrical cylinder blocks provided therein with a plurality of axial cylinder bores together with a double acting reciprocal compression mechanism, and; a front and a rear round end housing attached to a front and a rear end of the combined cylinder blocks, via a valve assembly, respectively, each of the front and rear housings having therein a low pressure refrigerant chamber, a high pressure refrigerant chamber, and an oil retaining chamber separated from one another by walls provided inside of each of the front and rear housings, comprising:

a valve plate having suction ports for connecting said low pressure refrigerant chamber of either one of said front and rear housings and said cylinder bores of said combined cylinder blocks, and discharge ports for connecting said high pressure refrigerant chamber of either one of said front and rear housings and said cylinder bores;

an intake reed valve means which is provided and is positioned between either one of said front or rear ends of said combined cylinder blocks and an inner face of said valve plate, said intake reed valve means being operable for openably closing said suction ports of said valve plate;

a discharge reed valve means disposed adjacent to an outer face of said valve plate, said discharge reed valve means

being operable for openably closing said discharge ports of said valve plate, and;
an integral gasket means made of a metallic plate having an inner and an outer face coated respectively with a resilient film, said gasket means being adapted to be arranged between said outer face of said valve plate and either one of said front or rear housings, and comprising an outermost, an intermediate and an innermost annular portion for applying hermetic seals to boundary portions of said low and high pressure refrigerant chambers and said oil retaining chamber of either one of said front or rear housings, and a rib means interconnected between said outermost and said intermediate annular portions, and between said intermediate and said innermost annular portions, said rib means including radially extending ribs which are arranged in alignment with said discharge valve means and have, respectively, a portion bent outwardly with respect to said outer face of said valve plate for permitting a predetermined magnitude of opening motion of said discharge valve means.

4,226,573

HYDRAULICALLY-OPERATED MACHINES

Alister U. Reid, Kyleakin, Norreys Drive, East Horsley, Surrey, England

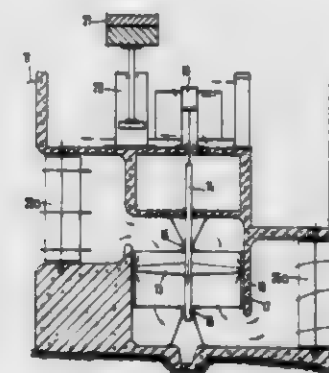
Continuation of Ser. No. 759,118, Jan. 13, 1977, abandoned. This application Jul. 18, 1978, Ser. No. 925,688

Claims priority, application United Kingdom, Jan. 16, 1976, 1806/76

Int. Cl.³ F04B 17/00; F16D 21/02; E21D 9/06

U.S. Cl. 417-329

3 Claims



1. A hydraulically-operated low head machine of large diameter, in excess of 20 feet, adapted to receive water at an upper level from a relatively large reservoir and to discharge the water to a lower level, which includes: a hollow ballasted piston head carried upon a piston rod for movement in a concrete cylinder structure, said piston rod being mounted for vertical movement in guide bushes located above and below the piston head, said cylinder structure being formed of a wall having a thin flexible liner on a bed of grouting between said liner and a wall of a cavity in said concrete structure, said liner being positioned in said cylinder wall through relative movement in one stroke of said piston head to provide a uniform gap of minimum dimension relative to the piston head over its entire stroke, control valve means; said control valve means being disposed in control valve passage means; and said control valve passage means comprising, concrete inlet control valve passage means and gates for allowing water to flow from the upper level alternately to the upper and lower surfaces of the piston head, and concrete outlet control valve passage means for allowing water on the respective other side of the piston head to flow to the lower level.

4,226,574

MAGNETICALLY DRIVEN PUMP

Guy J. Villette, Billieu, 38850 Charavines, France

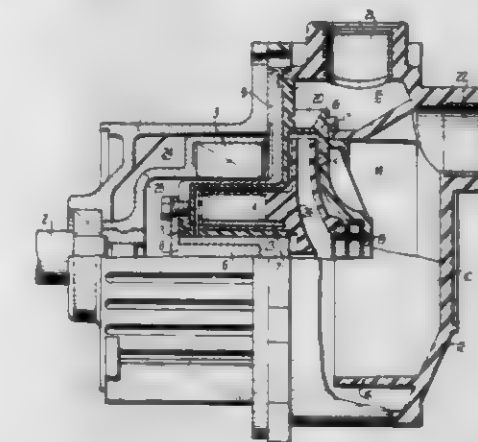
Filed Apr. 27, 1978, Ser. No. 900,481

Claims priority, application France, May 6, 1977, 77 14476

Int. Cl.³ F04B 17/00

U.S. Cl. 417-420

3 Claims



1. A magnetic motor-driven centrifugal impeller pump suitable for pumping corrosive fluids, which comprises:

a motor having a metallic housing;

an impeller housing having a cup-shaped end closure wall, a metallic shaft within said impeller housing having one end fixedly secured to the bottom of said end closure wall and another unsupported end;

an impeller having a cylindrical hub rotatably mounted on said shaft within said impeller housing;

first permanent magnet means fitted on the outer circumference of said hub;

a corrosion resistant sleeve carried by said shaft and interposed between said shaft and said hub;

a coupling housing in axial alignment with the impeller housing;

a cup-shaped rotor within said coupling housing and surrounding said hub, said rotor being driven by the motor and having second permanent magnet means fitted around the inner circumference of the cup-shaped rotor closely

spaced radially outwardly of said first magnet means for providing a magnetic coupling between the impeller and the cup-shaped rotor, said cup-shaped end closure wall having a cylindrical portion thereof interposed between said first and second permanent magnet means and an end flange portion fixedly secured to said coupling housing, said cup-shaped end closure wall being of a nonmagnetic responsive metallic material having a corrosion resistant coating;

a non rotating seal interposed between said sleeve and said coating for shielding said metallic shaft and said metallic wall from fluid communication.

4,226,575

WET PICK-UP VACUUM UNIT

Robert L. Hyatt, Tallmadge; Norbert H. Niessner, South Euclid, and Richard D. Sumser, Louisville, all of Ohio, assignors to Ametek, Inc., Kent, Ohio

Filed Jun. 6, 1979, Ser. No. 46,007

Int. Cl.³ F04B 37/20

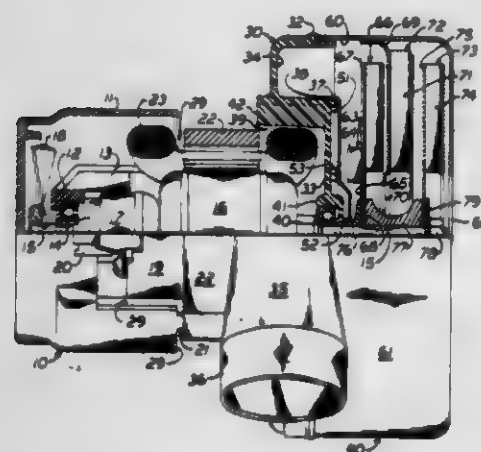
U.S. Cl. 417-423 A

15 Claims

1. In a fan section for a wet pick-up type vacuum cleaner unit comprised of a motor section and a fan section, said motor section containing a motor and means for causing motor-cooling air to be drawn into said motor section through an entrance thereto and discharged through an exit therefrom,

said fan section having a fan chamber provided with an inlet port and containing a fan system which draws working air (by which cleaning and pick-up is performed) into said chamber through said inlet port and discharges the same

through an outlet remote from an entrance or exit for the motor-cooling air of said motor section, said fan chamber having a wall provided with support means for a main bearing in which is journaled a shaft extending into said fan chamber and on which said fan system is mounted so as to provide a space between said bearing and the most closely adjacent fan of said fan system, said fan section having a sealing air inlet which is spaced from either a working air inlet or outlet of said motor section and which sealing air inlet leads through a sealing air passageway toward the location where said shaft extends from said bearing into said fan chamber, said passageway including a baffle portion segregating the passageway from the balance of said fan chamber and having an opening through which said shaft extends into said chamber, said opening being larger than the portion of



said shaft passing therethrough to provide a substantially annular orifice through which sealing air, under normal operating conditions, may be drawn from said passageway into said fan chamber whereby liquid carried by said working air into said fan chamber and which might otherwise accumulate adjacent said bearing in the space between said bearing and the most adjacent fan is swept, by the sealing air passing through said orifice into said fan chamber, back into said fan chamber for discharge therefrom with said working air, the improvement comprising: check valve means preventing reverse flow of air and liquid carried thereby through said orifice, passageway, and sealing air inlet under an abnormal condition in which, but for said check valve means, resistance to discharge of said working air from said fan section outlet would exceed the resistance of reverse flow through said orifice and passageway and out of said sealing air inlet.

4,226,576

PROTEIN TEXTURIZATION BY CENTRIFUGAL SPINNING

William M. Hildebolt, Mickleton, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Jan. 18, 1978, Ser. No. 870,525

Int. Cl.³ B29D 7/02

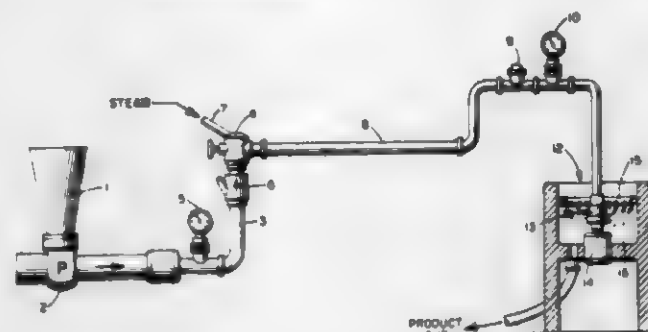
U.S. Cl. 425—69

7 Claims

1. Apparatus for producing texturized monofilaments of protein material comprising:

(a) means for treating a protein slurry with injected gas at an elevated temperature and pressure;

(b) means for centrifugally spinning said protein material into monofilaments; and



(c) means for recovering texturized protein monofilaments in a collection zone.

4,226,577

APPARATUS FOR INJECTION MOLDING OF CONTINUOUS SLIDE FASTENER CHAIN

Mitsuo Sawada, 1-1 Horitaka, Kurobe-shi, Toyama-ken, Japan

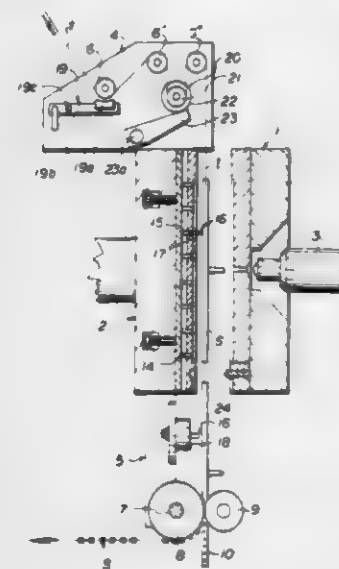
Filed Jul. 3, 1979, Ser. No. 54,421

Claims priority, application Japan, Jul. 4, 1978, 53/92716[U]

Int. Cl.² B29D 5/00; B29F 1/06

U.S. Cl. 425—111

2 Claims



1. In combination with an injection molding apparatus of the type wherein a continuous slide fastener chain is manufactured by repeating the steps of moving a movable mold relative to a stationary mold to intermittently open and close the molds, injection molding a row of fastener elements on portions of a pair of stringer tapes introduced through and positioned between said molds when said molds are closed, and then interrupting the positioning of said stringer tapes and subsequently feeding the same when said molds are opened preparatory to an ensuing injection molding operation, the improvement which comprises:

means for forming a projection on a portion of a runner molded together with said row of fastener elements at the time of injection molding;

means for halting the introduction of said tapes into the spacing between said molds in response to detection of said projection; and

means for retracting and tensioning said tapes already introduced in the spacing between said molds in order to position within said molds the portion of said tapes on which rows of fastener elements are to be subsequently injection molded, the posterior end of said runner previously molded on said tapes together with the rows of fastener elements serving as a standard for the positioning of said tapes.

4,226,578

PELLET MILL

Werner Gröbli, Flawil, Switzerland, and Peter Zimmermann, Johannesburg, South Africa, assignors to Gebrüder Bühler AG, Switzerland

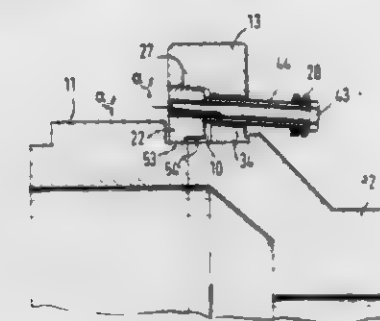
Filed Jan. 15, 1979, Ser. No. 3,766

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852420

Int. Cl.³ B29F 3/01

U.S. Cl. 425—186

30 Claims



1. A pellet mill for extruding plastic masses and including a cylindrical pellet die, a rotatable die holder, and means for releasably clamping the die concentrically with an end face of the die holder, said means comprising an annular step recess at the end face of the die holder for receiving the end face of the die, the radially outer surface of the annular step recess diverging conically outwardly in the direction of the die and defining a guiding surface, a series of peripherally spaced apart clamping segments interposed between said guiding surface and the periphery of said die, the radially outer and inner surfaces of the clamping segments respectively matching the conically divergent form of the guiding surface and the curvature of the end face of the die, spring means adapted to urge the clamping segments into clamping engagement with both said guiding surface and said die and auxiliary means actuatable to generate forces to oppose the forces generated by said spring means for disengaging said clamping segments, both the forces generated by said spring means and said auxiliary means being directed at angles α to the rotational axis of the die holder which are in the range between a value greater than zero and the angle of divergence of said guiding surfaces to produce radially outward movement of the clamping segments on disengagement thereof, members connecting said spring means and clamping segments being provided for transmitting said spring forces to the clamping segments, said members and auxiliary means being adapted to allow movement of the clamping segments in the direction of both said forces.

4,226,579

CRUST FORMING DEVICE

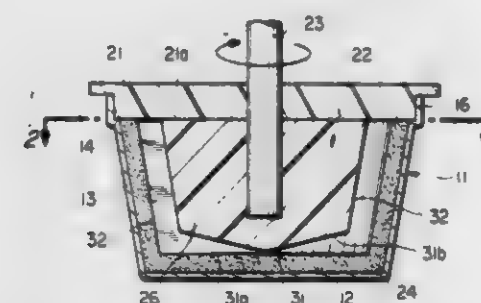
Luther E. Glasgow, 2122 Lakeshore Ave., Oakland, Calif. 94606

Filed Aug. 14, 1978, Ser. No. 933,456

Int. Cl.² A47J 43/00

U.S. Cl. 425—218

21 Claims



1. In a crust forming device for use with a container having a bottom wall and a peripheral side wall: a forming head having a bottom wall and an upstanding side wall, the bottom wall of the forming head including a first portion which throughout its radial extent is generally parallel to the bottom wall of the

container and a second portion which is inclined upwardly from the first portion and upwardly and outwardly toward the side wall of the forming head, the side wall of the forming head having a portion immediately adjacent to the first portion of the bottom wall which conforms generally to the peripheral contour of the side wall of the container, and means connected to the forming head for positioning the same in the container for relative rotation of the forming head and the container with the bottom and side walls of the forming head in facing relationship with the corresponding walls of the container.

4,226,580

APPARATUS FOR PRODUCING THERMOPLASTIC TUBING

Gerd P. H. Lupke, 46 Stornoway Cres., and Manfred A. A. Lupke, 35 Ironshield Cres., both of Thornhill, Ontario, Canada

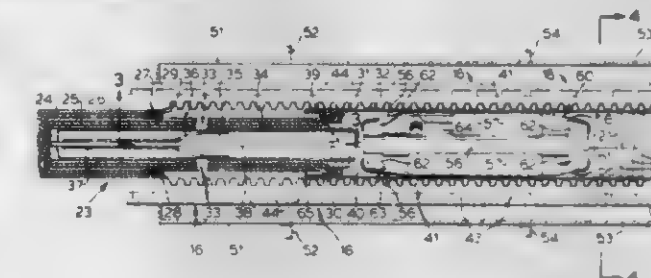
Filed Jan. 11, 1978, Ser. No. 868,702

Claims priority, application Canada, Feb. 7, 1977, 271188

Int. Cl.³ B29C 17/07; B29D 23/04

U.S. Cl. 425—504

11 Claims



1. Apparatus for producing thermoplastic tubing, the apparatus comprising a pair of complementary mold assemblies each of which has an endless array of articulately interconnected mold blocks, drive means for driving the mold blocks of each mold assembly in synchronism with the mold blocks of the other mold assembly along a forward run in which the mold blocks of the mold assemblies are in cooperative interengagement to provide an axially extending tubular mold tunnel, and back along a return run, and an extrusion head disposed at the entrance to the tubular mold tunnel for forming a tube of thermoplastic material, wherein in the mold blocks first passages extend between the tubular mold tunnel defining faces and first ports in external faces of the mold blocks, and second passages extend between the first passages and second ports in external faces of the mold blocks, a stationary suction chamber which is connectible to a suction source being positioned to communicate through said first ports with said first passages during movement of the mold blocks along the forward runs, a stationary cooling chamber which is connectible to a source of cooling fluid being positioned forwardly of the suction chamber to communicate through said first ports with said first passages during continued movement of the mold blocks beyond the suction chamber along the forward runs, a stationary pressure chamber which is connectible to a source of pressurized fluid being positioned forwardly of the cooling chamber to communicate through said first ports with said first passages during further continued movement of the mold blocks beyond the cooling chamber along the forward runs, with closure means being mounted in the mold blocks for closing said second passages while the first passages communicating therewith are in communication through said first ports with the suction chamber and with the pressure chamber, and for opening said second passages while the first passages communicating therewith are in communication through said first ports with the cooling chamber and said second port of each second passage, and the closure means thereof, being positioned outside the chambers while the first passage or passages communicating with said second passage is in communication with the cooling chamber.

4,226,581

SAFE START CHECK CIRCUIT

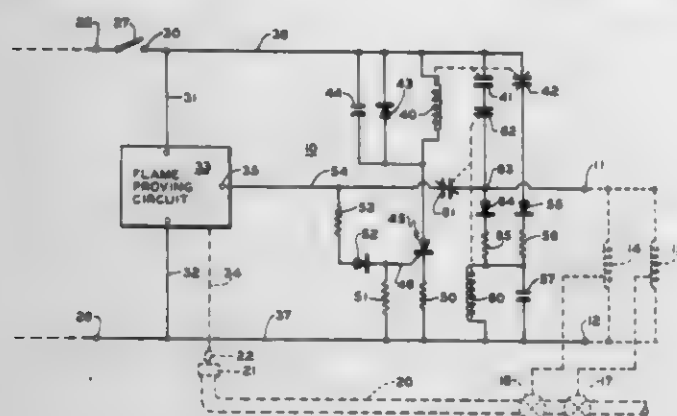
Roger A. Schilling, West St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 22, 1978, Ser. No. 972,533

Int. Cl.³ F23Q 23/00

U.S. Cl. 431-26

10 Claims



1. A safe start check circuit for a fuel burner, including: flame response means adapted to sense a flame at a fuel burner and to provide an output signal upon the presence of a flame; gated solid state switch means responsive to said output signal; said solid state switch means connected in a series circuit with flame relay means to a source of electric potential with said relay means having a normally open contact and a normally closed contact; a first control circuit including said normally closed relay contact in series with a diode, and a capacitor which are connected across said source to provide a time delay; control relay means responsive to a charge stored in said capacitor and including a normally open contact and a normally closed contact; a control relay holding circuit comprising said normally open relay contacts, a second diode, and said control relay connected across the said source; terminal means connected to said second diode and said control relay with said terminal means adapted to connect said source to valve means for said fuel burner through both said normally open relay contacts; and said normally closed contact of said control relay means including connection means to effectively short circuit said gated solid state switch means through said valve means until said control relay means is energized to thereby assure that a safe condition exists before said flame relay means normally open contact can close to energize said valve means.

4,226,582

PROCESS AND APPARATUS FOR THE INSTANTANEOUS COMBUSTION OF DIAFANOUS LIQUID PETROLEUM, DIESEL OR SIMILAR FUELS

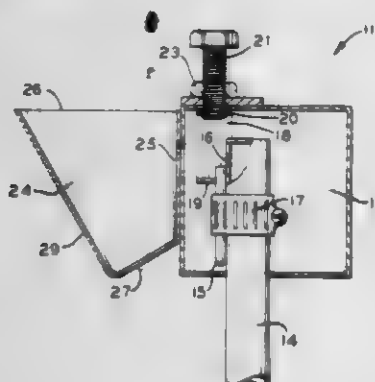
Fausto C. Mendoza, Cumbres de Acultzingo #185, Lomas de Chapultepec, Mexico (10DF)

Filed Jun. 5, 1978, Ser. No. 912,881

Int. Cl.³ H01M 4/70

U.S. Cl. 431-239

7 Claims



1. A process for the instantaneous combustion of liquid diafanous petroleum, diesel, or similar fuels comprising:

feeding the fuel through a fuel conduit to an enclosed mixing chamber, within said chamber, directing pressurized air across the outlet of the fuel conduit through an orifice so as to cause the pressurized air to expand, lower in pressure and achieve a high velocity precisely at the fuel conduit outlet to thereby suction the fuel from the conduit and disperse the fuel into small droplets and distribute the dispersed fuel homogeneously into the air to form an air-fuel mixture, ventilating the mixing chamber with ambient air, and projecting the air-fuel mixture through an opening in the mixing chamber into an ignition chamber, said mixing chamber being substantially isolated from the ignition chamber.

4,226,583

PHOTOFLASH LAMP WITH KNURLED FOIL STRIP

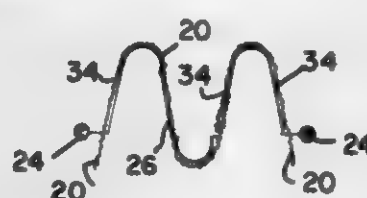
Howard S. Painter, Linden, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 29, 1978, Ser. No. 974,299

Int. Cl.³ F21K 5/00, 5/02

U.S. Cl. 431-362

10 Claims



1. A photoflash lamp comprising: a hermetically sealed, light-transmitting envelope; a combustion-supporting gas filling in said envelope; a corrugated strip of combustible foil disposed in said envelope, said foil having a knurled surface; support means for said corrugated strip of knurled foil; and ignition means disposed in said envelope in operative relationship with respect to said knurled foil.

4,226,584

ROTARY COMBUSTOR WALL

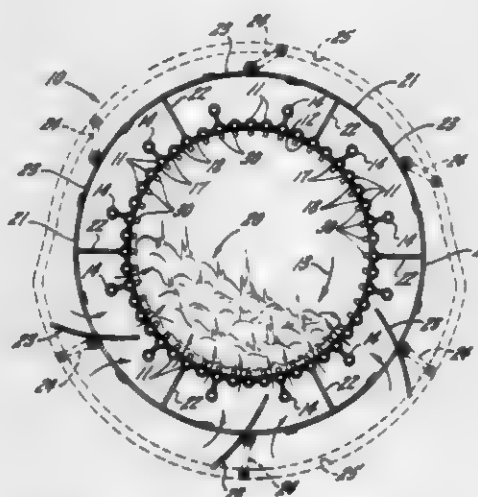
Tokihiko Ishikawa, Yokohama, Japan, assignor to O'Connor Engineering Laboratories, Inc., Costa Mesa, Calif.

Filed Apr. 2, 1979, Ser. No. 25,982

Int. Cl.³ F27D 15/00

U.S. Cl. 432-77

1 Claim



1. In a combustor having a plurality of water cooled pipes secured together to define an inner generally cylindrical surface and mounted for rotation about the axis of said surface, said pipes being secured so as to define a plurality of intermediate openings so that said cylindrical surface is gas porous, the improvement comprising, means defining a plurality of projec-

tions on said cylindrical surface creating a pattern to support burning material slightly spaced from said surface, said pattern being substantially open in the curved plane just within said cylindrical surface, and said means comprising short pins secured directly and in heat transfer relationship on said pipes of said cylindrical surface.

4,226,585

APPARATUS FOR THE PRODUCTION OF CEMENT CLINKERS FROM MOIST AGGLOMERATED RAW MATERIAL

Herbert Densner, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

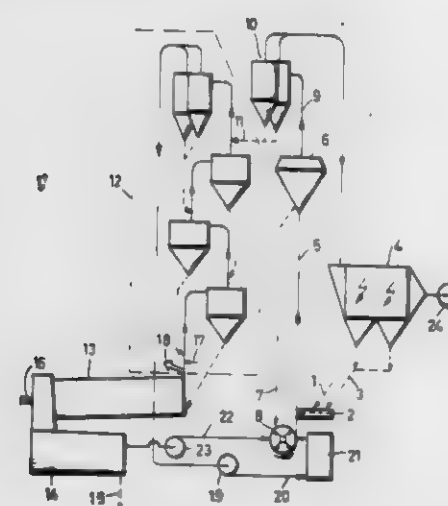
Filed Jun. 6, 1978, Ser. No. 912,995

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726138

Int. Cl.³ F27B 7/02

U.S. Cl. 432-106

4 Claims



1. An apparatus for the production of cement from moist agglomerated particles comprising: preheating means; a kiln receiving the output from said preheating means and arranged to calcine and sinter the particles into clinker; cooler means receiving the output from said kiln and arranged to cool the clinker particles; a suspension gas dryer including a relatively long vertically disposed conduit; a comminuting device connected to the lower end of said conduit; a sifting and separating device connected to the upper end of said conduit for separating fine from coarse particles; means for delivering hot exhaust gases from said kiln into said suspension gas dryer; and means for delivering the fine particles from said sifting and separating device into said preheating means.

4,226,586

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF FINE-GRAINED MATERIAL WITH HOT GASES

Kunibert Brachthäuser, Bergisch-Gladbach, and Horst Herchenbach, Troisdorf, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,902

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736607

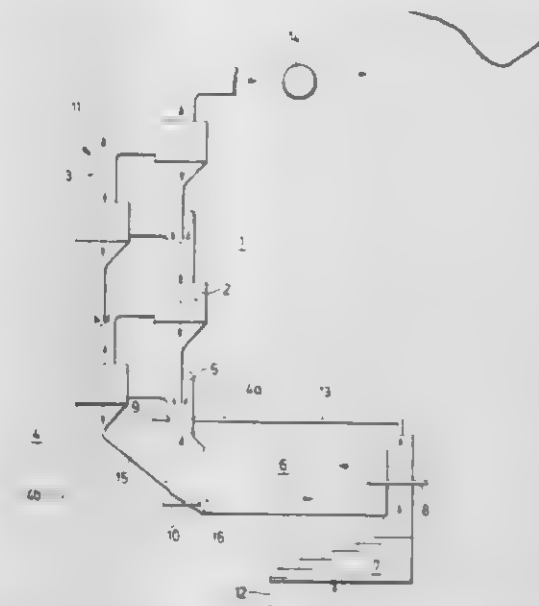
Int. Cl.² F27B 7/02

U.S. Cl. 432-106

6 Claims

1. An apparatus for the thermal treatment of fine-grained material with hot gases comprising a suspension gas heat exchanger having a plurality of stages of progressively higher temperatures in the direction of material flow,

a rotary kiln, conduit means connecting the hottest stage of said heat exchanger with said rotary kiln, means within said conduit means defining a first combustion zone,



means for introducing rapidly oxidizing fuel components into said first combustion zone, means in said rotary kiln defining a second combustion zone, and means for introducing slowly oxidizing fuel components into said second combustion zone.

4,226,587

HEATING SYSTEM FOR VACUUM COATING APPARATUS

Hans Aichert, Hanau am Main; Otto-Horst Hoffmann, Rodenbach; Friedrich Stark, Langenselbold, and Herbert Stephan, Bruchköbel, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

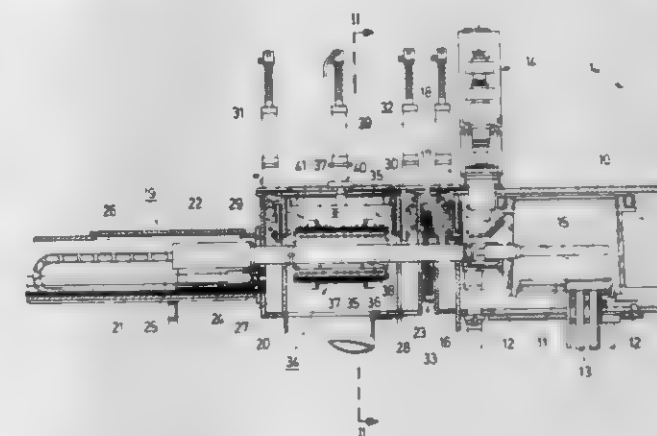
Filed Nov. 22, 1978, Ser. No. 963,061

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820286

Int. Cl.³ F27B 9/14

U.S. Cl. 432-122

4 Claims



1. In an elongated vacuum coating apparatus having a deposition chamber, the improvement comprising: a pass-through heating device comprising means including walls forming a heating chamber having an inlet and an outlet along the longitudinal axis of the vacuum coating apparatus, at least one heating means inside the heating chamber, means disposed parallel to the longitudinal axis of the vacuum coating apparatus and forming a thermal barrier between the heating means and the walls of heating chamber, movable means disposed transverse to the longitudinal axis of the vacuum coating apparatus for forming a thermal barrier at the inlet and the outlet of

the heating chamber when a substrate is to be heated therein; a substrate rack; and transport means for moving the substrate rack along the longitudinal axis of the vacuum coating apparatus into the heating chamber for heating and therethrough into the deposition chamber for deposition comprising a cantilevered transport shaft having the substrate holder connected at one end thereof, a movable box-shaped frame disposed in the heating chamber and having a thermal barrier facing the interior of the heating chamber and means for moving the frame into a closing position in the heating chamber when the substrate holder is in the deposition chamber to substantially close the sides and ends of the heating chamber to prevent a decrease in temperature and loss of energy.

4,226,588

SMELTING FURNACE

Tadao Ohara, 1-21, #2 Uematsu-cho, 8-chome, Yao City, Osaka 581, Japan

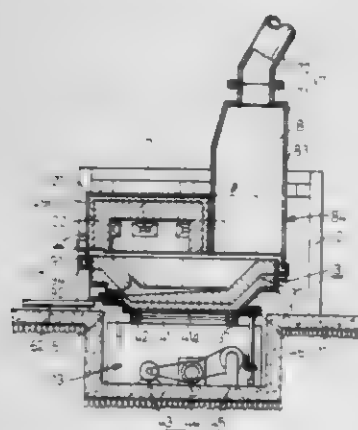
Filed Nov. 8, 1978, Ser. No. 958,905

Claims priority, application Japan, Jul. 14, 1978, 53-86566

Int. Cl.³ F27B 9/16

U.S. Cl. 432-138

6 Claims



1. A smelting furnace, comprising:

- a lower furnace body for containing molten metal supported rotatably, said lower furnace body being formed generally in the shape of a substantially circular dish having a bottom bed, and having an upper opening, said lower furnace body comprising at a lower portion thereof a normally-closed molten metal outlet and means for selectively opening said outlet, and wherein the bed of said furnace is inclined downwardly toward said molten metal outlet;
- means for rotating said lower furnace body;
- an upper furnace body covering the top of the lower furnace body to define an interior chamber of said furnace;
- a feed inlet chamber provided in a peripheral portion of said upper furnace body and positioned above the upper opening of the lower furnace body, said feed inlet chamber having opposite side walls extending downwardly to the upper edge of the lower furnace body to laterally separate the feed inlet chamber from the interior chamber of the furnace and said feed inlet chamber being enclosed with a box-like cover which is open at the bottom and includes a selectively openable door on its outer peripheral wall for introducing material into the furnace;
- a burner mounted on the upper furnace body; and
- exhaust means attached to the upper furnace body for releasing combustion waste gas.

4,226,589

ORTHODONTIC HEADGEAR RELEASE ASSEMBLY

Paul E. Klein, 601 First St., Lake Oswego, Oreg. 97034

Filed Aug. 25, 1977, Ser. No. 827,727

Int. Cl.³ A61C 7/00

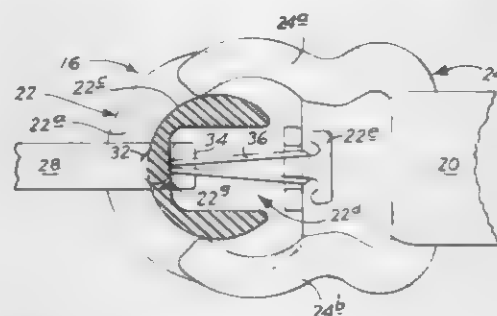
U.S. Cl. 433-5

2 Claims

1. Safety-release tension-applying mechanism for operative interposition between an end of an orthodontic facebow and an

adjacent end of a headstrap and the like for the facebow, said mechanism comprising

- a first mechanism part including an attaching portion having a convex circular surface expanse of revolution including a pair of spaced, generally opposing gripping-surface portions, and
- a second mechanism part including a infinitely changeable tension-producing portion having a changeable-geometry concave circular surface expanse of revolution including a pair of spaced, generally opposing gripping-surface portions which, through changes in geometry, are complementarily fittable against and releasably engageable with



said gripping-surface portions in said convex surface expanse of revolution in said attaching portion in said first part to assist in producing tension in an overall assembly including the release mechanism, headstrap and facebow, said tension-producing portion, when so engaged with said attaching portion, automatically releasing therefrom along a release axis, through changes occurring in its geometry, on the tension transmitted through such an assembly exceeding a predetermined tension level, said two pairs of gripping-surface portions, when engaged, accommodating sliding-contact pivoting about an axis substantially normal to said release axis.

4,226,590

DEVICE IN DENTAL SUCTION APPARATUS FOR CONNECTING AND HOLDING SUCTION NOZZLE TUBES AND/OR FOR FILTERING

Hans-Joachim Hofmann, Geradstetten, Fed. Rep. of Germany, assignor to Dürr-Dental KG, Bietigheim, Fed. Rep. of Germany

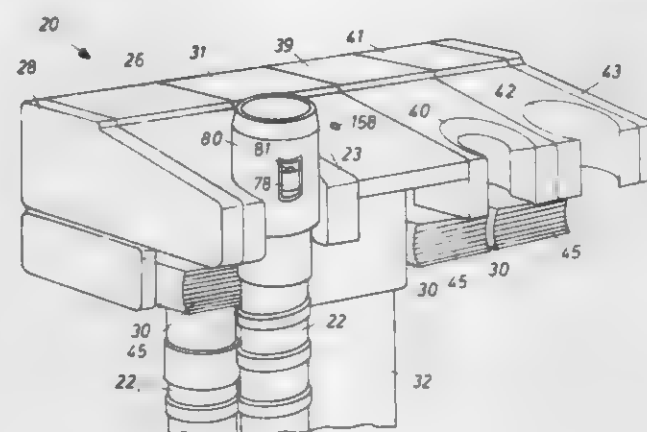
Filed Mar. 24, 1978, Ser. No. 889,854

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713320

Int. Cl.³ A61C 19/02

U.S. Cl. 433-28

23 Claims



1. Dental suction apparatus comprising a plurality of modules assembled side-by-side to constitute an assembly, each of said modules having a suction duct extending from one side to the other and connecting with the suction duct of at least one other module to constitute a main suction duct connected to suction producing means, each of at least two of said

modules having means for attachment of a suction nozzle tube and with duct means connecting said suction nozzle tube with said main suction duct, and further having means for removably holding a suction nozzle; a suction nozzle tube connected with said attachment means and a nozzle on said tube, valve means for shutting off said suction nozzle tube from said suction duct and means associated with said nozzle holding means controlling said valve means to shut off said suction nozzle tube from said main suction duct when the respective nozzle is held by said holding means.

4,226,591

CONTRA-ANGLE HEAD FOR DRIVING TWO DENTAL TOOLS

Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

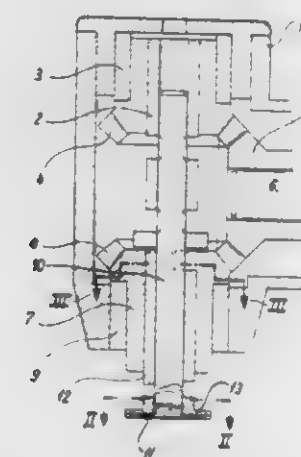
Filed Apr. 21, 1978, Ser. No. 898,779

Claims priority, application France, Jun. 20, 1977, 77 19547

Int. Cl.³ A61C 1/12

U.S. Cl. 433-133

3 Claims



1. A contra-angle dental handpiece comprising a housing having a hollow head portion, first and second bushings in said head portion of the housing in axial alignment with one another and spaced axially apart, first and second hollow bevel pinions rotatably supported externally respectively by said first and second bushings in axial alignment with one another and spaced apart, said pinions facing one another, first tool-holding means in said first hollow pinion and rotatable therewith, second tool-holding means in said second hollow pinion and rotatable therewith, a first tool having a shaft portion which extends through said second pinion and said second tool-holding means and has an end portion engaged by said first tool-holding means to rotate said tool, a second tool having a hollow shaft through which the shaft of said first tool extends, said shaft of said second tool being engaged by said second tool-holding means to rotate said second tool, said first and second tools having head portions adjacent one another, a drive shaft rotatable in said housing with its axis perpendicular to the axis of said first and second pinions and a third bevel pinion fixed on said drive shaft and engaging both of said first and second pinions to drive said pinions in opposite directions and thereby rotate said first and second tools in opposite directions.

4,226,592

ZERO-DEGREE POSTERIOR TEETH FOR A LOWER AND AN UPPER DENTURE

Josephus Schreinemakers, Maarheeze, Netherlands, assignor to Dental Holding N.V., Willemstad, Netherlands Antilles

Filed Oct. 16, 1978, Ser. No. 951,589

Claims priority, application Netherlands, Oct. 21, 1978, 7711568

Int. Cl.³ A61C 13/08

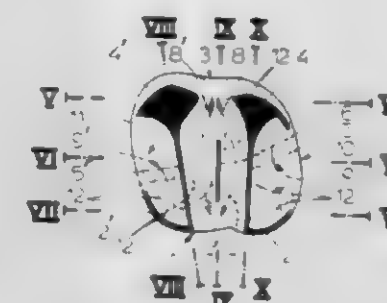
U.S. Cl. 433-197

13 Claims

1. Zero-degree posterior teeth for a lower and an upper denture, wherein opposite posterior teeth interact at least substantially in line-surface contact, wherein
- (a) the contour at the level of the active surface of the poste-

rior teeth closely resembles the contour of natural posterior teeth;

- (b) in each pair of opposite posterior teeth the lingual or palatal contour section of one posterior tooth is provided with a line shaped masticatory rim and the buccal contour section of this posterior tooth is provided with a masticatory plane, while the palatal or lingual contour section of the opposite posterior tooth is provided with a masticatory



tory plane and the buccal contour section of this opposite posterior tooth is provided with a line shaped masticatory rim; and

- (c) the posterior teeth are provided with evacuation channels in their active surface, which channels originate near the line contact between opposite posterior teeth, their depth gradually increasing towards their end at the contour, so that the line-surface contact at the contour is only interrupted by the ends of the evacuation channels.

4,226,593

APPARATUS AND METHOD FOR APPLYING DENTAL VENEER

Morton Cohen, 1555 W. Main St., Norristown, Pa. 19401, and Elliott Silverman, 4829 Atlantic Ave., Ventnor, N.J. 08406

Filed Apr. 16, 1979, Ser. No. 30,005

Int. Cl.³ A61C 5/00

U.S. Cl. 433-217

14 Claims



1. The method of applying a plurality of separate veneers to respective teeth of a patient, which method comprises: making a dental cast of the patient, shaping a plurality of veneers each for generally conforming congruent facing engagement with the labial contour of a respective cast tooth, applying a hardenable fluent material to the entire inner surface of each veneer, placing said veneers in position on the cast teeth to express excess material from between the cast teeth and veneers, removing the excess material, applying removable attachment means on the outer side of each veneer, applying a molding material into conforming engagement with the dental cast and veneers to define a mold having the veneers attached by said attachment means, removing the mold and attached veneers from the dental cast together with the hardenable material hardened to contours precisely conforming to the cast teeth, applying the mold and attached veneers to the patient's teeth to properly position the veneers in precise congruent conforming engagement with the patient's teeth, securing the positioned veneers to the patient's teeth, removing the mold while leaving the veneers secured to the patient's teeth, and removing the attachment means from the veneers.

CHEMICAL

4,226,594 METHOD FOR THE HEAT-TRANSFER PRINTING OF A TEXTILE MATERIAL

Henry Renaut, Roubaix, France, assignor to Societe Anonyme dite: Anciens Ets P. Lemaire & Cie, Roubaix, France
Filed May 31, 1978, Ser. No. 911,139
Int. Cl.² D06B 1/10; B41M 5/26
U.S. Cl. 8-471

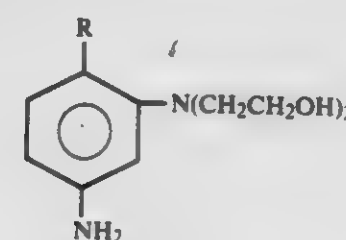


1. In a method of continuous heat-transfer printing of longitudinal textile material which comprises superposing on one side of said textile material a plurality of transversely juxtaposed longitudinal belts of inert heat-shrinkable carrier material having thereon sublimable dyes which define a motif, and passing said textile material with said belts thereon continuously through a heating zone to cause sublimation of said dyes and their transfer from said carrier material to said textile material, the improvement which comprises laterally positioning said belts of carrier material in advance of said heating zone with contiguous edges of said belts overlapping one another by an amount equal to one-half the amount of shrinkage which each of said belts undergoes over its width owing to the heating of said belts in said heating zone, whereby upon passage of said textile material and carrier belts through said heating zone, said belts shrink laterally so that edges of adjacent belts abut and the motifs carried by said belts precisely join to form a continuous motif extending across the width of said textile material.

4,226,595 OXIDATION HAIR-COLORING PREPARATION BASED UPON N,N-BIS-(β-HYDROXYETHYL)-m-PHENYLENEDIAMINES

David Rose, Hilden; Edgar Lieske, Düsseldorf, and Peter Busch, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany
Filed Dec. 21, 1978, Ser. No. 972,012
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758203
Int. Cl.² A61K 7/13

U.S. Cl. 8-406 16 Claims
1. An oxidation hair coloring composition consisting essentially of, as coupling agent at least one compound selected from the group of N,N-bis-(β-hydroxyethyl)-m-phenylenediamines having the formula I



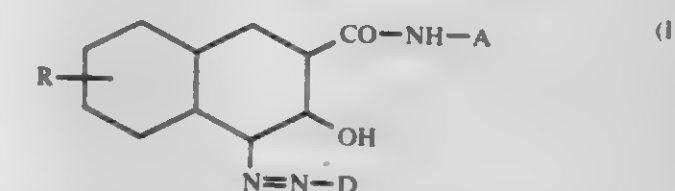
wherein R represents hydrogen or an alkoxy group, the alkyl portion of which contains one to four carbon atoms, and the water-soluble hair compatible organic or inorganic salts

thereof; and a water-soluble developer therefor, said developer and said coupling agent being present in the molar range of 2:1 to 1:2.

4,226,596 PROCESS FOR PRINTING UNIONS

9 Claims
Richard Peter, Basel; Hans D. Kirner, Pratteln, and Rolf Gehrlin, Muttens, all of Switzerland, assignors to Rohner AG Pratteln, Switzerland
Filed Nov. 8, 1978, Ser. No. 958,781
Claims priority, application Switzerland, Nov. 11, 1977, 13825/77

Int. Cl.³ D06P 3/82
U.S. Cl. 8-532 17 Claims
1. A process for printing unions consisting of mixtures of fibers which can be coloured with disperse dyestuffs and fibers which can be coloured with reactive dyestuffs, characterized by using a printing paste containing at least one finely dispersed, water-insoluble azo dyestuff of the formula:



which is not prepared in the printing paste and which has a melting point between 220° and 300° C. and wherein D is a phenyl radical free from sulfo and carboxyl groups and bearing at least one electrophilic substituent and optionally up to two low molecular weight alkyl and/or alkoxy groups, R is hydrogen, a halogen atom or an optionally substituted alkoxy group and A is a phenyl radical which can be substituted by one or two optionally substituted alkyl and/or alkoxy groups and/or one halogen atom as well as at least one reactive dyestuff at least one non-ionic surfactant, and by applying the printing paste to the unions in a manner known per se.

4,226,597 USE OF 2,4,4,4-TETRACHLOROBUTYL ACETATE AS A DYE CARRIER FOR DISPERSE DYES

Richard L. Doerr, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Jun. 29, 1979, Ser. No. 53,579
Int. Cl.³ D06P 1/16

U.S. Cl. 8-582 4 Claims
1. A dye carrier composition comprising a dye carrier and at least one emulsifier, said dye carrier comprising 2,4,4,4-tetrachlorobutyl acetate and said emulsifier being from about 5% to about 50% by weight of said dye carrier.

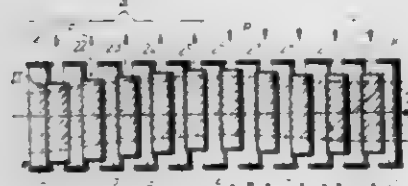
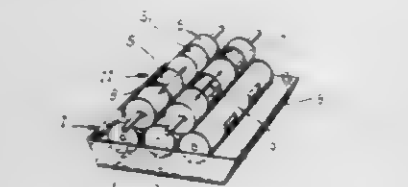
4,226,598 METHOD AND APPARATUS FOR WET TREATMENT, ESPECIALLY TREATING WITH LYE SOLUTION AND MERCERIZING, OF KNITTED TUBULAR FABRIC

Günter Schiffer, Krefeld, Fed. Rep. of Germany, assignor to Kleinfewers GmbH, Krefeld, Fed. Rep. of Germany
Filed Feb. 21, 1979, Ser. No. 13,806
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 2807312

Int. Cl.² D06M 1/02; D06B 7/10, 3/34
U.S. Cl. 8-125 10 Claims
1. A method of wet treatment, especially treating with lye solution and mercerizing, of knitted tubular goods using rollers respectively spaced from one another, which method includes the steps of:

passing said tube through the space between adjacent rollers while maintaining contact with said rollers, said tube at any given moment having two parallel straight cross sectional portions;

imparting to one of said two respectively straight portions of the tube cross section a movement directed substantially in the longitudinal direction of said tube; and



imparting to the other respectively straight portion of the tube cross section a movement directed substantially in the transverse direction of said tube.

4,226,599

REMOVAL OF HEPARIN FROM HEPARIN-CONTAINING BLOOD PLASMA SAMPLES USING A TRIETHYLAMINOETHYL CELLULOSE TABLET

James R. Butler, Morris Plains; James E. Turner, and Frank W. Goodhart, both of Morristown, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Division of Ser. No. 931,032, Aug. 4, 1978. This application Jun. 20, 1979, Ser. No. 50,355
Int. Cl.³ G01N 31/00

U.S. Cl. 23—230 B

5 Claims

1. A method for removing substantially all heparin from a heparin-containing blood plasma test sample which comprises:

A. adding to 1 milliliter of plasma sample a diagnostic tablet comprising from about 5.4 to about 10 parts by weight of granular microcrystalline cellulose per part by weight of fibrous triethylaminoethyl cellulose, said tablet being formulated to provide from about 5 to about 26 mg of triethylaminoethyl cellulose per milliliter of plasma sample;

B. agitating (A) for a time sufficient to disintegrate the tablet and distribute the fibrous triethylaminoethyl cellulose throughout the plasma sample and permit the adsorption of heparin;

C. centrifuging (B) to remove substantially all of the insoluble

ble triethylaminoethyl cellulose heparin complex formed in the plasma sample, together with uncomplexed tablet ingredients;

thereby obtaining a substantially heparin-free blood plasma sample suitable for coagulation testing.

4,226,600

MERCURY CONTAMINATION INDICATOR AND DECONTAMINATION AID

James W. Seidenberger, Royersford, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.
Filed Dec. 13, 1978, Ser. No. 969,020
Int. Cl.³ G01N 21/78, 31/22

U.S. Cl. 23—232 R

6 Claims

1. A composition of matter comprising a mixture of about 5 to 95% by weight of a metal iodide selected from the group consisting of cuprous iodide and silver iodide in combination with about 95 to 5% by weight of elemental sulfur.

4,226,601

PROCESS FOR REDUCING SULFUR CONTAMINANT EMISSIONS FROM BURNING COAL OR LIGNITE THAT CONTAINS SULFUR

Robert H. Smith, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Jan. 3, 1977, Ser. No. 756,195
Int. Cl.³ C10L 9/10, 5/00, 5/12

U.S. Cl. 44—10 D

8 Claims

1. In a process wherein a sulfur containing coal or lignite is burned, the improvement which comprises:

(a) admixing pulverized coal or lignite with at least one inorganic material selected from the group consisting of (i) an oxide of sodium, potassium, calcium or barium; (ii) a hydroxide of sodium, potassium, calcium or barium; (iii) a carbonate of sodium, potassium, calcium or barium; and (iv) dolomite; and

(b) thereafter burning the admixture of said pulverized coal or lignite and said inorganic material in conventional combustion equipment at a combustion bed temperature of less than about 3000° F. when said inorganic material is a sodium or potassium compound, less than about 2200° F. when said inorganic material is a calcium compound and less than about 2600° F. when said inorganic material is a barium compound.

2. The process of claim 1 wherein said inorganic material is finely divided and is mixed with said coal or lignite to form an intimate admixture.

3. The process of claim 2 wherein said intimate admixture is formed into pellets or briquettes prior to said burning.

4,226,602

METHOD OF CONTINUOUSLY PRODUCING RESINOID ABRASIVE WHEELS FOR CUTTING HARD MATERIALS

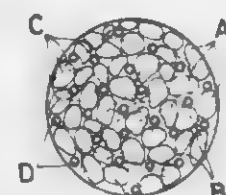
Heijiro Fukuda, 123, 3-chome, Umegaoka, Nagaokakyo, Kyoto, Japan

Filed Dec. 20, 1978, Ser. No. 971,570

Claims priority, application Japan, Dec. 22, 1977, 52-155291
Int. Cl.³ C09K 3/14

U.S. Cl. 51—296

16 Claims



1. An improved method of continuously producing a resinoid abrasive wheel for cutting hard materials comprising

the steps of preparing pore forming granules having predetermined mechanical strength and containing a substance thermally decomposable at a baking temperature for the production of the resinoid wheel, the thermally decomposable substance being selected from the group consisting of starch and funori, kneading the pore forming granules with abrasive grains and a thermosetting synthetic resin binder to prepare an abrasive composition, molding the abrasive composition into a block, heating the block by a high frequency heater, rolling the heated block containing the pore forming granules into a sheet by a multiplicity of pairs of rolls, blanking out a circular piece from the rolled sheet, and baking the circular piece to cure the binder therein and form pores in the resulting abrasive wheel by the decomposition of at least part of the thermally decomposable substance contained in the granules, wherein the improvement comprises:

- adding a blowing agent selected from the group consisting of sodium hydrogen carbonate, amyl acetate, butyl acetate and diaminobenzene, along with the thermally decomposable substance in the step of preparing pore forming granules; and
- forming pores by the decomposition of at least part of the thermally decomposable substance contained in the granules containing the blowing agent and by the decomposition of the blowing agent contained in the granules while curing the binder contained in the circular sheet in the baking step, the pores being larger than the pore forming granules and located where the pore forming granules were present.

4,226,603

GAS DISTRIBUTION DEVICE FOR THE SUPPLY OF A PROCESSING GAS WITH ADJUSTABLE FLOW DIRECTION TO AN ATOMIZING CHAMBER

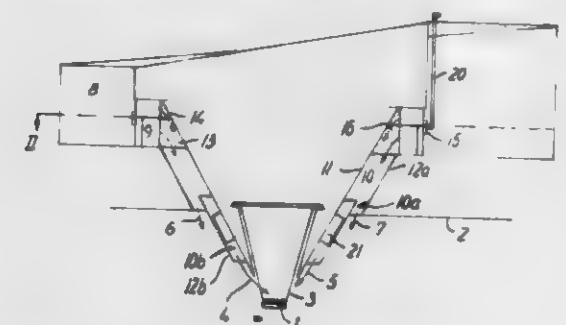
Finn H. Larsson, Tastrup, and Christian Schwartzbach, Malov, both of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

Filed Aug. 3, 1979, Ser. No. 63,885

Claims priority, application Denmark, Aug. 17, 1978, 3639/78
Int. Cl.³ B01D 47/16

U.S. Cl. 55—260

5 Claims



1. A gas distribution device for supplying a processing gas to an atomizing zone around an atomizing device arranged centrally in an atomizing chamber, comprising a horizontal spiral supply duct for said processing gas, said duct having an annular mouth extending in rotational symmetry around the axis of the chamber, and two conical guide walls extending around and above the atomizing device, said guide walls limiting a space communicating with said mouth, guide vanes being provided in said mouth for imparting a change of direction to the gas stream from a mainly purely tangential flow in the spiral duct into a rotating flow with a smaller tangential velocity component in the space between the conical guide walls, wherein the improvement comprises two separate sets of stationary vanes positioned relatively close to and overlying each other in the mouth, one of said sets being shaped to deflect the gas stream stronger to a direction with a considerably lower tangential velocity component than the other set and a damper being arranged along the mouth to be adjustable in the height direction for controlling the ratio of the portions of the gas

stream in the spiral duct conducted into each of the two vane sets.

4,226,604

METHOD AND APPARATUS FOR PREVENTING OVERHEATING OF THE SUPERHEATED VAPORS IN A SOLAR HEATING SYSTEM USING A REFRIGERANT

Frederick A. Weis, Englewood, Colo., assignor to Solar Specialties, Inc., Denver, Colo.
Filed May 14, 1979, Ser. No. 38,399
Int. Cl.³ F25B 27/00, 27/02; F25D 41/00

U.S. Cl. 62—2

9 Claims



1. In a solar heating system wherein a mixture of refrigerant in liquid and vapor form is circulated through a solar collector which takes heat from the atmosphere to convert the refrigerant to a superheated vapor preparatory to delivering it to a compressor, and wherein means responsive to the temperature of the superheated vapor leaving the collector is employed to control the amount of the mixture admitted to the latter, the improved method for reducing any excess superheat contained in the superheated vapors which comprises: sensing the degree of superheat contained in the superheated vapors entering the compressor, using any excess of superheat detected above a preselected maximum as an input operative to actuate means connected to bypass the refrigerant mixture around the collector and mix same directly with the overheated vapors, and employing the refrigerant mixture thus bypassed to cool down the overheated vapors to the preselected maximum temperature chosen for the superheated vapors being fed to the compressor.

4,226,605

FLAMELESS VAPORIZER

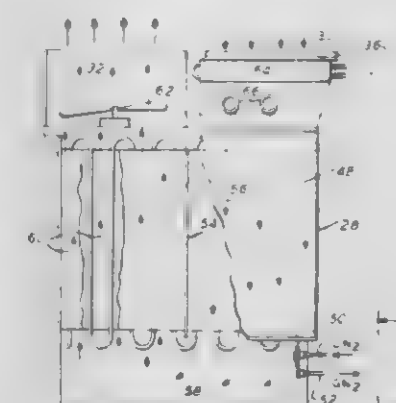
Frank Van Don, Fountain Valley, Calif., assignor to Airco, Inc., Montvale, N.J.

Filed Oct. 23, 1978, Ser. No. 953,994

Int. Cl.³ F17C 7/02

U.S. Cl. 62—52

9 Claims



1. A compact, self-contained ambient air vaporizer in combination with a refrigerant.

4,226,620

MAGNETIC ALLOYS

Frederick Rothwarf, Toms River; Robert L. Bergner, Randolph; Herbert A. Leupold, Eatontown, and Arthur Tauber, Elberon, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 27, 1979, Ser. No. 33,939

Int. Cl.³ C22C 28/00

U.S. Cl. 75—134 C

3 Claims

1. A high coercivity, high energy product permanent magnet alloy corresponding to the formula $\text{Sm}_2\text{Cu}_{1.6}\text{Zr}_{0.16}\text{Fe}_{3.3}\text{Co}_{10}\text{Mn}_2$ and having a saturation magnetization of 9.69 kG, an anisotropy field of 115 kOe, and a temperature coefficient of magnetization of $-0.02\%/^\circ\text{C}$.

4,226,621

BRASS MATERIAL AND A PROCESS FOR THE PREPARATION THEREOF

Peter Ruchel, Lauf, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Sep. 11, 1978, Ser. No. 941,131

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2742008

Int. Cl.³ C22C 9/04; C22F 1/08

U.S. Cl. 75—157.5

5 Claims

1. In a brass material, the improvement in that said material comprises an alloy of 61 to 65% by weight of copper with the remainder being zinc; said material evidencing a structure in which the recrystallized phases α and β_1 are present as a discrete fine mixture having grain sizes of less than 5 μm , the component of the β_1 phase comprising at least 10% of the structure and all of said phase being arranged in the form of a superfine distribution of discrete particles in the grain boundaries of the α phase.

4,226,622

CORROSION-RESISTANT DENTAL ALLOY

Joseph Aliotta, Newton, Mass., and Louis F. Alcuri, Jr., Matawan, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Continuation-in-part of Ser. No. 760,183, Jan. 17, 1977, abandoned. This application Aug. 24, 1978, Ser. No. 936,560

Int. Cl.³ B22F 1/00

U.S. Cl. 75—251

13 Claims



1. A corrosion-resistant dental alloy mixture for use as a filling for dental cavities after amalgamation with mercury consisting essentially of a substantially uniform mixture of particles of a first dental alloy and a second dental alloy, both of said dental alloys comprising a mixture of silver, tin and copper, said first alloy comprising spherical particles having a mean particle size of from about 20 to 26.5 microns, and further having a particle size distribution such that substantially all of said particles fall within a particle size range of from about 1 to 75 microns, said particles having a surface area of about 0.21 m^2/gm , and said second alloy comprising particles having a mean particle size of between about 20 and 26.5 microns, and further having a particle size distribution such that substantially all said particles fall within a particle size range of from

about 1 to 75 microns, said particles having a surface area of from about 0.23 m^2/gm to 0.26 m^2/gm .

7. A corrosion-resistant dental alloy mixture for use as a filling for dental cavities after amalgamation with mercury consisting essentially of a substantially uniform mixture of particles of a first dental alloy and a second dental alloy, both of said alloys comprising a mixture of silver, tin and copper, said first dental alloy comprising spherical particles having a mean particle size of between about 20 and 26.5 microns, and further having a particle size distribution such that substantially all of said particles fall within the particle size range of from about 1 to 75 microns, said spherical particles having a surface area of about 0.21 m^2/gm , and said second alloy comprising randomly shaped particles having a surface area at least about 20 percent greater than the surface area of said spherical particles but less than 0.33 m^2/gm , said randomly shaped particle having approximately the same particle size distribution as said spherical particles.

4,226,623

METHOD FOR POLISHING A SINGLE CRYSTAL OR GADOLINIUM GALLIUM GARNET

Isamu Koshiyama, Nagoya, and Yoshisuke Naitou, Aichi, both of Japan, assignors to Fujimi Kenmazai Kogyo Co., Ltd., Aichi, Japan

Filed Dec. 5, 1979, Ser. No. 100,497

Claims priority, application Japan, Feb. 19, 1979, 54-18590

Int. Cl.³ B24B 1/00; C09G 1/02

U.S. Cl. 106—3

11 Claims

1. A mechanochemical method of polishing a gadolinium gallium garnet single crystal characterized by polishing said gadolinium gallium garnet single crystal with a composition comprising a polishing agent selected from the group consisting of aluminium oxide, cerium oxide, zirconium oxide or chromium oxide suspended within an alkaline silicate solution selected from the group consisting of sodium silicate solution or potassium silicate solution.

4,226,624

SOLUBILIZATION OF HEXAVALENT CHROMIUM COMPOUNDS IN ORGANIC MATERIALS

Jack Ohr, Miami Beach, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1978, Ser. No. 937,670

Int. Cl.³ C09D 5/08

U.S. Cl. 106—14,05

13 Claims

1. A method for dissolving an inorganic alkali metal salt in a liquid organic material comprising:
dissolving an effective amount of an organo substituted quaternary ammonium salt in said liquid organic material to form a first solution; and
mixing an effective amount of said inorganic alkali metal salt with said first solution to form a second solution including cations from said quaternary salt and anions from said inorganic alkali metal salt in said liquid organic material; wherein said alkali metal salt is selected from the group consisting of sodium chromate, sodium dichromate and potassium chromate.

2. A solution, comprising:

a liquid organic material containing, in solution, cations from an organo substituted quaternary ammonium salt, and anions from an inorganic alkali metal salt selected from the group consisting of sodium chromate, sodium dichromate and potassium chromate.

4,226,625

INSULATING TUNDISH VENEER COMPOSITION USEFUL IN CASTING STEEL

Guy A. Delcorio, Chicago, Ill., and Joseph V. Grothaus, Leeds, Ala., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 4, 1979, Ser. No. 45,531

Int. Cl.³ C04B 35/68

U.S. Cl. 106—38.22

7 Claims

1. A tundish composition useful in casting steel which has the range of components as a troweling mix as follows:

	Percent
Diatomaceous earth	5-50
Refractory silica-alumina filler	5-50
Clay	2-20
Wood glue	0.2-5
Silica-alumina fiber	5-25
Graphite	1-25
Colloidal silica binder	1-30
Water	15-50

4,226,626

BINDER COMPOSITION CONTAINING ALCOHOL

Richard H. Toeniskoetter, Worthington, and John J. Spiwak, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 455,474, Mar. 27, 1974, abandoned, which is a continuation-in-part of Ser. No. 351,903, Apr. 17, 1973, Pat. No. 3,923,525, and Ser. No. 415,852, Nov. 14, 1973, Pat. No. 3,930,872. This application Dec. 27, 1977, Ser. No. 865,079

The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.

Int. Cl.² B28B 7/34

U.S. Cl. 106—38.35

47 Claims

1. Binder composition which comprises:

(A) aluminum phosphate containing from 0 up to about 40 mole % of boron based upon the moles of aluminum and containing a mole ratio of phosphorus to total moles of aluminum and boron of about 2:1 to about 4:1;

(B) nonpolymeric normally solid polyhydric alcohol soluble in aqueous solutions of the aluminum phosphate, and containing at least 2 adjacent carbon atoms each having directly attached thereto one alcoholic hydroxyl group; and keto tautomers thereof;

(C) oxygen-containing alkaline earth metal compound containing alkaline earth metal and an oxide, and capable of reacting with the aluminum phosphate; wherein said alkaline earth metal compound includes a free alkaline earth metal oxide or a free alkaline earth metal hydroxide and wherein said oxide or hydroxide has a surface area no greater than about 8.5 m^2/gram (measured by the BET procedure); and

(D) water;

wherein the amount of aluminum phosphate is from about 50 to about 95% by weight based upon the total weight of aluminum phosphate and alkaline earth metal compound; the amount of alkaline earth metal compound is from about 50 to about 5% by weight based upon the total weight of aluminum phosphate and alkaline earth metal compound, the amount of water is from about 15 to about 50% by weight based upon the total weight of aluminum phosphate and water; and the amount of said alcohol is from about 0.5 to about 25% by weight based upon the total weight of aluminum phosphate and alcohol.

4,226,627

OPTICAL GLASS

Satoshi Inoue, Sagami, and Fujio Komorita, Hachioji, both of Japan, assignors to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho, Kanagawa, Japan

Filed Jun. 13, 1979, Ser. No. 48,196

Claims priority, application Japan, Jun. 21, 1978, 53-74289

Int. Cl.³ C03C 3/08, 3/14

U.S. Cl. 106—47 Q

1 Claim

1. An optical glass having refractive index (nd) within a range of 1.68 to 1.82 and Abbe number (vd) greater than values on a line connecting a point where nd is 1.68 and vd is 56.0 and a point where nd is 1.82 and vd is 45.0 in an nd—vd rectangular coordinates representative of optical constants and substantially consisting of a composition in weight percent of 17.0 to 45.0% B_2O_3 , 0.5 to 10.0% SiO_2 , the total of said B_2O_3 and SiO_2 being 24.0 to 47.0%, 0.05 to 4.0% SnO_2 , 20.0 to 50.0% La_2O_3 1.0 to 35.0% Yb_2O_3 , 0 to 35.0% Gd_2O_3 , 0 to 15.0% Y_2O_3 the total of said La_2O_3 , Yb_2O_3 , Gd_2O_3 and Y_2O_3 being 43.0 to 68.0%, 0 to 3.0% Al_2O_3 , 0 to 5.0% GeO_2 , 0 to 10.0% ZrO_2 , 0 to 8.0% Ta_2O_5 , 0 to 3.0% Nb_2O_5 , 0 to 5.0% MgO , 0 to 10.0% CaO , 0 to 10.0% SrO , 0 to 10.0% BaO , 0 to 8.0% ZnO , the total of said MgO , CaO , SrO , BaO and ZnO being 0 to 10.0%, one or more ingredients selected from the group consisting of Li_2O , Na_2O and K_2O , the total of said Li_2O , Na_2O and K_2O being 0 to 0.5%, a fluoride or fluorides in substitution, in part or in whole, for the oxide or oxides of the same element or elements as said fluoride or fluorides among the ingredients of said composition, the total amount of F contained in said fluoride or fluorides being 0 to 8.0%, and 0 to 0.2% As_2O_3 and/or Sb_2O_3 .

4,226,628

CUPROUS COPPER AND/OR SILVER HALOPHOSPHATE GLASSES

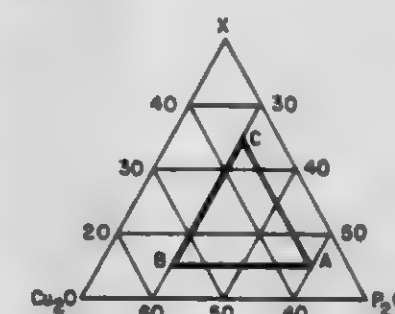
Roger F. Bartholomew, Painted Post; William G. Dorfeld, Lindley; James A. Murphy, Painted Post; Joseph E. Pierson, Painted Post; Stanley D. Stookey, Painted Post, and Paul A. Tick, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,901

Int. Cl.² C03C 3/16

U.S. Cl. 106—47 R

7 Claims



1. Cuprous copper and/or silver halophosphate glasses having softening points less than about 400° C., coefficients of thermal expansion (25°–300° C.) in excess of about $180 \times 10^{-7}/^\circ\text{C}$, and electrical resistivities when measured at room temperature of less than about 10^8 ohm cm , said glasses consisting essentially of the stated proportions, expressed in terms of weight percent on the oxide basis as calculated from the batch, selected from the groups of:

- compositions defined by area ABCD of FIG. 1;
- compositions defined by area ABCD of FIG. 2;
- compositions defined by area ABCDE of FIG. 3;
- compositions containing at least 1% chloride and defined by area ABCD of FIG. 5;
- compositions containing at least 1% bromide and defined by area ABCD of FIG. 6;
- compositions containing at least 1% iodide and defined by area ABCDE of FIG. 7;

- (g) compositions defined by area ABCDEF of FIG. 8;
 (h) compositions defined by area ABCDEF of FIG. 9;
 (i) compositions defined by area ABCDEF of FIG. 10;
 (j) compositions defined by area ABCDEF of FIG. 11.

4,226,629

ELECTROFUSION METHOD OF PRODUCING BORON ALUMINUM OXIDE REFRACTORY

Heizi Tabuchi, and Toshiaki Itoh, both of Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube, Japan
 Continuation-in-part of Ser. No. 886,109, Mar. 13, 1978, abandoned. This application May 8, 1979, Ser. No. 37,010
 Int. Cl.² C04B 35/10

U.S. Cl. 106—65

12 Claims

1. An electrofusion method of producing a refractory material comprising a boron aluminum oxide phase expressed by the formula $9Al_2O_3 \cdot 2B_2O_3$, the method comprising the steps of: preparing a powder mixture of aluminum oxide, diboron trioxide and at least one alkali metal compound selected from the group consisting of oxides and carbonates of lithium the amount of said lithium compound calculated in terms of Li_2O being at least 0.4 Wt% of the sum of Al_2O_3 and B_2O_3 in said mixture; and melting said mixture in an electric furnace by making a current flow through said mixture; the composition of said mixture being controlled such that the product of the melting step contains 78–94 Wt% of Al_2O_3 , 6–15 Wt% of B_2O_3 and up to 2 Wt% of R_2O such that the sum of Al_2O_3 , B_2O_3 and R_2O is not smaller than 95 Wt%, where R_2O represents at least one alkali metal oxide selected from the group consisting of Li_2O , Na_2O and K_2O , the amount of Li_2O in said product being not larger than 0.6 Wt%, the amount of Na_2O in said product being not larger than 1.6 Wt%.

4,226,630

LEACH-RESISTANT SOLID BODIES FROM FLY ASH AND HEAVY METAL SLUDGE

Robert W. Styrton, Marietta, Ga., assignor to Amax Resource Recovery Systems, Inc., Atlanta, Ga.
 Filed Apr. 3, 1979, Ser. No. 26,492
 Int. Cl.³ C04B 7/28

U.S. Cl. 106—85

16 Claims

1. A process of treating an aqueous sludge containing at least one heavy metal species selected from the group consisting of tungsten, cadmium, chromium, strontium, copper, iron, lead, nickel, zinc, molybdenum, tin, magnesium, aluminum, phosphorus, and manganese, to form a solid leach-resistant body, comprising forming a slurry consisting of said sludge, fly ash formed in the combustion of sub-bituminous coal from the Powder River Basin wherein said fly ash is present in an amount effective to form a slurry which will harden into a solid, leach-resistant body, and an initial water content such that the body will have a 7-day compressive strength of at least about 250 psi, and allowing the slurry to harden.

4,226,631

METHOD OF SOLIDIFYING NOXIOUS WASTES

Hirotsuke Kubota, Kawanishi, Japan, assignor to Kabushiki Kaisha Takenaka Komuten, Osaka and Kabushiki Kaisha Takenaka Doboku, Tokyo, both of Japan
 Filed Oct. 23, 1978, Ser. No. 953,383
 Claims priority, application Japan, Oct. 26, 1977, 52/129295
 Int. Cl.³ C04B 7/355

U.S. Cl. 106—95

4 Claims

1. A method of solidifying noxious wastes containing toxic contaminants, characterized by adding and admixing: a hydraulic cement or cement-type solidifying agent containing hydraulic cement as the main effective ingredient, and a lipid, simultaneously or separately into the noxious wastes, to cause solidification and at the same time fixation of said toxic contaminants.

4,226,632

PROCESS FOR PRODUCING HIGH-PURITY ALUMINA AND HYDRAULIC CEMENT

Laszlo Kapolyi, Budapest; Geza Szentgyörgyi, Tatabánya; György Vámos, Budapest, all of Hungary; Jerzy Grzymek, Warsaw, Poland; Anna D. Grzymek, Cracow, Poland; Stanislaw Bethke, and Bronislaw Werynski, both of Opole, Poland, assignors to Tatabányai Szénbányák, Tatabánya, Hungary
 Continuation of Ser. No. 731,370, Oct. 12, 1976, abandoned.
 This application Sep. 18, 1978, Ser. No. 942,962
 Int. Cl.² C04B 7/36

U.S. Cl. 106—100

10 Claims

1. In a process for recovering aluminum from a low grade aluminum and silicon containing starting material by sintering the starting material with limestone to produce a reaction product containing dicalcium silicate, cooling the reaction product whereby phase conversion of the dicalcium silicate causes the reaction product to disintegrate and subjecting the disintegrated product to alkaline extraction, wherein the improvement comprises the starting material and limestone are intimately mixed; the mixture of starting material and limestone is fluidized and preheated in the fluidized state to a temperature of 700° to 900° C. by heat exchange; then the preheated mixture is held at sintering temperature for 5 to 10 minutes in said sintering step.

4,226,633

RAW COMPOSITION FOR CARBON ARTICLES

Kiro Asano; Fumio Tamura; Yoshio Kawai, all of Tokyo, and Kiyoshi Yamaki, Fuchu, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
 Division of Ser. No. 665,049, Mar. 8, 1976, abandoned, which is a continuation of Ser. No. 459,845, Apr. 10, 1974, abandoned.
 This application Jul. 3, 1978, Ser. No. 923,647
 Claims priority, application Japan, Apr. 14, 1973, 48-42590
 Int. Cl.³ C08L 95/00; C08J 9/24

U.S. Cl. 106—269

17 Claims

1. A method for preparing a homogeneous and low porosity carbon article of great mechanical strength comprising: (I) shaping into a desired form a composition comprising: a sinterable mother material which is in fibrous, powder or particulate form, and which (i) is a polycyclic aromatic compound obtained from tar or pitch, (ii) has a H/C atomic ratio of from 0.3 to 0.75, (iii) a fixed carbon value of 55 to 96%, (iv) does not flow out of a 1 mm diameter nozzle under an applied load of 10 kg/cm² at 300° C., (v) benzene insolubles of more than 90%, and (vi) is capable of being sintered together without deformation while baking; and

an additive, in an amount sufficient to improve the workability and carbonization characteristics of said mother material, selected from the group consisting of: (i) a hydrocarbon, (ii) a fatty acid, an ester or metal salt thereof, (iii) an organic compound having a OH functional group in the molecule, and (iv) mixtures thereof, the additive having a maximum fixed carbon value of 20%, a boiling or decomposition point of at least 150° C., and becoming fluid at a temperature of at least 1,000° C., wherein said hydrocarbon (i) is selected from the group consisting of a liquid paraffin, a lubricating oil, a light oil, a coal tar, naphthalene, an alkyl naphthalene, an anthracene oil and a bottom oil by-product in the manufacture of olefins; said fatty acid (ii) is selected from the group consisting of lauric acid, myristic acid, palmitic acid, stearic acid and oleic acid; and said organic compound (iii) is selected from the group consisting of ethylene glycol, propylene glycol, glycerine, cyclohexanol, lauryl alcohol, decyl alcohol, cetyl alcohol, polyethylene glycol, polypropylene glycol and polyvinyl alcohol; and

(II) baking the shaped composition at a temperature of at least 1,000° C. to sinter and fuse together said mother material and to carbonize or graphitize the composition in

a nonoxidizing atmosphere, thereby providing a homogeneous and low porosity carbon article of great mechanical strength.

4,226,634

PROCESS FOR PREPARING PIGMENT COMPOSITIONS

Peter Dimroth, Mannheim; Helmut Knittel, Ludwigsburg; August Seitz, Besigheim, and Dietrich Wolff, Stuttgart, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany
 Filed Jan. 23, 1979, Ser. No. 5,765
 Claims priority, application Austria, Jan. 24, 1978, 517/78
 Int. Cl.³ B02C 17/20; C09B 67/04, 67/22; C09C 1/36

U.S. Cl. 106—288 Q

8 Claims

1. A process for producing pigment compositions which comprises:

- subjecting a suspension of an inorganic pigment component and of an organic pigment component in a liquid medium to intense shearing stresses, said inorganic pigment component being nickel titanium yellow, chromium titanium yellow, barium chromium titanate, barium nickel titanate and
- recovering a mixture of said components from said medium.

4,226,635

EXTENDED BACO₃ FOR BRICK SCUM PREVENTION

Robert H. Kindrick, Bartlesville, Okla., and Benjamin C. Harrison, Homewood, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio
 Filed Jun. 4, 1979, Ser. No. 45,149
 Int. Cl.² C04B 31/44; C09C 1/02

U.S. Cl. 106—306

7 Claims

1. A barium carbonate product useful as a chemical scavenger which consists essentially of an inert core and an effective amount of a thin crystalline layer of above about 10% by weight of barium carbonate precipitated in situ upon said core.

4,226,636

PRODUCTION OF CALCIUM SILICATE HAVING HIGH SPECIFIC BULK VOLUME AND CALCIUM SILICATE-GYPSUM COMPOSITE

Yukio Mizutani, Tokuyama; Yoshiaki Watanabe, Hikari, and Genji Taga, Shinnanyo, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan
 Filed Dec. 29, 1978, Ser. No. 974,523

Claims priority, application Japan, Dec. 30, 1977, 52-160031; Aug. 30, 1978, 53-104988; Dec. 18, 1978, 53-154889
 Int. Cl.² C09C 1/02

U.S. Cl. 106—306

13 Claims

1. A process for producing calcium silicate of the rational formula $2CaO \cdot 3SiO_2 \cdot mSiO_2 \cdot nH_2O$ wherein m is a number of more than 0 and n is a number of 0.1 to 5, said calcium silicate having a petal-like structure, a specific bulk volume of at least 4 cc/g and an amount of oil absorption of at least 2.0 cc/g, which process comprises contacting a water-soluble silicate compound with a calcium compound in an aqueous medium, and heating the resultant mixture at a temperature of 150° to 250° C., the amount of the aqueous medium being 5 to 100 times the weight of the calcium silicate obtained.

4,226,637

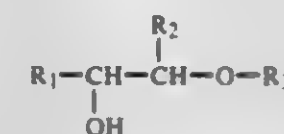
DISPERSING OF PIGMENTS

Heinrich Linden, Düsseldorf; Jochen Heidrich, Düsseldorf-Benrath; Bernd Wegemund, Haan, and Hans Bornmann, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany
 Filed Nov. 20, 1978, Ser. No. 962,371
 Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754576

Int. Cl.³ C09C 1/24, 1/36, 3/08; C09D 3/00
 U.S. Cl. 106—308 Q

11 Claims

10. Coated filler and pigment particles for paints and lacquers consisting essentially of particles of pigment and filler coated with 0.05% to 5% by weight of a dispersant selected from the group consisting of a β -hydroxyalkyl ether of the formula



where R_1 and R_2 are members selected from the group consisting of hydrogen and alkyl of 1 to 21 carbons, with the proviso that at least one of R_1 and R_2 is alkyl and the sum of the carbons in R_1 and R_2 is from 6 to 22; and R_3 is a member selected from the group consisting of alkyl having from 1 to 8 carbon atoms, hydroxyalkyl having from 2 to 8 carbon atoms, dihydroxyalkyl having from 3 to 8 carbon atoms, alkoxyalkyl having from 3 to 8 carbon atoms, hydroxyalkoxyalkyl having from 4 to 8 carbon atoms, and hydroxyalkoxyalkoxyalkyl having from 6 to 8 carbon atoms, and the alkylene oxide adducts selected from the group consisting of ethylene oxide and propylene oxide of said β -hydroxyalkyl ether.

4,226,638

METHOD OF MANUFACTURING XYLOSE SOLUTION FROM XYLAN-CONTAINING RAW MATERIAL

Hansjorg Pfeiffer, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
 Continuation-in-part of Ser. No. 811,192, Jun. 29, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,494
 Claims priority, application Switzerland, Jul. 1, 1976, 8428/76
 Int. Cl.³ C13K 1/02; C13D 1/00

U.S. Cl. 127—37

9 Claims

1. A method of manufacturing a xylose solution from a xylan containing plant raw material in particular animal plants which is very water absorbent in the dry state, said method comprising the steps of
 spraying the raw material with an acid to an extent sufficient to permit hydrolysis of the xylan to xylose without completely saturating the raw material;
 heating the raw material to a temperature sufficient to effect hydrolysis of the xylan to a xylose solution; and
 thereafter washing the acid-treated and heated raw material in counterflow with water to extract the xylose solution therefrom.

4,226,639

SILICA GUARD BED FOR ADSORBENT USED IN AN AQUEOUS SYSTEM

Edward Michalko, Hemet, Calif., and Armand J. deRosset, Clarendon Hills, Ill., assignors to UOP Inc., Des Plaines, Ill.
 Filed May 25, 1979, Ser. No. 42,479
 Int. Cl.³ C13D 3/14

U.S. Cl. 127—46 A

6 Claims

1. In a process for the separation of a component from a feed mixture comprising an aqueous solution comprising a mixture of saccharides components by contacting an aqueous solution comprising a mixture of saccharide components with an adsorbent comprising a crystalline aluminosilicate exhibiting an

adsorptive selectively towards said component thereby selectively adsorbing said component from said mixture, maintain said adsorbent at a temperature of less than 65° C., and thereafter recovering said adsorbed component by elution with an aqueous desorbent, the silicon constituent of said crystalline aluminosilicate tending to dissolve in said solution resulting in the undesirable disintegration of said crystalline aluminosilicate, the improvement which comprises contacting said feed mixture or said desorbent with a bed of silica gel prior to contacting said feed or said desorbent with said adsorbent, thereby effecting a substantial reduction in the extent of dissolution of said silicon constituent and the extent of said disintegration of said crystalline aluminosilicate in said adsorbent.

4,226,640

METHOD FOR THE CHEMICAL DECONTAMINATION OF NUCLEAR REACTOR COMPONENTS

Horst-Otto Bertholdt, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 777,457, Mar. 14, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 955,100 Int. Cl.² G21F 9/28

U.S. Cl. 134—3

15 Claims

1. Method for the chemical decontamination of radioactively contaminated equipment constructed of a metal selected from the group consisting of chrome-nickel steel, nickel alloys or chrome alloy steel, which comprises subjecting the contaminated equipment to three stages of treatment with an intermediate rinsing with demineralized water between stages as follows:

- pretreating the contaminated equipment with an aqueous alkaline permanganate solution at a temperature of 85° C. to 125° C. for about 2 hours
- rinsing the equipment after treatment with the alkaline permanganate with demineralized water
- treating the rinsed equipment with an aqueous decontamination solution with a pH-value adjusted to about 3.5, containing a citrate and oxalate and an inhibitor, at a temperature of 85° C. to 125° C. for about 2 to 20 hours
- rinsing the equipment after treatment with the citrate-oxalate with demineralized water, and
- post-treating the rinsed equipment with an aqueous solution of an organic acid and hydrogen peroxide containing suspended inert particles at a temperature of 20° C. to 80° C. for about 2 to 8 hours.

4,226,641

MAT OR RUG CLEANING PROCESS USING ROLLER BRUSH

Howard E. Bode, Sr., P.O. Box 9442, Metairie, La. 70055, and James B. Williams, 5168 Mt. Revard, Marrero, La. 70072

Filed Feb. 21, 1978, Ser. No. 879,042 Int. Cl.² B08B 1/02, 1/04

U.S. Cl. 134—9

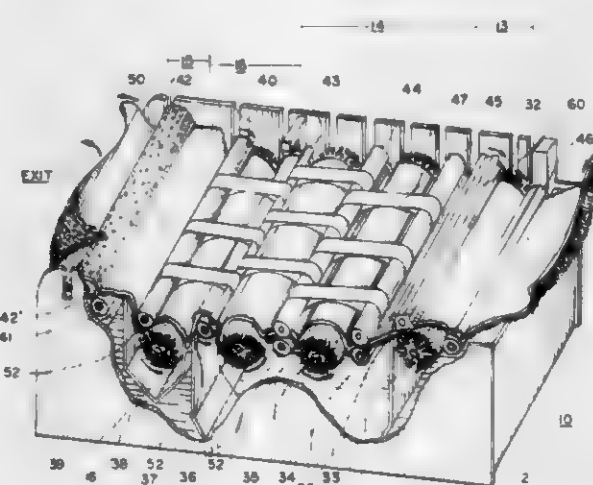
5 Claims

1. The method of cleaning a rug comprising the following steps:

- providing a rug cleaning apparatus comprising: first rotary feed conveying roller means for conveying a rug to be cleaned; roller brush cleaning means adjacent and substantially parallel to and positioned downstream from said first feed roller means for cleaning the surface of the rug, said roller brush means providing a cleaning brushing surface; wash water vessel means located under and at least around said roller brush means for holding washing water for the rug; and second feed roller means adjacent and substantially parallel to and positioned downstream from said roller brush cleaning means for receiving the rug coming from said

roller brush cleaning means and for further conveying the rug;

- rotating said roller brush cleaning means with a greater peripheral speed than at least one of said first and second feed roller means;
- feeding a rug through said cleaning apparatus with its nap side facing the surface of said roller brush cleaning means, and allowing, with the proper selection of differential speed amount and direction, the differential speeds of the feed roller means and the roller brush cleaning means to cause the rug to bunch up producing a tuck in the rug



along the side of said roller brush cleaning means and between said roller brush cleaning means and at least said one of said feed roller means, the tuck causing the nap of the rug to be opened up, increasing the exposure of the nap to the brushing action of said roller brush cleaning means; and

- maintaining during the cleaning of the rug a wash water level in said wash water vessel means around the top of said roller brush cleaning means to directly soak, wet and wash the rug where the tuck is formed and the rug is being brushed by the relatively high peripheral speed of said brushing surface.

4,226,642

SYSTEM PROVIDING FOR DECONTAMINATION WASHING AND/OR BIOCIDAL TREATMENT

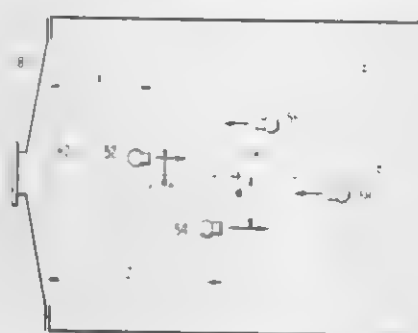
Walter J. Baran, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Feb. 6, 1979, Ser. No. 9,815

Int. Cl.³ B08B 3/10

U.S. Cl. 134—10

20 Claims



- Method in which articles are cleaned of soil and biocidally treated in a single chamber capable of operating at pressures other than atmospheric comprising the steps, after articles forming a load to be washed and biocidally treated are placed in the chamber and closing of an access door, of controllably filling the chamber with washing liquid to a selected level covering the load while establishing a confined air space volume in an upper portion of the chamber above such washing liquid level, injecting air under pressure subsurface of the washing liquid level through a plurality of inlets having discharges

spaced vertically below the load at a bottom portion of the chamber including at least a pair of inlets positioned in relation to each other to provide an interaction of their discharges on the washing liquid.

such discharges having a major component of discharge oriented horizontally in the bottom portion of the chamber and further oriented with a major component of discharge in the direction of the remaining inlet of the pair such that air discharges from the pair of inlets while exhibiting a major horizontal component pass in contiguous relationship propelling washing liquid in opposite directional relationship forming vertically oriented turbulent vortices in the washing liquid by contiguous passage of such discharges, such vertically-oriented turbulent vortices moving horizontally about the chamber into contact with the load,

such air injection further causing upward movement of air and washing liquid in the chamber, interrupting such air injection, and biocidally treating such washed articles in the chamber to provide a desired sterilization level.

4,226,643

METHOD OF ENHANCING THE ELECTRONIC PROPERTIES OF AN UNDOPED AND/OR N-TYPE HYDROGENATED AMORPHOUS SILICON FILM

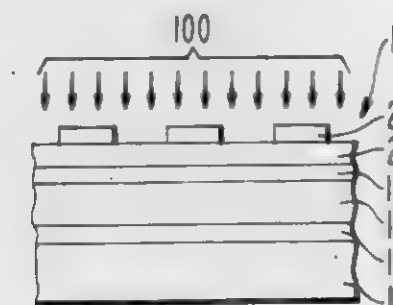
David E. Carlson, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,023

Int. Cl.³ H01L 31/04; B05D 3/06

U.S. Cl. 136—258

15 Claims



- A method of forming an N-type layer or an undoped hydrogenated amorphous silicon layer having increased dark conductivity and photoconductivity by the deposition of said layer in an AC or DC proximity glow discharge, said method comprising:

placing a substrate in a proximity glow discharge apparatus; reducing the pressure to from about 0.3 to about 1 Torr; heating the substrate to from about 150° to about 400° C.; introducing a gaseous mixture containing from about 10 to about 90 percent by volume of argon and from about 90 to about 10 percent by volume of silane; and applying a potential across the electrodes.

- In a solar cell having regions of undoped and N-type conductivity hydrogenated amorphous silicon fabricated in an AC or DC proximity glow discharge, the improvement which comprises fabricating said regions on a substrate in a glow discharge atmosphere incorporating argon in an amount from about 10 to about 90 percent by volume of the glow discharge atmosphere, and silane in an amount of from about 90 to about 10 percent by volume of the glow discharge atmosphere at a pressure of from about 0.3 to about 1 Torr, with a substrate temperature of from about 150° C. to about 400° C.

4,226,644

HIGH GAMMA PRIME SUPERALLOYS BY POWDER METALLURGY

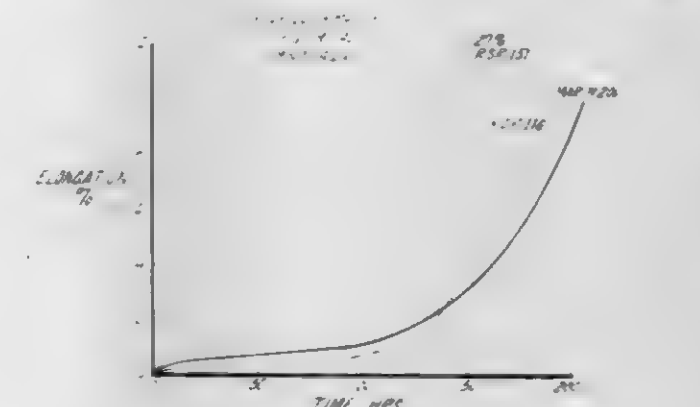
Arthur R. Cox, Jupiter; Romeo G. Bourdeau, Tequesta, and Paul R. Holiday, Palm Beach Gardens, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 5, 1978, Ser. No. 939,571

Int. Cl.² C22F 1/10

U.S. Cl. 148—2

10 Claims



- A method of fabricating an oxidation resistant nickel superalloy article including the steps of:

- providing an alloy consisting of 7-12% Al, 0-5% Ti, 7-15% Cr, 0-6% Ta, 0-6% Nb, 0-12% W, 0-10% Mo, 0-5% Hf, 0-0.5% C, 0-0.1% B, 0-0.1% Zr, 0-0.5% Y, balance nickel;
- melting the alloy;
- solidifying the alloy into particulate form at a rate in excess of 10⁴° F./sec. which is sufficient to suppress the formation of low melting eutectic phases; and
- compacting the solidified particulate form an article; and whereby the incipient melting temperature of the alloys and the elevated temperature mechanical properties of the alloy are increased and so that a more uniform distribution of elements throughout the alloy as obtained resulting in an increased volume fraction of the gamma prime phase being present and in improved oxidation resistance.

4,226,645

STEEL WELL CASING AND METHOD OF PRODUCTION

George M. Waid, Burton, and Robert T. Ault, Shaker Heights, both of Ohio, assignors to Republic Steel Corp., Cleveland, Ohio

Continuation-in-part of Ser. No. 866,754, Jan. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 752,441, Dec. 20, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,750

Int. Cl.² C21D 9/08

U.S. Cl. 148—2

8 Claims

- A process of making well casing characterized by improved hydrogen sulfide stress cracking resistance at high yield strengths ranging from about 90 to 145 ksi comprising the steps of providing an aluminum-killed steel consisting essentially in amounts by weight of from 0.10 to 0.40% carbon, 0.25 to 0.75% manganese, 0.05 to 0.50% silicon, 1.0 to 5.0% chromium, 0.30 to 1.0% molybdenum, 0.05 to 0.55% vanadium, 0.02 to 0.10% aluminum, and the balance iron except normal steel making impurities; rolling and forming the steel into tubular form; austenitizing the casing at a temperature of from 1550° to 1700° F., quenching the casing to obtain a microstructure which is essentially martensite, and tempering the casing at a temperature of from 1200° to 1400° F. to a maximum hardness of 35 Rc and a microstructure which is essentially tempered martensite.

4,226,646

PROCESS OF COATING A FERROUS METAL SUBSTRATE WITH AN AQUEOUS FLUOROPOLYMER COATING

Eustathios Vassiliou, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 26, 1979, Ser. No. 24,096

Int. Cl.² C23F 7/00

U.S. Cl. 148—6.14 R

3 Claims

1. A process of coating a ferrous metal substrate with an aqueous fluoropolymer coating with minimum flash rusting wherein the substrate is first coated with triethanolamine in a volatile liquid carrier, then evaporating the carrier, then coating the substrate with an aqueous fluoropolymer coating.

4,226,647

HEAT-TREATED ZIRCONIUM ALLOY PRODUCT

Erland M. Schulson, Deep River, and Donald J. Cameron, Pinawa, both of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

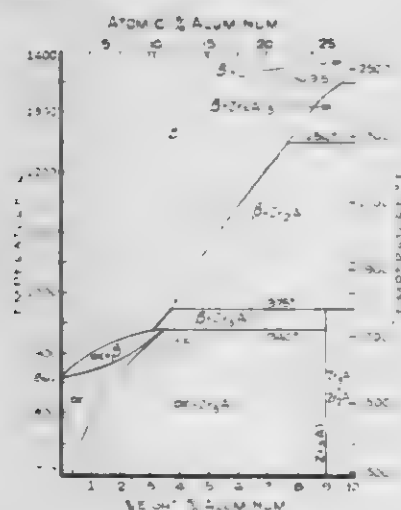
Continuation-in-part of Ser. No. 711,744, Aug. 4, 1976, Pat. No. 4,094,706, which is a continuation-in-part of Ser. No. 465,654, Apr. 30, 1974, abandoned. This application Jun. 12, 1978, Ser. No. 914,829

Claims priority, application Canada, May 11, 1973, 171070

Int. Cl.² C21D 1/02; C22D 16/00

U.S. Cl. 148—32.5

14 Claims



1. A heat-treated, high tensile strength creep and corrosion resistant zirconium alloy containing 7.0–10.0 wt% aluminum, and 0–3.0 wt% of one or more elements selected from the group comprising magnesium, tin, chromium, iron, carbon, silicon, yttrium, niobium, molybdenum and beryllium, balance, zirconium and incidental impurities, having a substantially continuous matrix of the intermetallic compound Zr_3Al .

11. A corrosion resistant, structural element fabricated from an alloy containing 7.0–10.0 wt% Al, and 0–3.0 wt% of one or more elements selected from the group comprising magnesium, tin, chromium, iron, carbon, silicon, yttrium, niobium, molybdenum and beryllium, balance zirconium and incidental impurities, heat treated in the range from 700° C.–950° C. for a sufficient time to ensure a substantially continuous matrix of the intermetallic compound Zr_3Al .

4,226,648

METHOD OF MAKING A HYPERABRUPT VARACTOR DIODE UTILIZING MOLECULAR BEAM EPITAXY

Charles A. Goodwin, Wyomissing, and Yusuke Ota, Slatington, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1979, Ser. No. 21,226

Int. Cl.² H01L 21/203, 21/22

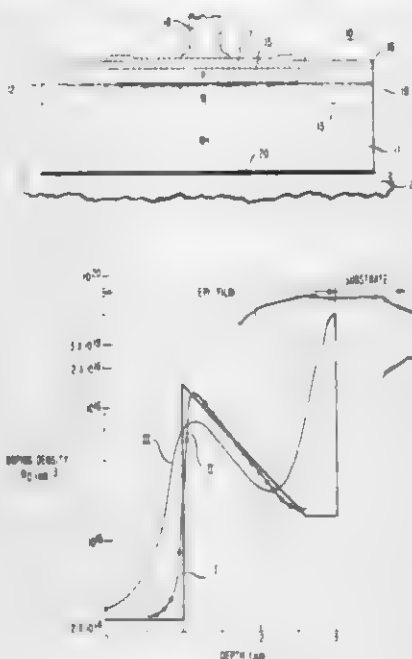
U.S. Cl. 148—175

4 Claims

1. A method of fabricating a silicon semiconductor varactor diode of the hyperabrupt junction type in which an epitaxial

layer having a PN junction therein is formed on a starting portion of high conductivity and of one conductivity type characterized by the steps of:

- (1) growing by molecular beam epitaxy on said starting portion a layer of one conductivity type and during said growing adding an impurity of said one conductivity type



- in an increasing amount so that the concentration of said impurity increases to a peak value, and
- (2) terminating the addition of said impurity to the growing process at the preselected peak value while continuing to grow said epitaxial layer thereby to form a surface-adjointing layer.

4,226,649

METHOD FOR EPITAXIAL GROWTH OF GAAS FILMS AND DEVICES CONFIGURATION INDEPENDENT OF GAAS SUBSTRATE UTILIZING MOLECULAR BEAM EPITAXY AND SUBSTRATE REMOVAL TECHNIQUES

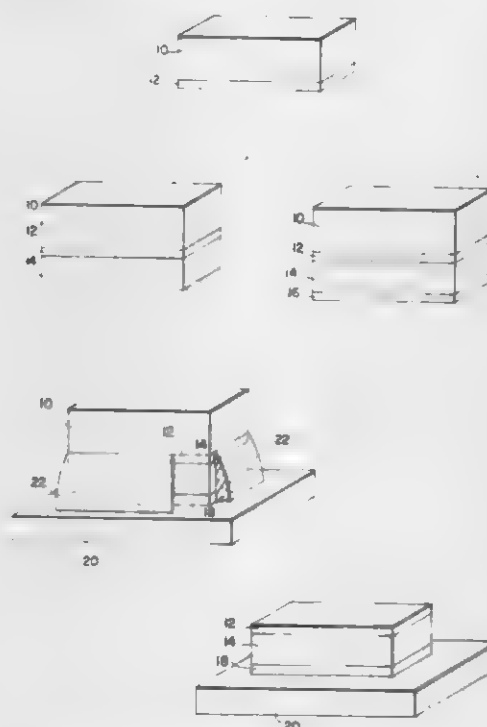
John E. Davey, Alexandria, and Aristos Christou, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1979, Ser. No. 74,448

Int. Cl.² H01L 21/203, 21/441

U.S. Cl. 148—175

18 Claims



1. A method of growing high-quality super-abrupt thin-film epitaxial layers to form a composite comprising:

polishing one surface of a high-resistivity, low-dislocation-count, germanium substrate, placing said polished germanium substrate into a vacuum deposition system, evacuating said system to a high vacuum, outgassing said substrate by heating said evacuated system to a temperature greater than a molecular beam epitaxial growth temperature, lowering the temperature of the system to the molecular beam epitaxial growth temperature for GaAs, growing a thin layer of n-doped GaAs onto said polished surface of said germanium substrate from a n-type doping source, abruptly shutting off said n-type doping source, simultaneous with shutting off said n-type doping source, initiating the growth of a semi-insulating layer without interrupting the GaAs growth process to obtain a layer of desired thickness, growing a thin layer of germanium onto said semi-insulating layer, reheating said doped substrate sufficiently to deposit a layer of gold onto said thin germanium layer to form a gold-germanium alloy, removing the layered substrate from said vacuum system and bonding the gold-germanium layer to a carrier substrate, applying a protective coating to the ends and edges of said composite up to said germanium substrate, etching said germanium substrate from the layered substrate, and etching said GaAs layer to tailor said GaAs layer to a desired thickness, whereby said GaAs layer may be photolithographically processed to form desired structures such as GaAs field-effect-transistors.

4,226,650

METHOD OF REDUCING EMITTER DIP IN TRANSISTORS UTILIZING SPECIFICALLY PAIRED DOPANTS

Kouichi Takahashi; Hidekuni Ishida, both of Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan

Filed May 30, 1978, Ser. No. 910,909

Claims priority, application Japan, Jun. 9, 1977, 52/67307

Int. Cl.² H01L 21/225, 29/36

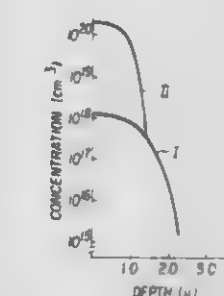
U.S. Cl. 148—188

4 Claims

1. A method of manufacturing a semiconductor device comprising:

- providing an N type collector layer in an N type silicon semiconductor wafer having a substantially flat surface;
- diffusing an N type impurity having a high energy of combination with vacancies and boron which is a P type impurity material through a first opening in a first insulating layer covering said N type collector layer such that a P type base layer in contact with said N type collector layer having a PN junction extending to said surface is formed, said P type base layer having a substantially uniform P type impurity concentration distribution in the direction of depth of said layer;
- covering said N type collector layer and said P type base layer with a second insulating layer;
- forming a second opening in said second insulating layer, said second opening being smaller than said first opening in said first insulating layer; and
- diffusing phosphorus and arsenic which are N type impurity materials through said second opening in said second insulating layer into said P type base layer so that an N

type emitter layer is formed which is in contact with said P type base layer having a PN junction extending to said



surface and which constitutes a transistor together with said N type collector layer and said P type base layer.

4,226,651

HIGH VOLTAGE CABLE SPLICING - ADDITIVE REACTION

Marvin H. Gold, 5050 Dory Way, Fair Oaks, Calif. 95628

Filed Feb. 1, 1978, Ser. No. 874,104

Int. Cl.² H01B 13/00

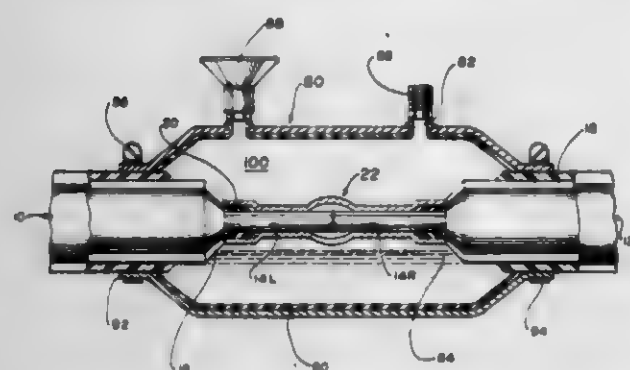
U.S. Cl. 156—48

15 Claims

1. A process for preparing a splice of two sections of high voltage cable; each of which comprises a conductor portion and original electrical insulation surrounding said conductor portion, the conductor portion having an exposed end protruding beyond the end of said insulation, said process comprising:

- a. electrically and mechanically joining the exposed ends of said conductor portions to form a conductor,
- b. providing semi-conductive material about the electrical junction,
- c. surrounding the joined section with a mold.

- d. filling the mold with a mixture comprising a liquid polyolefin having addition polymer reactable sites, a chain extension agent reactive with said polyolefin's sites, a particulated solid, saturated polyolefin,



- e. heating the mold to a temperature to effect chain extension of at least the liquid polyolefin, and
f. raising the temperature to effect polymeric grafting of the chain extended liquid polyolefin onto the solid polyolefin and the cable insulation.

4,226,652

METHOD AND APPARATUS FOR JOINING A SEALING ELEMENT TO A CYLINDRICAL CONTAINER SLEEVE

Rolf Berg, Djursholm, Sweden, assignor to Assi Can Aktiebolag, Stockholm, Sweden

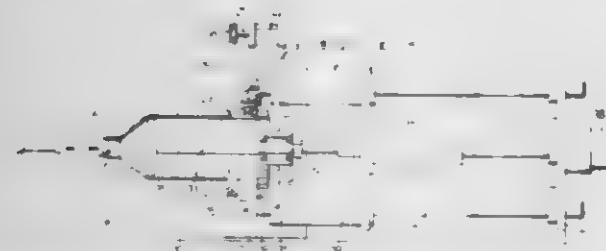
Filed Dec. 6, 1978, Ser. No. 966,989

Claims priority, application Sweden, Jun. 6, 1978, 7806619

Int. Cl.² B29C 27/08; B32B 31/20; B65B 7/28

U.S. Cl. 156-69

10 Claims



1. A method of joining to a cylindrical container sleeve (1) a sealing or closure element (2) provided with a circular collar (4) arranged to be inserted into one open end of the container sleeve, into abutment with the inner wall thereof, at least the collar comprising a heat-meltable plastics material, wherein the sealing or closure element is mounted on the container sleeve with the collar in abutment with the inner wall of said sleeve; wherein the container sleeve and the sealing or closure element are rotated around the cylinder axis of said sleeve; wherein at least one heated body (35) whose temperature exceeds the melting point of the plastics material in the collar is pressed against said collar; and wherein the container sleeve is rotated until the plastics material in said collar has melted, whereafter the heated body is removed out of contact with the plastics material and the plastics material is then permitted to solidify.

5. An apparatus for joining a cylindrical container sleeve (1) to a sealing or closure element (2) provided with a collar (4) made of a heat-meltable plastics material, said collar abutting a ring-shaped end part of the inside of the container sleeve, said collar being firmly welded to the container sleeve within said end part by supplying heat thereto, characterized by: means (6,14) for holding and rotating the container sleeve (1) and the sealing or closure element (2) around the cylinder axis of the container sleeve; at least one welding member (35) arranged to be maintained by heated means (39) at a temperature which exceeds the melting point of the plastics material; movement means (27, 33, 36, 38) for moving the welding member into contact with said collar to melt it during rotation of the container sleeve and for moving said welding member (35) out of

contact with the molten plastics material after a given interval of time has lapsed.

4,226,653

METHOD FOR THE CONTINUOUS PRODUCTION OF AN OPTICAL TRANSMISSION ELEMENT

Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

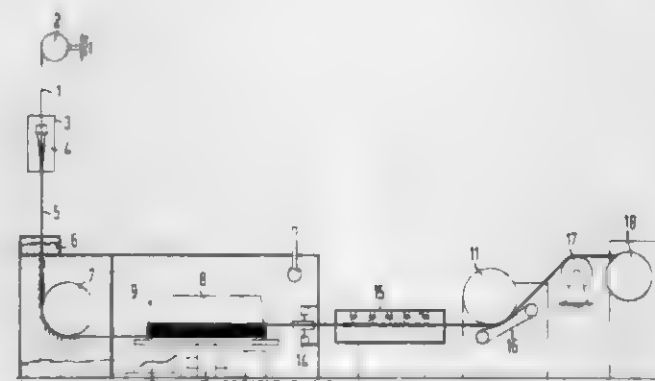
Filed Dec. 21, 1978, Ser. No. 971,698

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757786

Int. Cl.² B29C 27/24; G02B 5/14

U.S. Cl. 156-73.5

3 Claims



1. A method for the continuous production of an optical transmission element comprising a light waveguide fiber loosely received in an hose-like casing with the fiber having an excess length relative to the length of the casing, said method comprising the steps of pulling the fiber from a storage reel; controlling the speed of removal from the reel by applying a braking force to the reel; surrounding the fiber with a hose-like casing to form an optical transmission element; heating the element to a temperature, which is required for creating a necessary excess length between the casing and the fiber; passing the heated element around a tempered drum with a sufficient number of loops so that the hose-like casing and the light waveguide fiber are tightly coupled to one another due to friction and as a consequence of the friction, the speed of the casing on a support surface of the drum is the same as the fiber speed as the element is removed from the drum; removing the element from the drum; cooling the removed element to form a finished element; and then winding the finished element on a spool.

4,226,654

MANUFACTURE OF TIRES

Maurice A. Young, Birmingham, England, assignor to Dunlop Limited, London, England

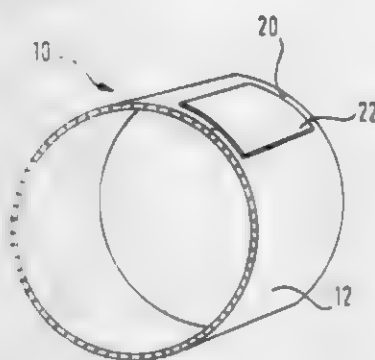
Filed Apr. 18, 1978, Ser. No. 897,442

Claims priority, application United Kingdom, May 3, 1977, 18547/77

Int. Cl.² B29H 17/08

U.S. Cl. 156-123 R

11 Claims



1. A method for the manufacture of a tire which is substan-

tially free of discontinuities in the circumferential direction including a carcass composed of a single ply of cord fabric wherein the cords are orientated at substantially 90° to the mid-circumferential plane of the tire, said method comprising the steps of firstly assembling into a cylindrical pocket a ply of rubberized cord fabric including a warp of reinforcing cords and a weft of threads having a low tensile strength and a low elastic modulus relative to the warp cords, the warp cords being aligned substantially parallel to the axis of the cylinder, such that in said pocket the ends of said ply abut substantially without overlapping; secondly laying over the joint between the ends of said ply an unwoven cover strip of a sheet material comprising low tensile strength and low elastic modulus threads of mechanical properties similar to said weft threads and embedded in rubber compound, the strip being arranged such that its threads are orientated substantially at 90° to the ply joint, and thirdly shaping said pocket into toroidal form.

4,226,655

METHOD FOR BUILDING A TIRE

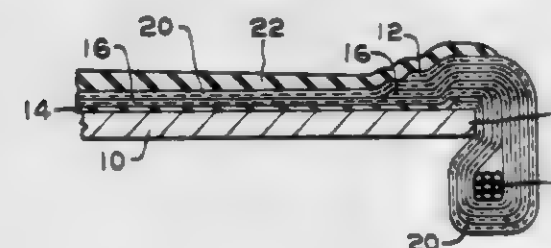
John R. Bush, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 2, 1979, Ser. No. 394

Int. Cl.² B29H 17/24; B60C 15/06

U.S. Cl. 156-132

4 Claims



1. The method of making a tubeless pneumatic tire comprising the sequential steps of:

- assembling upon a cylindrical drum at least two axially spaced nonwicking finishing strips, wherein a minor portion of the width of said finishing strip is contacting the outer surface of said drum;
- folding a major portion of the width of said finishing strip down such that said major portion is nearer to the horizontal axis of said drum than said minor portion of said finishing strip;
- applying a layer of air-impervious liner to said drum, wherein said liner extends over the edge of said minor portion of said finishing strip;
- applying a first body layer comprising at least one ply of rubber coated cord fabric and folding said fabric down to cover the outer edges of said drum;
- applying a bead core over each axially outer edge of the first body layer at either end of said drum and turning each of said edges up over the respective bead core;
- applying a second body layer comprising at least one ply of rubber coated cord fabric and turning the outer edges of said second body layer down around the respective bead core;
- turning said major portion of said finishing strips up around the respective bead core such that said finishing strip covers the edge of said second body layer;
- applying rubber externally of said body layers to constitute the tread and sidewall portions of the completed tire;
- removing the assembled materials as a cylindrical uncured tire from the building drum; and
- vulcanizing the uncured tire in a torodial configuration.

4,226,656

TIRE CARCASS ASSEMBLY

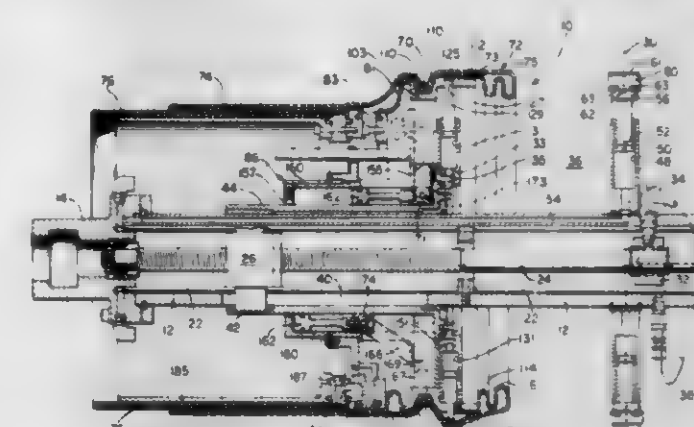
Paul E. Appleby, Cuyahoga Falls; Denver C. Folds, Akron; Joseph F. Stalter, Jr., Mogadore, and Harry R. Swanson, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 2, 1979, Ser. No. 26,391

Int. Cl.² B29H 17/22, 17/26

U.S. Cl. 156-132

22 Claims



1. A method of building a tire comprising in sequential combination the steps of:

- disposing an endless carcass band loosely about carcass shaping means having a pair of carrier means movable symmetrically toward and away from a center plane fixed normal to the direction of movement of said carrier means and having band holding means axially fixed at said center plane and which carrier means are located initially at a first axial distance apart;
- expanding circumferentially an axially narrow central portion of said band sufficiently only to resist axial displacement of said band by expanding said holding means to engage and to centralize said band with respect to the axis of said shaping means;
- expanding said band circumferentially in two axial portions located symmetrically with respect to said central portion by expanding spreader means carried respectively by said carrier means;
- smoothing and tensioning said band both axially and circumferentially by moving said spreader means while so expanded symmetrically axially away from said center plane to a second distance apart greater than the first-mentioned distance;
- locating a first and a second bead ring respectively about and radially spaced outwardly of said band;
- then fixing each said bead ring and said band relative to each other by expanding circumferentially beadseating means carried respectively on said carrier means adjacent to and respectively axially outward of the respective spreader means to expand circumferentially the axial zones of said band respectively immediately underlying each said bead;
- shaping said band between said bead rings outwardly from said holding means by moving said carrier means axially symmetrically toward said center plane to a third distance between the bead rings which distance is greater than the maximum axial width of the tire when mounted and inflated for use and the first-mentioned distance and less than the second-mentioned distance while applying a first air pressure to expand said band;
- causing said band to engage coaxially disposed annular restricting means disposed symmetrically of said center plane;
- thereafter applying to said band adjacent to the axial zones underlying said bead rings, a second air pressure greater than said first pressure by expanding a first pair of bladders affixed circumferentially respectively to said beadseating means and extending axially inward respectively therefrom and concurrently;

turning the respective ends of said band radially outwardly around each said bead ring by inflating a second pair of bladders circumferentially affixed respectively to said beadseating means and extending axially outward therefrom and by then inflating a third pair of bladders in contact with and circumferentially affixed on said carrier means to underlie respectively said second pair of bladders to urge the latter toward said first pair of bladders to compact said ends to the respective bead rings and opposing portions of said band; thereafter removing the assembled tire.

4,226,657

METHOD OF MAKING REFLECTING FILM REFLECTOR

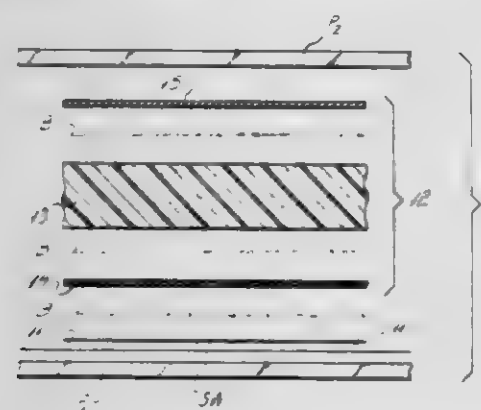
James G. Cottingham, Center Moriches, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 17, 1978, Ser. No. 906,820

Int. Cl.² B32B 31/08; G02B 5/08

U.S. Cl. 156-196

3 Claims



1. A method of bonding a reflecting film to a rigid substrate comprising:

- sandwiching a nonbonding adhesive medium between a smooth, simply curved receptor surface and a reflecting film, said surface having a radius of curvature great enough that said film may conform to said surface without wrinkling;
- bonding said substrate to the opposite side of said film with a bonding adhesive medium while said film is held in smooth contact with said surface by said nonbonding medium, said nonbonding medium further comprising a liquid soap having a temporary adhesion greater than the stresses upon said film generated by the application and curing of said bonding adhesive medium; and,
- removing said film and said bonded substrate from said surface after curing of said bonding adhesive medium.

4,226,658

METHOD OF MAKING RETROREFLECTIVE LAMINATE

Russell L. Carlson, Tallmadge; David L. Eastin, Hudson; Ralph H. Loehning, Stow, and William E. Stalker, Cuyahoga Falls, all of Ohio, assignors to Morgan Adhesives Company, Stow, Ohio

Filed Jan. 12, 1979, Ser. No. 2,984

Int. Cl.² B32B 31/08; G02B 5/128

U.S. Cl. 156-247

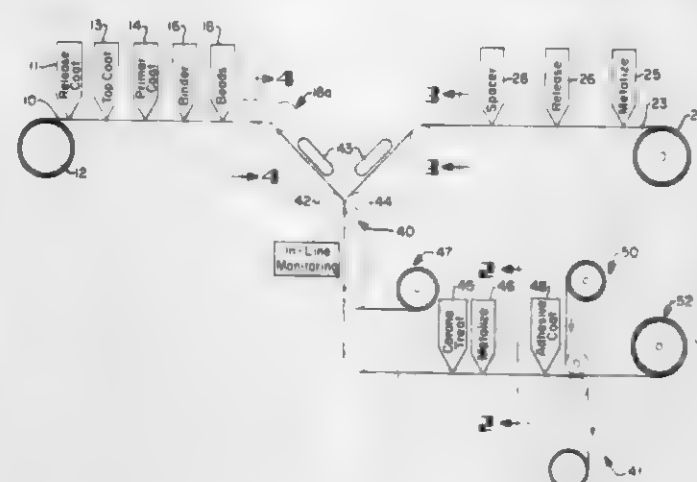
4 Claims

1. A method for forming a retroreflective laminate comprising a top coat layer, a binder layer, spaced optical beads in and protruding from the binder layer, a spacer layer, and a metal film adhered to one face of the spacer layer which is characterized by

- forming the spacer layer on a fibrous paper carrier with a release layer thereon, said carrier having uniform compressibility over its entire surface and having more but shorter fibers than average papers, said carrier being clay

coated on one face and said release layer being in contact with said one face,

- laminating the spacer layer together with the paper carrier to the binder layer with the protruding beads



engaging said spacer layer, the fibrous paper carrier supporting the spacer layer to prevent stretching thereof during laminating,

- removing the paper carrier, and
- applying a metal film to the spacer layer.

4,226,659

METHOD FOR BONDING FLEXIBLE PRINTED CIRCUITRY TO RIGID SUPPORT PLANE

Gary L. Griffith, Arvada, and Nawal K. Sharma, Broomfield, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 648,288, Jan. 12, 1976, abandoned. This application Dec. 27, 1976, Ser. No. 754,122

Int. Cl.² B41M 3/08

U.S. Cl. 156-305

2 Claims



1. A method of forming a printed circuit device comprising a rigid perforate substrate having an insulating surface bonded to one face of a two-faced flexible insulating sheet having thin conductive patterns produced on each of said faces, said flexible sheet having conductive through holes electrically connecting portions of the pattern on one face to portions of the pattern on the opposite face, which comprises the steps of:

- depositing a layer of a tacky contact adhesive comprising a rubber modified epoxy resin containing dispersed polyester fibers upon the rigid perforate substrate member,
- aligning said flexible insulating sheet upon the epoxy resin-coated surface of the substrate,
- attaching the flexible insulating sheet to the epoxy resin-coated surface of the substrate by applying sufficient pressure thereto to establish a firm contact bond,
- selectively removing adhesive in the through holes with a solvent selected from the group consisting of 1,1,1-trichloroethylene, trichloroethane and methylene chloride, thereby resulting in registration of through holes in the sheet with perforations in the rigid substrate, and
- curing the adhesive to an insoluble state.

4,226,660

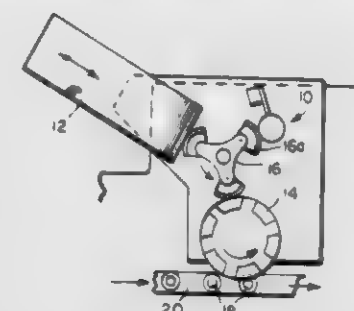
DOCTOR BLADE FOR LABELING MACHINE

Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Willoughby, Ohio

Filed May 24, 1979, Ser. No. 42,040

Int. Cl.³ B65C 9/08, 11/04

U.S. Cl. 156-357



1. The combination with a glue applying roll, label magazine and picker, so arranged that the picker is movable in a path to first receive glue from the glue applying roll and then engage a label in the magazine, said label magazine being retractable from said path, of means for supplying glue to the glue applying roll so that it spreads over the surface thereof, a doctor blade supported adjacent the glue applying roll with an edge spaced from and parallel thereto, means for retracting the magazine and means operable simultaneously with the retraction of the magazine to move the doctor blade closer to the surface of the glue applying roll to prevent an accumulation of an excessive amount of glue on the picker.

4,226,661

APPARATUS AND METHOD FOR PREFABRICATING POCKETS

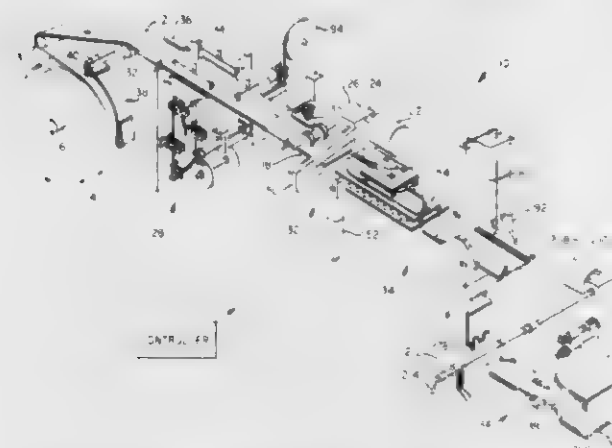
Joseph W. A. Off, Irving; Judson H. Early, Dallas, and William B. Greer, Grand Prairie, all of Tex., assignors to Haggard Company, Dallas, Tex.

Filed Dec. 19, 1978, Ser. No. 971,022

Int. Cl.² B31F 1/00; B32B 31/00; B65C 11/04

U.S. Cl. 156-358

24 Claims



1. Apparatus for prefabricating pockets, which comprises: feed means for selectively advancing pocket material of a predetermined width along an input path; adhesive applicator means located along the input path for selectively attaching predetermined strips of adhesive adjacent the edges of the pocket material; cutter means positioned beyond the adhesive applicator means and along the input path for selectively cutting the pocket material to provide pocket blanks with strips of adhesive attached thereto; means located beyond the cutter means and along the input path for aligning and folding each successive pocket blank; and rotatable pocket wheel means for receiving the successive folded pocket blanks from the aligning and folding means

and for activating at least portions of the adhesive strips therein to form prefabricated pockets.

4,226,662

APPARATUS FOR TREATING FIBROUS BOARDS

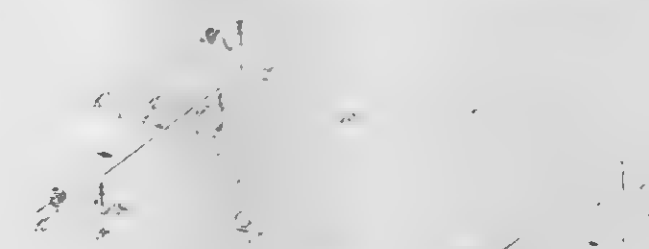
Ralph E. McCort, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Dec. 28, 1978, Ser. No. 974,165

Int. Cl.² B32B 31/00; B05G 11/00; B05D 5/00

U.S. Cl. 156-390

4 Claims



1. Apparatus for treating a fibrous board comprising: a. means for cutting away a portion of an edge of the board to form a remaining edge portion on the board; b. means for applying a facing to said board; and c. means for applying a liquid adhesive to the top, side and bottom of said remaining edge portion, said means for applying, comprising a generally block-shaped member having a channel positioned therein for the passage of said remaining edge portion therethrough, said channel having beveled inlet surfaces, a conduit for supplying said liquid adhesive into said channel, and trough-shaped branch conduits adapted to spread said liquid adhesive to all sides of said channel, said branch conduits being positioned in the side, top and bottom, respectively, of said channel

4,226,663

APPARATUS FOR ASSOCIATING A BEAD FILLER WITH A BEAD CORE OF A VEHICLE TIRE

Dante Pirovano, and Cesare Miglarini, both of Milan, Italy, assignors to Industrie Pirelli, S.p.A., Milan, Italy

Filed Nov. 9, 1978, Ser. No. 959,338

Claims priority, application Italy, Dec. 15, 1977, 30179 A/77

Int. Cl.² B29H 17/32

U.S. Cl. 156-422

15 Claims



1. An automatic device for the continuous application of elastomeric fillers on bead cores of pneumatic tires, each filler comprising a base and an upper part of pre-established shape, said filler having a length equal to the outermost peripheral

layout of the bead core, said device comprising a fixed frame to which are associated two discs in mutual contact along their periphery in order to rotate simultaneously, the first disc comprising a first annular groove to encase the bead core, the second disc comprising a second annular groove into which the upper part of the filler slides in a tangential direction, said second annular groove being able to dispose the base of the filler on the bead core rotating with the first disc as long as the filler base covers the outermost peripheral layout of the bead core and the two facing ends of the upper part of the filler are opened in the form of a "V", said device being characterized in that it comprises two pairs of two pressure elements each, each pair of pressure elements comprising two arms arranged symmetrically to each other with respect to the center plains of the first annular groove of the first disc and rotating around the axis of rotation at one end by means of at least one associated piston of a fluid-dynamic cylinder forming part of a mechanism for imparting thrusts opposite to one another in a pair of two arms, a butt splicing means for the facing ends of the filler, said fluid-dynamic cylinder being externally connected to said butt splicing means whereby when the fluid dynamic-cylinder applies the said opposite thrusts the said arms block the filler to the butt splicing means, said butt splicing means applying thrusts opposite to one another on the two pair of arms, and adjusting and centering means for orientating the first disc comprising the filler in respect of the position of the central symmetrical plane of the two pair of pressure elements, said means comprising a body of geometrical form having at least two lateral faces forming a "V", said body being actuated by a suitable control unit which moves said body between the two facing ends of the filler.

4,226,664

LAMINATING APPARATUS

Myron W. Shaffer, Irving, Tex., assignor to Laminating Equipment, Inc., Pantego, Tex.

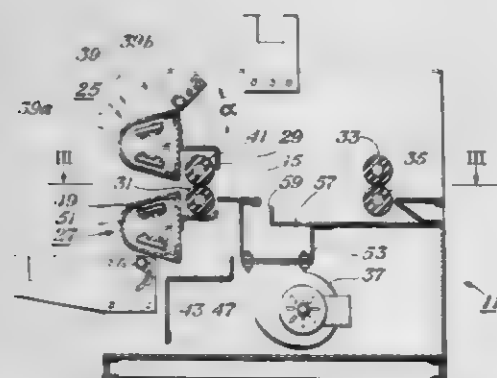
Division of Ser. No. 771,179, Feb. 23, 1977, Pat. No. 4,090,911.

This application May 8, 1978, Ser. No. 903,758

Int. Cl.² B32B 31/00; B31F 5/00

U.S. Cl. 156-499

1 Claim



1. In an apparatus for continuously laminating articles with a plastic having an adhesive side that melts at a lower temperature than the other side, the apparatus being of the type having a pair of supply rolls of plastic, means for drawing webs from the supply rolls past heating means and through a pair of pressure rollers for bonding the webs together with the article sandwiched between, and a pair of pull rollers mounted behind the pressure rollers for maintaining tension as the bonded webs cool, an improved heating means comprising:

upper and lower heat shoes mounted to the apparatus adjacent the pressure rollers and spaced apart vertically for contacting the webs, each heat shoe having a heating surface for contacting one of the webs and containing an electrical heater element means for heating the entire heating surface to a substantially uniform temperature above the melting temperature of the adhesive side, the heating surface having an arcuate portion joined by upper and lower planar surfaces symmetrical with each other and extending rearward tangential to the arcuate portion, each web being drawn over the upper planar surface, the arcu-

ate portion, and the lower planar surface of one of the heat shoes; the lower planar surface of the upper heating shoe being separated sufficiently from the upper planar surface of the lower heat shoe so that the webs and sandwiched article are not squeezed by the heat shoes.

4,226,665

DEVICE FABRICATION BY PLASMA ETCHING

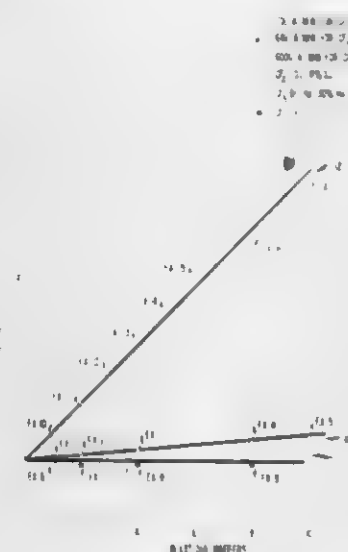
Cyril J. Mogab, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1978, Ser. No. 929,568

Int. Cl.² H01L 21/306; C23F 1/02

U.S. Cl. 156-643

24 Claims



1. Process for fabrication of at least one article comprising at least one operation during which the article undergoing fabrication comprises a surface to be etched wherein the said article surface is maintained within a plasma environment contained within an apparatus, the plasma resulting from imposition of an rf electrical field across gaseous matter between two electrodes, the surface to be etched consisting of a composition manifesting a loading effect when etched by a plasma environment produced across a gas mixture consisting essentially of CF₄ and O₂, or CCl₄, the said surface consisting essentially of a composition selected from the group consisting of elemental silicon, elemental aluminum, silicon nitride, boron nitride, and resists utilized in SIC processing, the said loading effect being defined as a variation in etch rate of at least 25 percent for a loading variation of from 10 percent capacity to 100 percent capacity for the said apparatus, etching being primarily due to reaction of the said surface with a primary etchant species characterized in that the said gaseous matter is of composition such as to result in two active chemical species within the said plasma, in which the two species are chemically distinct, the first of which, denoted primary etchant species, reacts with the said surface to result in removal of surface material and the second of which, denoted recombinant species, primarily serves to combine with unreacted primary etchant species to result in the said mean inherent lifetime, and in which the amount of recombinant species is maintained at a level sufficient to reduce mean inherent lifetime of the primary etchant species to a value which is no more than one-tenth as great as the mean lifetime due to chemical reaction with the surface resulting in etching.

4,226,666

ETCHING METHOD EMPLOYING RADIATION AND NOBLE GAS HALIDE

Harold F. Winters, San Jose, Calif., and Brian N. Chapman, Mahopac, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1978, Ser. No. 934,734

Int. Cl.² H01L 21/306

U.S. Cl. 156-643

31 Claims



1. A method for etching a surface wherein all of the constituents of the surface are capable of forming volatile substances which comprises exposing the surface to be etched to at least one noble gas halide and to radiation selected from the group of ion beam radiation, electron beam radiation, nuclear radiation, actinic light, and mixtures thereof at about the same time for a period of time to etch the surface to the desired extent.

4,226,667

OXIDE MASKING OF GALLIUM ARSENIDE

Ralph A. Logan, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 31, 1978, Ser. No. 956,392

Int. Cl.² H01L 21/308

U.S. Cl. 156-656

6 Claims

1. In a process of manufacturing an Al_xGa_{1-x}As device which includes the formation of a layer of native oxide on the device that is to be selectively patterned subsequent to the heating of the device to a temperature at which the oxide becomes insoluble as a result of change in composition of the oxide and more resistant to selective patterning, the step of covering the native oxide with a capping material which prevents the change in composition during subsequent heating whereby selective patterning is facilitated.

4,226,668

SPRAY DRYING APPARATUS UTILIZING PULSE JET ENGINES

Frederick A. Ferguson, Yelm, Wash., assignor to Sonic Dehydrators, Inc., Weiser, Id.

Filed Dec. 14, 1978, Ser. No. 969,398

Int. Cl.² B01D 1/14

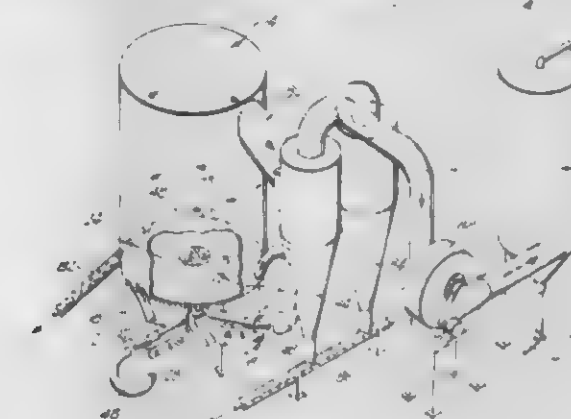
U.S. Cl. 159-4 A

12 Claims

1. Spray drying apparatus comprising:
a drying chamber having a first boundary surface and a boundary wall extending outwardly from the periphery of said first boundary surface;
at least one pulse jet engine having an exhaust pipe, an air intake section and a combustion chamber positioned between said exhaust pipe and said air intake section, said exhaust pipe of each of said pulse jet engines extending to

said first boundary surface of said drying chamber for exhausting high temperature gaseous flow inwardly into said drying chamber;

at least one air augmentation duct, each augmentation duct having an entrance opening positioned in spaced apart juxtaposition with the opening in the air intake section of an associated pulse jet engine, each air augmentation duct being configured to enter said drying chamber at a predetermined position in said boundary wall and proximate to said periphery of said first boundary surface, each air augmentation duct being configured and arranged for receiving high temperature gaseous flow emerging from said air inlet section of said associated pulse jet engine and ambient air entrained therewith, each air augmentation duct being further configured and arranged to direct said received gaseous flow and ambient air into said drying chamber to establish substantially circumferential flow along at least the outer regions of said first boundary



surface, said circumferential flow established by air augmentation ducts interacting with the upwardly directed gaseous flow, supplied by said pulse jet engine exhaust pipes to create inwardly and circumferentially directed flow in the direction away from said first boundary surface of said drying chamber; and

supply means for introducing the material to be dried into said exhaust pipe of each of said pulse jet engines, said high temperature gaseous flow within each of said exhaust pipes and attendant high level acoustic energy supplied by said pulse jet engines atomizing said material and effecting substantial moisture removal as said material passes through said exhaust pipe and into said drying chamber, said inwardly and circumferentially directed gaseous flow established by said air augmentation ducts and said inwardly directed flow of pulse jet engine exhaust carrying said atomized material into and about said drying chamber for additional moisture removal.

4,226,669

VACUUM CENTRIFUGE WITH MAGNETIC DRIVE

Frank Vilardi, Nesconset, N.Y., assignor to Savant Instruments, Inc., Hicksville, N.Y.

Filed May 9, 1979, Ser. No. 37,429

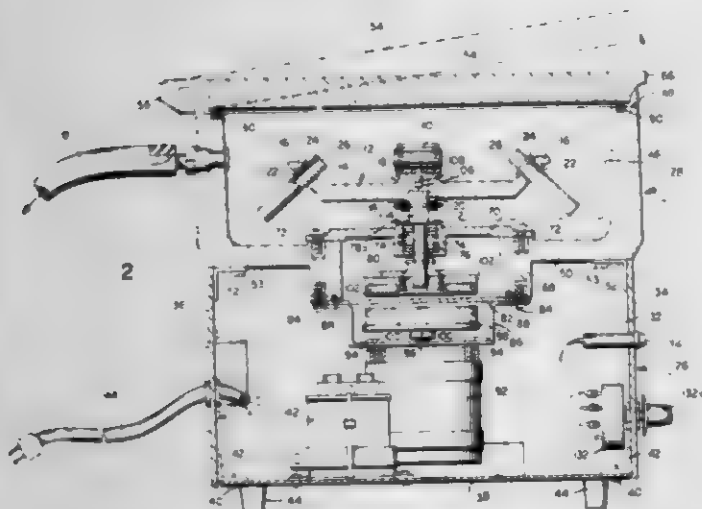
Int. Cl.² B01D 1/00

U.S. Cl. 159-6 R

10 Claims

1. A high speed centrifugal concentrator comprising a housing divided into a vacuum chamber and a base section, said vacuum chamber having side and bottom walls, a cover constituting the top wall thereof, and means pivotally mounting one end of said cover on said vacuum chamber for movement between an upstanding open position and a closed position in which it closes off said vacuum chamber in sealed, air-tight condition,
a centrifuge rotor,
means mounting said centrifuge rotor for rotation within said vacuum chamber, said mounting means including a mounting shaft journaled on said vacuum chamber and secured to said rotor.

an electric drive motor for said centrifuge rotor mounted within said base section externally of said vacuum chamber and remote therefrom,
 electric circuit means for controlling the operation of said motor and including means for dynamically braking said motor,
 magnetic coupling means for providing a magnetic drive connection between said motor and said centrifuge rotor and creating a magnetic field passing through a wall of said vacuum chamber, whereby said centrifuge rotor is rotated within said vacuum chamber in response to operation of said drive motor,



said magnetic coupling means comprising a first permanent magnet member secured to said mounting shaft and having a plurality of permanent magnets mounted thereon, and a second permanent magnet member secured to the drive shaft of said motor and having a corresponding member of permanent magnets of opposite polarity mounted thereon,
 and a safety interlock switch mounted on said vacuum chamber and operatively associated with said cover for energizing said means for dynamically braking said drive motor when said cover is in its open position.

4,226,670

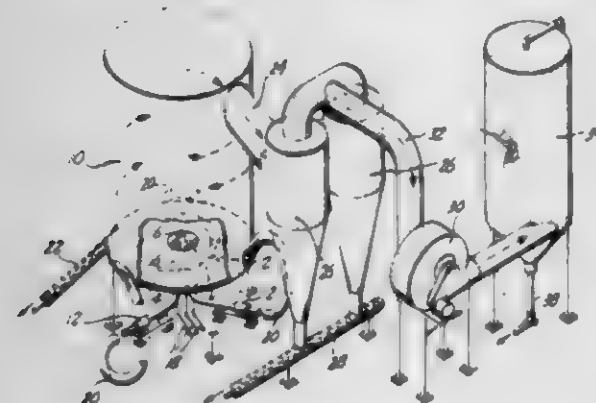
MATERIAL INJECTION NOZZLE FOR PULSE JET DRYING SYSTEMS

Frederick A. Ferguson, Yelm, Wash., and Rodney D. Payne, Saratoga, Calif., assignors to Sonic Dehydrators, Inc., Weiser, ID.

Filed Dec. 14, 1978, Ser. No. 969,397
 Int. Cl.² B01D 1/14

U.S. Cl. 159—16 R

6 Claims



1. A material injection nozzle for a pulse jet drying system of the type wherein the material to be dried flows through a material feedpipe which passes into and along the exhaust pipe of a pulse jet engine for introduction of the material into the hot gaseous flow stream and high level acoustic energy within said exhaust pipe and wherein said material feedpipe is termi-

nated a predetermined distance from the exhaust opening of said exhaust pipe, said material injection nozzle comprising:
 a substantially cylindrical member positioned coaxially within the terminal region of said pulse jet engine exhaust pipe, said cylindrical member coaxially surrounding at least the terminal portion of said material feedpipe, said cylindrical member being dimensioned for interaction with said high temperature gaseous flow stream and said acoustic energy within said exhaust pipe to prevent accumulation of portions of said material being dried on said exhaust pipe and said cylindrical member; and
 mounting means for retaining said cylindrical member within said terminal portion of said pulse jet engine exhaust pipe.

4,226,671

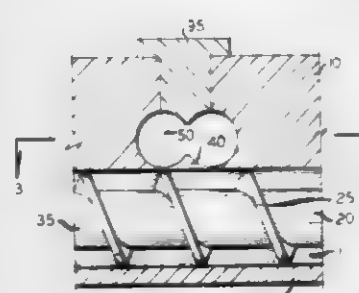
VENTING OF GASES

Don C. Christensen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1976, Ser. No. 718,485
 Int. Cl.² B01D 1/00

U.S. Cl. 159—47 R

1 Claim



1. A method for venting gases containing entrained particulate matter and mist from a container, said method comprising:
 (1) passing said venting gases from a vent opening in said container into an opening in a vent collecting device comprising a casing containing at least one bore, said bore having means for venting gas at its ends and containing at least one screw having pitched flights, said vent collecting device mounted in relation to said vent opening so that venting gases are passed into said bore of the collecting device between the means for venting gas from the bore;
 (2) trapping in the flights of said at least one screw the particulate matter and mist entrained in the venting gases; and
 (3) rotating said at least one screw in a manner to move the trapped particulate matter to a collection point.

4,226,672

PROCESS OF SEPARATING ASBESTOS FIBERS AND PRODUCT THEREOF

Victor J. Absolon, Plaisir, France; George T. Hurst, Newport, Australia; John C. Worboys, Doncaster, Australia; George H. Barnett, North Balwyn, Australia, and Ross P. Dickson, Oakleigh, Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Jun. 27, 1978, Ser. No. 919,549
 Claims priority, application Australia, Jul. 1, 1977, PD0669; Jul. 1, 1977, PD0670; Jul. 1, 1977, PD0671; Jul. 1, 1977, PD0672; Jul. 1, 1977, PD0673; Jul. 1, 1977, PD0674; Jul. 1, 1977, PD0678; Jul. 1, 1977, PD0680; Jul. 1, 1977, PD0681; Nov. 10, 1977, PD2006

Int. Cl.³ C03B 37/00

U.S. Cl. 162—3

43 Claims

1. A process for separating asbestos fibres from asbestos-bearing material selected from the group consisting of crude ore, fibre concentrates, mine wastes and tailings, which process includes the following steps:

(1) a contacting step where the asbestos-bearing material is treated with a solution containing a surfactant adsorbable

on or reactable with asbestos to form a viscous slurry dispersion,
 (2) a mechanical fiberising step,
 (3) a dilution step to reduce slurry viscosity without inducing coagulation of the fibres,
 (4) a classification step to remove unwanted grit,
 (5) a slurry dilution step sufficient to induce coagulation of fibres and form stringy fibre agglomerates, and
 (6) a dewatering step to recover the asbestos fibres.

4,226,673

COLOR REMOVAL FROM PAPER AND PULP MILL AQUEOUS EFFLUENTS

Henry A. Fremont, Wyoming, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 15, 1976, Ser. No. 666,917
 Int. Cl.³ D21C 11/00

U.S. Cl. 162—29

5 Claims

1. The method of removing color bodies present in an aqueous effluent from paper and pulp mill manufacturing operations comprising subjecting said effluent having a pH of about 11.5 and a temperature of 135° F. to ultrafiltration through a semi-permeable membrane consisting of polysulfone film coated with polyethyleneimine.

4,226,674

METHOD OF FORMING A TEXTURED FIBERBOARD

William G. Gross, York, and Robert H. Hutchinson, Lancaster, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 13, 1978, Ser. No. 969,107
 Int. Cl.² D21F 11/06, 11/12

U.S. Cl. 162—109

1 Claim

1. A process for forming a fiberboard structure with a rough textured surface, wherein said board is formed on the conventional Oliver single cylinder vacuum machine which has a rotating cylinder partially immersed in a reservoir containing a slurry of fibrous material, said cylinder having vacuum chambers therein so that when the slurry is brought in contact with the cylinder, the water of the slurry passes into the vacuum chambers of the cylinder and the fibrous material is deposited on the surface of the cylinder to form a fibrous mat, comprising the steps of:

- placing the fiber slurry in the reservoir containing the vacuum cylinder and rotating said cylinder in said slurry to draw water into the vacuum chambers of the cylinder and cause the fibrous material of the slurry to deposit upon the outer surface of said cylinder.
- the improvement comprising:
 - operating the vacuum of the rotating cylinder on a low vacuum level of 3–5 inches of mercury,
 - maintaining the slurry level in the reservoir containing the cylinder at a point about 5 inches below the center line of the rotating cylinder,
 - decreasing the normal slurry liquid agitation to a point where clumps of fibrous material are formed in the slurry, and
 - not contacting the surface of the fibrous mat formed with any type of pressure roll structure so as to dewater the board or to smooth the surface texture of the mat formed on the rotating cylinder.

4,226,675

METHOD AND APPARATUS FOR MONITORING AND MEASURING A GAS

Gary W. Lewis, Fountain Valley, and Alfred D. Robinson, El Monte, both of Calif., assignors to Comsip Delphi, Inc., El Monte, Calif.

Filed May 23, 1977, Ser. No. 799,307
 Int. Cl.² G21C 17/00; G01N 31/12

U.S. Cl. 176—19 R

11 Claims

1. Apparatus for continuously monitoring and signalling the

quantity of a preselected gas in a mixture of gases from a nuclear reactor pressure vessel comprising
 a compartment maintained at a preselected temperature,
 gas inlet means located outside of the compartment for continuously receiving a sample of gas to be monitored from a gas sample source and continuously conveying the sample to said compartment so as to continuously maintain the gas sample at said preselected temperature, while being conveyed through said compartment to thereby maintain the concentration of the mixed gases of the gas sample source,
 means located within the compartment for continuously receiving the gas from the inlet means and for continuously separating out a relatively small portion of the gas sample for measurement purposes,
 thermal conductivity gas sensing means arranged within said compartment for continuously measuring and signalling the quantity of a preselected, known gas in the gas sample, means for continuously conveying said small portion of the gas sample to said sensing means,
 catalytic reaction means arranged within said compartment



for continuously altering one of the gas constituents in the gas sample conveyed therethrough,
 means for continuously conveying said small portion of the gas sample to said reaction means,
 means for continuously conveying the reacted, sensed gas from said reaction means through said sensing means,
 means arranged within said compartment for continuously receiving the small portion of measured gas from said sensing means for maintaining a substantially constant mass flow of gas through said sensing means,
 means for continuously rendering said sensing means independent of the pressure of the gas received from said source,
 means arranged outside of said compartment for cooling gas, and
 means for continuously conveying the remaining portion of the unmeasured gas from said separation means to the gas cooling means, and gas outlet means for continuously combining and conveying the cooled gas with the measured gas portions received from the constant mass flow control means for continuous conveyance back to the gas sample source.

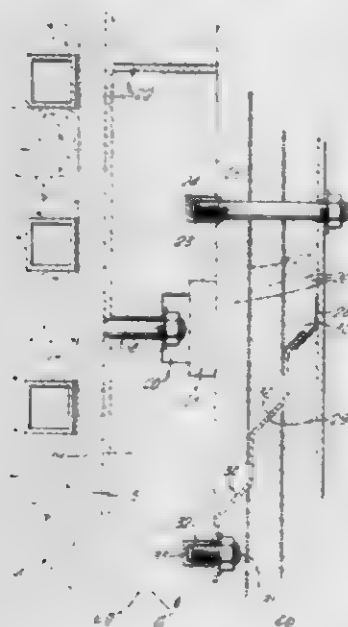
4,226,676

LIQUID METAL COOLED NUCLEAR REACTORS
 Sidney Barnes, Grappenhall, England, assignor to Nuclear Power Company Limited, London, England
 Filed May 18, 1978, Ser. No. 907,350
 Claims priority, application United Kingdom, Jan. 3, 1977, 23754/77

Int. Cl.² G21C 9/00

U.S. Cl. 176—38

5 Claims



1. A liquid metal cooled nuclear reactor comprising, a concrete vault having a lining with cooling means a primary vessel housed in the concrete vault and suspended from the roof structure of the vault, a nuclear fuel assembly submerged in a pool of liquid metal coolant contained by the primary vessel, a first layer of ceramic thermally insulating material cladding the inner wall surface of the vault, the first layer of thermally insulating material being impervious to liquid metal coolant, a second layer of thermally insulating material cladding the first layer of thermally insulating material, the second layer of thermally insulating material being pervious to liquid metal coolant.

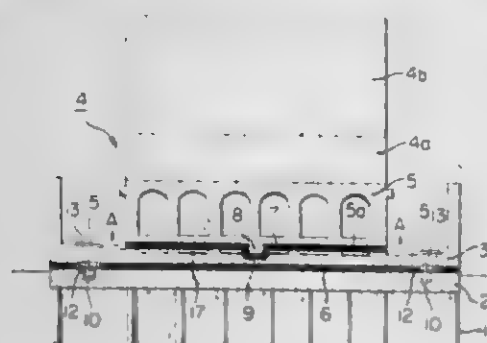
4,226,677

EARTHQUAKE-PROOF FOUNDATION STRUCTURE FOR HORIZONTAL TYPE COKE OVEN BATTERY
 Akira Saito, Yushichi Miura, and Koichiro Bando, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 9,954
 Claims priority, application Japan, Feb. 27, 1978, 53/21009
 Int. Cl.² C10B 5/00, 29/08; E02D 27/34

U.S. Cl. 202—138

3 Claims



1. An earthquake-proof foundation structure for a horizontal type coke oven battery, which comprises: a plurality of foundation piles driven substantially vertically into the ground;

a pile plate rigidly connected substantially in a horizontal position to the tops of said plurality of foundation piles; a base plate for mounting thereon a horizontal type coke oven battery, said base plate being placed substantially in a horizontal position on said pile plate, said coke oven battery comprising a regenerator, a plurality of coking ovens and combustion chambers alternately arranged in the horizontal direction on said regenerator, and a sole flue installed directly below said regenerator; and two sliding layers each arranged between said pile plate and said base plate and between said base plate and said sole flue of said coke oven battery, each of said two sliding layers being formed by tightly laying a plurality of steel sheets coated with graphite grease over the entire surface thereof into at least two laminations, among the surfaces of said plurality of steel sheets, those being in contact with the upper surface of said pile plate, the lower surface of said base plate, the upper surface of said base plate and the lower surface of said sole flue of said coke oven battery not being coated with graphite grease;

said foundation structure being characterized in that:

one of the lower surface of said sole flue of said coke oven battery and the upper surface of said base plate is provided with a longitudinal ridge and a plurality of transverse ridges, while one of the upper surface of said base plate and the lower surface of said sole flue of said coke oven battery is provided with a longitudinal groove and a plurality of transverse grooves to engage with said longitudinal ridge and said plurality of transverse ridges at locations corresponding to said ridges, thereby said coke oven battery being mounting on said base plate in a state in which said longitudinal ridge and said plurality of transverse ridges respectively engage with said longitudinal groove and said plurality of transverse grooves corresponding thereto; and

said pile plate and said base plate are connected to each other on the both longitudinal sides thereof by a plurality of buffers each of which comprises a bolt fixed with a plurality of reinforcing ribs at the lower portion thereof and an elastic ring engaging with the upper portion of said bolt.

4,226,678

METHOD AND APPARATUS FOR THE DECONTAMINATION OF A LIQUID CONTAINING CONTAMINANTS

Hanns Mende, Bad Nauheim; Helmut Beuler, Gambach, and Rolf Glaum, Butzbach, all of Fed. Rep. of Germany, assignors to Luwa AG, Zürich, Switzerland

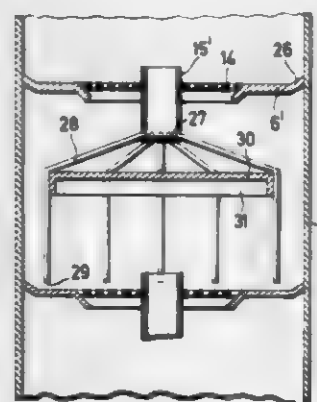
Filed Jun. 21, 1977, Ser. No. 808,626

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629581

Int. Cl.² B01D 3/22

U.S. Cl. 202—161

5 Claims



1. In an apparatus for decontaminating a liquid by evaporation, including an evaporator having a heating means, inlet means for introducing the liquid to be decontaminated, outlet means for removing the concentrate; the apparatus further including a vertical column coupled to the evaporator and

having a column wall, means defining, in an upper zone of the column, an inlet for introducing wash liquid and an outlet for removing the vapor generated in the evaporator; a plurality of horizontally oriented superposed plates arranged in a spaced relationship along the length of the column and connected tightly to the walls of the column; each plate having a wash liquid port arranged in a central zone of the respective plate; and a wash liquid distributing means arranged between each two plates and operatively connected to the wash liquid port associated with the plate located immediately above the respective wash liquid distributing means; the improvement wherein each plate has a first annular zone immediately surrounding said wash liquid port and containing vapor passages and a second annular zone immediately surrounding said first annular zone and being in circumferential contact with the column walls; said second annular zone being void of apertures; the improvement further comprising a horizontally oriented baffle plate arranged between each two plates and spaced therefrom, each said baffle plate fully overlapping the first annular zone of the plates situated immediately above and immediately below the respective baffle plate; each said baffle plate having a perimeter spaced from said column wall; and further wherein said wash liquid distributing means includes a plurality of tubes arranged in an array about the respective wash liquid port and being attached to the perimeter of the underlying baffle plate; each said tube having a first portion extending radially outwardly and downwardly from the respective wash liquid port to the perimeter of the underlying said baffle plate; each said tube further having a second portion extending vertically downwardly from said perimeter to a location close to and immediately above the second annular zone of the respective underlying plate and terminating by a vertically downwardly oriented discharge opening, whereby the wash liquid is discharged solely onto the second annular zone of each respective plate for radial inward flow on the first annular zone of the respective plate and further whereby the vapors passing vertically through the first annular zone of said plates impinge upon the overlying baffle plate and are deflected thereby to pass through an annular clearance defined by the column wall and the perimeter of the respective baffle plate to the first annular zone of the next overlying plate.

4,226,679

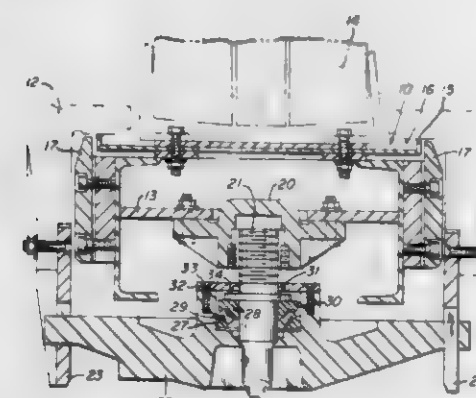
LATCH MECHANISM FOR COKE OVEN DOORS
 Calvin E. Kelly, Murrysville, and Thomas E. Nicely, Delmont Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,268

Int. Cl.² C10B 25/12

U.S. Cl. 202—246

2 Claims



1. In a coke oven which includes a door having a sealing strip extending around its perimeter, a jamb having a surface to be contacted by said strip, and at least one latch mechanism for holding said door in closed position against said jamb, said latch mechanism comprising: a screw spindle threadedly engaging said door and projecting outwardly therefrom; a latch bar pivoted to said spindle; and a pair of latch hooks projecting outwardly from said jamb to

be engaged by said bar but subject to being not perfectly in line; the combination therewith of an improved mounting for said bar providing self-adjustability thereof in all directions relative to said spindle to correct for misalignment of said hooks; said mounting comprising a combination radial-thrust bearing having outer and inner races and rollers between said races; said bar having a bore in which said outer race is fixed; said inner race being fixed to said spindle; the axes of said rollers lying at angles of about 40° to 50° to the axis of said spindle; and means retaining said bar on said spindle but forming a gap above said inner race to allow self-adjusting movement of said bar.

4,226,680

PROCESS FOR ELECTROLYTIC COLORATION OF ANODIZED ALUMINIUM

William E. Cooke, Kingston, and Robert A. Innes, Amherstview, both of Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

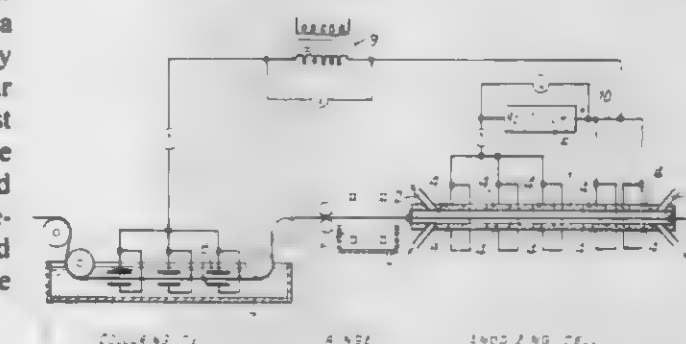
Continuation of Ser. No. 550,741, Feb. 18, 1975, abandoned.

This application Jun. 6, 1977, Ser. No. 803,854

Int. Cl.² C25D 11/22

U.S. Cl. 204—28

25 Claims



1. A method of producing a colored anodized aluminium strip which comprises drawing aluminium in strip form successively through an anodizing stage and an electrolytic coloring stage comprising in the anodizing stage moving the strip successively past one or more anodes immersed in a sulphuric acid anodizing electrolyte and past one or more cathodes and passing direct current between said cathodes and said anodes through the strip so as to render the strip initially cathodic and subsequently anodic to develop an anodic oxide film on the surface thereof, the thus anodized strip being then passed through, in said electrolytic coloring stage, an acidic electrolyte containing a material selected from a salt of at least one of copper, tin, cobalt, nickel, chromium, iron, silver or lead, or a manganate, tellurite or selenite, and passing alternating current between at least one electrode immersed in said acidic electrolyte and said anodized strip, the circuit for said alternating current being completed through an electrode immersed in the electrolyte of the direct current anodizing stage.

4,226,681

PROCESS FOR THE PRODUCTION OF A MAGNETIC RECORDING MEDIUM

Ryuji Shirabata, and Tatsuji Kitamoto, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 19, 1978, Ser. No. 916,540

Claims priority, application Japan, Jul. 12, 1977, 52/82503

Int. Cl.² C25D 5/00

U.S. Cl. 204—38 ST

8 Claims

1. A process for the production of a magnetic recording medium, which comprises heating a substrate or subbing layer

having a thickness of at least 500 Å containing at least 95% copper at a temperature of about 100° to 350° C. and, at the same time, vapor depositing at a vapor deposition speed of 0.03 to 3 μm/min. in a vacuum of at most 10⁻⁴ Torr a ferromagnetic metal containing at least 70% by weight cobalt directly on the substrate or subbing layer to thus form a magnetic recording layer.

4,226,682

BRIGHTENERS FOR ELECTROLYTIC ACID ZINC BATHS

Francine Popescu, 27, rue du Centre, 94490 Ormesson, France
Filed Feb. 16, 1979, Ser. No. 13,189

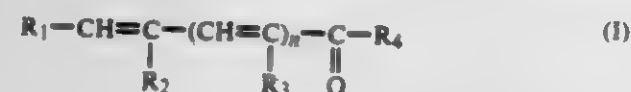
Claims priority, application France, Feb. 17, 1978, 78 04508
Int. Cl.² C25D 3/22

U.S. Cl. 204—55 R

9 Claims

1. A bright zinc electroplating bath comprising an aqueous acidic solution of zinc ions and:

- (a) 0.1 to 30.0 grams per liter of a dispersing agent compatible with said bath; and,
- (b) 0.05 to 2.0 grams per liter of a brightener of general formula:



wherein:

R₁ is a phenyl, pyridyl or naphthyl radical which may comprise one or several substituents selected from: hydroxy, chloro, bromo, alkyl, alkoxy, carboxy, amino, amido or methylenedioxy;

N is zero or 1

R₂ is hydrogen, hydroxy or methyl when n is 1;

R₂ is hydroxy or methyl when n is zero;

R₃ is hydrogen, hydroxy or methyl;

R₄ is an alkyl of at least two carbon atoms, hydroxyalkyl or pyridyl when R₁ is phenyl, R₂ is hydrogen and n=0; and

R₄ is alkyl, hydroxyalkyl or pyridyl in any other case.

4,226,683

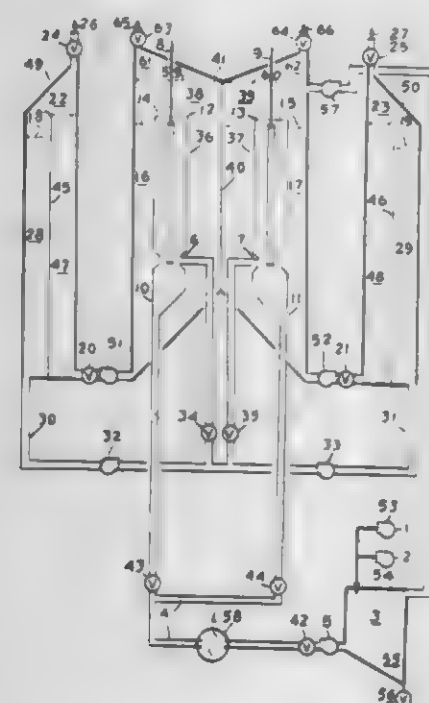
METHOD AND APPARATUS FOR HYDROGEN PRODUCTION IN AN ABSORBER LIQUID BY ELECTROCHEMICAL OF COAL AND WATER

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033

Filed Aug. 9, 1979, Ser. No. 65,210

Int. Cl.³ C25B 1/02, 1/00

U.S. Cl. 204—101



1. I claim a combination of processes as a single process for

use with coal or carbon dust and their particulates and their electro-chemical reaction with water for the express purpose of producing hydrogen; consisting of:

- reducing coal or carbon to particles smaller than 500 micron or as small as practical,
- blending the coal or carbon dust with water to produce a ten percent to eighty percent coal slurry (by weight),
- introducing the coal (carbon) slurry to a slurry supply reservoir under superatmospheric pressure,
- transferring the coal (carbon)/slurry through a heater or heat exchanger, increasing its temperature, then
- passing the coal (carbon) slurry through electrolyte cell conductor tubes or retaining devices which both mixes the slurry and intermittently passes a gaseous absorber liquid therein controlling the velocity of both liquids across the anode and across the cathode electrode, thus depolarizing the electrodes

in an electro-chemical cell which by nonmiscible physical and gravity separation keeps separated the coal (carbon) slurry from the absorber liquid, as well as free gases of CO₂ and H₂,

the carbon dioxide (CO₂) pregnant absorber liquid and frees CO₂ at the anode,

the hydrogen (H₂) pregnant absorber liquid, and frees H₂ at the cathode,

recycling the spent coal (carbon)/slurry from both the anode and cathode back to the coal (carbon)/water slurry reservoir,

at the same time removing the absorber liquid pregnant with CO₂ absorbed at the anode from the electrolysis system to the CO₂ stripper, and the absorber liquid pregnant with H₂ stripper, then

reducing the operating pressure within both the CO₂ and H₂ stripper causing effervescence and thus release of both CO₂ and H₂ respectively, and their individual recovery, recycling the gases freed absorber liquid from both strippers back to the electrolytic cell "conductor" tubes,

recovering the CO₂ for use or disposal to atmosphere from both electrolytic cell at anode and CO₂ stripper,

recovering the H₂ for use from both electrolytic cell at cathode, and stripper.

4,226,684

ELECTRODE COATING METHOD

Emil Scherba, 3100 Teranimar Dr., Anaheim, Calif. 92804,

assignor to Emil Stephen Scherba, Anaheim, Calif.

Filed Mar. 5, 1979, Ser. No. 17,715

Int. Cl.³ C25C 1/00, 7/02; H01M 4/88, 4/56

U.S. Cl. 204—105 R

4 Claims

1. A method of coating a metal base material and using same as an electrode in electrolytic processes comprising:

- (1) Providing an arc between the base material and a hollow electrode containing the coating material;
- (2) Melting the base material locally and simultaneously hammering the coating in the form of a powder on to the local area;
- (3) Repeating said process at different localized areas on the base material until a coating is completed;
- (4) and utilizing the coated base material as an electrode in electrolytic processes.

4,226,685

ELECTROLYTIC TREATMENT OF PLATING WASTES

Charles Portal, Newton, Mass., and Glenn M. Cook, Naperville, Ill., assignors to Kennecott Copper Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 32,256, Apr. 23, 1979, which is a continuation-in-part of Ser. No. 953,832, Oct. 23, 1978, abandoned. This application Jul. 5, 1979, Ser. No. 54,924

Int. Cl.² C25C 1/00; C02B 1/82; C25C 7/02

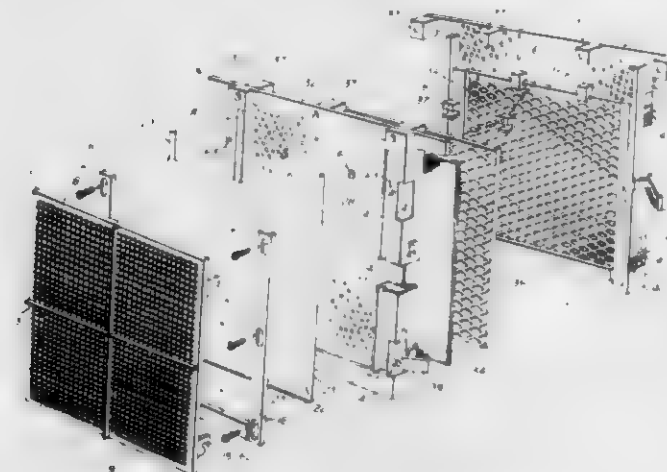
U.S. Cl. 204—105 R

11 Claims

1. In the method of reducing the concentration of a heavy

metal in an aqueous solution of plating wastes wherein the metal is precipitated electrolytically as it passes through a high surface area flow-through electrode, the improvement comprising:

- A. placing a stationary bed electrode in a tank, said electrode comprising
 - mating electrically nonconductive support frames;
 - a pair of perforated, electrically conductive, flow distributor plates attached to each frame and facing each other to form a cavity;
 - a pair of porous, bed supports adapted for attachment to said frame on the side of each distributor plate opposite the cavity creating a pair of basket-like compartments;
 - a porous, conductive bed in each of said compartments; and



a first quickly releasing means for holding said mated frame together;

B. feeding a solution of plating wastes to the cavity and through the distributor plates and beds while passing a current through the bed to plate a heavy metal therein and rejecting a solution reduced in heavy metal concentration from the tank;

C. releasing said first quickly releasing means to expose the bed;

D. removing the bed containing plated heavy metal from said compartment;

E. placing a fresh porous conductive bed in said compartment; and

F. repeating steps A through E.

4,226,686

METHOD OF FORMING A POROUS SHEET

David Hustler, Burnley, England, assignor to Rolls-Royce Limited, London, England

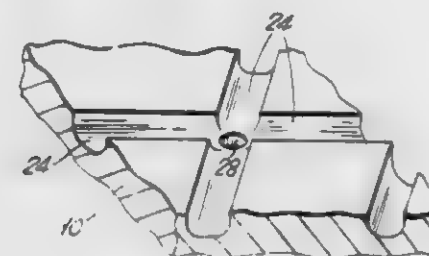
Filed Jul. 25, 1979, Ser. No. 60,680

Claims priority, application United Kingdom, Aug. 5, 1978, 32391/78

Int. Cl.³ C25F 3/02, 3/14

U.S. Cl. 204—129.55

2 Claims



1. A method of producing a perforate sheet comprising the steps of:

- (a) covering a side of the sheet with a photo resist material and then exposing desired portions of the photo resist material to light so as to harden those portions so exposed;

(b) washing off the unhardened photo resist material to leave bared sheet portions in a first pattern;

(c) producing a plurality of holes by an electro chemical machining action on the bared sheet portions of the first pattern, the holes extending to a depth of approximately 50% of the sheet thickness so as to effectively reduce the thickness of the sheet locally, and the holes produced having a diameter less than the width of the grooves to be produced thereafter;

(d) covering the same side of the sheet with a photo resist material and then exposing other portions of the photo resist material to light so as to harden those portions so exposed;

(e) washing off the unhardened photo resist material to leave bared sheet portions in a second pattern;

(f) producing a plurality of intersecting grooves by an electro chemical machining action in the bared sheet portions of the second pattern, which grooves obviate the previously formed holes and leave local depressions formed in the groove bottoms at positions of the previously formed holes thereby further effectively reducing the sheet thickness locally;

(g) covering the remaining side of the sheet with a photo resist material and then exposing desired portions of the photo resist material to light so as to harden those portions so exposed;

(h) washing off the unhardened photo resist material on the other side of the sheet to produce bared sheet portions in a pattern identical with the pattern for the holes previously formed;

(i) and then producing by an electro chemical machining action a pattern of holes identical with the first pattern of holes and causing the holes to break into the depressions and continuing the electro chemical machining action until the diameters of the holes so produced in the groove bottoms are of required dimensions.

4,226,687

METHOD OF PREVENTING FINE CRACKS FROM OCCURRING IN RUBBER OR PLASTIC INSULATION OF AN INSULATED WIRE OR CABLE EXPOSED TO ELECTRON BEAM IRRADIATION

Takashi Sasaki, Takasaki; Miyuki Hagiwara, Maebashi; Kunio Araki, Mito; Hayao Ishitani, Hiratsuka; Eisuke Saito, Kamakura, and Kyozi Komatsu, Yokosuka, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Japan Atomic Energy Research Institute, both of Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 944,782

Claims priority, application Japan, Sep. 30, 1977, 52-117356
Int. Cl.² C08F 2/46, 8/00

U.S. Cl. 204—159.13

5 Claims

1. A method of preventing fine cracks from occurring in the insulation of an elongated insulated wire or cable having a rubber or plastic insulation layer which has a maximum wall thickness of electron beam penetration of 4 mm or over and whose properties are improved by irradiation with an electron beam,

the method comprising:

longitudinally running the wire or cable under a scanner of an electron beam accelerator while rotating said wire or cable about the longitudinal axis thereof at such a speed as causes the same portion of the wire or cable to be irradiated with the electron beam of the electron beam accelerator at least twice during a period of less than 10 seconds; and

causing the electron beam accelerator to deliver on the insulation layer of the wire or cable an electron beam which is accelerated to an energy of 1 MeV or over and whose maximum penetration range in the said insulation layer is larger than its thickness.

4,226,688

ELECTRODIALYSIS DEVICE

Ora Kedem, and Tamar Robinson, both of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

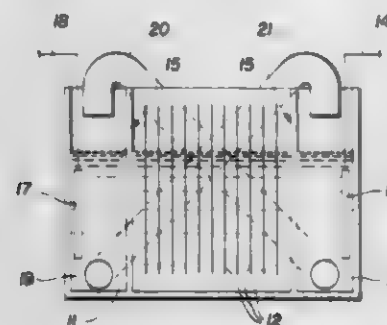
Filed Aug. 9, 1978, Ser. No. 932,408

Claims priority, application Israel, Aug. 16, 1977, 52758

Int. Cl.² B01D 13/02

U.S. Cl. 204—180 P

16 Claims



1. An electrodialysis device, comprising in combination: an anode compartment; a compartment containing a stack of electrodialysis membranes; a cathode compartment, the volume of said cathode compartment being larger than the volume of said anode compartment; conduits between said anode and cathode compartments; circulating means for circulating a slurry between said anode and said cathode compartments.

4,226,689

APPARATUS AND PROCESS FOR ELECTRICALLY RESOLVING EMULSIONS

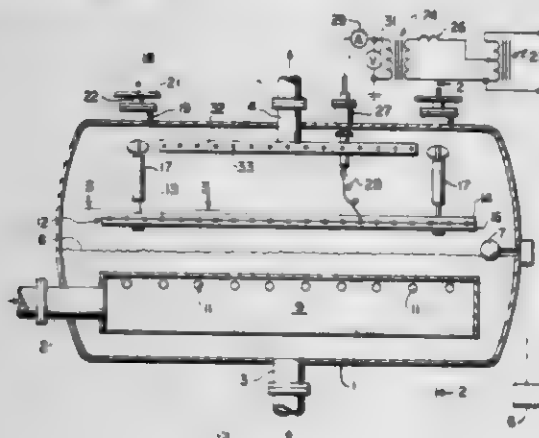
Weldon D. Mayse, and Frederick D. Watson, both of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed May 29, 1979, Ser. No. 43,551

Int. Cl.³ B03C 5/00; C10G 33/02

U.S. Cl. 204—188

15 Claims



1. Apparatus for electrically resolving an emulsion having immiscible aqueous and organic liquid phases, the aqueous phase being internal, comprising:

- (a) a metallic vessel having an emulsion inlet, an aqueous material outlet and organic material outlet means, said aqueous material outlet being at the bottom portion of said vessel and said organic material outlet means being in the upper portion of said vessel;
- (b) distributor means positioned in the lower portion of said vessel above said aqueous material outlet and connected by conduit means to said emulsion inlet;
- (c) planar, permeable electrode means adapted to be energized, horizontally positioned in said vessel spaced apart from the vessel walls and intermediate said distributor means and said organic material outlet means, said elec-

trode means being the only electrode means positioned in said vessel;

- (d) conductive means adapted to connect said electrode means with an electrical power source outside of said vessel;
- (e) insulating means for maintaining said conductive means electrically isolated from said vessel; and
- (f) means for controlling the level of aqueous material which collects in the bottom portion of said vessel, said means adapted to maintain the level of said aqueous material at a position intermediate said distributor means and said electrode means.

4,226,690

PROCESS FOR DEHYDRATION AND DEMINERALIZATION OF DILUTED BITUMEN

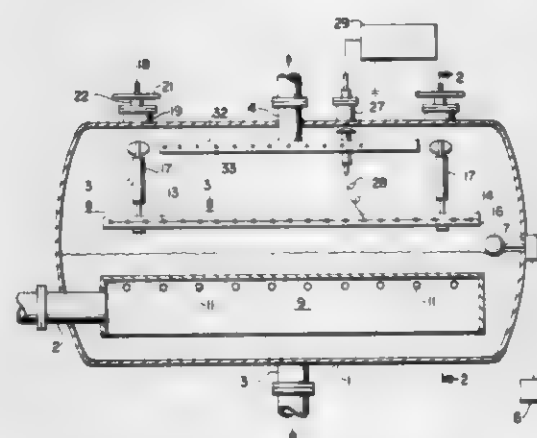
Robert B. Martin, Spring, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed May 29, 1979, Ser. No. 43,597

Int. Cl.² B03C 5/00

U.S. Cl. 204—190

12 Claims



1. A process for electrically resolving a diluted bitumen emulsion having immiscible aqueous and organic liquid phases, said aqueous phase carrying undissolved mineral particles, comprising:

- (a) establishing a unidirectional current electric field between an energized electrode and an aqueous material surface serving as an electrical ground;
- (b) introducing said emulsion below the level of the aqueous material surface, and allowing said emulsion to rise to said surface;
- (c) providing an emulsion treating gradient in the electric field of sufficient magnitude to cause coalescence of the aqueous material in said emulsion as soon as said emulsion breaks said aqueous material surface, whereby substantially all the emulsion is resolved at the aqueous material surface; and
- (d) recovering aqueous and organic liquid materials resolved from said emulsion.

4,226,691

BUBBLE MEMORY PROCESS USING AN ALUMINUM PLUS WATER CHEMICAL REACTION

James A. Cunningham, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 24, 1978, Ser. No. 963,308

Int. Cl.³ C23C 15/00; H01F 10/02

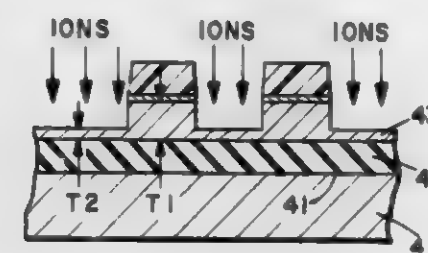
U.S. Cl. 204—192 E

8 Claims

1. A method of fabricating magnetic bubble memory chips from a magnetic film having a first insulating layer of SiO₂ on one surface thereof, said method including the steps of:

- forming an aluminous layer of AlCu on said first insulating layer, said aluminous layer having a first substantially uniform thickness;

forming a layer of water insoluble material on said aluminous layer;
forming a photoresist mask on said layer of water insoluble material for forming patterned control conductors for said memory;
removing all regions of said water insoluble layer that are not covered by said mask;



thinning to a second substantially uniform thickness all regions of said aluminous layer that are not covered by said mask; and
converting said thinned aluminous regions to corresponding Al₂O₃ regions by a chemical reaction with water to form said patterned control conductors with said Al₂O₃ regions lying therebetween.

4,226,692

SOLID STATE COMBUSTION SENSOR

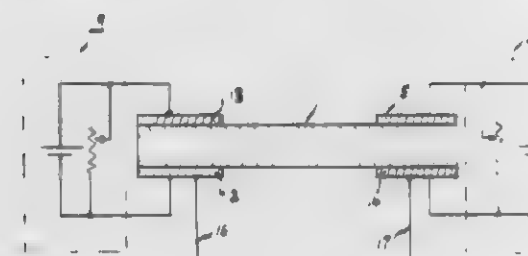
Arnold O. Isenberg, 327 Woodside Rd., Pittsburgh, Pa. 15221

Filed May 22, 1978, Ser. No. 908,243

Int. Cl.³ F02D 33/00; G01N 27/58

U.S. Cl. 204—195 S

8 Claims



1. A combustion sensing arrangement comprising: a conduit receiving the exhaust gases of a combustion process; a unitary solid state combustion sensor arranged in said conduit and consisting of a base member of an oxygen ion conductive material; and at least two electrodes disposed on said base member in intimate contact therewith and in spaced relationship so as to provide an ion conductive path between said electrodes through said base member, said base member and said electrodes being equally exposed to said exhaust gases and said sensor being arranged in said conduit with the associated electrodes spaced in the direction of flow such that the exhaust gas flowing through the conduit reaches first one and then the other of said associated electrodes and a transient gas front having different oxygen activities at opposite side thereof is momentarily disposed between said electrodes, said electrodes having leads for connection to an electrical signal processing circuit for supplying thereto signals generated by the sensor when a transient gas front moves past the sensor.

4,226,693

CORROSION PROBE COMBINATION

Jean P. Maes, Merelbeke, Belgium, assignor to s.a. Texaco Belgium n.v., Brussels, Belgium

Filed Dec. 29, 1978, Ser. No. 974,597

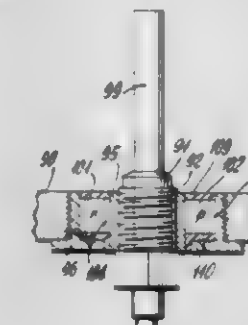
Int. Cl.² G01N 27/46

U.S. Cl. 204—195 C

3 Claims

1. The combination, comprising
a corrosion probe having a measuring element adapted for

being subjected to corrosive conditions and a body for supporting said measuring element,
thermoelectric means comprising a plurality of n-type and p-type semiconductors arranged for a Peltier-effect and having one group of electrodes in thermal contact with said measuring element and another group of electrodes in thermal contact with said probe body,
thermal insulating means for separating said two groups of electrodes,
first circuit means having two connections for applying an emf to and receiving an emf from said electrodes,
a thermocouple for measuring the temperature of said measuring element,



a differential amplifier having two inputs and an output, a potentiometer,
second circuit means for connecting the output of said potentiometer to one input of said amplifier,
third circuit means for connecting said thermocouple in series between the other input of said amplifier and one connection of said first circuit means, and
fourth circuit means for connecting the output of said amplifier to the other connection of said first circuit means, all whereby the temperature of said probe measuring element may be regulated in accordance with said potentiometer setting.

4,226,694

CATHODIC PROTECTION SYSTEM FOR A MOTOR VEHICLE

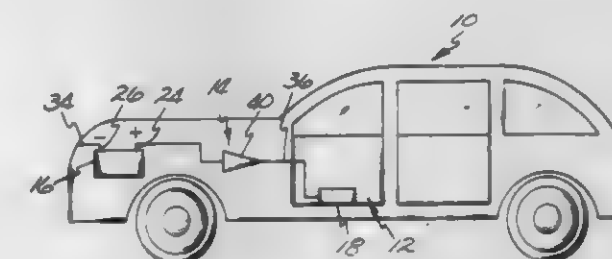
Robert Baboian, Johnston, R.I.; Gardner S. Haynes, Attleboro, and Richard G. Delagi, Sharon, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 16, 1976, Ser. No. 714,444

Int. Cl.³ C23F 13/00

U.S. Cl. 204—196

8 Claims



1. An improved impressed current cathodic protection system for a wheel mounted vehicle comprising a metallic body part of said vehicle, a corrosion resistant, electrically insulative coating covering said metallic body part, at least one anode member mounted in closely spaced, electrically insulated relation to said metallic body part extending over only a relatively small portion of said metallic body part and in a position to be electrolytically coupled to any portions of said metallic body part exposed through the coating by an electrolyte wetting said coating, and a D.C. voltage source having a positive pole electrically connected to said anode and a negative pole electrically connected to said metallic body part.

4,226,695

ELECTROCHEMICAL PROCESSING SYSTEM

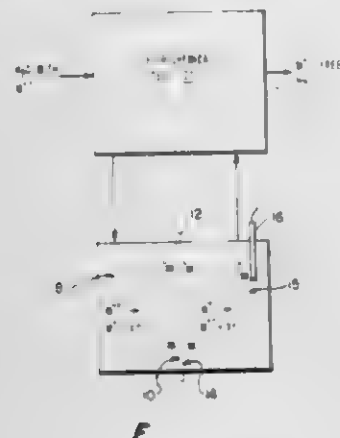
Wayne R. Matson, Ayer, Mass., assignor to Environmental Sciences Associates, Inc., Bedford, Mass.

Filed Oct. 20, 1978, Ser. No. 953,335

Int. Cl.³ C02C 5/12; C25C 1/00, 7/02

U.S. Cl. 204—231

19 Claims



1. An electrochemical cell comprising:
 - a first compartment for containing a first solution;
 - a first counter electrode and a first reference electrode disposed in said first compartment for contacting said first solution;
 - a second compartment for containing a second solution;
 - a second counter electrode and a second reference electrode disposed in said second compartment for contacting said second solution;
 - a porous, bi-polar barrier electrode separating said first and said second compartments, and electrically connected to ground;
 - means for applying a potential on the first compartment side of said porous, bi-polar barrier electrode at a first value; and
 - means for applying a potential on the second compartment side of said porous bi-polar barrier electrode at a second value.

4,226,696

ELECTROLYSIS FOIL

Paul J. Vera, Galgenberg 52 App. 7, 9209 Serskamp, Belgium

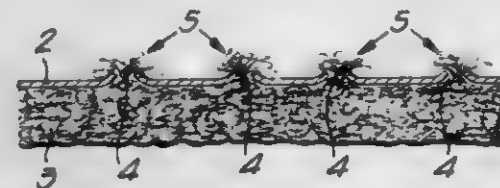
Filed Jun. 1, 1979, Ser. No. 44,715

Claims priority, application Belgium, Jun. 2, 1978, 57029

Int. Cl.³ C25D 17/14, 5/02, 9/06

U.S. Cl. 204—290 R

1 Claim



1. An electrolysis foil, comprising a sheet or foil of flexible aluminum with which is suitably bonded a layer of moisture absorbing felt material, the whole surface of said sheet of flexible material being provided with a large number of small holes, the layer of moisture absorbing felt material being bonded with the foil of flexible metal by means of "needling" wherein some of said felt material extends through said holes.

4,226,697

APPARATUS FOR THE SPARK DEPOSITION OF METALS

Bogomil T. Antonov, Stoyan Y. Panayotov, and Ognian V. Lyutakov, all of Sofia, Bulgaria, assignors to BRV "Electronna Obrabotka na Materialite", Sofia, Bulgaria

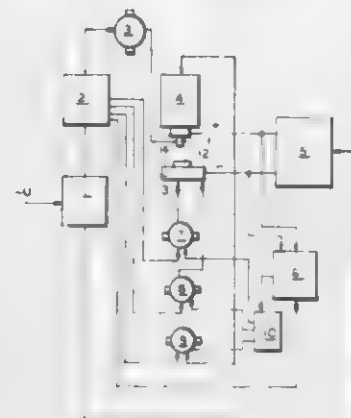
Filed Nov. 28, 1978, Ser. No. 964,255

Claims priority, application Bulgaria, Nov. 29, 1977, 37901

Int. Cl.² B23K 9/04

U.S. Cl. 204—298

1 Claim



1. In an apparatus for the electric spark deposition of metals upon a workpiece, the apparatus having a table movable in the x and y directions receiving the workpiece upon which the metal is to be deposited, and a rotatable depositing electrode-anode, the improvement which comprises a command unit to supply commands for the operation of the motors during motion or stopping of the apparatus, an impulse generator, first and second current supply units, a following system to determine any deviation in a predetermined distance between the electrode-anode and the workpiece a logic block to allow the switching on of each of the activating motors in response to a signal from the following system, means including a first electric motor for moving the depositing electrode-anode vertically, means including second and third electric motors for moving the table horizontally in the x- and y-directions, respectively, means including a fourth motor for rotating the electrode-anode, a first one of the outputs of the first current supply unit being connected to the command unit, a second output of the first current supply unit being connected to the impulse generator, the impulse generator having positive and negative outputs connected correspondingly to the second current supply unit and the moveable table of the apparatus and also to the following system; a second input of the following system being connected to one of the outputs of the command unit; the command unit having additional outputs connected to the first motor for producing the vertical motion of the depositing electrode-anode and the depositing head of the apparatus, the second motor for driving the table in the x-direction and the third motor for driving the table in the y-direction; the logic block selectively switching on each of the first, second, and third motors, said logic block having an input which is connected to the output of the following system; the second motor for the horizontal movement of the table in the x-direction, the third motor for the horizontal movement of the table in the y-direction, and the first motor for the vertical motion of the electrode-anode being additionally connected to respective ones of the outputs of the logic block.

4,226,698

ASH REMOVAL AND SYNTHESIS GAS GENERATION FROM HEAVY OILS PRODUCED BY COAL HYDROGENATION

Wilburn C. Schroeder, 7316 Radcliffe Dr., College Park, Md. 20740

Filed Aug. 4, 1978, Ser. No. 931,286

Int. Cl.³ C10G 1/00

U.S. Cl. 208—8 R

7 Claims

1. A continuous process for the hydrogenation of coal, com-

prising introducing particulate coal to a hydrogenation zone, reacting the coal in said zone under hydrogenation conditions with hydrogen-containing gases to produce an effluent containing a gaseous component, distillable oils, heavy oils and tars, unreacted coal, carbon and ash, separating said gaseous component and vacuum distilling light oils from a pumpable residue containing said heavy oils and tars, unreacted coal, carbon and ash, introducing at least a portion of said pumpable residue into a partial oxidation reactor operating at a temperature above about 2400° F. to generate hot gases containing hydrogen and carbon monoxide and convert the ash to molten form, introducing said hot gases from the partial oxidation reactor into the hydrogenation zone to provide at least a portion of the hydrogen requirement for the hydrogenation reaction, and removing molten ash from said oxidation reactor.

4,226,699

METHOD AND APPARATUS FOR CONSERVATION OF HEAT FROM SLUDGE PRODUCED BY A RETORT

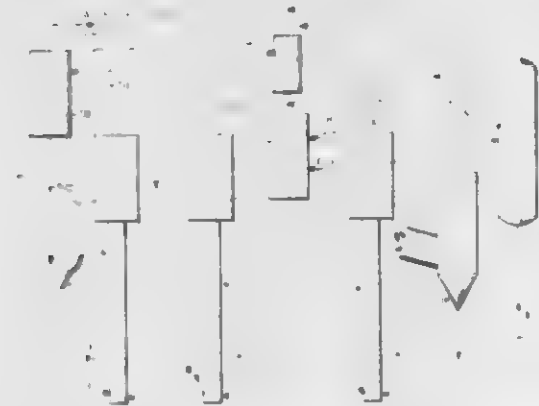
John F. Nutter, Encino, Calif., assignor to Tosco Corporation, Los Angeles, Calif.

Filed Jul. 17, 1978, Ser. No. 925,468

Int. Cl.² C10B 49/02; C10G 1/02

U.S. Cl. 208—11 R

7 Claims



1. In a process wherein hot flue gases containing oxygen are used for heating oil shale in a portion of the process not requiring the oxygen and wherein clean oil, waste particulate matter, and a sludge comprising particulate matter and burnable oil are produced, the method of maximizing the energy utilization and minimizing the waste disposal problems associated with the process comprising the steps of:
 - (a) forming a combustible mixture of the sludge and the flue gases prior to said heating portion of the process;
 - (b) combusting said combustible mixture prior to said heating portion of the process to consume the burnable oil and at least a portion of the oxygen of said mixture and to produce flue gases of increased temperature and lowered oxygen content and to produce particulate matter which can be disposed of with the other particulate matter from the process; and,
 - (c) using the increased temperature flue gases from step (b) in said heating portion of the process.

4,226,700

METHOD FOR INHIBITING FOULING OF PETROCHEMICAL PROCESSING EQUIPMENT

Henry T. Broom, Richmond, Tex., assignor to Nalco Chemical Company, Oakbrook, Ill.

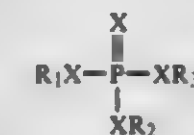
Filed Aug. 14, 1978, Ser. No. 932,855

Int. Cl.² C10G 9/16

U.S. Cl. 208—48 AA

1 Claim

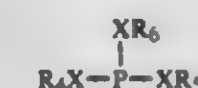
1. A method of inhibiting formation of a foulant on process equipment through which a stream of hot crude oil or naphtha is fed and comprising adding to the stream an effective amount of a mixture consisting essentially of (1) a thiodipropionate and, (2) either a dialkyl acid phosphate ester or dialkyl acid phosphite ester, said phosphate ester being characterized by the general formula



where:

X is sulfur or oxygen,

R₁, R₂, and R₃ are each individually selected from the group consisting of hydrogen and addition complexes of hydrogen with an amine, alkyl, aryl, alkaryl, cycloalkyl, alkenyl, and aralkyl provided that in any given such phosphate ester at least one and not more than two of each R₁, R₂ and R₃ are hydrogen or an addition complex of hydrogen with an amine; and said phosphite ester being characterized by the general formula



where:

X is sulfur or oxygen,

R₄, R₅, and R₆ are each independently selected from the group consisting of hydrogen and addition complexes of hydrogen with an amine, alkyl, aryl, alkaryl, cycloalkyl, alkenyl, and aralkyl, provided that in any given such phosphite ester at least one and not more than two of each R₄, R₅, and R₆ are each hydrogen or an addition complex of hydrogen with an amine.

4,226,701

TEMPORARY SHUTDOWN OF CO-COMBUSTION DEVICES

Richard G. Graven, Westmont, and Robert A. Sailor, Cinnaminson, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

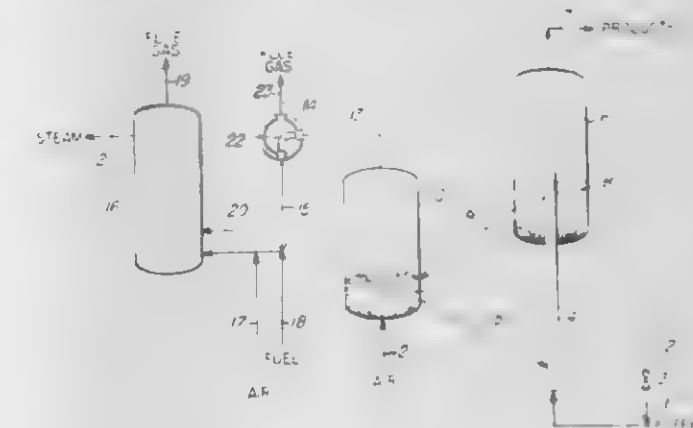
Division of Ser. No. 832,140, Sep. 12, 1977, Pat. No. 4,146,464, which is a division of Ser. No. 703,862, Jul. 9, 1976, Pat. No. 4,064,047. This application Jan. 8, 1979, Ser. No. 1,648

The portion of the term of this patent subsequent to Dec. 20, 1994, has been disclaimed.

Int. Cl.² C10G 11/04; B01J 8/24

U.S. Cl. 208—121

2 Claims



adjusting the temperature of the dense bed of the regenerator to a minimum of 1000° F.; and subsequently increasing the air flow rate to the regenerator to provide sufficient oxygen to support said combustion.

4,226,702

ADDITION OF WATER TO EMULSIONS TO ACCELERATE COALESCENCE

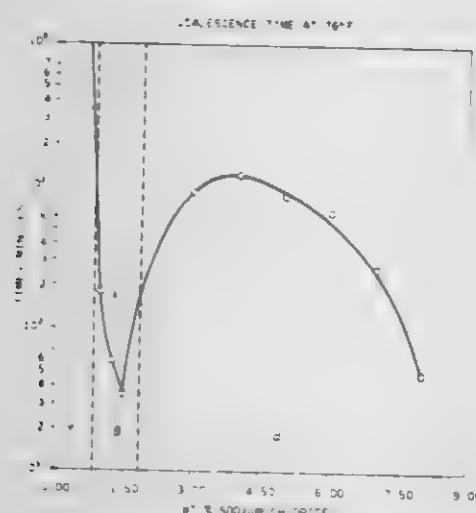
James E. Vinatieri, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 20, 1978, Ser. No. 926,478

Int. Cl.² C10G 33/00, 33/04

U.S. Cl. 208—189

11 Claims



1. A process comprising:

- forming a diluted system by adding to an opaque macroemulsion system made up of oil, a surfactant, water, and an electrolyte having a sodium chloride equivalent concentration in said opaque macroemulsion of at least 2 weight percent based on the weight of water; an amount of water such that the thus formed diluted system coalesces into a predominantly oil upper phase, a transparent microemulsion middle phase containing oil, surfactant, water and electrolyte and an aqueous lower phase;
- allowing said diluted system to so coalesce; and
- recovering oil from said upper phase.

4,226,703

ELECTRO-STATIC TOBACCO SEPARATOR

Stephen E. Stout, Wilson, N.C., assignor to Imperial Group Limited, Bristol, England

Filed Aug. 11, 1978, Ser. No. 932,853

Int. Cl.² B03C 7/04

U.S. Cl. 209—127 B

3 Claims



1. A continuous electro-static separator for (a particulate material) separating lighter and heavier particulate material such as tobacco fines and sand comprising, in combination, a vibrating conveyor for receiving the particulate material at

one end thereof, and for conveying particles material by vibratory motion, said conveyor forming a lower charged electrode; a vibrating open mesh grid such as hardware cloth operatively connected to said vibrating conveyor, said vibrating grid forming an upper oppositely charged electrode which is spaced from and electrically isolated from said vibrating conveyor;

a trough of insulating material disposed adjacent the underside of said vibrating grid, said trough having a width substantially less than that of said vibrating grid, and said trough being operatively connected to said lower vibrating conveyor to convey by vibratory motion any particulate material located in said trough;

means for applying a voltage between said vibrating conveyor and said vibrating grid to provide a field for electrostatic separation;

such that as said vibrating conveyor receives and conveys the particulate material, the particulate material picks up the charge of said vibrating conveyor causing the lighter particles of the particulate material to be attracted to said oppositely charged vibrating grid where the charge of the lighter particles is lost and whereby some of the lighter particles then fall back towards said vibrating conveyor and are collected in said trough and conveyed away while those lighter particles reaching said vibrating conveyor are again subject to being raised and ultimately collected in said trough.

4,226,704

COLLECTOR DISCHARGE APPARATUS

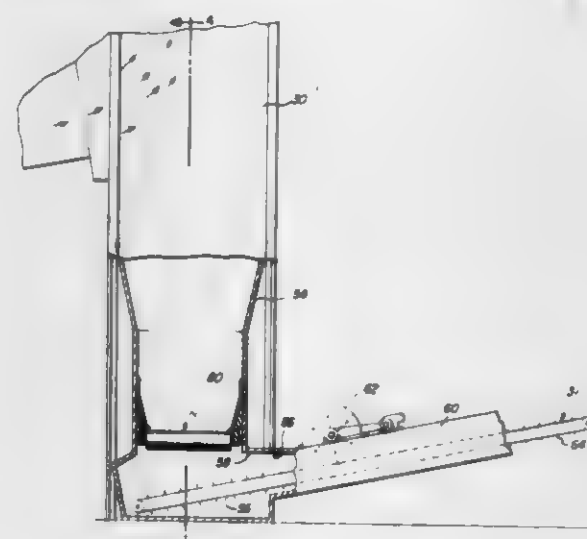
Malcolm M. Paterson, Lee; Michael R. Grubbs, Nashua, both of N.H.; Eugene J. Coulombe, Pepperell, Mass., and William J. Paxson, Cedar Rapids, Iowa, assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 1, 1978, Ser. No. 882,501

Int. Cl.² B07B 4/02

U.S. Cl. 209—138

15 Claims



1. A material handling system comprising a collector having side walls defining a collecting space, a discharge opening located at a midpoint in a lower portion of the collector, means for creating a stream of air flowing upwardly through the collector whereby the lower end of the collector in the area of the discharge opening is under negative air pressure, means for depositing material into the collector at a level above said discharge opening whereby at least a portion of the material will fall out of the air stream toward the discharge opening, discharge conveyor means for removing material falling through the discharge opening, said discharge conveyor means having a material-receiving portion located within the collector at a level below the level of the discharge opening and having a major portion extending exteriorly of the collector through an exit opening in a wall of the collector, and air seal means attached to wall portions of the collector adjacent the exit opening for restricting passage of substantial amounts of

air through the exit opening, the air seal means including conduit means disposed longitudinally about the major portion of the conveyor means and having wall portions spaced therefrom for providing an exit passageway, and rotatable means having a plurality of angularly spaced portions disposed in the conduit means for sequentially engaging the conveyor means and the spaced wall portions of the conduit means for permitting passage of material and blocking a flow of air therebetween.

4,226,705

METHOD OF PRODUCING MICROBUBBLES FOR TREATING A SUSPENSION

Yves Lecoffre, Domene, France, assignor to Alsthom-Atlantique, Paris, France

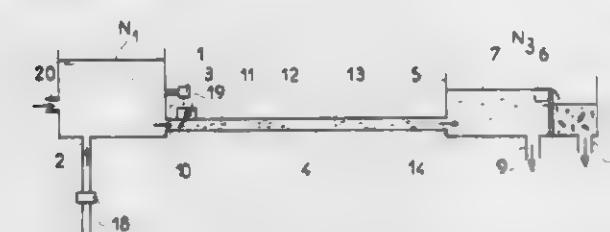
Filed Jul. 7, 1978, Ser. No. 922,700

Claims priority, application France, Jul. 26, 1977, 77 22873

Int. Cl.² B03D 1/14

U.S. Cl. 209—164

4 Claims



1. A method of producing bubbles for treating a suspension by flotation, said method comprising the steps of: saturating the suspension with dissolved gas, causing the saturated suspension to flow through a pipe bearing a shutter valve into a flotation vat below the surface level of the suspension accumulating within said vat, maintaining the pressure downstream of said shutter valve lower than the pressure upstream thereof to cause the suspension to be supersaturated downstream of said shutter valve, rapidly interrupting the flow in the pipe by opening and closing said shutter valve at a predetermined frequency to produce, when the shutter valve is closed, in the downstream portion of the pipe, a periodic wave of low pressure such that cavitation bubbles are produced in the flow of said supersaturated suspension in said downstream portion, said periodic wave during shutter valve closing propagating a low pressure wave in the pipe up to the flotation vat where it is reflected as a wave of high pressure which produces the collapse of the cavitation bubbles and forms micro-bubbles which become fixed to the particles to be floated and tend to be enlarged during flow up to the flotation vat with said particles.

4,226,706

DISPERSED AIR FLOTATION MACHINE

Vernon R. Degner, Carmichael, and William V. Colbert, Lodi, both of Calif., assignors to Envirotech Corporation, Menlo Park, Calif.

Continuation of Ser. No. 918,982, Jun. 26, 1978, abandoned, and a continuation-in-part of Ser. No. 791,102, Apr. 26, 1977, Pat. No. 4,110,210, which is a continuation of Ser. No. 583,072, Jun. 2, 1975, abandoned, said Ser. No. 918,982, is a continuation of Ser. No. 695,881, Jun. 14, 1976, abandoned. This application

Aug. 9, 1979, Ser. No. 65,028

Int. Cl.² B03D 1/14

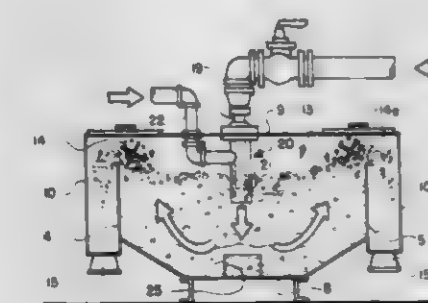
U.S. Cl. 209—170

15 Claims

1. A dispersed gas flotation machine wherein hydraulic effects are utilized to disperse gas bubbles throughout contained liquid comprising:

- a housing and a plurality of flotation cells, mounted adjacent one another in a horizontal series in said housing

- and each of said cells containing a liquid body with a free surface;
- b. means connected to said housing for introducing liquid for processing thereinto;
- c. means for transferring liquid from cell to cell;
- d. removal means for removing processed liquid from said housing;
- e. means for removing froth from the free surface of the liquid in said housing;
- f. a plurality of fluid ejection devices mounted one in each of said flotation cells in a position to expel a mixed fluid into the liquid contained in said cell, each said fluid ejection device including:
 - (i) a hollow tubular expansion chamber member which has



- (ii) a liquid-carrying pipe sealingly connected in communication with said opposite end of said expansion chamber member;
 - (iii) gas introduction means for introducing gas into the interior of said expansion chamber member for mixing with the liquid therein; and
- g. pump means connected to said removal means and to said liquid-carrying pipes to pump less than all of the processed liquid into said fluid ejection devices, whereby the processed liquid mixes with gas from said gas introduction means to form the mixed fluid which is ejected into the liquid body in each said cell of said plurality of cells to form a dispersion of gas bubbles in each said cell.

4,226,707

CENTRIFUGAL CLEANER

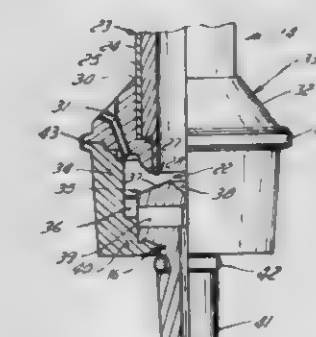
Joseph R. G. Boivin, Grand 'Mere, Canada, assignor to Consolidated-Bathurst Limited, Montreal, Canada

Filed Jun. 9, 1978, Ser. No. 914,034

Int. Cl.² B04C 5/14

U.S. Cl. 209—211

14 Claims



1. An apparatus for separating undesired particles from liquids and liquids and liquid suspensions, the apparatus comprising a chamber having a side wall disposed concentrically about a longitudinal axis, an inlet adjacent one end of said chamber for introducing a particle-laden fluid into said chamber and imparting a vortical flow thereto, a first discharge outlet in an end wall adjacent said first end, and a restricted outlet at the other end of said chamber, and a reject control and enclosure means concentric with and into which the re-

stricted outlet at the other end of said chamber opens, the entrance to said enclosure being formed by an annular slit-like passage for discharge of rejected material, an annular enclosure surrounding said slit, the internal bottom surface of said enclosure being formed by a relatively blunt upright conical abrasive surface having an inverted conical area therein, the height of said slit-like passage being defined by the extension of said restricted lower end towards said surface such that the size of rejected material passing through said slit is controlled and the material held at the opening of said passage, while orbiting around said opening, is worn by said abrasive surface to a size which will allow the same to pass through said slit.

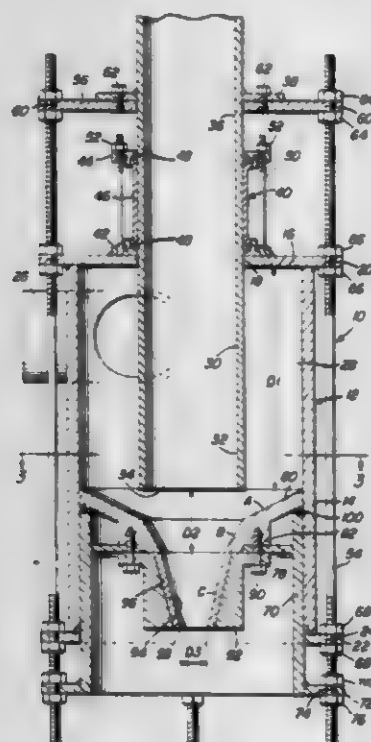
4,226,708

VARIABLE WALL AND VORTEX FINDER HYDROCYCLONE CLASSIFIER

Walter T. McCartney, Uniontown, Pa., assignor to Coal Processing Equipment, Inc., Cincinnati, Ohio
Filed Feb. 24, 1977, Ser. No. 771,793
Int. Cl.³ B04C 5/14

U.S. Cl. 209—211

7 Claims



1. A cyclone classifier including a housing defining a generally cylindrical chamber, means for admitting fluid flow suspended materials into said chamber adjacent one end thereof and in a direction extending generally tangentially of said chamber, an elongated hollow vortex finder centrally disposed in said chamber adjacent said one end thereof and shiftable longitudinally of said chamber, said vortex finder opening into the chamber toward the other end thereof, inwardly opening generally frusto-conical wall means disposed in and closing the other end of said chamber, said frusto-conical wall means opening inwardly toward and being shiftable toward and away from said one end of said chamber, the apex of said wall means including means defining a restricted outlet, and adjustment means operatively connected between said frusto-conical wall means and said vortex finder and between the combination including said frusto-conical wall means and said vortex finder and said housing for adjustable relative shifting between said frusto-conical wall means and said vortex finder longitudinally of said chamber and adjustable relative shifting between said combination and said housing longitudinally of said chamber independent of relative shifting between said frusto-conical wall means and said vortex finder.

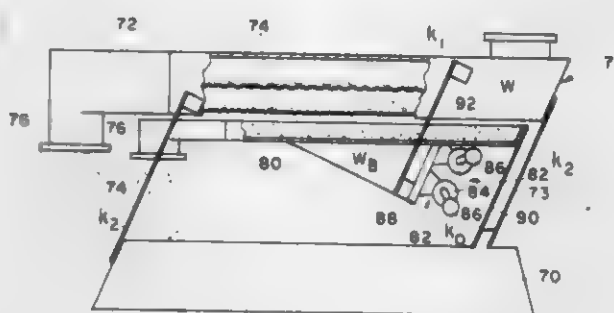
4,226,709

VIBRATING SURFACE APPARATUS

Jaklin B. Popper, Kyriat Motzkin, Israel, assignor to Popper Engineering Ltd., Kyriat Motzkin, Israel
Filed Jun. 5, 1978, Ser. No. 912,886
Int. Cl.³ B07B 1/42

U.S. Cl. 209—315

6 Claims



1. Vibratory surface apparatus comprising:
a fixed base member;
vibratory motion producing means vibrating axially along a vibratory axis;
first spring means coupling said vibratory motion producing means to said base member;
a first surface adapted to be vibrated along said vibratory axis;
second spring means drivingly coupling said first surface to said vibratory motion producing means, said second spring means having a finite spring constant along said vibratory axis thereby permitting substantial differential motion between said vibratory motion producing means and said first surface along said vibratory axis; and
third spring means coupling said first surface to said base member.

4,226,710

PROCESS FOR PURIFYING WATER CONTAINING FLUORIDE ION

Stanley Bruckenstein, Williamsville, N.Y., assignor to Andco Industries, Inc., Cheektowaga, N.Y.

Continuation-in-part of Ser. No. 761,685, Jan. 24, 1977, Pat. No. 4,145,282. This application Feb. 12, 1979, Ser. No. 11,512
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.² C02B 1/20

U.S. Cl. 210—714

25 Claims

1. A continuous process for purifying water containing fluoride which comprises:

- (a) continuously adding sufficient calcium composition to a stream of water to provide at least five moles of available calcium in said water for each mole of fluoride in said water;
- (b) continuously adding sufficient phosphate composition to said stream; and
- (c) making any adjustment in the pH of said water which is required to provide a desired pH in the water of from 6.0 to about 11.5; and
- (d) causing said stream to pass through a bed of a particulate seeding composition selected from the group consisting of fluorapatite, calcium fluoride and mixtures thereof, the residence time of said stream through said bed being sufficient to permit a precipitate to form which contains essentially all fluoride which was present in the water.

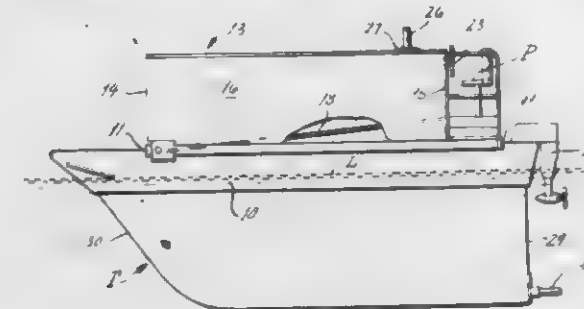
4,226,711

OIL SPILL RECOVERY METHOD AND APPARATUS

Leno M. Meneghetti, No. 8 Arabian Trail, Springfield, Ill. 62702 and Huey A. Cain, 607 N. 8th, Carmi, Ill. 62821
Filed Jul. 14, 1978, Ser. No. 924,516
Int. Cl.² E02B 15/04

U.S. Cl. 210—691

11 Claims



1. Apparatus for recovery of oil in an oil spill upon water by sinking the oil and collecting the oil below the surface of the water, said apparatus comprising: a container for an oil sinking agent, means carried by said container and operable to release the contents of the container upon the oil spill beneath the surface of the water; a collecting vessel formed with spaced sides and bow and stern ends and a bottom surface, said collecting vessel being submerged with said bow and stern below the water surface and with said bottom in position to arrest the motion of the water at the surface; and means connecting said container and collecting vessel for cooperation in depositing the agent upon the oil spill and collecting the oil and oil sinking agent sinking below the surface of the water, said submerged collecting vessel permitting the oil spill to enter over said bow and water substantially free of oil to pass said collecting vessel by at least said stern end.

4,226,712

METHOD AND APPARATUS FOR TREATING WATER CONTAINING WASTES

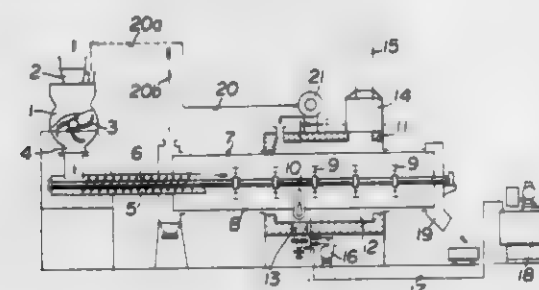
Takeji Kamei, Fuji, Japan, assignor to Nihon Automatic Machinery Mfg. Co., Ltd., Japan
Filed Apr. 30, 1979, Ser. No. 35,201

Claims priority, application Japan, Apr. 29, 1978, 53-51195; Apr. 29, 1978, 53-51916

Int. Cl.³ C02C 3/00

U.S. Cl. 210—710

4 Claims



1. A method of treating water containing organic and/or inorganic waste comprising the steps of: mixing 100 parts by weight of the waste containing 50% to 99.8% by weight of water with 5 to 40 parts by weight of calcium oxide to produce an exothermic reaction mixture of the calcium oxide and the water contained by the waste; heating the reaction mixture using the heat from the exothermic reaction mixture to obtain a preliminarily dried mixture; transferring the preliminarily dried mixture to a drying kiln; further drying the preliminarily dried mixture and granulating it in the drying kiln by continuously agitating and heating the preliminarily dried mixture at a temperature from about 800° C. to about 1,450° C. to yield a

granulated product collecting stinking exhaust gases produced by said mixing of the waste with calcium oxide; channeling the exhaust gases to a furnace; and burning the exhaust gases in the furnace to produce substantially odorless gases.

4,226,713

DIAGNOSTIC AGENTS

Jack M. Goldberg, 4612 W. Elm Ter., Skokie, Ill. 60076
Filed Apr. 24, 1978, Ser. No. 899,597

Int. Cl.² C09K 3/00; G01N 31/02, 31/06, 31/14, 33/16

U.S. Cl. 23—230 B 5 Claims

2. A method of precipitating LDL and VLDL lipoproteins from a body fluid comprising:

adding a single precipitating agent, made by the addition of magnesium chloride to neutralized phosphotungstic acid, to a body fluid wherein said magnesium chloride is colorless in 0.05 molar solution, and wherein said neutralized phosphotungstic acid is a water-soluble phosphotungstate to provide a concentration of said magnesium chloride of 0.025 to 0.075 millimoles per milliliter of body fluid and a concentration of phosphotungstate polyanion of 0.002 to 0.008 grams per milliliter of body fluid; and clarifying the solution of the precipitating agent and body fluid to yield a supernatant solution containing HDL as substantially the only form of cholesterol to quantitatively determine the HDL.

4,226,714

THICKENER CONTROL SYSTEM

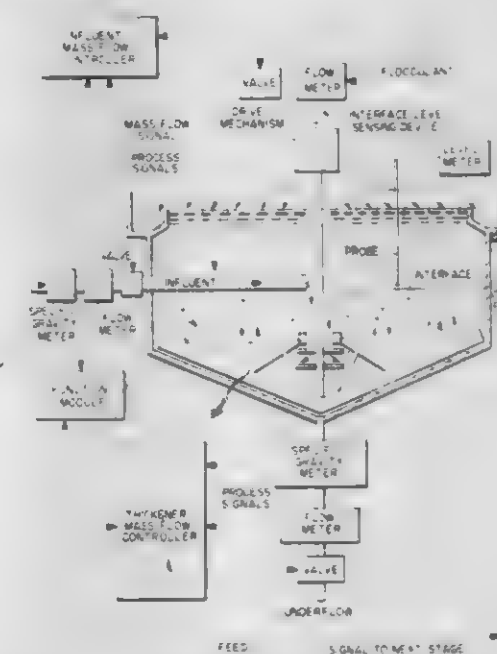
Kenneth M. Furness, Manuel Quinonez, and Stanley T. Low, all of Tucson, Ariz., assignors to The Anaconda Company, New York, N.Y.

Filed Dec. 27, 1978, Ser. No. 973,758

Int. Cl.² B01D 21/01, 21/06

U.S. Cl. 210—723

17 Claims



1. A method for controlling a liquid-solid separation process in which an interface is formed so that substantially steady state operation is maintained comprising steps for:

- (a) feeding a contaminated liquid-solid influent into a first separator;
- (b) withdrawing a substantially clear liquid overflow and a substantially solid contaminant underflow therefrom;
- (c) metering specific gravity and flow rate of the liquid-solid influent;
- (d) adjusting mass flow rate in response to fluctuations in the metered parameters of step (c) to maintain a desired substantially constant mass flow rate of liquid-solid influent into the separator;

- (e) metering specific gravity and flow rate of the substantially solid contaminant underflow;
- (f) adjusting mass flow rate of the substantially solid-contaminant underflow according to the adjustment of step (d);
- (g) monitoring an interface level between clear and unclear areas of the separator; and
- (h) correcting the adjustment of step (f) according to fluctuations of the interface level.

4,226,715

APPARATUS AND METHOD FOR SEPARATING ENTRAINED PARTICULATE MATTER FROM A CONVEYING FLUID

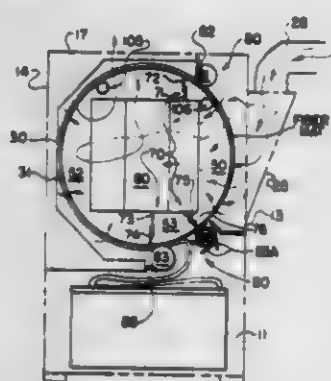
Kurt W. Niederer, and Robert E. Terrell, both of Charlotte, N.C., assignors to The Terrell Machine Company, Charlotte, N.C.

Filed Sep. 24, 1979, Ser. No. 78,224

Int. Cl.³ B01D 33/04, 33/06, 46/26

U.S. Cl. 210—783

29 Claims



29. A method of separating entrained particulate matter from a conveying fluid, comprising the steps of:

- a. directing the particulate-containing fluid into a first chamber and through a fluid permeable band having a filter surface thereon and collecting the particulate matter from the fluid in an overlying porous layer on an upstream side of said filter surface to form a filter medium of enhanced filtering capacity;
- b. moving said band with said overlying porous layer of particulate matter thereon from said first chamber into a second chamber; and
- c. directing said fluid into said second chamber and through said overlying porous layer of particulate matter from an upstream to a downstream side thereof.

4,226,716

ROTARY FILTER

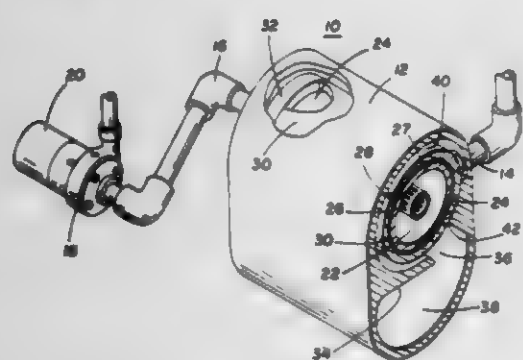
Russell P. White, Jr., Dallas, Tex., assignor to Wesley G. McCain, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,721

Int. Cl.³ B01D 33/10, 37/02

U.S. Cl. 210—193

7 Claims



1. Apparatus for filtering a process fluid for removing particulate matter therefrom comprising in combination:

- (a) a rotatable drum having a perforated surface and dis-

posed in a housing to form a plenum between the drum surface and the interior of the housing.

- (b) a tubular shaft supporting said drum, said shaft having fluid passages therethrough within said drum for removing said process fluid from within the interior of said drum,
- (c) end plates joined to said drum at each end thereof, said plates having a larger diameter than said drum to form a bed on the surface thereof,
- (d) a fiber member covering said drum surface within said bed,
- (e) means for producing a pressure differential between said plenum and the interior of said drum,
- (f) means to provide a layer of filter material covering said fiber member and extending to said end plates, said filter material formed into said layer by said pressure differential,
- (g) means for introducing said process fluid into said plenum, said pressure differential forcing process fluid through said layer of filter material,
- (h) a blade positioned against the surface of said layer of filter material, said blade extending along the length of said bed for stripping away said particulate matter collected on the surface of said filter layer as said drum rotates past said blade,
- (i) an exhaust port, said stripped particulate matter being deposited adjacent said port for entrainment within process fluid exhausted through said port, and
- (j) means to regulate the flow of said exhausted process fluid to remove said stripped particulate matter from said housing.

4,226,717

WASTE WATER TREATMENT

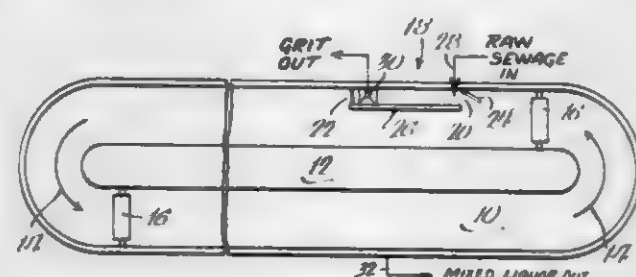
Arthur P. Malm, 1022 E. Devon Ave., Bartlett, Ill. 60103

Filed Nov. 8, 1978, Ser. No. 958,648

Int. Cl.³ C02F 3/18

U.S. Cl. 210—195.1

8 Claims



1. In a waste water system, the combination of: an oxidation vessel including spaced walls for receipt of waste water therebetween, said walls defining an elongated, closed loop path for the flow of waste water within the vessel;

means for directing waste water along said path; means for introducing oxygen into waste water between said spaced walls;

an additional wall between said spaced walls defining an elongated grit chamber within said vessel having an inlet and an outlet defined by the ends of said additional wall, said inlet and outlet being spaced from each other along and within said path, said grit chamber, remote from said inlet, being provided with means disposed below the intended level of waste water within said vessel for retaining grit within said chamber to prevent it from entering the remainder of said vessel while allowing organic material to pass from said outlet into said vessel remainder to be oxidized therein;

means for introducing raw waste water into said grit chamber near said inlet by introducing waste water between one of said spaced walls and said additional wall near the inlet end of the additional wall; and

a mixed liquor outlet in said vessel.

4,226,718

PROCESS FOR SEPARATING POLYVINYL ALCOHOL FROM ITS SOLUTION

Totaro Yamagata, Suzuka, and Shuji Banno, Konan, Japan, assignors to Shikibo Limited, Osaka, Japan

Division of Ser. No. 642,341, Dec. 19, 1975, Pat. No. 4,078,129.

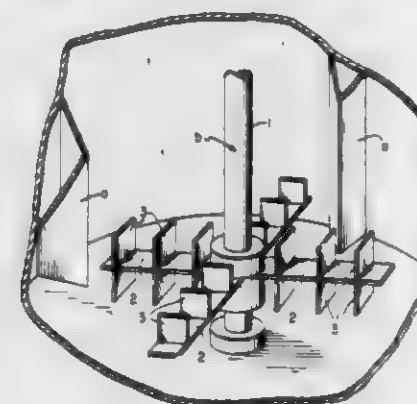
This application Dec. 21, 1977, Ser. No. 862,854

Claims priority, application Japan, Dec. 20, 1974, 49/147125

Int. Cl.² B01D 21/01

U.S. Cl. 210—219

4 Claims



4. Apparatus for coagulating particles of dissolved solids from an aqueous solution which comprises an upright stirring vessel provided with a stirrer comprising a substantially vertical rotatable shaft extending vertically into said vessel and having a plurality of flat arms mounted symmetrically thereon and extending radially outwardly from said shaft and having both flat surfaces of each blade substantially parallel to the plane of rotation of the blades, and a plurality of knives mounted on said arms and extending vertically upwardly and downwardly therefrom and rotatable about said shaft in a plane substantially parallel to the axis of rotation of said shaft, and having the flat surfaces of each knife oriented substantially tangent to cylindrical plane of rotation of the knife.

4,226,719

TREATING DEVICE FOR LARGE BODIES OF WATER

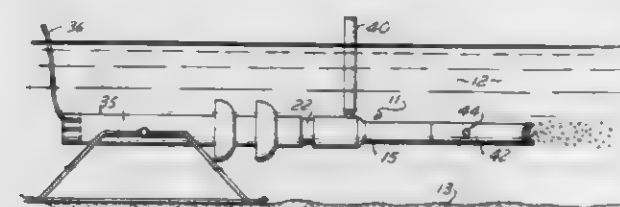
Robert B. Woltman, 44625 Tonapah St., Newberry Springs, Calif. 92368

Continuation of Ser. No. 771,882, Feb. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 694,847, Jun. 10, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 923,463

Int. Cl.³ C02B 3/08; B01F 3/04

U.S. Cl. 210—220

3 Claims



1. Treating means particularly adapted for dispersing a treating agent in a body of water comprising:

- a casing for immersion in said body,
- said casing having a water passage therethrough including: an inlet for connection to a source of pressurized water, an outlet of lesser cross-sectional area than said inlet, inlet venturi passage means intermediate said inlet and said outlet, and
- outlet venturi passage means downstream of said inlet venturi passage means,
- said inlet venturi passage means having a restricted outlet opening and said outlet venturi passage means having a

restricted inlet opening, the two restricted openings being of round shape and substantially equivalent diameters and being in alignment and axially separated,

said casing having structural means forming a water-tight mixing chamber including and surrounding the axial space between said restricted outlet opening and said restricted inlet opening and intake opening means into said mixing chamber adapted for communication with the atmosphere above said body of water, said intake opening means defining a passage of round cross-section extending radially into said casing and the restricted outlet opening of said inlet venturi passage means being positioned at a perpendicular plane through the axis of said casing coincident with the extended axis of the intake opening means passage,

said outlet venturi passage means comprising a first chamber of frusto-conical shape, a second chamber of frusto-conical shape diverging at a greater angle than said first chamber and a third chamber of cylindrical shape terminating in said outlet, said first chamber being the longest of the three chambers and said second chamber being the shortest of those chambers, said chambers being in communication so that water flowing through said outlet venturi passage means passes through the three chambers in their numbered sequence,

whereby the forcing of pressurized water into the inlet end of said casing when the latter is immersed in said body of water for use causes a stream of the water to pass through the restricted outlet opening of the inlet venturi passage means and into the restricted inlet opening of the outlet venturi passage means, then through said outlet venturi passage means in a turbulent condition as a result of the shape of the three chambers making up that passage, and whereby when said water under pressure is being forced through said casing, air from the atmosphere is sucked through said intake opening means, when the latter is in communication with said atmosphere, and ingested into the stream of water passing between said inlet venturi passage means and said outlet venturi passage means in said outlet venturi passage means, and

whereby a chemical treating agent can be fed to the mixing chamber through said intake opening means for ingestion into said stream of water in the same manner in which the air is ingested thereto so that violent mixing of the treating agent and water takes place in said venturi outlet passage means,

said treating means including tubular nozzle means connectible to the outlet end of said casing, said nozzle means having an inside diameter equal to that of said third chamber and having opening means through its wall positioned so that a discharge stream from said casing passing through the connected nozzle means draws additional water into said nozzle through said opening means to increase the density and turbulence of said stream and impart greater penetrating force to the stream as it passes through the discharge end of said nozzle means into said body of water,

the discharge end of said nozzle means being beveled from opposite sides to the middle to form a pair of points substantially equidistant from the opposite end of the nozzle means, the plane of the beveled configuration on one side being of a more acute angle relative to a plane through the axis of the nozzle means and said pair of points than the plane of the beveled configuration on the other side, whereby a sweeping motion is imparted to the outlet stream from said connected nozzle means when said treating means is in operation.

4,226,720

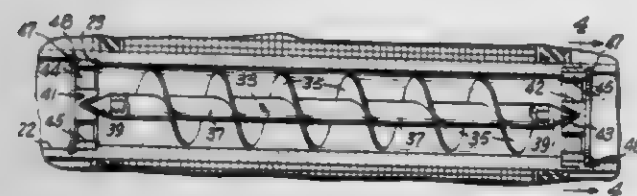
UNITARY PACKAGE FOR WATER TREATMENT FOR ATTACHMENT TO HOME HOT WATER HEATER

Miguel F. Brigante, 16550 NW. Tenth Ave., Miami, Fla. 33169
Continuation-in-part of Ser. No. 474,580, May 30, 1974, abandoned, Ser. No. 672,819, Apr. 1, 1976, and Ser. No. 855,951, Nov. 30, 1977, Pat. No. 4,151,090. This application Feb. 5, 1979, Ser. No. 9,669

Int. Cl.³ C02F 1/48

U.S. Cl. 210—222

4 Claims



1. A unitary special package for attachment to a home hot water heater between a municipal water line and the water inlet of the heater comprising:

a package casing having a top, a bottom and sides therebetween enclosing electrical conversion AC to DC apparatus and an electromagnetic assembly about a straight pipe section in the package for water treatment inside the casing;

an upper compartment immediately below the top of said casing in which is mounted a step down transformer converting 110-220 volts to 24 volts AC and a DC rectifier converting said 24 volts input into DC output for energizing an electromagnet coil in a lower compartment of the package;

a lower compartment containing a straight pipe section between the casing sides which projects from the sides and thus forms a straight line for direct communication between the municipal water line and the inlet line to the hot water heater;

an electromagnet coil extending along substantially the entire length of said pipe section between the casing sides; said electromagnet coil being fed by 24 volts DC to thereby induce a DC magnetic field within the interior of said pipe section through which water flows;

a spider bearing fitting into said straight pipe section within said package in alignment with each of said sides, said spider bearing having a plurality of radially spaced arms to permit free flow of water therethrough, one of said spider bearings having a hub portion formed with a conically shaped recess having a graphite impregnated bearing surface;

an elongated solid helical impeller of ferromagnetic material having a first end shaft portion of conical shape fitting into the conically shaped recess of the spider bearing supported for rotation responsive to incoming municipal water flow; and

said helical impeller longitudinally traversing the entire length of said electromagnet coil and having a clearance tolerance between 1/16" and 1/128" between helical flights of the impeller and the inner diameter of the pipe section so that the helical impeller is adapted to rotate both at low flow velocity and at extremely high volume of water whereby said helical impeller will not whip under said conditions.

4,226,721

FILTER PRESS

Hendrik B. Baas, Halsteren, Netherlands, assignor to B.V. Machinefabriek en IJzergieterij Holland, Bergen op Zoom, Netherlands

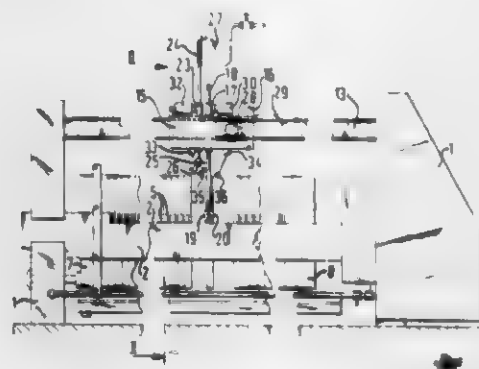
Filed Mar. 23, 1979, Ser. No. 23,187

Claims priority, application Netherlands, Mar. 31, 1978, 7803430

Int. Cl.² B01D 25/12, 25/38

U.S. Cl. 210—225

9 Claims



1. A filter press comprising, in combination:

a frame having a fixed head and a movable head and means for moving said movable head toward and away from the fixed head respectively to clamp and to release a stack of filter plates disposed therebetween, and means for passing liquid to be filtered through said filter plates when the latter are clamped between the heads;

a carriage movable horizontally along said frame above the filter plates, coupling means mounted on said carriage for selectively engaging a filter plate when said movable head has been moved away from said fixed head to release said stack of filter plates, means for moving said carriage a predetermined distance after said coupling means has engaged a filter plate whereby to move such engaged plate to a position clear of other filter plates, and cleaning means mounted on said carriage for cleaning filter cake from said filter plate engaged by said coupling means, said coupling means and said cleaning means being mounted on said carriage at fixed locations thereon whereby the coupling means positively locates the engaged filter plate with respect to the carriage and the cleaning means and moves the engaged filter plate with the carriage to preserve such positive location when the carriage is moved to position the engaged filter plate at said position clear of other plates.

4,226,722

REMOVING OIL FROM WASTE WATER WITH SULFUR

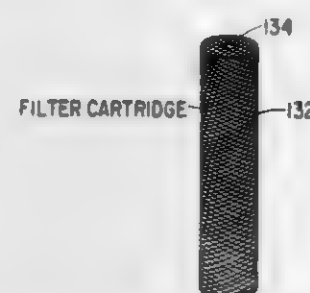
Lloyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Continuation of Ser. No. 503,001, Sep. 3, 1974, abandoned, which is a division of Ser. No. 80,424, Oct. 13, 1970, Pat. No. 3,853,753. This application Aug. 29, 1975, Ser. No. 609,116

Int. Cl.² B01D 27/02

U.S. Cl. 210—287

4 Claims



1. An oil-coalescing filter cartridge for removing oil from oily water comprising a cylinder with a longitudinal bore

therethrough, said cylinder being made of porous fibrous material supporting a solid phase yellow sulfur.

4,226,724

TWO-STAGE PUSHER CENTRIFUGE

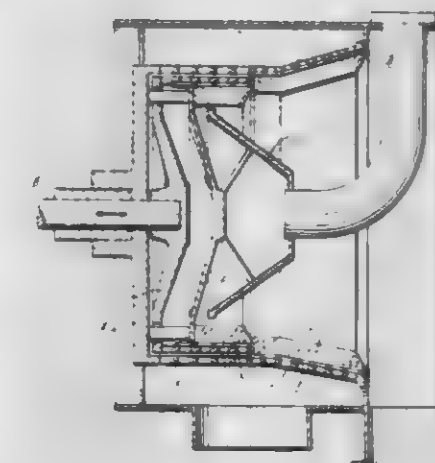
Fritz G. Stürmer, Mülheim, Fed. Rep. of Germany, assignor to Siebtechnik GmbH, Mülheim, Fed. Rep. of Germany
Continuation of Ser. No. 726,619, Sep. 27, 1976, abandoned. This application May 30, 1978, Ser. No. 910,367

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 2542916

Int. Cl.² B01D 33/10

U.S. Cl. 210—376

4 Claims



4,226,723

FILTRATION APPARATUS

Derek B. Purchas, Woking, England, assignor to National Research Development Corporation, London, England

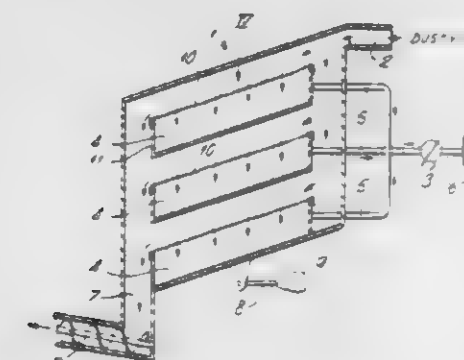
Filed Oct. 27, 1978, Ser. No. 955,243

Claims priority, application United Kingdom, Nov. 4, 1977, 45966/77

Int. Cl.² B01D 23/24, 29/04, 35/22, 46/04

U.S. Cl. 210—332

9 Claims



1. Apparatus for filtering and separating a solid from a fluid comprising:

a chamber,
an inlet to said chamber for a solid-bearing fluid,
a solids outlet from said chamber for collected solids;
a plurality of filter units mounted and arranged within said chamber in parallel between said inlet and said solids outlet,

each such filter unit being a box-like structure comprising walls enclosing a hollow interior, at least one wall being formed by a sheet of filter medium and the remainder of said walls preventing access of said solid-bearing fluid to the interior of said structure,

each filter unit having an outlet communicating from the interior thereof for discharging the filtered fluid;
means for removing the filtered fluid from the interior of said filter units,

said sheets of filter medium presenting a first surface facing outward into said chamber, a second surface facing inward into said hollow interior,

said sheets of filter medium being set at an angle of slope to the horizontal and arranged so that fluid passes through the thickness of each said sheet from said first surface thereof to said second surface, leaving substantially all filtered solids retained on said first surface,

means to vibrate said filter units, the vibrations assisting to dislodge the retained solids from said first surfaces of said sheets of filter medium,

said sheets of filter medium being sloped such as to have one end adjacent said solids outlet, and

said plurality of filter units being arranged such as to define paths for sliding gravity travel of said dislodged solids towards said solids outlet whereby said solids travel by gravity while substantially avoiding solids rising appreciably into the atmosphere of said chamber.

1. A two-stage pusher centrifuge for effectively dewatering and treating moist liquid material being centrifuged so as to provide a substantially drier material having a characteristic sliding friction angle which comprises an outer drum having a pusher bottom provided at the peripheral portion thereof including a first stage and a second stage with an extension comprising a cylindrical screen section collectively forming a short first stage having a length equalling from 30% to 40% of effective total drum length and a conical outwardly flaring screen section in the second stage practically confined to length of the pusher and the subsequent conically outwardly flaring section having an inclination at an entrance of the conical outwardly flaring section being less than said characteristic sliding friction angle of material in centrifugally moist condition being dewatered and treated along the conically outwardly flaring section, an axially displaceable cylindrical inner screen drum having a pusher end formation slidable on the cylindrical screen section of said outer drum, reciprocable means drivingly connected to said inner drum for reciprocating same, said inner screen drum and pusher end formation being dimensional to extend to the outer end of said cylindrical screen section of said outer drum on outward travel of said inner drum, and pusher bottom means inwardly of and fixed relative to said outer drum in axially spaced relationship to said bottom of said outer drum, including a disk formation extending outwardly with the screen section of said inner drum slidable on its periphery, a second disk formation spaced axially from said first disk formation with the peripheries of said disk formations spaced less than the length of the peripheral cylindrical screen section of said inner drum, a supply conduit leading to the space between said disk formations to supply material to be centrifuged to the said peripheral cylindrical screen section of said inner drum, the cylindrical section of said outer drum extending to the end of the travel of said peripheral screen section of said inner drum, said conical section of said outer drum extending axially and radially outwardly from said cylindrical section of the outer drum a distance greater than the length of the path of travel of said inner drum, so that said inner section moves material on said section of said outer drum onto and along said conical section, the movement along said conical section requiring less force to move the material thereon than for a cylindrical section of equal length, said conical section providing more efficient extraction of moist liquid material than a cylindrical section of less length and less mean diameter.

4. A two-stage pusher centrifuge having a rotating assembly

rotated by a rotating shaft for effectively dewatering and treating moist liquid material being centrifuged so as to provide a substantially drier material having a characteristic sliding friction angle which comprises a radially outer cylindrical screen formed with a conical screen extension flaring outwardly from the outer end of said outer cylindrical screen, a radially inner cylindrical screen within and coaxial with said outer cylindrical screen and of less length than said outer cylindrical screen, said inner cylindrical screen having its axially outer end formed as a reciprocating pusher element slidable on the inner surface of said outer cylindrical screen, a second pusher element fixed relative to said outer cylindrical screen and having its periphery slidable on the inner surface of said inner cylindrical screen, means to reciprocate said inner screen with its reciprocating pusher element so that said pusher element moves along said outer cylindrical screen from its axially inward position to its outward position, said inner screen and said reciprocating pusher element being dimensioned to extend to the axially outer end of said outer cylindrical screen at its outward end of travel, with its pusher element at the axially outer end of the outer cylindrical screen adjacent said conical extension to push material from said outer cylindrical screen onto said conical extension, said second pusher element retaining material on said inner screen against inward movement when said inner screen returns to its inward position, thereby transferring material from said inner cylindrical screen to said outer cylindrical screen, and assembly including means to deliver material to said inner cylindrical screen, the material on said conical screen extension having a longer dwell time therewith to effect more efficient centrifugal extraction of liquid before being moved off the outer end of said conical extension by outward movement of said inner pusher element to move material from said outer cylindrical screen to said conical screen extension, said rotating conical screen extension creating an outward component of force to assist in moving the material on said screen in an outward direction.

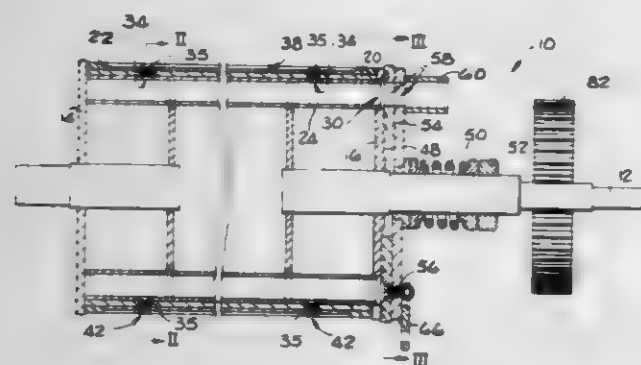
4,226,725

IMPROVEMENTS IN OR RELATING TO VACUUM BELT FILTERS

Theodor M. Stielan, Johannesburg, South Africa, assignor to Delkor Technik (Proprietary) Limited, South Africa
Continuation-in-part of Ser. No. 933,474, Aug. 14, 1978, Pat. No. 4,186,092. This application Jul. 16, 1979, Ser. No. 58,097
Int. Cl.³ B01D 33/04

U.S. Cl. 210—400

10 Claims



1. A horizontal vacuum belt filter which includes an endless filter cloth on which a residue filter cake is, in use, formed;
- a filter head roller;
- a rotatable discharge roller located some distance forward of the head roller, a portion of the filter cloth passing over a segment of the cylindrical surface of the discharge roller and being in engagement therewith;
- a plurality of longitudinally directed and circumferentially spaced apart passages in the discharge roller which are each in communication with a different segment of the cylindrical surface of the discharge roller via suitable bores;
- a first valve means for directing a discharge liquid to those

passages which are in communication, at any particular time, with that segment of the cylindrical surface of the discharge roller engaged by the filter cloth; and

a plurality of second valve means for permitting flow of discharge liquid only from those passages that are in communication with the said segment through the bores associated with those passages to the said segment.

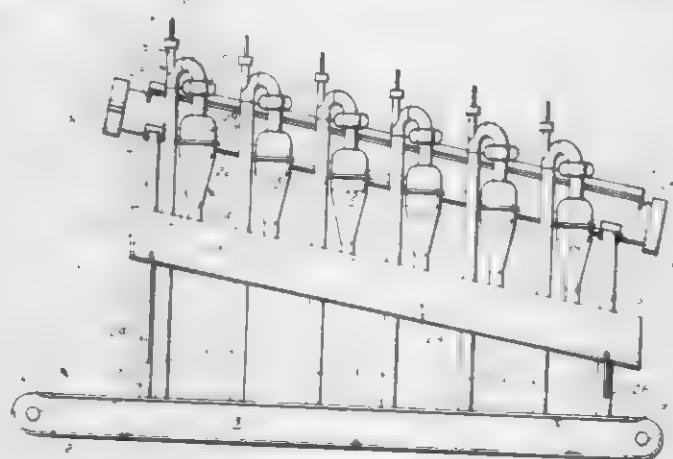
4,226,726
DESILTER

William A. Rehm, Houston, Tex., assignor to Technical Systems Co., Houston, Tex.

Filed Mar. 5, 1979, Ser. No. 17,103
Int. Cl.³ B04C 5/12

U.S. Cl. 210—512 M

17 Claims



1. A desilter for drilling muds comprising a common inlet manifold conduit and a plurality of hydrocyclone separators arranged in two parallel rows in series along said conduit and connected thereto,

each of said hydrocyclone separators comprising a hollow, enclosed vessel, having an upper, large casing portion with a tangential side inlet opening and conduit extending therefrom and an outlet conduit extending out through the upper wall thereof, and a lower casing portion tapering downwardly from said upper casing portion and defining a downwardly extending conical chamber having a bottom outlet for discharge of separated materials therefrom, supporting means for said separators,

said inlet manifold conduit being supported on said supporting means and having a plurality of conduit means positioned serially thereon connecting the same to respective tangential inlet conduits on said separators,

at least one collection trough open to atmosphere at the top and positioned below said separators to receive the discharge of material from the bottom outlets therefrom, and individual syphon conduits for each of said outlet conduits having outlet ends discharging separately to a collection point at atmospheric pressure.

4,226,727

PERSISTENT FIRE SUPPRESSANT COMPOSITION
William B. Tarpley, Jr., West Chester, Pa.; John R. Huzinec, Frostburg, Md., and Marion K. Freeman, West Chester, Pa., assignors to Energy & Minerals Research Co., Kennett Square, Pa.

Filed Jul. 21, 1978, Ser. No. 926,786
Int. Cl.³ A62D 1/00

U.S. Cl. 252—8

10 Claims

1. A nonaqueous persistent thixotropic fire suppressant composition comprising a fire suppressant agent, a carrier material, said suppressant agent permeating said carrier material to form a suppressant permeated carrier material, a fire extinguishing dispersant, said carrier material being insoluble in said dispersant, said permeated carrier material being suspended in said dispersant, and a gelling agent in an amount effective to thixo-

tropically gel said suspension of permeated carrier material and dispersant, said permeated carrier material being capable of adhering to an object in the vicinity of combustion.

4,226,728

FIRE EXTINGUISHER AND FIRE EXTINGUISHING COMPOSITION

Shin H. Kung, 28-34-200th St., Bayside, N.Y. 11360
Filed May 16, 1978, Ser. No. 906,409
Int. Cl.² A62D 1/00

U.S. Cl. 252—8

8 Claims

1. An improved extinguishing compound for use in low pressure, aerosol fire extinguishers consisting of between about 10 and 90% of a low vapor pressure halogenated alkane selected from the group consisting of trichlorofluoromethane, dibromodifluoromethane, bromochlorodifluoromethane and 1,2-dibromotetrafluoroethane and between about 4 and 96% of a high vapor pressure halogenated alkane selected from the group consisting of, bromotrifluoromethane, and chloropentafluoroethane, all of said percentages being by weight of the extinguishing compound.

4,226,729

FABRIC SOFTENER COMPOSITIONS AND ARTICLES CONTAINING 2-OXABICYCLOOCTANE DERIVATIVES AND PROCESSES FOR PREPARING SAME

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

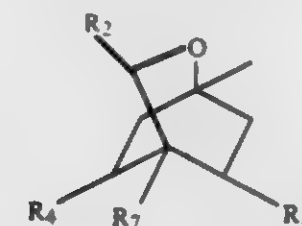
Continuation-in-part of Ser. No. 12,695, Feb. 16, 1979, Pat. No. 4,195,100, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Jun. 15, 1979, Ser. No. 48,706

Int. Cl.³ D06M 13/18; C09K 11/06

U.S. Cl. 252—8.9

9 Claims

1. A process for augmenting or enhancing the aroma of a perfumed article selected from the group consisting of fabric softeners and optical brightener compositions comprising the step of adding to said fabric softener composition or optical brightener composition an aroma augmenting or enhancing quantity of a cyclic chemical compound having the structure:



wherein R₂ is C₂-C₅ alkyl or alkenyl; R₄ is hydrogen, methyl or ethyl, R₇ is hydrogen or methyl; and R₈ is hydrogen or methyl with the proviso that (i) when R₄ and R₈ are both hydrogen, R₇ is methyl; and (ii) when R₄ is methyl or ethyl, R₇ and R₈ are not both hydrogen.

4,226,730

SECONDARY RECOVERY METHOD UTILIZING THICKENED WATER

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

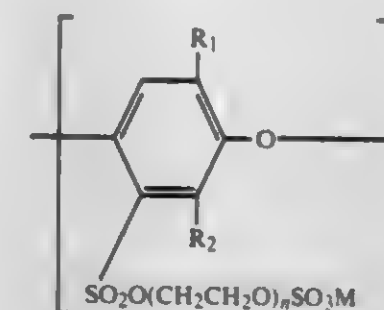
Filed Feb. 9, 1978, Ser. No. 876,390
Int. Cl.² C09K 3/00

U.S. Cl. 252—8.55 D

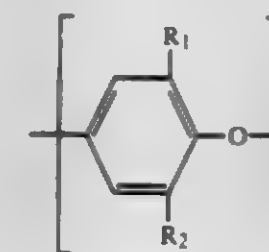
9 Claims

1. A method for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:
 - (a) injecting into the formation via an injection well a driving fluid comprising water having dissolved therein about

- 0.01 to about 2.0 weight percent of a water-soluble, sulfated, ethoxylated polyphenol,
- (b) forcing the said fluid through the formation, and
- (c) recovering hydrocarbons through the production well, wherein the said water-soluble, sulfated, ethoxylated polyphenol comprises recurring A-type units of the formula:



wherein R₁ and R₂ are independently selected straight chain alkyl groups of 1 to 3 inclusive carbon atoms, n is an integer of from 3 to about 30, and M is a cation selected from the group consisting of hydrogen, ammonium, sodium and potassium, and recurring B-type units of the formula:



wherein R₂ and R₂ have the same meaning as previously described, wherein in the said sulfated, ethoxylated polyphenol the weight percent of A-type units ranges from about 20 to about 60 with the balance being B-type units, and wherein the number average molecular weight of the said water-soluble, sulfated, ethoxylated polyphenol is from about 5000 to about 250,000.

4,226,731

SECONDARY RECOVERY PROCESS UTILIZING SULFONATED POLYPHENOLS

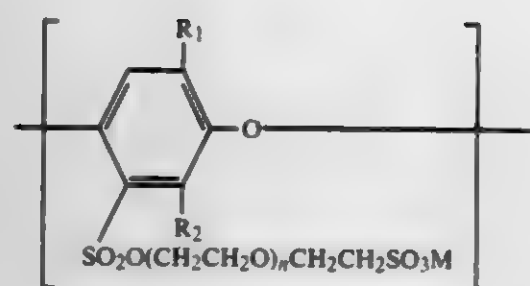
Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Feb. 9, 1978, Ser. No. 876,391
Int. Cl.² C09K 3/00

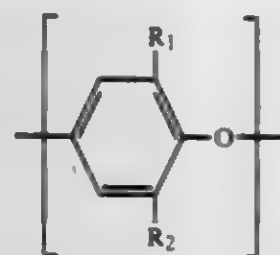
U.S. Cl. 252—8.55 D

9 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:
 - (a) injecting into the formation via an injection well a driving fluid comprising water having dissolved therein about 0.01 to about 2.0 weight percent of a water-soluble sulfonated, ethoxylated polyphenol,
 - (b) forcing the said fluid through the formation, and
 - (c) recovering hydrocarbons through the production well, wherein the said water-soluble, sulfonated, ethoxylated polyphenol comprises recurring A-type units of the formula:



wherein R_1 and R_2 are independently selected straight chain alkyl groups of 1 to 3 inclusive carbon atoms, n is an integer of from 3 to about 30, and M is a cation selected from the group consisting of hydrogen, ammonium, sodium and potassium, and recurring B-type units of the formula:



wherein R_1 and R_2 have the same meaning as previously described and wherein in the said sulfonated, ethoxylated polyphenol the weight percent of A-type units ranges from about 20 to about 60 with the balance being B-type units, and wherein the number average molecular weight of the said water-soluble, sulfonated, ethoxylated polyphenol is from about 5000 to about 250,000.

4,226,732

SYNTHETIC AIRCRAFT TURBINE OIL

Russell R. Reinhard, Hopewell Junction, and Roberta Yaffe, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,938
Int. Cl.² C10M 1/44

U.S. Cl. 252—32.5

16 Claims

1. A synthetic lubricating oil consisting of a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of pentaerythritol or a poly-pentaerythritol or trimethylolpropane and an organic monocarboxylic acid having from about 2 to 18 carbon atoms per molecule containing:

- from about 0.3 to 5 percent by weight of the lubricating oil composition of a phenyl-naphthylamine or an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from 4 to 12 carbon atoms,
- from about 0.3 to 5 percent by weight of a dialkyldi-phenylamine in which the alkyl radical has from 4 to 12 carbon atoms,
- from about 0.25 to 10 percent by weight of a hydrocarbyl phosphate ester in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms,
- from about 0.01 to 0.5 percent by weight of a polyhydroxy-substituted anthraquinone,
- from about 0.05 to 1.0 percent by weight of a t-alkylamine salt of 3-aminotriazole-dodecenyl-succinamic acid,
- from about 0.005 to 0.50 percent by weight of 2-hydroxypropyl-N,N-dibutylthiocarbamate, and
- from about 0.001 to 0.10 percent by weight of a tertiary alkylamine salt of methyl acid phosphate.

4,226,733

LUBRICANT COMPOSITIONS STABILIZED AGAINST ULTRA-VIOLET DEGRADATION

Eldon L. Armstrong, Mullica Hill, and Samuel J. Leonardi, Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 755,283, Dec. 29, 1976, which is a continuation-in-part of Ser. No. 604,977, Aug. 15, 1975, abandoned. This application Nov. 17, 1978, Ser. No. 961,792
Int. Cl.² C10M 1/54

U.S. Cl. 252—42.7

9 Claims

1. A lubricant composition comprising a major amount of a mineral oil or a fraction thereof of lubricating viscosity and a minor amount effective for stabilizing said composition against ultra-violet degradation of an organo-nickel complex which is a suitable amine complex of a nickel alkylphenolate sulfide; said alkyl groups having from 1 to about 30 carbon atoms said amine selected from the group consisting of primary aliphatic amines, primary aromatic amines and cyclic secondary amines.

4,226,734

COOLING, LUBRICATING, AND CLEANING AGENT

Dietrich Schuster, 6741 Frankweilerpfad, Am Kaefernberg 7, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,848

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757322

Int. Cl.² C10M 1/06

U.S. Cl. 252—49.3

4 Claims

1. A cooling, lubricating and cleaning agent, comprising the agent formed by the condensation reaction of an excess diethanolamine with boric acid, and the adding of lauryl (poly-1-oxapropene) oxoethane carboxylic acid, wherein the products used in forming said agent are in the following mutual molar relationship:

7 moles diethanolamine

3.3 moles boric acid

1 mole lauryl (poly-1-oxapropene) oxoethane carboxylic acid.

4,226,735

DIELECTRIC CERAMIC COMPOSITION AND PROCESS FOR ITS PRODUCTION CONTAINING $MgTiO_3$ AND Pb_2O_3 HAVING A QUANTITATIVE RELATIONSHIP

Yukio Sakabe, Nagakakyō, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Nov. 15, 1978, Ser. No. 961,043

Claims priority, application Japan, Nov. 15, 1977, 52-137492

Int. Cl.² H01B 3/12

U.S. Cl. 252—63.2

2 Claims

1. A dielectric ceramic composition consisting essentially of strontium titanate, magnesium titanate, bismuth oxide, titanium oxide and lead oxide, wherein respective components are present in the following compositional proportion when the components are expressed by $SrTiO_3$, $MgTiO_3$, Bi_2O_3 , TiO_2 and Pb_2O_3 , respectively:

4,226,736

DISHWASHING DETERGENT GEL COMPOSITION

William G. Bush, and Valerie D. Braun, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Continuation of Ser. No. 490,466, Jul. 22, 1974, abandoned. This application Jan. 2, 1979, Ser. No. 308

Int. Cl.² C11D 3/08, 17/00

U.S. Cl. 252—135

8 Claims

1. A low-foaming machine dishwashing composition consisting essentially of:

- from about 0.1 to 20 weight percent of an aqueous thickener;
- from about 0.1 to 20 weight percent of a non-ionic surfactant; and
- water,

4,226,738

N,N-BIS(TRIFLUOROMETHYLSULFONYL)OXAMIDES AND CHEMILUMINESCENT COMPOSITIONS CONTAINING THE SAME

Michael M. Rauhut, Bridgewater; Shin-Shyong Tseng, Raritan, and Arthur G. Mohan, Somerville, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Nov. 1, 1978, Ser. No. 956,567

Int. Cl.² C09K 3/00

U.S. Cl. 252—188.3 CL

19 Claims

1. A compound represented by formula (I)



(I)

said composition being in the form of a gel characterized as having a yield point of at least about 1170.

2. The composition as claimed in claim 1 additionally containing a builder.

3. The composition as claimed in claim 2 consisting essentially of from about 0.1 to 20 weight percent of an aqueous thickener; 0.1 to 20 weight percent of a non-ionic surfactant; 1 to 20 weight percent of a corrosion inhibitor; 1 to 70 weight percent of a builder; and the remaining portion constituting water.

4. The composition as claimed in claim 3 consisting essentially of from about 0.1 to 5 weight percent of sodium carboxymethylcellulose; 1 to 20 weight percent of sodium silicate; 0 to 40 weight percent of tetrasodium pyrophosphate; 1 to 30 weight percent of trisodium nitrilotriacetate monohydrate; 10 to 95 weight percent water; and a nonionic surfactant selected from the group consisting of:

(a) from about 0.1 to 10 weight percent of polypropoxylated-polyethoxylated ethylene glycol having an average molecular weight between about 2100 and 3100, that consists of, by weight, from about 20 to 40 weight percent polyoxyethylene, and a polyoxypropylene portion having a molecular weight between about 1700 and 2500;

(b) from about 0.1 to 10 weight percent of a compound having the general formula $R-O(A)H$ wherein: R is an essentially linear alkyl group having from 10 to 18 carbon atoms, with the proviso that at least 70 weight percent of said compounds in said mixture have an R of from 12 to 16 carbon atoms, and A is a mixture of oxypropylene and oxyethylene groups, said oxypropylene and oxyethylene groups being from 55 percent to 80 percent of total weight of the compounds, the oxypropylene to oxyethylene ratio of said total weight being from 0.85:1 to 2.75:1; and

(c) mixtures thereof.

wherein R and R' independently represent hydrogen; alkyl of 1 to 6 carbon atoms; cycloalkyl of 4 to 8 carbon atoms; substituted alkyl or cycloalkyl wherein the substituents are selected from halo, carboxy, alkoxy, or alkoxycarbonyl, wherein the alkoxy is of 1 to 6 carbon atoms; alkanoyl of 2 to 18 carbon atoms; aryl of 7 to 11 carbon atoms; aralkyl of 7 to 11 carbon atoms; aryl of 6 to 10 carbon atoms; heterocyclic aryl of 3 to 9 carbon atoms; substituted aryl and heterocyclic aryl of 6 to 10 and 3 to 9 carbon atoms, respectively, wherein the substituents, one or more, are selected from halo, nitro, cyano, trifluoromethyl, alkyl and alkoxy of 1 to 6 carbon atoms, hydroxy, phenoxy, benzyloxy, phenyl, alkanoylamino of 2 to 6 carbon atoms, benzoylamino, alkylsulfonyl of 1 to 6 carbon atoms, carboxy, alkoxycarbonyl and alkoxysulfonyl wherein the alkoxy group has 1 to 6 carbon atoms, $-SO_3^+M^+$ wherein M^+ is a cation selected from sodium, potassium, lithium, ammonium, monoalkylammonium, dialkylammonium, trialkylammonium, or tetraalkylammonium wherein the alkyl radicals have 1 to 6 carbon atoms, and may be the same or different, aminocarbonyl, and aminosulfonyl which are unsubstituted or substituted at the nitrogen by 1 or 2 radicals selected from alkyl of 1 to 6 carbon atoms, phenyl, or substituted phenyl wherein the substituents are as defined above for aryl and heterocyclic aryl.

4,226,737

POLYCYCLOALIPHATIC POLYAMINES

Edward W. Kluger, Pauline, and Tien K. Su, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

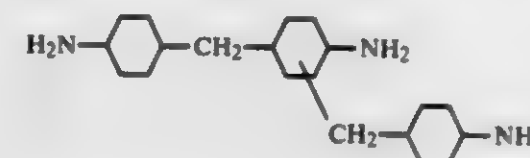
Filed Nov. 10, 1977, Ser. No. 850,502

Int. Cl.² C09K 3/00

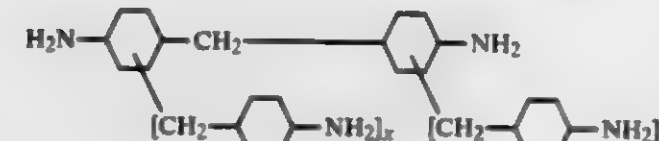
U.S. Cl. 252—182

3 Claims

1. An epoxy curing agent comprising a mixture consisting essentially of from about 50 to about 75 weight percent of a polycycloaliphatic polyamine having the general structure



and from about 15 to about 30 weight percent of a polycycloaliphatic polyamine having the general structure



wherein x and y are integers of from 0 to about 2 and the sum of such integers, $x+y$, is 2.

4,226,740

INFRA-RED RESPONSIVE FINGERPRINT COMPOSITION AND METHOD OF MAKING

Robert Worsham, Opa Locka, and Kurt L. Jenkins, Miami, both of Fla., assignors to Criminalistics, Inc., Miami, Fla.

Filed Feb. 9, 1979, Ser. No. 10,736

Int. Cl.² A61B 5/10; C09K 3/00

U.S. Cl. 252—408

4 Claims

1. A fingerprint composition for use under ordinary light and under infra-red consisting essentially of a mixture of the following finely divided powders:

aluminum in a particle range of 1 to 75 microns and a proportion of 6% to 20% by weight;

- (a) a backbone solvent selected from the group consisting of aromatic, aliphatic or cycloaliphatic type solvent, and
(ii) a polar solvent having a polar function selected from the group consisting of alcohol, ester, acid and amine groups, said polar solvent interacting primarily with the neutralized sulfonate groups of said neutralized sulfonated thermoplastic, said polar solvent being miscible with said backbone solvent, said solvent system comprising about 60 to about 98 wt.% of said backbone solvent; and
- (b) a neutralized sulfonated thermoplastic polymer dissolved in said solvent system at a concentration level of about 5 to about 50 grams per 100 ml of said solvent system to form a solution, said solution having a Brookfield viscosity at room temperature of about 1,000 to about 20,000 cps, said neutralizing sulfonated thermoplastic polymer being derived from the group consisting of polyolefinic and polyvinyl aromatic resins and derivatives thereof.

4,226,752

EMULSION PROCESS FOR POLYMER PARTICLES

James R. Erickson, Brunswick, and Robert J. Seidewand, Olmsted Falls, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 837,390, Sep. 28, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,878

Int. Cl.² C08L 31/04, 33/08, 25/04; C08F 2/26, 2/30

U.S. Cl. 260—29.6 RB 10 Claims

1. An improved emulsion polymerization process for producing large particle size emulsion polymer particles wherein the improvement comprises:

providing substantially monodispersed polymer seed particles between 500 Å and 8,000 Å and having a D_w/D_n of between about 1.0 and 1.1 wherein D_w is the particle weight average diameter and D_n is the particle number average diameter, said polymer seed particles being a homopolymer or copolymer containing a polymerized monomer selected from styrene, acrylate, or methacrylate;

increasing the size of said polymer seed particles by polymerizing ethylenically unsaturated second stage monomers selected from styrene, alkyl acrylates, alkyl methacrylates, vinyl acetate, acrylic acid, and methacrylic acid onto said polymer seed particles in the presence of surfactants consisting essentially of non-ionic and anionic surfactants comprising by weight between about 30% and 98% non-ionic surfactant, said surfactant being present in the second stage processing sufficient to provide between about 105% and 1000% of theoretical polymer seed coverage to produce polymer particles containing by weight between about 5% and 95% polymerized second stage monomers.

4,226,753

NOVEL METHACRYLIC POLYMERS HAVING CONDENSATION-CROSSLINKABLE FUNCTIONALITY

Sheldon N. Lewis, Willow Grove, and Richard A. Haggard, Fort Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 517,337, Oct. 23, 1974, Pat. No. 4,103,093, which is a continuation-in-part of Ser. No. 371,921, Jun. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 137,057, Apr. 23, 1971, abandoned. This application May 15, 1978, Ser. No. 905,812

Int. Cl.² C08K 5/01; C08L 23/00

U.S. Cl. 260—29.6 10 Claims

1. A coating composition comprising an anionically-polymerized addition polymer of at least one ester of methacrylic acid, the polymer comprising mers having condensation-crosslinkable functionality, wherein the average chain length of the polymer, \bar{n} , is about 6 to about 50 mers and about 1 to about

50% by weight of water or an organic solvent, and optionally comprising a pigment.

4,226,754

SYNTHETIC POLYMER

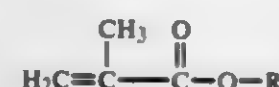
Han B. Yun, Princeton Junction, and Alfred J. Whitton, Hightstown, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,898

Int. Cl.³ C09D 3/74, 3/80, 5/02; C08F 220/06

U.S. Cl. 260—29.6 TA 23 Claims

1. A polymer of (a) from about 15 to about 35% by weight, of methacrylic acid, (b) from about 5 to about 70% by weight, of at least one ester of methacrylic acid represented by the structural formula:



wherein R is saturated or unsaturated and represents an alkyl group having from 1 to 20 carbon atoms, and (c) from about 5 to about 80% by weight, of at least one vinyl ester of a saturated aliphatic carboxylic acid, wherein the acid has from 1 to 10 carbon atoms.

4,226,755

TRIMELLITIC ACID ESTER AND ITS USE IN A PROTECTIVE LACQUER BASED ON EPOXIDE RESIN

Eduard Knecht, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 13, 1978, Ser. No. 968,898

Claims priority, application Switzerland, Dec. 23, 1977, 15959/77

Int. Cl.² C08G 59/42

U.S. Cl. 260—31.4 EP 8 Claims

1. A lacquer which contains: (1) an epoxide resin; (2) a trimellitic anhydride ester mixture which is obtained by heating trimellitic anhydride with at least one diol, in a molar ratio of 2:1.25, for at least 4 hours at 190°–250° C., at an external pressure of 5–30 torr for at least part of this time and in the absence of catalyst; and (3) a solvent.

4,226,756

MIXTURES OF EXTENDERS AND POLYOLS OR POLYMER/POLYOLS USEFUL IN POLYURETHANE PRODUCTION

Frank E. Critchfield, South Charleston; Richard M. Gerkin, Charleston, and Leslie E. Hawker, South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 703,022, Jul., 1976, Pat. No. 4,125,505. This application Aug. 10, 1978, Ser. No. 932,638

Int. Cl.³ C08K 5/06

U.S. Cl. 260—33.2 R 2 Claims

1. A polyol-chain extender mixture consisting of (1) a poly-(oxypropylene-oxyethylene)polyol having a hydroxyl number of from about 20 to 60, an oxyethylene cap of from about 10 to 30 weight percent and an internal oxyethylene content of from about 30 to 60 weight percent and (2) ethylene glycol.

4,226,757

POLYPIVALOLACTONE POLYMER BLENDS

Jesse D. Jones, and Edwin D. Hornbaker, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 951,780, Oct. 16, 1978, abandoned. This application Jul. 17, 1979, Ser. No. 58,156

Int. Cl.² C08K 3/10; C08L 67/00

U.S. Cl. 260—37 R 8 Claims

1. A moldable thermoplastic resin composition comprising an intimate mechanical blend of a first polypivalolactone resin having an LVN of from about 1.3 to about 2.5 as measured in

benzyl alcohol at 150° C., and from about 5 to about 50 phr (based on the weight of said first resin) of a second polypivalolactone resin having an LVN of less than about 1.2 as measured in benzyl alcohol at 150° C.

4,226,758

FRICTION MATERIAL

Arthur Sumira, Manchester, England, assignor to Gandy Frictions Limited, Merseyside, England

Filed Feb. 23, 1978, Ser. No. 880,811

Claims priority, application United Kingdom, Feb. 23, 1977, 7563/77

Int. Cl.² C08K 7/26

U.S. Cl. 260—38 3 Claims

1. A friction material wherein the asbestos fibres are substantially completely replaced by blown alumino-silicate ceramic fibres made from the mineral kaolin, said alumino-silicate fibres being substantially free of water glass.

4,226,759

FRICTION MATERIALS

John Chester, Stockport, England, assignor to Ferodo Limited, Manchester, England

Filed Jul. 31, 1978, Ser. No. 929,533

Claims priority, application United Kingdom, Aug. 10, 1977, 33485/77

Int. Cl.² C08K 3/08

U.S. Cl. 260—38 11 Claims

1. A friction material composition suitable for moulded friction pads consisting essentially of a thermosetting binder, a fibrous reinforcement including additional fillers and additives, wherein:

- (a) the thermosetting binder comprises a phenol formaldehyde resin and a heat and chemical resistant rubber which binder constitutes from 20% to 45% by volume of the friction material composition of which at least half of said binder is said resin;
- (b) the fibrous reinforcement consists solely of short lengths of steel fiber in an amount between 5% and 15% by volume of the composition;
- (c) at least 10% by volume of the composition is an inert mineral filler; and
- (d) the balance of the composition consists substantially entirely of inorganic friction and wear modifiers in an amount up to 40% by volume.

4,226,760

COLORED RIGID THERMOPLASTIC RESIN COMPOSITIONS AND A PROCESS FOR THEIR PRODUCTION

Martin L. Feldman, East Brunswick, and James T. DeGoff, Oldwick, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed May 9, 1979, Ser. No. 37,542

Int. Cl.² C08K 9/04

U.S. Cl. 260—42.14 20 Claims

1. The process for coloring a rigid thermoplastic resin composition that comprises incorporating in said composition an amount of a non-plasticizing liquid pigment dispersion that will provide at least 0.1% by weight of pigment, based on the weight of the composition, said non-plasticizing liquid pigment dispersion containing

- (a) 5% to 80% by weight of at least one pigment and
- (b) 20% to 95% by weight of an unsaturated polyester vehicle that comprises
 - (1) 50% to 100% by weight of an unsaturated polyester that is the product of the reaction of a dicarboxylic acid component containing 80 to 90 mole percent of at least one unsaturated aliphatic dicarboxylic acid having 4 to 8 carbon atoms and 10 to 20 mole percent of at least one saturated aromatic dicarboxylic acid with an alcohol component containing 40 to 60 mole percent of a glycol having 2 to 6 carbon atoms and 40 to 60 mole percent of

a monohydric alcohol having 6 to 12 carbon atoms, in the amount of 0.4 mole to 0.6 mole of the dicarboxylic acid component per mole of the alcohol component, and

- (2) 0 to 50% by weight of an unsaturated monomer capable of reacting with said unsaturated polyester to form cross-linkages.

4,226,761

POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING POLYSILOXANE-MODIFIED ALKENYL AROMATIC RESINS

Glenn D. Cooper, Delmar; William R. Haaf, Voorheesville, and Howard A. Vaughn, Jr., Schenectady, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 27, 1978, Ser. No. 963,800

Int. Cl.³ C08L 71/04

U.S. Cl. 260—42.18 23 Claims

1. A thermoplastic molding composition which, after molding, has good impact resistance, said composition comprising: (a) a polyphenylene ether resin; and (b) an alkenyl aromatic resin that is modified with a polysiloxane in the form of small rubber-like particles by polymerizing alkenyl aromatic monomer in the presence of the polysiloxane.

4,226,762

ANTIFRICTION MATERIALS

Gilbert Bourrin, Lyons, France, assignor to Cestidur, Villeurbanne, France

Continuation of Ser. No. 744,746, Nov. 24, 1976, abandoned.

This application Dec. 1, 1978, Ser. No. 965,322

Claims priority, application France, Nov. 26, 1975, 75 36906

Int. Cl.² C08K 7/20

U.S. Cl. 260—42.46 5 Claims

1. A moulded antifriction material having very good resistance to wear consisting essentially of, by weight, from about 68 to about 84% of polyethylene having a molecular weight from about 1×10^6 to about 6×10^6 , from about 12 to about 28% of glass micro-beads having a grain size of from about 1 to about 44 microns and a density of about 1.45 kg/l, and the balance comprising an antistatic material.

4,226,763

2-[2-HYDROXY-3,5-DI-(α,α -DIMETHYLBENZYL)-PHENYL]-2H-BENZOTRIAZOLE AND STABILIZED COMPOSITIONS

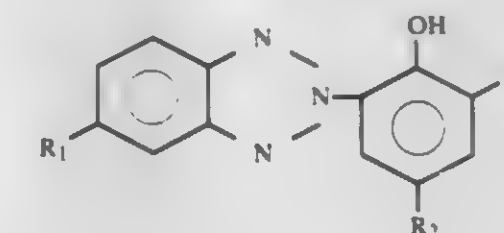
Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 26, 1978, Ser. No. 918,984

Int. Cl.² C08K 5/34; C07D 249/20

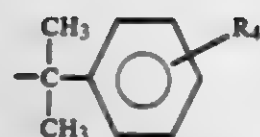
U.S. Cl. 260—45.8 N 10 Claims

1. A compound of the formula



wherein

R₁ is hydrogen or chloro,
R₂ and R₃ are independently the group



where R₄ is hydrogen or lower alkyl.

4,226,764

α-AMYLASE INHIBITOR FROM A STREPTOMYCETE AND PROCESS FOR ITS PREPARATION

Volker Oeding, Kerkheim; Werner Pfaff, Hofheim am Taunus; Laszlo Vertesy, Eppstein, and Hans-Ludwig Weidenmüller, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 17, 1978, Ser. No. 870,247

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701890

Int. Cl.² C07G 7/028

U.S. Cl. 260—112 R

1 Claim

1. Peptidic glycoside hydrolase inhibitor obtained by cultivating *Streptomyces tendae* 4158 (ATCC no. 31210) and isolating the inhibitor from the culture, said inhibitor having a molecular weight in the range of from 5,000 to 10,000, an absorption maximum in the ultraviolet light at 276 nm, an isoelectric point of 4.4 and the following amino acid composition:

aspartic acid	5-6	glycine	5-6
threonine	5-6	alanine	5-6
serine	3-5	cysteine	3-4
glutamic acid	5-6	valine	5-6
proline	2-3	isoleucine	1-2
leucine	3-4	lysine	0-1
tyrosine	4-5	arginine	2-3
phenylalanine	0-2	tryptophan	1-2
histidine	1-2		

4,226,765

NOVEL RIFAMYCIN COMPOUNDS OF HIGH ANTIBIOTIC ACTIVITY

Leonardo Marsili; Vittorio Rossetti, and Carmine Pasqualucci, all of Milan, Italy, assignors to Archifar Industrie Chimiche Del Trentino S.p.A., Rovereto, Italy

Filed May 12, 1976, Ser. No. 685,624

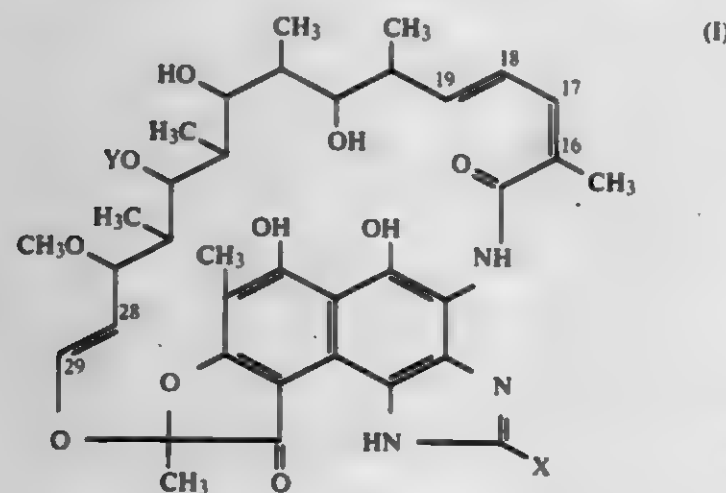
Claims priority, application Italy, May 20, 1975, 5157 A/75

Int. Cl.³ C07D 491/08

U.S. Cl. 260—239.3 P

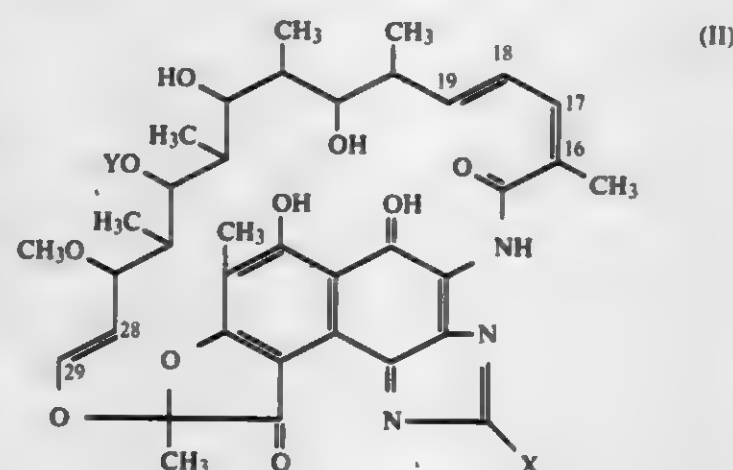
5 Claims

1. A rifamycin compound selected from the group comprising compounds having the formula:



wherein: X is a radical selected from the group comprising hydrogen, carboxyl, alkyl with less than 10 carbon atoms, cycloalkyl with less than 7 carbon atoms, alkenyl with less than

4 carbon atoms, cycloalkenyl with less than 7 carbon atoms, aryl hydrocarbon with less than 13 carbon atoms, aryl hydrocarbon-alkyl with less than 14 carbon atoms, aryl hydrocarbon-alkenyl with less than 11 carbon atoms, a heterocycle selected from the group comprising thiophene, furan, thiazole, tetrazole, thionaphene, methylene dioxyphenyl, and pyridine, substitution products of the above specified radicals with a substituent which is at least one radical different therefrom and selected from the group comprising, in addition to all of the above specified radicals, halogen, hydroxyl, alkoxy, nitro, amino, N-alkylamino, N,N-dialkylamino, formyl, carboxyl, carboalkoxy, carboxyalkoxy, N,N-dialkylaminoalkoxy, alkanoyloxy and acetamido, there being less than 14 carbon atoms in said radical X; Y is —H or —COCH₃, and its 16, 17, 18, 19 tetrahydroderivatives and 16, 17, 18, 19, 28, 29 hexahydroderivatives and corresponding oxidized products having the formula:



4,226,766

NOVEL METHOD FOR PREPARING N(1)-ALKYLATED-5-PHENYL-7-SUBSTITUTED-2-DEOXY-1,4-BENZODIAZEPINES

Franjo Kajfez; Vitomir Sunjic, and Vesna Caplar, all of Zagreb, Yugoslavia, assignors to CRC Compagnia di Ricerca Chimica S.A., Chiasso, Switzerland

Continuation of Ser. No. 740,075, Nov. 8, 1976, abandoned, and a continuation-in-part of Ser. No. 684,450, May 7, 1976, abandoned. This application Jul. 27, 1978, Ser. No. 928,833

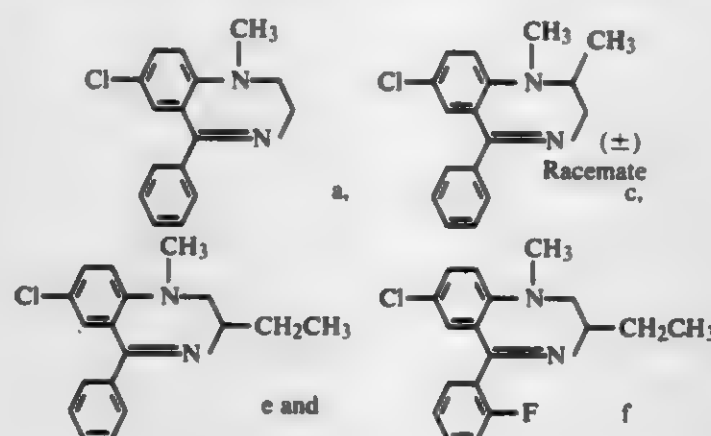
Claims priority, application Switzerland, May 12, 1975, 8068/75

Int. Cl.³ C07D 243/16

U.S. Cl. 260—239 BD

2 Claims

1. A process for preparing compounds of the formulas:



which comprises reacting 0.5 mole of the methyl ester of polyphosphoric acid with 0.14 mole of the appropriate respective starting materials, to wit:

a=2-amino-5-chloro(2'-hydroxyethylketimine)-benzophenone for 5 hours at about 160° C.
c=2-amino-5-chloro(2'-hydroxy-2'-methylethylketimine)-benzophenone for 8 hours at about 140° C.

e=2-amino-5-chloro-(1'-ethyl-2'-hydroxyethylketimine)-benzophenone for 8 hours at about 140° C.
f=2-amino-5-chloro-(1'-ethyl-2'-hydroxyethylketimine)-o-fluoro-benzophenone for 8 hours at about 140° C., respectively, and isolating the respective products.

4,226,767

INTERMEDIATES FOR 3-AMINOAZETIDIN-2-ONES

Robin D. G. Cooper; Gary A. Koppel, and Lawrence J. McShane, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

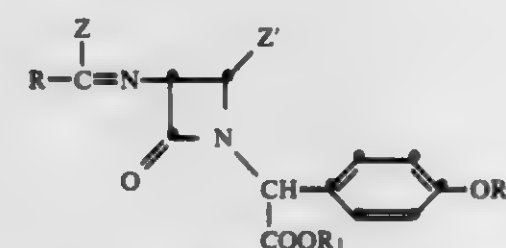
Division of Ser. No. 933,707, Aug. 15, 1978, Pat. No. 4,180,507, which is a division of Ser. No. 775,240, Mar. 7, 1977, Pat. No. 4,127,568. This application May 21, 1979, Ser. No. 41,281

Int. Cl.³ C07D 205/08, 277/06, 513/04

U.S. Cl. 260—239 A

5 Claims

1. The compound of the formula



wherein R is C₁–C₃ alkyl, phenyl, or benzyl; R₁ is methyl, benzyl, 4-methoxybenzyl, or diphenylmethyl; R₂ is benzyl, 4-methoxybenzyl, or diphenylmethyl; and Z and Z' are both hydrogen or both chloro.

4,226,768

PROCESS FOR THE PREPARATION OF IMIDAZOBENZODIAZEPINES

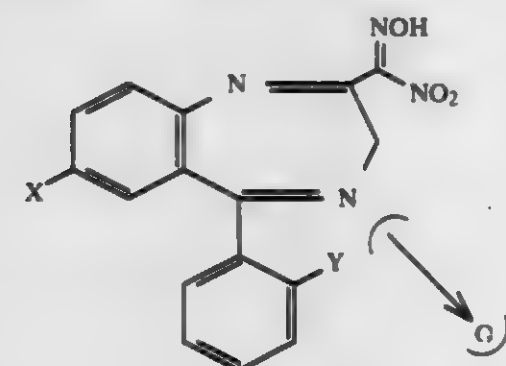
Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 29, 1979, Ser. No. 43,417

Int. Cl.² C07D 243/16

U.S. Cl. 260—239 DD

1. A compound of the formula



wherein X is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl and Y is selected from the group consisting of hydrogen, halogen and trifluoromethyl.

4,226,769

PROCESS FOR PREPARING A SOLID PREPARATION OF A PENICILLIN DERIVATIVE

Terutsugu Tsuji; Shigeji Sato, both of Osaka; Keiji Fujioka, Amagasaki; Yoshiya Yamahira, and Tadao Maeda, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

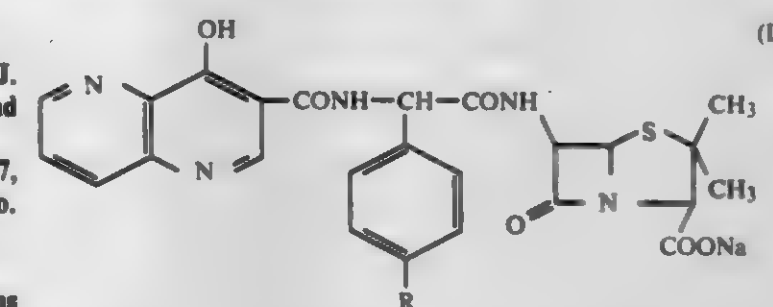
Filed Nov. 17, 1978, Ser. No. 961,841

Claims priority, application Japan, May 8, 1978, 53/54804 Int. Cl.² C07D 499/68

U.S. Cl. 260—239.1

5 Claims

1. In a process for freeze-drying an aqueous solution of a penicillin derivative of the formula:



wherein R is a hydrogen atom or a hydroxyl group, by evaporating a frozen aqueous solution of the penicillin derivative (I) under vacuum from the frozen state to dryness, the improvement which comprises maintaining the temperature of the solution during the primary drying period of the drying process within a range from the eutectic point of the solution as determined by the electric resistance method to —8° C. when R is a hydrogen atom in said penicillin derivative, or from said eutectic point to —10° C. when R is a hydroxyl group in said penicillin derivative.

4,226,770

SYNTHESIS OF STEROIDS

Emil T. Kaiser, 5634 S. Woodlawn Ave., Chicago, Ill. 60637

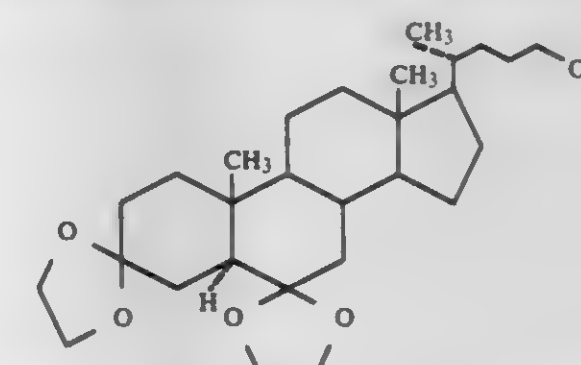
Continuation of Ser. No. 876,753, Feb. 10, 1978, Pat. No. 4,163,744. This application Feb. 23, 1979, Ser. No. 14,695

Int. Cl.³ C07J 21/00

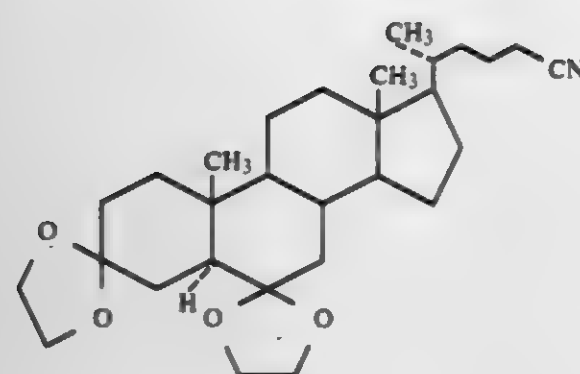
U.S. Cl. 260—239.55 C

18 Claims

1. In a process for preparing a 3,6-diketo steroid compounds, the step of heating a compound having the structure:



with a metal cyanide, where Q is an aryl or alkyl sulfonyl group to produce the compound having the structure:



4,226,771

1,2,5-OXADIAZINO[5,4-a][1,4]BENZODIAZEPINE DERIVATIVES

Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

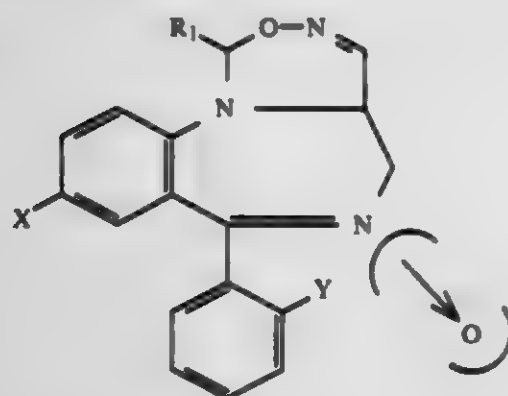
Filed Jul. 25, 1979, Ser. No. 60,258

Int. Cl.² A61K 31/55; C07D 487/04, 498/04

U.S. Cl. 260-243.3

1 Claim

1. A compound of the formula



wherein

X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl and R₁ is hydrogen.

4,226,772

1-[(DIALKYLAMINO)METHYL]-6-PHENYL-4H-S-[4,3-a][1,4]TRIAZOLOBENZODIAZEPINE N¹-OXIDE

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

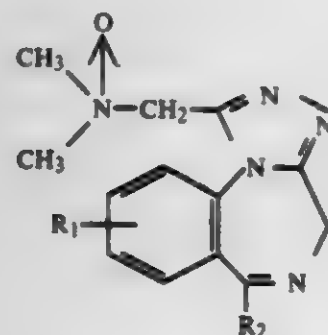
Continuation of Ser. No. 853,290, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 713,923, Aug. 12, 1976, abandoned, which is a division of Ser. No. 666,902, Mar. 15, 1976, Pat. No. 4,008,175. This application Sep. 8, 1978, Ser. No. 940,802

Int. Cl.² A61K 31/55

U.S. Cl. 260-245.5

5 Claims

1. A compound of the formula II:



wherein R₁ is hydrogen, fluoro, chloro, bromo, nitro, trifluoromethyl or alkylthio in which the alkyl moiety is of 1 to 3 carbon atoms, inclusive; and wherein R₂ is phenyl, o-

chlorophenyl, o-fluorophenyl, or 2,6-difluorophenyl or the pharmacologically acceptable acid addition salts thereof.

4,226,773

PYRAZOLYL AMINO IMIDAZOLINES AS DIURETIC AGENTS

John J. Kyncl, Lake Forest, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

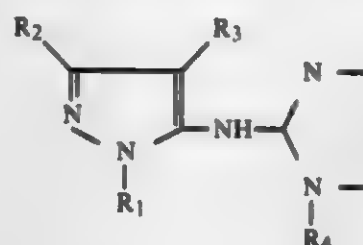
Filed May 7, 1979, Ser. No. 36,883

Int. Cl.² A61K 31/40, 31/47, 31/415, 31/435

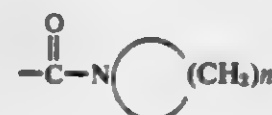
U.S. Cl. 424-273 P

9 Claims

1. A method of increasing urinary excretion in a subject in need thereof which comprises administering to said subject an effective amount sufficient to produce increased urinary excretion of a compound represented by the structural formula



wherein R₁ and R₂ are hydrogen, loweralkyl, lowercycloalkyl, benzyl, phenyl or naphthyl, pyridyl, isoquinolyl or phthalazyl, or phenyl or naphthyl substituted by one or more hydrogen, halo, loweralkyl, lowercycloalkyl, haloloweralkyl, aminosulfonyl, nitro, hydroxy, alkoxy, carboxy, alkoxy carbonyl, cycloalkoxy carbonyl, aminocarbonyl, diloweralkylaminocarbonyl or



wherein n is 4 or 5.

R₃ is hydrogen, halogen, loweralkyl or phenyl or naphthyl, and

R₄ is hydrogen, acetyl, amino or loweralkyl, and the pharmaceutically acceptable acid addition salts thereof.

4,226,774

CARBAZOLE MELONATES

Harvey Gurien, West Orange, and Sidney Teitel, Clifton, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

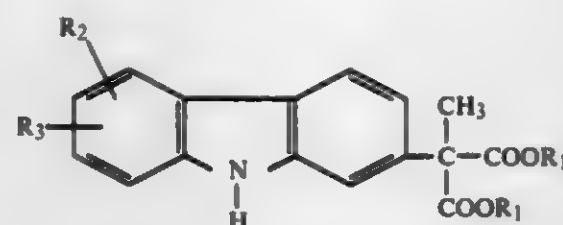
Division of Ser. No. 23,114, Mar. 23, 1979, which is a division of Ser. No. 935,197, Aug. 21, 1978, Pat. No. 4,158,007. This application Aug. 8, 1979, Ser. No. 64,963

Int. Cl.² C07D 209/86

U.S. Cl. 260-315

2 Claims

1. A compound of the formula



wherein R₁ is lower alkyl, R₂ is hydrogen, halogen, trifluoromethyl, hydroxy, lower alkyl, hydroxy-lower alkyl, lower alkylthio, amino, mono-lower alkylamino, or di-lower alkylamino; and R₃ is halogen, trifluoromethyl, lower alkyl, hydroxy-lower alkyl, lower alkoxy, lower alkylthio, hydroxy, amino, mono-lower alkylamino or di-lower alkylamino, or R₂, taken together with an adjacent R₃, is also lower alkylene-dioxy.

4,226,775

SUBSTITUTED THIO-SUBSTITUTED BENZYL-PROPIONYL-L-PROLINES

Francis J. McEvoy, Pearl River, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

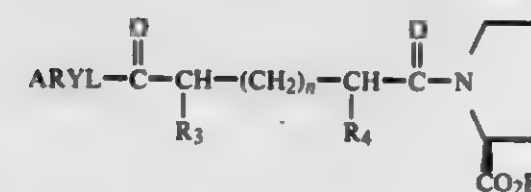
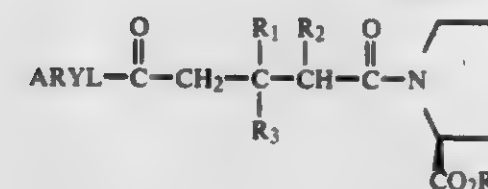
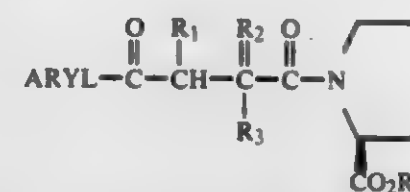
Continuation-in-part of Ser. No. 939,564, Sep. 5, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,733

Int. Cl.² C07D 207/16; A61K 31/40

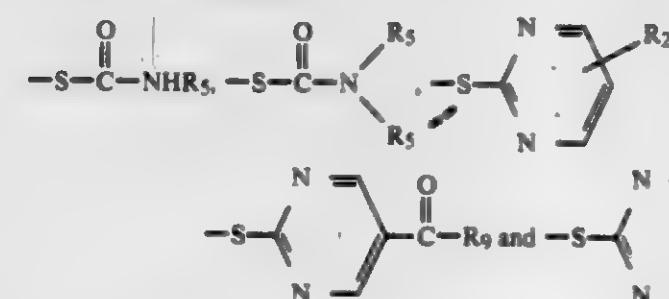
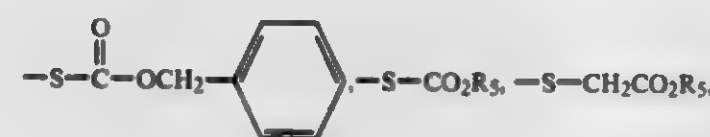
U.S. Cl. 260-326.33

26 Claims

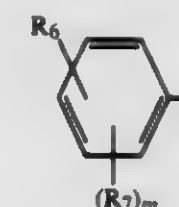
1. A compound selected from the group consisting of those of the formulae:



wherein n is zero or one; R₁ is hydrogen or alkyl having up to 3 carbon atoms; R₂ is hydrogen, phenyl or alkyl having up to 3 carbon atoms; R₃ is mercapto, formylthio, benzoylthio, alkanolthio having from 2 to 4 carbon atoms or moieties of the formulae:



wherein R₀ is phenyl; R₄ is hydrogen, phenyl or alkyl having up to 4 carbon atoms; R₅ is hydrogen or alkyl having up to 4 carbon atoms; and ARYL is selected from the group consisting of 1-naphthyl, 2-naphthyl, 4-chloro-1-naphthyl, 5,6,7,8-tetrahydro-1-naphthyl, 5,6,7,8-tetrahydro-2-naphthyl, 4-methoxy-1-naphthyl, 5-acenaphthyl, 4-biphenyl, 5-indanyl, 4-indanyl and moieties of the formula:



wherein R₆ is selected from the group consisting of hydrogen, fluoro, chloro, bromo, trifluoromethyl, cyano, amino, phenoxy, halophenoxy, phenylthio, halophenylthio, p-cyclohexylphenoxy, alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms, alkylamino having up to 4 carbon

atoms, alkanoylamino having from 2 to 4 carbon atoms and alkoxy carbonyl having from 2 to 4 carbon atoms, R₇ is selected from the group consisting of chloro, fluoro, bromo, alkyl having up to 4 carbon atoms and alkoxy having up to 4 carbon atoms, and m is zero, one or two; and the pharmacologically acceptable cationic salts thereof when R₅ is hydrogen.

4,226,776

PREPARATION OF ARYLENE-BIS-MALEIMIDES

Raymond D. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,277

Int. Cl.² C07D 403/10

U.S. Cl. 260-326.26

1 Claim

1. In the process for preparing arylene-bis-maleimides by (1) reacting an arylenediamine and maleic anhydride to form an intermediate compound followed by (2) treatment with acetic anhydride, the improvement comprising carrying out reaction (1) in the presence of acetic acid and trimethylamine or triethylamine and the acetic acid to acetic anhydride mole ratio does not exceed 1.3.

4,226,777

3-FLUORO-3-NITROOXETANE

Kurt Baum, Pasadena, and Philip T. Berkowitz, Santa Ana, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

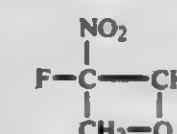
Continuation-in-part of Ser. No. 933,364, Aug. 14, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 59,920

Int. Cl.² C07D 305/08

U.S. Cl. 260-333

6 Claims

1. A compound having the structure:



4,226,778

PROCESS FOR THE MANUFACTURE OF ALKYLENE CARBONATES

Carlo Venturillo, Turin, and Rino D'Aloisio, Novara, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Apr. 12, 1979, Ser. No. 29,564

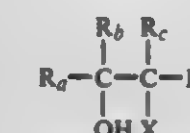
Claims priority, application Italy, Apr. 14, 1978, 22323 A/78

Int. Cl.² C07D 317/36, 317/38

U.S. Cl. 260-340.2

22 Claims

1. A process for the manufacture of alkylene carbonates, starting from a corresponding vicinal halohydrin of the formula:



wherein R₆, R_b, R_c, and R_d, which can be the same or different, are hydrogen or alkyl, aryl, alkylaryl or arylalkyl radicals and X is a halogen, comprising reacting said halohydrin, in the presence of carbon dioxide and of an organic diluent, with the bicarbonate of a quaternary -onium compound, where "-onium" means ammonium, phosphonium, arsonium, or stibonium.

4,226,779

PROCESS FOR ISOMERIZING
METHYL-DELTA-4-TETRAHYDROPHthalic
ANHYDRIDEMotoyuki Yamato, Kamakura, and Tadao Natsuume, Yokosuka,
both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo,
Japan

Filed Apr. 30, 1979, Ser. No. 34,502

Claims priority, application Japan, May 4, 1978, 53-52670;
Jun. 2, 1978, 53-66533Int. Cl.³ C07D 307/89

U.S. Cl. 260—346.3

5 Claims

1. A process for isomerizing methyl-delta-4-tetrahydrophthalic anhydride without double-bond shift, which comprises heat-treating it at a temperature of 60° to 300° C. for a period of 0.1 to 30 hours in the presence of at least one nitrogen-containing compound selected from the group consisting of (a) a quaternary ammonium compound and (b) a compound having a nitrogen atom bonded to the carbon atom of the carbonyl group.

4,226,780

MANUFACTURE OF PROPYLENE OXIDE

Gerd Fouquet, Ludwigshafen; Franz Merger, Frankenthal, and
Karl Baer, Weinheim, all of Fed. Rep. of Germany, assignors
to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of
Germany

Filed Feb. 21, 1978, Ser. No. 879,723

Claims priority, application Fed. Rep. of Germany, Mar. 4,
1977, 2709440Int. Cl.³ C07D 301/02

U.S. Cl. 260—348.16

5 Claims

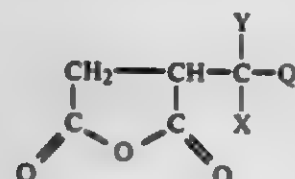
1. A process for the manufacture of propylene oxide which comprises heating 1,2-propylene glycol or a mixture containing at least 70% by weight of 1,2-propylene glycol and up to 30% by weight of one or more monoesters, with or without diesters, of 1,2-propylene glycol with low molecular weight carboxylic acids, in the gas phase at a temperature of from 300° to 500° C. under a pressure of from 0.01 to 1 bar over a catalyst which contains a weakly acidic carrier and an added basic alkali metal salt of a low-molecular weight carboxylic acid.

4,226,781

1,1,2,3-PROPANE TETRACARBOXYLIC ACID
COMPOUNDSEddie N. Gutierrez, Fort Lee, N.J., assignor to Lever Brothers
Company, New York, N.Y.Division of Ser. No. 848,549, Nov. 4, 1977, Pat. No. 4,146,543.
This application Dec. 18, 1978, Ser. No. 970,827Int. Cl.³ C07D 307/60

U.S. Cl. 260—346.74

5 Claims



wherein

- (A) X is COOR and R is methyl or ethyl;
(B) Y is COOR' and R' is methyl or ethyl; and
(C) Q is OH, H or CH₃.

4,226,782

PRODUCTION OF ALKYLENE OXIDES AND
CATALYSTS THEREOFPercy Hayden; Richard W. Clayton, both of Middlesbrough,
England, and Alan F. G. Cope, Cheltenham, Australia, assign-
ors to Imperial Chemical Industries Limited, London, England
Filed May 8, 1978, Ser. No. 903,403Claims priority, application United Kingdom, May 23, 1977,
21611/77Int. Cl.³ C07D 301/10; B01J 23/04, 23/50

U.S. Cl. 260—348.34

8 Claims

1. A catalyst for the production of an alkylene oxide by oxidation of the corresponding olefine with oxygen which comprises silver supported on a porous heat resisting support which has a specific surface area in the range 0.05 to 10 m²/g as measured by the Brunauer Emmett and Teller method, the catalyst also comprising more than 16 μgram equivalents of potassium per square meter of surface area of the catalyst, the said amount being also more than 1.5 × 10⁻⁵ gram equivalents per gram of catalyst, together with at least one other alkali metal selected from rubidium and cesium, the said potassium and rubidium and/or cesium being present in a form which is extractable by contact with water.

4,226,783

α-CHLORINATION PROCESS

Frank D. Marsh, Wilmington, Del., assignor to E. I. Du Pont de
Nemours and Company, Wilmington, Del.

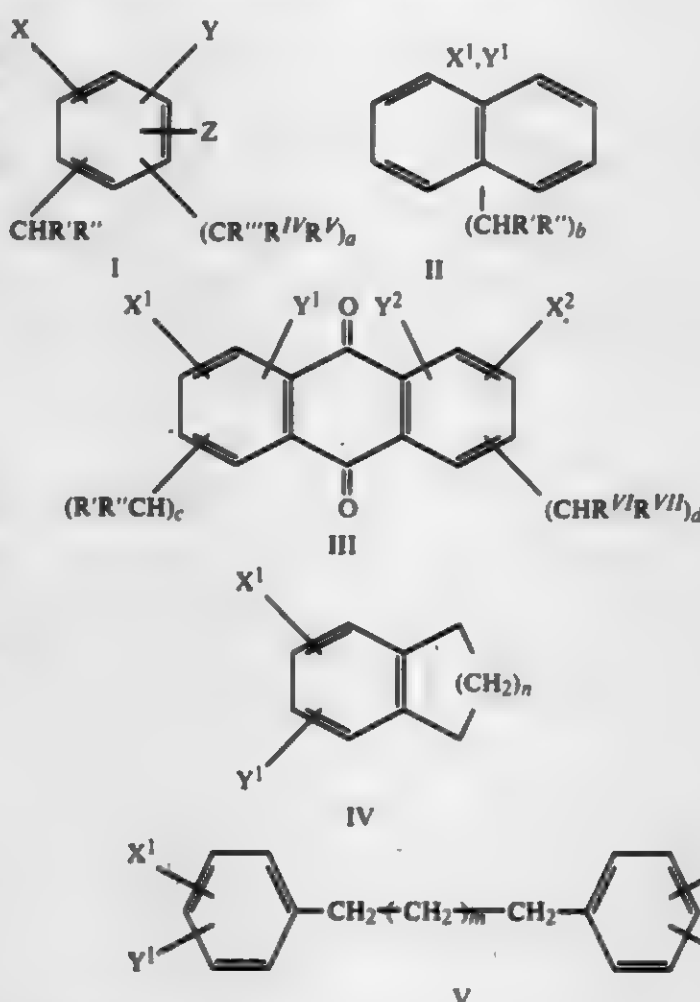
Filed Jul. 3, 1978, Ser. No. 921,382

Int. Cl.³ C07C 50/16, 21/24, 50/24; C07B 9/00

U.S. Cl. 260—351

9 Claims

1. A process for α-chlorination of a side chain of an aromatic compound which comprises contacting dichlorine monoxide with an aromatic compound of the formula



wherein for Formula I;

X is NO₂, CN, CF₃, Cl, Br, F,

4,226,784

2- AND 5-AMINOALKYLAMINO ANTHRAQUINONE
DYES USEFUL AS BASIC DYES IN COLORING HAIRGregoire Kalopissis, Paris, and Andrée Bugaut, Boulogne-sur-
Seine, both of France, assignors to L'Oreal, Paris, France
Continuation of Ser. No. 96,645, Dec. 9, 1970, abandoned, which
is a division of Ser. No. 607,898, Jan. 9, 1967, Pat. No.3,617,163. This application Feb. 25, 1977, Ser. No. 772,227
Claims priority, application Luxembourg, Jan. 10, 1966,
50233; Jun. 24, 1966, 51408; Dec. 9, 1966, 52555Int. Cl.³ A61K 7/13; C07C 97/24; C09B 1/28

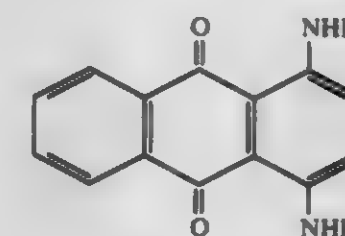
U.S. Cl. 260—378

3 Claims

1. A compound of the formula



wherein R and R' are hydrogen, n is a whole number between 2 and 6 inclusive and A is selected from the group consisting of (1) anthraquinonyl per se in which case the NR-(CH₂)_n-NHR' chain is in position 2 of said anthraquinonyl or (2) anthraquinonyl of the formula



wherein R₁ and R₂ are selected from the group consisting of hydrogen and lower alkyl and the NR-(CH₂)_n-NHR' chain occupies position 5 of said anthraquinonyl.

4,226,785

PROCESS FOR DEHYDROGENATION OF STEROLS TO
PRODUCE Δ⁴-3-KETOSTEROIDSDonald R. Nelan, Kingsport, Tenn., assignor to Eastman Kodak
Company, Rochester, N.Y.

Filed Oct. 4, 1979, Ser. No. 81,954

Int. Cl.³ C07J 71/00

U.S. Cl. 260—397.25

16 Claims

1. A process which comprises dehydrogenating a 3-β-hydroxy steroid or a mixture of soy sterols to form the corresponding Δ⁴-3-keto derivatives, the improvement which comprises dehydrogenating said steroid or mixture of sterols using either copper or palladium as the catalyst and in the presence of a dialkyl ketone solvent.

4,226,786

PROCESS FOR DEHYDROGENATION OF STEROLS TO
PRODUCE Δ⁴-3-KETOSTEROIDS (II)Charles H. Foster, and Donald R. Nelan, both of Kingsport,
Tenn., assignors to Eastman Kodak Company, Rochester,
N.Y.

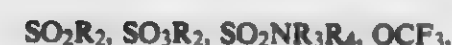
Filed Oct. 4, 1979, Ser. No. 81,957

Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.2

13 Claims

1. A process which comprises dehydrogenating a 3-β-hydroxy steroid or a mixture of soy sterols to form the corresponding Δ⁴-3-keto derivatives, the improvement which comprises dehydrogenating said steroid or mixture of soy sterols using a supported nickel catalyst in the presence of a dialkyl ketone and a 1-olefin.

or CCl₃;Y is H, NO₂, Cl, Br, F, CN, CF₃,OR₆ or aryl;

Z is H, Cl or Br;

and for Formulae II-V:

X¹ and X² are independently NO₂, CN, CF₃, Cl, Br, F,or CCl₃ or can be H for Formula III;Y¹ and Y² are independently H, NO₂, Cl, Br, CN or

wherein in Formula I to V,

R₁ is alkyl of 1-8 carbons, aryl, alkoxy of 1-4 carbons, OH
or NR₃R₄;R₂ is alkyl of 1-4 carbons;R₃ and R₄ are independently H or alkyl of 1-4 carbons;R₅ is alkyl of 1-8 carbons, trifluoromethyl, or aryl;R₆ is H or alkyl of 1-3 carbons; and furthermore,

R' and R'' are independently H, alkyl of 1-3 carbons, or are

joined to form a carbocyclic ring of 5 or 6 carbons; and for

R''', it can also be alkyl of 1-20 carbon atoms;

R''', R^{IV} and R^V are independently H or methyl;R^{VI} and R^{VII} are independently H, alkyl of 1-3 carbon or are

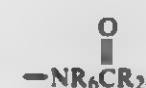
joined to form a carbocyclic ring of 5 or 6 carbons;

a is 0 or 1;

b, and c are independently 1 or 2;

n is 1 or 2; d is 0, 1, or 2; m is 0-6;

provided when X =



Y and Z both cannot be H provided when y=OR₆, Z cannot be H.

4,226,787

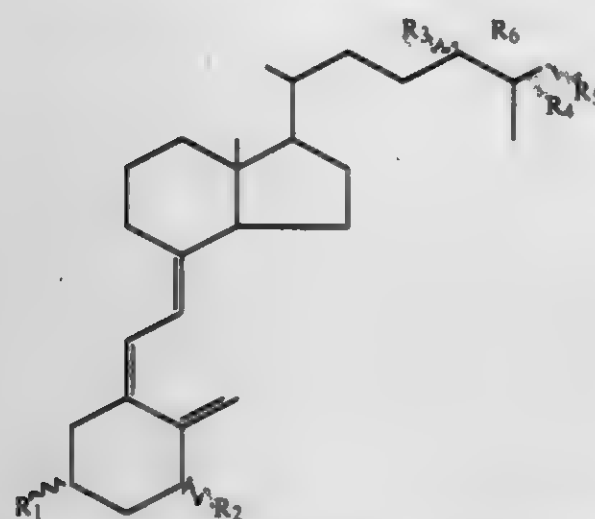
FLUOROVITAMIN D COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Hector F. DeLuca; Heinrich K. Schnoes; Joseph L. Napoli, Jr., and Bruce L. Onisko, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis. Division of Ser. No. 928,279, Jul. 26, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 64,212 Int. Cl.² C07J 9/00, 21/00

U.S. Cl. 260—397.2

4 Claims

1. Compounds having the formula



where R₁ is selected from the group consisting of hydrogen, hydroxy, O-acyl and O-lower-alkyl, and where R₂ is fluoro and where each of R₃, R₄, and R₅ is selected from the group consisting of hydrogen, hydroxy, O-lower-alkyl, O-acyl, lower-alkyl and fluoro, and R₆ is hydrogen or lower alkyl.

4,226,788

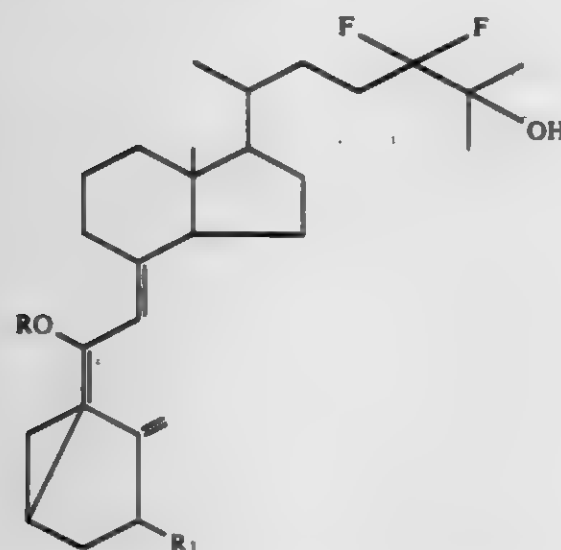
24,24-DIFLUORO-1α,25-DIHYDROXYCHOLECALCIFEROL

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, Wis.; Nobuo Ikekawa, Tokyo, Japan; Yoko Tanaka, Madison, Wis., and Yoshiro Kobayashi, Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis. Division of Ser. No. 24,848, Mar. 28, 1979, abandoned. This application Aug. 6, 1979, Ser. No. 64,254 Int. Cl.² C07J 9/00

U.S. Cl. 260—397.2

1 Claim

1. Compounds having the formula



where R is a hydrocarbon radical having from 1 to about 4 carbon atoms and R₁ is selected from the group consisting of hydrogen and hydroxyl.

4,226,789

REMOVAL OF NITROSAMINES FROM DENITROANILINES BY TREATMENT WITH HCL

Richard F. Eizember, Greenwood; Kathleen R. Vogler, Indianapolis, and William N. Cannon, Cumberland, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 878,834, Feb. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 816,558, Jul. 18, 1977, abandoned. This application Jul. 2, 1979, Ser. No. 54,345 Int. Cl.² C07C 85/26

U.S. Cl. 260—397.7 R

78 Claims

1. The process which comprises

- (1) contacting a nitrosamine-containing dinitroaniline selected from the group consisting of trifluralin, isopropalin, benefin, ethalfluralin, butralin, pendimethalin, fluchloralin, profluralin, dinitramine, 4-trifluoromethyl-2,6-dinitro-3-chloro-N,N-diethylaniline, 4-methyl-2,6-dinitro-N,N-bis(2-chloroethyl)aniline, oryzalin, and nitratin,
 - (a) in liquid phase
 - (b) with a reagent selected from the group consisting of 20–38% hydrochloric acid and gaseous HCl until the concentration of the nitrosamine has been reduced from about several thousand ppm or less; and
- (2) thereafter recovering the dinitroaniline.

4,226,790

PROCESS FOR OXIDIZING THALLIUM (I) TO THALLIUM (III)

Jerry A. Walker, Oshtemo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich. Continuation-in-part of Ser. No. 807,032, Jun. 16, 1977, Pat. No. 4,135,051. This application Aug. 14, 1978, Ser. No. 933,665 The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed. Int. Cl.² C07F 5/00

U.S. Cl. 260—429 R

9 Claims

1. A process for oxidizing monovalent thallium ions to trivalent ions which comprises reacting a monovalent thallium salt of an organic carboxylic acid having a pK_a above about 2 in a liquid medium with a perorganic acid having a pK_a above 2 in the presence of a reactive form of manganese said manganese being provided in a sufficiently soluble form and in an amount sufficient to promote the oxidation of monovalent thallium ions to the trivalent thallium valence state.

4,226,791

METHOD AND A REAGENT MIXTURE FOR REMOVING METAL IONS FROM AN AQUEOUS SOLUTION BY MEANS OF LIQUID-LIQUID EXTRACTION

Hans Reinhardt, Vm Frölunda, and Harald D. Ottertun, Mölndal, both of Sweden, assignors to Berol Kemi AB, Steungsund, Sweden

Continuation of Ser. No. 786,848, Apr. 12, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 964,959 Int. Cl.² C07F 1/08, 11/00, 15/02, 15/04

U.S. Cl. 260—429 R

11 Claims

1. A method of extracting metal ions from an aqueous solution by means of liquid-liquid extraction which comprises bringing an aqueous solution containing metal ions into contact with an organic liquid which is insoluble in water and which contains a reagent mixture including a water-insoluble diester of dithiophosphoric acid having the general formula

4,226,794

LOW-FOAMING ALKOXY-BIS(TRIALKOXYSILOXY)-SILANE SURFACTANTS

Michael Scardera, Hamden, and David F. Gavin, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn. Filed May 21, 1979, Ser. No. 40,629 Int. Cl.² C07F 7/04, 7/18

U.S. Cl. 556—443

14 Claims

1. A low-foaming surfactant composition having the formula:



wherein n is an integer of about 10 to about 75; R is selected from hydrogen, alkyl, alkenyl, aryl, and aralkyl; each R' is independently selected from the same group as R with the proviso that at least a majority of the R' groups on each Si atom are sterically hindered alkyl groups having at least 3 carbon atoms; and each R'' is independently selected from hydrogen and methyl.

4,226,795

PURGE GAS IN METHANOL SYNTHESIS

Edward B. Bowman, Beaumont, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 882,917, Mar. 2, 1978, abandoned. This application May 4, 1979, Ser. No. 36,242 Int. Cl.² C07C 31/06

U.S. Cl. 210—449.5

23 Claims

1. A process for the manufacture of methanol using a hydrogen-containing gaseous purge stream from a chemical manufacturing process comprising:

- (a) raising the pressure of a second hydrogen-containing gaseous stream at a lower pressure than the purge stream by combining the two streams and feeding the combined streams to a hydrogen-enrichment zone;
- (b) raising the hydrogen concentration in the combined stream in the hydrogen-enrichment zone by removing gaseous materials therefrom which are inert with respect to a methanol synthesis reaction;
- (c) adjusting the hydrogen to carbon oxide molar ratio of the hydrogen-enriched gas stream to a level within the range of about 2:1 to 12:1 by addition of a carbon oxide thereto;
- (d) feeding the carbon oxide-adjusted hydrogen-enriched gas stream to a methanol synthesis zone containing a methanol synthesis catalyst and forming a methanol-containing gaseous effluent, said zone maintained at a temperature below which any substantial methanation occurs and at a pressure no higher than the pressure of the purge stream; and
- (e) recovering methanol from the gaseous effluent.

4,226,796

SULPH(ON)ATION PROCESS

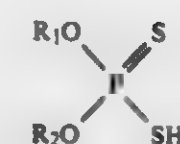
Brian J. Akred; Alan J. Lambie, and John Maden, all of Whitehaven, England, assignors to Albright & Wilson Limited, West Midlands, England

Continuation of Ser. No. 686,433, May 14, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,807 Int. Cl.² C07C 141/04, 143/24

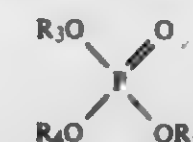
U.S. Cl. 260—459 R

19 Claims

1. A continuous cyclic process for sulph(on)ating a sulph(on)atable organic feedstock by reacting said feedstock with sulphur trioxide comprising forming a reactant liquid substantially free of inert diluent and comprising the organic feedstock and its sulph(on)ation derivative which has been recycled, passing said reactant liquid through a static mixer without any moving parts and also passing undiluted liquid or



wherein R₁ and R₂, independently of each other, represent a hydrophobic group, R₁ and R₂ being selected so that the dithiophosphoric acid is insoluble in water, as well as a water-insoluble phosphate having the general formula



wherein R₃ represents a hydrophobic group and R₄ and R₅, independently of each other, represent hydrogen or a hydrophobic group, R₃, R₄ and R₅ being selected so that the phosphate is insoluble in water, in a ratio by volume between the dithiophosphoric acid and the phosphate of from 1:99 to 9:1, whereupon the metal ions pass to the organic liquid from where said metal ions can be readily re-extracted and stripped therefrom.

4,226,792

LEAD CHELATE COMPLEX COMPOUNDS

Yuji A. Tajima, Teaneck, N.J., assignor to NL Industries, Inc., New York, N.Y.

Filed Mar. 5, 1964, Ser. No. 350,635 Int. Cl.² C07F 7/24

U.S. Cl. 260—435 A

18 Claims

1. Lead chelate complex compounds selected from the group consisting of lead 3-nitrosalicylaldehyde, lead 5-nitrosalicylaldehyde, lead 5-chlorosalicylaldehyde, lead 2,4-dihydroxybenzophenone, lead ortho-hydroxyacetophenone, lead 1,4-dihydroxyanthraquinone, lead 2,5-dihydroxybenzoquinone, lead bis-ortho-hydroxyphenacylphenone, lead phenylsalicylate, lead ethylsalicylate, lead disalicylamide, lead disalicylthylene diamide, lead salicylamide, lead bis-salicylaldehyde-o-phenylene diimine, lead salicylidene acetamide, lead bis-salicylaldehydeethylene diimine, and lead (o-carboxyphenyl) salicylaldehyde.

4,226,793

PROCESS FOR THE MANUFACTURE OF MONOMERIC AND OLIGOMERIC SILICIC ACID ESTERS

Hans-Joachim Kötzsch; Claus-Dietrich Seiler, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,464 Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744726 Int. Cl.² C07F 7/04

U.S. Cl. 556—470

13 Claims

1. In a process for the manufacture of an orthosilicic acid ester or an oligomer thereof wherein a tetrachlorosilane or a higher homolog thereof is contacted with a primary alcohol, in some instances with the addition of water, the improvement which comprises introducing the alcohol directly into a tetrachlorosilane or higher homolog thereof liquid phase without said alcohol touching the gas phase and, after completion of the reaction, removing any residual hydrogen chloride from the reaction zone.

gaseous sulphur trioxide through said static mixer to contact said reactant liquid and form a reaction mixture, said reactant liquid being in a condition of turbulent flow at the point of contact of the sulphur trioxide and said reactant liquid and thereafter in the zone of reaction of sulphur trioxide and said reactant liquid, removing a portion of the reaction mixture as sulph(on)ated product, the weight ratio of reaction mixture removed as said product to the remainder of the reaction mixture being in the range of about 1:40 to 1:2000, cooling said reaction mixture before and/or after removing said portion of the reaction mixture as said product, recycling said remainder of said reaction mixture and adding additional organic feedstock to said remainder of said reaction mixture to compensate for that removed as said product to form said reactant liquid, and maintaining the temperature of said reactant liquid and said reaction mixture throughout the process within a maximum temperature differential of 10° C. and maintaining said reactant liquid and reaction mixture in said cyclic process under no externally applied vacuum.

4,226,797

PREPARATION OF MONOALKYL SULFURIC ACIDS AND THEIR SALTS

Pieter M. Bakker; Cornelis E. Kind, and Volker G. Aurich, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 836,141, Nov. 28, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 939

Claims priority, application United Kingdom, Nov. 30, 1976, 49832/76

Int. Cl.³ C07C 139/08

U.S. Cl. 260—460

23 Claims

1. A process for preparing the salts of secondary monoalkyl sulphuric acids which comprises:

- sulphating, in a sulphation reaction zone, an olefin reactant comprising one or more C₈ to C₂₂ olefins by reacting at a temperature from -20° C. to 50° C. said olefin reactant with sulphuric acid, having an initial concentration between 75 and 100% by weight, in the presence of between 25 and 400% mole of one or more added C₈ to C₂₂ secondary alcohols, based on the moles of said olefin reactant, the amount of sulphuric acid added to the sulphation reaction zone being in the ratio of from 1.5 to 15 moles of sulphuric acid per mole of olefin plus alcohol added to said reaction zone,
- neutralizing the secondary monoalkyl sulphuric acids so formed to yield the salts thereof,
- recovering the C₈ to C₂₂ alcohols from the neutralization reaction product, and
- recycling the recovered alcohols to the sulphation reaction zone.

4,226,798

METHOD OF SELECTING OPERATION OF A FLUID-BED REACTOR AND APPARATUS FOR DOING SO

Joseph A. Cowfer, Medina; Dane E. Jablonski, Broadview Heights; Ronald M. Kovach, Avon Lake, and Angelo J. Magistro, Brecksville, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 6, 1978, Ser. No. 949,170

Int. Cl.³ C07C 120/14, 45/04, 17/15; G05D 24/00

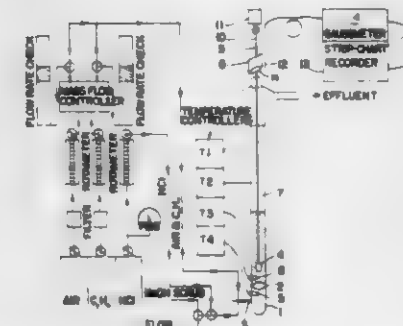
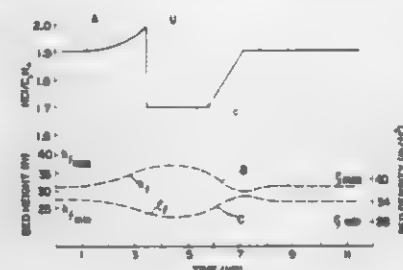
U.S. Cl. 260—465.3

20 Claims

1. In a process for the ammoxidation of a monoolefin having 3 or 4 carbon atoms, using a catalytic fluid-bed reactor in which ammonia, oxygen and said monoolefin are feed components, which reactor is provided with a pendulum viscometer with low rotational velocity which does not appreciably disturb the state of said fluid-bed in the immediate vicinity of said viscometer, and means to provide said pendulum with a pre-

lected initial angular displacement, a method for obtaining desired operation of said reactor comprising,

- charging said reactor with a supported catalyst on which is deposited at least one element selected from the group consisting of elements of Groups I, V, VI and VIII of the Periodic Table and compounds thereof, in the presence of which supported catalyst said ammoxidation occurs which increases stickiness of said catalyst as conversion of said feed components to desired products is improved,
- operating said reactor at an elevated temperature above about 100° C. but below a temperature deleterious to said catalyst,



- measuring a peak rate of damping of a predetermined torsional oscillation of said pendulum viscometer during operation of said fluid-bed at or near its inversion point,
- measuring a usual rate of damping of said predetermined torsional oscillation of said pendulum viscometer during usual, desired operating conditions,
- obtaining a quantitative difference between said usual rate and said peak rate of damping, and
- adjusting process conditions to operate said reactor while maintaining approximately said quantitative difference.

4,226,799

α-AMINOMETHYLENE-β-FORMYLAMINOPROPIONITRILE AND ITS MANUFACTURE

Wolfgang Bewert, Frankenthal, and Wolfgang Littmann, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,567

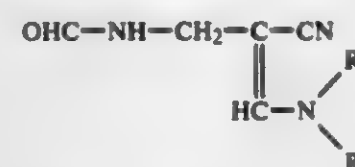
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748153; Apr. 26, 1978, 2818156

Int. Cl.³ C07C 87/452

U.S. Cl. 260—465 E

6 Claims

1. A compound of the formula



where the R groups, which may be the same or different, represent hydrogen, alkyl, aryl or aralkyl or together with the nitrogen form a morpholine or piperidine ring, the total number of carbon atoms of the two R groups being 1 to 20.

4,226,800

SYNTHESIS OF ACETYLENE-TERMINATED COMPOUNDS

Lewellyn G. Picklesimer, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

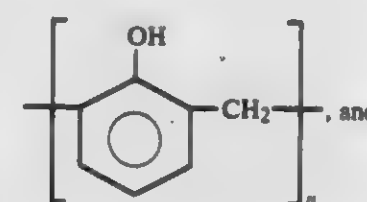
Filed Jun. 14, 1979, Ser. No. 48,322

Int. Cl.² C07C 43/20, 121/75, 147/06; C08F 138/00

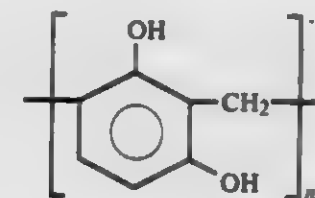
U.S. Cl. 260—465 F

13 Claims

13. A process for preparing a phenolic material containing propargyl groups which comprises reacting propargyl bromide with a phenolic material selected from the group consisting of resorcinol, hydroquinol, 2,3-dicyanohydroquinone, 4,4'-dihydroxydiphenylsulfone, 4,4'-isopropylidenediphenol, a phenol novolac resin having the following formula:



a resorcinol novolac resin having the following formula:



wherein n in each formula is an integer ranging from about 2 to 100, the reaction being conducted in an aqueous sodium hydroxide solution at a temperature ranging from about 70° C. to reflux temperature of the sodium hydroxide solution for a period of about 1 to 3 hours, the amount of propargyl bromide being about equivalent to the hydroxyl content of the phenolic material, and the mole ratio of sodium hydroxide to propargyl bromide being about 1:1.

4,226,801

TERMINATED BIS(3,4-DICYANOPHENOXY) ALKANES

Teddy M. Keller, Alexandria, Va., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

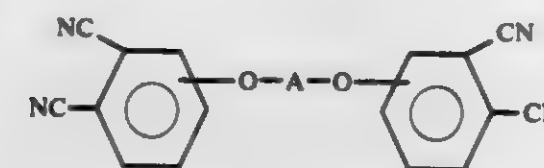
Filed Jun. 25, 1979, Ser. No. 51,568

Int. Cl.³ C07C 121/50

U.S. Cl. 260—465 F

8 Claims

1. A terminated dicyanophenoxy alkane of the general formula:



wherein A is an alkylene with a length from 2 to 30 carbon atoms provided that the α- and β-carbon atoms are not substituted and that no branching chain is more than five carbon atoms in length.

4,226,802

2-(4-TRIFLUOROMETHYLPHENYLAMINO)-3-METHYLBUTANOIC ACID ESTERS AND INTERMEDIATES THEREFOR

Richard J. Anderson, and Ted A. Baer, both of Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.

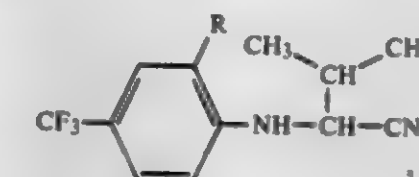
Filed Oct. 29, 1979, Ser. No. 89,003

Int. Cl.³ C07C 101/447, 103/28, 119/20, 121/78

U.S. Cl. 260—465 E

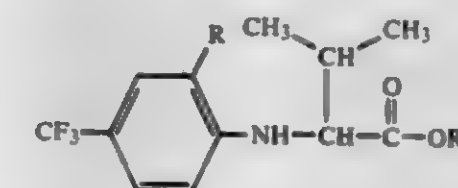
10 Claims

1. A compound of the following formula:



wherein R is hydrogen, bromo, chloro, fluoro or methyl.

5. A compound of the formula:



wherein R is hydrogen, bromo, chloro, fluoro or methyl and R¹ is lower alkyl or one to three carbon atoms.

4,226,803

PROCESS FOR PRODUCTION OF OPTICALLY ACTIVE BASES

Karl H. Klingler, Langen, and Horst Traube, Dreieich, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,067

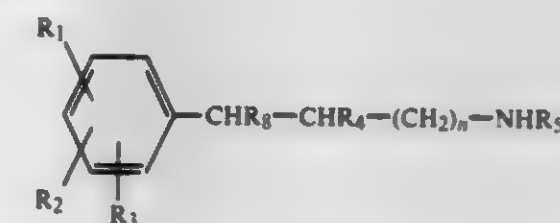
Claims priority, application United Kingdom, Dec. 16, 1977, 52421/77

Int. Cl.³ C07C 101/04; C07B 19/00; C07C 91/16, 87/28

U.S. Cl. 260—501.11

27 Claims

1. A process for preparing an optically active base from a racemic base



comprising reacting the racemic base in a solvent with an optically active half amide of an unsaturated aliphatic dicarboxylic acid of the formula



where R₁, R₂ and R₃ are hydrogen, halogen, a hydroxy group, a methyl group or a methoxy group or two of R₁, R₂ and R₃ together are a methylenedioxy group, R₄ is a methyl group, R₅, R₆ and R₇ are hydrogen or a C₁-C₄ alkyl group, R₈ is hydrogen or a hydroxy group and n is 0 or 1.

2. A process according to claim 1 also including the step of splitting an optically active homogeneous salt fraction into the corresponding optically active base and the added half amide.

4,226,804

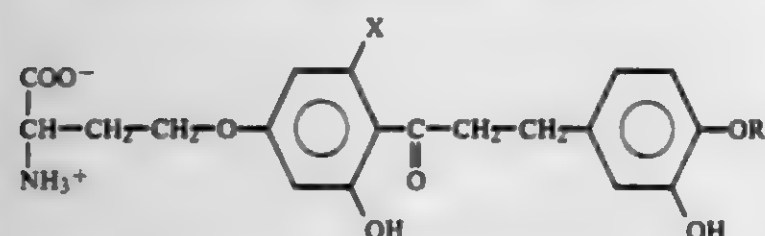
ALPHA AMINO ACID DIHYDROCHALCONES
Grant E. DuBois, Palo Alto; Rebecca A. G. Stephenson, Redwood City, and Guy A. Crosby, Palo Alto, all of Calif., assignors to Dynapol, Palo Alto, Calif.

Filed Mar. 9, 1979, Ser. No. 19,054
Int. Cl.² C07C 101/72; A23L 1/236

U.S. Cl. 260—501.11

13 Claims

1. The dihydrochalcone represented by the formula



wherein X is selected from between hydrogen and hydroxy and R is an alkyl of from one to four carbon atoms.

4,226,805

SULFONATION OF OILS

Oscar W. Bauer, Petrolia, Pa., assignor to Witco Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 602,616, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 400,457, Sep. 24, 1973, abandoned, which is a continuation of Ser. No. 102,946, Dec. 30, 1970, abandoned. This application Sep. 9, 1976, Ser. No. 711,903

Int. Cl.³ C07C 143/24

U.S. Cl. 260—505 R

10 Claims

1. In a method for sulfonating aromatic petroleum oil feedstock with sulfur trioxide, the improvement, successful in avoiding the tough, intractable sludge which otherwise forms when sulfonating said feedstock with SO₃ at atmospheric pressure, which consists essentially in (i) mixing at a temperature in the range of 110°–200° F. of an aromatic petroleum feedstock with a liquid sulfonic acid diluent, said diluent being present in the concentration of about 3% to about 50%, by weight, based upon the weight of the feedstock, (ii) vigorously stirring said mixture while gradually adding, over a period of about 10 minutes to about 3 hours, an amount of sulfur trioxide sufficient to sulfonate said aromatic petroleum oil feedstock at substantially atmospheric pressure, (iii) thereafter allowing the resulting product mixture of sulfonated feedstock oil and sludge to stand whereby said sludge settles out from the sulfonated oil, and (iv) separating said substantially sludge-free sulfonated oil from said sludge.

4,226,806

7-[(SULFOMETHYL)PHENYL]ACETAMIDOCEPHALOSPORIN DERIVATIVES

Fortuna Haviv, Wheeling, Ill., and Abraham Patchornik, Ness Ziona, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Division of Ser. No. 849,231, Nov. 7, 1977, Pat. No. 4,148,997. This application Jan. 8, 1979, Ser. No. 1,559

Int. Cl.² C07C 143/52, 143/525

U.S. Cl. 260—507 R

5 Claims

1. A compound of the formula



wherein Y is hydrogen, chlorine, bromine, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, or an alkoxy group of from 1 to 4 carbon atoms, Z is a bond, oxygen or sulfur, W is selected from hydrogen, methyl, amino, hy-

droxy, SO₃H, or COOR₄ wherein R₄ is selected from hydrogen or 5-indanyl with the proviso that when Z is oxygen or sulfur, W is other than hydroxy, or an acid halide thereof, with the proviso that when the compound is the acid halide, W is other than COOH.

4,226,807

PROCESS FOR MAKING ETHER SULFONATES

David R. McCoy, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 881,286, Feb. 27, 1978, abandoned. This application Jun. 7, 1979, Ser. No. 46,271

Int. Cl.² C07C 143/42, 143/02

U.S. Cl. 260—512 R

15 Claims

1. In a method of preparing ether sulfonates of the formula:



where R is a radical selected from the group consisting of C₂–C₂₂ alkyl, C₂–C₂₂ alkenyl, C₂–C₂₂ hydroxyalkyl, C₂–C₂₂ hydroxyalkenyl, alkaryl containing one or more C₁–C₁₈ alkyl groups substituted on said aryl group, aralkyl containing 7–28 carbon atoms, and polyether derivatives of any of the foregoing, R₂ is alkylene, and A is an alkali metal cation which comprises the step of reacting in liquid phase an alcohol, ROH where R has the just stated significance with an alkali metal hydroxy-containing alkyl sulfonic acid salt which is substantially all added in solid form to said alcohol prior to initiation of reaction and so reacted under a vacuum less than about 300 mm of mercury, while for at least the majority of said reaction period continuously dispersing an inert gas through said liquid reaction mass; the improvement which comprises adding a small amount of said ether sulfonate to the reaction mass prior to the initiation of said reaction.

4,226,808

1-ARYL-2-DIHALOGENODEUTERIOALKANOYLAMIDO-1,3-PROPANEDIOL ANTIBACTERIAL AGENTS

Tattanshalli L. Nagabhushan, Parsippany, N.J., assignor to Schering Corporation, Kenilworth, N.J.

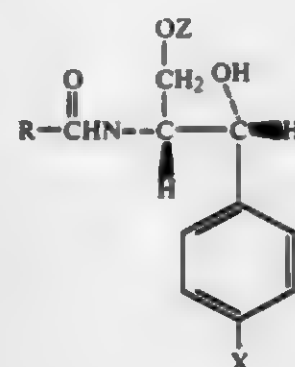
Filed Aug. 17, 1979, Ser. No. 67,267

Int. Cl.² C07C 103/127, 69/63; C11C 3/00; A61K 31/165

U.S. Cl. 260—562 B

10 Claims

1. A D-(threo)-1-aryl-2-acylamido-1,3-propanediol of the following formula:



wherein R is a member selected from the group consisting of dihalogenodeuteriomethyl and 1,2-dihalo-2-deuterioethyl;

X is a member selected from the group consisting of NO₂, SO₂R₁, SO₂SR₁, SONH₂, SO₂NH₂, SONHR₁, SO₂NHR₁, COR₁, CN, halogen, hydrogen, phenyl, and phenyl substituted by halogen, NO₂ or SO₂CH₃, wherein R₁ is a member selected from the group consisting of methyl, ethyl, n-propyl and isopropyl; and

Z is a member selected from the group consisting of hydrogen, an acyl radical of a hydrocarboncarboxylic acid having up to 16 carbon atoms, an acyl radical of a hy-

drocarbonylcarboxylic acid having up to 16 carbon atoms, and an acyl radical of an aminohydrocarboncarboxylic acid having up to 12 carbon atoms; and the pharmaceutically acceptable salts of said acyl radicals.

4,226,809

HYDROGENATION OF UNSATURATED DINITRILES USING CATALYST COMPRISING REACTION PRODUCTS OF NICKEL COMPOUND AND OF A PALLADIUM COMPOUND EACH WITH AN ALKALI METAL BOROHYDRIDE

Tod K. Shioyama, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 7, 1979, Ser. No. 64,470

Int. Cl.² C07C 85/12

U.S. Cl. 260—583 P

20 Claims

1. A process for the catalytic hydrogenation of a branched, unsaturated aliphatic dinitrile which comprises subjecting the same under hydrogenation conditions to the presence of a catalytic material comprising a reaction product of an alkali metal borohydride with a palladium compound which is reducible by hydrogenation to the elemental form and a reaction product of an alkali metal borohydride with a nickel compound which is reducible by hydrogen to the elemental form.

4,226,810

SPLITTING UP PYRAN RINGS

Vincenzo Redaelli, Mariano Comense; Renato De Simone, Como, and Edoardo Platone, San Donato Milanese, all of Italy, assignors to Anic, S.p.A., Palermo, Italy

Filed Nov. 28, 1978, Ser. No. 964,137

Claims priority, application Italy, Jan. 3, 1978, 19008 A/78

Int. Cl.³ C07C 45/56

U.S. Cl. 568—386

8 Claims

1. A process for splitting up the ring 2,6,6-trimethyl-5,6-dihydro-4H-pyran comprising the step of heating same in the presence of a water and a halogen catalyst.

4,226,811

PREPARATION OF SUBSTITUTED FLUOROBENZENES
Heinz-Guenter Oeser, Ludwigshafen; Karl-Heinz Koenig, Frankenthal, and Dietrich Mangold, Neckargemuend, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,596

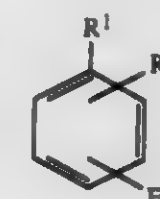
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803259

Int. Cl.³ C07C 79/12

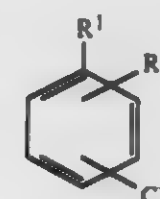
U.S. Cl. 568—937

3 Claims

1. A process for the preparation of a substituted fluorobenzene of the formula



where R¹ is nitro or cyano and R² is hydrogen, an aliphatic radical or halogen, by reacting a substituted-chlorobenzene of the formula



where R¹ and R² have the above meanings, with potassium

fluoride in the presence of a crown ether and in the presence of an N,N-disubstituted carboxylic acid amide, nitrobenzene, nitrile, aliphatic sulfone and/or aliphatic sulfoxide as solvent, said reaction being carried out at from 150° to 230° C.

4,226,812

PROCESS FOR PRODUCING CHLOROTRIFLUOROETHYLENE

Wim J. M. Pieters, Morristown; William E. Gates, Andover, and Franz Wenger, Mountainside, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 25, 1977, Ser. No. 854,919

Int. Cl.³ C07C 21/18, 19/045, 21/06; B01J 27/00

U.S. Cl. 570—157

11 Claims

1. In a process for converting 1,1,2-trichloro-1,2,2-trifluoroethane to chlorotrifluoroethylene, the improvement which comprises passing said trichlorotrifluoroethane in a mixture of oxygen, hydrogen chloride and ethylene in the vapor phase over a catalyst consisting essentially of a mixture of copper chloride and an alkali metal chloride salt occluded in a molecular sieve, having an average pore size diameter in the range of about 5 to 11 angstroms, at a temperature in the range of about 350° C. to 525° C., for a contact time of about 0.1 to 30 seconds.

4,226,813

3,9-BROMOPHENOXY-2,4,8,10-TETRAOXA-3,9-DIPHOSPHASPIRO(5.5)UNDECANE-3,9-DIOXIDES

James A. Albright, Hampton, N.J., and Chester J. Kmiec, Williamsville, N.Y., assignors to Velsicol Chemical Corporation, Chicago, Ill.

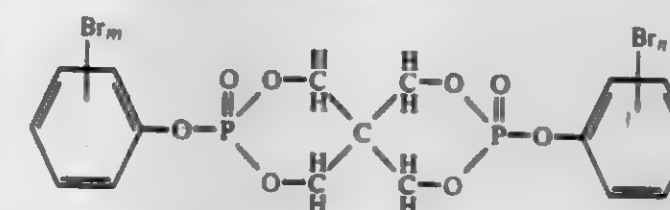
Continuation-in-part of Ser. No. 685,754, May 13, 1976, abandoned. This application Apr. 27, 1979, Ser. No. 33,601

Int. Cl.² C07F 9/21; C08K 5/52

U.S. Cl. 260—927 R

2 Claims

1. A compound of the formula



wherein m and n are integers independently selected from the group consisting of 1, 2, 3, 4, and m and n plus n equal 6.

4,226,814

CARBURETOR

John Dirda, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 5, 1979, Ser. No. 17,516

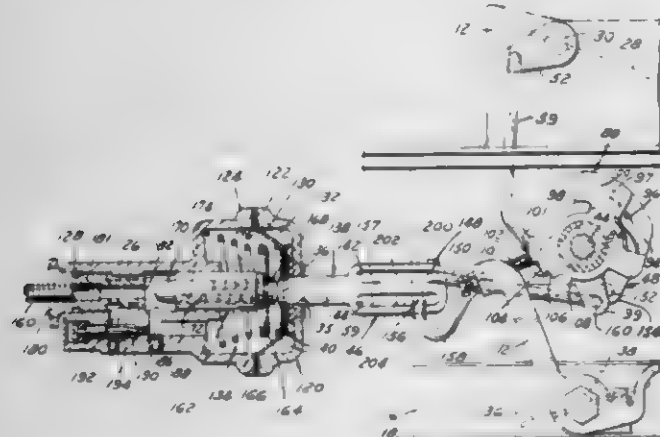
Int. Cl.³ F02M 1/10

U.S. Cl. 261—39 B

9 Claims

1. A carburetor having a choke valve rotatable between closed and open positions, a rotatable choke pulldown lever connected to the choke valve for rotating the same, a throttle valve biased towards a closed position and rotatable between closed and open positions, a throttle lever operably fixed for rotation with the throttle valve and having a stop screw thereon, a rotatable fast idle cam having first and second circumferentially contiguous radial face type steps thereon of lessening radial extent adapted in first and second rotative positions of the cam, respectively, to project into the path of movement of the stop screw in a throttle valve closing direction to stop the throttle valve rotation in a different open position as a function of the step engaged by the stop screw, a first link connected to the pulldown lever for moving the pulldown lever to open the choke valve, a second link con-

nected to the cam for rotating the cam to disengage the first cam step from the stop screw and engage the second cam step with the stop screw, a vacuum controlled servo, and control means connecting both the first and second links to the servo for controlled actuation of the pulldown lever and movement of the cam, the control means including an actuating rod reciprocable in opposite directions, the rod having a first elongated slot slidably receiving one end of the first link therein in a lost motion type manner, the rod having a second elongated slot slidably receiving therein one end of the second link in a lost motion type manner, the first link end abutting an end of the first slot when the choke valve is in a closed position, the second link end being spaced from the ends of the second slot



when the choke valve is closed whereby actuation of the rod in one direction first moves the first link to open the choke valve and subsequently moves the second link to rotate the cam, the servo including a housing, a movable fluid pressure actuated diaphragm in the housing with the housing defining a vacuum chamber and an ambient air vent chamber, means connecting the diaphragm to the rod for movement thereof, spring means biasing the diaphragm and rod in a choke valve closing direction, conduit means connecting a source of engine vacuum to the vacuum chamber, and means to control the movement of the diaphragm to provide a dual stage movement of the rod including vacuum metering means to control the flow of vacuum to act on the diaphragm.

4,226,815 COOLING APPARATUS

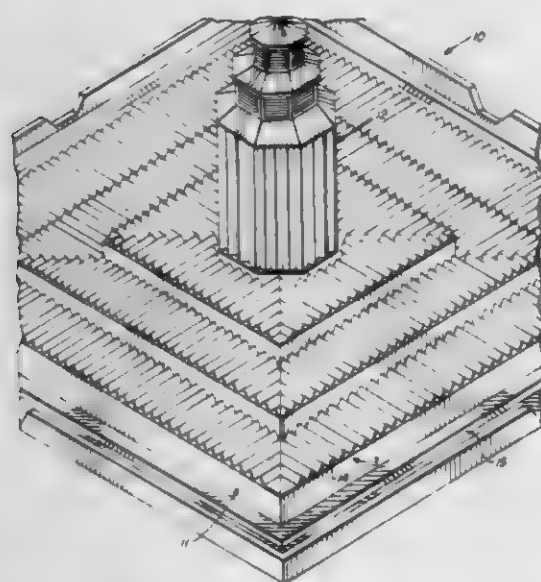
Haggle I. Cockman, P.O. Box 1600, Sanford, Fla. 32771

Filed Nov. 19, 1979, Ser. No. 95,352

Int. Cl.³ B01F 3/04

U.S. Cl. 261-110

17 Claims



1. A liquid cooling apparatus comprising in combination: a multi-level terraced structure forming a plurality of flow paths over each level thereof for the flow of a liquid from

one level to the next lower level of each level of said terraced structure;
a central tower mounted on the top level of said terraced structure;
liquid input means connected to a source of liquid and leading into said central tower;
at least one liquid spray head mounted in said central tower to said liquid input means for spraying liquid being fed from said liquid input means into said central tower; and
air feed means for feeding air under pressure into said central tower beneath said sprayed liquid being dispersed from said liquid spray head whereby liquid entering said central tower through said liquid input means is cooled and aerated.

4,226,816 METHOD OF MANUFACTURING A CLUTCH FACING OF THE TYPE USED FOR AUTOMOTIVE AUTOMATIC TRANSMISSIONS

Yasunobu Yamamoto, Chiryu; Mitsumasa Matsuo, and Atsushi Nakagawa, both of Toyota, all of Japan, assignors to Aisin Chemical Company, Limited, Aichi, Japan

Filed Jul. 6, 1978, Ser. No. 922,296

Claims priority, application Japan, Jul. 16, 1977, 52-085351; Dec. 19, 1977, 52-152750

Int. Cl.² D01F 9/16

U.S. Cl. 264-29.4

36 Claims

1. A method of manufacturing a paper based frictional material, comprising: forming a paper material of a desired size from a mixture comprising at least wood pulp; soaking said paper material in a binder agent, and then drying the soaked material; and heating said dried paper product at 120°-500° C. for 0.5-20 hours to carbonize a portion of said wood pulp under conditions in which oxygen is substantially eliminated from contact with said paper material by removing air over said product by reducing the atmospheric pressure, by covering a material with a liquid or by maintaining said material under inert atmosphere, so that a material is obtained whose frictional characteristics are such that the material is useful as a clutch facing in automatic transmissions.

4,226,817 PURGING FOR SPINNING HYDRATED ACRYLIC POLYMER MELT

Edwin J. Siegman, Pensacola, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 21, 1979, Ser. No. 12,977

Int. Cl.² B28B 7/04

U.S. Cl. 264-39

5 Claims

1. In the process of melt-spinning acrylonitrile polymer fiber which comprises furnishing a composition of acrylonitrile polymer and water in solid form to a compacting zone, converting said polymer and water composition to a homogeneous single-phase fusion melt while in said compacting zone, and extruding the resulting fusion melt through a spinnerette assembly, the improvement which comprises adding a purge composition prior to or subsequent to said furnishing of said polymer-water composition, said purge composition comprising from about 65 to 85 weight percent of an acrylonitrile copolymer, from about 15 to 35 weight percent of ethylene carbonate, and from 0 to about 5 weight percent of water, said purge being in solid state at a temperature below about 40° C. and atmospheric pressure and having a melt viscosity which is about equal to or greater than that of the fusion melt to be purged or extruded at the melting temperature of said fusion melt, the quantity of purge composition employed being sufficient to fill the processing areas of said compacting zone and said spinnerette assembly.

4,226,818 PRODUCTION OF POLYVINYL BUTYRAL SHEET ROLLS

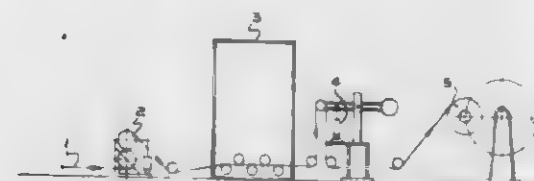
Van Pelt Brower, Wilbraham; Robert A. Esposito, Granby, and Thomas E. Soar, Holyoke, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 8, 1979, Ser. No. 47,519

Int. Cl.² B29C 25/00

U.S. Cl. 264-40.1

7 Claims



6. A process for the production of a roll of polyvinyl butyral interlayer sheet adapted for use in laminated glazing units which comprises seasoning a polyvinyl butyral sheet for at least ten days at from 50° to 70° C., then forwarding the seasoned sheet at a constant tension in the range of from 50 to 120 grams per linear centimeter through a tension-sensing device and thereafter winding the sheet on a core rotated at a speed that is responsive to the tension-sensing device such that the sheet is wound at the same constant tension and at a temperature of from 7° to 12° C. and stored at that temperature until used.

4,226,819 METHOD OF PRODUCING KERAMZIT

Rafik B. Oganessian, Daev pereulok, 31, kv. 15, Moscow, U.S.S.R.

Continuation of Ser. No. 727,012, Sep. 27, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,986

Int. Cl.² C04B 33/04

U.S. Cl. 264-43

4 Claims

1. A method of producing Keramzit having a bulk density of 100-830 Kg/m³ from clay granules formed and dried at temperatures in the range of 100° to 150° C. and then treated at a temperature in the range of 200°-500° C. which comprises subjecting said granules to a two-stage calcination procedure comprising:

- (a) in the first stage rapidly heating said granules from said treating temperatures to a specific first calcination temperature within the range of 800°-1150° C.;
- (b) isothermally maintaining said granules at said first stage calcination temperature for from 0.5 to 10 minutes, the time and temperature of said first stage of calcination being such as to remove gaseous products from the upper layers of said granules and to form in said granule an outer oxidized zone the thickness of which depends on the duration of said heating;
- (c) rapidly heating said granules in the second calcination stage to a specific second calcination temperature which is above said first calcination temperature and within the range of 1150°-1250° C.;
- (d) isothermally maintaining said granules at said second stage calcination temperature for from 1 to 5 minutes, wherein said oxidized zone is converted to a clinker-like high strength crust and said nucleus swells; and then
- (e) cooling the resultant product.

4,226,820 METHOD OF AND APPARATUS FOR FORMING AN ARTICLE FROM A MIXTURE OF A SOLIDIFYING PLASTIC MATERIAL AND A LARGE PORTION OF FILLER MATERIAL

Georg Björhaag, Amal, Sweden, assignor to Svensk Hårdbetong-teknik AB, Bromma, Sweden

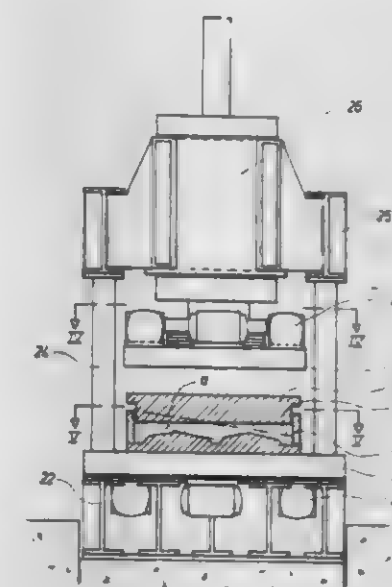
Continuation-in-part of Ser. No. 493,125, Jul. 30, 1974, abandoned. This application Jul. 14, 1978, Ser. No. 924,672

Claims priority, application Sweden, Jul. 30, 1973, 7310463

Int. Cl.³ B29G 1/00; B29J 5/04

U.S. Cl. 264-72

20 Claims



1. A method of forming an article of complicated shape from a mixture of a solidifying plastic compound and a relatively large portion of filling material, comprising introducing the mixture to a predetermined level into a mould, adapted to the shape of one side of the article, through an opening from which the cavity of the mould is directly accessible, inserting a ram adapted to the shape of the other side of the article into said opening, placing said mould in an apparatus including power means provided to press the ram into the mould and vibrating means provided to subject the mould and the ram to vibrations, in which method the pressing and vibrating is made in the following cycle:

- subjecting the ram to a force of a first pressure level by means of said power means for pressing the ram into the mould;
- subjecting the mould to at least two sets of frequency-synchronous, mutually phase-offset vibrations, each set being produced by at least one vibrator, including a first set of vibrations having a first component aligned with the direction of pressure applied to the ram relative to the mould and a second component in a first direction transverse to said direction of pressure, and a second set of vibrations having a first component aligned with said direction of pressure and a second component in a second direction transverse to said direction of pressure and also crosswise to the direction of said second component of said first set of vibrations;
- while said mould is thus subjected to vibrations, subjecting the ram to at least two sets of frequency-synchronous phase-offset vibrations, each set being produced by at least one vibrator, and each having a first component aligned in the said direction of pressure and a second component in a direction transverse to said direction of pressure, said sets of vibrations and the components thereof to which the ram is subjected being opposite in direction and equal in frequency, and hence opposite in phase, respectively to said sets of vibrations and the components thereof to which the mould is subjected;
- maintaining the pressure of said first level of force and said vibrations until the resulting shifting of particles has distributed said mixture in said mould cavity in a mass adapted to the complicated shape of the article, and

subjecting the ram to a force of a second and increased pressure level while continuing said vibrations, so that the mixture becomes compressed in its distributed form.

14. A method of forming an article of complicated shape from a mixture of solidifying plastic compound and a relatively large portion of filling material, comprising introducing the mixture to a predetermined level into a mould, adapted to the shape of one side of the article, through an opening from which the cavity of the mould is directly accessible, inserting a ram adapted to the shape of the other side of the article into said opening, placing said mould in an apparatus including power means provided to press down the ram into the mould and vibrating means provided the mould and the ram to vibrations, in which method the pressing and vibrating is made in the following cycle:

- subjecting the ram to a force of a first pressure level by said power means for pressing the ram into the mould;
- subjecting the mould to at least two sets of vibrations each produced by at least one eccentric-mass rotary vibrator of which the axis is perpendicular to the direction of pressure applied to the ram relative to the mould, the vibrator axis of rotation for a first one of said sets of vibrations being oriented substantially at right angles to the vibrator axis of rotation for a second of said sets of vibrations,
- while said mould is thus subjected to vibrations, subjecting the ram to at least two sets of vibrations, including a third and a fourth set, each produced by at least one eccentric-mass rotary vibrator, the axes of rotation of said vibrators for said ram being parallel to the respective axes of rotation of said vibrators for said mould;
- maintaining the pressure of said first level of force and said vibrations until the resulting shifting of particles has distributed said mixture in said mould cavity in a mass adapted to the complicated shape of the article, and
- subjecting the ram to a force of a second and increased pressure level while continuing said vibrations, so that the mixture becomes compressed in its distributed form.

4,226,821

PROCESS FOR PRODUCING FLEXIBLE GRAPHITE

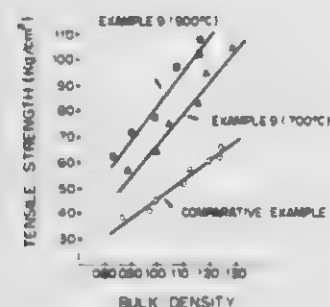
Toshikatsu Ishikawa, Tokyo; Kazuhisa Kawazumi, Yokohama; Hiroshi Yamazoe, Yokohama, and Isao Sugiura, Yokohama, all of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,804

Claims priority, application Japan, Dec. 28, 1977, 52/160547
Int. Cl.³ B32B 3/26; C04B 41/28

U.S. Cl. 264—134

10 Claims



1. A process for producing flexible graphite comprising incorporating particulate expanded graphite having a c direction expansion at least 10 times as great as that of the original c direction dimension with 5-40% by weight, based on the graphite, of a member selected from the group consisting of colloidal silicas containing 10-30% by weight of SiO₂ and organo-silicon high molecular weight compounds having carbon and silicon as the skeletal components to form a mixture, drying the mixture so formed, pressure molding the dried mixture to an extent that the mixture so molded has a predetermined bulk density and then heat treating the molded mixture at 500°-2000° C. thereby to produce the flexible graphite.

4,226,822

BIAXIALLY STRETCHED FIVE-LAYER FILM AND METHOD FOR MANUFACTURE THEREOF

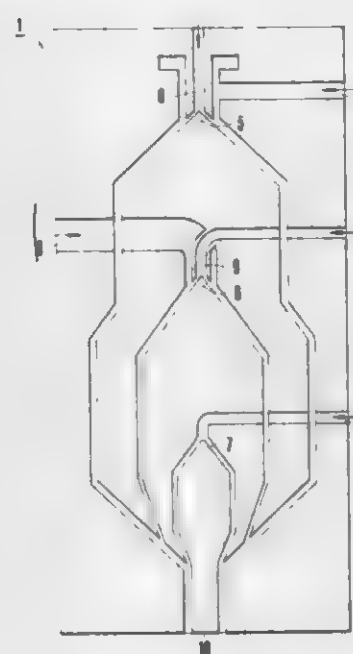
Shinsuke Yoshikawa; Nobuyuki Hisazumi, and Masataka Yamamoto, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 862,135, Dec. 19, 1977, Pat. No. 4,161,562.
This application Sep. 20, 1978, Ser. No. 944,167

Claims priority, application Japan, Dec. 29, 1976, 51/159068
Int. Cl.² B32B 31/30

U.S. Cl. 264—173

8 Claims



1. A method for the manufacture of a biaxially stretched five-layer laminate resin film which comprises use of a three-layer tubular molding die provided with three resin flow paths respectively for an outermost resin layer, an intermediate resin layer and an innermost resin layer, each of said three resin flow paths being provided with a torpedo which serves in modifying a solid resin flow into a tubular flow, characterized in that,
 - (a) two resin-feed ducts are installed respectively into the path for the outermost resin layer and in the path for the intermediate resin layer so as to have each of the end portions of the installed resin-feed ducts inserted into each of said paths for the outermost and the intermediate resin layers with each of said paths and extended short of direct contact with each of said torpedoes;
 - (b) an olefine polymer resin selected from the group consisting of an ionomer, a homopolymer and a copolymer of an olefine and a mixture of said homopolymer and said copolymer of an olefine is fed from outside of said die in a melt state and is extruded through said resin flow path for said outermost resin layer; a copolymer of vinylidene chloride is fed from outside of said die in a melt state and is extruded through said resin flow path for said intermediate resin layer; an ionomer is fed from outside of said die in a melt state and is extruded through said resin flow path for said innermost resin layer and, at the same time, a copolymer of ethylene having a crystal-melting point of 5° to 30° C. lower than that of said ionomer is fed from outside of said die and is extruded through both of said feed ducts, thereby producing a five-layered laminate resin tube at the outlet of said die;
 - (c) the resultant five-layered laminate resin tube is rapidly cooled by quenching so as to cause said copolymer of vinylidene chloride in said laminate tube to assume an amorphous state; and
 - (d) the thus quenched laminate resin tube is biaxially stretched at a temperature lower than the crystal-melting point of said olefine polymer resin in said outermost resin layer and that of said ionomer in said innermost resin layer and at least 4° C. higher than that of said copolymer of ethylene, thereby yielding a biaxially stretched five-layered laminate resin film having a first resin layer of 7 to

25μ, a second resin layer of 0.2 to 3μ, a third resin layer of 5 to 15μ, a fourth resin layer of 0.2 to 3μ and a fifth resin layer of 20 to 50μ in thickness, the ratio of thickness of said first resin layer to that of said fifth resin layer being in the range of from 0.4 to 0.6 and the total thickness of said five-layered laminate resin film being in the range of from 35 to 90μ.

4,226,823

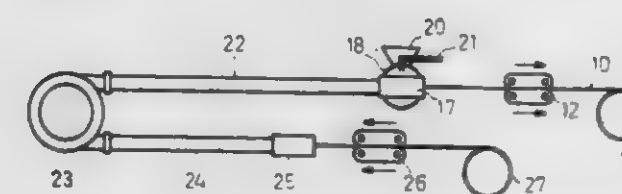
METHOD OF APPLYING A STRIPPABLE OUTER SEMICONDUCTIVE LAYER ON AN INSULATED CABLE CONDUCTOR

Gunnar Jansson, Älvjätt, and Gustaf Linderöth, Bromma, both of Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden
Continuation of Ser. No. 803,643, Jun. 6, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,512

Claims priority, application Sweden, Jun. 10, 1976, 7606528
Int. Cl.³ B29F 3/10

U.S. Cl. 264—174

11 Claims



1. In a method of applying a strippable semiconductive layer to a cable conductor which has an insulation therearound of thermoplastic or crosslinked polyethylene by extruding thereon a polymer material comprising a copolymer of ethylene and vinyl acetate, carbon black and an organic peroxide in an extrusion machine, the improvement wherein said organic peroxide is uniformly mixed with a mixture of said copolymer and said carbon black to form said polymer material after said mixture of said copolymer and said carbon black have been supplied to said extrusion machine, and heating said polymer material after the polymer material has been extruded into said insulated cable conductor so as to cause cross-linking.

4,226,824

PROCESS FOR SPINNING MODACRYLIC FIBER HAVING HIGH RETRACTION AND REDUCED INFLAMMABILITY

Giorgio Cazzaro, Saronno; Domenico Malgeri, Magenta; Giancarlo Matera, Monza, and Antonino Cavallaro, Cesano Maderno, all of Italy, assignors to Societa Nazionale Industria Applicazioni Viscosa S.p.A., Italy

Filed May 9, 1978, Ser. No. 905,032

Claims priority, application Italy, May 13, 1977, 23504 A/77
Int. Cl.³ D01F 6/18

U.S. Cl. 264—182

13 Claims

1. Process for the manufacture of modacrylic fibers having a retraction of above 35%, reduced inflammability and high glossiness, comprising the steps of:

- (a) preparing a viscous spinning dope constituted by a solution, in an organic spinning solvent miscible with water, of a mixture of copolymers deriving from acrylonitrile, vinylidene chloride, at least a vinyl ester and at least an unsaturated monomer containing at least a sulphonic group, wherein the units deriving from acrylonitrile are present in an amount from 50% to 85% by weight and those derived from the vinyl ester in an amount from 3% to 6% by weight; spinning said dope in a coagulating bath constituted by a mixture of water and spinning solvent;
- (b) drawing the coagulated fiber at a draw ratio from 2 to 4 in a liquid selected from the group consisting of water and mixtures of water and spinning solvent at a temperature of from 80° to 100°;
- (c) subsequently drying the fiber by means of hot air at temperatures from 100° and 130° C. while leaving it free

concurrently to contract to a degree of about 25% to 30%; and

(d) subsequently subjecting the fiber to a further hot drawing in air at a draw ratio from 1.5 to 3.5 at a temperature from 50° to 100° C.

4,226,825

FILM EMBOSSED PROCESS

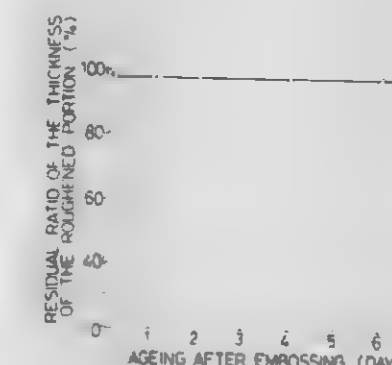
Kikuo Yamagis; Hiroshi Okuyama, and Hideo Kawaguchi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 21, 1978, Ser. No. 972,174

Claims priority, application Japan, Dec. 26, 1977, 52/156907
Int. Cl.² B29C 17/00, 25/00

U.S. Cl. 264—235

4 Claims



1. A film embossing process for roughening a lateral edge of a thermo-plastic film by mechanical deformation, to produce embossed film, comprising the steps of: subjecting the lateral edge of said thermo-plastic film to an embossing process at a temperature in the range of T_g to T_g+60° C., where T_g is the glass transition temperature to produce an intermediate film and, heat treating said intermediate film for a period of time in the range of from 30 to 600 seconds at a temperature exceeding the temperature of the film embossing step by approximately 10° C. to 30° C., wherein said process alleviates wavy pleating in said embossed film.

4,226,826

METHOD FOR MANUFACTURING POLYESTER FILMS

Masahiko Motegi, Hikone; Kazuhiro Tanaka, and Saburo Fujita, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 7, 1979, Ser. No. 64,375

Claims priority, application Japan, Aug. 7, 1978, 53-95415
Int. Cl.³ B29C 17/02, 25/00

U.S. Cl. 264—235.8

8 Claims

1. In a process for preparing a polyester film having an F-5 value in the TD which is above 14 kg/mm², the steps which comprise heat-setting a biaxially oriented polyester film obtained by stretching the film at a ratio of more than 2.0 in both the MD and TD, at a temperature above the T_m, TD-, and re-MD stretching temperature but below T_m (the melting point of the polyester) - 10° C., then restretching the film at a ratio of 1.05-2.5 in MD and then at a ratio of 1.05-2.5 in TD at a temperature between T_g (glass transition temperature of the polyester) + 10° C. and T_m - 40° C., and heat-setting the film at a temperature between T_g + 50° C. and T_m - 10° C.

4,226,827

METHOD FOR PREPARING PIEZOELECTRIC CERAMICS

Masamitsu Nishida, Osaka; Syunichiro Kawashima, Nishinomiya; Ichiro Ueda, Osaka, and Hiromu Ouchi, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

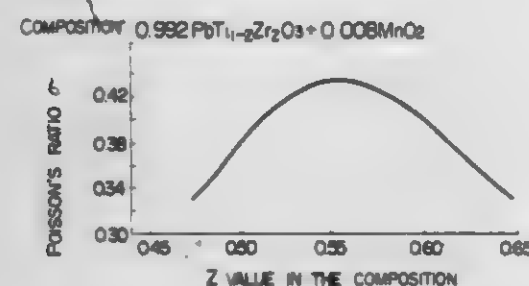
Filed Aug. 20, 1979, Ser. No. 67,681

Claims priority, application Japan, Aug. 23, 1978, 53-103023; Aug. 23, 1978, 53-103024

Int. Cl.² C04B 35/36

U.S. Cl. 264—332

4 Claims



1. Process for preparing a piezoelectric ceramic body which comprises hot-press sintering a composition expressed by the formula:



wherein z and w satisfy respectively the formulae: $0.48 \leq z \leq 0.64$ and $0.004 \leq w \leq 0.06$, at a temperature of 1050° to 1300° C. under a pressure of 100 to 500 kg/cm² for 0.5 to 24 hours.

4,226,828

PROCESS FOR PRODUCING A RETICULATED WEB NET

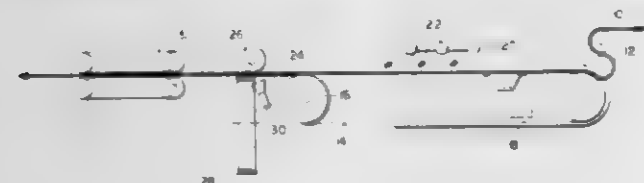
John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 20, 1978, Ser. No. 971,594

Int. Cl.² B29C 17/10; B29D 7/02; B29C 17/04

U.S. Cl. 264—555

3 Claims



1. A process for forming a reticulated web net comprising: providing a film of thermoplastic polymeric material; heating said film to a temperature suitable for thermoforming; then placing said film in contact with a perforated surface; then subjecting said film to a pressure differential to force portions of the film into the perforations of said perforated surface thus forming pips; then cooling said film to harden the film; then stripping the film from the perforated surface; then skiving off the pips substantially parallel to the surface of said film; and then biaxially stretching and orienting said film into a reticulated web net.

4,226,829

RENEWABLE VAPORIZER FOR AIR TREATMENT AND THE LIKE

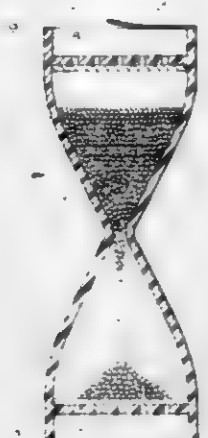
Andrew Mike, 141 Deauville Ct., Fort Mitchell, Ky. 41017

Filed Oct. 4, 1978, Ser. No. 948,548

Int. Cl.² A01M 1/20; A61L 9/01, 9/12

U.S. Cl. 422—123

14 Claims



1. A renewable vaporizer for producing air treating vapors comprising a container having at least one opening therein, a supply of fluid-like carrier material carrying a vapor producing treating agent contained within said container; and a porous membrane covering said opening, said fluid-like material being in contact with said membrane to transfer a part of said treating agent thereto when said container is positioned in a first orientation, said membrane operating to bring a part at least of said transferred treating agent into contact with the outer surface of said membrane for producing air treating vapors.

4,226,830

FLUIDIZED BED REACTOR

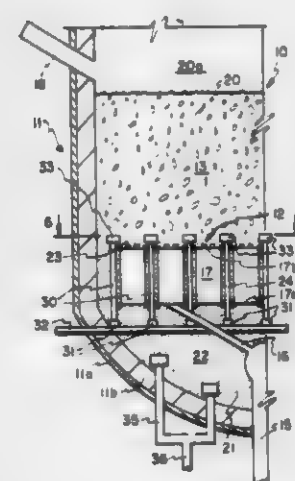
William L. Davis, Bakersfield, Calif., assignor to Hicap Engineering & Development Corporation, Salt Lake City, Utah

Filed Aug. 28, 1978, Ser. No. 937,512

Int. Cl.² B01J 8/18, 8/32, 8/44

U.S. Cl. 422—143

16 Claims



1. A fluidized bed reactor comprising, a cylindrical reactor shell; means for passing feed solids into the reactor shell and for withdrawing product solids therefrom; a windbox structure that consists of a plurality of spaced apart independent sections arranged in the same horizontal plane, and each section includes an upper surface spaced apart from and above a bottom plate for arrangement in said cylindrical reactor shell, said bottom plate spaced from the bottom of said reactor shell thereby forming a reactor chamber above said upper surface and a plenum volume below said bottom plate;

means for supporting said windbox structures within said cylindrical shell; a plurality of plenum pipe means open therethrough for passing of unfluidized feed solids from said reactor chamber into said plenum volume, said plenum pipe means secured at an outer surface thereof to both the upper surface and bottom plate of said windbox structures; tuyere array means connected to said windbox structure for passing fluidizing gas therethrough to said reactor chamber through to said reactor chamber and into a bed of feed solids therein; conduit means connected to each said windbox structure for supplying fluidizing gas thereto; and exhaust means connecting into said cylindrical reactor shell for exhausting gas passed from said fluidized bed.

4,226,831

APPARATUS FOR REMOVAL OF SULFUR FROM GAS

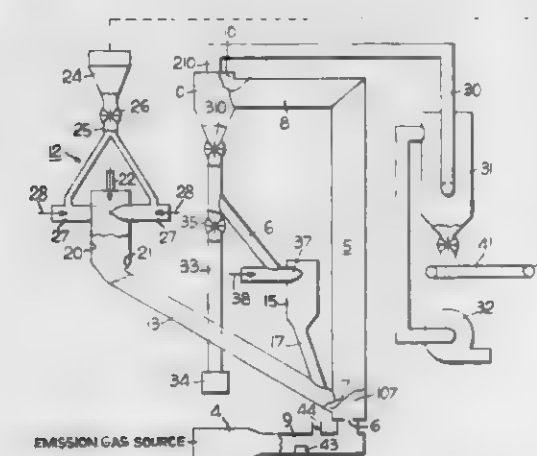
Louis R. Dilworth, Greendale, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 16, 1979, Ser. No. 21,026

Int. Cl.² F01N 3/10, 3/15; B01J 8/08

U.S. Cl. 422—173

7 Claims



1. Apparatus for removing pollutant gases such as sulfur dioxide from emission gas to be released into the atmosphere, said apparatus comprising:

- A mixing vessel (5) having
 - an outlet (8),
 - an inlet zone (107) spaced from said outlet (8), and
 - inlet means (6, 7) communicating with the inlet zone (107) for admitting emission gas and pollutant adsorbing particulate medium into the inlet zone (107), with said inlet means being arranged to produce turbulent flow of the emission gas and the medium in the vessel (5);
- pollutant containing emission gas delivery means (9) connected to the inlet means (at 6) for supplying emission gas to the inlet zone (107) of vessel (5);
- pollutant adsorbing particulate medium feed means (25, 12, 13) connected to the inlet means (at 7) for supplying fresh pollutant adsorbing particulate medium to the inlet zone (107) of vessel (5);
- a gas cleaner (10) for separating particulate medium from emission gas, and having
 - an inlet (110) connected with the outlet (8) of the mixing vessel (5),
 - a gas outlet (210), and
 - a particulate medium outlet (310);
- suction means (32) connected to the gas outlet (210) of the gas cleaner (10) for drawing emission gas and medium from the inlet zone (107) through the vessel (5) and the vessel outlet (8) into the gas cleaner (10);
- recirculation means (16, 17) connecting the particulate medium outlet (310) of the gas cleaner (10) to the inlet zone (107) of the mixing vessel (5) to thereby define a particulate medium recirculating loop structure (16, 17, 5, 8, 10, 16);
- particulate medium discharge means (33, 34, 35) con-

4,226,832

DEVICES FOR FERMENTATION OF ORGANIC REFUSE AND SLURRIES

Didier Roumens, 3 Bd.St-Germain, Paris, France (75005)

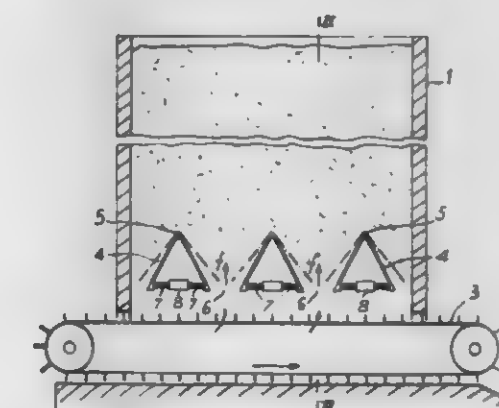
Filed Sep. 8, 1977, Ser. No. 831,633

Claims priority, application France, Sep. 17, 1976, 76 27970

Int. Cl.² B01J 19/18, 4/00; C05F 3/06

U.S. Cl. 422—184

13 Claims



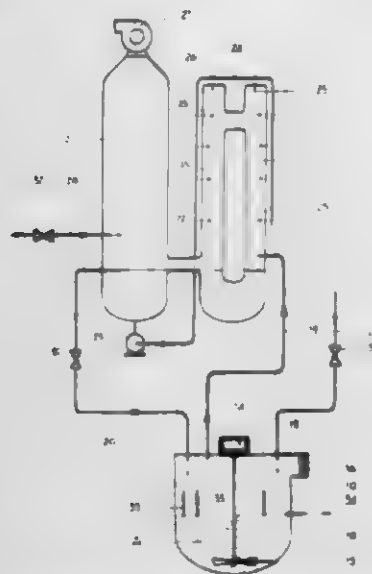
1. A silo for producing compost from organic material subjected to aerobic fermentation comprising
a container having closed sides, an opening in the top through which the organic material is introduced and gas produced by the fermentation process escapes, and an opening in the bottom through which the compost exits, means for supplying gas into the lower portion of the container to traverse upwardly in the container through substantially all of the material being fermented to aid in the fermentation, the interior of the container from the top to a lower portion thereof which is adjacent the bottom being unobstructed so that the organic material will fall of its own weight from the container top to said lower portion as the fermentation process takes place, the gas supplied into the container and gases produced during fermentation moving upwardly through the material being fermented from said lower portion to the opening at the top and exit therefrom while said material is simultaneously moving downward in the opposite direction, and means at said lower portion of said container for controlling both the rate at which the material moves downwardly in and exits from the container and the volume of the gas supplied to the material in the container, said controlling means comprising a plurality of elements, means for mounting said elements rotatably about generally parallel horizontal axes, the amount of rotation of said elements determining the spacing therebetween and the rate at which the moves downwardly in and exits from the container.

4,226,833

APPARATUS FOR OBTAINING BIAMMONIUM PHOSPHATE

Anacleto C. Mainardi, Bologna Veneta, Italy, assignor to Kappa Fertilizzanti S.p.A., Via Quari Destra, Italy
 Filed Mar. 31, 1978, Ser. No. 892,150
 Claims priority, application Italy, Apr. 6, 1977, 48864 A/77
 Int. Cl.² B01J 1/00; C01B 25/26
 U.S. Cl. 422-189

4 Claims



1. Apparatus for obtaining biammonium phosphate, comprising: a first tower operating as an effective tank of phosphoric acid, said first tower being connected to a phosphoric acid source and receiving therefrom the acid for biammonium phosphate production, said first tower having a bottom for collecting said acid; a saturator open to the atmosphere for free entry of air thereto, said saturator being provided with mechanically operated agitating means; a second tower operating as a washing tower provided with spraying means adapted to produce a rain of liquid therein; a first pipe connecting said first tower to said saturator, said first pipe receiving from said first tower an overflow of phosphoric acid from said first tower bottom; a second pipe provided with a pump, said second pipe connecting the bottom of said first tower to said spraying means of said second tower, in order to produce a rain of phosphoric acid therein; a third pipe connecting an upper portion of said saturator to an upper portion of said second tower; a fourth pipe with larger cross section than said first, second and third pipes connecting a lower portion of said first tower to a lower portion of said second tower; a fifth pipe connecting said saturator to a tank feeding ammoniacal solution to said saturator; an overflow pipe for exit from the saturator of biammonium phosphate solution produced within the saturator; and mechanical means adapted to produce a strong air draft from the atmosphere into said saturator and thence into said second tower via said third pipe and thence to said first tower via said fourth pipe and from said first tower into the atmosphere.

4,226,834

LATERAL PULLING GROWTH OF CRYSTAL RIBBONS AND APPARATUS THEREFOR

Taro Shudo, Tokyo; Bosshi Kudo, Nagareyama, and Yasushi Tamai, Noda, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha and Japan Silicon Co., Ltd., both of Tokyo, Japan
 Division of Ser. No. 739,632, Nov. 8, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 864,745
 Claims priority, application Japan, Nov. 14, 1975, 50-136841
 Int. Cl.² B01J 17/18

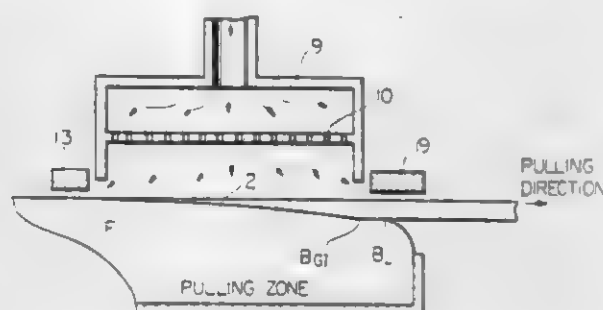
U.S. Cl. 422-249

3 Claims

1. Apparatus for growing a thin single crystal ribbon at high speed by continuously substantially laterally pulling a crystal ribbon of a substance from a melt surface of said substance, a crystal growing interface being formed between said pulled

crystal ribbon and the surface of the melt in contact therewith, comprising:

means for containing said substance;
 means for heating and melting said substance and producing said melt surface on the upper surface of said substance;
 gas cooling means provided with at least one nozzle for blowing a gaseous cooling medium over at least a portion of the upper surface of the melt and over the upper surface of at least a portion of the crystal ribbon above said interface, and defining a crystal growing domain on the surface of the melt in contact with said interface, said cooling means controlling the temperature of the melt surrounding said crystal growing domain to above the melting



point thereof so that crystal growth occurs on the surface of said crystal ribbon at said interface, said cooling means being provided above said crystal growing domain and in the vicinity thereof;

said cooling means being movable in a horizontal direction back and forth substantially in the pulling direction of said crystal ribbon to change the geometry in the horizontal direction of said crystal growing domain during pulling of said crystal ribbon, said cooling means being movable in a direction opposite to the crystal ribbon pulling direction to change a short crystal growing interface to a longer crystal growing interface during pulling of said crystal ribbon.

4,226,835

FLUIDIZED-BED SEAL

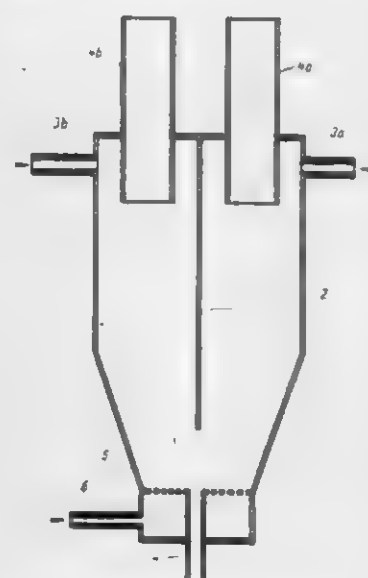
Jaroslav Beranek, Prague; Dobromil Pihert, and Oleg Engel, both of Kladno, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia
 Filed Jul. 12, 1979, Ser. No. 56,846

Claims priority, application Czechoslovakia, Jul. 20, 1978, 4866-78

Int. Cl.² B01J 8/44; F26B 25/00, 17/10; B65G 65/00

U.S. Cl. 422-310

4 Claims



1. A fluidized-bed seal comprising: a vertical vessel divided into two parts by a vertical baffle, said vessel being closed at the upper end and having a fluidization grid situated at the

4,226,838

PROCESS FOR ACCELERATING THE DIGESTION AND SEDIMENTATION STEPS ON THE BAYER ALUMINA PROCESS

József Boros, Ajka; Zsolt Csillag, Budapest; Tibor Ferenczi, Tatabánya; Tibor Kálmán, Budapest; László Lengyel; József Mátyási, both of Almasfüzítő; Ferenc Orbán; Károly Solymár, both of Budapest; Béla Tóth, Ajka; Lajos Toth; István Vörös, both of Budapest; Kálmán Wentzely, Almasfüzítő; János Zámbo, Budapest, and József Zöldi, Tatabánya, all of Hungary, assignors to Almasfüzítő Timföldgyár, Almasfüzítő, Hungary

Continuation-in-part of Ser. No. 834,273, Sep. 19, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 5,996
 Claims priority, application Hungary, Dec. 7, 1976, AU 368
 Int. Cl.² C01F 7/06

U.S. Cl. 423-121

7 Claims

1. An improved process for accelerating the digestion procedure of bauxite containing diasporite or goethite processed according to the Bayer technology at a temperature of from 180°-300° C. with the aid of an aluminate liquor having a sodium oxide concentration of from 80-300 g/liter for increasing the alumina yield, for converting goethite into hematite and for recrystallizing the resulting finely dispersed hematite wherein the improvement comprises carrying out the digestion with the addition of a hydrogarnet catalyst having a composition of



in an amount corresponding to 5-20% by weight calculated on the dried weight of the bauxite where A is Ca²⁺, Mg²⁺, Mn²⁺ or Fe²⁺ and B is Al³⁺, Fe³⁺ or Cr³⁺ or Al³⁺+yFe³⁺, in which y is 0.05 to 0.5, and x is from 0 to 3.

4,226,836

METHOD FOR SEPARATING MOLYBDENUM VALUES FROM SEA NODULES

Harry Zeitlin, Honolulu, HI., and Quintus Fernando, Tucson, Ariz., assignors to University Patents, Inc., Norwalk, Conn.
 Filed Jan. 3, 1979, Ser. No. 675

Int. Cl.² C01G 3/10, 45/10, 39/00, 51/10

U.S. Cl. 423-41

8 Claims

1. A process for recovery of molybdenum values from ferromanganese sea nodule ores which comprises the steps of:

- sulfating the nodule ore with sulfur dioxide in the presence of oxygen;
- volatilizing the molybdenum values from the sulfated ore; and
- condensing the volatilized molybdenum values from step (b) and collecting said molybdenum values in their thus condensed form.

4,226,837

PROCESS FOR CONVERTING SILICON DIOXIDE CONTAINING WASTE FLUE DUST TO CRYSTALLINE ZEOLITIC MOLECULAR SIEVES OF TYPE Y WITH A FAUJASITE STRUCTURE

Karl Achenbach, Frankfurt, and Günter Türk, Hanau, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 8, 1977, Ser. No. 849,612
 Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651446

Int. Cl.² C01B 33/28

U.S. Cl. 423-118

23 Claims

1. A process for the preparation of crystalline zeolite molecular sieves of Type Y from waste flue dust containing silicon dioxide obtained from the production of silicon metal or a silicon alloy or is a mixture of flue dusts from the production of silicon metal and silicon alloy comprising (1) dissolving the flue dust in alkali metal hydroxide solution with the formation of alkali metal silicate solution having the mole ratio SiO₂:Me₂O in the range of 4.0:1 to 5.0:1 at a temperature of 60°-110° C.; (2) purifying the thus obtained alkali metal silicate solution from organic constituents by treatment with activated carbon or an oxidizing agent or a mixture of activated carbon and oxidizing agent and separating the non-decomposable residue from the solution; and, (3) reacting alkali metal aluminate solution present at room temperature with the purified alkali metal silicate solution with a mole ratio SiO₂:Me₂O of 4.0:1 to 5.0:1 obtained by steps (1) and (2) and subsequently crystallizing the reaction mixture (SiO₂:Al₂O₃=4-7:1, Me₂O:SiO₂=0.4-0.7, H₂O:Me₂O=30-50:1) at a temperature of 75°-100° C. with stirring for a period of 8-48 hours, subsequently filtering to remove the product from the mother liquor, washing and drying to recover a zeolite molecular sieve of Type Y with a Faujasite structure having a degree of whiteness according to BERGER at 460μ in the range of 90-95%.

4,226,839

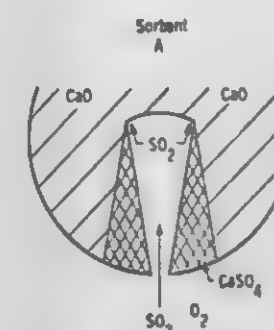
ACTIVATION OF CALCIUM OXIDE AS A SORBENT

Eoin P. O'Neill, Mount Merrion, Ireland, and Dale L. Kearns, Pittsburgh, Pa., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Continuation-in-part of Ser. No. 553,199, Feb. 26, 1975, abandoned. This application Jul. 21, 1978, Ser. No. 926,925
 Int. Cl.² C01F 11/06

U.S. Cl. 423-177

10 Claims



1. A method for producing calcium oxide of increased sorbent capacity with respect to sulfur dioxide which comprises: heating stones of particle size 400-1000 microns containing calcium carbonate, at about 900° C. for a time sufficient to effect decomposition of the CaCO₃ to CaO, in a calcination delaying atmosphere containing carbon dioxide where the partial pressure of the carbon dioxide is greater than 40 percent and up to 85 percent the equilibrium partial pressure of carbon dioxide over calcium carbonate at the reaction temperature, to cause a back pressure of CO₂ sufficient to convert initially formed fine pores of CaO to coalesce into larger pores.

6. A method of producing calcium oxide of increased sorbent capacity with respect to sulfur dioxide from stones of

400-2000 microns particle size containing calcium carbonate and magnesium carbonate, which comprises:

- a. heating said stones at 700° up to 900° C. in an atmosphere in which the partial pressure of carbon dioxide is greater than the equilibrium partial pressure of CO₂ over CaCO₃ at the reaction temperature to calcine the magnesium fraction of the stones; and,
- b. additionally heating said stones in an atmosphere containing an amount sufficient of carbon dioxide to delay calcination and for a time sufficient to cause sufficient CO₂ back pressure to produce large mouthed pores, at a temperature greater than that in step (a) in the range 900°-950° C. for a time sufficient to effect decomposition of the CaCO₃ to CaO, the CO₂ partial pressure being greater than 40% but not exceeding 85% of the equilibrium partial pressure of CO₂ over CaCO₃ at the reaction temperature.

4,226,840

PROCESS FOR THE POLYMERIZATION OF CYCLIC POLYHALOPHOSPHAZENES USING A CATALYST COMPOSITION OF BORON TRIHALIDE AND OXYGENATED PHOSPHORUS COMPOUNDS

John W. Fieldhouse, Mogadore, and Daniel F. Graves, Clinton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

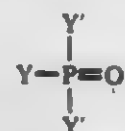
Filed Sep. 19, 1979, Ser. No. 77,245

Int. Cl.³ C01B 25/10

U.S. Cl. 423-300

11 Claims

1. A method of preparing a substantially gel free linear polydihalophosphazene polymer represented by the formula (NPX₂)_n in which X is a halogen selected from the group consisting of F, Cl and Br and n is from 20 to 50,000; said method comprising polymerizing a cyclohalophosphazene represented by the formula (NPX₂)₃ in which X is as defined above at a temperature of from 180° to 270° C. in the presence of a catalytically effective amount of a catalyst which comprises the reaction product of a boron compound of the formula BX₃ in which X is F, Cl or Br with an oxygenated phosphorus compound of the formula



wherein Y and Y' may be the same or different and are selected from the group consisting of F, Cl, Br, R—, RO— and RS—, wherein R is an aryl or substituted aryl group with the proviso that not more than two of the groups represented by Y and Y' may be R— groups.

4,226,841

METHOD OF PRODUCING SILICON CARBIDE POWDER

Katsutoshi Komeya, Yokohama; Hiroshi Inoue, Kawaguchi; Haruo Kudo, Kamakura, and Hiroshi Endo, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 7, 1979, Ser. No. 18,264

Claims priority, application Japan, Mar. 10, 1978, 53/26597

Int. Cl.³ C01B 31/36

U.S. Cl. 423-345

5 Claims

1. A method of producing a silicon carbide powder, comprising, forming a powdery mixture consisting of 1 part by weight of silica powder or a compound forming silica powder at the baking temperature employed, 0.5 to 4 parts by weight of carbon powder or a compound forming carbon powder at said baking temperature, and 0.05 to 1 part by weight of silicon carbide powder, the amounts of the silica powder-forming compound, and the carbon powder-forming compound being such that the amounts of the formed silica and carbon powders are equal to those specified above and baking said mixture at

1350° C. to 1850° C. under a non-oxidizing atmosphere selected from the group consisting of carbon monoxide, argon and hydrogen to produce a silicon carbide powder consisting of fine particles of uniform size and shape.

3. A method of producing a silicon carbide powder, comprising forming a powdery mixture consisting of 1 part by weight of silica powder or a compound forming silica powder at the baking temperature employed, 0.5 to 4 parts by weight of carbon powder or a compound forming carbon powder at said baking temperature, and 0.05 to 1 part by weight of silicon carbide powder, the amounts of the silica powder-forming compound, and the carbon powder-forming compound being such that the amounts of the formed silica and carbon powders are equal to those specified above and baking said mixture at a temperature exceeding 1,550° C. under a non-oxidizing atmosphere selected from the group consisting of nitrogen and ammonia to produce a silicon carbide powder consisting of fine particles of uniform size and shape.

4,226,842

PREPARATION OF CRYSTALLINE CRYOLITE

Friedrich Lunzer, Ottensheim, and Werner Kepplinger, Linz, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Austria

Filed Jul. 11, 1979, Ser. No. 56,496

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831095

Int. Cl.³ C01F 7/50

U.S. Cl. 423-465

3 Claims

1. In a process for the preparation of crystalline cryolite having a molar ratio Na:Al of 2.9:1 to 3.0:1 and a maximum adsorbed water content of 8% by weight, by reacting an aqueous solution of aluminum fluoride with at least a stoichiometric amount of an aqueous solution of sodium fluoride whilst heating and stirring in the presence of cryolite seed crystals, separating off the product which has crystallized out and calcining it, the improvement which comprises using the sodium fluoride in an amount of 3.2 to 3.5 moles of sodium per mole of aluminum, the aluminum fluoride concentration being 15 to 250 g./l., the concentration of the sodium fluoride solution is 30 to 42 g./l. and mixing the two solutions with one another at a temperature within the range of 85° to 100° C. in the course of 0.5 to 3 hours, the pH value of the reaction mixture being maintained at from 5 to 8.

4,226,843

PROCESS AND APPARATUS FOR PRODUCTION OF SPHERICAL GRAIN FERRITE POWDER

Yasuo Watanabe; Seizi Isoyama, both of Okayama, and Yoshikazu Yamamichi, Tokyo, all of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 823,345, Sep. 10, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,605

Int. Cl.³ C01G 49/00

U.S. Cl. 423-594

17 Claims

1. A process for the production of spherical grain ferrite powder which comprises the steps of: suspending impalpable powder of (1) pre-formed ferrite powder or (2) ferrite-forming material, in methyl alcohol to form a suspension consisting of said impalpable powder in said alcohol, said ferrite-forming material being selected from the group consisting of the oxides, hydroxides and carbonates of (i) iron and (ii) at least one ferrite-forming metal element M selected from the group consisting of Mn, Ni, Zn, Co, Mg, Cu, Ba and Sr, and wherein said pre-formed ferrite powders have the formula MO.Fe₂O₃; spraying said suspension into a high temperature zone at a temperature of from about 1200° to about 1300° C.; whereby granulation, and ferrite formation when said impalpable powder is said ferrite-forming material, and sintering of said impalpable powder occurs while they are in

said high temperature zone to form spherical ferrite particles with at least 80% of said spherical particles being of a size between 30 and 250 microns.

4,226,844

METHOD OF THERMALLY SPLITTING HYDRATE OF ALUMINUM CHLORIDE

Lothar Reh, Bergen-Eckheim; Ludolf Plass, Kronberg, both of Fed. Rep. of Germany; Philippe Marchessaux, Aix en Provence, France, and Raman Sood, Kingston, Canada, assignors to Aluminum Pechiney, Lyon, France

Filed Feb. 5, 1979, Ser. No. 9,115

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1978, 28059065

Int. Cl.³ C01F 7/30

U.S. Cl. 423-625

15 Claims

1. A method of thermally splitting hydrate of aluminum chloride to form aluminum oxide using a splitting zone, a separate turbulent zone, and a separate residence zone and a cooling zone comprising:

- (1) feeding the hydrate of aluminum chloride into the splitting zone;
- (2) fluidizing the hydrate of aluminum chloride while in the splitting zone by the introduction of a fluidizing gas;
- (3) heating the fluidized hydrate of aluminum chloride in the splitting zone partially to split the hydrate of aluminum chloride while in the splitting zone;
- (4) cycling partially split aluminum chloride from the splitting zone to the turbulent zone;
- (5) fluidizing the solids in the turbulent zone by introduction of gas from the cooling zone to the lower portion of the turbulent zone;
- (6) heating the fluidized solids in the turbulent zone to advance the splitting reaction;
- (7) cycling the heated solids from the turbulent zone to the residence zone for further completion of the splitting of the hydrate of aluminum chloride to aluminum oxide;
- (8) recycling a portion of the solids from the residence zone to the turbulent zone for admixture with the partially split aluminum chloride from the splitting zone;
- (9) passing the remainder of the solids from the residence zone to the cooling zone for passage in heat exchange relation with fluidizing gas to yield a preheated gas fed to the turbulent zone and a cooled aluminum oxide as product; and
- (10) recycling a portion of the solids from the turbulent zone to the splitting zone for supply of heat to the splitting zone and for admixture with the hydrate of aluminum chloride introduced into the splitting zone.

4,226,845

WATER GAS SHIFT REACTION AND IN THE HYDROFORMYLATION AND HYDROHYDROXYFORMYLATION REACTIONS

Richard M. Laine, Mountain View, Calif., assignor to S R I International, Menlo Park, Calif.

Filed Dec. 6, 1978, Ser. No. 967,028

Int. Cl.³ C01B 1/02, 2/06; C07C 45/08, 29/16

U.S. Cl. 423-655

8 Claims

1. In the production of hydrogen and carbon dioxide by the water gas shift reaction, and in the hydroformylation and hydrohydroxymethylation of olefins by reaction of the olefins with carbon monoxide and hydrogen or water and wherein a homogeneous catalyst in the form of a solution of a catalyst in a solvent is used, the improvement which comprises employing a mixed ruthenium carbonyl/iron carbonyl as a catalyst.

4,226,846

ALBUMIN MICROAGGREGATES FOR RADIOACTIVE SCANNING OF RETICULOENDOTHELIAL SYSTEMS

Eugene L. Saklad, Sudbury, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 783,633, Apr. 1, 1977, Pat. No. 4,094,965. This application Apr. 20, 1978, Ser. No. 898,292

Int. Cl.³ A61K 29/00, 43/00; C07G 7/00

U.S. Cl. 424-1 65 Claims
64. A method for making an agent for labelling with Tc-99m for radioactive imaging, said method comprising microaggregating albumin in the presence of a reducing metal, at a pH between 3.5 and 9.5 but at a pH away from the apparent isoelectric point of said albumin.

4,226,847

LATEX POLYMER SENSITIZED WITH STEROID-SERUM ALBUMIN CONJUGATE, PREPARATION AND TEST THEREWITH

Katsuhiko Ogasa, Yokohama; Morio Kuboyama, Tokyo; Minoru Saito, Komae; Tsutomu Kudo, Kawasaki; Yoshitsugu Harada, Yokohama; Akio Kawashiri, Fujimi, and Eiji Takahashi, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,254

Claims priority, application Japan, Jun. 21, 1977, 52/72775

Int. Cl.³ A61K 39/00, 31/74; G01N 31/00, 33/16

U.S. Cl. 424-12

16 Claims

1. A method for preparation of a latex reagent containing latex particles sensitized with a steroid-serum albumin conjugate and suitable for immunochemical detection of steroid contained in human body fluid or excreted fluid, which comprises

preparing steroid-serum albumin conjugate by reacting a steroid with a serum albumin in a ratio between 0.5 mole/mole serum albumin-7.0 mole/mole serum albumin, and preparing sensitized latex particles by sensitizing immunologically inert latex particles with said steroid-serum albumin conjugate.

8. A latex reagent comprising latex particles sensitized with steroid-serum albumin conjugate and suitable for immunochemical detection of steroid contained in human body fluid or excreted fluid, wherein said conjugate has a steroid bonding number in the range 0.5-7.0 molecules per molecule of serum albumin, and said latex particles are sensitized with an effective amount of said conjugate to avoid non-specific agglutination but to cause agglutination due to antigen-antibody reaction between said latex reagent and the antibody for which the steroid to be detected may act as a hapten.

14. In a method for the immunochemical detection of a steroid compound and/or metabolites thereof present in human body fluid or excreted fluid by forming a conjugate of a steroid and a protein material, forming sensitized latex particles by absorbing said conjugate on latex particles, obtaining an antiserum or antibody by injecting an animal with said conjugate and thereafter separating said antiserum or antibody from the blood of said animal and determining the presence of said steroid compound in a sample of body fluid by an agglutination reaction in the presence of said antiserum or antibody and said sensitized latex particles, the improvement comprising:

increasing the sensitivity of said method by employing a conjugate having a steroid to serum albumin mole ratio ranging from 0.5 to 7.0.

4,226,848

METHOD AND PREPARATION FOR ADMINISTRATION TO THE MUCOSA OF THE ORAL OR NASAL CAVITY

Tsuneji Nagai, Chofu; Yoshiharu Machida, Kawasaki; Yoshiaki Suzuki, and Hiroshi Ikura, both of Hino, all of Japan, assignors to Teijin Limited, Japan

Filed Mar. 2, 1979, Ser. No. 17,059

Int. Cl.² A61K 9/02, 9/14, 9/22

U.S. Cl. 424—19

9 Claims

1. A method for administering a medicament which comprises adhering to the mucosa of the nasal cavity a pharmaceutical preparation comprising

(a) a water-swellaable and mucosa-adhesive polymeric matrix comprising about 50 to about 95% by weight of a cellulose ether and about 50 to about 5% by weight of a homo- or copolymer of acrylic acid or a pharmaceutically acceptable salt thereof, and

(b) dispersed therein, a pharmaceutically effective amount of the medicament,

said preparation releasing continuously the medicament at a controlled rate; and causing the released medicament to be absorbed through the mucosa or enterally.

4,226,849

SUSTAINED RELEASE THERAPEUTIC COMPOSITIONS

Joseph M. Schor, Locust Valley, N.Y., assignor to Forest Laboratories Inc., New York, N.Y.

Filed Jun. 14, 1979, Ser. No. 48,344

Int. Cl.³ A61K 47/00

U.S. Cl. 424—19

9 Claims

1. A shaped and compressed sustained release therapeutic composition comprising a therapeutically active medicament and a carrier base material, characterized by a long-lasting slow and regular incremental release of the medicament upon administration, wherein the carrier base material is hydroxypropylmethylcellulose or a mixture of hydroxypropylmethylcellulose and either up to 30% ethylcellulose or 30% sodium carboxymethylcellulose or both, and wherein the hydroxypropylmethylcellulose or the mixtures thereof have been subjected to hydrolysis and oxidation and have a carbonyl content which ranges from 0.2 to 3.0 grams/100 grams and a carboxyl content which ranges from 0.37 to 2.6 grams/100 grams, the oxidation having been carried out at about 30° to 50° C. in the presence of oxygen or a stream of air for a period of time sufficient to obtain the desired carbonyl and carboxyl values and the composition having incorporated therein 0.1–1.0%, based on the weight of the carrier material, of a reducing stabilizing agent which prevents undesired further oxidation and the hydrolysis having been carried out either (a) by humidification in a chamber at ambient or elevated temperature until the humidity of the chamber reaches at least 85% and the humidity is maintained for at least 12 hours or (b) by mixing the carrier base material with water and heating to a temperature of 30°–100° C. for at least 12 hours.

4,226,850

METHODS FOR CONTROLLING PERSPIRATION

Elias W. Packman, 214 Sycamore Ave., Merion, Pa. 19066, and Ruth Jeffkin, 259 Richards Ave., Lansdowne, Pa. 19050

Filed Nov. 12, 1976, Ser. No. 741,298

Int. Cl.³ A61K 7/00, 7/32, 7/34, 7/36

U.S. Cl. 424—47

17 Claims

1. A method of controlling perspiration which comprises administering topically an antiperspirant composition to a human in need thereof, the composition comprising an antihistamine selected from the group consisting of an ethanolamine, an ethylenediamine, an alkylamine, a phenothiazine and a piperazine, or a physiologically acceptable salt thereof, and a pharmaceutically acceptable carrier, the antihistamine being in an amount effective to control the perspiration.

4,226,851

STABLE DENTAL COMPOSITION CONTAINING HYDROGEN PEROXIDE

Hewitt A. Sompayrac, South Main St., Society Hill, S.C. 29593

Filed Jul. 11, 1979, Ser. No. 56,633

Int. Cl.³ A61K 7/20, 33/40, 31/355

U.S. Cl. 424—53

9 Claims

1. A composition of matter comprising a mixture of oral hygienic effective aqueous solution of hydrogen peroxide and zinc chloride, and an effective amount of vitamin E for stabilizing the mixture against oxygen release therefrom during storage.

4,226,852

TWO-COMPONENT PEROXIDE HAIR BLEACHING COMPOSITIONS

Holger Tesmann, Düsseldorf; Erwin Weinrich, Haan, and Edgar Lieske, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 873,219, Jan. 30, 1978. This application Apr. 5, 1979, Ser. No. 27,512

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1977, 2704905

The portion of the term of this patent subsequent to Jan. 29, 1997, has been disclaimed.

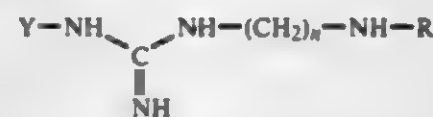
Int. Cl.² A61K 7/135

U.S. Cl. 424—62

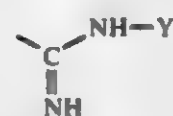
3 Claims

1. A two-component composition for bleaching hair comprised of:

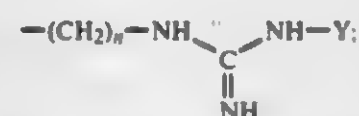
I. a first component consisting essentially of an admixture of:
(a) 0.1 to 10 percent by weight of a guanidine derivative of the formula:



wherein R is a member selected from the group consisting of hydrogen, the radical



and the radical



Y is a member selected from the group consisting of hydrogen, the NH₂ radical, and an alkyl radical having 1 to 4 carbon atoms, and n is the integer 2 or 3, or a water soluble acid addition salt thereof.

(b) 1 to 20 percent by weight of an ammonia-free alkalization agent in an amount sufficient to give the composition a pH of 8–10.5.

(c) 0 to 20 percent by weight of ethylene diurea,

(d) 0 to 0.01 mole/liter of heavy metal cations,

(e) 0 to 10 percent by weight of thickening agents,

(f) 0 to 10 percent by weight of surface-active agents,

(g) 0 to 2 percent by weight of additional conventional ingredients, and

(h) 0 to 70 percent by weight of solvent; and

II. a second component for admixture with said first component consisting essentially of an admixture of:

(a) 2 to 8 percent by weight, calculated as hydrogen peroxide, of a peroxide oxidation agent,

(b) 0 to 0.1 percent by weight of a peroxide oxidant stabilizer, and

(c) up to 70 percent by weight of solvent, the total amount of solvent in both components being from 10 to 70 percent by weight.

4,226,853

FORMALINIZED ALLERGEN-CONTAINING SUBSTANCES AND PRODUCTION THEREOF

David G. Marsh, 11420 Harford Rd., Baltimore, Md. 21057

Continuation-in-part of Ser. No. 289,284, Sep. 15, 1972, abandoned, which is a continuation of Ser. No. 865,481, Oct. 10, 1969, abandoned. This application Feb. 18, 1975, Ser. No. 550,535

Claims priority, application United Kingdom, Oct. 10, 1968, 48064/68; Oct. 1, 1969, 48189/69

Int. Cl.³ A61K 39/35, 39/36; C07G 7/00

U.S. Cl. 424—91

37 Claims

1. A process for producing a formalinized allergen of low allergenic activity in allergic humans and which is capable of inducing in mammals the formation of blocking antibody against the native allergen in significant concentration, comprising: (1) extracting an allergen-containing material with an aqueous solution; (2) removing essentially all of the low molecular weight non-allergenic substances from the soluble part of the said extract to leave the allergen-containing materials in said solution; (3) adding formaldehyde to the said solution of allergen-containing materials to give a concentration of formaldehyde from about 0.06 M to 5.0 M; (4) treating the aqueous extract of material containing said allergens with said formaldehyde solution in a non-phenolic environment at a temperature from about the freezing point of the incubation mixture up to about 40° C.; and (5) incubating the same at a temperature below that which the allergen undergoes substantial heat denaturation and generally from about the freezing point of the incubation mixture up to about 40° C. until the substantial formation of inter- or intramolecular methylene bridge linkages occurs in said solution and the allergenic determinant groups are modified to result in substantial reduction of allergenic properties while largely retaining the desired immunizing properties.

20. A formalinized allergen of low allergenic activity in allergic humans and which is capable of inducing in mammals the formation of blocking antibody against the native allergen in significant concentration, prepared by: (1) extracting an allergen-containing material with an aqueous solution; (2) removing essentially all of the low molecular weight non-allergenic substances from the soluble part of the said extract to leave the allergen-containing materials in said solution; (3) adding formaldehyde solution to the said solution of allergen-containing materials to give a concentration of formaldehyde from about 0.06 M to 5.0 M; (4) treating the aqueous extract of material containing said allergens with said formaldehyde solution in a non-phenolic environment at a temperature from about the freezing point of the incubation mixture up to about 40° C.; and (5) incubating the same at a temperature below that which the allergen undergoes substantial heat denaturation and generally from about the freezing point of the incubation mixture up to about 40° C. until substantial formation of inter- or intramolecular methylene bridge linkages occur in said solution and the allergenic determinant groups are modified to result in substantial reduction of allergenic properties while largely retaining the desired immunizing properties.

4,226,854

DEBRIDEMENT OF DEVITALIZED TISSUE WITH HYDROLYTIC ENZYME PRODUCT

Gerold K. V. Klein, Merepoint Rd., Brunswick, Me. 04011, and John C. Houck, Washington, D.C., assignors to Gerold K. V. Klein, Brunswick, Me.

Division of Ser. No. 887,607, Mar. 17, 1978, which is a continuation of Ser. No. 678,695, Apr. 20, 1976, abandoned, which is a continuation of Ser. No. 489,254, Jul. 17, 1974, abandoned, which is a continuation of Ser. No. 432,622, Jan. 8, 1974, abandoned. This application Jun. 4, 1979, Ser. No. 45,109

Int. Cl.² A61K 37/54; C07G 7/022

U.S. Cl. 424—94

9 Claims

1. A method for debridement of devitalized tissue from a mammalian host which comprises contacting said tissue with an amount of an enzyme product or a physiologically acceptable alkali metal or acid addition salt thereof which is effective to hydrolyze that portion of the devitalized tissue which is in direct contact with adjacent vital tissue so that the devitalized tissue can be removed therefrom, and removing said devitalized tissue from the vital tissue, said enzyme product being a heat labile protein which is obtainable from bromelain, capable of debridement of devitalized tissue from a mammalian host, water soluble, free of caseinolytic activity; has a peak isoelectric point of about 6; comprises at least two subunits each subunit having a molecular weight of from about 14,300 to 15,000 daltons; is active in the absence of sulfhydryl activation and in the presence of sulfhydryl deactivating quantities of phenylmercuric acetate; and has a characteristic absorption peak in the ultraviolet region of the spectrum at 280 nm.

4,226,855

PLANT VIRAL DISEASE PREVENTIVE ALGINATE CONTAINING COMPOSITIONS

Taichiro Shigematsu, Machida; Tetsuya Shibahara; Hiroshi Kasugai, both of Yokohama; Tetsuo Nakajima, Kawasaki, and Shozo Motojima, Hatano, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Dec. 8, 1977, Ser. No. 858,791

Claims priority, application Japan, Dec. 16, 1976, 51-151406; Dec. 17, 1976, 51-151631

Int. Cl.² A61K 27/00

U.S. Cl. 424—177

13 Claims

1. A plant viral disease preventive composition comprising: an alginate having the following properties (a) and (b):

(a) a neutralization degree of 10 to 30%, said neutralization degree (wt%) being given from:

$$\frac{(\text{C}_5\text{H}_7\text{O}_4\text{COOM})_m}{(\text{C}_5\text{H}_7\text{O}_4\text{COOH})_n + (\text{C}_5\text{H}_7\text{O}_4\text{COOM})_m} \times 100$$

wherein m is the number of the carboxylate groups substituted with an alkali metal or ammonium group M;

(b) a viscosity in a 1 wt% aqueous solution at 20° C. of 2 to 10 centipoises;

at least one biopolymer selected from the group consisting of casein, its water-soluble salts and globulin, said biopolymer being blended in an amount of 0 to 40% by weight based on the alginate;

a carbonate and an organic acid, the sum of said carbonate and organic acid being 0 to 35% by weight based on the alginate;

a solid carrier containing silica, said carrier being in an amount of 1 to 30% by weight based on the alginate; and a surface active agent in an amount of 1 to 10% by weight based on alginate.

4,226,864

7-SUBSTITUTED AMINOACETAMIDO
OXADETHIACEPHALOSPORINS

Masayuki Narisada, Ibaraki; Teruji Tsuji, Takatsuki; Mitsuru Yoshioka, Toyonaka; Matsumura Hiromu, Ashiya; Yoshio Hamashima, Kyoto; Sadao Hayashi, Ashiya, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 22, 1977, Ser. No. 826,818

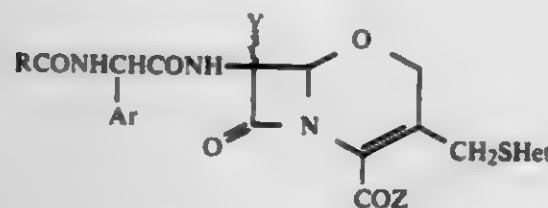
Claims priority, application Japan, Sep. 1, 1976, 51-105117

Int. Cl.³ A61K 31/535; C07D 265/04, 413/02

U.S. Cl. 424-248.5

16 Claims

1. A compound of the following formula or its pharmaceutically acceptable salt:



wherein

R is 1,3-dimethylureido, 1,3-dimethylthioureido, 3-methanesulfonyl-2-oxoimidazolidin-1-yl, N-methyl-N-cinamoylamino, 3,4-di-acetoxypheyl, 4-oxothiopyran-3-yl, 8-ethyl-3-methoxy-5-oxo-5,8-dihydropyrido[2,3-c]pyridazin-6-yl, 4-methyl-2,3-dioxopiperazin-1-yl, 4-ethyl-2,3-dioxopiperazin-1-yl, or 4-propyl-2,3-dioxopiperazin-1-yl; Ar is phenyl, hydroxyphenyl, carbamoyloxyphenyl, hydroxyfluorophenyl, or acetoxypheyl; Y is hydrogen or methoxy; and Het is 1-methyltetrazol-5-yl, 1,3,4-thiadiazol-5-yl, 2-methyl-1,3,4-thiadiazol-5-yl, or 1,2,3-thiazol-4-yl.

15. An antibacterially active pharmaceutical composition which comprises an antibacterially effective amount of a compound according to claim 1 or pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

4,226,866

NOVEL ANTIBIOTIC ANALOGUES OF
CEPHALOSPORINS

Burton G. Christensen, Scotch Plains, and Ronald W. Ratcliffe, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

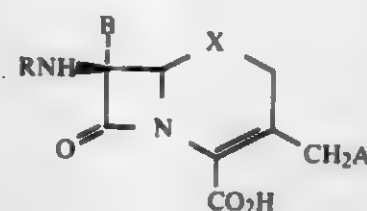
Continuation of Ser. No. 869,199, Jan. 13, 1978, abandoned, which is a continuation of Ser. No. 587,526, Jun. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 395,662, Sep. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 303,906, Nov. 6, 1972, abandoned. This application Jun. 8, 1979, Ser. No. 47,593

Int. Cl.² A61K 31/535; C07D 265/34

U.S. Cl. 424-248.51

19 Claims

1. A compound of the formula:



and its isomers wherein R is a carboxylic acyl radical; B is H, OCH₃, CH₃ or SR'' wherein R'' is lower alkyl of 1-6 carbons and phenyl; A is azido, halo, cyano, quaternary ammonium, hydroxy, carbamoyloxy, N-lower alkyl carbamoyloxy, N,N-di-lower alkyl carbamoyloxy, amino mercapto, lower alkylthio, lower alkanoyloxy, aroyloxy or a 5-membered heterocyclic thio radical selected from the group consisting of 1-methyltetrazolylthio and 2-methyl-1,3,4-thiadiazolylthio; X is -O- and non-toxic pharmacologically acceptable salts, esters and amides thereof.

16. A method of treatment comprising administering an antibiologically effective amount of a compound according to claim 1.

4,226,867

3,3-SUBSTITUTED SPIRO-1,2,4-BENZOTHIADIAZINES

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

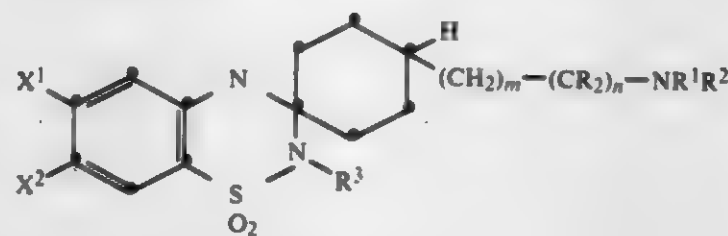
Filed Oct. 6, 1978, Ser. No. 949,348

Int. Cl.³ C07D 285/24, 285/30; A61K 31/54

U.S. Cl. 424-246

21 Claims

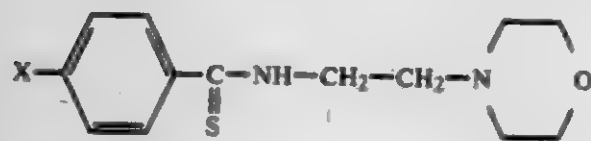
1. A compound of the formula



wherein

X¹ is H or halo or trifluoromethyl, X² is H, halo or -SO₂NH₂, R is H or lower alkyl, R¹ is H or lower alkyl, R² is lower alkyl or C₃-C₆ cycloalkyl, R¹ and R² may be joined to form -(CH₂)₄ or -(CH₂)₅-, R³ is H, lower alkyl, phenyl or chlorophenyl, m is 0 or 1 and n is 0 to 5 and pharmaceutically acceptable salts thereof.

21. A method of treating hypertension by administering an effective amount of a compound of claim 1 to a hypertensive human.



wherein X is halogen, trifluoromethyl or C₃₋₄ alkyl or a pharmaceutically acceptable acid addition salt thereof.

4,226,865

METHOD OF TREATING DEPRESSION

Willy Burkard, Reinach, and Pierre-Charles Wyss, Muttetz, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 771,222, Feb. 23, 1977, abandoned. This application May 19, 1978, Ser. No. 907,366

Claims priority, application Austria, Mar. 8, 1976, 1674/76

Int. Cl.³ A61K 31/535

U.S. Cl. 424-248.5

3 Claims

1. A method of treating a depressive condition which comprises administering to a host requiring such treatment an antidepressive amount of a compound of the formula

4,226,868

PROCESSES FOR INHIBITING THE GROWTH OF SEA
URCHIN EGGS

Seymour Zigman, and Paul B. Gilman, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,283

Int. Cl.² A01N 43/42

U.S. Cl. 424-258

8 Claims

1. A process for inhibiting the growth of sea urchin eggs comprising contacting the eggs with a growth inhibiting concentration of a methine dye in an inert liquid carrier, the methine dye (i) having a reduction potential (E_R) equal to or more negative than -1.0 volt and (ii) being capable of being absorbed by the cells of sea urchin eggs.

4,226,869

METHOD OF STIMULATING THE IMMUNE RESPONSE
WITH HALOGENATED10-(ω-DIALKYLAMINOPOLYMETHYLENEAMINO)-2-
METHOXYPIRIDO[3,2-b]QUINOLINES

Keith C. Murdock, Pearl River, N.Y.; Frederick E. Durr, Ridge-wood; Martin R. Damiani, Allendale, both of N.J., and Patrick T. Izzo, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

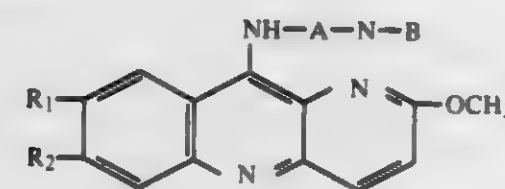
Filed Feb. 2, 1979, Ser. No. 9,025

Int. Cl.³ A61K 31/47

U.S. Cl. 424-258

9 Claims

1. A method of stimulating the immune response in a warm-blooded animal which comprises orally administering to said animal an effective immunostimulating amount of a compound of the formula:



wherein R₁ and R₂ are each selected from the group consisting of hydrogen and halogen; A is a straight or branched alkyl chain of 3 to 7 carbon atoms; B is selected from the group consisting of dimethyl, diethyl and di-(2-hydroxyethyl); and the pharmaceutically acceptable salts thereof.

4,226,870

O-, N- AND CARBOXYL DERIVATIVES OF
THIENAMYCIN

Burton G. Christensen, Metuchen; John Hannah, Matawan; William J. Leanza, Berkeley Heights; Ronald W. Ratcliffe, Matawan, and David H. Shih, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

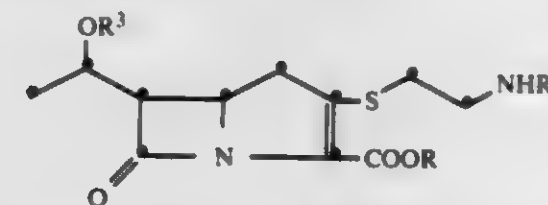
Continuation-in-part of Ser. No. 733,652, Oct. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 634,294, Nov. 21, 1975, abandoned. This application Dec. 16, 1977, Ser. No. 861,246

Int. Cl.³ C07D 487/04; A61K 31/44, 31/40

U.S. Cl. 424-263

2 Claims

1. The compound having the trans- form of the structure of the following formula:



wherein r is hydrogen, a pharmaceutically acceptable salt cation, or an easily removable blocking group; R³ is SO₃H or SO₃CH₃; and R² is formyl, acetyl, propionyl, butyryl, chloroacetyl, methoxyacetyl, aminoacetyl, methoxycarbonyl, ethoxycarbonyl, methylcarbamoyl, ethylcarbamoyl, phenylthiocarbonyl, 3-aminopropionyl, 4-aminobutyryl, N-methylaminoacetyl, N,N-dimethylaminoacetyl, N,N,N-trimethylaminoacetyl,

cetyl, 3-(N,N-dimethyl)aminopropionyl, 3-(N,N,N-trimethyl)amino propionyl, N,N,N-triethylaminoacetyl, pyridiniumacetyl, guanylthioacetyl, guanidinoacetyl, 3-guanidinopropionyl, N³-methylguanidinopropionyl, hydroxyacetyl, 3-hydroxypropionyl, acryloyl, propynoyl, malonyl, phenoxyacetyl, amidinoacetyl, acetamidinoacetyl, amidinopropionyl, acetamidopropionyl, guanylureidoacetyl, guanylcarbamoyl, carboxymethylaminoacetyl, sulfoacetylaminocetyl, phosphonoacetylaminocetyl, N³-dimethylaminoacetamidinopropionyl, ureidocarbonyl, dimethylguanylthioacetyl, 3-(1-methyl-4-pyridinium)propionyl, 3-(5-aminoimidazol-1-yl)propionyl, 3-methyl-1-imidazoliumacetyl, 3-sydnonylacetyl, o-aminomethylbenzoyl, or o-aminobenzoyl.

2. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,226,871

HETEROCYCLIC CARBAMATES

William A. Bolhofer, Frederick, and John D. Prugh, Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

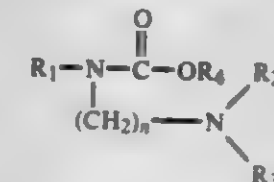
Filed Mar. 13, 1979, Ser. No. 20,147

Int. Cl.² A61K 31/44; C07D 211/84

U.S. Cl. 424-263

9 Claims

1. A compound having the formula:



wherein n is 2 to 4;

R₁ is pyridyl which may optionally be substituted with one, two or three of loweralkyl, halogen, trifluoromethyl, loweralkoxy, loweralkylthio, loweralkylsulfonyl or mixtures thereof;

R₂ and R₃ are loweralkyl; and

R₄ is loweralkyl or phenyl.

9. A composition for the suppression of gastric acid secretions which comprises an inert carrier and a compound of claim 1.

4,226,872

PYRIDYL ESTERS OF α-SUBSTITUTED AMINO ACIDS

Clive A. Henrick, Palo Alto, Calif., assignor to Zeecon Corporation, Palo Alto, Calif.

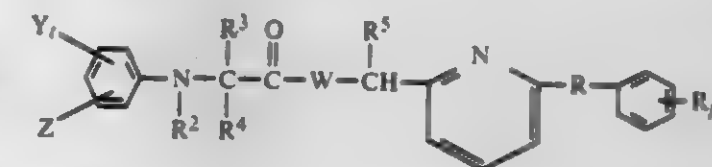
Continuation-in-part of Ser. No. 16,775, Mar. 2, 1979, abandoned. This application Aug. 24, 1979, Ser. No. 69,445

Int. Cl.² A01N 9/22; C07D 213/55

U.S. Cl. 424-263

32 Claims

1. A compound of the formula:



wherein,

R is oxygen, sulfur, methylene or carbonyl;

R' is fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio;

p is zero, one or two; W is oxygen or sulfur;

t is zero, one, two, three or four; Y is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyl, lower alkoxy carbonyl, lower acyloxy, halogen, cyano, nitro, and lower haloalkylthio; and Z is independently selected from the values of Y, cycloalkyl having 3 to 8 carbon atoms, and lower haloalkoxy; or Y and Z form a methylenedioxy group;

R² is hydrogen or lower alkyl;

R^3 is lower alkyl of 2 to 5 carbon atoms, lower alkenyl of 2 to 5 carbon atoms, lower haloalkyl of 1 to 4 carbon atoms, lower haloalkenyl of 2 to 4 carbon atoms, or lower cycloalkyl of 3 or 4 carbon atoms;

R^4 is hydrogen or fluoro;

R^5 is hydrogen, cyano, ethynyl, methyl, ethyl or trifluoromethyl; and the salt thereof of a strong inorganic acid or organic acid.

30. A method for the control of pests selected from insects of the order Lepidoptera, Orthoptera, Heteroptera, Homoptera, Diptera, Coleoptera and Hymenoptera; mites of the family Tetranychidae and Tarsonemidae and ticks of the family Ornithodoros which comprises applying to the locus of the pest a compound according to claim 1, in a pesticidally effective amount, in a suitable liquid or solid carrier.

4,226,873

5-SUBSTITUTED-3-FLUOROSULFONYL-4H-1,2,4-TRIAZOLES AND USE AS INSECTICIDES AND MITICIDES

Joel L. Kirkpatrick, Overland Park, and William C. Doyle, Jr., Leawood, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 697,505, Jun. 18, 1976, abandoned. This application Feb. 23, 1977, Ser. No. 771,133
Int. Cl.³ A01N 43/64; C07D 249/12

U.S. Cl. 424-269

38 Claims

1. 3-Fluorosulfonyl-5-tert-butyl-4H-1,2,4-triazole.

10. A method of combating insects and mites which comprises applying to the foliage of plants infested with insects and mites an effective amount of a compound having the structural formula



including tautomeric forms thereof, in which R is hydrogen, C_1 to C_6 alkyl, branched or unbranched, benzyl, phenyl or C_3 to C_6 cycloalkyl, in combination with a major proportion of an inert diluent.

4,226,874

PHARMACOLOGICALLY ACTIVE THIOUREA AND UREA COMPOSITIONS AND METHODS OF USE

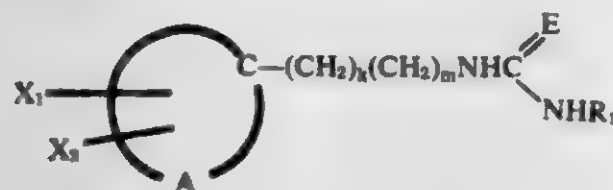
Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charo R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 837,961, Sep. 20, 1977, Pat. No. 4,151,288, which is a division of Ser. No. 758,291, Jan. 5, 1977, Pat. No. 4,069,327, which is a division of Ser. No. 637,494, Dec. 4, 1975, Pat. No. 4,018,931, which is a division of Ser. No. 451,333, Mar. 14, 1974, Pat. No. 3,950,353, which is a continuation-in-part of Ser. No. 290,584, Sep. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Jan. 15, 1979, Ser. No. 3,160
Claims priority, application United Kingdom, Mar. 9, 1971, 6352/71; Jul. 22, 1971, 34334/71; Aug. 8, 1972, 37015/72; Ireland, Feb. 3, 1972, 136/72
Int. Cl.² A61K 31/41, 31/415

U.S. Cl. 424-269

12 Claims

1. A pharmaceutical composition to inhibit H-2 histamine receptors comprising a pharmaceutical carrier and in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being a triazole pyridine ring; X_1 is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl,

halogen, amino or $(CH_2)_kY(CH_2)_mNHC(=E)NHR_1$; X_2 is hydrogen or

when X_1 is lower alkyl, lower alkyl or halogen, k is 0 to 2 and m is 2 or 3, provided that the sum of k and m is 3 or 4; Y is oxygen sulphur or NH; E is oxygen or sulphur; and R_1 is hydrogen, lower alkyl, benzoyl or di-lower alkylamino-lower alkyl or a pharmaceutically acceptable addition salt thereof.

4,226,875

NOVEL SPIRO-OXAZOLIDINEDIONES

Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

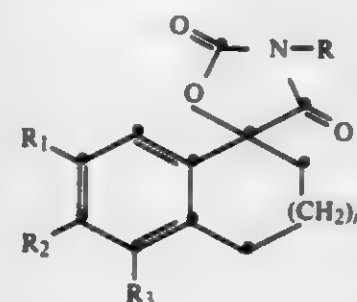
Filed Apr. 2, 1979, Ser. No. 26,615

Int. Cl.² C07D 263/44; A61K 31/42

U.S. Cl. 424-272

9 Claims

1. A compound of the formula



and the pharmaceutically acceptable salts thereof, wherein n is zero or one;

R and R_2 are each hydrogen;

and R_1 and R_3 are each selected from the group consisting of hydrogen, chloro, bromo, fluoro and alkyl of 1 to 3 carbon atoms.

4,226,876

ARTHROPODICIDAL IMIDAZOLINE DERIVATIVES

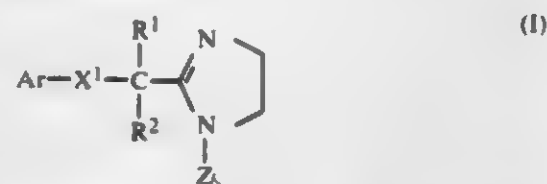
Frederick C. Copp, Beckenham; Peter T. Roberts, Berkhamsted; Alexander D. Frenkel, Aston Clinton, and David Collard, Beckenham, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 862,168, Dec. 19, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,422
Claims priority, application United Kingdom, Dec. 20, 1976, 53059/76; Dec. 20, 1976, 53061/76; Dec. 20, 1976, 53062/76; Oct. 26, 1977, 44485/77; Jun. 19, 1978, 27295/78
Int. Cl.³ A61K 31/415; C07D 233/22, 233/24

U.S. Cl. 424-273 R

60 Claims

1. A compound of formula (I)



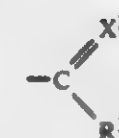
wherein Ar is unsubstituted or mono-, di or tri-substituted phenyl in which the substituents are the same or different and are selected from C_1 -4 alkyl, C_1 -4 alkoxy, halogen, hydroxy, cyano, amino, trifluoromethyl or nitro and in which any two adjacent carbon atoms on the phenyl ring may optionally be joined by a carbon chain having 3 or 4 carbon atoms;

X_1 is O or NH;

R_1 and R_2 are the same or different and are hydrogen or

C_1 -4 alkyl;

Z is a group



in which X_2 is O or S;

and R^3 is C_1 -4 alkoxy, aryloxy or NR^5R^6 , where "aryl" is phenyl or naphthyl either unsubstituted or substituted with one or more substituent(s) which are the same or different and which are selected from C_1 -4 alkyl, C_1 -4 alkoxy, halogen, nitro, cyano and amino; and R^5 and R^6 are the same or different and are hydrogen, C_1 -4 alkyl or aryl where "aryl" is as defined with respect to R^3 , or an acid addition salt thereof.

38. A method of controlling arthropod pests which comprises applying to the pest or the pest's environment an arthropodically effective amount of a compound of formula (I) as defined in claim 1 or an acid addition salt thereof.

4,226,877

PYRAZOLES ACTIVE IN THE CENTRAL NERVOUS SYSTEM

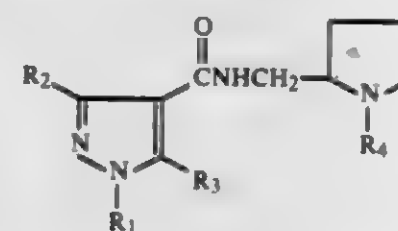
David L. Arendsen, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 881,319, Feb. 27, 1978, abandoned. This application May 14, 1979, Ser. No. 39,015
Int. Cl.² A61K 31/415; C07D 403/12

U.S. Cl. 424-273 P

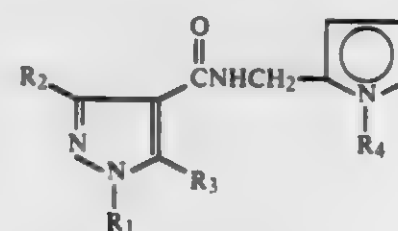
9 Claims

1. A compound of the formula



wherein R_1 is hydrogen, lower alkyl, or phenyl, R_2 is hydrogen or lower alkyl, R_3 is lower alkoxy or hydroxy, and R_4 is lower alkyl, provided the compound wherein R_2 is isopropyl when R_1 is methyl, R_3 is methoxy and R_4 is ethyl is excluded, and the pharmaceutically acceptable acid addition salts thereof.

6. A method of treating schizophrenia in mammals which method comprises administering to a mammal in need of such treatment an effective amount of a compound of the formula



wherein R_1 is hydrogen, lower alkyl, or phenyl, R_2 is hydrogen or lower alkyl, R_3 is lower alkoxy or hydroxy, and R_4 is lower alkyl, provided the compound wherein R_2 is isopropyl when R_1 is methyl, R_3 is methoxy and R_4 is ethyl is excluded, or a pharmaceutically acceptable acid addition salt thereof.

4,226,878

IMIDAZOLE DERIVATIVE

Kinji Iizuka; Kenji Akahane; Denichi Momose; Yukio Kamijo, all of Matsumoto, and Yukiyoshi Ajisawa, Okaya, all of Japan, assignors to Kissei Pharmaceutical Co., Ltd., Matsumoto and Ono Pharmaceutical Co., Ltd., Osaka, both of Japan
Filed Jun. 13, 1979, Ser. No. 48,112

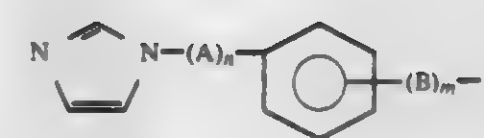
Claims priority, application Japan, Jun. 13, 1978, 53-71273

Int. Cl.³ C07D 233/60; A61K 31/415

U.S. Cl. 424-273 R

22 Claims

1. A compound of the formula:



wherein Y is a carboxyl group or an alkoxycarbonyl group having 2 to 7 carbon atoms, A and B, which may be the same or different, each is a straight- or branched-chain alkylene or alkenylene group having 1 to 8 carbon atoms, n and m are zero or 1, with the proviso that the aggregate number of the linear carbon atoms in A and B is 2, 3 or 4; and the pharmaceutically acceptable salts thereof.

22. A method of alleviating the diseases caused by thromboxane A_2 in mammals which comprises administering a therapeutically effective amount of a compound of claim 1.

4,226,879

ANTIBIOTIC COMPOSITION

Satoshi Omura, Tokyo; Chiaki Kitao, Yokohama; Akira Nakagawa, Fuchu; Haruo Tanaka, Machida; Juichi Aways, Soka, and Ruiko OIwa, Yokohama, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Ohte and The Kitasato Institute, Tokyo, both of Japan

Continuation-in-part of Ser. No. 821,361, Aug. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 771,875, Feb. 25, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 939,102

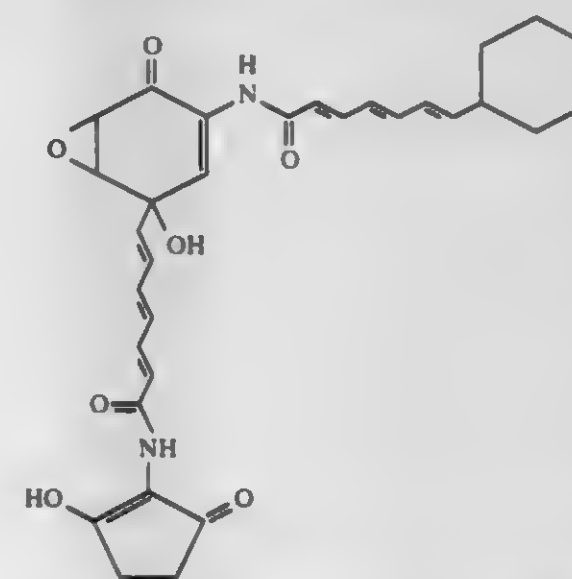
Claims priority, application Japan, Feb. 27, 1976, 51-20119; Aug. 3, 1976, 51-92426; Aug. 3, 1976, 51-92427

Int. Cl.² A61K 31/335; C07D 303/06; A61K 35/00

U.S. Cl. 424-278

10 Claims

9. A method for preventing or treating coccidiosis in an animal subject which comprises administering to said animal subject an effective amount of the compound



for preventing or treating coccidiosis as active ingredient in association with a physiologically acceptable carrier or excipient.

4,226,880

ANTIBACTERIAL COMPOUNDS

Norman H. Rogers, Rudgwick, and Peter J. O'Hanlon, Redhill, both of England, assignors to Beecham Group Limited, England

Division of Ser. No. 955,196, Oct. 27, 1978. This application May 24, 1979, Ser. No. 42,014

Claims priority, application United Kingdom, Nov. 1, 1977, 45305/77

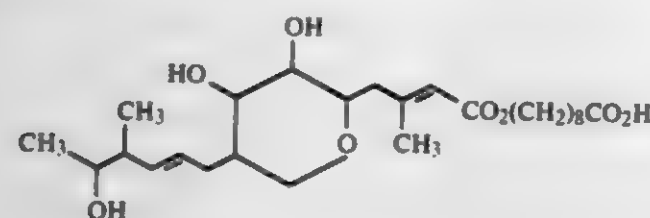
Int. Cl.² A61K 31/35

U.S. Cl. 424-283

12 Claims

7. The method of treating human or veterinary bacterial or mycoplasma-induced infections therapeutically or prophylactically which comprises administering to a human or veterinary animal respectively an antibacterially effective amount of

a compound selected from the group consisting of an acid of the formula:



a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable ester thereof.

4,226,881

INSECTICIDAL COMPOSITIONS

Sol J. Barer, Clark, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 631,962, Nov. 14, 1975, abandoned.

This application Mar. 18, 1977, Ser. No. 779,167

Int. Cl.³ A01N 31/00, 43/08, 47/10

U.S. Cl. 424—285

6 Claims

1. An insecticidal composition comprising 1-naphthyl N-methyl carbamate and an alkanediol of up to about 6 carbon atoms in an amount sufficient to enhance the activity of said carbamate, said carbamate being present in an amount from about 0.05 to about 10% by weight of the alkanediol.

3. An insecticidal composition comprising (2,3-dihydro-2,2-dimethyl-7-benzofuranyl) N-methyl carbamate and an alkanediol of up to about 6 carbon atoms in an amount sufficient to enhance the activity of said carbamate, said carbamate being present in an amount from about 0.05 to about 10% by weight of the alkanediol.

5. An insecticidal composition comprising m-[N-(dimethylaminomethylene) amino] phenyl N-methyl carbamate and an alkanediol of up to about 6 carbon atoms in an amount sufficient to enhance the activity of said carbamate, said carbamate being present in an amount from about 0.05 to about 10% by weight of the alkanediol.

4,226,882

USE OF α,α' -DITHIOBIS(β -ARYLACRYLIC ACID) DERIVATIVES IN THE TREATMENT OF HYPERTENSION

Eugene L. Giroux, Cincinnati, Ohio; Nellikunja J. Prakash, and Paul J. Schechter, both of Strasbourg, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

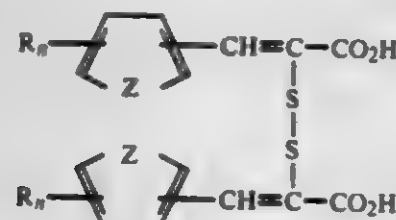
Filed Mar. 2, 1979, Ser. No. 16,941

Int. Cl.³ A61K 31/19, 31/34, 31/38, 31/40

U.S. Cl. 424—285

5 Claims

1. A method of treating hypertension in a patient in need thereof which comprises administering to said patient an effective amount of an α,α' -dithiobis(β -arylacrylic acid) of the following formula:



wherein Z is C=C, O, S or NH; R is H, CH₃, C₂H₅, OH, CH₃O, C₂H₅O, Cl, Br, F, I or CF₃; and n is 1, 2 or 3; or a pharmaceutically acceptable non-toxic salt thereof.

4,226,883

CARBAMATE DERIVATIVES AND METHOD FOR MANUFACTURE THEREOF

Izuru Yamamoto, No. 5-1, Kamiyoga 2-chome, Setagaya-ku, Tokyo; Yohji Takahashi, No. 10-4, Ogawa 2-chome, Machida-shi, Tokyo, and Nobuo Kyomura, No. 9-7, Mita 1-chome, Tama-ku, Kawasaki-shi, Kanagawa-ken, all of Japan

Division of Ser. No. 622,413, Oct. 14, 1975. This application Jul. 3, 1978, Ser. No. 921,750

Claims priority, application Japan, Mar. 22, 1975, 50-34708; Mar. 27, 1975, 50-37179; Mar. 28, 1975, 50-37459; Mar. 28, 1975, 50-37460; Mar. 30, 1975, 50-38152; Mar. 31, 1975, 50-38980; Oct. 15, 1974, 49-118387; Nov. 11, 1974, 49-129726; Dec. 23, 1974, 49-147838; Feb. 6, 1975, 50-15629; Feb. 6, 1975, 50-15630; Feb. 14, 1975, 50-18627

Int. Cl.³ A01N 47/10

U.S. Cl. 424—300

13 Claims

1. An insecticidal composition containing as the effective agent a synergistic mixture of:

A. a N-n-propylcarbamate selected from the group consisting of 3-methylphenyl N-n-propylcarbamate; 3,4-dimethylphenyl N-n-propylcarbamate and 3,5-dimethylphenyl N-n-propylcarbamate; and

B. a N-methylcarbamate selected from the group consisting of 3-methylphenyl N-methylcarbamate; 3,4-dimethylphenyl N-methylcarbamate; 3,5-dimethylphenyl N-methylcarbamate; 2-i-propylphenyl N-methylcarbamate; 2-sec-butylphenyl N-methylcarbamate; 3-methyl-5-i-propylphenyl N-methylcarbamate; 2-chlorophenyl N-methylcarbamate; 2-i-propoxyphenyl N-methylcarbamate and naphthyl N-methylcarbamate; the weight ratio of A to B being within the range of 0.5:1 to 2:1.

4,226,884

L-GAMMA-GLUTAMYL-TAURINE AS EXTRACTED FROM PARATHYROID GLAND AND METHOD OF TREATMENT USING SAME

Laszlo Feuer, Budapest, Hungary, assignor to Chinoin Gyógyszer és Vegyszeti Termékek Gyára Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 457,627, Apr. 3, 1974, Pat. No. 4,001,396, which is a continuation-in-part of Ser. No. 274,723, Jul. 24, 1972, abandoned. This application Jan. 3, 1977, Ser. No. 756,409

Claims priority, application Hungary, Aug. 4, 1971, 1146

The portion of the term of this patent subsequent to Jan. 4, 1994, has been disclaimed.

Int. Cl.³ A61K 31/255; C07C 143/12

U.S. Cl. 424—303

2 Claims

1. L-gamma-glutamyl-aurine.

2. A pharmaceutical composition for the treatment or prevention of radiation poisoning, comprising an effective amount of the compound defined in claim 1 in admixture with a pharmaceutically acceptable carrier.

4,226,885

GUANYLHYDRAZONES AND MEDICAMENTS CONTAINING THEM

Henri Orzalesi, and Jean Castel, both of Montpellier, France, assignors to Choay S.A., Paris, France

Filed Oct. 13, 1977, Ser. No. 841,947

Claims priority, application France, Oct. 13, 1977, 76 30722

Int. Cl.³ C07C 143/02, 133/10; A61K 31/255, 31/155

U.S. Cl. 424—303

33 Claims

1. A guanyl hydrazone of the following general formula (I):

4,226,886

MANUFACTURE OF PASTA FILATA CHEESE

Cornelis Siecker, Woodford, Australia, assignor to Caboolture Co-Operative Associates Limited, Caboolture, Australia

Continuation-in-part of Ser. No. 832,098, Sep. 9, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,968

Int. Cl.² A23C 19/02

U.S. Cl. 426—36

5 Claims

1. A process for producing pasta filata cheese comprising the steps of:

- (a) standardizing the milk;
- (b) setting the milk;
- (c) cutting, cooking and draining the resultant curd;
- (d) sub-dividing the curd;
- (e) dry salting the curd subsequently to or simultaneously with step (d);
- (f) resting the salted curd for a period of at least 5 minutes to enable the salt to be thoroughly absorbed into the curd and until the curd has a titratable acidity between about 0.75 and about 0.95;
- (g) mechanically stretching the curd in hot water for a period of from 4.5 to 6.5 minutes; and
- (h) cooling and shaping the cheese.

4,226,886

SELF-METERING LIQUID RETENTIVE PAD AND PROCESS FOR PRODUCING SAME

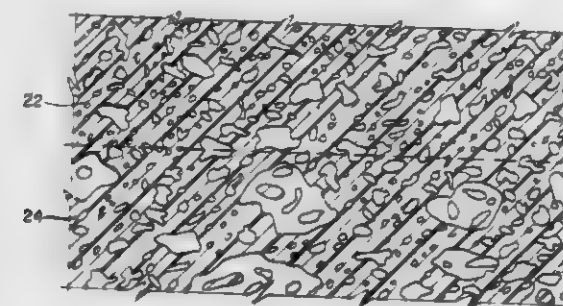
A. Dale Lakes, Dayton, Ohio, assignor to Micro-Cel Systems, Inc., Dayton, Ohio

Filed Feb. 16, 1979, Ser. No. 12,948

Int. Cl.² B32B 3/26; B29D 7/02

U.S. Cl. 428—304

14 Claims



11. A multi-layer ink printer comprising in combination:

- A. an extruded microporous polymer layer;
- B. an outer skin portion of the extruded microporous polymer layer with channels and pores of a size smaller than the channels and pores of the microporous polymer layer integral therewith;
- C. a second additional extruded porous polymer layer connected to the underside of the first microporous polymer layer so that the channels and the pores of the second layer are of a size greater than the size of the pores in the first layer and wherein the density of the layers is greatest at the skin portion and decreases with the cross section; and this second layer is extruded onto a solid profile and
- D. ink contained in the channels and pores of both layers self-metering in use.

4,226,887

ANTI-INFLAMMATORY AGENTS

Winston S. Marshall, Bargersville, and William Pfeifer, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 522,006, Nov. 8, 1974, which is a division of Ser. No. 428,163, Dec. 26, 1973, Pat. No. 3,991,212. This application Apr. 16, 1979, Ser. No. 29,970

Int. Cl.³ A61K 31/015

U.S. Cl. 424—356

3 Claims

1. A method of treating inflammation, fever, or pain in a warm-blooded animal which comprises administering to the animal an effective amount of an active agent which is 4-biphenylacetylene.

4,226,889

COSMETIC STICK COMPOSITION

Edward R. Yuhas, Yonkers, N.Y., assignor to Dragoco, Inc., Totowa, N.J.

Filed Dec. 19, 1978, Ser. No. 971,113

Int. Cl.³ A61K 7/42, 7/44, 31/055, 7/021

U.S. Cl. 424—59

23 Claims

1. A cosmetic stick-type composition consisting essentially of:

- (1) an aqueous sodium stearate-water vehicle formed of:
 - (a) 100 parts by weight of water; and
 - (b) from about 1 to about 30 parts by weight of sodium stearate; and
- (2) from about 0.05 to about 50 weight percent, based upon the total weight of the composition, of at least one cosmetic active ingredient intended to be deposited on human skin, which ingredient is stable in the aqueous alkaline environment provided by said sodium stearate-water vehicle.

4,226,890

MEAT ANALOG COMPOSITIONS

Norman B. Howard, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 28, 1978, Ser. No. 900,956

Int. Cl.² A23J 3/00

U.S. Cl. 426—92

8 Claims

1. A meat analog product comprising texturized protein material, binder, lipid and a food additive composition comprising:

- (a) an emulsifier selected from the group consisting of polyglycerol monoesters of fatty acids; monoacylglycerol esters of dicarboxylic acids; sucrose monoesters of fatty acids; polyol monoesters of fatty acids; phospholipids; and mixtures thereof;
- (b) water, the ratio of emulsifier to water being in the range of from 1:10 to 10:1; and
- (c) a food additive selected from the group consisting of flavoring agents; coloring agents; fats; sugars; ground meat, and mixtures thereof, said composition being in a liquid crystalline state which is stable from about 98° F. to about 200° F.

4,226,891

TREATMENT OF ROBUSTA COFFEE

Neal A. Lewis, Mason, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 909,247, May 24, 1978, abandoned, which is a continuation of Ser. No. 764,933, Feb. 2, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,006
Int. Cl.³ A23F 5/16

U.S. Cl. 426—430

13 Claims

1. A process for preparing an improved, substantially non-decaffeinated Robusta coffee comprising:

(1) contacting roast and ground Robusta coffee beans with a single phase non-chlorinated organic solvent system having a boiling point below 200° F. and having less than about 10% water comprising a major portion of acetone and a minor portion of low molecular weight alcohol having from 1 to 3 carbon atoms, the weight ratio of beans:solvent system being in the range of from about 2:1 to about 1:5, for from about 1 minute to about 20 minutes;

(2) removing said solvent system from contact with said coffee.

4,226,893

PROCESS FOR THE PRODUCTION OF FOAM PRODUCTS SIMILAR TO EGG WHITE FROM MILK SERUM

Denis Pâquet; Kaing S. Thow, and Charles Alais, all of Nancy, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly, France

Filed Aug. 24, 1978, Ser. No. 936,250

Claims priority, application France, Aug. 14, 1977, 77 27797
Int. Cl.² A23J 3/02

U.S. Cl. 426—564

21 Claims

1. Process for producing a foamable product useful as an egg white substitute, said process comprising:

(a) taking the pH of a milk serum based solution having a protein content of the order of 2 to 15%, to a value comprised between 2 and 6;

(b) bringing the temperature of said solution to a temperature comprised between about 45° C. and 80° C. within about 1 to 10 minutes and maintaining said temperature for about 5 to 20 minutes;

(c) rapidly cooling said solution to a temperature comprised between about 15° and 20° C.; and

(d) alkalising said solution to a pH comprised between about 7 and 9.

4,226,894

HYDRATED STABLE FLUENT SHORTENING CONTAINING SOLID PHASE EMULSIFIER COMPONENTS

Ilija Gawrilow, Strongsville, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 747,296, Dec. 3, 1976, Pat. No. 4,137,338. This application Nov. 13, 1978, Ser. No. 959,728
Int. Cl.³ A23D 5/00

U.S. Cl. 426—606

7 Claims

1. A temperature stable fluent shortening for yeast-raised products, to provide improved dough conditioning and anti-staling properties, consisting essentially of

an emulsifier concentrate comprising a normally liquid or soft partial glycerol ester emulsifier having an Iodine Value in the range of about 40–150, an ethoxylated fatty acid ester emulsifier, a solid beta-phase crystalline food emulsifier, and optionally soybean stearine in the proportions of about 4–10 parts glycerol ester, about 2–8 parts ethoxylated fatty acid ester, about 2–8 parts crystalline food emulsifier, and about 0–3 parts stearine;

said ethoxylated fatty acid ester emulsifier being an ethoxylated fatty acid ester of glycerol, polyglycerols, propylene glycol, hexitol, hexitan and isohexide, or a fatty acid ester of ethoxylated glycerol, hexitol, hexitan and iso-hexide.

a liquid vegetable oil in the proportion of about 40–70 weight parts vegetable oil to about 8–29 parts emulsifier concentrate; and

water, emulsified with said oil and emulsifier concentrate in the proportion of about 45–75% water to about 25–55% lipoidal materials.

4,226,895

FLAVORED SPREADABLE EMULSION

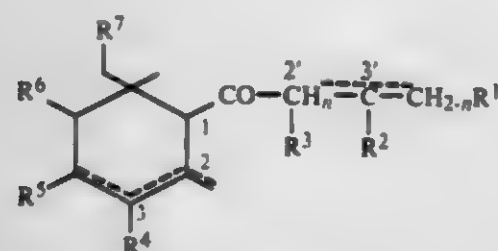
Donald E. Miller, Strongsville, and Charles E. Werstak, Medina, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 930,037, Aug. 1, 1978, abandoned. This application Feb. 1, 1979, Ser. No. 8,521
Int. Cl.³ A23L 1/09

U.S. Cl. 426—658

9 Claims

1. A flavored, spreadable emulsion which is non-pourable over a wide temperature range including room temperature and which is readily spreadable at elevated temperatures above about 110° F. consisting essentially of, based on the total weight of the emulsion, about 8% to about 15% vegetable fat,

containing one double bond in position 2'- or 3'- of the acyl side-chain and either one double bond in position 1- or 2- or two conjugated double bonds in positions 1- and 3- of the ring, the double bonds being represented by dotted lines, and wherein n is zero or 1, R¹, and R³ represents hydrogen or one of them a lower alkyl radical and others hydrogen, and R⁴, R⁵, R⁶ and R⁷ represent hydrogen or one of them a lower alkyl radical and the others hydrogen.

water and sweetening agent, in the proportion of about 3–4:1 sweetening agent to water, a bodying amount of stabilizing agent, and emulsifying amounts of an oil-in-water emulsifier and water dispersible or soluble protein, the relative proportions of emulsifier and protein being those necessary to maintain said non-pourable but spreadable emulsion consistency, said stabilizing agent, emulsifier and protein in combination comprising less than about 10% by weight of the emulsion; said fat having a Wiley Melting Point in the range of about 90° to about 115° F., and an approximate solid-fat index of:

Temperature, °F.	Approximate Solid-Fat Index
50	65 ± 10
92	more than 18
100	11 max.

4,226,896

PLASMA METHOD FOR FORMING A METAL CONTAINING POLYMER

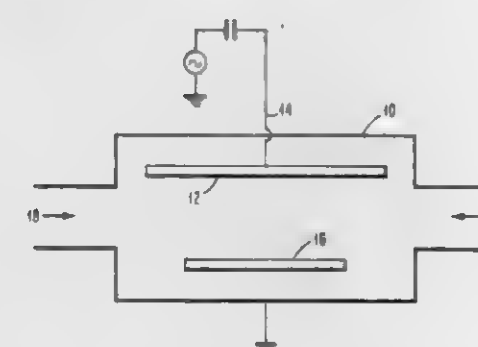
John W. Coburn, and Eric Kay, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,826

Int. Cl.² B05D 1/10; C23C 13/02

U.S. Cl. 427—34

8 Claims



1. A plasma process for forming a polymer film containing metal therein comprising the steps of:

providing a closed vacuum system having gas input means and gas exhaust means;

providing a first electrode in said system of a metal adapted to be plasma etched by a halogen to form a volatile halide; providing a substrate in said system in spaced relation to said first electrode and adapted to have a polymer film deposited thereon;

passing a halocarbon monomer through said system, said monomer plasma etching said first electrode to form a volatile halide and forming at the same time a stable polymer on said substrate when a glow discharge is established by the application of a suitable voltage to said first electrode; and

applying a suitable voltage to said first electrode whereby metal plasma etched from said first electrode is incorporated into the polymer film that is deposited on said substrate.

4,226,897

METHOD OF FORMING SEMICONDUCTING MATERIALS AND BARRIERS

John H. Coleman, Locust Valley, N.Y., assignor to Plasma Physics Corporation, Locust Valley, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,690

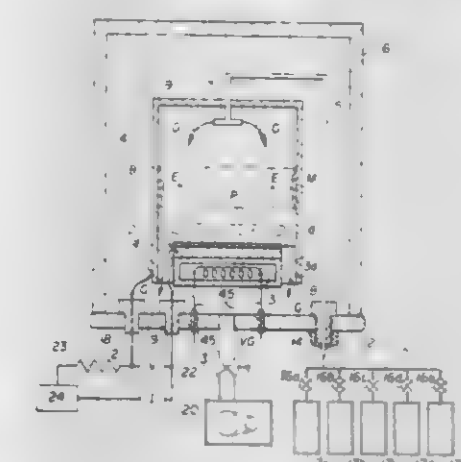
Int. Cl.² B05D 3/06

U.S. Cl. 427—39

38 Claims

2. The method of producing a film on the surface of a substrate in an evacuated enclosure, which includes the steps of introducing a gaseous material at sub-atmospheric pressure in

the region of said surface, applying to said surface a spatially non-uniform electric field having a weak field region extending over a portion of said surface and controlling said pressure to



maintain a glow-discharge in said weak field region adjacent said portion of said surface to produce a substantially uniform film on said portion of said surface.

4,226,898

AMORPHOUS SEMICONDUCTORS EQUIVALENT TO CRYSTALLINE SEMICONDUCTORS PRODUCED BY A GLOW DISCHARGE PROCESS

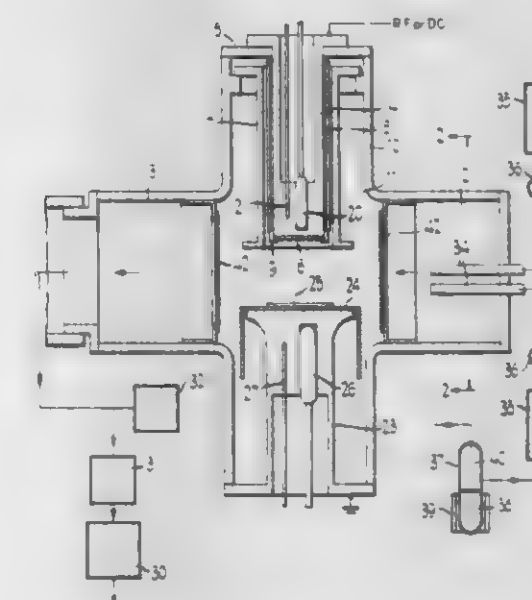
Stanford R. Ovshinsky, Bloomfield Hills, and Arun Madan, Rochester, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Mar. 16, 1978, Ser. No. 887,353

Int. Cl.² H01L 45/00

U.S. Cl. 427—39

57 Claims



1. The method of making a semiconductor film comprising a solid amorphous semiconductor host matrix including at least one element and having electronic configurations which have an energy gap and a density of localized states therein, said method comprising depositing on a substrate a solid amorphous semiconductor host matrix including at least one element by glow discharge decomposition of a compound containing said at least one element and at least one alterant element in a partial vacuum having an atmosphere separately containing at least one different alterant element and not derived from the compound, wherein said different at least one alterant elements of said compound and separately contained in said atmosphere comprise at least fluorine and are incorporated in said amorphous semiconductor host matrix during deposition thereof yielding an altered amorphous semiconductor material having altered electronic configurations with a reduced density of localized states in the energy gap.

4,226,899

METHOD FOR FABRICATING CONTROLLED TCR THIN FILM RESISTORS

Ronald A. Thiel, and Edward H. Maurer, both of San Diego, Calif., assignors to General Dynamics Corporation Electronics Division, San Diego, Calif.

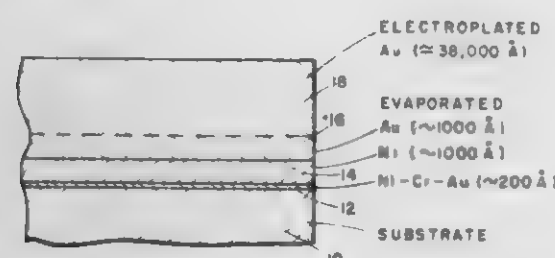
Division of Ser. No. 784,052, Apr. 4, 1977, Pat. No. 4,164,607.

This application Aug. 21, 1978, Ser. No. 935,307

Int. Cl.² H01C 7/00, 7/02, 7/04

U.S. Cl. 427-101

13 Claims



1. A method of fabricating thin film resistors comprising the steps of:

- selecting a dielectric substrate, and co-deposit preselected percentages of gold, nickel and chromium on said substrate forming a resistive film of not more than 5,000 angstroms in thickness of an alloy consisting of gold, nickel and chromium wherein the percentage of gold is no greater than the combined percentage of nickel and chromium.

4,226,900

MANUFACTURE OF HIGH DENSITY, HIGH STRENGTH ISOTROPIC GRAPHITE

Robert K. Carlson, Decatur, Tex., and James J. Ferritto, Saginaw, Mich., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 3, 1978, Ser. No. 883,227

Int. Cl.² B05D 3/02

U.S. Cl. 427-228

7 Claims

1. The method of producing a homogeneous, isotropic, graphite article having a density of at least about 2 g/cc, a compressive strength of at least about 20,000 psi, a flexural strength of at least about 8,000 psi, and an isotropic ratio of about 1.05 or less, by the steps comprising

- (a) reducing, to 100 mm mercury or less, the pressure on a homogeneous, isotropic graphite substrate having
 - (1) a density of about 1.6 to about 1.95 g/cc;
 - (2) an isotropic ratio of about 1.05 or less;
 - (3) at least about 15 percent total porosity;
 - (4) at least about 50 percent of said total porosity being open porosity contained in interconnected pores open to the surface of said substrate and having an average pore size of about 5 microns or less and a narrow pore size distribution in which at least 90 percent of said open porosity is contained in pores having diameters of less than about 20 microns;
- (b) covering said substrate while under said reduced pressure with a fluid, carbonizable impregnant selected from (1) phenolic and furfural alcohol resins, and (2) petroleum and coal tar pitches having melting points of about 200° C. or less, carbon/hydrogen atom ratios of at least about 1.6, carbon residue values of at least about 60 percent, and less than about 20 weight percent benzene insolubles, at a temperature of at least about 20° C. above the melting point of said impregnant;
- (c) impregnating said substrate and carbonizing said impregnant within said substrate by (1) pressurizing said substrate, while covered with said impregnant, up to a pressure of at least about 10,000 psi and less than about 30,000 psi, (2) heating said substrate up to a temperature of at least about 600° C. correlated with said pressure to maintain the combination of said impregnant and substrate at a

pressure of at least about 10,000 psi and less than about 30,000 psi and a temperature of at least about 600° C. for a period of time sufficient to impregnate at least about 80% of said open porosity with said impregnant and carbonize said impregnant within said open porosity; and

- (d) graphitizing the resulting carbonized, impregnated substrate by heating it to a temperature of at least about 2400° C., said impregnating, carbonizing and graphitizing steps being conducted at pressures below about 30,000 psi and under pressures correlated with temperatures so that at temperatures above 1800° C. said graphite substrate is not exposed to any substantial pressure capable of increasing said isotropic ratio.

4,226,901

METHOD FOR METALLIC FINISH COATING

Shinji Sugiura, Tadashi Watanabe, and Satoru Ito, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Nov. 20, 1978, Ser. No. 962,034

Claims priority, application Japan, Nov. 25, 1977, 52/141281

Int. Cl.² B05D 3/02

U.S. Cl. 427-385.5

3 Claims

1. In a method for applying a metallic finish coat to a substrate which comprises applying a base coat composed of a metallic paint containing a thermosetting resin as a film-forming ingredient to a substrate, applying a top coat composed of a clear paint containing a thermosetting resin as a film-forming ingredient to the surface of the base coat, and heating both the base coat and top coat to cure them, the improvement wherein the top coat consists essentially of

- (A) an acrylic resin having a number average molecular weight of 5,000 to 15,000 and a glass transition temperature of from 5° to 35° C. obtained by copolymerizing (a) 42 to 90 parts by weight of at least one methacrylate selected from alkyl methacrylates with the alkyl moiety having 4 to 18 carbon atoms and (b) 10 to 58 parts by weight of a monomer having an ethylenically unsaturated bond and a hydroxyl group in the molecule, the total amount of components (a) and (b) being 100 parts by weight, and
- (B) an aminoaldehyde resin, the weight ratio of the acrylic resin (A) to the aminoaldehyde resin (B) being from 80:20 to 65:35.

4,226,902

DECORATIVE DEVICE

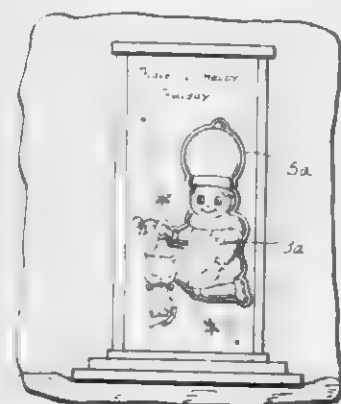
Robert E. Webb, 4710 Grizzard Rd., Huntsville, Ala. 35810

Filed Feb. 9, 1979, Ser. No. 10,629

Int. Cl.² A47G 33/00

U.S. Cl. 428-7

7 Claims



- 1. A decorative device for decorating a supporting surface, said decorative device comprising an inflatable gas-tight envelope having a substantially flat sheet-like back with an edge defining the border thereof, the edge providing a flat margin around the envelope, the

envelope presenting a three-dimensional item when inflated; valve means in said envelope for selectively inflating and deflating said envelope; and adhesive means on the back of said envelope in the area of the edge thereof on the flat margin for removably affixing said envelope to a supporting surface.

4,226,903

ELECTRICAL INSULATING SHEET MATERIAL AND ELECTRICAL WINDING MADE THEREFROM

William H. Gottung, Ballston Lake, and Kevork A. Torossian, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 836,095, Sep. 23, 1977. This application

Aug. 25, 1978, Ser. No. 936,961

The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.² B32B 7/14; D02G 3/00; H02K 15/12

U.S. Cl. 428-195

8 Claims



- 1. An electrical insulating sheet material comprising a sheet of aramid paper, a coating of thermosetting resinous adhesive material in a solid but heat bondable state and substantially uniformly distributed over at least one side of the aramid paper sheet, and a pressure sensitive adhesive material applied in a pattern to at least one side of the resin-coated aramid paper sheet, said pattern being of predetermined configuration to limit to a predetermined maximum distance the spacing between any point on the sheet not covered with pressure sensitive adhesive material and the closest point in the pattern of pressure sensitive adhesive material, said pressure sensitive adhesive material having a predetermined peel strength sufficient to hold the paper to a surface before the thermosetting adhesive is bonded thereto.

4,226,904

POLYMETHYL METHACRYLATE-POLYVINYLIDENE FLUORIDE LAMINATES AND METHOD

Jean-Paul Ollivier, Paris, and Albert Strassel, Oullins, both of France, assignors to Produits Chimiques Ugine Kuhlmann, France

Filed Nov. 27, 1978, Ser. No. 963,801

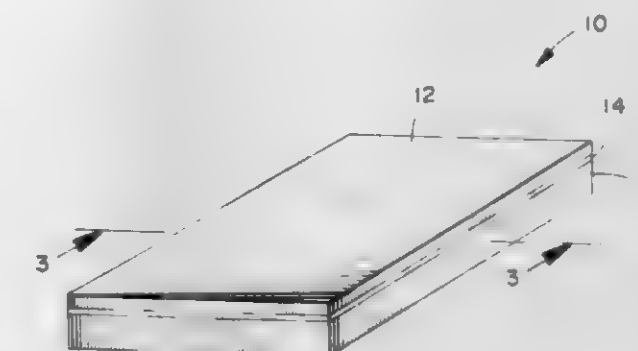
Int. Cl.² B32B 7/02, 27/08

U.S. Cl. 428-212

3 Claims

- 1. A laminate comprising a polymethyl methacrylate layer having coated on at least one surface thereof a layer of a polyvinylidene fluoride having a maximum thickness one-tenth of the thickness of the polymethyl methacrylate with the thick-

ness of the polyvinylidene fluoride coating being no greater than 400 microns and an intermediate layer having the same



optical properties as polymethyl methacrylate comprising a polymethyl methacrylate layer.

4,226,905

MANUFACTURE OF FILM FROM PARTIALLY CROSSLINKED POLYETHYLENE

David A. Harbourne, Kingston, Canada, assignor to Du Pont Canada Inc., Montreal, Canada

Filed Apr. 16, 1979, Ser. No. 30,708

Claims priority, application United Kingdom, Apr. 18, 1978, 15202/78

Int. Cl.² B29D 23/04; C08F 110/02

U.S. Cl. 428-220

15 Claims

- 1. A blown film process in which partially crosslinked polyethylene is extruded into film having a thickness in the range of 10 to 100 μm, said process having a blow-up ratio in the range of 1.2:1 to 4:1 and a MD draw down ratio in the range of 2 to 60, said polyethylene having had before crosslinking, a density in the range of 0.940 to 0.970 g/cm³ and a melt index in the range of 0.2 to 15.0 g/10 min and having been crosslinked to an extent sufficient to provide, after extrusion in said blown film process, a film having an Elmendorf tear strength in the transverse direction substantially less than the Elmendorf tear strength in the transverse direction of a film produced from the polyethylene, before crosslinking, under the same conditions as the film produced from the partially crosslinked polyethylene.

- 12. A blown film produced from partially crosslinked polyethylene consisting essentially of polyethylene which, before being crosslinked, had a density in the range of 0.940 to 0.970 g/cm³ and a melt index in the range of 0.2 to 15.0 g/10 min. and which, after being crosslinked, exhibits an Elmendorf tear strength in the transverse direction substantially less than the Elmendorf tear strength in the transverse direction of a blown film produced from such polyethylene before being crosslinked under the same conditions as the film produced from the partially crosslinked polyethylene.

4,226,906

MICROPOROUS COATED FABRICS FROM CLUSTERED MICROSPHERES

Ezekiel J. Jacob, Brooklyn, N.Y., assignor to John Brian Hawthorth, Westport, Conn.

Filed Aug. 14, 1978, Ser. No. 933,541

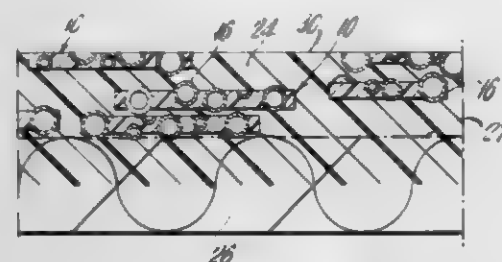
Int. Cl.² B32B 5/16, 27/14

U.S. Cl. 428-283

10 Claims

- 1. A microporous plastic composition comprising a synthetic resin matrix and a network of domains dispersed throughout said matrix; each of said domains comprised of plurality of porous microspheres bonded together with a bonding agent

that is insoluble in the synthetic resin matrix; said composition having a relatively uniform gas permeability.



3. The composition according to claim 1, wherein said domains are comprised of vitreous rhyolitic tuff.

4,226,907

FLAME RETARDANT ARTICLE

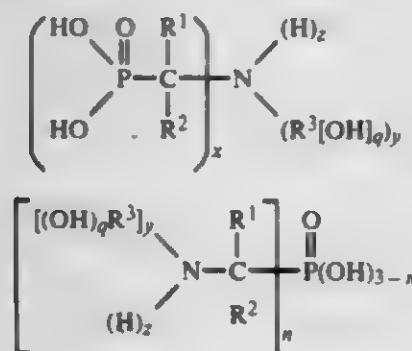
Kenneth J. Sienkowski; Richard R. Nicholson, both of Ann Arbor, Mich., and Ray E. Smith, Lake Buena Vista, Fla., assignors to Velsicol Chemical Corporation, Chicago, Ill. Continuation-in-part of Ser. No. 966,930, Dec. 6, 1978. This application Sep. 17, 1979, Ser. No. 76,098

Int. Cl.³ C09D 5/18; D04H 1/58

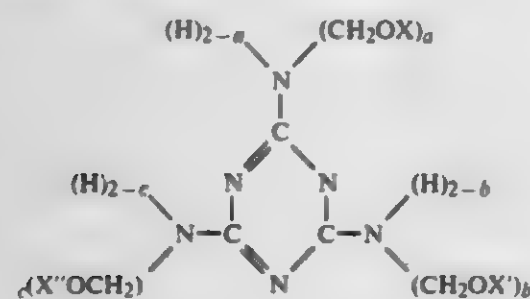
U.S. Cl. 428—288

10 Claims

1. A flame retardant article comprising an article treated with a flame-retardingly effective amount of an intumescent composition comprising a hydroxyalkyl amino alkyl phosphonic acid, a cyclic nitrogen compound, and water, wherein said phosphonic acid is selected from the group consisting of



wherein x, y, and n are integers independently selected from the group consisting of 1 and 2, q is an integer selected from the group consisting of 1, 2, and 3, z is an integer selected from the group consisting of 0 and 1, R¹ and R² are independently selected from the group consisting of hydrogen, alkyl radicals containing from about 1 to about 6 carbon atoms, and haloalkyl radicals containing from about 1 to about 6 carbon atoms, and R³ is selected from the group consisting of alkyl radicals containing from about 1 to about 6 carbon atoms and haloalkyl radicals containing from about 3 to about 6 carbon atoms, provided that the total number of carbon atoms in the R¹, R², and R³ groups does not exceed about 14; and wherein said cyclic nitrogen compound is



wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X',

and X'' are independently selected from the group consisting of hydrogen and —CH₃.

4,226,908

WATER REPELLENT INORGANIC FOAM AND METHOD FOR PRODUCING THE SAME

Akira Yoshino, Yokohama; Isamu Iwami, Zushi, and Tsuneo Wakabayashi, Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Dec. 7, 1977, Ser. No. 858,296

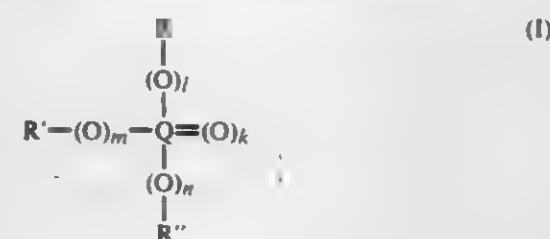
Claims priority, application Japan, Jun. 20, 1977, 52/73067; Sep. 20, 1977, 52/112194

Int. Cl.² C04B 21/00; C07F 9/22, 9/06; B32B 5/18

U.S. Cl. 428—310

17 Claims

1. In an inorganic foamed article comprising a metallic salt of phosphoric acid, the improvement which comprises imparting water repellency to said article by chemically bonding hydrophobic groups to said salt, said hydrophobic groups being formed during preparation of the article by a reaction between said salt and a compound of the formula (I):



wherein Q represents phosphorus or nitrogen and k, l, m and n are integers of 0 or 1 and, when Q is phosphorus,

(1) k is 0 or 1, l is 1, m and n are 0 or 1, R and R' are hydrogen atoms, and R'' is an alkyl, an aryl, a substituted alkyl or a substituted aryl; or

(2) k is 0 or 1, l is 1, m and n are each 0 or 1, R is hydrogen and R' and R'' are each an alkyl, an aryl, a substituted alkyl or a substituted aryl, and

when Q is nitrogen, k, l, m and n are 0, R, R' and R'' are each hydrogen, an alkyl, an aryl, a substituted alkyl or a substituted aryl, with the proviso that the case where R, R' and R'' are all hydrogen is excluded.

4,226,909

COBALT-DOPED ACICULAR HYPER-MAGNETITE PARTICLES

Thomas M. Kanten, Baldwin, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 736,744, Oct. 29, 1976, Pat. No. 4,137,342.

This application Aug. 21, 1978, Ser. No. 935,749

Int. Cl.² C01G 49/06, 49/08

U.S. Cl. 428—329

4 Claims

1. Acicular particles useful for magnetic recording media, each having a core consisting essentially of acicular



wherein x is greater than one and not greater than 1.5, and a surface layer comprising a cobalt compound, the cobalt being substantially only at the surface and providing 1-10% by weight of the particle.

4,226,910

ENERGY CONTROL SHEET HAVING INSULATIVE PROPERTIES

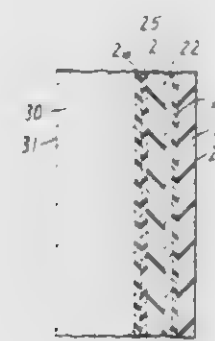
Richard R. Dahlen, White Bear Lake, Minn.; Richard L. Hansen, West Chester, Pa., and Richard L. Weiher, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 867,321, Jan. 5, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 56,905

Int. Cl.³ B32B 17/10, 15/08

U.S. Cl. 428—336

12 Claims



1. In a window unit located in the external wall of a room, said unit comprising a plurality of transparent strata and including at least

(a) a glazing unit having an inside face oriented toward the interior of the room and an outside face oriented toward the exterior of the room, said glazing unit comprising at least one rigid transparent stratum whose inner face coincides with the inside face of the glazing unit, and

(b) a flexible, transparent energy control stratum which is located adjacent to said glazing unit or one of its component strata and which is a flexible, unitary multi-layer sheet material comprising a transparent-reflective metal layer bonded to a transparent polymeric support foil which has low transmission and high absorption properties with respect to infra-red energy in the 4-40 micrometer wave length, said metal layer being covered by a transparent polymeric protective layer and having a sheet resistance of less than 20 ohms/square,

the improvement wherein (1) the transparent polymeric layer is selected from polymers which, in thicknesses on the order of 5-50 micrometers, transmit at least about 80% of the normal room temperature infra-red radiant energy in the wavelength of 4-40 micrometers,

and (2) the energy control stratum is located other than adjacent the outside face of the glazing unit and is oriented so that the protective layer confronts an air space and does not contact any surface of the glazing unit,

whereby said window unit not only effectively excludes externally originating heat and glare in hot weather but also returns to the room at least about 55% of the internally originating infra-red energy impinging on said window unit and thereby significantly improves the insulative effectiveness of said window unit in cold weather.

7. A thin, flexible, self-sustaining transparent reflective sheet material for making the energy control stratum in the window unit of claim 1, said sheet material comprising in laminar combination:

(a) a self-sustaining flexible, transparent biaxially oriented polyethylene terephthalate foil having first and second faces,

(b) a transparent-reflective metal layer adhered to the first face of said polyethylene terephthalate foil, and

(c) protectively covering said metal layer, a flexible, transparent layer of a polymeric material which, in thicknesses of 5-50 micrometers, transmits at least about 80% of infra-red radiant energy in the wavelength of 4-40 micrometers.

4,226,911

MICROPOROUS ELASTOMERIC MATERIAL AND METHOD OF MANUFACTURE

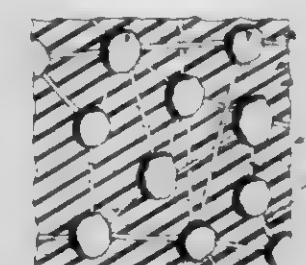
Doyle V. Haren, Clyde, N.C., assignor to Dayco Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 884,792, Mar. 9, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,098

Int. Cl.³ B41J 27/20; B29D 27/00

U.S. Cl. 428—375

23 Claims



1. An article capable of taking up and dispersing a liquid substance which comprises an elastomeric matrix having interconnecting cavities distributed therethrough and having from about 1 to about 100 parts per 100 parts by weight of elastomeric material of discrete fibers dispersed therethrough, said fibers having a diameter in the range of about 0.0005 to about 0.004 inch and a length in the range of about 0.005 to about 0.250 inch, wherein said fibers increase the liquid take-up and dispensing capability of said article.

4,226,912

HEAT-SENSITIVE RECORDING MATERIAL

Hiroshi Iwasaki, Kawanishi; Takeshi Murakami, Osaka, and Mitsuru Kondo, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 9,083

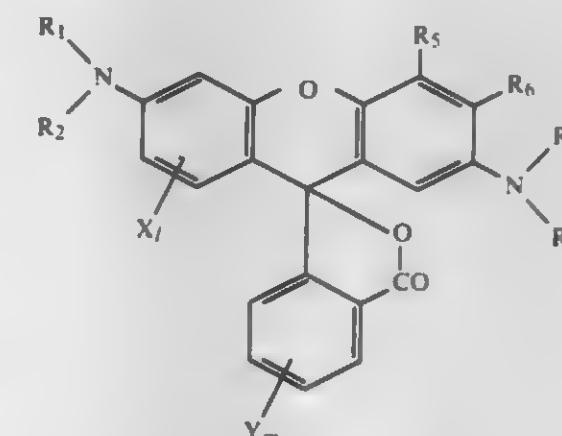
Claims priority, application Japan, Feb. 15, 1978, 53-16695

Int. Cl.² B41M 5/18

U.S. Cl. 428—411

12 Claims

1. In a black color developing heat-sensitive recording material comprising a base sheet and a color developing layer formed on at least one surface of the base sheet, said color developing layer including colorless or light-colored chromogenic material and acceptor which is reactive with said chromogenic material to develop a black color, an improvement that at least 60% by weight of said chromogenic material comprises at least two kinds of black color developing fluoran compounds having the same blackish hue and having the general formula



where each R₁, R₂, R₃ and R₄ represents hydrogen, alkyl, alicyclic, aryl or aralkyl, each of which may have at least one substituent selected from the group consisting of halogen, alkyl, halogenated alkyl, cyanoalkyl, alicyclic, aryl, aralkyl, hydroxyl, alkoxy, phenoxy, acyl, carboxyl, alkoxy-carbonyl, amino, substituted amino, cyano and nitro. R₁ may cooperate with R₂ to form a heterocyclic ring and R₃ may cooperate with

R₄ to form a heterocyclic ring; R₅ represents hydrogen, halogen, alkyl, halogenated alkyl, cyanoalkyl, alkoxy, aralkyl or substituted amino; R₆ represents hydrogen, halogen, alkyl, halogenated alkyl, cyanoalkyl or aralkyl; R₅ may cooperate with R₆ to form an aromatic ring; X represents halogen, alkyl, halogenated alkyl, cyanoalkyl or alkoxy; Y represents halogen, alkyl, alicyclic, halogenated alkyl, cyanoalkyl, alkoxy, aralkyl, aryl, acyl, amino, substituted amino or nitro; Y may form an aromatic ring together with the benzene ring to which Y is attached; l is zero or an integer of 1 to 2 and m is zero or an integer of 1 to 4, and the amount of each of said black color developing fluoran compounds is not larger than 90% by weight of the total amount of said black color developing fluoran compounds.

4,226,913

POLYPARABANIC ACID/COPPER FOIL LAMINATES OBTAINED BY DIRECT SOLUTION CASTING

Don J. Henderson, Worthington, Ohio, assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Division of Ser. No. 832,760, Sep. 12, 1977, Pat. No. 4,148,969, which is a continuation of Ser. No. 663,596, Mar. 3, 1976, abandoned, which is a continuation of Ser. No. 464,359, Apr. 26, 1974, abandoned. This application Dec. 18, 1978, Ser. No. 970,605

Int. Cl.² B32B 15/08, 27/08

U.S. Cl. 428—421

11 Claims

1. A process of forming coated articles of polyparabanic acid strongly adhered to a supportive substrate which comprises in combination the steps of:

- forming a solution of polyparabanic acid with an inherent viscosity of 0.4–2.5 and a Brookfield viscosity of from 1000 to 50,000 cps, at least 25% of the polyparabanic acid being of an aromatic type,
- coating a thin layer of said solution directly on a substrate in the absence of intermediate adhesives,
- heating said thin layer of polyparabanic acid solution to evaporate the solvent from said film and,
- recovering a coated article having a relatively dry layer of polyparabanic acid strongly adhered directly to said substrate.

4,226,914

NOVEL SPRAYING COMPOSITION, METHOD OF APPLYING THE SAME AND ARTICLE PRODUCED THEREBY

Leslie L. Turner, West Bloomfield; David Moskowitz, Southfield, and Roy L. Van Alsten, Redford, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 19, 1978, Ser. No. 907,530

Int. Cl.² B05D 1/08; B32B 13/04, 9/04; C01B 31/36

U.S. Cl. 428—446

15 Claims

1. As a new article of manufacture: a substrate, and, a tightly adherent wear and heat resistant coating on said substrate composed of beta silicon carbide and silicon, said coating being applied to said substrate by a plasma spray of a finely divided mixture consisting essentially of silicon carbide and silicon.

6. A method of developing a coating on a substrate which comprises:

- developing a plasma spray,
- feeding a mixture of finely divided silicon carbide and silicon to said plasma spray, and
- directing said plasma spray at an exposed surface of the substrate whereby said exposed surface is coated with a tightly adherent wear and heat resistant coating consisting essentially of beta silicon carbide and silicon.

4,226,915

PRESSURE-SENSITIVE ADHESIVE TAPE OR SHEET

Eiji Iijima, Sakura, and Yoshimi Nishimura, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed Nov. 2, 1978, Ser. No. 957,083

Claims priority, application Japan, Nov. 16, 1977, 52-138281 Int. Cl.¹ B32B 25/04

U.S. Cl. 428—492

7 Claims

1. A pressure-sensitive adhesive tape or sheet, comprising an air-permeable substrate having coated thereon a layer of an adhesive composition, said adhesive composition consisting essentially of a substantially homogeneous mixture of (a) 3 to 25% by weight of a water-soluble polyol selected from the group consisting of glycerin, propylene glycol, butylene glycol, hexylene glycol, polyethylene glycols having a molecular weight not higher than 1000, ethylene glycol, polypropylene glycol having a molecular weight of up to 1000, mannitol and sorbitol, (b) 1 to 25% by weight of a water-soluble or water-swelling polymer selected from the group consisting of polyvinyl alcohol, methyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxyethyl cellulose, sodium alginate and polyethylene oxides having a molecular weight higher than 300,000, the sum of amounts of the components (a) and (b) being at least 6% by weight, based on the weight of the adhesive composition, and the balance of the adhesive composition essentially is a pressure-sensitive adhesive capable of adhering to and safe for use on

4,226,916

FORCE TRANSMITTING LOOP MADE OF FIBER COMPOSITE MATERIAL

Ralf-Thilo Schulz, Putzbrunn; Klaus Brunsch, Weidach, and Rudolf Woernle, Neubiberg, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany
Filed Jul. 31, 1978, Ser. No. 929,278

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736124

Int. Cl.³ B32B 9/04; B29H 9/02; F16G 11/00

U.S. Cl. 428—542

11 Claims



1. A force transmitting element of fiber composite material including reinforcing filaments embedded in a synthetic cured embedding material, comprising an open ended U-shaped member having a constant cross sectional area along the length of said open ended member and a cross-sectional configuration which varies along the length of said open ended member which is formed of an endless filament bundle initially wound onto a removable winding core means having a core proper and side wall means spaced from each other so that the spacing corresponds to said cross-sectional configuration which varies along the length of said open ended member having initially a closed loop form wherein after curing one end is removed by severing thereby forming said open ended U-shaped member.

10. A method for forming a force transmitting element of fiber filament composite material in the form of an open ended member comprising the following steps: providing removable core means having a core proper and side walls, spacing said side walls from each other so that the space between the walls has a constant cross-sectional area along the length of the core means and a cross-sectional configuration which varies along the length of the core means, winding a fiber filament impreg-

nated with a curable synthetic embedding material onto said core to form an endless loop, curing the synthetic embedding material, separating the endless loop from the core means, and severing said endless loop proximate one end to form said open ended U-shaped member, which has a constant cross-sectional area and a varying cross-sectional configuration along its length.

4,226,917

COMPOSITE JOINT SYSTEM INCLUDING COMPOSITE STRUCTURE OF CARBON FIBERS EMBEDDED IN COPPER MATRIX

Masao Tsuruoka; Hideyuki Yagi; Keiichi Morita, and Keiichi Kuniya, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 12, 1978, Ser. No. 895,590

Claims priority, application Japan, Apr. 15, 1977, 52-42550

Int. Cl.² B32B 15/14, 15/20; B60M 5/00

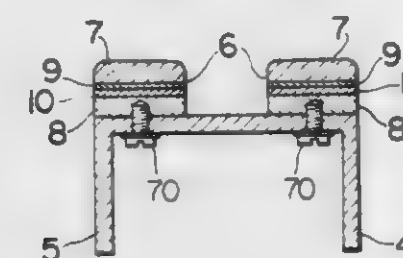
U.S. Cl. 428—614

5 Claims

U.S. Cl. 429—25

Int. Cl.² H01M 8/04

3 Claims



1. A composite joint system having a composite structure containing a plurality of carbon fibers embedded in a copper matrix, said composite structure being joined through a brazing material to a member to be secured to said composite structure, wherein said brazing material is Al, and wherein between said composite structure and said brazing material is interposed a film of metal which prevents the direct contact of said brazing material with said composite structure and has a good wettability to both the composite structure material and said brazing material, said metal film including a first layer of Ni provided on said composite structure and a second layer of at least one selected from a group consisting of Cr, Mo, W, Ta, Ti, Zr, V, and an alloy of at least one of these metals and provided on said first layer.

3. A composite joint system having a composite structure containing a plurality of carbon fibers embedded in a copper matrix, the composite structure being joined through a brazing material to a member to be secured to said composite structure, wherein said brazing material is an Al brazing material, and wherein between said composite structure and said brazing material is interposed a film of metal which prevents the direct contact of said brazing material with said composite structure and has a good wettability to both the composite structure and said brazing material, said metal film including a first layer of Ni provided on said composite structure and a second layer of at least one selected from a group consisting of Cr, Mo, W, Ta, Ti, Zr, V and an alloy of at least one of these metals and provided on said first layer.

4,226,918

RUBBER ADHERENT TERNARY CU-ZN-NI ALLOY COATED STEEL WIRES

Raymond A. Friend, Niles, Mich., assignor to National-Standard Company, Niles, Mich.

Filed Aug. 3, 1978, Ser. No. 930,799

Int. Cl.³ B32B 15/18

U.S. Cl. 428—676

5 Claims

1. A ferrous wire for use as a reinforcement for rubber tires or rubber hose having a homogeneous alloy coating deposited thereon, said alloy coating comprised of between about 0.3–6.0% by weight of nickel, 60–75% by weight of copper and 40–25% by weight of zinc, with said homogeneous coating

comprising of between about 0.25–16.0 grams by weight of coating per kilogram weight of the combined coating and wire.

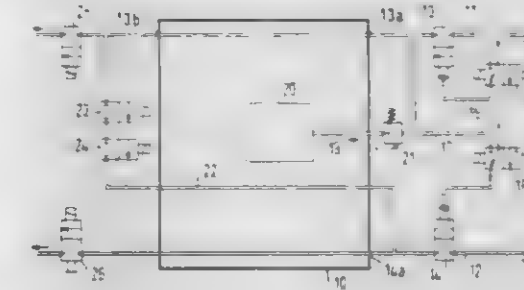
3. A ferrous bead wire for use as a reinforcement for rubber tires, said bead wire having a homogeneous alloy coating deposited thereon, said alloy coating comprised of between about 0.3–6.0% by weight of nickel, 50–75% by weight of copper and 50–25% by weight of zinc, with said alloy coating comprising of between about 0.25–1.25 gram by weight of coating per kilogram weight of the combined coating and wire.

4,226,919

HYDROGEN/OXYGEN FUEL CELL

Botho Stüwe, Fürth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Aug. 8, 1979, Ser. No. 64,887

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836464

Int. Cl.² H01M 8/04

1. In an improved hydrogen/oxygen fuel cell of the type having a hydrogen gas feed line connected to said cell for the flow of hydrogen gas into said cell, and having an oxygen gas feed line connected to said cell for the flow of oxygen gas into said cell, said hydrogen gas feed line including a hydrogen diaphragm valve positioned therein which controls the flow of hydrogen gas into said cell, with a hydrogen control line for controlling said hydrogen diaphragm valve and a hydrogen control valve for opening and closing said hydrogen control line, and in which said oxygen feed line includes an oxygen diaphragm valve positioned therein which controls the flow of oxygen gas into said cell, with an oxygen control line for controlling said oxygen diaphragm valve, said improvement comprises:

a connection of said oxygen control line to said hydrogen feed line at a point upstream of said hydrogen diaphragm valve, and a downstream of the connection of said hydrogen feed line to said cell, which provides fluid communication between said oxygen control line and said hydrogen feed line;

oxygen control valve positioned in said oxygen control line for opening and closing said oxygen control line; wherein the opening pressure of said oxygen diaphragm valve is higher than the opening pressure of said hydrogen diaphragm valve.

4,226,920

EXPANDED ZINC ELECTRODE FOR DRY CELLS

William A. Armstrong, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jun. 22, 1979, Ser. No. 51,234

Claims priority, application Canada, Oct. 20, 1978, 313887 Int. Cl.² H01M 6/10

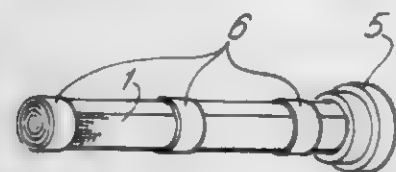
U.S. Cl. 429—94

12 Claims

1. An anode for a cylindrical electrochemical cell, comprising

- a sheet of a perforated electrochemically active material, said sheet being wound in the form of a coil, and
- spacer means providing substantially uniform spacing between adjacent layers of the coil, said spacer means

being in the form of a resilient strip-shaped material attached to said sheet material, the thickness of said strip



being about 0.001 to 0.005 inch to permit adequate flow of electrolyte between said adjacent layers.

4,226,921

SELECTIVE PLUGGING OF BROKEN FIBERS IN TUBESHEET-HOLLOW FIBER ASSEMBLIES

Floris Y. Tsang, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 16, 1979, Ser. No. 57,926

Int. Cl.² H01M 2/14

U.S. Cl. 429-104

9 Claims

1. The method of treating a tubesheet/hollow fiber assembly to ensure that any defective fibers and/or tubesheet channels included therein will be selectively plugged, said method comprising

A. providing as said assembly one which comprises a bundle of gas-filled, hollow fiber lengths passing through and sealingly engaged with a rigid, relatively thin wall-member of tubesheet having first and second generally parallel faces, each of said lengths having an open end terminating in or protruding from said first face and at least a majority of said lengths having portions depending from said second face which have closed ends or are generally U-shaped loops having second open ends terminating in or protruding from said first face,

B. covering said first face with a body of a flowable, curable sealant and developing a pressure differential between said body and the exteriors of said dependent fiber portions, thereby

(1) causing said sealant to flow into the defective fibers and/or tubesheet channels and to displace therefrom at least a portion of the gas contained therein, and

(2) causing said sealant to flow into the open ends of the non-defective fibers to a limited extent determined by the resistance to compression of the gas they contain,

C. diluting the sealant external to the fibers,

D. subjecting the exteriors of said dependent fiber portions and the diluted sealant body to essentially the same reduced pressure, with the results that: the gas in the non-defective fibers expands until the pressure inside them is the same as the pressure outside them,

the undiluted sealant in the non-defective fibers is expelled and the diluted sealant intrudes slightly into them, the column of sealant in each defective fiber and tubesheet channel remains in place and no more than a small terminal portion of it is diluted,

E. While maintaining the pressure equilibrium established in step D, removing the main body of the diluted sealant from contact with the tubesheet,

F. optionally, rinsing said first face and open fiber ends with a diluent, and

G. curing the sealant in the defective fibers and/or tubesheet channels, thereby plugging them,

said sealant being so composed as to be convertible, in-situ in said defective fiber lengths or channels and at a temperature below the distortion temperature of said fibers, to plugs of a solid, non-porous material sealingly bonded to the fiber or channel walls and having a coefficient of expansion substantially matching that of the fiber material.

4,226,922 SODIUM SULFUR ELECTROCHEMICAL CELL OR BATTERY

Anthony F. Sammelis, Naperville, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Aug. 9, 1979, Ser. No. 65,081

Int. Cl.² H01M 10/39

U.S. Cl. 429-104

11 Claims

1. In a sodium/sulfur electrochemical cell or battery having at least one anode chamber with anodic reactant and at least one cathode chamber with cathodic reactant and separated from each other by a sodium ion conducting solid electrolyte and having a cathodic current collector in contact with the cathodic reactant, the improvement comprising said cathodic current collector comprising a boronized surface in contact with said cathodic reactant and an additional boron source in physical proximity to said boronized surface.

4,226,923

VOLUME EFFICIENT SODIUM SULFUR BATTERY

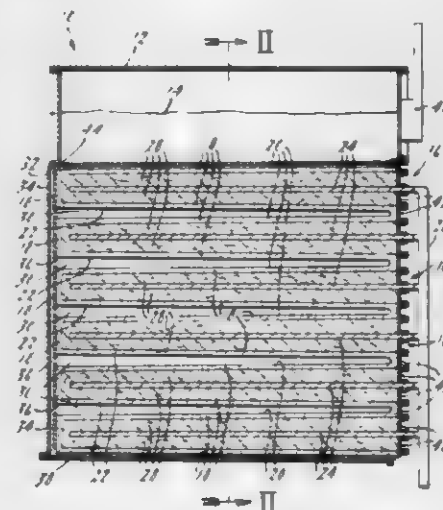
Mati Mikkor, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 29, 1979, Ser. No. 89,060

Int. Cl.² H01M 6/18

U.S. Cl. 429-104

4 Claims



1. A sodium sulfur battery which comprises:

a plurality of box shaped sulfur electrodes, the outer surfaces of each of said electrodes being defined by an electrolyte material, each of said electrodes having length and width dimensions substantially greater than the thickness dimension thereof, each of said sulfur electrodes having an upwardly facing surface and downwardly facing surface; electrode means contained in each of said box shaped sulfur electrodes, said electrode means for providing electrical access to each of said sulfur electrodes to an external electric circuit;

structure means for holding said plurality of box shaped sulfur electrodes in a stacked condition with an upwardly facing surface of one sulfur electrode in facing relationship to a downwardly facing surface of one sulfur electrode thereabove with a small thickness dimension separating the same, a volume thereby being defined between each pair of upwardly facing and downwardly facing surfaces of said sulfur electrode;

a reservoir means for containing sodium; manifold means for connecting said volumes between said facing sulfur electrodes to said reservoir means; and metering means for controlling the flow of sodium between said reservoir means and said manifold means.

4,226,924

THIN METAL-HALOGEN CELLS

Muneaki Kimura; Tatsumi Arakawa, both of Fuji, Japan; Masaru Ozaki, Drexel Hill, Pa., and Hidehiko Kobayashi, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

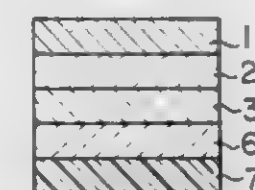
Filed Nov. 20, 1978, Ser. No. 962,359

Claims priority, application Japan, Nov. 22, 1977, 52/139419; Nov. 24, 1977, 52/139835; Jan. 24, 1978, 53/5826; Mar. 10, 1978, 53/26671; Mar. 10, 1978, 53/26672; Jul. 4, 1978, 53/80520

Int. Cl.² H01M 6/04

U.S. Cl. 429-126

13 Claims



1. A thin metal-halogen cell which comprises an electroconductive substrate about 50 microns to 0.5 mm in thickness, a metal film anode active material layer of about 1 to 100 microns formed on the substrate, a solid electrolyte layer of about 1 to 20 microns formed on the anode active material, a cathode active material layer of about 50 microns to 0.5 mm thickness and comprising a halogen, an adhesive and carbonaceous powder, and an electroconductive plastic film about 50 microns to 0.5 mm thick, the cathode active material layer and the electroconductive plastic film being laminated on the solid electrolytic layer in this order.

4,226,925

BATTERY WITH INTERNAL ELECTRICAL CONNECTOR

Hironosuke Ikeda, Hirakata, and Satoshi Narukawa, Kobe, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

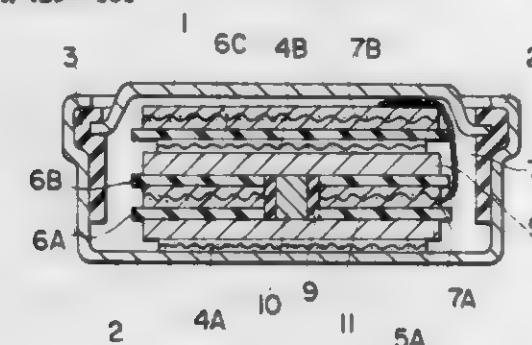
Filed Feb. 16, 1979, Ser. No. 12,731

Claims priority, application Japan, Mar. 8, 1978, 53-80558[U]; Jun. 14, 1978, 53-83336[U]; Jun. 14, 1978, 53-83337[U]; Jun. 16, 1978, 53-83778[U]; Jun. 16, 1978, 53-83779[U]; Jul. 26, 1978, 53-103907[U]

Int. Cl.² H01M 2/26

U.S. Cl. 429-161

16 Claims



1. A battery characterized in that: between a pair of electrodes having one polarity, an electrode having the other polarity is interposed, with separator layers therebetween, central bores are defined in said separator layers and said electrode having said other polarity, an electrical contact member is passed through said central bores, an insulating member is disposed between said electrical contact member and said electrode having said other polarity, and each of both end surfaces of said electrical contact member is press-contacted with each of the opposite surfaces of said pair of electrodes having said one polarity, whereby said pair of electrodes having said one polarity are

electrically connected to each other by means of said electrical contact member.

4,226,926

FLEXIBLE, MICROPOROUS RUBBER BASE ARTICLES

Bruce S. Goldberg, Clifton, and Mahendra Shah, Newark, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 915,915

Int. Cl.² H01M 2/16; C08J 9/28

U.S. Cl. 429-252

32 Claims

1. As an article of manufacture, a microporous, flexible shape of a sulfur-free, cured polymeric material selected from the group consisting of natural rubber, ethylenepropylene rubber, polyisoprene, styrene butadiene, nitrile-butadiene, and mixtures thereof, and a polyol acrylate, methacrylate, or mixtures thereof, as precursor curative, of a pore size less than 2 microns and of a predetermined flexibility.

4,226,927

PHOTOGRAPHIC SPEED TRANSFER ELEMENT WITH OXIDIZED POLYETHYLENE STRIPPING LAYER

Gerard H. Kinderman; Robert L. Rutledge, both of St. Paul, and Ronald S. Steelman, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 10, 1978, Ser. No. 904,547

Int. Cl.² G03C 1/90; B65D 65/28; B32B 3/06, 3/00

U.S. Cl. 430-14

4 Claims

1. A photographic sheet material suitable for producing a dry transfer element, comprising a thin, flexible carrier substrate having a release coating thereon, said release coating comprising oxidized polyethylene, and overlying said release coating and releasably bonded thereby to said substrate a photosensitive layer comprising a silver halide emulsion, said photosensitive layer, after imagewise exposure thereof, development with a tanning developing agent and removal of the soluble portions of said layer, having greater adhesion to a receptor surface when applied thereto under pressure than the adhesion of said photosensitive layer to said carrier substrate under like pressure.

4,226,928

LAMINATED PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY

Toru Nakazawa, Osaka; Keiichi Nagahashi, Kaizuka, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Jan. 5, 1978, Ser. No. 867,304

Claims priority, application Japan, Jan. 17, 1977, 52-2923

Int. Cl.² G03G 5/06

U.S. Cl. 430-57

7 Claims

1. A laminated photosensitive material for electrophotography, which comprises an electrically conductive substrate, an intermediate photoconductive layer formed on the substrate and a top photoconductive layer laminated on said intermediate layer, wherein the intermediate photoconductive layer comprises, incorporated in a binder, (A) phthalocyanine or a phthalocyanine derivative and (B) a polycyclic aromatic nitro compound selected from the group consisting of trinitrofluorenone and tetranitrofluorenone at an (A):(B) mixing weight ratio of from 10:5 to 10:40 and the top photoconductive layer comprises (C) polyvinyl carbazole or a nuclear substitution derivative thereof and said polycyclic aromatic nitro compound (B) at a (C):(B) mixing weight ratio of from 1:1.7 to 1:2.2

4,226,929

FLEXIBLE MULTI-LAYER PHOTORECEPTOR OF ELECTROPHOTOGRAPHY

Toru Teshima, Yokohama; Hiroshi Nozaki, Chiba; Minoru Koyama, Tokyo, and Kazuhisa Kato, Yokohama, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1978, Ser. No. 958,493

Claims priority, application Japan, Nov. 15, 1977, 52-136261
Int. Cl.³ G03G 5/082, 5/09

U.S. Cl. 430—57

6 Claims



1. A photoreceptor for electrophotography comprising:
(1) a first layer of a Se-Te-Halogen alloy containing halogen in a weight ratio of 10^{-3} to 10^{-8} to the Se-Te-Halogen alloy and a Te content of about 5 to about 35% by weight of the Se-Te alloy, the thickness of said first layer being about 0.1 to 10 microns, said first layer formed on top of,
(2) a second layer of an Se-S-Halogen alloy containing halogen in a weight ratio of 10^{-2} to 10^{-7} to the Se-S-Halogen alloy and having a sulfur content of about 10 to about 35% by weight based on the Se-S alloy, the thickness of said second layer being about 10 to about 100 microns, said second layer formed on top of an electrically conductive substrate.

4,226,930

ELECTROPHOTOGRAPHIC METHOD FOR PRODUCING PHOTOPOLYMER PRINTING PLATE

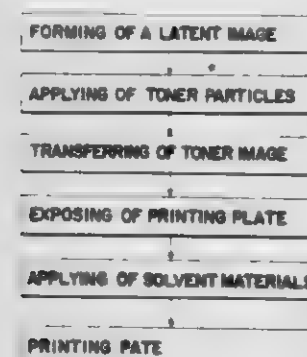
Yasuyuki Takimoto, Takatsuki; Kunsei Tanabe, Hirakata; Shin Saito, Suita; Masakatsu Nishimura, Settsu, and Yasushi Umeda, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 816,355, Jul. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 596,260, Jul. 16, 1975, abandoned. This application Nov. 8, 1978, Ser. No. 958,705

Int. Cl.² G03G 13/16; G03C 1/68

U.S. Cl. 430—126

11 Claims



1. A method of producing a photopolymer printing plate comprising the steps of
(a) forming a powder image on a photoconductive medium electrophotographically,
(b) transferring the powder image from the surface of the photoconductive medium directly onto a photopolymer printing plate by bringing the powder image bearing surface of the photoconductive medium and photosensitive resin layer surface of the photopolymer printing plate into close line contact with each other under a uniform pressure in the range from 1 to 40 Kg/linear cm of line contact and applying a rolling motion therebetween at a speed in the range from 1 to 10 cm/sec. and sufficient to cause an adhesion of the powder image onto the photosensitive resin layer surface of the photopolymer printing plate,

- (c) exposing the entire powder image bearing surface of the photopolymer printing plate to a light, and
(d) applying solvent material to the exposed photopolymer printing plate thereby forming surface differentiations therein corresponding to the powder image.

4,226,931

PROCESS OF MAKING LITHOGRAPHIC PLATE, AND PLATE FROM PHOTOCURABLE ELEMENT

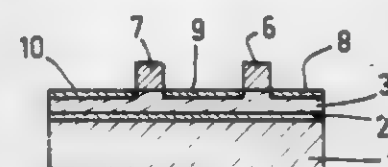
Ronald Neill, Paris, and Marcel Pigeon, Neuilly, both of France, assignors to L. A. Cellophane, Paris, France

Filed May 10, 1978, Ser. No. 904,579

Claims priority, application France, May 12, 1977, 77 14489
Int. Cl.² G03F 7/02; B41N 1/00; B41M 5/00

U.S. Cl. 430—302

6 Claims



1. A lithographic printing plate comprising:
(a) a support,
(b) overlying the support (a) an anchoring layer having a thickness greater than about 200 angstroms comprising an hydrophobic oleophilic colloid ester which is capable of being rendered hydrophilic by an aqueous alkali solution,
(c) overlying the anchoring layer (b) and arranged according to a pattern to be printed, an hardened oleophilic polymer obtained by polymerizing a photosensitive resin layer by activation with actinic radiation through a transparency having opaque areas and transparent areas corresponding to the pattern to be printed whereby only the portions of the photosensitive layer corresponding to the transparent areas are polymerized and removing the non-polymerized unexposed portions of the photosensitive layer corresponding to the opaque areas, and
(d) an hydrophilic layer, corresponding to the opaque areas of the transparency, obtained by treating the portions of the anchoring layer (b) not covered by the hardened oleophilic polymer pattern with an aqueous alkali solution.

4,226,932

TITANIUM NITRIDE AS ONE LAYER OF A MULTI-LAYERED COATING INTENDED TO BE ETCHED

Giampiero Ferraris, Milan, Italy, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jul. 5, 1979, Ser. No. 54,750

Int. Cl.³ B05D 5/12; B32B 7/00; B23C 15/00; C23F 1/02

U.S. Cl. 430—312

8 Claims

1. A multilayered thin film structure for use in hybrid integrated circuits comprising:
substrate means providing a base for said structure;
resistive means located on said substrate means;
an adhesive layer of titanium nitride located on said resistive means;
thermal diffusion barrier means located on said titanium nitride means;
conductive means located on said thermal diffusion barrier means;
said thermal diffusion barrier means functioning to prevent the diffusion of titanium included in said titanium nitride, to said conductive means in response to heat.
5. A method of making a multilayered thin film structure for use in hybrid integrated circuits, said method comprising:
a first step of placing a substrate in a vacuum station;
a second step of depositing on said substrate a layer of tantalum nitride, by means of sequential sputtering deposition;

- a third step of depositing a layer of titanium on said layer of tantalum nitride and doping the titanium layer with nitrogen during sputtering to obtain a layer of titanium nitride;
a fourth step of depositing on said titanium nitride layer, a layer of palladium; and
a fifth step of depositing on said palladium layer, a layer of gold.
6. A method of making a multilayered thin film structure as claimed in claim 5, wherein there is further included:
a sixth step comprising withdrawal of said coated substrate from said vacuum station; and
a seventh step comprising photolithographing said coated substrate by means of a first selective chemical etching of said gold, palladium, titanium nitride and tantalum nitride layers so as to obtain a conductive circuit.

4,226,933

METHOD OF MANUFACTURING A DECORATIVE PANEL

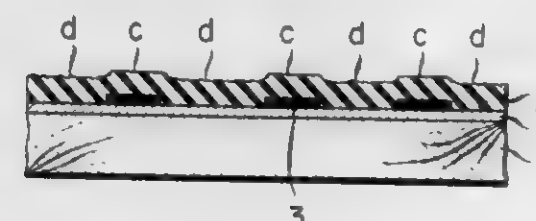
Hideo Ishizawa, Tokyo; Akira Niwayama, Matsudo; Mitsuru Shimizu, Kamifukuoka, and Takashi Kagami, Tokyo, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,296

Int. Cl.² G03F 5/00; G03C 1/90, 5/00

U.S. Cl. 430—320

3 Claims



1. A method of manufacturing a decorative panel producing a prominent impression of relief and solidity corresponding to a pattern appearing thereon which comprises the steps of laminating by an adhesive a pigment-containing sheet impressed with a pattern for color effect on a substrate; coating the surface of the laminate with a photohardening paint prepared from a photohardening synthetic resin mixed with a matting agent, photosensitizer and peroxide catalyst; tightly spreading a transparent smooth film displaying a prescribed degree of gloss over the coated surface of the laminate; lightly pressing the surface of the transparent smooth film by a rubber roller to drive out air bubbles contained in the photohardening paint; applying on the transparent smooth film a layer of an inert, nonvolatile, transparent liquid substance which remains viscous at normal temperature; tightly mounting a mask film which is selectively rendered transparent and opaque on the liquid substance so as to cause the transparent portions of said mask to be aligned with the whole or part of a pattern impressed on the pigment-containing sheet and also the opaque portions of said mask to be aligned with the whole or part of the other portions of said sheet than those which display the pattern; the layer of liquid substance wrapping or surrounding dust which may be present between the transparent smooth film and the mask film; gently pressing the surface of the mask by a rubber roller to expel air bubbles contained in the liquid substance projecting a light on the mask to effect the photohardening of the illuminated portions of the photohardening synthetic resin paint with the interior of the unilluminated portions of said paint hardened to a certain extent by the action of the peroxide catalyst; and removing the transparent smooth film and mask film when the illuminated portions of the photohardening synthetic resin paint are fully hardened and while the other unilluminated portions thereof are not sufficiently hardened, thereby causing the photohardened portions of the paint to take a convex form due to shrinkage, and to pull the adjacent unilluminated slowly hardening portions, the surface of said convex portions displaying the same glossy state as that of the film surface and also causing the other unilluminated

portions to be pulled toward the illuminated portions to take a concave form and become matted by the action of the matting agent.

4,226,934

LIGHT SENSITIVE PHOTOGRAPHIC MATERIAL CONTAINING DEVELOPMENT INHIBITOR RELEASING COMPOUNDS

Terence C. Webb, Witham, and David L. R. Reeves, Brentwood, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jul. 26, 1978, Ser. No. 928,211

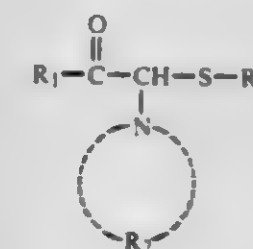
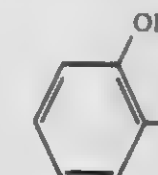
Claims priority, application United Kingdom, Aug. 12, 1977, 33883/77

Int. Cl.² G03C 5/30

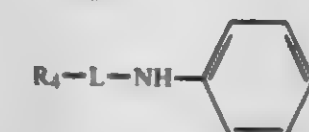
U.S. Cl. 430—443

10 Claims

1. A light-sensitive photographic material which comprises, coated on a photobase, at least one silver halide emulsion layer, said emulsion layer or a layer adjacent thereto containing a development inhibitor releasing compound of the formula

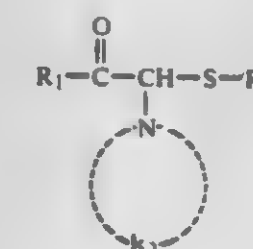
wherein R₁ is a group of the formulae

or



wherein L is —SO₂— or —CO— and R₄ is a ballasting alkyl group or contains an unsubstituted or substituted ballasting alkyl group of at least 10 carbon atoms, R₂ represents the atoms necessary to complete a tetrazole, triazole, pyrazole or imidazole ring system which is unsubstituted or substituted by alkyl or alkylthio and R₃ is unsubstituted or substituted pyrimidyl, thiazolyl, triazinyl, tetrazolyl, triazolyl, pyridyl, phenyl or benzthiazolyl groups —S—R₃ being the development inhibiting group.

6. A process for the production of a photographic image which comprises imagewise exposing a light-sensitive photographic silver halide material which contains in at least one silver halide layer or a layer adjacent thereto a compound of formula

wherein R₁, R₂ and R₃ have the meanings indicated in claim 1

and developing the exposed silver halide with a paraphenylene diamine colour developing agent thereby to liberate imagewise the group R_3-S^\ominus .

4,226,935

ENZYMATIC DIAGNOSTIC COMPOSITION

Murray C. Fusee, Ellicott City, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,334

Int. Cl.³ C12Q 1/00, 1/50; C12N 11/06

U.S. Cl. 435—14

33 Claims

1. A diagnostic composition comprising a mixture of hexokinase and glucose-6-phosphate dehydrogenase bound in biologically-active form to a carboxylated poly(urea-urethane) polymer matrix having oxyalkylene backbone segments wherein at least 60 mole percent of the oxyalkylene units are oxyethylene said carboxylated polymer prepared by reacting an excess of a polyoxyalkylene urethane prepolymer with a monomeric amino acid, and wherein said enzymes are bonded to at least one exterior surface of said polymer matrix.

7. A method for analyzing human body fluids comprising contacting a first aqueous solution of said body fluids with a mixture of hexokinase and glucose-6-phosphate dehydrogenase bound in biologically-active form to a carboxylated polyurethane polymer matrix, allowing said immobilized enzymes to catalyze reaction between the components of the first aqueous solution to form a second aqueous solution and determining the amount of at least one component of said second aqueous solution, said polymer comprising the reaction product of an excess of a polyoxyalkylene urethane prepolymer and a monomeric amino acid.

27. A method for binding enzymes comprising reacting a monomeric amino acid with an excess of a polyoxyalkylene urethane prepolymer to form a carboxylated prepolymer, curing the carboxylated prepolymer and coupling an enzyme thereto by use of a carbodiimide.

4,226,936

PROCESS FOR PREPARING 9 α -OH BN ALCOHOL

Merle G. Wovcha; Frederick J. Antosz, both of Kalamazoo; John M. Beaton, Portage; Alfred B. Garcia, Kalamazoo, and Leo A. Kominek, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 844,366, Oct. 21, 1977, Pat. No. 4,175,006.

This application Apr. 23, 1979, Ser. No. 32,189

Int. Cl.² C12P 33/16

U.S. Cl. 435—55

4 Claims

1. A process for preparing 9 α -OH BN alcohol in its essentially pure form which comprises cultivating a mutant microorganism selected from the group consisting of *Arthrobacter*, *Bacillus*, *Brevibacterium*, *Corynebacterium*, *Microbacterium*, *Nocardia*, *Protaminobacter*, *Serratia*, and *Streptomyces*, said mutant being characterized by its ability to selectively degrade steroids having 17-alkyl side chains of from 8 to 10 carbon atoms, inclusive, and accumulate 9 α -OH BN alcohol in the fermentation beer, in an aqueous nutrient culture medium under aerobic conditions in the presence of a steroid containing from 8 to 10 carbon atoms, inclusive, in the 17-alkyl side chain and isolating said compound in its essentially pure form from the culture medium.

4,226,937

METHOD USING GLUCOAMYLASE IMMOBILIZED ON POROUS ALUMINA

Mukhtar Abdullah, Downers Grove, and Frederick C. Armbruster, LaGrange, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Apr. 27, 1979, Ser. No. 33,913

Int. Cl.³ C12P 19/20

U.S. Cl. 435—96

7 Claims

1. A process for converting a starch hydrolyzate to a dextrose-containing syrup which comprises:

- treating the starch hydrolyzate with ion-exchange resin until its ash content is less than 0.1% on a dry basis;
- contacting the deionized starch hydrolyzate with an immobilized enzyme composite consisting essentially of glucoamylase sorbed on porous alumina;
- separating the treated hydrolyzate from said enzyme composite; and
- recovering the dextrose product from the treated hydrolyzate.

4,226,938

METHOD FOR IMMOBILIZING ENZYMES

Masaru Yoshida; Minoru Kumakura, and Isao Kaetsu, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Continuation of Ser. No. 706,329, Jul. 19, 1976, abandoned. This application Sep. 21, 1978, Ser. No. 944,444

Claims priority, application Japan, Jul. 23, 1975, 50-89207; Jul. 23, 1975, 50-89209

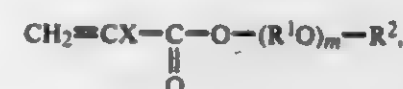
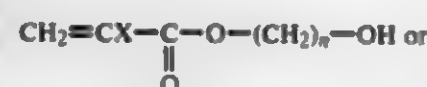
The portion of the term of this patent subsequent to Dec. 4, 1996, has been disclaimed.

Int. Cl.³ C12N 11/14

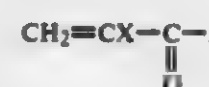
U.S. Cl. 435—176

9 Claims

1. A method for immobilizing enzymes or enzyme-containing cells comprising (a) adsorbing said enzymes or enzyme-containing cells on an adsorbent selected from the group consisting of inorganic natural earth adsorbents, synthetic inorganic adsorbents and active carbon in an aqueous medium, (b) admixing the aqueous dispersion of said adsorbent on which enzymes or enzyme-containing cells have been adsorbed with a polymerizable monomer selected from the groups consisting of compounds represented by the general formula



wherein R^1 is a group $-CH_2CH_2-$ or $-CH(CH_3)CH_2-$, R^2 is hydrogen or methyl or a group represented by



X is hydrogen or methyl, n is an integer 2, 3 or 4 and m is an integer from 2 to 20 and (c) effecting polymerization at a temperature between -20° C. and -80° C., to form a porous gel lump in which enzymes or enzyme-containing cells are distributed adsorbed on inorganic adsorbent, and through which a substrate solution can freely pass.

4,226,939

TREATMENT OF MAKE-UP WATER FOR USE IN A FERMENTATION PROCESS FOR GROWTH OF YEAST CELLS REQUIRING GROWTH FACTORS

Eugene H. Wegner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 6, 1978, Ser. No. 875,667

Int. Cl.³ C12N 1/32

U.S. Cl. 435—247

14 Claims

1. In a process for aqueous biological fermentation employing at least one yeast or bacterial culture wherein said microorganism requires at least one organic growth factor for effective growth under aqueous aerobic fermentation conditions employing at least one organic growth factor, make-up water containing residual chlorine and a suitable carbon substrate, assimilable nitrogen source, molecular oxygen, and nutrient minerals, effective for growth of said at least one yeast or bacterial culture, said residual chlorine being present in

amounts rendering said at least one growth factor less effective for growth of the microorganism, the step which comprises substantially removing said residual chlorine from said residual chlorine-containing make-up water to produce a residual chlorine content in said water of substantially zero prior to contact with said organic growth factors, said residual chlorine being removed by one treatment selected from the group consisting of using a reducing agent, aeration and a combination of heating and aeration, said treatment effective to render said residual chlorine content substantially zero.

4,226,940

NON-FROZEN CONCENTRATED BACTERIAL CULTURES

Arnold B. Storrs, Solon Mills, Ill., assignor to Great Lakes Biochemical Co., Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 871,231, Jan. 23, 1978,

abandoned. This application Jun. 21, 1979, Ser. No. 50,886

Int. Cl.³ C12N 1/04

U.S. Cl. 435—260

17 Claims

1. In a process for preparing a concentrated bacterial culture which can be cooled to a subfreezing temperature for preserving the viability of the bacteria for an extended time including the steps of inoculating an aqueous bacterial nutrient medium with a culture of the bacteria, incubating the inoculated medium under suitable conditions to obtain a desired yield of bacterial cells, and concentrating the medium to obtain a concentrated bacterial paste containing water, the improvement comprising

admixing with said paste a liquid anti-freeze agent containing at least one water freezing point depressant which is water-soluble, is non-injurious to the bacteria, and does not form crystals when cooled to a predetermined temperature within the range of about 5° to about -40° C., the amount of said water freezing depressant in said anti-freeze agent being sufficient to prevent formation of ice crystals from the water present in the resultant mixture when the resultant mixture is cooled to said predetermined temperature.

4,226,941

PROCESS FOR THE OPTICAL RESOLUTION OF D,L-2-AMINO-4-METHYLPHOSPHINOBUTYRIC ACID

Hitoashi Goh, Chiba; Shinji Miyado; Takashi Shomura, both of Yokohama; Akira Suzuki, Tokyo; Tomizo Niwa, and Yujiro Yamada, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Sep. 27, 1979, Ser. No. 79,366

Int. Cl.³ C07B 19/02

U.S. Cl. 435—280

15 Claims

1. A process for the optical resolution of D,L-2-amino-4-methylphosphinobutyric acid which comprises the steps of: providing D,L-2-amino-4-methylphosphinobutyric acid in the form of its N-acyl derivative; reacting the N-acyl derivative of D,L-2-amino-4-methylphosphinobutyric acid in an aqueous medium with a microbial acylase having an optically specific hydrolytic activity which is produced by cultivating a microbial strain belonging to the genus *Pseudomonas*, *Streptomyces* or *Aspergillus*; whereby selectively eliminating the acyl group of N-acyl-L-2-amino-4-methylphosphinobutyric acid to give a mixture of L-2-amino-4-methylphosphinobutyric acid and N-acyl-D-2-amino-4-methylphosphinobutyric acid; and isolating and recovering L-2-amino-4-methylphosphinobutyric acid from the mixture.

4,226,942

FOAMABLE RESINS PROCESS

Nan Wei, West Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 15, 1978, Ser. No. 934,134

Int. Cl.² C08J 9/18, 9/20, 9/22

U.S. Cl. 521—56

26 Claims

1. In an improved process for the production of foamable polyvinyl aromatic resin beads, the steps comprising: (a) polymerizing a vinyl aromatic monomer in a first aqueous suspension system forming polymeric beads of said monomer, (b) separating the beads from the first aqueous suspension, (c) suspending the separated beads under agitation in a second aqueous suspension system, (d) incorporating a volatile liquid blowing agent into the beads at a temperature above the softening temperature of the beads under superatmospheric pressure in a closed vessel, (e) cooling the second aqueous suspension under superatmospheric pressure until the suspended beads have cooled sufficiently to render the beads non-foaming at atmospheric pressures, (f) recovering the beads from the aqueous suspension, (g) drying the beads forming free flowing foamable polyvinyl aromatic polymeric beads having 1-15% of said volatile liquid blowing agent incorporated in the beads, the improvement comprising: drying said beads under vacuum conditions at normal temperatures of about 15° to 45° C., removing residual water from said beads while retaining said blowing agent in said beads and maintaining the structure of said beads as foamable non-foamed beads recovered from step (f), said vacuum being 380 to 735 mm of Hg.

4,226,943

FOAMABLE COMPOSITION OF VINYL CHLORIDE POLYMERS AND METHOD OF PRODUCING OPEN CELL SHEET

Normitsu Tsurushige; Toshinori Takao, and Shinichi Yamada, all of Naruto, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Filed Nov. 21, 1978, Ser. No. 962,708

Int. Cl.² C08J 9/10

U.S. Cl. 521—73

13 Claims

1. A foamable composition of vinyl chloride polymers for preparation of an open cell sheet, comprising: (i) 100 parts by weight of a vinyl chloride (ii) 30 to 150 parts by weight of a plasticizer; (iii) 1 to 8 parts by weight of a synthetic hydrocarbon wax prepared by a process selected from the group consisting of depolymerization of polyethylene, polymerization of ethylene and the Fischer-Tropsch synthesis of coal gas, said wax having a molecular weight of 1,500 to 7,000, a softening point of 90° to 135° C. and an average particle size of 10 to 100 μ m, (iv) 1 to 5 parts by weight of an alkali metal-zinc stabilizer and (v) 2 to 10 parts by weight of a decomposable organic blowing agent containing at least 60% by weight of azodicarbonamide.

4,226,944

PROCESS FOR A POLYURETHANE FOAM CONTAINING FRAGRANCE

Herman Stone, Hazleton, and Peter D. Pauly, Mountaintop, both of Pa., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Nov. 13, 1978, Ser. No. 960,390

Int. Cl.² C08G 18/14, 18/08; A61L 9/01

U.S. Cl. 521—76

26 Claims

1. A process for the manufacture of a polyurethane foam

containing a particulate filler and a fragrance which comprises the steps of mixing at least one particulate filler with at least one fragrance material to form a first mixture, mixing said first mixture with at least one liquid polyol to form a second mixture, and then mixing said second mixture with at least one organic polyisocyanate, water, and at least one catalyst whereby a polyurethane foam capable of releasing fragrance at a controlled and steady rate is produced.

4,226,945

RUBBER COMPOSITIONS EXPANSIBLE UNDER VULCANIZATION CONDITIONS

Hans J. Bücken, Monheim-Baumberg, and Helmut Horskorte, Monheim, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 883,684, Mar. 6, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,356

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709622

Int. Cl.³ C08J 9/08

U.S. Cl. 521-92

6 Claims

1. A rubber composition, expansible under vulcanization conditions consisting of at least one vulcanizable synthetic rubber selected from the group consisting of styrene/butadiene rubber, polybutadiene rubber, and mixtures thereof, vulcanizing agents and a propellant gas donor under vulcanizing conditions in the absence of azobutyric acid dinitrile and sodium hydrogen carbonate, consisting of a mixture of

- (a) from 100 to 900 parts by weight, based on 100 parts by weight of said synthetic rubber, of natural, non-pretreated chalk, and
- (b) from 5 to 120 parts by weight, based on 100 parts by weight of said synthetic rubber, of at least one natural fatty acid having from 14 to 18 carbon atoms and containing at least 60% of saturated acids, as the sole blowing agent.

4,226,946

POLYETHYLENE BLEND FOAMS HAVING IMPROVED COMPRESSIVE STRENGTH

Chung P. Park, Pickerington, and Richard A. Bouton, Reynoldsburg, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1979, Ser. No. 14,184

Int. Cl.³ C08J 9/14

U.S. Cl. 521-98

14 Claims

1. In a method of making polymer resin foams by the process of extrusion foaming wherein a normally solid thermoplastic resin is heat-plasticized and mixed with at least one blowing agent to form a flowable gel which is then passed through a die opening into a zone of lower pressure to cause expansion of the extruded material which is then cooled to form a cellular resinous body, the improvement wherein the thermoplastic resin comprises a polyethylene blend comprising about 35 to about 60 weight percent of low density branched polyethylene having a density from about 0.910 to about 0.930 in admixture with from about 40 to about 65 weight percent of intermediate density linear polyethylene having a density from about 0.931 to 0.940 thereby producing polyethylene blend foams having density of from about 3.0 to about 15.0 pounds per cubic foot, substantially closed-cell structure and compressive strength at 10% deformation of from about 7 to about 170 psi.

4,226,947

FLEXIBLE URETHANE FOAMS HAVING A LOW DENSITY AND A METHOD FOR PRODUCING SAID FOAMS

Toshio Yukuta; Hiroya Fukuda; Seiji Ishii, and Kazuo Utsumi, all of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

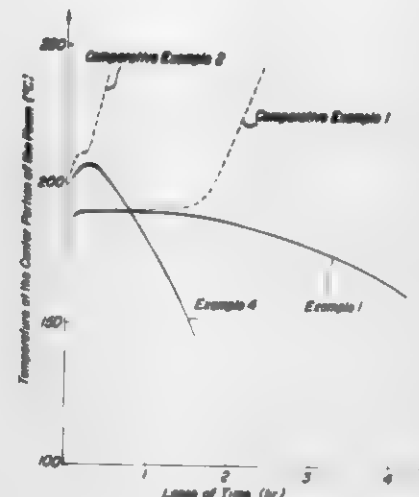
Filed Oct. 24, 1978, Ser. No. 954,378

Claims priority, application Japan, Nov. 11, 1977, 52-134686

Int. Cl.³ C08G 18/14

U.S. Cl. 521-107

10 Claims



1. In a method for producing flexible urethane foams having a low density and capable of preventing spontaneous combustion during production and storage of flexible urethane foams by combining polyhydroxyl compounds, polyisocyanates, water, catalysts, surfactants, foaming agents and other additives, the improvement which comprises using 5.0-12.0 parts by weight of water based on 100 parts by weight of the polyhydroxyl compounds, and not less than 0.1 part by weight of aromatic amine antioxidants.

4,226,948

2-TRICHLOROMETHYLOXAZOLIDINE AND THIAZOLIDINE DERIVATIVES USEFUL AS FLAME RETARDANTS FOR POLYURETHANE FOAM

Ivan C. Popoff, Ambler, and Stanley R. Sandler, Springfield, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

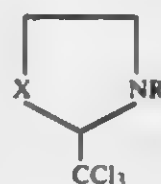
Filed Jan. 8, 1979, Ser. No. 1,626

Int. Cl.² C08G 18/38, 18/32, 18/14

U.S. Cl. 521-167

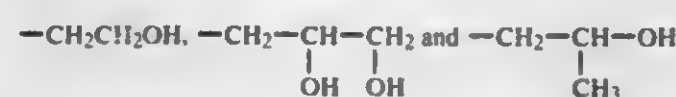
4 Claims

1. A rigid polyurethane foam prepared from a reaction mixture which comprises a flame retarding amount of a compound selected from the group consisting of:



where

- (a) X is O or S and
- (b) R is selected from the group consisting of H,



wherein the resulting foam not only has flame retardant properties but also has smoke suppressant properties.

4,226,949

WHOLLY AROMATIC POLYAMIDE FOAM

Wesley Memeger, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

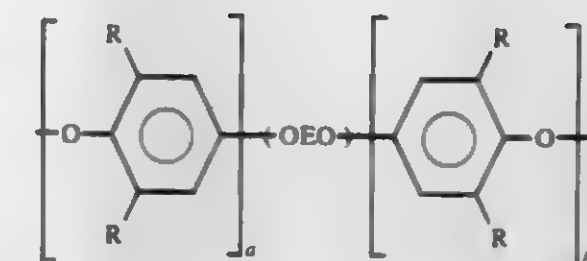
Continuation-in-part of Ser. No. 881,731, Feb. 27, 1978, Pat. No. 4,178,419. This application Aug. 1, 1979, Ser. No. 62,907

Int. Cl.² C08J 9/02

U.S. Cl. 521-184

4 Claims

1. A wholly aromatic polyamide foam prepared by dealylation of an N-alkyl wholly aromatic polyamide wherein either the diamine residue or the dicarboxylic acid residue is para oriented, said foam having a density of 0.025 to 0.7 g./cm.³ wherein the cell walls are oriented as evidenced by a birefringence of at least 10% of the maximum possible birefringence and having substantially no residual N-alkyl groups.



wherein independently each +OEO+ is a divalent quinone residue, E is a divalent arene radical, either a or b is at least equal to 1, the sum of a plus b is at least equal to 10, and R is hydrogen, a hydrocarbon radical, a halohydrocarbon radical, a hydrocarbonoxy radical or a halohydrocarbonoxy radical; said divalent bis(oxyarylenethio)polystyrene radical being of the formula

4,226,950

PLASTICIZED, IMPACT MODIFIED POLYCARBONATES

Fred F. Holub, Schenectady, N.Y., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Filed Jul. 6, 1978, Ser. No. 922,305

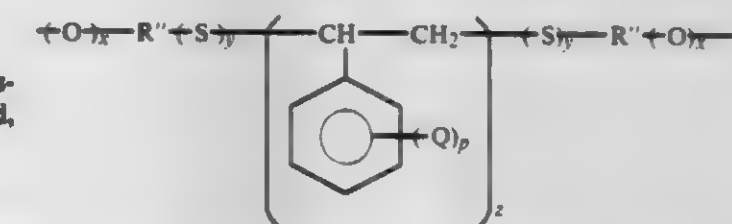
Int. Cl.² C08L 67/06

U.S. Cl. 525-67

9 Claims

1. A thermoplastic molding composition comprising:

- (a) a bisphenol-A polycarbonate having an I.V. of about 0.2-1.0;
- (b) about 0.1-10 weight percent based upon said polycarbonate of an oligomeric ester plasticizer: 2,2-dimethyl-1,3-propane-diol and adipic acid; in admixture with
- (c) an impact modifier of about 0.1-10 weight percent based upon said polycarbonate of at least one component selected from the group consisting of polyolefins, olefin based copolymers and olefin based terpolymers, or
- (d) about 0.1-50 weight percent based upon said polycarbonate of at least one component selected from the group consisting of methyl methacrylate-butadiene-styrene copolymers, methyl methacrylate-acrylonitrile-butadiene-styrene copolymers and acrylonitrile-butadiene-styrene copolymers.



wherein independently each x is an integer at least equal to 1 and is a maximum equal to the number of replaceable hydrogen atoms associated with the R' arene radical, y is an integer at least equal to 1, R' is at least a divalent arene radical, Q is a hydrogen, halogen, alkyl or alkenyl radical, p is an integer of from 1 to 5, and Z is an integer at least equal to 2.

4,226,952

THERMOPLASTIC ELASTOMER BLENDS OF ALPHA-OLEFIN POLYMERS AND HYDROGENATED MEDIUM AND HIGH VINYL BUTADIENE POLYMERS

Adel F. Halasa, Bath; David W. Carlson, and James E. Hall, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 20, 1979, Ser. No. 68,281

Int. Cl.³ C08F 8/04

U.S. Cl. 525-192

16 Claims

1. A thermoplastic elastomer composition comprising a blend of (a) a hydrogenated polybutadiene having, prior to hydrogenation, 40-100 percent 1,2-microstructure and said hydrogenation having been effected to remove at least 85 percent of the original unsaturation, and (b) a polymer of at least one alpha-olefin having 2-20 carbon atoms, said alpha-olefin polymer having a melting point of at least 90° C. and having at least 45 percent crystalline structure therein; the amount of said hydrogenated polybutadiene comprising 40-90 percent by weight and the amount of alpha-olefin polymer comprising 10-60 percent by weight, said percentage being based on the combined weight of components (a) and (b).

4,226,953

THERMOPLASTIC COMPOSITIONS OF STYRENE-ACRYLONITRILE RESIN AND NITRILE RUBBER

Aubert Y. Coran, and Raman P. Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 893,880, Apr. 6, 1978, abandoned. This application Feb. 22, 1979, Ser. No. 13,946

Int. Cl.² C08L 9/02, 25/12

U.S. Cl. 525-193

10 Claims

1. A thermoplastic composition comprising a blend of about 20 to about 65 parts by weight thermoplastic SAN resin comprising a polymer of styrene and acrylonitrile and about 75 to about 35 parts by weight nitrile rubber comprising a polymer



wherein Ar is a heteroarylene radical; said divalent quinone-coupled phenoxy radical being of the formula

of 1,3-butadiene or isoprene and vinyl nitrile monomer per 100 total parts by weight SAN resin and nitrile rubber in which the nitrile rubber is cured with rubber curative and has a gel content in toluene of at least 85%.

4,226,954

REACTIVE FLUID ADHESIVE COMPOSITIONS

Lorenzo F. Pelosi, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1978, Ser. No. 961,419

Int. Cl.² C08F 255/02

U.S. Cl. 525—259

7 Claims

1. A composition suitable for use as an adhesive when combined with an aldehyde-amine condensation product, said composition comprising chlorosulfonated polyethylene, peroxy free radical generator, methacrylic acid, and a monomer mixture consisting essentially of a major proportion of at least one compound selected from the group consisting of C₁₀—C₁₈ acrylates and C₁₀—C₁₈ methacrylates, and a minor proportion of at least one compound selected from the group consisting of diacrylates and dimethacrylates, wherein the diacrylates and dimethacrylates comprise 10-30 weight percent of the monomer mixture.

4,226,955

POLYMERIZATION PROCESS

William J. I. Bracke, Hamme, and Jacqueline Brandli, Brussels, both of Belgium, assignors to Labofina S.A., Brussels, Belgium

Continuation of Ser. No. 676,807, Apr. 14, 1976, abandoned.

This application Jul. 18, 1978, Ser. No. 925,756

Int. Cl.² C08F 279/04

U.S. Cl. 525—316

9 Claims

1. A process for preparing an ABS graft copolymer comprising the steps of:

- imbibing a stabilized latex rubbery polymer having a surface tension of between about 30 and 40 dynes/cm with a portion of the styrene to be grafted with the latex in an amount of about 1.5 and 15 parts by weight styrene per 100 parts of dry latex and with a portion of the acrylonitrile to be grafted with the latex in an amount of about 5 to 15 parts by weight acrylonitrile per 100 parts of dry latex for a period between about 1 and 20 hours;
- introducing said imbibed latex into a polymerization vessel;
- introducing into said polymerization vessel the balance of styrene, and the balance of acrylonitrile and a free radical initiator;
- introducing a polymerization activator into said polymerization vessel;
- polymerizing said styrene and acrylonitrile in said polymerization vessel in the presence of said latex, whereby an ABS graft copolymer is produced; and
- withdrawing said ABS polymer from said polymerization vessel.

4,226,956

GRAFT COPOLYMERS CONTAINING POLYOXAZOLINE AND POLYOXAZINE, AND THE PREPARATION THEREOF

Donald N. Schulz, Hartville, and Prakash D. Trivedi, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 796,911, May 16, 1977, Pat. No. 4,143,100.

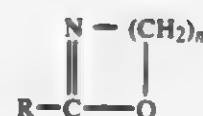
This application Nov. 7, 1978, Ser. No. 958,586

Int. Cl.³ C08G 73/00

U.S. Cl. 525—330

21 Claims

1. A graft copolymer composition, comprising: the reaction product of a backbone polymer having allylic chloride groups therein and monomers forming a pendant graft polymer, said monomers having the formula



wherein R is an alkyl group having from 1 to 15 carbon atoms, a cycloalkyl group having from 4 to 15 carbon atoms, an aryl group having from 6 to 15 carbon atoms, combinations thereof, or hydrogen, and wherein n is 2 or 3,

the amount by weight of said pendant graft polymer ranging from about 0.5 percent to about 90 percent based upon the total weight of said graft copolymer, said backbone polymer being polychloroprene, and said graft polymer substituted for said chlorine atom of said allylic chloride group of said backbone polymer.

4,226,957

WET STRENGTH PAPER ADDITIVES

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

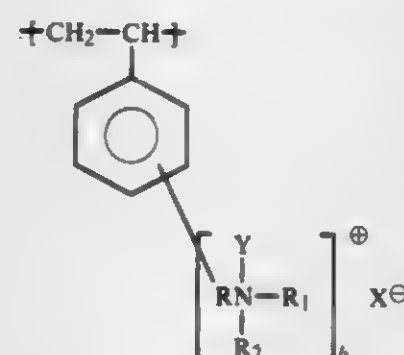
Filed Jun. 13, 1979, Ser. No. 48,218

Int. Cl.² C08F 8/32, 8/24

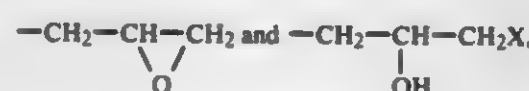
U.S. Cl. 525—336

5 Claims

1. A polymeric wet strength additive wherein from 5 to 100% of the recurring units have the formula



Y is selected from



X is a radical derived from water-soluble proton acid, R is a C₁ to C₃ alkylene group, R₁ and R₂ are each substituted or unsubstituted C₁ to C₄ alkyl groups or, taken with the nitrogen together represent a saturated heterocyclic group, and b is an integer from 1 to 3.

4,226,958

PROCESS FOR PREPARING ORGANO-ARSENIC DERIVATIVES OF POLYSTYRENE AND RELATED POLYMERS

Curtis P. Smith, Chesilire, and George H. Temme, North Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

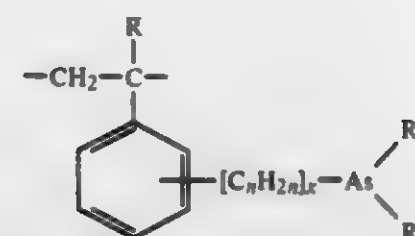
Filed Aug. 27, 1979, Ser. No. 69,764

Int. Cl.³ C08F 8/22, 8/24, 8/42

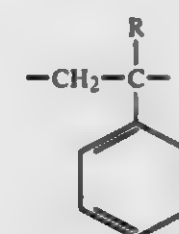
U.S. Cl. 525—356

19 Claims

1. A process for the preparation of a polymer having in its molecule at least one unit having the formula:

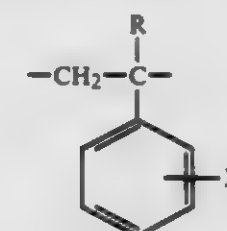


wherein R is selected from the group consisting of hydrogen and methyl, C_nH_{2n} represents lower-alkylene, R₁ and R₂ are independently selected from the group consisting of aryl and lower-alkyl and x is 0 or 1, and the remainder of the recurring units in said polymer have the formula:



wherein R is as above defined; which process comprises reacting a mixture of:

- the corresponding polymer having in its molecule at least one unit represented by the formula:



wherein R has the meaning above defined and X is selected from the group consisting of chlorine, bromine, iodine, lower-chloroalkyl, lower-bromoalkyl and lower-iodoalkyl, the remainder of the recurring units in said polymer having the formula (II) above;

- at least one molar proportion, per unit of formula (III) in said starting polymer, of an arsenic compound selected from the group consisting of arsenic trichloride, arsenic tribromide and arsenic trioxide; and
- at least 3 molar proportions, per unit of formula (III) in said starting polymer, of a hydrocarbyl halide selected from the group consisting of aryl chlorides, aryl bromides, aryl iodides, lower-alkyl chlorides, lower-alkyl bromides, lower-alkyl iodides and mixtures of said halides;

in the presence of:

- an at least stoichiometric proportion, based on the proportion of component (c), of a metal selected from the class consisting of sodium, lithium and magnesium.

4,226,959

PROCESS FOR THE PREPARATION OF POLYMERIC ACETAL CARBOXYLATES

David R. Dyroff, Creve Coeur, and Victor D. Papanu, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 22, 1979, Ser. No. 86,894

Int. Cl.³ C08F 283/06; C08G 6/00; C08L 61/02

U.S. Cl. 525—401

18 Claims

- A process which comprises: (A) bringing together an ester of glyoxylic acid and a polymerization initiator under polymerization conditions; (B) adding to the resulting polymer a sufficient amount of trichloroacetic acid or trifluoroacetic acid to provide a temporarily stabilized polymer; (C) providing a miscible solvent and a sufficient amount of

trichloroacetic acid or trifluoroacetic acid to act as an endcapping catalyst for the temporarily stabilized polymer; and

- (D) adding an alkyl vinyl ether having up to about 20 carbon atoms in the alkyl group to provide a chemically stable end group at the polymer termini to stabilize the polymer against rapid depolymerization in alkaline solution.

4,226,960

PROCESS FOR THE PREPARATION OF POLYMERIC ACETAL CARBOXYLATES

David R. Dyroff, Creve Coeur, and Victor D. Papanu, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 22, 1979, Ser. No. 86,895

Int. Cl.³ C08F 283/06; C08L 61/02

U.S. Cl. 525—401

13 Claims

1. In a process wherein an ester of glyoxylic acid is polymerized, and an alkyl vinyl ether containing 1 to about 20 carbon atoms in the alkyl group is added to the resulting polymer in the presence of a haloacetic acid to stabilize the polymer against rapid depolymerization in alkaline solution; the improvement which comprises: adding the alkyl vinyl ether in the presence of a miscible solvent having a dielectric constant of at least about 15.

4,226,961

TRANSPARENT COMPOSITIONS OF BISPHENOL-A-POLYCARBONATE, POLYALKYLENE TEREPHTHALATE AND AN AROMATIC POLYESTER CARBONATE

Gary S. Motz, Wadesville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 869,529, Jan. 16, 1978, abandoned. This application Aug. 10, 1979, Ser. No. 65,517

Int. Cl.² C08L 67/02

U.S. Cl. 525—439

24 Claims

1. A thermoplastic molding composition, which after molding is transparent, said composition comprising

- a polyalkylene terephthalate;
- a bisphenol-A polycarbonate; and
- an aromatic polyester carbonate, wherein the total amount of component (a) exceeds about 10 to 12 percent by weight of the total composition.

4,226,962

PRODUCTION OF NOVEL METAL MODIFIED NOVOLAK RESINS AND THEIR USE IN PRESSURE SENSITIVE PAPERS

John J. Stolfo, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 830,993, Sep. 6, 1977, Pat. No. 4,173,684.

This application Dec. 11, 1978, Ser. No. 968,358

Int. Cl.³ C08G 8/28

U.S. Cl. 525—506

5 Claims

1. A process for the preparation of a metal modified novolak resin, said metal modified novolak resin being an electron acceptor suitable for use in a pressure-sensitive copy system and being co-reactive with color precursors of the electron donor type, said metal modified novolak resin being further characterized by compatibility with the surface properties of a paper substrate comprising:

- heating a mixture consisting essentially of one or more para-substituted phenols, salicylic acid, formaldehyde and an acid catalyst for a period of time sufficient to substantially completely react said phenols and said salicylic acid with said formaldehyde to form a melted novolak resin, said mixture having a pH below 4 and being substantially free of any alkaline earth metal salt;
- mixing said melted novolak resin with a metal salt in an inert atmosphere to form said metal modified novolak

resin, said metal salt being selected from the metal alkanoate salts of an alkanic acid having 1 to 3 carbon atoms, metal hydroxybenzoates, metal dibenzoates and metal acetylacetonates, said metal being selected from the group consisting of copper, zinc, cadmium, aluminum, indium, tin, chromium, cobalt and nickel.

5. A process for the production of a novolak resin, said novolak resin being useful in the preparation of a metal modified novolak resin, said metal modified novolak resin being an electron acceptor suitable for use in a pressure-sensitive copy system and being co-reactive with color precursors of the electron donor type, said novolak resin being further characterized by compatibility with the surface properties of a paper substrate, said process comprising heating a mixture consisting essentially of:

- a para-substituted phenol, said para-substituted phenol being selected from the group consisting of para-alkyl phenols having an alkyl group of 1 to 12 carbon atoms, para-phenylphenol and mixtures thereof;
- salicylic acid;
- formaldehyde; and
- an acid catalyst; said mixture having a pH below 4 and being substantially free of any alkaline earth metal salt.

4,226,963

PROCESS FOR THE STEREOREGULAR POLYMERIZATION OF ALPHA-OLEPHINS

Umberto Giannini; Antonio Cassata; Paolo Longi, all of Milan, and Romano Mazzocchi, Pernate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 845,945, Oct. 27, 1977, abandoned, Continuation-in-part of Ser. No. 853,749, Nov. 21, 1977, abandoned, said Ser. No. 845,945, is a continuation of Ser. No. 599,412, Jul. 28, 1975, abandoned, which is a division of Ser. No. 503,963, Sep. 16, 1974, abandoned, which is a continuation of Ser. No. 265,438, Jun. 23, 1972, abandoned, said Ser. No. 853,749, is a continuation of Ser. No. 593,991, Jul. 8, 1975, abandoned, which is a division of Ser. No. 503,765, Sep. 6, 1974, abandoned, which is a continuation of Ser. No. 265,503, Jun. 23, 1972, abandoned. This application Nov. 13, 1978, Ser. No. 959,604

Claims priority, application Italy, Jun. 25, 1971, 26275 A/71 The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.

Int. Cl.² C08F 4/02, 10/06

U.S. Cl. 526—114

34 Claims

1. Process for the stereoregular polymerization of alpha-olefins of the formula $\text{CH}_2=\text{CHR}$ wherein R is an alkyl radical having 1-6 carbon atoms and mixtures thereof with ethylene, which process comprises polymerizing the olefins in contact with a catalyst the starting catalyst-forming components of which comprise the following components (A) and (B):

(A) the addition and/or substitution reaction product of an electron-donor compound (or Lewis base) free from ester groups of oxygenated organic and inorganic acids with an Al-trialkyl compound or the addition reaction product of said electron-donor compound with an Al-alkyl compound containing two or more Al atoms linked together through an oxygen or a nitrogen atom, component (A) being characterized in that the amount of Al-alkyl compound present as addition compound with the electron-donor compound ranges from 0.01 to 1 mole per mole of the starting Al compound and in that the Al-compound present as substitution compound ranges from 0.01 to 0.9 moles per mole of the starting Al-compound; and

(B) the product obtained by contacting a Ti compound selected from the group consisting of the halogenated bi-, tri-, and tetravalent Ti compounds and complexes of said Ti compounds with an electron-donor compound, with a support comprising an anhydrous Mg or Mn dihalide and from 30% to 90% of a co-support selected from the group consisting of LiCl , CaCO_3 , CaCl_2 , SrCl_2 , BaCl_2 , Na_2SO_4 , Na_2CO_3 , $\text{Na}_2\text{B}_4\text{O}_7$, $\text{Ca}(\text{PO}_4)_2$, CaSO_4 , BaCO_3 , $\text{Al}(\text{SO}_4)_3$, B_2O_3 , Al_2O_3 and SiO_2 , the Mg or Mn dihalide being in an

active state such that the X-rays powder spectrum of component (B) does not show the most intense diffraction lines as they appear in the X-rays powder spectrum of the normal non-activated Mg or Mn dihalides, the X-rays powder spectrum of component (B) showing a broadening of said most intense diffraction lines, component (B) being further characterized in that the Ti compound present therein, expressed as Ti metal, is less than 0.3 g atom per mole of the total amount of the electron-donor compound present in a combined form in the catalyst and the catalyst being additionally characterized in that the Al/Ti molar ratio is from 10 to 1,000.

4,226,964

PROCESS FOR POLYMERIZING OLEFIN

Toru Tanaka, Komae; Shigeaki Okano, Yamato, and Eiji Tanaka, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Jan. 25, 1979, Ser. No. 6,386

Claims priority, application Japan, Feb. 23, 1978, 53-20148; Oct. 17, 1978, 53-127507

Int. Cl.² C08F 4/02, 10/02

U.S. Cl. 526—114

17 Claims

1. In a process for polymerizing an olefin in the presence of a catalyst system combining an organoaluminum compound with a hydrocarbon insoluble solid catalytic component prepared by treating a hydrocarbon solution containing a magnesium compound, a titanium compound and a zirconium compound with an aluminum halide having the formula AlR^1X_2^1 , wherein R^1 represents an alkyl, aryl or cycloalkyl group and X^1 represents a halogen atom, the improvement wherein the magnesium compound is a compound having the formula



wherein R^2 represents an alkyl, aryl or cycloalkyl group; and the titanium compound is a compound having the formula



wherein R^3 represents an alkyl, aryl or cycloalkyl group; and the zirconium compound is a compound having the formula



wherein R^4 represents an alkyl, aryl or cycloalkyl group; X^4 represents a halogen atom; m is 1, 2 or 3 or an alcohol solution of a compound having the formula



$\text{X}^3=\text{X}^4=\text{Cl}$; and wherein

$$\gamma = \frac{\text{X}^{11} + \text{X}^3 + \text{X}^4}{\text{OR}^2 + \text{OR}^3 + \text{OR}^4 + \text{X}^3 + \text{X}^4} > 3 \text{ and } 2.3 \leq \frac{\text{Zr}}{\text{Ti}} \times \gamma \leq 2.9$$

4,226,965

METHOD FOR PREPARING POLYMERS AND COPOLYMERS OF HIGHER α -OLEFINS

Vasily A. Grigor'ev, ulitsa O. Koshevo, 10, kv. 71; Zinaida V. Arkhipova, Porokhovskaya ulitsa, 54/1, kv. 210; Gurgan A. Balaev, prospekt Morisa Toreza, 94, korpus 3, kv. 5; Nikolai G. Bakajutov, kanal Griboedova, 29, kv. 24; Vera I. Vysotskaya, Grazhdansky prospekt, 77, korpus 2, kv. 8; Arkady V. Polyakov, prospekt Morisa Toreza, 9, kv. 193, and Vitaly M. Zapletnyak, Moskovskoe shosse, 4, kv. 185, all of Leningrad, U.S.S.R.

Filed Sep. 28, 1978, Ser. No. 947,334

Int. Cl.² C08F 4/66, 10/14

U.S. Cl. 526—116

2 Claims

1. A method for preparing crystalline polymers and copolymers of higher α -olefins having from 4 to 8 carbon atoms which comprises polymerizing or copolymerizing in a hydrocarbon medium said α -olefins in a reactor in the presence of a homogeneous catalyst soluble in the hydrocarbon medium containing an alkyl-aluminum chloride, trialkyl vanadate and an alkoxy derivative of a metal selected from the group comprising titanium, zirconium, hafnium, and then separating the hydrocarbon medium and remaining catalyst from the resultant polymer or copolymer.

4,226,966

METHOD FOR PRODUCING VINYL CHLORIDE RESINS

Makoto Shiraishi; Hiroshi Uchida, both of Kurashiki; Yoshinori Koizumi, Toyama, and Akira Saito, Ibaragi, all of Japan, assignors to Kurara Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 667,654, Mar. 17, 1976, abandoned.

This application Feb. 23, 1978, Ser. No. 880,557

Claims priority, application Japan, Mar. 24, 1975, 50/35233

Int. Cl.² C08F 2/20, 2/02, 118/08, 114/06

U.S. Cl. 526—202

4 Claims

1. A method for producing a polyvinyl chloride resin comprising suspension polymerizing vinyl chloride monomer in the presence of an effective amount of a suspension stabilizer of a partially saponified polyvinyl alcohol having simultaneously: (a) a degree of saponification in the range of from 60 to 90 mol percent; (b) a solubility-in-methanol index at 55° C. in the range of from 10 to 60 percent; and; (c) a solubility in aqueous solution whereby said suspension stabilizer will not flocculate from a stirred 0.1 percent aqueous solution at a temperature in the range of from 30° C. to 65° C.

4,226,967

HIGHLY CHARGE-TRANSFERABLE POLYCONDENSATION POLYMER AND PROCESS FOR PREPARATION

Shigeo Tazuke, Yokohama, and Hajime Nagahara, Fuji, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 30, 1979, Ser. No. 34,700

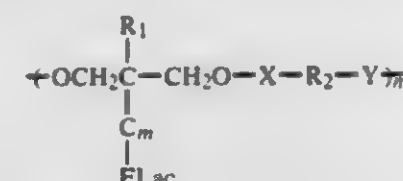
Claims priority, application Japan, Apr. 28, 1978, 53-49749

Int. Cl.² C08G 18/32, 18/62

U.S. Cl. 528—74

10 Claims

1. An electron acceptor polycondensation polymer of the formula (I):



wherein R_1 is a hydrogen atom or an alkyl group, an aryl group or an aralkyl group, having not more than 15 carbon atoms; C_m is a divalent connecting group; FLac is an electron acceptor group having a fluorene nucleus; X and Y are a carbonyl group or an acid amide capable of forming a urethane

linkage with the oxygen atom of a diol; R_2 is a divalent organic residue having not more than 20 carbon atoms; n is a number greater than 10 which represents the degree of polycondensation of the resultant polycondensation polymer.

4,226,968

METHOD OF PRODUCING FURAN-EPOXY POWDER-LIKE BINDER

Gennady D. Varlamov, ulitsa Jubileinaya, 5, kv. 13; Ildgam A. Bekbulatov, ulitsa Kashkarskaya, 215; Shavkat Madaliev, ulitsa Yarmazar, 361; Juldash Mamatov, ulitsa Pushkina, 50, kv. 60; Alexandra V. Proshkina, ulitsa 25-letia Oktyabrya, 56, kv. 6, and Svetlana N. Ubiennykh, ulitsa 50-letia VLKSM, 14, kv. 14, all of Fergana, U.S.S.R.

Filed Jun. 6, 1978, Ser. No. 913,085

Int. Cl.² C08G 59/40

U.S. Cl. 528—91

37 Claims

1. A method of producing a furan-epoxy powder-like binder comprising:

- reacting
 - the polycondensation product of epichlorohydrin with bis(hydroxyphenyl)propane, with
 - a ketone of the furan series selected from the group consisting of monofurfurylideneacetone; difurfurylideneacetone; difurfurylidene cyclohexanone; a mixture of monofurfurylideneacetone and difurfurylideneacetone at a weight ratio of from 1:1 to 1.4:1; 1,9-di-(α -furyl)-nonanetetraene-1,3,6,8-one-5 and 1,5-di-(α -furyl)-2,4-dimethylpentadiene-1,4-one-3; and
 - a nitrogen-containing compound selected from the group consisting of triethanolamine, 3-methyl-5-furylpyrazoline; trifurylimidazole, hexamethylenediamine; low molecular weight polyamides having a molecular weight of 2,000–10,000, and polyethylenepolyamine having a molecular weight of 1,000 at a temperature of 130° to 200° C. and the weight ratios of components (a):(b):(c) being 100:33-200:8-100;
- cooling the product of (1) to a temperature of not exceeding 30° C.; and
- grinding the product of (2) to a powder state.

4,226,969

EPOXY COMPOSITION FOR THREADLOCKING

Charles R. Watson, Jr., Farmington, and Mary A. Eichner, Windsor, both of Conn., assignors to Allied Products Corporation, Avon, Conn.

Filed Feb. 8, 1979, Ser. No. 10,214

Int. Cl.² C08G 59/50, 59/64

U.S. Cl. 528—93

7 Claims

1. An epoxy resin threadlocking composition consisting essentially of:

- 30–70 percent by weight of an epoxy resin;
- 30–70 percent by weight of an amine hardener component therefor;
- up to 25 percent by weight of a polyfunctional amine accelerator therefor;
- up to 10 percent by weight of an inert filler; and
- 1–25 percent by weight of an aminoalcohol compound soluble in the resin/hardener system and wherein the amine and hydroxyl groups are dispersed on a carbon chain and on different carbon atoms of that chain.

4,226,970

POLYESTERS DERIVED FROM DIKETODIOLS AND AROMATIC DICARBOXYLIC ACIDS AND FILAMENTS THEREOF

August H. Frazer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

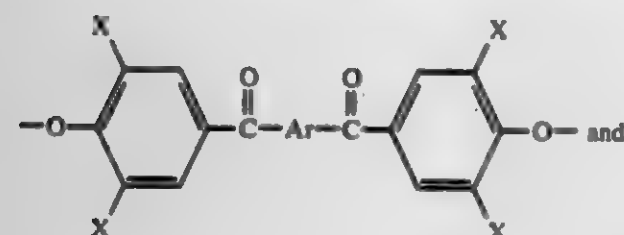
Filed Jul. 23, 1979, Ser. No. 59,891

Int. Cl.² C08G 63/18

U.S. Cl. 528—128

7 Claims

1. A fiber-forming (co)polyester consisting essentially of units having the structural formulas



in substantially equimolar amounts and wherein X is methyl- or chloro- and Ar is m- or p-phenylene with the proviso that when Ar is p-phenylene R₂ is selected from the group consisting of

- p-phenylene (15–40 mol %) and m-phenylene (60–85 mol %);
- p-phenylene (0–35 mol %) and ethylenedioxybis-p-phenylene (65–100 mol %);
- m-phenylene (0–50 mol %) and ethylenedioxybis-p-phenylene (50–100 mol %); and
- m-phenylene (0–30 mol %) and p,p'-biphenylene (70–100 mol %) and when Ar is m-phenylene, R₂ is selected from the group consisting of
- p-phenylene (0–35 mol %) and p,p'-biphenylene (65–100 mol %);
- p-phenylene (0–60 mol %) and ethylenedioxybis-p-phenylene (40–60 mol %);
- m-phenylene (0–40 mol %) and ethylenedioxybis-p-phenylene (60–100 mol %), and
- m-phenylene (15–50 mol %) and p,p'-biphenylene (50–85 mol %).

4,226,971

PHENOL-ALDEHYDE CONDENSATION PRODUCT WITH AMINOALKYLENE DERIVATIVE OF A POLYOXYALKYLENEPOLYAMINE

Harold G. Waddill, Austin, and Howard P. Klein, Houston, both of Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 927,260, Jul. 24, 1978, Pat. No. 4,164,520, Continuation-in-part of Ser. No. 865,053, Dec. 27, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,125

Int. Cl.² C08G 14/06

U.S. Cl. 528—162

5 Claims

1. The condensation product of phenol, formaldehyde and an aminoalkylene derivative of a polyoxyalkylenepolyamine made by reacting a polyoxyalkylenepolyamine with acrylonitrile followed by hydrogenation.

4,226,972

PROCESS FOR PREPARING POLY(ORGANOPHOSPHAZENES) FROM SOLUBLE OR GELLED POLY(DICHLOROPHOSPHAZENES)

Donald N. Schulz, Hartville; Jung W. Kang, Clinton, both of Ohio, and John W. Spiewak, Webster, N.Y., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

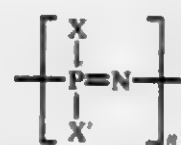
Filed Nov. 3, 1978, Ser. No. 957,398

Int. Cl.² C08G 79/02, 73/00

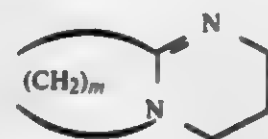
U.S. Cl. 528—168

12 Claims

1. A method of preparing poly(organophosphazenes) containing repeating units of the structure:



wherein X and X' are organic substituents which may be the same or different and n is from 20 to 50,000; which comprises reacting a poly(dichlorophosphazene) having the formula $-(NPCl_2)_n-$, in which n is from 20 to 50,000, with an active hydrogen-containing compound or mixture of active hydrogen-containing compounds in the presence of a bicyclic amine represented by the structure:



in which m is an integer of from 1 to 10.

4,226,973

PROCESS FOR UPGRADING PREPOLYMER PARTICLES

Russell V. Malo, Munster, Ind.; Gary A. Gustafson, Naperville, and Ronald E. Bockrath, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 22, 1979, Ser. No. 51,043

Int. Cl.² C08G 63/26

U.S. Cl. 528—481

9 Claims

1. A process for upgrading polyester prepolymer particles comprising continuously conveying polyester prepolymer particles through a thermovane processor under an inert gas sweep at a temperature below the softening point of the polyester and sufficient to achieve crystallization and/or solid-state polymerization without sticking of the particles.

4,226,974

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM POLYVINYL CHLORIDE LATEXES AND SLURRIES

Donald Goodman, Flemington; Marvin Koral, Warren; Robert S. Miller, Bridgewater, and Robert J. Stanaback, Gladstone, all of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 604,281, Aug. 13, 1975. This application Jan. 21, 1977, Ser. No. 761,109

Int. Cl.² C08F 6/24, 6/16, 2/20

U.S. Cl. 528—483

1 Claim

1. The process for the removal of vinyl chloride from an aqueous dispersion, latex, or slurry that contains from about 1000 parts to 20,000 parts by weight of vinyl chloride per million parts by weight of said dispersion, latex, or slurry and from 5% to 50% by weight of a vinyl chloride polymer selected from the group consisting of polyvinyl chloride and copolymers of vinyl chloride and at least one monomer copolymerizable therewith that comprises maintaining the dispersion, latex, or slurry at subatmospheric pressure while sparging

it with ammonia until the dispersion, latex, or slurry contains less than about 10 parts by weight of vinyl chloride per million part by weight of said vinyl chloride polymer.

4,226,975

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM POLYVINYL CHLORIDE DISPERSIONS AND LATEXES

Donald Goodman, Flemington; Marvin Koral, Warren; Robert S. Miller, Bridgewater, and Robert J. Stanaback, Gladstone, all of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 604,281, Aug. 13, 1975. This application Nov. 8, 1976, Ser. No. 739,919

Int. Cl.² C08F 6/24, 6/16, 2/20

U.S. Cl. 528—483

1 Claim

1. The process for the removal of vinyl chloride from an aqueous dispersion or latex that contains from about 1000 parts to 20,000 parts by weight of vinyl chloride per million parts by weight of said dispersion or latex and from 5% to 50% by weight of a vinyl chloride polymer selected from the group consisting of polyvinyl chloride and copolymers of vinyl chloride and at least one monomer copolymerizable therewith that comprises the steps of

- adding to the dispersion or latex from 2% to 8% by weight of a polar, water-soluble organic compound selected from the group consisting of acetonitrile, chloroacetonitrile, formamide, dimethylformamide, diisopropylamine, 1-chlorobutene-2, and butyl bromide, and
- maintaining the resulting dispersion or latex at subatmospheric pressure while sparging it with ammonia until the dispersion or latex contains less than about 10 parts by weight of vinyl chloride per million parts by weight of said vinyl chloride polymer.

4,226,976

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM POLYVINYL CHLORIDE LATEXES AND SLURRIES WITH HYDROCARBON COMPOUNDS

Donald Goodman, Flemington; Marvin Koral, Warren; Robert S. Miller, Bridgewater, and Robert J. Stanaback, Gladstone, all of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 604,281, Aug. 13, 1975. This application Sep. 20, 1976, Ser. No. 724,806

Int. Cl.² C08F 6/24, 6/14

U.S. Cl. 528—498

10 Claims

1. The process for the removal of vinyl chloride from an aqueous dispersion, latex, or slurry that contains from about 1000 parts to 20,000 parts by weight of vinyl chloride per million parts by weight of said dispersion, latex, or slurry and from 5% to 50% by weight of a vinyl chloride polymer selected from the group consisting of polyvinyl chloride and copolymers of vinyl chloride and at least one monomer copolymerizable therewith that comprises maintaining the dispersion, latex, or slurry at a pressure between about 100 mm. and 600 mm. mercury absolute while sparging it with a gaseous organic compound selected from the group consisting of aliphatic hydrocarbons having 1 to 4 carbon atoms, halogenated aliphatic hydrocarbons having 1 or 2 carbon atoms and 1 to 4 halogen atoms, and mixtures thereof until the dispersion, latex, or slurry contains less than about 10 parts by weight of vinyl chloride per part by weight of said vinyl chloride polymer.

4,226,977

PROCESS FOR SEPARATING A KETOSE FROM AN ALDOSE BY SELECTIVE ADSORPTION

Richard W. Neuzil, Downers Grove, and James W. Priegnitz, Elgin, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 27, 1976, Ser. No. 690,768

Int. Cl.² C07G 3/00

U.S. Cl. 536—1

6 Claims

1. A process for separating a ketose from a mixture compris-

ing a ketose and an aldose which process comprises contacting at adsorption conditions said mixture with an adsorbent comprising a X zeolite containing at exchangeable cationic sites a cation pair selected from the group consisting of both barium and potassium and both barium and strontium and selectively adsorbing said ketose and thereafter recovering said ketose.

4,226,978

β -GALACTOSYL-UMBELLIFERONE-LABELED AMINOGLYCOSIDE ANTIBIOTICS AND INTERMEDIATES IN THEIR PREPARATION

Robert C. Boguslaski; Robert J. Carrico, and John F. Burd, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

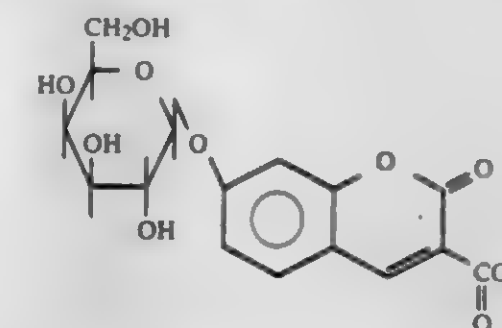
Filed Mar. 13, 1978, Ser. No. 886,094

Int. Cl.² C07H 15/22, 17/04

U.S. Cl. 536—4

11 Claims

8. A compound of the formula:



wherein Z is hydrogen, potassium or sodium.

4,226,979

FORTIMICIN AK

James B. McAlpine, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

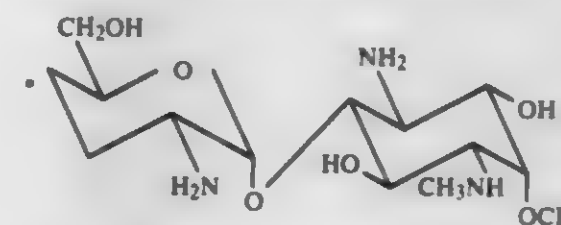
Filed Mar. 29, 1979, Ser. No. 25,241

Int. Cl.² A61K 31/71; C07H 15/22

U.S. Cl. 536—17 R

1 Claim

1. Fortimicin AK represented by the formula



or a pharmaceutically acceptable salt thereof.

4,226,980

NOVEL DERIVATIVES OF FORTIMICIN B AND PROCESS FOR PREPARING SAME

Moriyuki Sato, Machida; Kenichi Mochida, Hiratsuka; Shigeo Yoshiie, Machida, and Yasuki Mori, Kawasaki, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

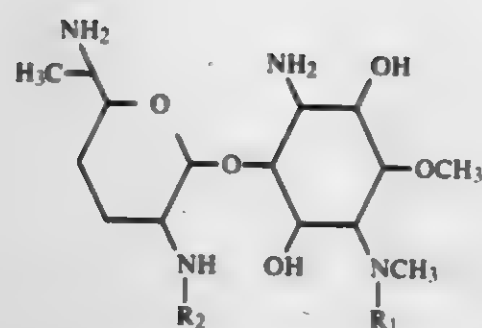
Filed Dec. 7, 1978, Ser. No. 967,352

Int. Cl.² A61K 31/71; C07H 15/22

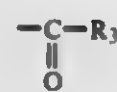
U.S. Cl. 536—17 R

5 Claims

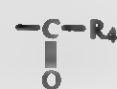
1. 4,2'-di-N-substituted derivatives of fortimicin B, represented by the formula:



wherein R_1 represents a



or $\text{—CH}_2\text{—R}_3$ group, and R_2 represents a



or $\text{—CH}_2\text{—R}_4$ group and wherein R_4 represents an aminoalkyl group having 1 to 8 carbon atoms, hydroxyalkyl group having 1 to 8 carbon atoms, carbamoylaminoalkyl group having 2 to 9 carbon atoms or α -aminohydroxyalkyl group having 2 to 9 carbon atoms wherein the amino group and hydroxy group are bonded to different carbon atoms, and R_3 represents a carbamoylaminoalkyl group having 2 to 9 carbon atoms, and the pharmaceutically acceptable non-toxic acid addition salts thereof.

4,226,981

ETHER-ESTER DERIVATIVES OF CELLULOSE AND THEIR APPLICATIONS

Yoshiro Onda, Niigata; Hiroaki Muto, and Kazumasa Maruyama, both of Joetsu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Sep. 20, 1978, Ser. No. 944,177

Claims priority, application Japan, Sep. 28, 1977, 52/116328; Oct. 17, 1977, 52/124237; Oct. 25, 1977, 52/127947

Int. Cl.² B44D 1/50; C08B 13/00; G03C 1/92

U.S. Cl. 536—66

18 Claims

1. A method of preparing a mixed ester selected from the class consisting of alkylcellulose, hydroxyalkylcellulose and hydroxyalkylalkylcellulose esterified with acidic succinyl groups expressed by the formula $\text{HO—CO—CH}_2\text{CH}_2\text{CO—}$ and acyl groups represented by the general formula R—CO— where R is an aliphatic monovalent hydrocarbon group, which comprises esterifying a cellulose ether represented by the formula



where R^1 is a hydroxyalkyl group, R^2 is an alkyl group, A is a glucosic residue and m and n are each zero or a positive number not equal to zero simultaneously, with succinic anhydride and an anhydride of an aliphatic monocarboxylic acid.

4,226,982 PROCESS TO BREAK DOWN CELLULOSE POLYMERS AND PRODUCE CELLULAR SOLID OR SOLID REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 884,135, Mar. 7, 1978, Pat. No. 4,159,369, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Feb. 21, 1979, Ser. No. 13,139

Int. Cl.³ C08B 1/08; C08J 9/02; C08G 18/02

U.S. Cl. 536—101

35 Claims

1. The process for the production of water-soluble broken-down alkali metal cellulose polymer by the following steps:

- (a) mixing 2 parts by weight of a cellulose-containing plant with 1 to 3 parts by weight of an alkali metal hydroxide;
- (b) heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes, thereby
- (c) producing a water-soluble broken-down alkali metal cellulose polymer.

4,226,983

PREPARATION OF METAL COMPLEXES

Edward S. Lane, Didsot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sep. 26, 1978, Ser. No. 945,841

Claims priority, application United Kingdom, Sep. 29, 1977, 40587/77

Int. Cl.³ C08B 37/02

U.S. Cl. 536—113

10 Claims

1. A process for the preparation of a solution of a complex of iron, said complex including the iron and an organic complexing agent, comprising treating with an acid or alkali a water-insoluble, gel precipitate containing the iron and an organic complexing agent selected from the group consisting of dextran, polyvinyl alcohol, dextrin, starch, dextrose and sorbitol to redisperse the gel precipitate and form said solution.

4,226,984

2-DECARBOXY-2-AMINOMETHYL-TRANS-4,5-DIDEHYDRO-PGI₂ COMPOUNDS

Donald E. Ayer, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

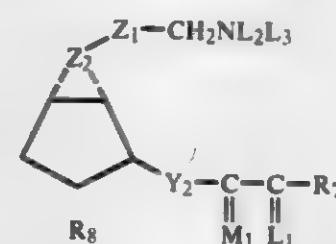
Continuation-in-part of Ser. No. 821,542, Aug. 3, 1977. This application Aug. 31, 1978, Ser. No. 938,547

Int. Cl.² C07D 307/93

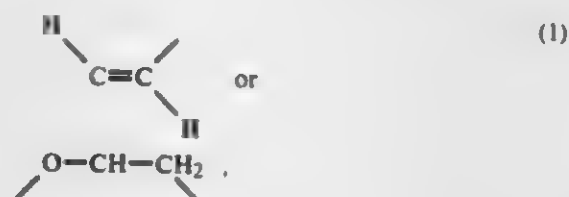
U.S. Cl. 542—426

82 Claims

1. A prostacyclin analog of the formula



wherein Y_2 is trans—CH=CH— , cis—CH=CH— , or $\text{—CH}_2\text{CH}_2\text{—}$; wherein Z_2 is



(1)

4,226,985

11-SUBSTITUTED PROSTAGLANDINS

George W. Holland, Cedar Grove; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

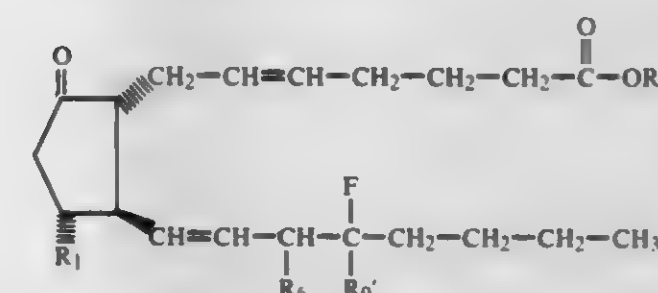
(2) Division of Ser. No. 780,878, Mar. 24, 1977, abandoned, which is a division of Ser. No. 614,044, Sep. 17, 1975, Pat. No. 4,036,871, which is a division of Ser. No. 480,458, Jun. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Apr. 2, 1979, Ser. No. 26,125

Int. Cl.³ C07C 177/00

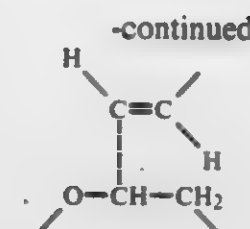
U.S. Cl. 542—426

4 Claims

1. A compound of the formula:



wherein R is hydrogen or lower alkyl; R_1 is carboxy or lower alkoxy; R_6 is hydroxy, tetrahydropyranyloxy, lower alkanoyloxy, benzyloxy, benzoyloxy, benzhydryloxy, trityloxy, or triloxyalkylsilyloxy, or enantiomers or racemates thereof.



wherein Z_1 is

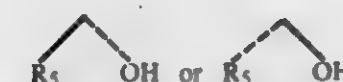
(1) $\text{—(CH}_2\text{)}_g\text{—CH}_2\text{—CH}_2\text{—}$, or

(2) $\text{—(CH}_2\text{)}_g\text{—CH}_2\text{—CF}_2\text{—}$,

wherein g is the integer zero, one, or 2;

wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;

wherein M_1 is

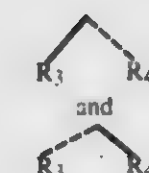


wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive; and

wherein L_1 is



or a mixture of

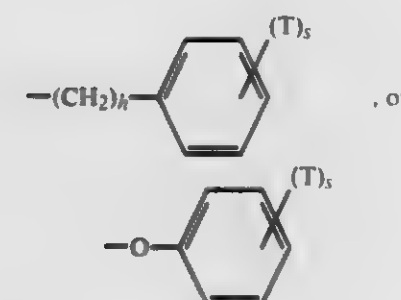


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; and

wherein R_7 is

(1) $\text{—(CH}_2\text{)}_m\text{—CH}_3$,



wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T 's are other than alkyl.

4,226,986

PROCESS FOR HALOGENATION OF β -LACTAM COMPOUNDS

Lowell D. Hatfield, Bargersville; Larry C. Blaszcak, and Jack W. Fisher, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

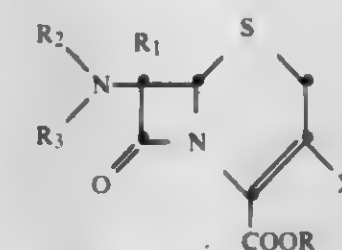
Filed Feb. 1, 1979, Ser. No. 8,647

Int. Cl.² C07D 501/04

U.S. Cl. 544—16

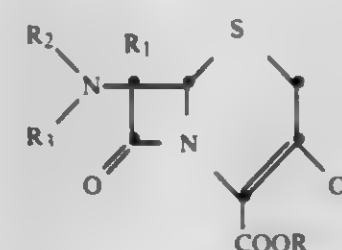
38 Claims

1. A process for preparing a compound of the formula



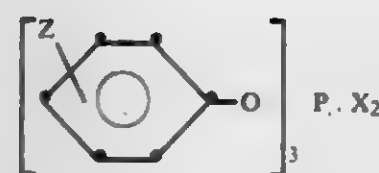
(2)

which comprises reacting a compound of the formula

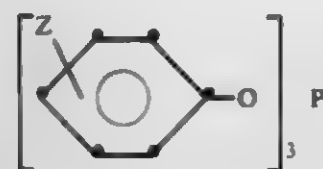


(3)

with about 1.0 to about 1.3 equivalents of a halogenating compound of the formula

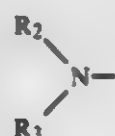


which is the kinetically controlled product of the reaction, in a substantially anhydrous inert organic solvent, of equivalent amounts of a triaryl phosphite of the formula



and chlorine or bromine, in a substantially anhydrous inert organic solvent at a temperature below about 30° C. wherein in the above formulas

X is Cl or Br;
Z is hydrogen, halo, C₁-C₄ alkyl or C₁-C₄ alkoxy;
R is carboxylic acid protecting group;
R₁ is hydrogen or methoxy; and



is amino protected by a conventional amino protecting group; or

R₂ is hydrogen or an acyl group derived from a carboxylic acid; and

R₃ is an acyl group derived from a carboxylic acid; or
R₂ and R₃ taken together with the nitrogen atom to which they are attached form a group of the formula



wherein R₄ is the residue of an acyl group derived from a dicarboxylic acid; provided that when R₂ and R₃ are substituted by amino, hydroxy or carboxy groups, those groups are first protected by one of the conventional amino, hydroxy or carboxy protecting groups.

4,226,987

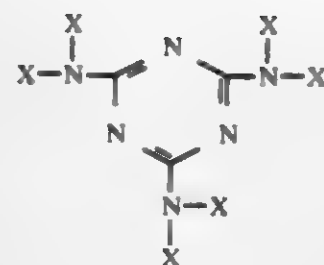
HETEROCYCLIC AMINE MOLYBDATE

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Division of Ser. No. 792,293, Apr. 29, 1977, Pat. No. 4,153,792, which is a division of Ser. No. 770,168, Feb. 14, 1977, Pat. No. 4,053,435. This application Mar. 22, 1979, Ser. No. 22,670
Int. Cl.³ C07D 413/04

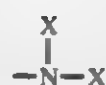
U.S. Cl. 544—64

2 Claims

1. A heterocyclic amine molybdate wherein the heterocyclic amine used in producing the molybdate is a substituted melamine having the formula



wherein in at least one



the X's are joined together to form a morpholino group and the remaining X's are hydrogen or an alkyl, alicyclic, aralkyl, alkaryl or aryl group containing from 1 to 10 carbon atoms.

4,226,988

N-SUBSTITUTED PARAMENTHANE CARBOXAMIDES

Hugh R. Watson, Wargrave; David G. Rowsell, Staines, and David J. Spring, Datchet, all of England, assignors to Wilkinson Sword Limited, London, England
Division of Ser. No. 796,973, May 16, 1977, Pat. No. 4,150,052, which is a continuation of Ser. No. 486,566, Jul. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 221,755, Jan. 28, 1972, abandoned. This application Jan. 18, 1979, Ser. No. 4,332

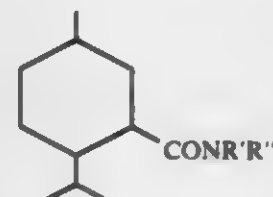
Claims priority, application United Kingdom, Feb. 4, 1971, 3928/71; Feb. 4, 1971, 3934/71

Int. Cl.³ C07D 295/18, 213/75

U.S. Cl. 544—176

1 Claim

1. Substantially odorless, non-volatile physiologically active cooling compounds of the formula



where R' and R'', when taken together jointly represent a straight or branched chain alkylene group having a total of up to 10 carbon atoms, said alkylene group providing a chain of 4 or 5 carbon atoms the opposite ends of which are attached to the nitrogen atom to form a 5 or 6 membered heterocycle; a —CH₂CH₂OCH₂CH₂— group, or a CH₂CH₂NHCH₂CH₂ group;

or, when taken separately, R' represents hydrogen and R'' represents a pyridyl group.

4,226,989

MELAMINE-MONOPHTHALIMIDES

Roland R. DiLeone, Rowayton, and Jeno G. Szita, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

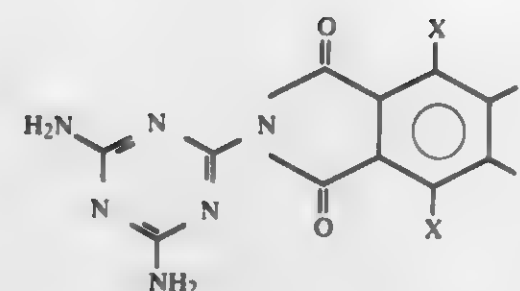
Filed Jul. 19, 1979, Ser. No. 58,883

Int. Cl.³ C07D 403/04

U.S. Cl. 544—198

4 Claims

1. A compound defined by the formula



wherein each X represents a member selected from the group consisting of hydrogen and halogen atoms.

4,226,990

TRIAZINE-DIONES

Ian T. Kay, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 15, 1974, Ser. No. 515,090

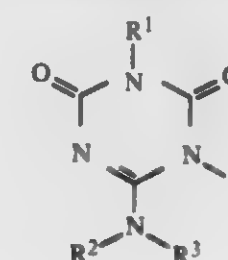
Claims priority, application United Kingdom, Nov. 1, 1973, 50827/73; Feb. 15, 1974, 6959/74

Int. Cl.³ C07D 487/04

U.S. Cl. 544—212

3 Claims

1. A triazine-dione compound of the formula:



wherein R¹ is an alkyl radical of 1 to 8 carbon atoms, R² is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms and R³ together with the group X, forms a divalent radical Z linking the exocyclic nitrogen atom to which R³ is attached to the nitrogen atom in the triazine ring, so as to form a second 5- or 6-membered ring, the radical Z being selected from the group consisting of oxalyl (—CO.CO—), 1,2-dihydroxyethylene (—CH(OH)—CH(OH)—), ethylene (—CH₂CH₂—), trimethylene (—CH₂CH₂CH₂—), and radicals of the formula —CH₂NR⁵CH₂— wherein R⁵ is phenyl, an alkyl group of 1 to 10 carbon atoms or hydrogen.

4,226,991

PROCESS FOR PREPARING 3-ALKYLTHIOPROPIONIC ACID ESTERS

Yutaka Nakahara, Iwatsuki; Tohru Haruna, Okegawa, and Kenji Tazima, Kuwana, all of Japan, assignors to Argus Chemical Corp., Brooklyn, N.Y.

Filed Oct. 13, 1978, Ser. No. 950,976

Claims priority, application Japan, Oct. 17, 1977, 52/125007

Int. Cl.² C07D 251/34

U.S. Cl. 544—221

12 Claims

1. A process for preparing a polyhydric alcohol 3-alkylthiopropionate polyolefin stabilizer capable of enhancing the resistance to deterioration and minimizing the formation of undesirable color and odor of a polyolefin resin when heated at 150° C., comprising the step of heating a reaction mixture containing at least one polyhydric alcohol having 3 to 6 alcoholic hydroxyl groups and 3 to 20 carbon atoms, provided that the number of carbon atoms is at least equal to the number of alcoholic hydroxyl groups, and for each mole of alcoholic hydroxyl group supplied by the polyhydric alcohol from 0.6 to 1.5 moles of a beta-mercaptopropionic acid compound selected from the group consisting of beta-mercaptopropionic acid and a lower alkyl ester thereof and from 0.6 to 2 moles of at least one alpha-olefin having 6 to 40 carbon atoms, and an amount effective to initiate reaction of a reaction initiator selected from the group consisting of azonitriles and organic peroxides having 4

to 40 carbon atoms, and subsequently recovering the polyhydric alcohol 3-alkylthiopropionate polyolefin resin stabilizer from the mixture.

4,226,992
AMINO-FUNCTIONALIZED
NAPHTHALENE-1,2-DICARBOXYLIC ACID
HYDROZIDES

Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

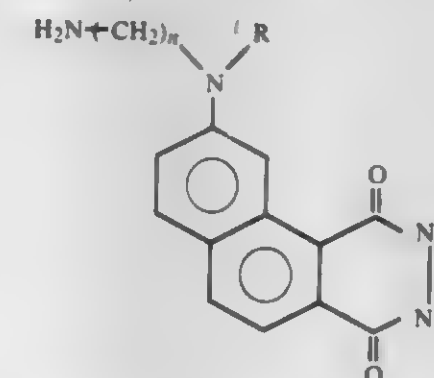
Division of Ser. No. 927,286, Jul. 24, 1978. This application Oct. 5, 1979, Ser. No. 82,110.

Int. Cl.³ C07D 237/32

U.S. Cl. 544—234

3 Claims

1. A compound of the formula:



wherein R is hydrogen or straight chain alkyl containing 1-4 carbon atoms and n=2-6.

4,226,993

AMINO-FUNCTIONALIZED PHTHALHYDRAZIDES

Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

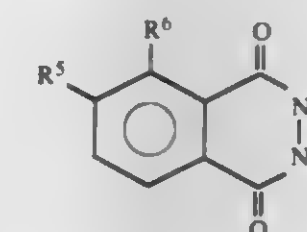
Division of Ser. No. 927,621, Jul. 24, 1978. This application Apr. 30, 1979, Ser. No. 34,250

Int. Cl.³ C07D 237/32; A61K 31/50

U.S. Cl. 544—237

6 Claims

1. A compound of the formula:



wherein one of R⁵ and R⁶ is hydrogen and the other is —NR⁷R⁸; R⁷ is hydrogen or straight chain alkyl having 1-4 carbon atoms and R⁸ is



wherein n=2-8.

4,226,994

**PROCESS FOR MAKING
4-METHYL-4,5-DIHYDROTETRAZOLO [1,5-a]
QUINAZOLIN-5-ONE**

John H. Marsden, and Norman Harrison, both of Blackley, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 19, 1979, Ser. No. 49,902

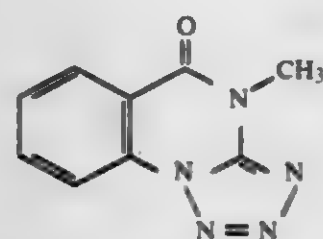
Claims priority, application United Kingdom, Jul. 4, 1978, 28713/78

Int. Cl.³ C07D 455/00

U.S. Cl. 544—251

9 Claims

1. In a process for preparing the compound 4-methyl-4,5-dihydrotetrazolo[1,5-a]quinazolin-5-one having the structural formula:



which comprises the steps of (i) bringing anthranilic acid into reaction with cyanamide at a temperature in the range of 80° to 100° C.; (ii) bringing the reaction product obtained by the foregoing step (i) into reaction with hydrazine hydrate in the presence of an organic solvent; then (iii) diazotising the hydrazino compound so formed to yield a tetrazole; and finally (iv) methylating the tetrazole, the improvement which comprises using n-butanol as the organic solvent in step (ii).

4,226,995

PREPARATION PROCESS OF 2-CHLORO PYRIMIDINE
Claude G. Demosthene, Aramon, and Christian R. Aspisi, Boulbon, both of France, assignors to "Societe Anonyme" Expansion, Paris, France

Filed May 11, 1979, Ser. No. 38,177

Claims priority, application United Kingdom, May 31, 1978, 25655/78

Int. Cl.³ C07D 239/30

U.S. Cl. 544—334

3 Claims

1. Preparation process of 2-chloro pyrimidine from 2-amino pyrimidine, hydrochloric acid and an alkali metal nitrite, the reagents being in substantially similar proportions as in the previously known methods, consisting in preparing a mixture of hydrochloric acid and of a non polar solvent of low boiling point, then adding 2-amino pyrimidine characterized in that, there is slowly added, at room temperature, the chloride of a metal selected from the group consisting of the transition metals, tin, antimony, thallium and zinc, then introduced, under an inert gas circulation, the selected nitrite at a temperature not exceeding 10° C. and finally poured the reaction mixture in iced water.

4,226,996

**NOVEL HETEROCYCLIC COMPOUNDS AND
PHARMACEUTICAL COMPOSITION CONTAINING
THEM**

Sasson Cohen, Tel-Aviv, and Abraham Fisher, Holon, both of Israel, assignors to The Purdue Frederick Company, Norwalk, Conn.

Division of Ser. No. 852,402, Nov. 17, 1977, which is a division of Ser. No. 655,650, Feb. 6, 1976, Pat. No. 4,083,985. This application Oct. 23, 1978, Ser. No. 953,514

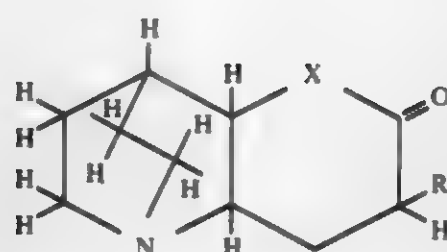
Claims priority, application Israel, Nov. 11, 1975, 48453

Int. Cl.² C07D 491/04, 491/08

U.S. Cl. 546—89

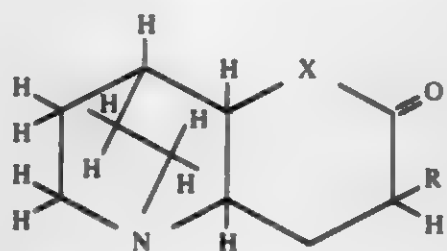
2 Claims

1. A process for the production of a salt of a compound of the formula:



wherein X is oxygen, and wherein R is a radical selected from the group consisting of lower alkyl, cyclopentyl and cyclohexyl, which comprises reacting 2-methylenequinuclidin-3-one with the corresponding radical-substituted diloweralkylmalonate in the presence of sodium alkoxide to give the corresponding 3-oxoquinuclidin-2-yl) malonate, reducing the latter with sodium borohydride to the corresponding (3-hydroxyquinuclidin-2-yl) malonate, and treating the latter with a concentrated mineral acid to obtain the desired product, a 4-radical-6-oxa-1-azatricyclo(4.2.2.0^{2.7}) dodecan-5-one salt.

2. A process for the production of a salt of a compound of the formula:



wherein X is oxygen and R is a radical selected from the group consisting of thienyl, phenyl, methylphenyl, methoxyphenyl, chlorophenyl, trifluoromethylphenyl, aminophenyl, diloweralkylaminophenyl and benzyl, which comprises reacting 2-methylene quinuclidin-3-one with the corresponding radical-substituted diloweralkylacetate in the presence of sodium alkoxide to give the corresponding (3-oxoquinuclidin-2-yl) acetate, reducing the latter with sodium borohydride to the corresponding (3-hydroxyquinuclidin-2-yl) acetate, and treating the latter with a concentrated mineral acid to obtain the desired product, a 4-radical-6-oxa-1-azatricyclo(4.2.2.0^{2.7}) dodecan-5-one salt.

4,226,997

**8-CHLORO-5,6,7,8-TETRAHYDRO-2-QUINOLONE AND
8-BROMO-5,6,7,8-TETRAHYDRO-2-QUINOLONE, THE
HYDROCHLORIDE OR HYDROBROMIDE THEREOF
AND PROCESS FOR THEIR MANUFACTURE**

Helmut Meidert, Frankfurt am Main; Werner H. Müller, Epstein, and Wilfried Pressler, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 75,240

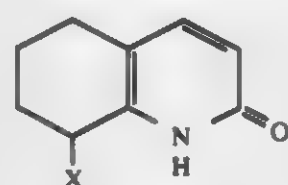
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840437

Int. Cl.³ C07D 215/22

U.S. Cl. 546—157

12 Claims

1. 8-halo-5,6,7,8-tetrahydro-2-quinolone of the formula



in which X is chlorine or bromine, and the hydrohalide thereof.

4. Process for the manufacture of 8-chloro-5,6,7,8-tetrahydro-2-quinolone hydrochloride or 8-bromo-5,6,7,8-tetrahydro-

2-quinolone hydrobromide, which comprises reacting 3,4,5,6,7,8-hexahydro-2-quinolone with chlorine or bromine in an inert solvent and at a temperature of from 10° to 50° C. and heating the reaction solution to 60° to 80° C. after termination of the halogen addition.

4,226,998

1-BENZOTHIIEPIN-4-CARBOXAMIDES

Melvin H. Rosen, Kendall, Fla., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 854,176, Nov. 23, 1977, Pat. No. 4,185,109, which is a continuation of Ser. No. 743,208, Nov. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 585,147, Jun. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,524, Sep. 26, 1974, abandoned. This application Sep. 20, 1978, Ser. No. 944,218

Int. Cl.³ A61K 31/445; C07D 409/04

U.S. Cl. 546—202

1 Claim

1. The N-(3,4-dichlorophenyl)-7-chloro-5-piperidino-2,3-dihydro-1-benzothiepin-1,1-dioxide-4-carboxamide.

4,226,999

**PIPERIDYL ESTERS OF PHENOLALKYLENE
CARBOXYLIC ACIDS**

Roger Malherbe, Muttentz, and Michael Rasberger, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 751,775, Dec. 16, 1976, Pat. No. 4,148,784. This application Jan. 5, 1979, Ser. No. 1,195

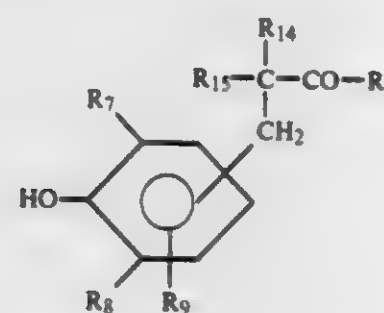
Claims priority, application Switzerland, Dec. 29, 1975, 16820/75; Nov. 19, 1976, 14580/76

Int. Cl.³ C07D 211/46

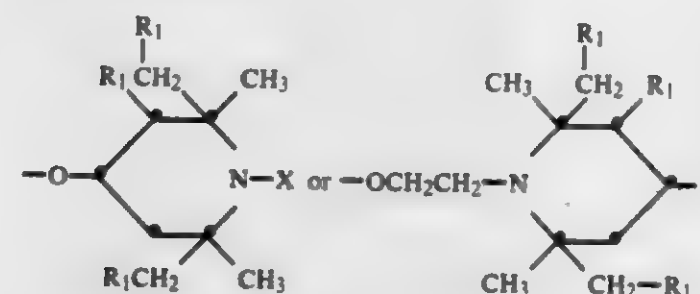
U.S. Cl. 546—222

3 Claims

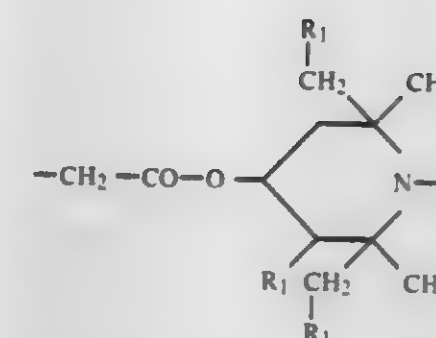
1. A member selected from the group consisting of (A) a compound of the formula



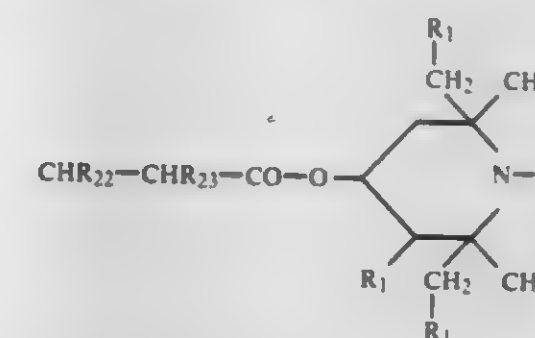
in which R₂ represents



R₁ is hydrogen or C₁—C₅-alkyl, R₇ and R₈ independently represent C₁—C₉-alkyl, C₇—C₉-aralkyl or C₅—C₈-cycloalkyl, R₉ is hydrogen or methyl, X represents (1) hydrogen, (2) C₁—C₄ alkyl, (3) allyl, (4) propargyl, (5) C₂—C₆ alkoxyalkyl, (6) acetyl, (7) acryloyl, (8) crotonoyl, (9) —CH₂—COOR₁₀ where R₁₀ is C₁—C₄ alkyl, (10) —CH₂—CH(R₁₁)—OH where R₁₁ is H or methyl or (11) —COOR₁₃ where R₁₃ is C₁ to C₄ alkyl, R₁₄ is cyano, C₁—C₄ alkyl, or C₁ to C₆ alkyl sulphonyl, R₁₅ is (1) hydrogen, (2) 4—OH-3,5-di C₁ to C₄ alkyl benzyl, (3) C₁ to C₁₂ alkyl, (4) C₃ to C₄ alkenyl, (5) propargyl, (6) benzyl, (7) phenyl, (8) a group of the formula



wherein R₁ and X are as previously defined, or (9) a group of the formula



wherein R₁ and X are as previously defined and R₂₂ and R₂₃ are H or methyl, and (B) an acid addition salt thereof with an organic or inorganic acid.

4,227,000

**INTERMEDIATES IN THE PROCESS FOR MAKING
HISTAMINE ANTAGONISTS**

Thomas H. Brown, Welwyn Garden City, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

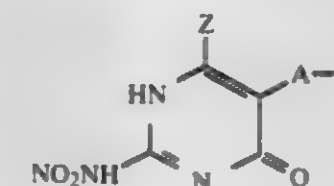
Filed Apr. 6, 1979, Ser. No. 27,543

Int. Cl.³ C07D 239/34; A61K 31/505

U.S. Cl. 544—321

9 Claims

1. A 2-nitroaminopyrimidone of the formula:



in which Z is hydrogen or lower alkyl, A is C₁—C₅ alkylene or —(CH₂)_pW(CH₂)_q— where W is oxygen or sulphur and the sum of p and q is 1 to 4, and B is a naphthyl, 5- or 6- (2,3-dihydro-1,4-benzodioxinyl), or 4- or 5- (1,3-benzodioxolyl) group, or a phenyl group substituted with lower alkyl, lower alkoxy, halogen, benzyloxy, hydroxy, lower alkoxy-lower alkoxy, trifluoromethyl, di(lower alkyl)amino, phenoxy, halophenoxy, lower alkoxy-phenoxy, phenyl, halophenyl or lower alkoxyphenyl groups.

4,227,001

**PREPARATION OF POLYCHLORINATED PYRIDINES
FROM 2,4-DICHLORO-6-(TRICHLORO
METHYL)PYRIDINE**

Thomas J. Dietsche, Berkeley, and Jim Love, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 916,450, Jun. 19, 1978, abandoned. This application Mar. 1, 1979, Ser. No. 16,631

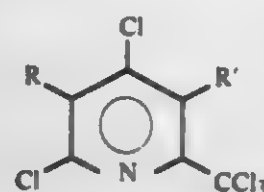
Int. Cl.³ C07D 213/26

U.S. Cl. 546—345

14 Claims

1. A process for preparing chlorinated pyridine compounds

which comprises contacting, in liquid phase, a starting material of the formula:



wherein R and R' each independently represent chloro or H, with the proviso that at least one of R and R' is always H, with chlorine at a temperature of at least about 160° C. to about 220° C. at superatmospheric pressures from about 190 psig to about 220 psig in the presence of a catalyst Lewis acid and amount thereof effective to catalyze the reaction, and thereafter recovering said chlorinated pyridine compounds.

4,227,002

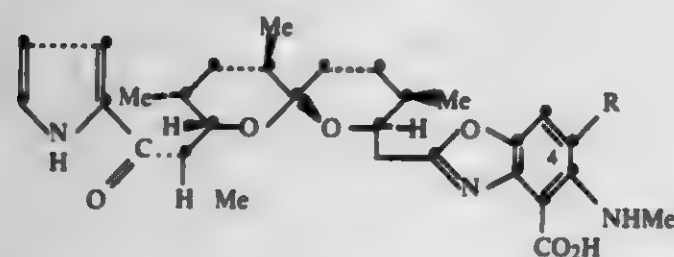
HALO-A-23187 DERIVATIVES

Donner F. Babcock, Madison, Wis.; Charles M. Deber, Toronto, Canada; Manuel Debono, R. Michael Molloy, both of Indianapolis, Ind., and Douglas R. Pfeiffer, Austin, Minn., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Oct. 11, 1978, Ser. No. 950,487
Int. Cl.³ C07D 493/10; A61K 31/42

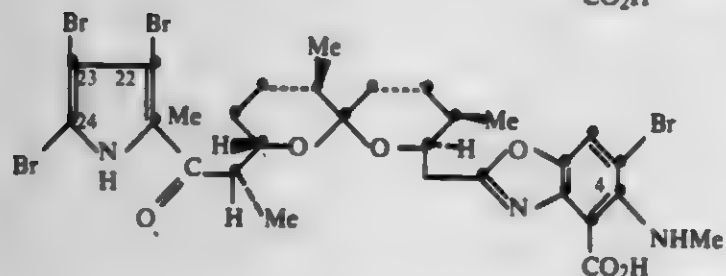
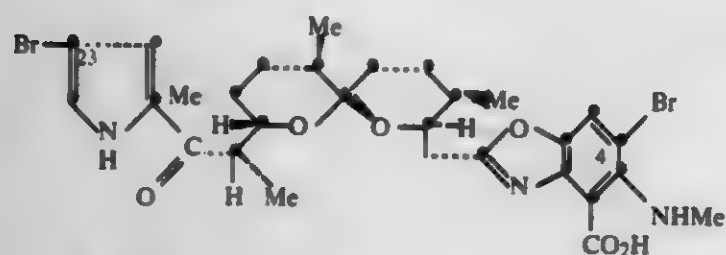
U.S. Cl. 548—216

7 Claims

1. A compound selected from a group consisting of compounds having the following formulas:



wherein R is bromine or chlorine;



and the pharmaceutically acceptable cationic salts of (1), (2) and (3).

4,227,003

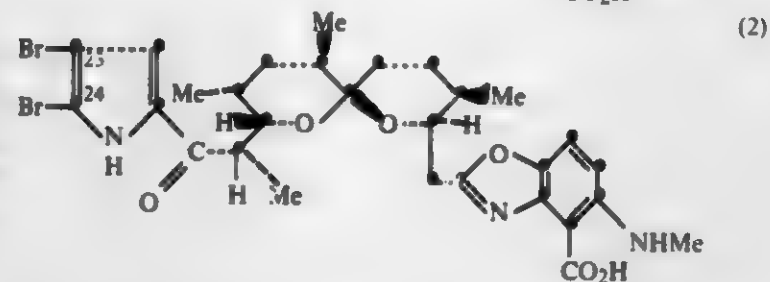
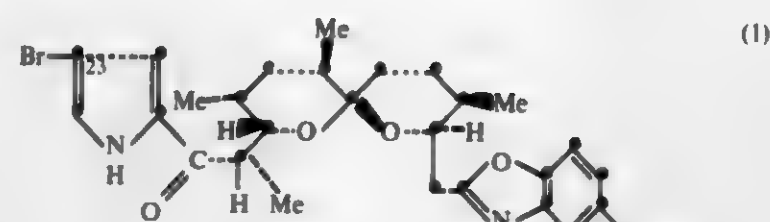
BROMO-A-23187 DERIVATIVES

Manuel Debono, and R. Michael Molloy, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Oct. 11, 1978, Ser. No. 950,485
Int. Cl.³ C07D 493/10; A61K 31/42

U.S. Cl. 548—216

5 Claims

1. A compound selected from a group consisting of compounds having the following formulas:



and the Pharmaceutically acceptable cationic salts of (1) and (2).

4,227,004

SYNTHESIS OF SUBSTITUTED 1-ARALKYL-1H-v-TRIAZOLES

Richard A. Wildonger, Newark, Del., assignor to ICI Americas Inc., Wilmington, Del.

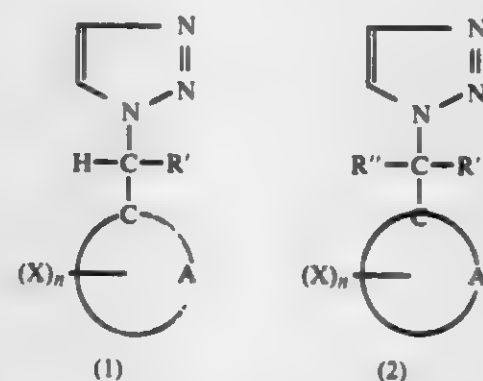
Filed Jan. 2, 1979, Ser. No. 450

Int. Cl.³ C07D 249/04

U.S. Cl. 548—255

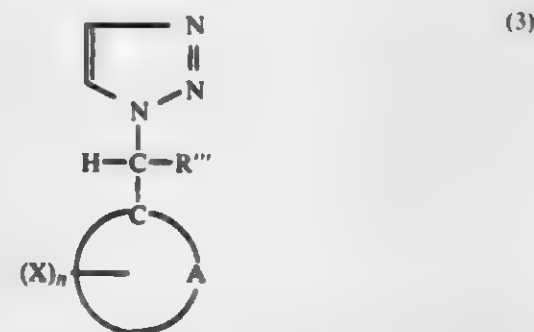
7 Claims

1. A process of preparing compounds represented by formulas



comprising:

(a) reacting a compound represented by the formula



with an alkylating agent in the presence of a base and a solvent to produce a product containing at least one compound represented by the formulas

4,227,006

N²-DANSYL-L-ARGININE DERIVATIVES, AND THE PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Shosuke Okamoto, Kobe; Ryoji Kikumoto, Tokyo; Yoshikuni Tamao, Yokohama; Shinji Tonomura, and Kazuo Ohkubo, both of Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 496,939, Aug. 13, 1974, Pat. No. 3,978,045.

This application Jun. 1, 1976, Ser. No. 691,766

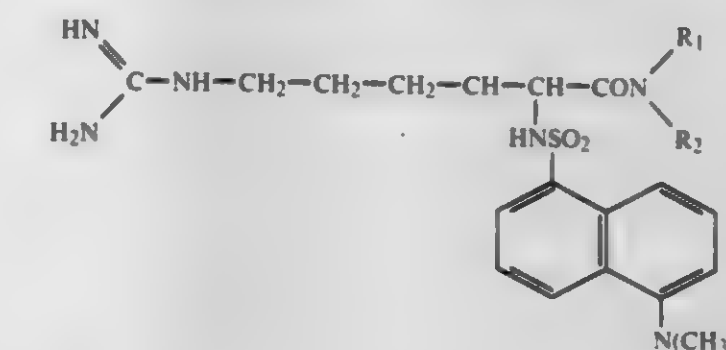
Claims priority, application Japan, Aug. 13, 1973, 48-090699; Oct. 16, 1973, 48-116035; Oct. 18, 1973, 48-117292; Dec. 10, 1973, 48-137501; Mar. 19, 1974, 49-031141; Mar. 25, 1974, 49-033260

The portion of the term of this patent subsequent to Jan. 17, 1995, has been disclaimed.
Int. Cl.³ C07C 129/08

U.S. Cl. 560—10

4 Claims

1. N²-dansyl-L-argininamides of the formula



wherein

R₂ = H

R₁ = —CH₂—CH₂—CO₂—CH₃.

4,227,007

DIURETHANES

Ulrich Schirmer, Heidelberg; Wolfgang Rohr, Mannheim; Bruno Wuerzer, and Kurt Fett, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 13, 1978, Ser. No. 869,323

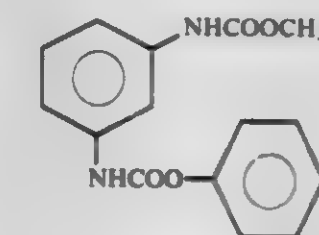
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2703838

Int. Cl.³ C07C 125/04; A01N 9/20

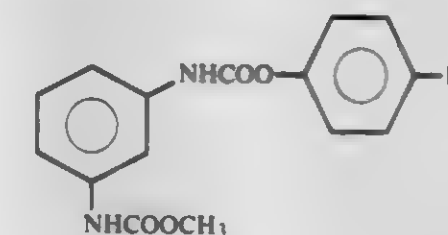
U.S. Cl. 560—25

9 Claims

1. A diurethane of the formula



3. A diurethane of the formula



8. A diurethane of the formula

4,227,005
DIALCOHOLS

Hans Batzer, Arlesheim; Jürgen Habermeyer, Pöfingen, and Daniel Porret, Friesen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 541,911, Jan. 17, 1975, Pat. No. 4,161,594, which is a continuation-in-part of Ser. No. 82,074, Oct. 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 870,547, Nov. 4, 1969, Pat. No. 3,629,263. This application Oct. 31, 1978, Ser. No. 956,523

Claims priority, application Switzerland, Nov. 11, 1968, 16803/68

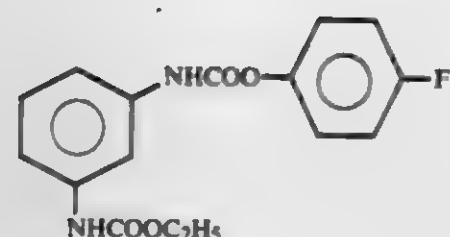
The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.

Int. Cl.³ C07D 233/74

U.S. Cl. 548—312

1 Claim

1. A compound 1,3-di-(beta-hydroxyethyl)-5,5-dimethylhydantoin which is a crystalline solid.



4,227,008

PROCESS FOR PREPARING AROMATIC URETHANES
Katsuharu Miyata; Makoto Aiga, and Seiji Hasegawa, all of Omura, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jul. 25, 1978, Ser. No. 927,779

Claims priority, application Japan, Jul. 25, 1977, 52-88440

Int. Cl.³ C07C 125/04

U.S. Cl. 560—23

14 Claims

1. A process for producing an aromatic urethane comprising interacting an aromatic primary amino compound having a nitro group, a nitroso group or a carbamate group, an organic compound having at least one hydroxyl group, and carbon monoxide in the presence of a catalytic system comprising a palladium catalyst and a complex of a Lewis acid with a nitrogen-containing aromatic heterocyclic compound or with an organic phosphorus compound under high temperature and high pressure conditions.

4,227,009

PHENOXYPHENOXY-PROPIONIC ACID DERIVATIVES
Manfred Koch, Kelkheim; Reinhard Handte, Hofheim am Taunus; Gerhard Hörlein; Heinrich Leditschke, both of Frankfurt am Main; Helmut Köcher, and Peter Langelißdeke, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 24, 1977, Ser. No. 799,974

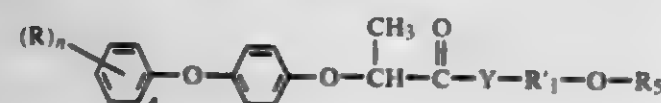
Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623558

Int. Cl.³ C07C 69/76, 153/07; A01N 43/40, 43/36

U.S. Cl. 560—61

6 Claims

1. A 2-[4'-phenoxyphenoxy]-propionic acid derivative, or a salt thereof with a base, of the formula



in which

R means identical or different substituents selected from the group consisting of halogen, C₁-C₄ alkyl or C₁-C₄ alkoxy; n is 1 or 2;

Y is oxygen or sulfur;

R₁ is a linear or branched C₁-C₄ alkylene; and

R₂ represents C₁-C₆ alkyl, C₁-C₄ haloalkyl, C₂-C₈ alkoxyalkyl, C₃-C₁₂ alkoxyalkoxyalkyl, hydroxyethyl, phenyl or phenyl substituted once or twice by halogen and/or C₁-C₃ alkyl.

4,227,010

RECOVERY OF DIMETHYL TEREPHTHALATE AND INTERMEDIATES FROM THE TARRY FRACTION OF COOXIDATION PROCESS RESIDUE

Horace E. Hood, Cecil County, Md., assignor to Hercofina, Wilmington, N.C.

Filed Oct. 13, 1978, Ser. No. 953,228

Int. Cl.³ C07C 69/82

U.S. Cl. 560—77

5 Claims

1. In a process for the heat treatment of the tarry fraction of DMT esterified oxidate residue to recover dimethyl tere-

phthalate therefrom, the improvement wherein said tarry fraction, substantially free of water and of oxidation-esterification catalyst material, is established in admixture with a catalytic quantity of alkali metal material within the temperature range from about 250° to about 350° C., and the resulting reaction mixture is maintained in said temperature range for a period of time sufficient for formation of a substantial quantity of dimethyl terephthalate.

4,227,011

15-DEOXY-16-HYDROXY-16-CHLOROMETHYL OR BROMOMETHYL PROSTAGLANDINS OF THE E AND F SERIES

Sow-Mei L. Chen, Parkridge, N.J., and Charles V. Grudzinskas, Nyack, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

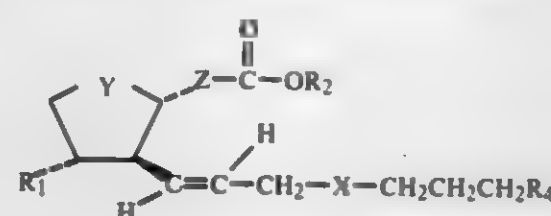
Filed Jun. 7, 1979, Ser. No. 46,516

Int. Cl.³ C07C 177/00

U.S. Cl. 560—121

5 Claims

1. An optically active compound of the formula:



wherein

Y is



X is

R₁ is hydrogen or hydroxyl;R₂ is hydrogen or C₁ to C₆ alkyl;R₃ is chloromethyl and bromomethyl;R₄ is hydrogen and C₁ to C₃ alkyl;

Z is selected from the group consisting of a divalent moiety of the formula —(CH₂)_n—, —(CH₂)_mOCH₂— and —(CH₂)_mSCH₂— wherein n is 5 to 7 and m is 3 to 5 and the racemic mixture thereof, and when R₁ is hydrogen, the pharmaceutically acceptable salts thereof.

4,227,012

OXIDATION OF METHYL BENZENES IN THE PRESENCE OF ACETIC ACID AND A DEHYDRATING AGENT

George Suld, Springfield; James E. Lyons, Wallingford, and Robert W. Shinn, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 3, 1978, Ser. No. 957,613

Int. Cl.³ C07C 69/035

U.S. Cl. 560—131

9 Claims

1. A process for the oxidation of methyl benzenes to form phenolic acetates, and formaldehyde or methylene diacetate, or mixtures thereof, which comprises contacting said methyl benzenes with air or oxygen, and acetic acid and P₂O₅, in the presence of a strong acid catalyst and benzaldehyde at temperatures of at least about 80° C. and pressures of at least about 1

atmosphere, said benzaldehyde being present in amounts of from about 0.01–1.0 mole based on the methyl benzene.

4,227,013

PROCESS FOR PREPARING POLYFUNCTIONAL COMPOUNDS

Howard C. Haas, Arlington, Mass., and Robert D. Moreau, Nashua, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

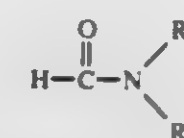
Filed May 3, 1979, Ser. No. 35,705

Int. Cl.³ C07C 69/34, 147/14, 102/00

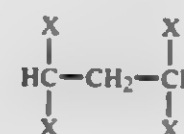
U.S. Cl. 560—190

14 Claims

1. A process for preparing a polyfunctional methylene-bridged compound which comprises reacting a difunctional methylene-bridged compound having the formula X—CH₂—X, wherein each X is selected from the group consisting of —CONH₂, —COOR where R is alkyl and —SO₂R where R is alkyl, with an alkali metal in the presence of a disubstituted formamide having the formula



where each R¹ is alkyl or together both R¹ groups complete a heterocyclic moiety; and acidifying the resulting reaction mixture, thereby to provide a polyfunctional compound having the formula



where each X group has the meaning previously ascribed.

4,227,014

4-[(CYCLOALKYL OR CYCLOALKENYL SUBSTITUTED)AMINO, ALKYLAMINO OR ALKENYLAMINO]BENZOIC ACIDS AND SALTS THEREOF

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

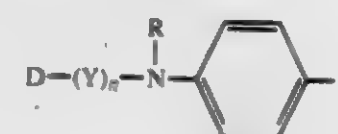
Filed Feb. 27, 1978, Ser. No. 881,457

Int. Cl.³ C07C 101/60

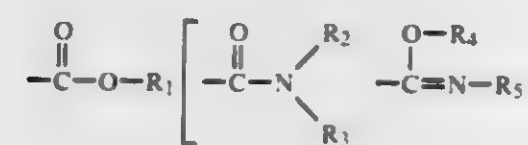
U.S. Cl. 562—457

99 Claims

1. A compound of the formula:



wherein Z is a moiety of the formula:



wherein

R₁ is hydrogen;R₂ is hydrogen;

n is either zero or one;

Y is a divalent radical selected from the group consisting of unbranched or branched C₁-C₁₃ alkylene or alkenylene and

is either unsubstituted or substituted with at least one C₁-C₄ alkyl group;

and D is selected from the group consisting of C₃-C₁₆ cycloalkyl or C₄-C₁₇ cycloalkenyl and is either unsubstituted or substituted with at least one C₁-C₁₃ alkyl, C₄-C₈ cycloalkyl, decahydronaphthyl, methylene, ethyldene, or isopropylidene group;

with the proviso that the total number of carbon atoms in D and Y shall not exceed twenty; and with the further proviso that when n is 1, D is not an unsubstituted cyclopropyl nor a cyclopropyl substituted with at least one C₁-C₁₃ alkyl;

and the pharmaceutically acceptable non-toxic acid-addition and cationic salts thereof.

4,227,015

SUBSTITUTED PHENYL VINYL CYCLOPROPYL KETONES

Joseph C. Collins, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 885,575, Mar. 13, 1978, Pat. No. 4,182,729, which is a division of Ser. No. 740,358, Nov. 10, 1976, Pat. No. 4,093,736, which is a continuation-in-part of Ser. No. 545,486, Jan. 30, 1975, Pat. No. 4,171,378, which is a continuation-in-part of Ser. No. 436,611, Jan. 25, 1974, Pat. No. 3,917,718, which is a continuation-in-part of Ser. No. 265,333, Jun. 22, 1972, Pat. No. 3,829,475. This application Feb. 14, 1979, Ser. No. 12,202

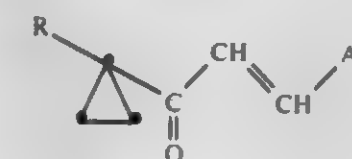
Claims priority, application United Kingdom, Jun. 18, 1973, 28793/73

Int. Cl.³ C07C 65/38, 69/76, 87/62, 103/42, 143/78

U.S. Cl. 562—459

7 Claims

1. A compound of the formula



wherein R is hydrogen or lower-alkyl of 1 to 4 carbon atoms, and Ar is phenyl substituted by a member selected from the group consisting of carboxy, carbo-lower-alkoxy of 2 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms, dialkylamino where alkyl has from 1 to 4 carbon atoms, and amino-sulfonyl.

4,227,016

PROCESS FOR MANUFACTURING α-CHLOROARYLACETIC ACIDS

Emmanuel Herman, Sarcelles, France; Helmut Diery, Kelkheim, Fed. Rep. of Germany; Michel Soreau, Montmorency, and Yanni Christidis, Paris, both of France, assignors to Hoechst France, Puteaux, France

Filed Dec. 28, 1977, Ser. No. 865,285

Claims priority, application France, Dec. 30, 1976, 76 39628

Int. Cl.³ C07C 57/58

U.S. Cl. 562—465

19 Claims

1. Process for producing α-chloroarylacetic acids comprising mixing glyoxylic acid and hydrochloric acid and then reacting with an aromatic compound comprising a benzene ring and having thereon at least one substituent group selected from the group consisting of alkyl, aryl, hydroxy, alkoxy and aryloxy, and having at least one free position capable of fixing a —CHCl—COOH group.

4,227,017

PROCESS FOR THE PREPARATION OF AN ALKALI-METAL BENZOATE BESIDES A BENZYL ALCOHOL

Cornelis Jongama, Oirsbeek, Netherlands, assignor to Stamcarbon, B.V., Geleen, Netherlands

Filed May 17, 1979, Ser. No. 40,152

Claims priority, application Netherlands, May 19, 1978, 7005415

Int. Cl.² C07C 51/42, 29/00

U.S. Cl. 562—494

14 Claims

1. A process for recovering sodium benzoate besides benzyl alcohol from a reaction residue resulting from the manufacture of benzoic acid by the oxidation of toluene and containing contaminated benzyl benzoate therein, said process consisting essentially in:

- distilling said residue containing contaminated benzyl benzoate therein at a temperature in the range of about 80° C. to about 240° C. and in the presence of from about 0.01 to about 10% by weight of a basic substance calculated on the weight of said residue being distilled;
- hydrolyzing the distillate resulting from step (a) with an aqueous solution of sodium hydroxide or sodium carbonate at a temperature in the range of about 30° C. to about 300° C. thereby producing an aqueous solution containing the sodium benzoate and benzyl alcohol;
- crystallizing and recovering the sodium benzoate from the resulting solution of step (b); and
- distilling and recovering the benzyl alcohol from the resulting solution of step (b).

4,227,018

ODORLESS BENZOIC ACID PROCESS

Wilhelm Wolf, Krefeld, and Meinhard Puhl, Neumorschen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 4, 1975, Ser. No. 637,546

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1974, 2460822

Int. Cl.¹ C07C 51/42

U.S. Cl. 562—494

10 Claims

1. Process for making substantially odorless benzoic acid which consists essentially of spray drying benzoic acid contaminated with diphenyl to obtain substantially spherical crystals of said benzoic acid and thereafter passing an inert gas selected from the group consisting of nitrogen, carbon dioxide, a noble gas or air having an oxygen content of less than 8% by volume or a mixture thereof at a temperature of 50°–100° C. through said benzoic acid spherical crystals contaminated with diphenyls.

4,227,019

11-SUBSTITUTED PROSTAGLANDINS

George W. Holland, Cedar Grove; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

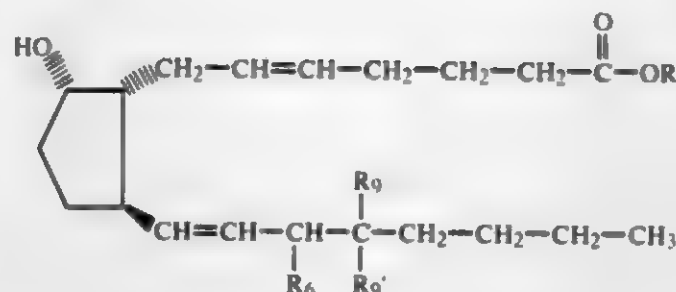
Division of Ser. No. 780,878, Mar. 24, 1977, abandoned, which is a division of Ser. No. 614,044, Sep. 17, 1975, Pat. No. 4,036,871, which is a division of Ser. No. 480,458, Jun. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Apr. 2, 1979, Ser. No. 26,126

Int. Cl.² C07C 177/00

U.S. Cl. 562—503

2 Claims

1. A compound of the formula:



wherein R is hydrogen or lower alkyl, R₆ is hydroxy, lower alkanoyloxy, benzyloxy, benzoyloxy, trityloxy, tetrahydropyranyloxy, benzhydryloxy or triloxyalkylsilyloxy; R₉ is fluoro, R₉ is hydrogen or lower alkyl; or enantiomers or racemates thereof.

4,227,020

METHOD OF PREPARING NAPHTHENIC ACIDS

Bagadur K. Zeinalov, ulitsa Nizami 73, kv. 19; Vagab S. Aliev, ulitsa Nizami 66, kv. 10; Arif A. Akhundov, 5 Alatinskaya ulitsa, 3, kv. 13, all of Baku; Jury N. Bocharov, ulitsa Dokunina, 3, kv. 13, Moscow; Vladimir D. Lugovskoi, ulitsa Vurguna, 8/a, kv. 43, and Akop A. Miramianian, 6 Mikror-aion, 6, kv. 37, both of Baku, all of U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,127

Int. Cl.² C11C 1/00; C09F 5/08

U.S. Cl. 562—511

1 Claim

1. A method for preparing naphthenic acids consisting in that a petroleum fraction boiling out in the temperature range of 250°–350° C. is oxidized with oxygen taken in the quantity of 0.06–0.065 kg/kg per hour at a temperature of 135°–140° C. in the presence of a catalyst consisting of 30–40 percent by weight of manganese naphthenate and 60–70 percent by weight of potassium naphthenate taken in the quantity of 1.2–2.5 percent of the weight of the starting stock; the product of the oxidation reaction, which is a mixture of organic oxygen-containing compounds containing naphthenic and hydroxynaphthenic acids, is diluted with an organic solvent taken in the weight ratio of 1:1–1.5 to the reaction mixture which is inert toward said mixture in order to precipitate hydroxynaphthenic acids which are then separated; the solution of organic oxygen-containing compounds in said organic solvent is treated with an aqueous solution of sodium hydroxide at a temperature at which said organic solvent boils to separate the obtained aqueous solution of sodium naphthenates from the solution of unsaponifiable organic oxygen-containing compounds in said organic solvent; said aqueous solution of sodium naphthenates is treated with diethyl sulphate at a temperature of 90°–95° C. to obtain ethyl naphthenates from which the fraction of ethyl naphthenates boiling out in the temperature range of 75°–170° C. is separated by rectification in vacuum of 3 mm Hg; said isolated fraction is treated with an aqueous solution of sodium hydroxide, and the end product is finally isolated from the obtained aqueous solution of sodium naphthenates by treating with organic acids.

4,227,021

PRODUCTION OF ADIPIC ACID FROM ACIDIC WASH WATERS

Otto-Alfred Grosskinsky, Ludwigshafen; Norbert Petri, Frankenthal; Johannes Hein, Weinheim, and Hans Leitner, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,235

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721858

Int. Cl.² C07C 51/24, 55/14

U.S. Cl. 562—513

8 Claims

1. In a process for producing adipic acid from the acidic wash waters which arise in the process for oxidizing cyclohexane with air, by treatment with nitric acid at from 10° to 50° C., with removal of the heat of reaction by external cooling, the improvement which comprises leading the reaction mixture at

a flow velocity of at least 2.0 m/sec as a thin layer spirally in counter-current to the coolant, under conditions which do not perturb the flow of the reaction mixture.

4,227,022

ACETYLENIC DIOLS AND MONOETHERS THEREOF

Michael Rosenberger, Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

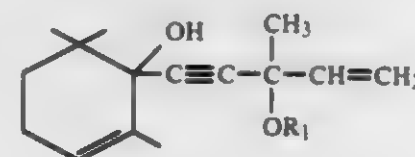
Division of Ser. No. 791,678, Apr. 28, 1977, abandoned, which is a division of Ser. No. 723,411, Sep. 15, 1976, Pat. No. 4,045,476, which is a division of Ser. No. 585,224, Jun. 9, 1975, Pat. No. 4,000,198. This application Oct. 10, 1978, Ser. No. 949,849

Int. Cl.³ C07C 43/303, 35/18, 43/168

U.S. Cl. 568—591

2 Claims

1. The compound of the formula:



wherein R₁ is hydrogen, alpha-lower alkoxy-lower alkyl, tetrahydropyranyl, benzyl, benzhydryl, t-butyl or 4-methyl-5,6-dihydro-2H-pyranyl.

4,227,023

PROCESS FOR THE SELECTIVE ORTHO-ALKYLATION OF PHENOLIC COMPOUNDS

Motoo Kawamata, Yokohama; Tadimitsu Kiyoura, Kamakura; Kazushi Ohshima, Yokohama; Yasuo Kogure, Yokohama; Akihide Kudoh, Yokohama, and Makoto Kotani, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Dec. 4, 1978, Ser. No. 966,356

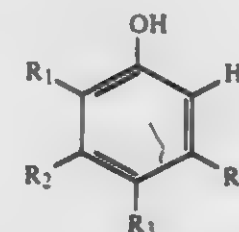
Claims priority, application Japan, Dec. 13, 1977, 52-148758

Int. Cl.³ C07C 37/14, 39/06

U.S. Cl. 568—804

4 Claims

1. In a process for the selective orthoalkylation of a phenolic compound having at least one orthopositioned hydrogen atom and having the general formula



wherein R₁, R₂, R₃ and R₄ represent hydrogen atoms or aliphatic hydrocarbon radicals, by catalytically reacting the phenolic compound with a saturated aliphatic alcohol having from 1 to 4 carbon atoms, in the vapor phase, the improvement which comprises carrying out the reaction at a temperature of from 300° C. to 500° C. with a molar ratio of phenolic compound to alcohol ranging from 1:1 to 1:15 in the presence of a catalyst consisting of manganese oxide, silicon oxide and one or more oxides selected from the group consisting of magnesium oxide, calcium oxide, strontium oxide and barium oxide, said manganese and silicon contained in the mixed oxide catalyst being present in such a proportion as to provide an atomic ratio of manganese to silicon ranging from 100:0.01 to 100:20 and said one or more oxides selected from the group consisting of magnesium oxide, calcium oxide, strontium oxide and barium oxide being present in such an amount as to provide an atomic ratio of magnesium to additive metals ranging from 100:0.01 to 100:30.

4,227,024

PREPARATION OF 2,6-XYLENOL AND CATALYST COMPOSITION USEFUL THEREFOR

Bruce E. Leach, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jun. 4, 1979, Ser. No. 45,571

Int. Cl.³ C07C 37/14, 39/06

U.S. Cl. 568—804

7 Claims

1. A process for preparing 2,6-xyleneol in high selectivity wherein the process comprises reacting phenol, o-cresol or mixtures thereof with methanol in the presence of water using a catalyst consisting essentially of the following materials in percent by weight: Fe₂O₃—about 90 to about 97; SnO₂—about 0.5 to about 5; Cr₂O₃—about 0.5 to about 5; K₂O—about 0.01 to about 1, said process being characterized further in that:

- prior to use the catalyst has been treated with hydrogen at a temperature of 300° to 500° C. at a flow rate of 2 to 6 volumes of hydrogen per minute per volume of reactor for 2 to 12 hours;
- there is present about 1 to 10 moles of methanol per mole of phenol and/or o-cresol;
- the amount of water is about 5 to about 15 weight percent, based on the total amount of phenol, o-cresol and methanol;
- the amount of catalyst expressed as LHSV is about 0.1 to about 5;
- the temperature is in the range of about 380° to about 420° C.;
- the pressure is from atmospheric to 1,000 psig; and
- the product mixture contains at least 99 weight percent o-cresol and 2,6-xyleneol.

4,227,025

REACTIVATION OF ARSENIC-POISONED NOBLE METAL CATALYST FOR REMOVAL OF ACETYLENE

Dean P. Montgomery, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 13, 1979, Ser. No. 11,743

Int. Cl.¹ C07C 5/03

U.S. Cl. 585—259

5 Claims

1. In a process for the effective removal of acetylene from a first gas feed containing the same, together with small quantities of arsenic in the form of a gaseous compound thereof, which comprises feeding said gas together with hydrogen at an acetylene removal temperature in contact with a noble metal hydrogenation catalyst, wherein the activity of the catalyst falls off due to arsenic poisoning thereof, the steps which comprise discontinuing the feeding of said first gas when activity of the catalyst has been reduced, feeding a second arsenic-free acid together with hydrogen into contact with said catalyst to effect a purging operation, elevating gradually the temperature of the catalyst until its activity is substantially restored, then discontinuing the feeding of said second gas and then resuming feeding of said first gas and hydrogen to the catalyst.

4,227,026

DEHYDROGENATION METHOD AND NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

John F. Flagg, Rosemont, and George J. Antos, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill. Continuation-in-part of Ser. No. 758,285, Jan. 10, 1977, Pat. No. 4,110,199. This application Aug. 10, 1978, Ser. No. 932,576

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.² C07C 5/38

U.S. Cl. 585—434

27 Claims

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis,

about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, and about 0.1 to about 10 wt. % uranium; wherein the platinum group, catalytically available cobalt and uranium components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the uranium component is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states.

4,227,027

RECYCLABLE BORON TRIFLUORIDE CATALYST AND METHOD OF USING SAME

Robert E. Booth; Francis E. Evans, both of Hamburg; Richard E. Eibeck, Orchard Park, and Martin A. Robinson, Amherst, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 951,911, Oct. 16, 1978. This application Nov. 23, 1979, Ser. No. 96,955

Int. Cl.³ C07C 3/56, 3/18

U.S. Cl. 585-465

10 Claims

1. In a method of reacting at least one unsaturated hydrocarbon in an alkyl transfer reaction of the type catalyzed by boron trifluoride, the improvement which comprises conducting the

reaction in the presence of a catalytic amount of an adduct formed by saturating a butanediol with boron trifluoride and recovering the adduct from the reaction mixture and recycling the adduct.

4,227,028

REGIOSELECTIVE SUBSTITUTION AT CARBON ATOM VICINAL TO DOUBLY BONDED TERTIARY CARBON ATOM BY SULFUR DIOXIDE CATALYSTS

Divakaran Masilamani, Morristown, and Milorad M. Rogic, Whippany, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 862,313, Dec. 20, 1977. This application Mar. 1, 1979, Ser. No. 16,578

Int. Cl.² C07C 13/18, 5/22

U.S. Cl. 585-941

5 Claims

1. A method for deuterating an olefinic compound having a first nucleus of hydrogen or isotope thereof attached to a carbon atom vicinal to a tertiary double bonded carbon atom comprising:

maintaining said compound in solution in liquid sulfur dioxide and providing the oxide of a hydrogen isotope in the sulfur dioxide solution whereby said first nucleus is exchanged in said compound for a nucleus of a hydrogen isotope present in the sulfur dioxide solution.

ELECTRICAL

4,227,029

METHOD AND APPARATUS FOR ELIMINATING D.C. IN AN ELECTRIC GLASS MELTING FURNACE

James R. Joseph, Brockway, Pa., assignor to Brockway Glass Company, Inc., Brockway, Pa.

Filed May 15, 1978, Ser. No. 905,586

Int. Cl.² C03B 5/02; G05F 1/44

U.S. Cl. 13-6

12 Claims



1. In an electrical glass melting furnace including glass melting electrode means and means for supplying alternating electricity, a circuit for controlling the supply of said alternating electricity to said electrode means comprising:

- (a) circuit means for providing a conductive path between said supply means and said electrode means;
- (b) means in said path to selectively alter the electrical conduction of said path in a manner providing successive periods of alternating electricity each including a number of half cycles to said electrode means; and
- (c) control means connected in controlling relation to said conduction altering means for controlling the operation thereof, said control means causing one period of said alternating electricity supplied to said electrode means to begin with a polarity opposite that of the alternating electricity supplied during another immediately preceding period and causing adjacent periods of said alternating electricity to have the same number of half cycles, said control means comprising first pulse generating means for supplying command pulses to said conduction altering means for causing electrical conduction of one polarity in said path, second pulse generating means for supplying command pulses to said conduction altering means for causing electrical conduction of an opposite polarity in said path, and conduction mode control means for controlling the operation of said first and second pulse generating means in an alternating manner from period to period and in a manner such that adjacent periods include the same number of half cycles whereby whichever of said pulse generating means was the first to operate during the immediately preceding period of alternating electricity supplied to said electrode means the other pulse generat-

ing means is the first to operate during the next immediately adjacent period;

(d) whereby any component of direct electricity in said path is cancelled to zero when averaged over said two of said adjacent periods having said same number of half cycles and any direct electricity in said path is eliminated or significantly minimized during operation of said furnace.

4,227,030

ARC FURNACE ELECTRODE SLIP MONITORING DEVICE

Heinz W. H. Osterwold, Roodepoort, South Africa, assignor to National Institute for Metallurgy, Randburg, South Africa

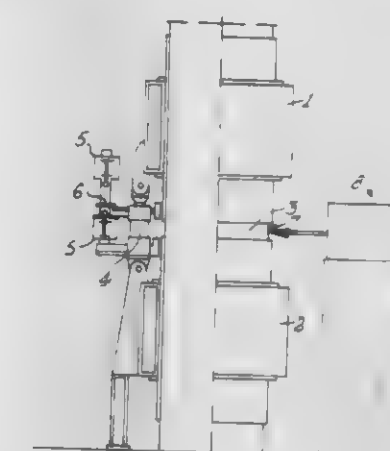
Filed Jun. 29, 1979, Ser. No. 53,553

Claims priority, application South Africa, Jul. 14, 1978, 78/4025

Int. Cl.² H05B 7/10

U.S. Cl. 13-14

9 Claims



1. An arc furnace electrode slip monitoring device comprising a frame-work adapted to be held fixed relative to a movable electrode a movable unit supported by said frame-work and movable in reciprocating manner along a predetermined path which is substantially parallel to the direction of movement of an electrode, an electrode engaging member movable transverse to the direction of movement of the movable unit to be capable, in use, of firmly engaging an electrode during movement of the movable unit in one direction but to be disengaged therefrom during movement in the opposite direction, means for detecting the position of the movable unit along its path of movement, and further means for counting the number of reciprocal movements executed by the movable unit.

4,227,031

NONCONSUMABLE ELECTRODE FOR MELTING METALS AND ALLOYS

Boris E. Paton, ulitsa Chkalova, 41a, kv. 26; Jury V. Latash, ulitsa Artema, 55, kv. 23; Georgy M. Grigorenko, Sapernoe pole, 26a, kv. 39, all of Kiev; Jury V. Lisovoi, Irpen, ulitsa Sovetskaya, 24; Viktor V. Stepanenko, Vasilkov I, ulitsa Pushkina, 15, both of Kievskaya oblast, and Grigory B. Asolants, ulitsa Mechnikova, 18, kv. 19, Kiev, all of U.S.S.R.

Filed May 18, 1979, Ser. No. 40,220

Int. Cl.² H05B 7/08

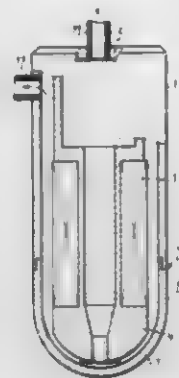
U.S. Cl. 13-18 A

5 Claims

1. A nonconsumable electrode for melting metals and alloys, comprising:

- a hollow cylindrical body;
- a hollow detachable tip made in the form of a body of revolution coaxial with said hollow cylindrical body and secured to one of the ends thereof, said hollow tip having:
- a lateral cylindrical non-arcng portion;
- a convex arcng end portion;
- a solenoid, for generating a magnetic field, having its lower end located within the cavity of said tip, said cavity being

defined by said lateral cylindrical non-arcng portion of said hollow tip;



a partition coaxially mounted in the cavity of said hollow body and of said hollow tip so that between said partition and the walls of said hollow body and of said hollow tip a passageway is formed for the flow of a coolant.

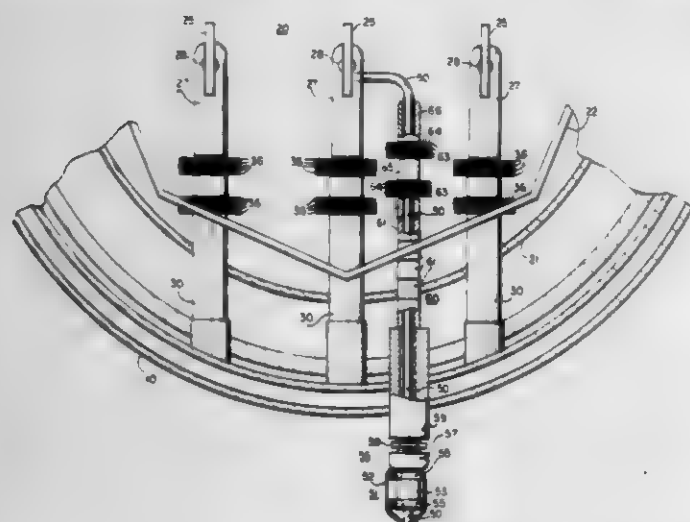
4,227,032

POWER FEED THROUGH FOR VACUUM ELECTRIC FURNACES

William R. Jones, Chalfont, and Rush B. Gunther, Abington, both of Pa., assignors to Abar Corporation, Feasterville, Pa.
Filed Jan. 15, 1979, Ser. No. 3,658
Int. Cl.³ H05B 3/08, 7/16

U.S. Cl. 13-20

5 Claims



1. A power feed through for vacuum electric furnaces having hostile environment therein and containing electrically conductive ions capable of deposition on objects within the furnace which comprises

a work support interiorly supported in the furnace and having an electrically conductive portion,
an electrically insulated power conductor extending through the furnace wall and connected to said conductive portion of said work support,

covering members for said power conductor comprising a plurality of separate non-electrical conductive elements in stacked relation on said power conductor and in engagement along said power conductor and having a portion extending exteriorly of the furnace,

shielding means mounted on said conductor in spaced relation to said work support for shielding contiguous portions of said covering members from metallic deposition thereon,

said shielding means comprising a plurality of parallel closely spaced readily replaceable discs of electrical non-conducting material, and
vacuum sealing means outside said furnace for said covering members.

4,227,033

INDUCTION CRUCIBLE FURNACE

Ivan D. Nikolov; Pavel M. Minchev; Marin A. Dimitrov; Assen P. Georgiev, and Iliya G. Chorbov, all of Sofia, Bulgaria, assignors to Institute po Metaloznanie i Tehnologia na Metale, Sofia, Bulgaria

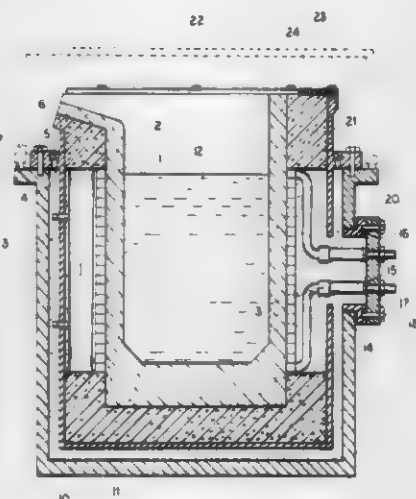
Filed Feb. 27, 1979, Ser. No. 15,647

Claims priority, application Bulgaria, Feb. 27, 1978, 38842

Int. Cl.² H05B 5/00

U.S. Cl. 13-27

2 Claims



1. An induction crucible furnace comprising:
an upwardly open housing formed with a bottom wall and a cylindrical upright wall having an outwardly extending flange;
an upwardly open intermediate vessel received in said housing and having a bottom wall spaced above the bottom wall of said housing and an upright cylindrical wall spaced inwardly from the cylindrical wall of said housing, said cylindrical wall of said vessel being formed with an outwardly extending support flange overlying and terminating inwardly of the flange of said housing;
a mass of insulating material filling the space between said cylindrical walls and said bottom walls;
a crucible for receiving a melt received within said vessel and spaced inwardly therefrom;
induction heating means surrounding said crucible and received within said vessel, said induction heating means including induction heating coils and yokes;
fastener means including bolts traversing said cylindrical wall of said vessel for securing said induction heating means and said crucible in said vessel;
insulating means interposed between said crucible and said vessel around said induction heating means; and
a cover fitted over said crucible, said vessel and said housing and sealingly engaging the flange of said housing outwardly of the flange of said vessel to enable selective pressurization and evacuation of a space above the melt in said crucible.

4,227,034

EARTH GROUND ASSEMBLY INCLUDING AN ELECTRODE AND ROD MEANS WHICH MAY BE DRIVEN INTO THE GROUND

Bernard P. J. M. van Rijswijk, 16, Eikenlaan, St. Michielsgestel, Netherlands

Filed May 22, 1978, Ser. No. 908,500

Claims priority, application Netherlands, May 20, 1977, 7705571

Int. Cl.³ H01R 4/66

U.S. Cl. 174-7

3 Claims

1. An earth ground assembly comprising an earth electrode, a rod which may be driven into the ground, and at least one helically wound clamping wire surrounding the lower end portion of said earth electrode and being secured at its lower

end portion to the lower end portion of the rod, said lower end portion of the rod having a tube-like portion surrounding at least the lower end portion of the helically wound clamping



wire, said helically wound clamping wire having a pitch greater than the diameter of the space surrounded by the windings of the helically wound clamping wire.

4,227,035

MODULAR CONDENSER BUSHING

Robert W. Runnels, and Loren B. Wagenaar, both of Muncie, Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 15, 1978, Ser. No. 905,673

Int. Cl.³ H01B 17/28

U.S. Cl. 174-15 BH

7 Claims U.S. Cl. 174-16 HS



1. An electrical condenser bushing comprising:
an axially extending electrical conductor; and
first and second condenser elements each formed of concentric axially extending electrically conductive layers separated by like electrical insulating material having a predetermined dielectric constant, said first and second condenser elements being coaxially disposed around said conductor and axially spaced apart to define a gap of predetermined width between adjacent end portions thereof, said gap being filled with an electrically insulating material having a predetermined dielectric constant, which dielectric constant is different than the dielectric constant of the electrically insulating material of said first and second condenser elements;

said electrically conductive layers in each of said first and second condenser elements having predetermined electrical potentials when said electrical conductor is energized,

forming equipotential lines between their adjacent end portions;

the ends of the conductive layers in the first condenser element being axially spaced in varying increments from the end portion of said first condenser element which is adjacent to the gap, to define a conductive layer free space;

the ends of the conductive layers in the second condenser element being disposed in proximity with the end portion of said second condenser element which is adjacent to the gap;

the end portion of said second condenser element which is adjacent to an end portion of the first condenser element being disposed at a predetermined angle with respect to the axis of the conductor, said angle and the ratio of the dielectric constant of the insulating material in said gap to the dielectric constant of the insulating material forming said first and second condenser element being selected to cause the equipotential lines extending from said conductive layers in said second condenser element to the conductive layers at substantially the same potential in said first condenser element to bend radially outward with respect to the axis of said conductor upon entering said gap.

4,227,036

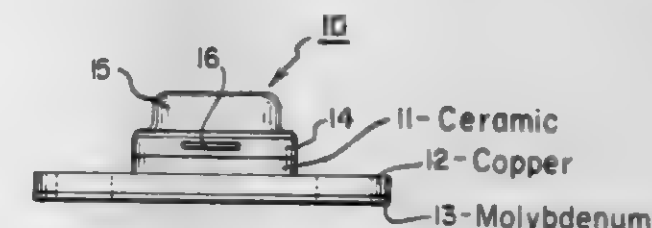
COMPOSITE FLANGED CERAMIC PACKAGE FOR ELECTRONIC DEVICES

William Fitzgerald, Asbury, N.J., assignor to Microwave Semiconductor Corp., Somerset, N.J.

Filed Sep. 18, 1978, Ser. No. 943,487

Int. Cl.² H05K 7/20

6 Claims



1. In a package for electronic devices of the type comprising a heat conducting ceramic base member and a metal flange secured to said base for dissipating heat from said base, the improvement wherein said flange comprises a bi-layer composite bi-metallic flange comprising a first layer of heat conducting metal having a thermal conductivity and a thermal coefficient of expansion appreciably greater than that of said base and, on the side of said first layer opposite said ceramic base, a second layer of metal secured to said first layer having a thermal coefficient of expansion approximately equal to that of the ceramic.

4,227,037

SHIELDED NON-METALLIC CONTAINER

Paul L. Layton, Irvine, Calif., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 29, 1979, Ser. No. 43,206

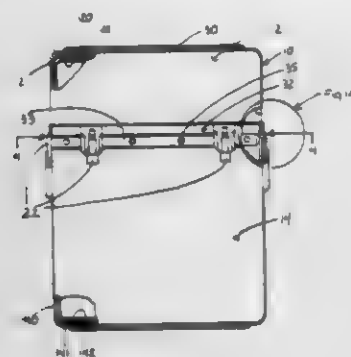
Int. Cl.³ H05K 9/00

U.S. Cl. 174-35 MS

8 Claims

1. A container including complementary upper and lower portions, each portion adapted to mate with and engage to define an enclosed inner chamber, said upper and lower portions each having laminated outer casings wherein a non-met-

allic, electrically conductive, inner layer is integrally molded with and bonded to and between at least two outer non-metal-



lic reinforcing layers to shield said inner chamber from electromagnetic and radio frequency interference.

4,227,038

VIBRATION ISOLATOR CONNECTOR

James Mitchell, Regina, Canada, assignor to Saskatchewan Power Corporation, Regina, Canada

Filed Feb. 17, 1978, Ser. No. 878,986

Claims priority, application Canada, Mar. 18, 1977, 274294

Int. Cl.¹ H02G 7/14

U.S. Cl. 174—42

10 Claims



1. A vibration isolator connector providing an electrical connection between a fixed apparatus and a suspended linear electrically conductive body, comprising:

a vibration absorbing and reducing weight electrically connected to the fixed apparatus by a connector attached to the weight; and

electrically conductive energy absorbing resilient suspension means connected to the weight, which suspension means resiliently suspends and separates the weight from the linear electrically conductive body and forms an electrical connection between the linear body and the connector attached to the weight.

9. A method of making an electrical connection between fixed apparatus and a suspended linear conductor comprising the steps of:

resiliently suspending a weight from the linear conductor through an electrically conductive, resilient member connected to the linear conductor and the weight;

connecting a flexible, electrical conductor between the weight and the fixed apparatus such that the flexible, electrical conductor is electrically connected through the weight and the resilient member to the suspended linear conductor.

4,227,039

THIN-FILM MICROCIRCUIT BOARD

Ichiro Shibasaki; Kaoru Ohmura; Takeo Kimura, and Hidehiko Kobayashi, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

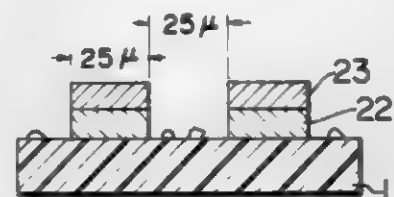
Filed Oct. 23, 1978, Ser. No. 953,497

Claims priority, application Japan, Oct. 24, 1977, 52-126730; Nov. 7, 1977, 52-132524

Int. Cl.² H05K 01/14

U.S. Cl. 174—68.5

9 Claims



1. A thin film microcircuit board comprising: a dielectric substrate; and

a thin-film laminate formed on said substrate, said thin-film laminate comprising a thin-film of a dispersion-metal dispersible and evaporable upon application of an energy above a threshold value and an electrical property-imparting thin film singly not easily dispersible, being dispersible in the form of said laminate by said energy application and capable of providing a conductor film, said dispersion-metal thin film having a thickness between 100 and 5000 Å and being formed of a member selected from the group consisting of Bi, Te, Ni, Cu, Sn, In, Pb, Zn, Se, Ge, Co, Fe, Ti, Sb, Al, Cd, and alloys thereof, said electrical property-imparting film having a thickness of between 50 and 5000 Å, and being formed of a member selected from the group consisting of Ag, Au, Pt, Ru, Rh, Pd, Os, Ir, Ir₂O₃, and SnO₂;

said thin-film laminate being patterned in a desired circuit form by the dispersion thereof by the application of an energy above a threshold value.

4,227,040

SCREW-ON ELECTRICAL CONNECTOR

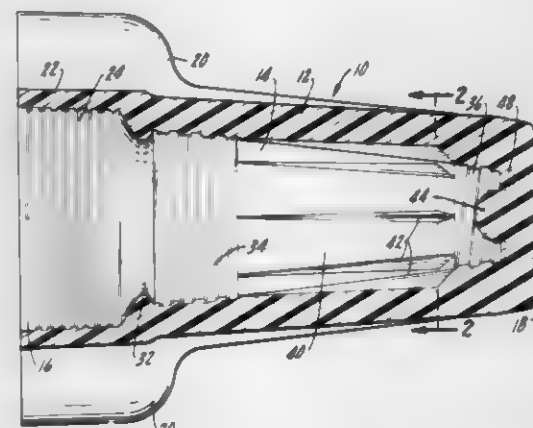
William J. Scott, Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Apr. 9, 1979, Ser. No. 28,056

Int. Cl.² H01R 5/12

U.S. Cl. 174—87

33 Claims



1. In an electrical connector of the screw-on type for joining the ends of two or more electric wires, a cap of stiffly flexible insulating material having a generally central bore open at one end and enclosed at the other end by an integral end wall, a generally tapered wire coil in the bore, the outer end of the coil being toward the open end of the cap and in engagement with an outer area on the inner surface of the central bore, the inner end of the coil being in engagement with an inner area on the inner surface of the central bore adjacent the end wall, and a central area in the bore between the inner and outer areas

engaging the coil in its free state and having less resistance to expansion of the coil than that of the outer area.

4,227,041

FLAT TYPE FEEDER CABLE

Hiroshi Den; Masao Shimizu, both of Chiba, and Yoshioki Shingo, Shizuoka, all of Japan, assignors to Fujikura Cable Works, Ltd., Tokyo, Japan

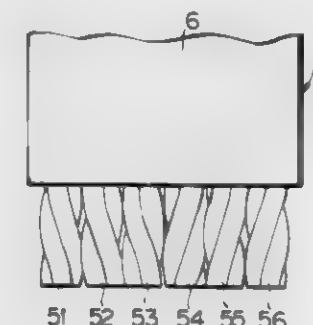
Filed Nov. 16, 1978, Ser. No. 961,093

Claims priority, application Japan, May 23, 1978, 53-61311

Int. Cl.² H01B 7/08

U.S. Cl. 174—117 F

14 Claims



1. A flat type feeder cable useful for supplying electricity to an elevator comprising an even number of at least four stranded conductors with their respective axes arranged in a line and in a substantially coplanar relationship and an outer jacket made of a flexible material completely covering the stranded conductors, each of said stranded conductors being composed of a plurality of insulated cores stranded together, and wherein an equal number of the stranded conductors are disposed in a positionally symmetrical relationship with respect to the lateral axis of symmetry on a cross section of the cable, the direction of lay of each of half the number of stranded conductors is right-hand while the direction of lay of each of the remaining stranded conductors is left-hand, and each of the plurality of insulated cores constituting each stranded conductor has one twist per one pitch of the stranding of the stranded conductor, said twist having the same direction as the direction of the stranding of the stranded conductor.

4,227,043
SEALING DEVICE FOR PORTIONS OF ELECTRIC CABLES IN THE HOLES OF HOUSINGS OF ELECTRIC MOTORS OR THE LIKE

Heinz Stöhr; Gerhard Kuntz, both of Bad Homburg, and Gerhard Scheer, Namborn, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,163

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730675

Int. Cl.² H02G 3/22; H01B 17/30

U.S. Cl. 174—151

10 Claims



1. In combination, a wall member having a hole extending therethrough, an electric cable having a sheath extending through said hole, and a sealing device sealing the cable at the hole and comprising, an elongated sleeve surrounding said cable sheath and extending through said hole, said elongated sleeve including a median portion having a first outer diameter and extending through the hole, and two opposite end portions having smaller second outer diameters; means sealing the interface between said median portion of said sleeve and the surface of the wall member which bounds the hole; and a pair of tubular insulating portions, each sealingly surrounding one end portion of said sleeve and the adjacent portion of the cable sheath and each having an outer diameter which is at most equal to said first outer diameter so that either of said insulating portions can pass through the hole and past said sealing means as the sealing device is introduced into and withdrawn from the hole.

4,227,044

PEN STATUS SYSTEM FOR DIGITIZER PEN

George A. Fencel, Phoenix, Ariz., assignor to Talos Systems, Inc., Scottsdale, Ariz.

Filed Jan. 22, 1979, Ser. No. 5,195

Int. Cl.³ G08C 21/00

U.S. Cl. 178—19

10 Claims

1. In a digitizer, a pen status indicating system for indicating whether a writing tip of a pen is pressed against a writing surface, said pen status indicating system comprising in combination:

- a housing for said pen;
- a pen cartridge including a writing tip and a reservoir containing writing fluid;
- resilient means for resiliently resisting movement of said writing tip toward said housing and urging said writing tip toward said writing surface;
- inductive means having first and second series connected windings and a center tap for producing an AC pen status signal on said center tap, said inductive means including a movable core connected in substantially fixed relationship to said writing tip;

4,227,042

TELEPHONE CORDS

Donald E. Lueddecke, St. Charles, Mo.; John J. Mottine, Jr., Red Bank Township, Monmouth County, N.J., and William C. Vesperman, Bel Air, Md., assignors to Western Electric Inc., New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1978, Ser. No. 967,550

Int. Cl.² H01B 7/06, 7/02

U.S. Cl. 174—120 SR

19 Claims

1. An electrical cord having a plasticized polyvinyl chloride jacket and at least one conductor surrounded thereby wherein said jacket has a coating thereon, said coating resulting from drying of a coating formulation comprising a binder having from (a) 75-90 weight percent of a medium molecular weight copolymer of methyl methacrylate and ethylhexylacrylate, (b) 5-15 weight percent cellulose acetate butyrate and (c) 5-10 weight percent carbalkoxy benzyl phthalate plasticizer.

of the handle and actuator through other limited sectors; the lock plug having a key actuated contractable latch laterally movable in response to movement of a key; and the bushing having peripherally spaced opening means for receiving the latch, whereby the handle is locked in place when a key is removed from the lock plug.

4,227,057

APPARATUS FOR ASCERTAINING THE UPPER LEVEL OF LIQUIDS IN TANKS OR THE LIKE

Wolfgang Kibler, Industriestrasse 31, CH-6300 Zug, Switzerland

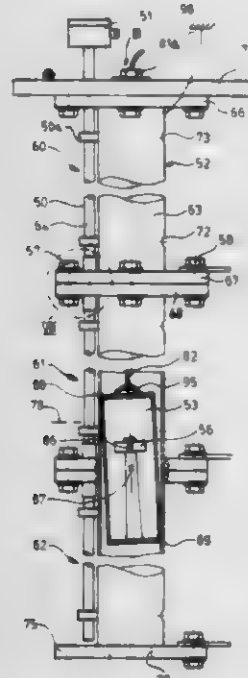
Filed Apr. 3, 1979, Ser. No. 26,671

Claims priority, application Switzerland, Apr. 13, 1978, 3981784/78

Int. Cl.² H01H 35/18

U.S. Cl. 200-84 C

14 Claims



1. Apparatus for ascertaining the upper level of a supply of liquid which is confined in a vessel, comprising an elongated conduit which is permeable to liquids and is installed in said vessel in upright position so that the upper level of liquid in said conduit at least approximates the upper level of said supply of liquid; a float disposed in said conduit and including switch actuating means; an upright pipe adjacent to said conduit; and a plurality of electrical components sealingly confined in and being withdrawable from said pipe, said components including a row of spaced-apart electric switches actuable by said actuating means whereby the actuation of a switch which is adjacent to said float denotes the upper level of liquid in said conduit, said pipe and said conduit comprising a plurality of superimposed sections and means for coupling the neighboring sections to each other.

4,227,058

TURN-START PUSH-STOP SWITCH OPERATOR

Robert J. Johnston, Beaver Falls; Stephen G. Layciak, Beaver, and Dominic Colista, Ambridge, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 29, 1979, Ser. No. 25,178

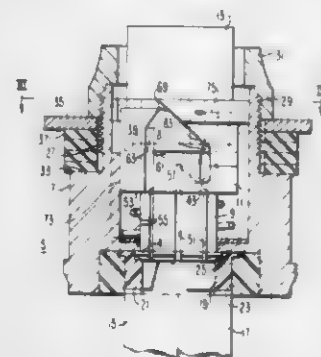
Int. Cl.² H01H 9/20, 3/08

U.S. Cl. 200-153 J

5 Claims

1. A turn-push switch operator comprising a tubular housing, stationary and movable contact operating means including a reciprocable plunger, a manual operator, actuator means for actuating the plunger to effect opening and closing of the contacts and comprising an actuator and a manual handle, the actuator including a detent and being rotatably mounted within the housing, a detent cam operatively connected to the detent, the detent cam being movable longitudinally only within the housing and being spring-biased against the detent,

the cam having a camming surface inclined to the longitudinal axis of the housing, the detent being movable on the camming surface to effect rotation of the actuation, stop surface means at each end of the camming surface, the manual operator being movable rotatably and longitudinally of the detent cam and comprising a projection extending toward the detent cam, the projection having a detent-engaging surface for moving the detent over the camming surface in one direction thereof, the camming surface having a detent-receiving notch at the end



toward which the detent is moved in one direction by the projection, the actuator and the handle having interfitting key means for enabling simultaneous rotation in either direction, the projection having an inclined edge facing the notch, the detent cam having a portion at the notch end of the camming surface, and the portion being engageable with the inclined edge when the detent is in the notch to effect the rotation of the handle in the other direction when the handle is pushed toward the detent cam.

4,227,059

DRIVING MECHANISMS FOR VACUUM CIRCUIT BREAKERS

Seishi Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

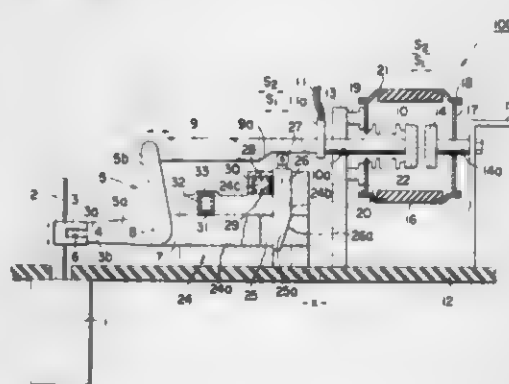
Filed Jun. 13, 1979, Ser. No. 48,233

Claims priority, application Japan, Jun. 19, 1978, 53-73910

Int. Cl.² H01H 3/00, 35/24, 1/50

U.S. Cl. 200-153 G

12 Claims



1. In a driving mechanism for a vacuum circuit breaker of the type wherein a movable contact is moved toward and away from a stationary contact, the driving mechanism having actuating means for opening and closing the vacuum circuit breaker, and a bell crank rotatable about a pivot pin and interposed between said actuating means and the movable contact, the improvement which comprises shifting means for shifting, in accordance with the wear of the movable and the stationary contacts, the pivot pin of said bell crank in parallel with the axis of the movable contact to correct the retracted position of the movable contact, to compensate for the wear of the movable and the stationary contacts.

4,227,060

LOCATING MEANS FOR AN ELECTRIC SWITCH

Frederick C. Ayres, Cheltenham, and Philip V. Little, Stroud, both of England, assignors to Bonnella Switches Limited, Cheltenham, England

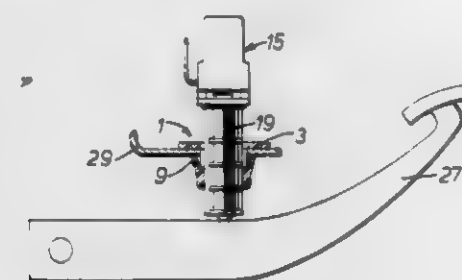
Filed May 29, 1979, Ser. No. 43,249

Claims priority, application United Kingdom, May 30, 1978, 23963/78; May 31, 1978, 25154/78

Int. Cl.³ H01H 13/18

U.S. Cl. 200-296

10 Claims



1. The combination of a body having an opening therein, a plurality of members extending around part of the side wall of the opening, said members being arranged side-by-side in the direction parallel to the depth of the opening, and a projection projecting from the side wall into the opening and a switch carrier having an elongate portion, a plurality of members extending around part of the side wall of the elongate portion, said members being arranged side-by-side in the direction parallel to the length of the elongate portion and a projection projecting outwardly from the side wall of the elongate portion, the opening in the body and the elongate portion of the switch carrier being such that the elongate portion is insertable in the direction of its length into the opening and by causing limited relative rotation between the elongate portion of the carrier and the body in a first direction members on the body and members on the carrier mate together to axially locate the carrier in the body and the projections being such that said relative rotation in the first direction cause them to take up relative positions which prevent relative rotation between the body and the elongate portion in the opposite direction unless the applied force to bring about relative rotation in said opposite direction is sufficient to deform one or both of the projections.

4,227,061

METHOD AND APPARATUS FOR CLADDING A METAL ROD WITH ANOTHER METAL

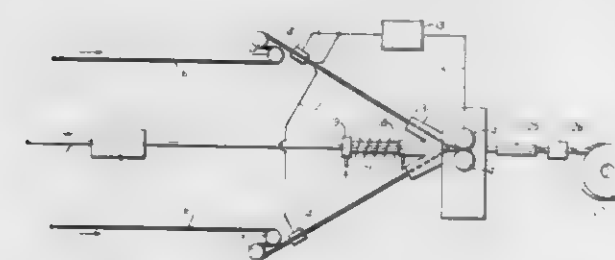
Lee R. Westfall, McKeesport, and Malcolm J. Fraser, Pittsburgh, both of Pa., assignors to Copperweld Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1976, Ser. No. 743,459

Int. Cl.³ B23K 13/00, 11/00; H05B 6/02

U.S. Cl. 219-9.5

2 Claims



1. A method of cladding a metal rod with a dissimilar metal to form a product not subject to hot tearing, comprising con-

tinuously feeding the rod forward, continuously feeding metal cladding strips toward the rod for engagement with it, the strips having a different electrical resistance than the rod, passing electric current through a predetermined length of the strips to heat them by electrical resistance to a solid-phase bonding temperature before they engage the rod, simultaneously heating the rod to a solid-phase bonding temperature by electrical induction in a predetermined area before engagement by the strips, maintaining the surface of the heated portion of the rod substantially free from oxide before engagement by the strips, then substantially enclosing the heated rod with the heated strips to form a substantially circular composite, and pressing the heated strips against the heated rod with enough force to reduce the diameter of the composite and simultaneously solid-phase bond the strips and rod together.

4,227,062

OPTIMUM TIME RATIO CONTROL SYSTEM FOR MICROWAVE OVEN INCLUDING FOOD SURFACE BROWNING CAPABILITY

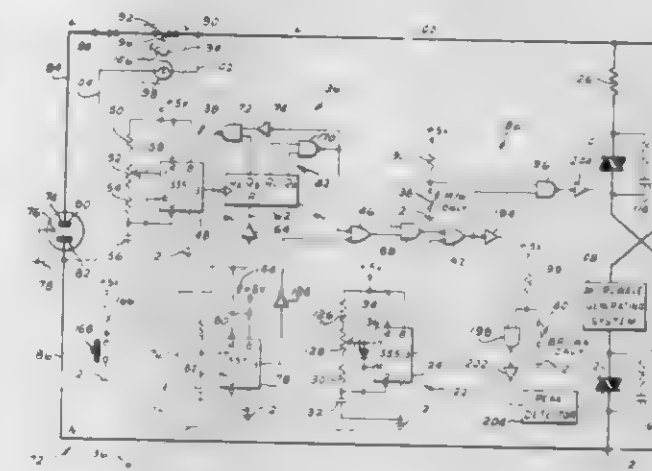
Thomas R. Payne, and Bohdan Hurko, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 31, 1978, Ser. No. 911,614

Int. Cl.³ H05B 6/68; H02J 3/14

U.S. Cl. 219-10.55 B

19 Claims



1. In a cooking oven having a cooking cavity, an electrical resistance food browning system positioned within the cavity so as to brown by radiant energy the surface of food being cooked therein, and a microwave energy generating system supplying the cooking cavity, an optimized time ratio control system comprising:

output means connected to energize either the microwave energy generating system or the electrical resistance food browning system; timing means controlling said output means and effective to establish successive time share cycles, each time share cycle including a long browner ON time interval during which the food browning system is energized, and each time share cycle further including an alternating interval which in turn includes a plurality of alternating short microwave ON time sub-intervals and short browner ON time sub-intervals during which the microwave generating system and the food browning system, respectively, are alternately energized; and each long browner ON time interval having at least a predetermined minimum duration selected to allow the browning system time to reach at least a minimum effective temperature for browning of the surface of the food by infrared radiant energy; whereby during the long browner ON time intervals the electrical resistance food browning system is raised to at least an effective temperature, and during the alternating intervals energy is supplied to the food browning system so as to keep the food browning system warm and energy is supplied to the microwave energy generating system in relatively frequent pulses.

4,227,063

MICROWAVE APPARATUS SEAL

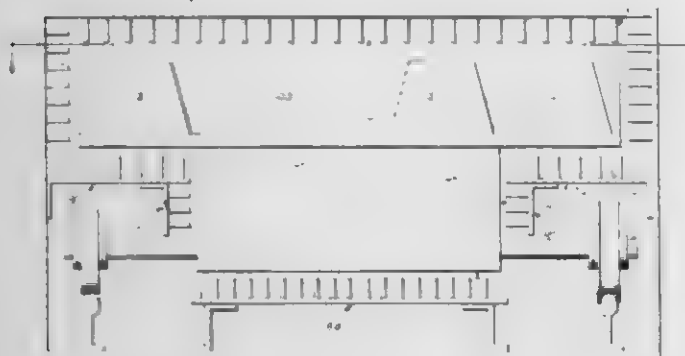
Richard H. Edgar, Chelmsford; E. Eugene Eves, II, Nabnasset, and Charles L. Gilliatt, Andover, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 25, 1978, Ser. No. 872,189

Int. Cl.² H05B 9/06

U.S. Cl. 219—10.55 A

5 Claims



1. In combination:

A conductive enclosure energized with microwave energy and having at least one access aperture;
an elongated hollow structure extending outward from said aperture;
a plurality of microwave energy reflectors spaced apart in and being movable through said hollow structure and having mutually orthogonal dimensions greater than the free space wavelength of said energy;
microwave energy seals each comprising peripheral regions of a reflector and regions of the walls of said hollow structure;
said seals inhibiting the transmission of said energy in the gap between said wall regions and said peripheral regions in a direction substantially perpendicular to the length of said hollow structure; and
means for transporting a product comprising a train of vehicles connected in a loop.

4,227,064

DEVICE FOR ADVANCING A WORKPIECE IN ELECTRO-EROSIVE PROCESSING BY A WIRE-LIKE ELECTRODE

Harry Muegge, and Klaus-Peter Steil, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

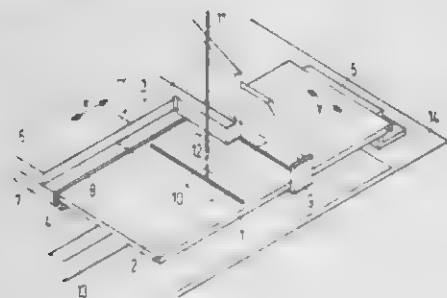
Filed Dec. 11, 1978, Ser. No. 968,171

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755724

Int. Cl.² B23P 1/12

U.S. Cl. 219—69 W

9 Claims



1. A device for advancing a workpiece in an electroerosive processing by a wire-like electrode which is threaded into a starting bore in the workpiece and is drawn through by a drive and guide system and wherein a path of the relative movements between the workpiece and the electrode is controlled

by means of an electric control system, comprising: a base; means for fixing a portion of the workpiece which is not to be processed to a cross-coordinate support which can be moved in all lateral directions by use of an attached clamp bearing having a bearing surface on which the workpiece rests; a bearing table having two sliding bearings, one for advance in each of two orthogonal coordinate directions; a portion of the workpiece which is to be processed resting on a bearing surface of the bearing table; one of said sliding bearings being secured to the base and the other sliding bearing connected to the cross-coordinate support via the clamp bearing such that the cross-coordinate support and the bearing table are displaceable in parallel relative to one another and the bearing surface of the bearing table has the same height as the bearing surface of the clamp bearing; and that the bearing surface of the bearing table is provided with a slot means for movement of the wire-like electrode, said slot means extending longitudinally in a direction of movement of the sliding bearing secured to the base.

4,227,065

METHOD OF JOINING CURRENT CONDUCTING COMPONENTS OF WAVE GUIDE ELEMENTS AND PRODUCING OF THE SAME

Laszlo Paradi; Miklos Acs; Tibor Szucs, and Tibor Konkoly, all of Budapest, Hungary, assignors to Finommechanikai Vállalat, Budapest, Hungary

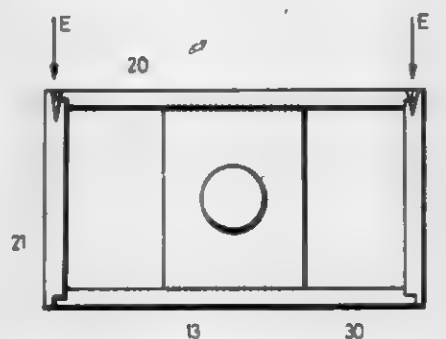
Filed Sep. 29, 1977, Ser. No. 837,883

Claims priority, application Hungary, Sep. 30, 1976, PA 1263

Int. Cl.² B23K 9/00

U.S. Cl. 219—121 EM

8 Claims



1. A method of making a wave guide which comprises the steps of:
forming a plurality of components adapted collectively to constitute a wave guide element and including at least two sheet metal plates formed with electroplated high-conductivity coatings adapted to form a current-conducting surface of the wave guide element the plates having sheet metal sides turned away from said coatings;
assembling said components into a wave-guide configuration with at least two of said plates being disposed adjacent one another and forming a corner of the resulting assembly with the respective coatings in contact with one another; and
beam welding said components together at said corner by directing a high energy beam onto one of said plates from the sheet metal side thereof to form at a location spaced outwardly from the region in which said coatings contact a melting pool bridging said plates and thereby welding the same together.

4,227,066

HAND-OPERATED REMOTE CONTROL UNIT AND MOUNTING STRUCTURE FOR AN ARC WELDING MACHINE

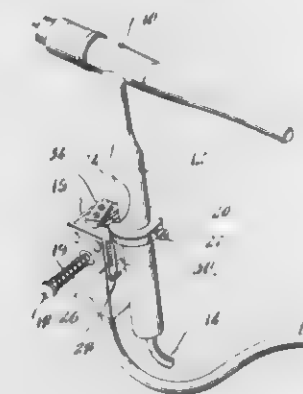
Bulwidas, Jr., John J., Jeremiah Rd. - R.D. #3, Sandy Hook, Conn. 06482

Filed Feb. 12, 1979, Ser. No. 11,314

Int. Cl.² B23K 9/10

U.S. Cl. 219—132

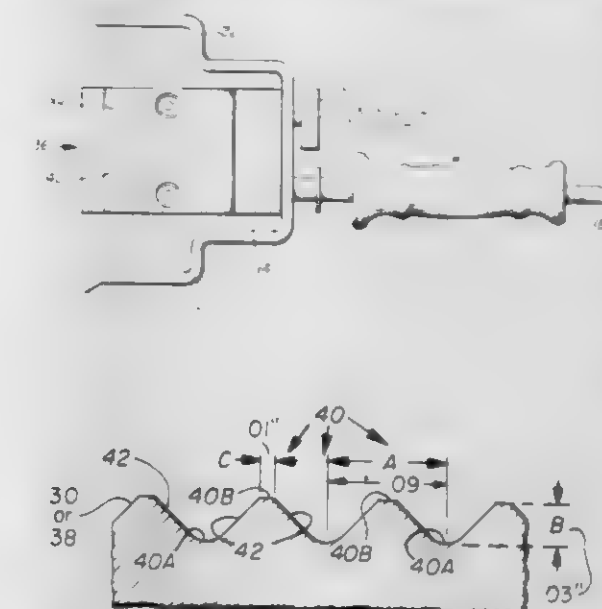
5 Claims



1. A hand-operated remote control unit and mounting structure for an electric welding torch comprising:

- (a) a rotary potentiometer having a rotatable shaft extending therefrom,
- (b) a pinion mounted on said rotatable shaft,
- (c) a rack having said pinion coupled thereto,
- (d) a switch element coupled to said rotatable shaft which normally is in an off-position being activated to an on-position when said rotatable shaft is activated,
- (e) a spring loaded push button attached to said rack adapted to be actuated by a digit of the hand of the user for linearly moving said rack thereby rotating said pinion and said shaft for operating said switch element to an on-position and varying the resistance of said potentiometer,
- (f) a rectangular housing having said potentiometer, said rack and pinion, and said switch elements mounted therein with said spring loaded push button extending therefrom, and
- (g) mounting means on said housing for holding an electric welding torch, said mounting means including a holder mounted on said housing, and an adjustable ring-shaped clamp adapted to adjustably hold the handle of an electric welding torch, said adjustable clamp being held in said holder.

said first and second heating surfaces increased surface thermal contact area between said heating surfaces and the corresponding portions of said elements; and wherein



4,227,068

CONVECTOR HEATER

Brian Carter, Paris, France, assignor to Societe PRL, Aubervilliers, France

Continuation-in-part of Ser. No. 924,091, Jul. 12, 1978, abandoned, which is a continuation of Ser. No. 770,760, Feb. 12, 1977, abandoned. This application Jul. 14, 1978, Ser. No. 924,837

Claims priority, application United Kingdom, Feb. 20, 1976, 6880/76

Int. Cl.² F24H 3/00

U.S. Cl. 219—366

17 Claims

1. A convector heater for mounting onto a wall, said heater comprising:

- heat exchanger means for producing heat;
- cabinet means surrounding said heat exchanger means for housing said heat exchanger means therein, said cabinet means comprised of:
 - a front cabinet having front, side and top portions respectively surrounding the front, sides, and top of said heat exchanger means; and
 - a rear cabinet having rear, bottom and side portions respectively surrounding the rear and bottom and at least part of the sides of said heat exchanger means, said side portions of said rear cabinet being in planes spaced inwardly from planes of said side portions of said front cabinet, and said side portions of said rear cabinet extending rearwardly beyond the rear edge of said front side portions, whereby a rebate is formed on each side of said cabinet means by said inward spacing and said rearward extent of said side portions of said rear cabinet;
- control means in one of said rebates and connected to said

4,227,067

HEATER ADAPTER FOR MAKING POLYETHYLENE PIPE CONNECTIONS

Arthur H. McElroy, P.O. Box 15580, Tulsa, Okla. 74115

Continuation-in-part of Ser. No. 650,189, Jan. 19, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,675

Int. Cl.² H05B 1/00; B32B 31/20

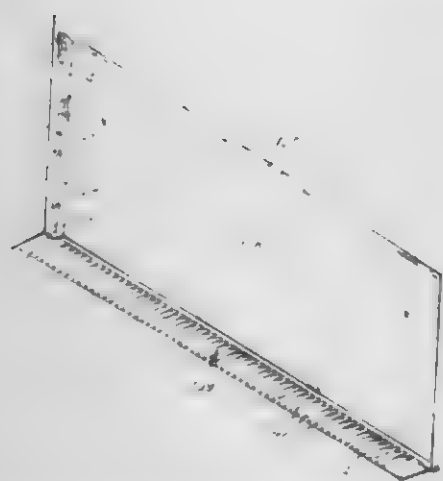
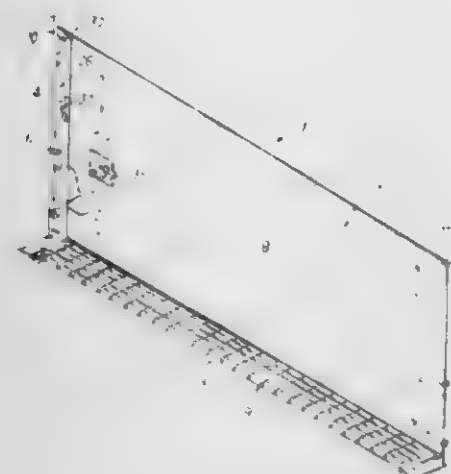
U.S. Cl. 219—243

16 Claims

1. A platen for simultaneously heating a first portion of a first thermoplastic thick-walled element and a first portion of a second thick-walled thermoplastic element in a process for heat fusion bonding together said two heated portions of said elements, and in which the depth of the heat metled first portions of said elements is greater than is possible with conventional heating devices, comprising:

- (a) a platen base having heating means for heating the base;
- (b) said platen having first and second opposed heating surfaces, said first surface configured to approximately match said first portion of said first element, said second surface configured to approximately match said first portion of said second element, said heating surfaces being heated by said heating means to a selected temperature sufficient to heat melt said first portions of said thermoplastic elements;
- (c) ridge and groove means to provide over the full extent of

heat exchanger means for controlling the heat produced by said heat exchanger means; and



mounting means connected to said rear cabinet for mounting said cabinet means onto a wall.

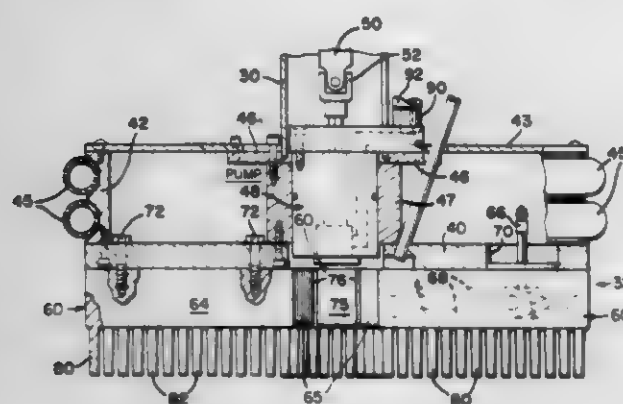
4,227,069

HOT MELT DISPENSER

James J. Gardner, and Hugh P. Koppehele, both of Hamilton, Ohio, assignors to Nordson Corporation, Amherst, Ohio. Continuation-in-part of Ser. No. 755,974, Dec. 30, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,481. Int. Cl.² B67D 5/62; H05B 3/78

U.S. Cl. 219-421

5 Claims



2. In hot melt pumping and dispensing apparatus in which a platen carrying a pump and a plastic material heater is arranged to be lowered into a barrel of hot melt plastic material for melting and dispensing the same from the barrel, the improvement in heater construction comprising a plurality of individual sector-shaped heater segments arranged in a circle on the lower face of said platen and defining a central space at a common apex thereof in communication with said pump, each of said heater segments having a non-perforated heater body of heat conducting material, a heater element embedded

in said body, and a plurality of integral depending heat conducting projections formed integrally with the lower face of said body and extending downwardly therefrom and terminating substantially at a common plane, said projections being proportioned to extend into said material in advance of said body to preheat and soften said material for liquefaction by said body, and said segments being spaced from each other to define radial flow passages between adjacent said segments and opening into said space for delivery of heated material thereinto.

4,227,070

ELECTRICAL TOTALIZER

Thomas E. Baker, 9781 La Zapatilla Cir., Fountain Valley, Calif. 92708, and John P. Robertson, 2307 Aralia St., Newport Beach, Calif. 92660

Filed Apr. 28, 1978, Ser. No. 901,138
Int. Cl.² G06M 3/08

U.S. Cl. 235-92 ST

15 Claims



1. An electrical totalizer for forming an output signal with occurrences separated by a minimum time interval and representative of the total number of random occurrences in first and second circuits, comprising:

- first and second input circuits for receiving occurrences from, respectively, such first and second circuits;
- first and second bistable state circuits for responding to separate strobes for changing states for each occurrence at, respectively, the first and second input circuits;
- combining means coupled to the first and second bistable state circuits for forming an output representation for each different occurrence at both input circuits;
- separator means for forming in an output signal an output occurrence responsive to an applied strobe for each of the output representations; and
- means operative during repetitive cycles for applying, during each cycle, a strobe to each of the first and second bistable state circuits and to the separator means in a predetermined sequence.

4,227,071

ELECTRONIC CURRENCY COUNTER

Dmytro Tomyn, 58 Stephenson Cres., Saskatoon, Sask., Canada (S7H 3L7)

Filed Sep. 8, 1978, Ser. No. 940,632
Int. Cl.² G06M 9/00

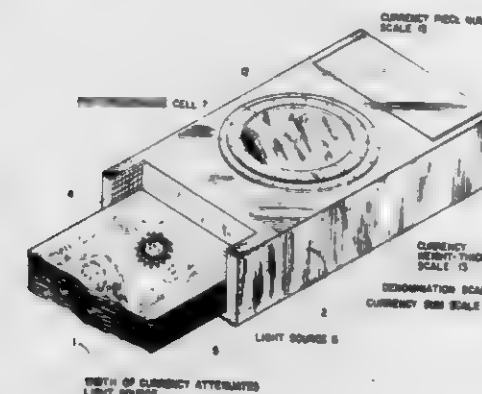
U.S. Cl. 235-92 SB

2 Claims

1. An electronic currency counter for counting a stack of paper currency, said currency counter comprising a pocket-sized housing having a ledge extending therefrom bordered by a pair of spaced parallel side walls perpendicular to the ledge forming an enclosure for accommodating at least one end part of a stack of paper currency; a source of light in one of the side walls for providing light extending to the other of the side walls and illuminating

said other of the side walls entirely, from the ledge to the top of said other side wall;

a plurality of photoresponsive cells on said other of said side walls for receiving the light from the source of light, said photoresponsive cells being arranged in rows parallel to said ledge, each of the rows of cells being dimensioned to correspond to the thickness of a single piece of paper currency, said photoresponsive cells functioning as a currency sensor and producing an electrical signal for each row of cells obstructed and therefore for each piece of paper currency resting on said ledge between said side walls;



counter means in the housing electrically connected to the cells for counting the electrical signals produced thereby; indicating means in the housing electrically connected to the counter means for visually indicating the count of said counter means; and

a source of electrical energy in the housing electrically connected to the indicating means and the source of light whereby said indicating means indicates the number of pieces of paper currency in the stack of currency resting on said ledge in said enclosure.

4,227,072

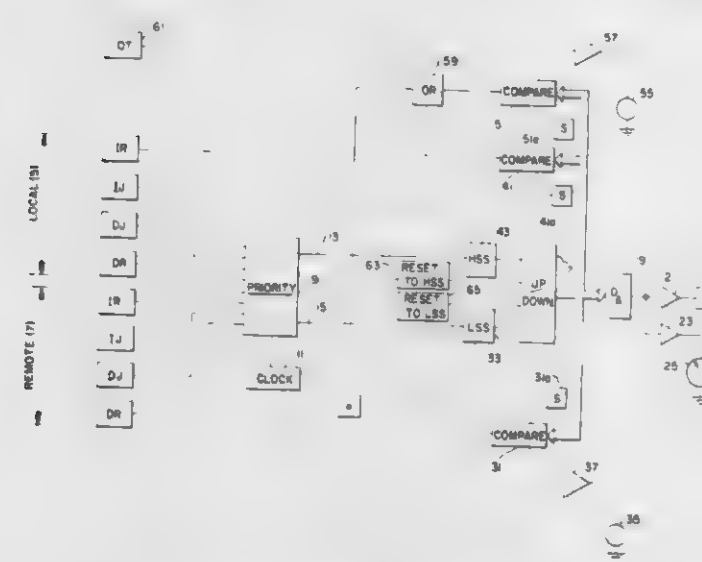
REFERENCE SIGNAL CIRCUIT

Thomas A. Fancy, Westminster, and Donald F. Behringer, Ashburnham, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 26, 1978, Ser. No. 928,246
Int. Cl.² G06M 3/12, 3/14

U.S. Cl. 235-92 CA

4 Claims



1. A speed reference signal circuit for providing a desired speed reference signal into a speed control system comprising: a keyboard for introducing the desired speed signal into the reference signal circuit; priority logic for determining an up count or down count signal; an up-down counter for receiving up counts and down

counts and providing an output signal representative of desired speed;

an up count channel and a down count channel interconnecting the priority logic with said up-down counter;

a first feedback loop interconnecting the up-down counter output with down count inhibit means in said down count channel; said first feedback loop including a comparator for comparing said counter output with a preset low speed value;

a second feedback loop interconnecting the up-down counter output with up count inhibit means in said up count channel; said second feedback loop including a comparator for comparing said counter output with a preset overspeed value;

a third feedback loop interconnecting the up-down counter output with the up count inhibit means in said up count channel; said third feedback loop including a comparator for comparing said counter output with a preset high speed value; and,

high speed override means interconnecting the high speed value comparator with the up count inhibit means, said override means having an overspeed test enabling input whereby the down count inhibit will prevent further decrement of the up-down count at a preselected low speed value; the up count inhibit will prevent further increment of the up-down counter at a preselected overspeed value; and, the up count inhibit will prevent further increment of the up-down counter at a preselected high speed value below said overspeed value unless there is an enabling input into said override means.

4,227,073

CHECK NUMBER COUNTER DEVICE FOR PAPER COUNTING MACHINE

Tuyoshi Miyagawa, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

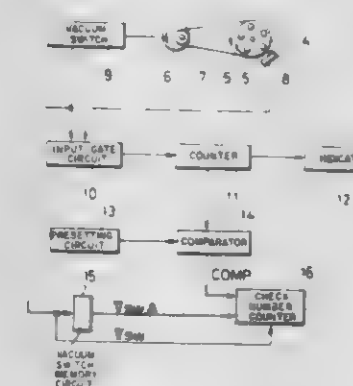
Filed Oct. 23, 1978, Ser. No. 953,747

Claims priority, application Japan, Oct. 25, 1977, 52-143238[U]

Int. Cl.² G06M 7/06

U.S. Cl. 235-92 SB

1 Claim



1. In a paper counting machine, including: a suction cylinder for sucking to deflect sheets of paper one by one so that the latter may be counted, a vacuum switch for controlling the operations of said suction cylinder for generating an operation terminating signal indicating when the operations of said suction cylinder are terminated, counter means for counting the number of said deflected sheets until generation of said operation terminating signal, and generating a counter output, and comparator means for comparing said counter output with a predetermined number, and issuing a coincidence signal when said counter output and said predetermined number coincide; a check number counter device comprising: AND gate means responsive to both said coincidence signal and the operation terminating signal of said vacuum switch for generating a gate output when both the coinci-

dence signal and the operation terminating signal are received, and for not generating said gate output when both the coincidence signal and the operation terminating signal are not received; and counter means responsive to the gate signal of said AND gate means for counting occurrences thereof, whereby to count the number of coincidence signals.

4,227,074

COUNTING SECTION SHIELDING DEVICE FOR PAPER SHEET COUNTING MACHINE

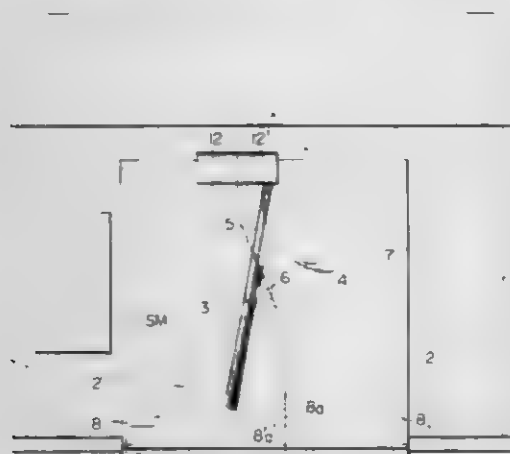
Tuyoshi Miyagawa, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,901

Claims priority, application Japan, Feb. 8, 1978, 53-15323[U]
Int. Cl.² G06M 9/02

U.S. Cl. 235—92 SB

4 Claims



1. In a paper sheet counting machine comprising: a counting section including a paper holder made movable between an open stand-by position in which the machine is ready to receive paper sheets for counting and a closed holding position for holding the paper sheets, a rotatable suction drum, and a plurality of rotatable suction cylinders carried on said suction drum for sucking the paper sheets one by one so as to count the number of the same; and a comparator for comparing the actual counted number with a preset number,

a counting section shielding device comprising: a pair of double-leaf type sound-proof covers made movable between an open position for providing easy access to said counting section and a closed position in which the shielding device extends above said counting section so as to shield the same and prevent the escape of noise and dust; an electric circuit for generating closing signals after said paper holder is charged with the paper sheets and for generating opening signals when the comparison by said comparator shows the counted number to be equal to the preset number but not when the comparison shows said numbers to be unequal, said electric circuit including a resetting button made manually operable for generating the opening signals of said electric circuit; and drive means made responsive to both the closing signals of said electric circuit for closing said sound-proof covers and the opening signals of the same for opening said sound-proof covers as well as said paper holder.

4,227,075

MULTICHANNEL FIBER OPTIC CONTROL SYSTEM

John M. Holland, Shawsville, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 30, 1977, Ser. No. 829,168

Int. Cl.² H04B 9/00

U.S. Cl. 370—4

49 Claims

1. A multichannel fiber optic transmission system, comprising:
first UART circuit means for receiving a plurality of signals on separate input terminals and for providing said signals

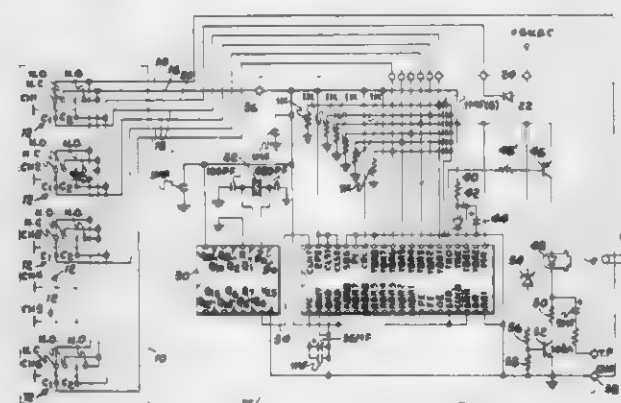
consecutively at a single output terminal, said circuit means including:

a transmit register empty (TRE) output which provides a one-level signal when the transmit register of the UART is empty;

a transmit buffer register load input (TBRL) which causes an input buffer register to load upon receipt of a one-level signal; and

an RC delay circuit that charges when the transmit register empty output provides a one-level signal and after a predetermined time delay provides a one-level signal to the transmit buffer register load input, whereby the transmit buffer register will load a predetermined time after the transmit register is emptied;

second means connected to said output terminal and respon-



sive to the consecutive signals received therefrom for providing consecutive light signals corresponding to said consecutive signals;

optical waveguide means coupled to said light output means for conducting said consecutive light signals;

third means for receiving said light signals and in response thereto for providing consecutive electrical signals corresponding to the light signals; and

fourth means for receiving said consecutive electrical signals and in response thereto providing said signals simultaneously and separately at a plurality of output terminals whereby the first and second means are electrically isolated from the third and fourth means and the system is substantially unaffected by electromagnetic radiation due to the inherent dielectric characteristics of the optical waveguide means.

4,227,076

OPTICAL POSITION DETERMINING OR TRACKING DEVICE

Joachim Hermann, Munich, Fed. Rep. of Germany, assignor to Bölkow Gesellschaft mit beschränkter Haftung, Ottobrunn bei Munich, Fed. Rep. of Germany

Filed Jun. 11, 1965, Ser. No. 464,269

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1964, 77251

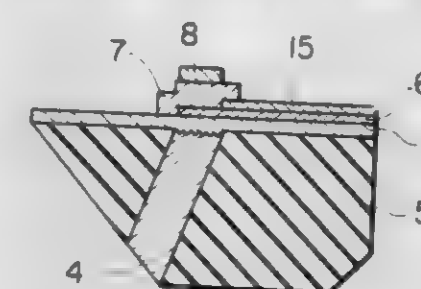
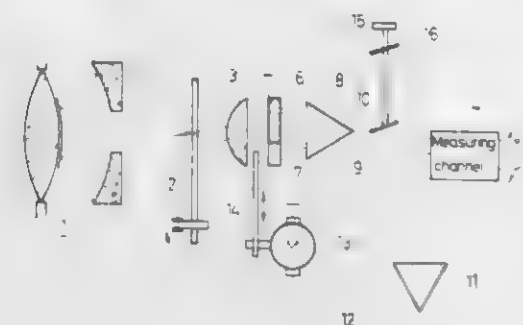
Int. Cl.³ G01J 1/20

U.S. Cl. 250—203 R

14 Claims

1. In an optical device for determining the position of a body and including compensation means for the background radiation of the body, the compensation means including two radiation detectors, one responsive to the emission spectrum of the body and the other responsive to the emission spectrum of the background of the body, and having respective outputs supplying electric signal potentials corresponding to the radiation effective thereupon with the detector outputs being opposed to each other, and adjusting means operable to change the output of at least one detector prior to initiation of the position determining procedure; the improvement comprising, in combination, a control device for said adjustment means; means applying the difference of the electrical signal potentials to said

control device to operate said adjusting means in a direction to balance the detector outputs; and switch means operable, and an end face of said optical fiber bundle located on said



second surface of said substrate serves as an information reading face.

4,227,079

MULTIPATH FINE POSITIONING BEAM DIRECTOR

John N. Dukes, Los Altos Hills; Charles E. Bryson, III, Palo Alto, and Lynn Weber, Saratoga, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 15, 1978, Ser. No. 969,758

Int. Cl.² G01D 5/34; G01J 3/42

U.S. Cl. 250—231 SE

6 Claims

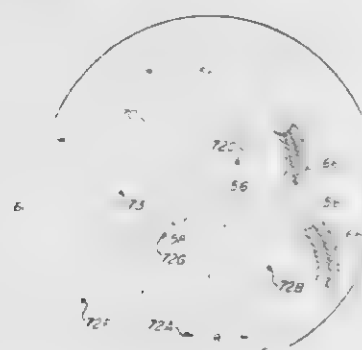
4,227,077
OPTICAL TRACKING SYSTEM UTILIZING SPACED-APART DETECTOR ELEMENTS
James E. Hopson, Wellesley, and Arthur B. Slater, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 129,414, Mar. 30, 1971. This application Feb. 26, 1973, Ser. No. 337,049

Int. Cl.³ G01J 1/20; F41G 7/00

U.S. Cl. 250—203 R

18 Claims



15. A radiation tracker system comprising:
a gyroscopically stabilized platform;
means for deflecting radiation;

a hexagonal detector array supported by said platform and positioned relative to said deflecting means to intercept rays of radiation deflected by said deflecting means; and a spiral scanner supported by said platform, the spiral scanner positioning and driving said deflecting means to scan said radiation towards said hexagonal detector array in a spiral scan.

4,227,078

PHOTO-SENSOR

Hideaki Yamamoto, Hachioji; Haruo Matsumaru, Hinodemachi; Makoto Matsui, Hachioji; Toshihisa Tsukada, Sekimachi; Tadaaki Hirai, Koganei, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan and Hitachi, Ltd., Japan

Filed Jun. 22, 1978, Ser. No. 918,273

Claims priority, application Japan, Jun. 27, 1977, 52-75593

Int. Cl.² G02B 5/14

U.S. Cl. 250—227

22 Claims

1. A photo-sensor wherein a bundle of optical fibers extending from a first surface to a second surface of a predetermined substrate is disposed within said substrate, an array of photo-sensitive elements is integrated onto said substrate in such a manner that at least one transparent insulating layer intervenes between the photoelectric elements and an end face of the

4,227,080

DEVICE FOR SHIFTING FROZEN SPECIMEN, FOR USE IN SCANNING TYPE ELECTRON MICROSCOPE

Akimitsu Okura, Chiba; Syobu Saito, and Motohide Ukiana, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 4, 1978, Ser. No. 966,040

Claims priority, application Japan, Dec. 5, 1977, 52/144996

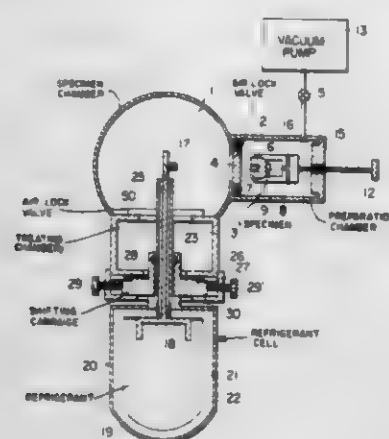
Int. Cl.² G01M 23/00

U.S. Cl. 250—311

10 Claims

1. A device for shifting frozen specimen for use in scanning type electron microscope comprising: a first, second and a third chambers which are in mutual communication; a specimen unit including a specimen support having a recess, and a specimen holder adapted to hold a frozen specimen and detachably coupled to the opened end of said recess, said specimen unit being disposed for movement between said first and second chambers; a specimen receiving member disposed for

movement between said second and third chambers; and means for making said specimen holder engage said specimen receiving member, such that said specimen holder is separated from



said specimen support when said specimen unit and said specimen receiving member have been moved to said second chamber.

4,227,081

METHOD OF EVALUATING THE INTEGRITY OF THE OUTER CARBON LAYER OF TRISO-COATED REACTOR FUEL PARTICLES

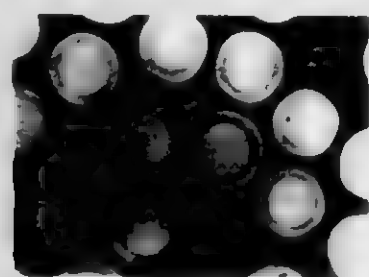
Anthony J. Caputo, Knoxville; Dante A. Costanzo; Walter J. Lackey, Jr., both of Oak Ridge; Frank L. Layton, Clinton, and David P. Stinton, Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 13, 1979, Ser. No. 48,290

Int. Cl.² G03B 41/16; G03C 15/16; G21C 17/00

U.S. Cl. 250—321

2 Claims



1. A method for determining the existence of cracks penetrating the respective isotropic vapor-deposited carbon outer coatings covering respective silicon carbide coatings of respective triso-coated fuel particles, comprising the steps of subjecting said outer carbon coatings of said particles to a substantially pure chlorine gas atmosphere at a temperature of about 1500° C. for a selected time period in the range from 1 to 5 hours, cooling said particles, and finally radiographing said cooled particles to determine any change in density of the respective silicon carbide coatings of said particles as a result of any cracks in said outer coatings effecting a reaction between said chlorine gas and said silicon carbide coatings to form low density carbon and volatile silicon chloride, whereby any of said particles having cracks in the outer coating thereof can be readily determined from the resulting radiograph of said particles.

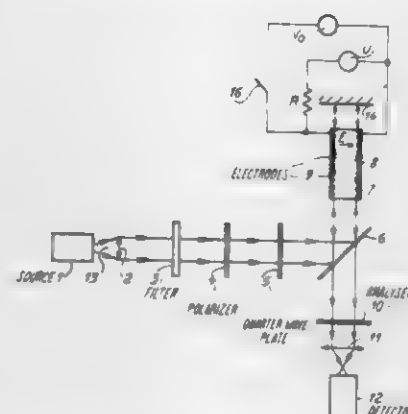
4,227,082

DETECTOR FOR DETECTING IONIZING RADIATION

Christian Mayeux, and Francois Micheron, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jul. 25, 1978, Ser. No. 927,822
Claims priority, application France, Jul. 29, 1977, 77 23441
Int. Cl.² G01T 1/00

U.S. Cl. 250—336

13 Claims



1. A detector for detecting ionizing radiation, comprising at least one point detecting unit, said unit comprising a plate of an electro-optical material arranged to receive an homogeneous beam of said radiation, said plate being capable of absorbing the most part of said radiation, the resistivity of said material being variable with respect to the intensity of said most part; said unit further comprising two electrodes arranged on opposite faces of said plate parallel to said beam of radiation and forming a capacitor; said detector further comprising electrical means supplying a constant current between said two electrodes, the voltage between said two electrodes being dependent upon the resistivity of said material and creating an electrical birefringence in said plate; said detector further comprising optical means for emitting a luminous beam of polarized light in the direction of said plate, polarization analysing means receiving the light emerging from said plate, and photodetecting means receiving the light transmitted by said analysing means.

4,227,083

APPARATUS FOR INFRARED LASER SPECTROSCOPY OF ROOM TEMPERATURE VULCANIZABLE SILICONE COMPOSITIONS

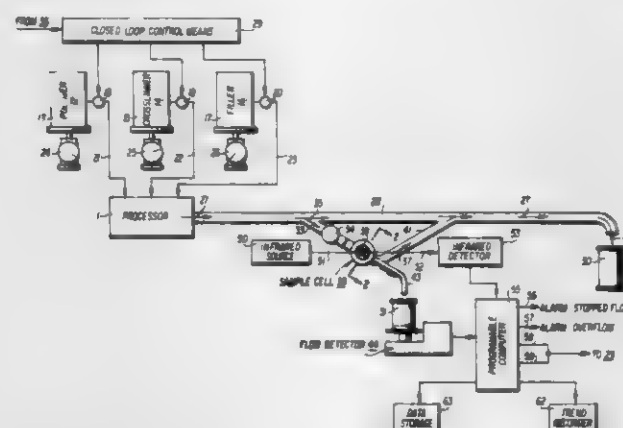
Lawrence R. Sherinski, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,818

Int. Cl.² G01J 1/00

U.S. Cl. 250—343

17 Claims



1. Apparatus for determining the concentration of a constituent in a process stream, comprising:

- (a) means for bypassing a portion of said stream to a sample detection region;
- (b) means for splitting said portion of said stream into first

and second parts and diverting said first part from said sample detection region;

(c) a sample cell comprising a pair of opposed infrared transparent windows extending in parallel planes wherein the space between said windows is adjusted upon consideration of the relative viscosity of said second part of said stream;

(d) means for diverting said second part of said stream through said sample cell between said windows and wherein the space between said windows defines the thickness of the sample stream flowing therebetween;

(e) a laser effective for directing a beam of infrared radiation maintainable at a predetermined frequency corresponding to a selected infrared absorption frequency of the constituent in the process stream under consideration through said windows of said cell and said second part of the process stream flowing therebetween; and

(f) means for continuously detecting the proportion of said infrared radiation at said predetermined frequency absorbed by said second part of said stream in said sample cell.

4,227,085

IONIZATION-TYPE PARTICLE DETECTOR

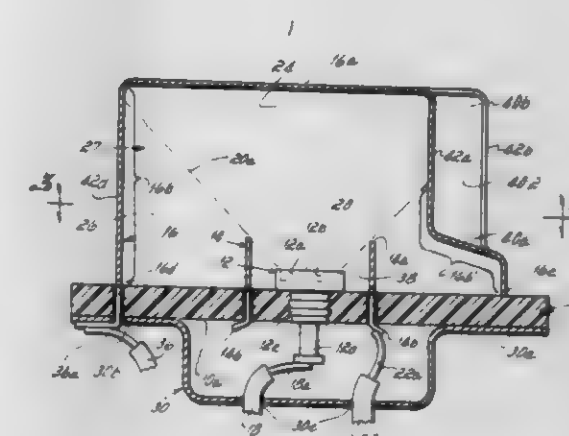
Paul B. Sunde, Northridge, Calif., assignor to Electrometer Corporation, Cincinnati, Ohio

Filed Oct. 5, 1978, Ser. No. 948,803

Int. Cl.² G01T 1/18

U.S. Cl. 250—384

3 Claims



1. An ionization-type particle detector comprising: an inner electrode,

a single radioactive source of ionizing radiation mounted proximate said inner electrode for directing a generally conical beam of ionizing radiation along a predetermined axis of symmetry, said beam having an envelope,

a generally cylindrical outer electrode symmetrically disposed about said inner electrode, said outer electrode having a longitudinal axis of symmetry substantially coincident with said predetermined axis of symmetry of said beam, said outer electrode having an opening therein communicating with the environment through which particles enter from the environment,

a source of potential connected between said inner and outer electrode,

a generally cylindrical intermediate electrode disposed symmetrically about said inner electrode to define therebetween a compensation zone having a substantially saturated ion current which is substantially unaffected by changes in particle concentration therein, said intermediate electrode being generally concentric to said outer electrode to define therebetween a particle sensing zone having an unsaturated ion current which decreases with increasing particle density therein, said intermediate electrode having an opening in the top thereof co-extensive in area to the cross-sectional area of said intermediate cylindrical electrode, said opening being defined by an upper circular edge through which radiation from said source is emitted with the envelope of said beam dividing said sensing zone into an upper bipolar region interiorly of said beam and a lower unipolar region exteriorly of said beam, said intermediate and outer electrodes having diameters and heights designed relative to each other to approximately equally divide the potential of said source between said compensation and sensing zones and produce, in response to an increase in particles in said sensing zone, an ionization current decrease in said unipolar region which exceeds the ionization current decrease in said bipolar region by a factor of approximately three, thereby providing enhanced insensitivity of the detector to variations in environmental air velocity.

METHOD OF DETECTING HIGH ENERGY RADIATION VIA A BISMUTH OXIDE COMPOUND

Helmut Thomann, Munich, and Christa Grabmaier, Kempfenhausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

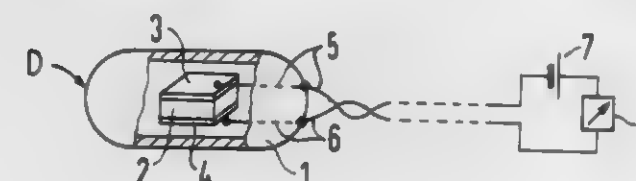
Filed Sep. 28, 1977, Ser. No. 837,197

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644168

Int. Cl.² G01T 1/22

U.S. Cl. 250—370

5 Claims



1. A dosimeter for detecting X-rays and gamma-rays comprising: a hollow capsule having an X-ray and gamma-ray sensitive body therein;

a pair of electrodes attached to opposite surfaces of said body;

means providing an electrical charge operationally coupled to said electrodes; and

means for sensing changes in the electrical charge on said body operationally coupled to said means for providing an electrical charge to said electrodes;

said X-ray and gamma-ray sensitive body being composed of a crystalline bismuth oxide compound having the formula:



wherein X is at least one element selected from the group consisting of Al, Ga, Ge, Si and Ti and n is a numeral substantially equal to the stoichiometric amount of oxygen within the compound, said compound being gamma-ray and X-ray photoconductive so that when said compound is irradiated by a gamma-ray or an X-ray, such ray causes an electrical change to occur in the electrical conductivity of said body.

4,227,086

DETECTORS OF PARAMETERS ADAPTED TO ACT ON THE FORCE OF ATTRACTION BETWEEN AN ELECTRET AND AN ELECTRODE

Gérard Dreyfus, Résidence Bel Air, Bâtiment 2, Villebon S/Y-vette-91120 Palaiseau; Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud, and Didier Perino, 10, rue de Bellevue, 92150 Suresnes, all of France

Filed Apr. 25, 1978, Ser. No. 899,862

Claims priority, application France, May 5, 1977, 77 13727
Int. Cl.² G01T 1/185

U.S. Cl. 250—389

16 Claims



1. A device for detecting the exceeding of a given threshold by a parameter capable of affecting the electrostatic force of attraction exerted between a charged electret and one of two electrodes between which said electret is disposed, the parameter being other than a difference in electrical potential, and the two electrodes being at the same electrical potential, said device comprising means for enabling said parameter to affect said electrostatic force of attraction, return means for exerting an opposing force to said electrostatic force of attraction which serves to bias the said one electrode and the electret apart and detection means for detecting the relative displacement of the one electrode in relation to the electret which occurs when said electrostatic force of attraction becomes less than the opposing force of the return means.

4,227,087

BEAM DETECTOR

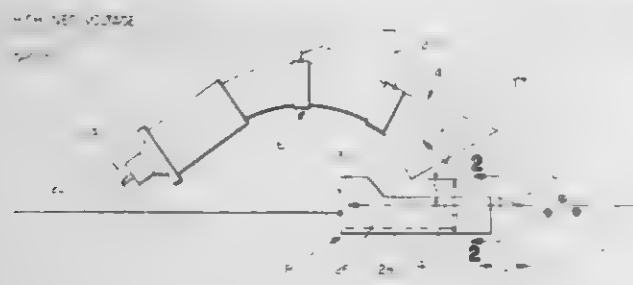
Edward A. Kurz, Leicester, Mass., assignor to Galileo Electro-Optics Corp., Sturbridge, Mass.

Filed May 18, 1979, Ser. No. 40,734

Int. Cl.² H01J 39/00; G01K 1/08

U.S. Cl. 250—397

10 Claims



1. In apparatus for detecting an ion beam, said apparatus including an electron multiplier, a deflector, a high-voltage lead for supplying a negative voltage to the inlet of said multiplier, and a low-voltage current-measuring lead connected to the outlet of said multiplier, said deflector lying along the undeflected trajectory of said beam and said inlet being displaced transversely from said trajectory, the improvement wherein:

said measuring lead is connected to said deflector and said deflector and multiplier inlet are positioned with respect to said beam such that said beam is deflected into said inlet by the electric field generated by said high negative voltage at said inlet,

whereby said apparatus can conveniently be switched from an amplification mode in which said beam is deflected into said multiplier to a Faraday-cup mode in which said beam

impinges on said deflector by only turning off said high-voltage lead, in both said modes the number of ions being measured as the current generated at said measuring lead which is common to both said multiplier outlet and deflector.

4,227,088

HIGH SPEED COMPUTER ASSISTED TOMOGRAPHY

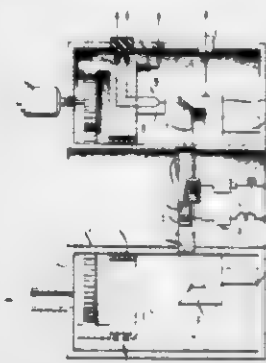
Dan Maydan, Short Hills, and Lawrence A. Shepp, South Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 10, 1978, Ser. No. 949,979

Int. Cl.³ G01N 21/34, 23/04

U.S. Cl. 250—445 T

5 Claims



1. Apparatus for X-ray generation and detection for use in a transverse section computer assisted tomography system comprising a fixed circular anode (3) surrounding a patient area, a source (8) of electrons impinging upon said anode thereby producing X-rays directed through the patient area, and a circular array of detectors (22) characterized in that said source of electrons is a single electron producing structure incorporated on a rotatable ring adjacent to said fixed circular anode, said ring surrounds the patient area and is substantially concentric with the longitudinal axis of the patient area; said single electron producing structure being orbitally movable by said ring around the patient area adjacent to said fixed circular anode, and said detectors lie in the X-ray beam plane and are partitioned into groups, each group being movable out of said plane synchronously with the movement of said single electron producing structure.

4,227,089

APPARATUS FOR OPENING RADIOGRAPHIC CASSETTES

Hendrik S. Plessers, Boechout, and Julianus J. Hellemans, Kontich, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

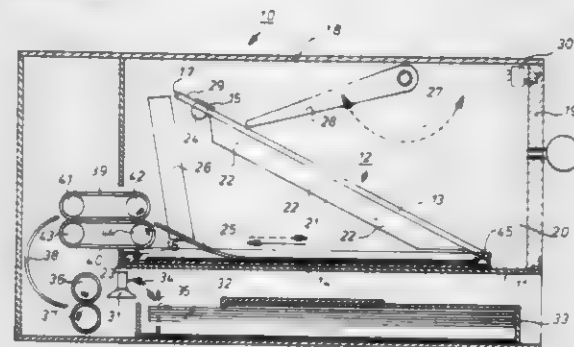
Filed Oct. 16, 1978, Ser. No. 951,396

Claims priority, application United Kingdom, Oct. 18, 1977, 43329/77

Int. Cl.² G03B 41/16; G11B 1/00

U.S. Cl. 250—468

10 Claims



1. An apparatus for opening radiographic film cassettes

which comprises a housing and in said housing a platform for the introduction and withdrawal of the radiographic cassette into and from said housing, guide means for engaging a longitudinal edge of said cassette for aligning the cassette relative to said platform during its introduction, stop means for precluding further movement of the cassette when it has advanced to a predetermined location in said housing, and a cam surface is inclined inwardly relative to said platform with its lowermost end in the path of a laterally projecting lip portion of a cassette cover as the cassette is advanced relative to said inclined cam surface so that the cassette cover becomes progressively opened during its introduction into the housing.

4,227,090

ELECTRON BEAM MICROFABRICATION APPARATUS AND METHOD

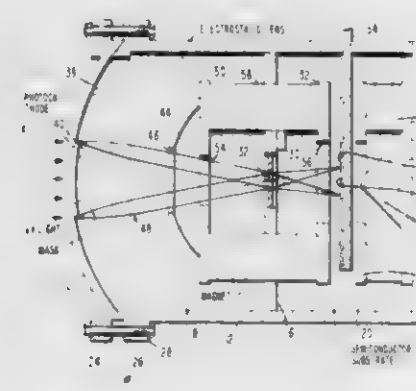
Kurt Amboss, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 21, 1979, Ser. No. 13,588

Int. Cl.³ A61K 27/02; B01J 1/10; G01N 23/00

U.S. Cl. 250—492 A

11 Claims



1. An electron beam microfabrication apparatus comprising: a substantially spherically curved female surface for receiving thereon a patterned photocathode; a semiconductor wafer holder positioned in front of said surface; and a lens for focusing electrons emitted from said patterned photocathode onto a wafer on said wafer holder on a demagnification scale so that when said photocathode is excited the patterned electron emission therefrom is focussed and demagnified and projected onto a resist on a wafer on said wafer holder for exposure thereon of a demagnified pattern.

4,227,091

OPTICAL MONITORING APPARATUS

Erwin Sick, Icking, Fed. Rep. of Germany, assignor to Erwin Sick GmbH, Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

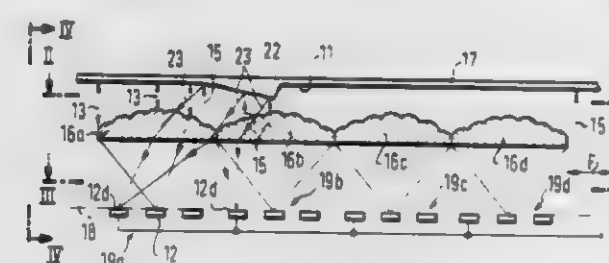
Filed Feb. 14, 1979, Ser. No. 12,046

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808360

Int. Cl.² G01N 21/32

U.S. Cl. 250—572

7 Claims



1. Optical monitoring apparatus for the separate detection of light rays which leave a surface scanned by a light beam at

various angles in which there is provided, in the path of the light rays leaving the surface, a strip-like row of Fresnel lenses extending in the scanning direction, said strip like row comprising a series of individual Fresnel lenses arranged edge-wise directly adjacent one another with at least the adjacent edges of each neighbouring pair of Fresnel lenses being plane and their being further provided a respective group of a plurality of photodetectors arranged in the focal plane of each individual Fresnel lens and processing means for processing the electrical output signals from said photodetectors.

4,227,092

HAND CRANKED ELECTRICAL POWER SOURCE

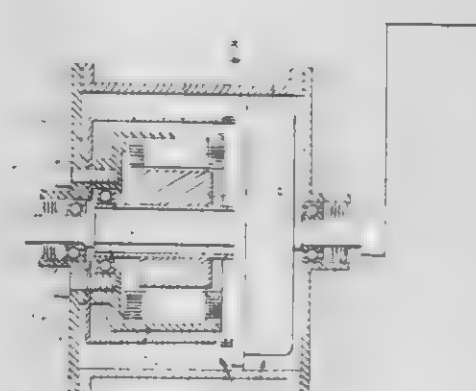
Carl J. Campagnuolo, Potomac; Leon Scheinine, Adelphi, and Paul M. Mayerck, Wheaton, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 30, 1977, Ser. No. 855,859

Int. Cl.¹ H02P 9/04

U.S. Cl. 290—1 C

11 Claims



1. Apparatus for generating electrical power, which comprises: a relatively low-speed input shaft and a relatively high-speed output shaft, means for manually rotating said input shaft, harmonic drive means including a circular spline, a flex-spline and a wave generator, said output shaft being rigidly connected to said wave generator, magnetic rotor means connected to rotate with said high-speed output shaft, and stator means positioned about said rotor means for generating electrical energy in response to rotation of said rotor means, wherein said rotor means and said stator means are arranged concentrically within said flexspline of said harmonic drive means.

4,227,093

SYSTEMS AND METHOD FOR ORGANIZING COMPUTER PROGRAMS FOR OPERATING A STEAM TURBINE WITH DIGITAL COMPUTER CONTROL

Robert Uram, East Pittsburgh, Pa., and Juan J. Tanco, Buenos Aires, Argentina, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 247,887, Apr. 26, 1972, abandoned.

This application Aug. 24, 1973, Ser. No. 391,406

Int. Cl.² H02P 9/04

U.S. Cl. 290—40 R

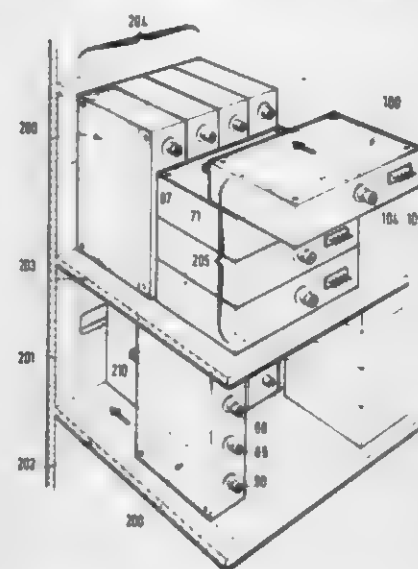
43 Claims

1. An electric power generating system having a steam turbine, a steam generator, and an electric generator rotated by said turbine and adapted to be connected to an electric load, said system comprising:

a. means for digitally computing and processing, having a

- central processing unit and a memory interconnected with said central processing unit;
- b. means for converting input signals to digital data, said input converting means connected to said digital computing means;
- c. means for converting digital data to output signals, said digital to output converting means connected to said digital computing means;
- d-1. means for sensing the value of predetermined turbine operating parameters and for generating input signals representative of said parameters, said sensing means being connected to said input converting means;
- d-2. means for supplying load demand input signals to said input converting means;
- e. means for controlling the steam flow to said turbine;
- f. means for connecting said output signal converting means to said steam flow control means;
- g. said digital computer means comprising speed control means for automatic startup and synchronization of said generating system, and characterized in that it is programmed to per-

vided on a corresponding separate plane support with each row conductor or column conductor being wired together with the half switching points which are connected directly to it, the supports being assembled in two stacks, one constituted by the supports which contain the row conductors, the other



constituted by supports which contain the column conductors, the two stacks being disposed perpendicularly to each other and placed with their edge surface against each other, the supports of the two stacks including, at their points of contact connections which provide electrical connections between corresponding pairs of half switching points.

4,227,095

DEVIATION DRIVER CIRCUIT

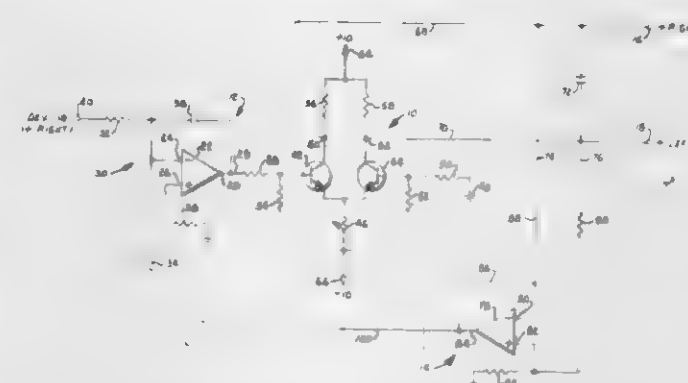
Ralph E. Bazil, Olathe, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Jun. 30, 1978, Ser. No. 921,078

Int. Cl.² G06G 7/12; H03K 1/14

U.S. Cl. 307—229

10 Claims



1. A deviation driver circuit for producing a difference voltage having a magnitude related to the voltage of a DC deviation signal which is generated by an external source, said deviation driver circuit comprising:

a first differential amplifier producing said difference voltage in response to an input signal, said difference voltage having a magnitude related to the voltage of said input signal; and

a feedback loop coupled with said first differential amplifier, said feedback loop being comprised of means for producing a feedback signal having a voltage level related to the magnitude of said difference voltage and multiple input integrating means for summing said feedback signal with said deviation signal to provide a summation signal having a current level related to the algebraic sum of the voltage of said deviation signal and for integrating said summation signal to provide said input signal, wherein said means for producing a feedback signal being further comprised of a second differential amplifier operable to produce a feedback signal having a voltage level related to the magni-

4,227,094

SWITCHING MATRIX FOR WIDE BAND ELECTRIC TRANSMISSION SIGNALS

Pierre Semur, Bondoufle, and Marcel Basset, Villaine, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jul. 9, 1979, Ser. No. 53,670

Claims priority, application France, Jul. 12, 1978, 78 20845

Int. Cl.² H01H 25/00; H06Q 1/16

U.S. Cl. 307—113

3 Claims

1. A switching matrix for wide band electric transmission signals, said matrix comprising inlet/outlets, two sets of conductors which lead to the inlet/outlets, one of the sets forming the columns while the other set forming the rows of the matrix, controlled switching points disposed at the intersections of the conductors and constant current sources arranged to control the switching points wherein the switching points are symmetrical structure being constituted by two half switching points and wherein each row and each column of the matrix is pro-

tude of said difference voltage, said second differential amplifier having a first and a second input and a single output, said second differential amplifier being coupled with said first differential amplifier so that said difference voltage is provided to the first and second inputs of said differential amplifier.

4,227,096

MICROWAVE INTEGRATED CIRCUIT FOR JOSEPHSON VOLTAGE STANDARDS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Louis B. Holdeman, Boyds; Jaan Toots, Gaithersburg, both of Md., and Chu-Cheng Chang, Kowloon Tong, Hong Kong

Filed Aug. 31, 1978, Ser. No. 938,298

Int. Cl.² G01R 23/06

U.S. Cl. 307—233 R

6 Claims



1. A Josephson junction type voltage standard comprising: first and second electrical resonators tuned to resonate at a selected, like, frequency;

a Josephson junction connected electrically between said resonators;

coupling means for coupling a signal of said selected frequency to at least one of said resonators;

a D.C. series circuit comprising a low-pass filter, a variable potential D.C. junction bias source, and said resonators for applying a selectable bias to said Josephson junction; and

means coupled to said series circuit for detecting the current-voltage characteristic of said Josephson junction, whereby a precise voltage related to said frequency may be determined.

4,227,097

LOGIC D FLIP-FLOP STRUCTURE

Christian Piguet, Neuchatel, Switzerland, assignor to Centre Electronique Horloger, S.A., Breguet, Switzerland

Filed Jul. 7, 1978, Ser. No. 922,843

Claims priority, application Switzerland, Jul. 8, 1977, 8473/77

Int. Cl.² H03K 3/286, 3/353, 19/08, 19/20

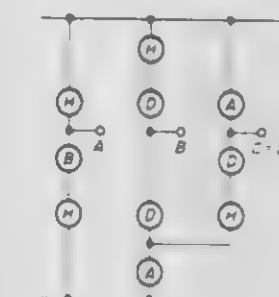
U.S. Cl. 307—279

11 Claims

1. A logic bistable D flip-flop structure capable of being realized in integrated circuit technology with complementary MOS transistors, comprising at least three logic gates each of which comprises a first group of transistors of a first conduction type and a second group of transistors of a second conduction type, these two groups of transistors being connected in series across the terminals of a voltage supply source and their common connection point forming the output node of the gate, the conduction paths of the transistors of each group being connected in series and/or in parallel with each other so that the conduction state of these transistors defines the potential at the output node of the gate, which represents the inner variable provided by this gate and may take values substantially equal

to those at the two terminals of the voltage supply source, the terminal connected to the first group of transistors having a potential 1 and the terminal connected to the second group of transistors the potential 0, each transistor being controlled by an inner variable or by an external control variable such as D or H, where H is a clock signal, the said structure having a dynamic behavior at least for H=1 and comprising the following logic gates respectively indicated by the inner variable they provide, said gates being formed by transistors indicated for each group and designated by their respective control variables, the series connection of these transistors being indicated by "series":

Gate A:



first group: H

second group: B series H

Gate B:

first group: H series D

second group: D series A

Gate C:

first group: A

second group: D series H series A,

the transistor controlled by A in the second groups of gates B and C being preferably common to these gates and the output variable of the circuit being in the inverted form Q and being constituted by the variable C.

4,227,098

SOLID STATE RELAY

Dale M. Brown; Marvin Garfinkel, both of Schenectady, N.Y., and John A. Laurent, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,675

Int. Cl.² H03K 3/42, 17/60

U.S. Cl. 307—311

9 Claims



1. A solid state relay comprising

a pair of input terminals,

a light-emitting diode connecting to said input terminals for generating radiation in response to current applied to said input terminals,

an array of photodiodes series connected between a pair of array electrodes and optically coupled to said light-emitting diode for developing a control voltage across said array electrodes in response to radiation from said light-emitting diode,

a field effect transistor including a pair of current carrying electrodes, a gate electrode and a substrate electrode, one of said array electrodes connected to said gate electrode and the other of said array electrodes connected to said substrate electrode whereby the impedance between said current carrying electrodes has one value in the absence

of, and another greatly different value in the presence of said control voltage between said gate electrode and said substrate electrode.

means for providing a large resistive impedance between said gate electrode and said substrate electrode, a pair of output terminals, each connected to a respective one of said current carrying electrodes.

4,227,099

CIRCUIT ARRANGEMENT COMPRISING A HIGH-VOLTAGE POWER TRANSISTOR

Henk Houkes, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

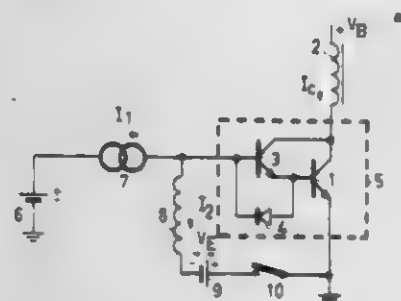
Filed Sep. 12, 1978, Ser. No. 941,564

Claims priority, application Netherlands, Oct. 10, 1977, 7711083

Int. Cl.² H03K 3/26, 17/60

U.S. Cl. 307—315

9 Claims



1. A circuit arrangement comprising a high-voltage power transistor, drive means for supplying a pulse-shaped switching signal to the base electrode thereof, a voltage supply source and a load impedance connected to the collector electrode of the high-voltage power transistor and to the voltage supply source, the collector current of the high-voltage power transistor, driven to the saturation state, supplied by the voltage supply source, being interruptible under the influence of the pulse-shaped switching signal applied thereto, and the drive means comprising an additional transistor, the emitter electrode of which is connected to the base electrode of the high-voltage power transistor and the collector electrode of the additional transistor is connected to the collector electrode of the high-voltage power transistor, wherein the drive means further comprises two current paths, namely a first current path comprising a switched-mode current source coupled to the base electrode of the additional transistor for making and maintaining the high-voltage power transistor conductive, and a second current path which comprises an inductance, a substantially constant-voltage source and a switch and which is included between the emitter and the base electrode of the high-voltage power transistor for blocking this transistor, the switched current flowing during operation while the switch is cut off and not flowing while the switch is conducting.

4,227,100

DUAL OUTPUT FORCE MOTOR

Frederick D. Ezekiel, Lexington, and Alf L. Carroll, Jr., Cohasset, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 801,692, May 31, 1977, abandoned.

This application Feb. 26, 1979, Ser. No. 15,280

Int. Cl.² H02K 33/00

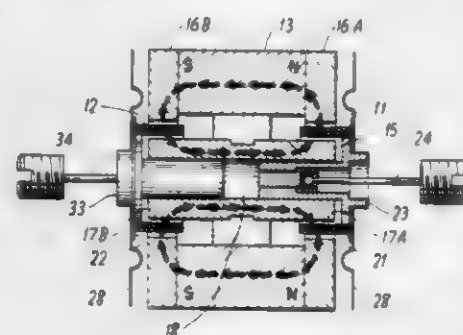
U.S. Cl. 310—13

3 Claims

1. An electrical force motor comprising: an elongate tubular structure of magnetic material; an elongate cylindrical structure of magnetic material positioned within said tubular structure and spaced therefrom; pole piece means attached to opposite ends of said structures forming coaxial circular air gaps of equal diameter and width at the respective ends; one of said structures including permanent magnet means

establishing a single magnetic flux path which serially passes through both said tubular and cylindrical structures and across each air gap at the respective ends of said structures;

first and second movable coils of equal diameter positioned within said air gaps respectively and adapted to be actuated by independent electrical signals;



said permanent magnet means being formed of a material exhibiting high coercive forces that are sufficient to substantially minimize the effect on the output force of one coil that is produced by an electrical signal applied to the other of said coils, whereby said coils may develop corresponding non-interactive output forces.

4,227,101

STEPPER MOTOR AND ADAPTOR RING

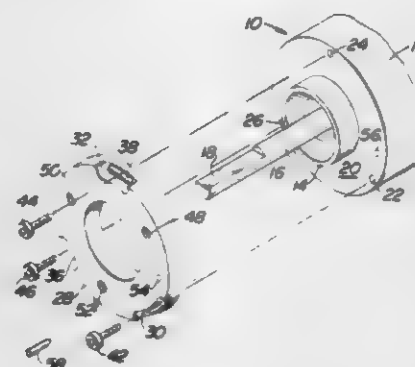
Vahé H. Malakian, and Howard F. Hendricks, both of Lansdale, Pa., assignors to Transcoil, Inc., Worcester, Pa.

Filed Jun. 5, 1978, Ser. No. 912,634

Int. Cl.² H02K 37/00

U.S. Cl. 310—49 R

7 Claims



1. Apparatus comprising:

- a stepper motor including a housing, said motor having a shaft extending through an opening in said housing, said shaft having a flat on an exposed portion thereof,
- an adapter ring coaxial with said housing opening and through which the motor shaft extends, means coupling said ring to one end of said housing in a manner so that ring has limited rotation relative to said housing, said ring having a plurality of mounting holes for selective coupling of said ring and housing to a support, and said ring having a hole to facilitate permanent securement of the ring to the housing to prevent said relative rotation whereby said ring may be secured to said housing upon adjustment of the mounting holes to a detented position to said flat on said shaft.

4,227,102

ELECTRICAL MACHINE WITH CRYOGENIC COOLING

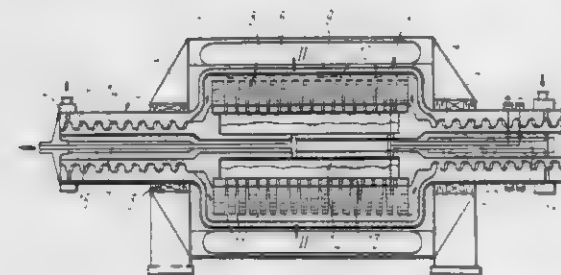
Lev M. Rozenfeld, ulitsa Pravdy, 7a, kv. 30; Jury S. Popov, ulitsa Bariernaya, 16, kv. 14, and Anatoly G. Korolkov, ulitsa Ivanova, 5, kv. 71, all of Novosibirsk, U.S.S.R.

Filed May 10, 1978, Ser. No. 904,430

Int. Cl.² H02K 9/00

U.S. Cl. 310—52

7 Claims



1. An electrical machine with cryogenic cooling, comprising:

- a sealed housing;
- a stator winding secured in said sealed housing;
- a hollow rotor arranged inside said sealed housing;
- a shaft of said hollow rotor;
- a superconducting exciting winding secured in said hollow rotor on said shaft of said hollow rotor;
- busbars connected to said superconducting exciting winding;
- an axial channel for the supply of liquid coolant to said superconducting exciting winding, provided at one end of said shaft and extending along the axis of said shaft;
- an additional axial channel for the removal of gaseous coolant, provided at the opposite end of said shaft and extending along the axis of said shaft;
- other channels for the removal of gaseous coolant, provided at both ends of said shaft and in communication with the inner cavity of said rotor, and adapted to be connected to gas collectors;
- at least two chambers provided on said shaft of said rotor and extending over the entire length of said superconducting exciting winding, parallel with and extending along the axis of said shaft, and communicating with said axial channel for the supply of liquid coolant and with said additional axial channel for the removal of gaseous coolant;
- radial channels provided within said exciting winding, and said radial channels arranged to provide communication between said chambers and said cavity of the rotor; and
- longitudinal channels adapted to remove the gaseous coolant, provided at the outer peripheral surface of said superconducting exciting winding along the entire length thereof, whereby said coolant is continuously separated in the course of its movement toward said sealed housing of said rotor and the temperature of said superconducting exciting winding is substantially more stabilized.

4,227,104

ELECTRIC MOTOR DRIVE UNIT

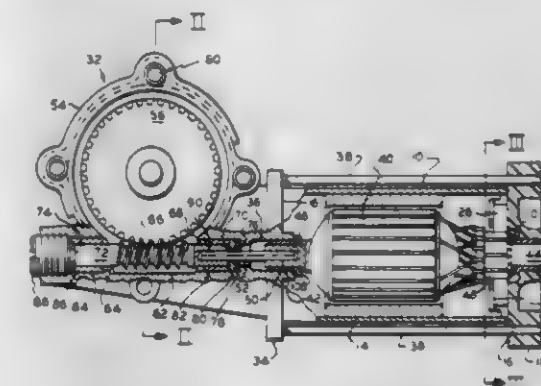
Lyle J. Hamman, Eaton Rapids, Mich., assignor to Eaton Stamping, Eaton Rapids, Mich.

Filed Mar. 13, 1978, Ser. No. 885,863

Int. Cl.² H02K 7/10

U.S. Cl. 310—75 R

5 Claims



1. An electric motor drive unit for driving a worm wheel comprising, in combination, an electric motor casing having first and second ends, an end cap mounted on said casing first end, a worm wheel housing mounted upon said casing second end having worm wheel support means defined thereon, armature bearing means mounted in said end cap and housing, an armature mounted in said casing rotatably mounted upon said bearings having an axis of rotation, a worm shaft rotatably mounted in said worm wheel housing coaxial with said armature axis, radial and thrust bearings mounted upon said housing separately of said armature bearing means supporting said worm shaft, and an elongated self-aligning drive member interposed between said armature and worm shaft producing a positive drive connection between said motor armature and said worm shaft.

4,227,103

APPARATUS FOR INSULATING AN INTERNAL MOTOR CONNECTION

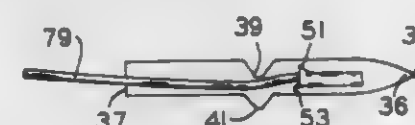
Calvin Humes, Jr., Sycamore, Ill.; Sammy L. Miller, Jurong Town, Singapore, and Alan L. Kindig, Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Filed Feb. 21, 1978, Ser. No. 879,395

Int. Cl.² H02K 11/00

U.S. Cl. 310—71

1 Claim



1. In a stator assembly for use in a dynamo-electric machine

4,227,105

ANNULAR MAGNET ASSEMBLY

Shokichi Kumakura, 5-3, Funabori 2 chome, Edogawa-ku, Tokyo, Japan

Continuation of Ser. No. 808,218, Jun. 20, 1977, abandoned.

This application Jun. 4, 1979, Ser. No. 45,503

Claims priority, application Japan, Jun. 21, 1976, 51-80400; Jun. 21, 1976, 51-80404; Nov. 15, 1976, 51-152887

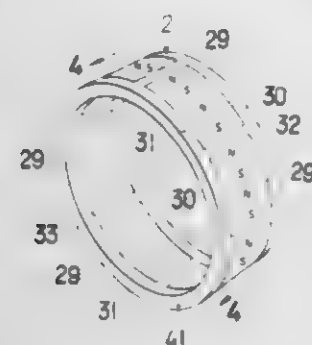
Int. Cl.² H02K 21/22

U.S. Cl. 310—153

7 Claims

1. An annular magnet assembly adapted to be mounted on an annular or cylindrical surface of a dynamoelectric machine for producing a magnetic field therein, comprising a plurality of arcuate permanent magnets disposed in an end-to-end abutment to form an annular array, each of the permanent magnets having a first and a second major surface, the first surface

being in engagement with the annular or cylindrical surface of the machine, both ends of each permanent magnet being cut to form a recess in the second major surface at the respective abutment of the magnets, said recess being disposed on opposite sides of the respective abutment of the magnets and extending axially across the axial width of said magnets, and a frame



member of a non-magnetic material for rigidly connecting the magnets together, the frame member including a pair of annular portions which tightly engage the opposite sides of the annular array and ledge portions disposed in said recesses and extending axially across the width of said magnets to connect the pair of annular portions together and radially retain said magnets in said frame member.

4,227,106

HIGH VOLTAGE INDUCTION MOTOR WITHOUT LADDER INSULATION BETWEEN MOTOR WINDINGS AND METHOD OF CONSTRUCTION THEREFOR

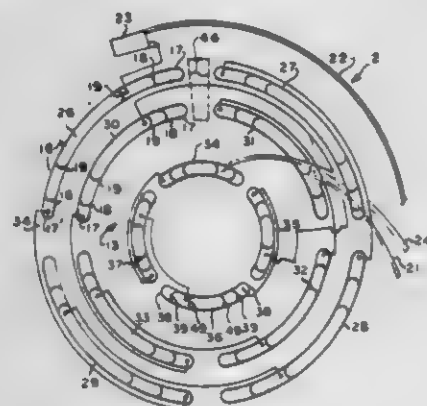
Raymond Druss, deceased, late of Florissant, Mo. (by Marian A. Druss, executrix), and Glenn Hoffmeister, Crestwood, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 4, 1976, Ser. No. 664,060

Int. Cl.³ H02K 3/00

U.S. Cl. 310—184

7 Claims



1. A permanent split capacitor induction motor having an input voltage at and above 440 volts, comprising:

a rotor; and

a stator assembly, said stator assembly including a core of magnetic material, said core being constructed from a plurality of individual laminations, said laminations having a central opening in them, and a plurality of receptacles extending radially outwardly from said central opening, the receptacles defining winding receiving, closed bottom slots and the central opening defining a rotor receiving bore, insulation means along at least the closed bottom portion of said slots, windings in said slots, said windings including a main winding and an auxiliary winding, said main winding comprising a first winding part and a second winding part, each of said first and said second main winding parts comprising a plurality of wire coil sets constructed from a number of individual wire turns, said wire turns being constructed from magnet wire, said magnet wire including an insulation film about an electrical conductor, said first and said second main winding parts being connected in series to one another, said auxiliary

winding being connected in parallel with said first main winding part, said auxiliary winding being positioned in said slots adjacent the coil sets of the main winding part with which it is electrically connected, said auxiliary winding and said first main winding part being placed adjacent one another in said slots so that at least some wire turns of said main and said auxiliary windings are continuous with one another along the insulation coating of the magnet wire from which said windings are constructed, said auxiliary winding being separated from said second main winding part by said first main winding part.

4,227,107

DIRECT CURRENT MOTOR WITH DOUBLE LAYER ARMATURE WINDINGS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo; Manabu Shiraki, 4451-171, Shimotsuruma, Yamato-shi, Kanagawa-ken, and Kazuhito Egami, 2-44-1, Chuo, Nakano-ku, Tokyo, all of Japan

Filed Jul. 31, 1978, Ser. No. 929,565

Claims priority, application Japan, Dec. 5, 1977, 52/145179

Int. Cl.³ H02K 3/00, 23/26

U.S. Cl. 310—198

2 Claims



1. An improved direct current motor having an armature and armature windings for intersecting a magnetic path of a field magnet, said armature windings superposed on each other in double layers, wherein the improvement comprises:

a field magnet having 2 mn poles arranged peripherally at equal angular spacings and alternately magnetized to N and S polarities wherein m is a positive integer equal to or greater than 1 and n is a positive integer, equal to or greater than 2;

a magnetic material for closing the magnetic path of said field magnet;

a first series of m(2n-1) armature windings mounted on said armature so that said windings are juxtaposed side-by-side at equal pitches, each said winding having conductor portions for generating torque which are angularly spaced from each other a distance equal to the angular width of each said field magnet pole;

a second series of m(2n-1) armature windings mounted on said armature so that said windings of the second series are juxtaposed side-by-side at equal pitches, each said winding of the second series having conductor portions for generating torque which are angularly spaced from each other a distance equal to the angular width of each said field magnet pole, and

the first series of m(2n-1) armature windings and the second series of m(2n-1) armature windings being interconnected and superposed on each other and having a phase shift with respect to each other equal to 1/(2n-1) of the angular width of each said field magnet pole.

4,227,108

GLASS COMPOUND LAYER FOR MECHANICAL AND THERMAL PROTECTION OF A LAMINATED IRON CORE ROTARY ELECTROMACHINE

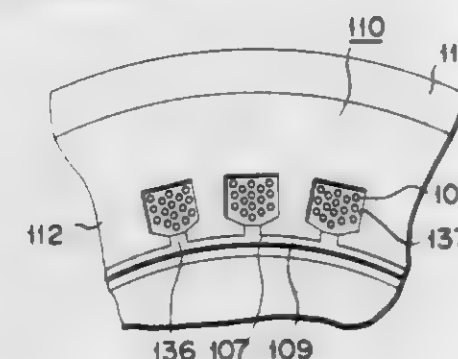
Teruo Washizu, Yokohama, and Eizo Goto, Chigasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 24, 1978, Ser. No. 899,459

Int. Cl.³ H02K 3/48

U.S. Cl. 310—214

5 Claims



1. A laminated iron core for rotary electromachines comprises a plurality of laminar metallic plates laid on each other, a glass layer disposed between each pair of the contiguous metallic plates to bond one to another, and a glass-compound layer means consisting essentially of glass and aggregates bonded in said glass and formed on end faces of the laminar metallic plates, for providing thermal resistance as well as mechanical impact protection.

4,227,109

SYSTEM FOR PROVIDING UNIFORM AXIAL EXPANSION OF A STATOR CORE

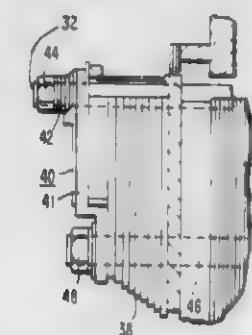
Arthur Mulach, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1978, Ser. No. 965,013

Int. Cl.³ H02K 1/12

U.S. Cl. 310—258

3 Claims



1. A dynamoelectric machine comprising:

a cylindrical stator core constituting a plurality of axially adjacent laminations, each of said laminations having radially inner and outer peripheries, said inner periphery having slots which extend a predetermined distance in the radially outer direction terminating on an intermediate portion;

a frame disposed about said stator core;

a plurality of bore rings circumferentially disposed about said stator core to provide circumferential structural support therefor;

means for structurally connecting said bore rings and said frame to provide an axially rigid link therebetween;

a plurality of axially extending threaded building bolts rigidly connected to said bore rings and in axially sliding relationship with said laminations along said outer peripheries;

a plurality of axially extending threaded through-bolts disposed through said laminations' intermediate portions in axially sliding relationship therewith;

a plurality of through-nuts in torqued threaded engagement

with said through-bolts, at least one through-nut being disposed on each axial end of each through bolt, said torqued threaded engagement providing a first predetermined axial displacement of said lamination's intermediate portions at a selected temperature;

a plurality of building nuts in torqued threaded engagement with said building bolts, at least one building nut being disposed on each axial end of each building bolt; and

biasing means disposed axially between said building nuts and said laminations for enabling a second predetermined axial displacement of said lamination's outer peripheries at the selected temperature, said second axial displacement being at least as great as said first axial displacement.

4,227,110

TRANSDUCER CONTROL SYSTEM

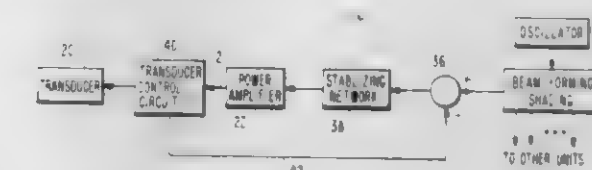
George R. Douglas, Arnold, and John H. Thompson, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 10, 1976, Ser. No. 740,683

Int. Cl.³ H01L 41/10

U.S. Cl. 310—316

10 Claims



1. A transducer control circuit for connection between a transducer and a transducer power source, said transducer having input leads, and an active acoustic radiation member subject to varying loading and a reaction member, comprising:

(a) means connected to said transducer input leads for obtaining signals indicative of the input current and voltage of said transducer; and

(b) circuit means responsive to said current and voltage indicative signals for generating a control signal proportional to the velocity of said radiation member.

4,227,111

FLEXIBLE PIEZOELECTRIC COMPOSITE TRANSDUCERS

Leslie E. Cross; Robert E. Newnham, both of State College, Pa., and Doyle P. Skinner, Pittsford, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1979, Ser. No. 24,827

Int. Cl.³ H01L 41/18, 41/22

U.S. Cl. 310—358

14 Claims

1. A transducer comprising in combination a piezoelectric ceramic formed with a multiplicity of three-dimensionally interconnected cavities; an elastomer within said cavities; and an electrode attached to a pair of opposite surfaces of said ceramic.

4,227,112

GRADATED TARGET FOR X-RAY TUBES

John S. Waugh, Wellesley, Mass., and Martin Braun, San Jose, Calif., assignors to The Machlett Laboratories, Inc., Stamford, Conn.

Filed Nov. 20, 1978, Ser. No. 962,443

Int. Cl.³ H01J 35/10

U.S. Cl. 313—41

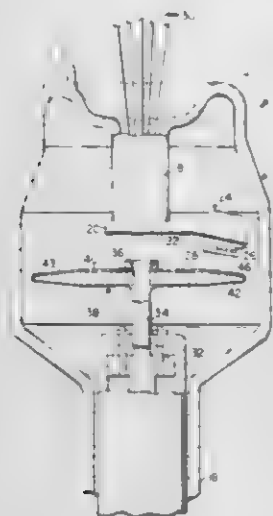
14 Claims

9. An X-ray tube including:

a tubular envelope;

an X-ray target rotatably mounted in the envelope and having an annular focal track surface overlying a composite layer comprising a first material and a controlled gradient

of a second material disposed therein, one of the materials being a heat absorbent material comprised of one or more elemental components having respective atomic numbers no greater than thirty and the other of the materials being an X-ray emissive material comprised of one or more



elemental components having respective atomic numbers greater than the atomic numbers of the elemental components of said one of the materials; and means for beaming electrons into the composite layer and generating X-rays which pass in a beam out of the tube.

4,227,113

INCANDESCENT ELECTRIC LAMP WITH PARTIAL LIGHT TRANSMITTING COATING

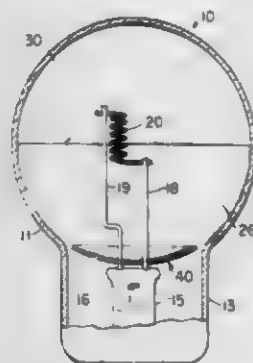
Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Oct. 18, 1978, Ser. No. 952,266

Int. Cl. H01K 1/14, 1/26, 1/32

U.S. Cl. 313-112

15 Claims



1. An incandescent electric lamp comprising: an envelope, a filament within said envelope, means for supplying electrical current to said filament to cause it to incandesce and produce energy in both the infrared and visible ranges, the major portion of said envelope being curved and having an optical image axis for said filament, a first coating on a first part of said major portion of said envelope for reflecting the major portion of both the infrared and the visible energy from the filament incident thereon, a second coating on a substantial portion of the remaining part of said major portion of said envelope for reflecting the major portion of the infrared energy from the filament incident thereon and for transmitting therethrough the major portion of the visible energy from the filament incident thereon, said filament being mounted off of said optical image axis, said coatings on said major portion of the envelope both reflecting incident infrared energy back toward said filament, and said first and second coatings being located

with respect to said major portion of said envelope so that the infrared energy which is incident thereon and which is reflected is reflected back to impinge upon said filament after two reflections from said coatings.

4,227,114

CATHODOLUMINESCENT GAS DISCHARGE IMAGE DISPLAY PANEL

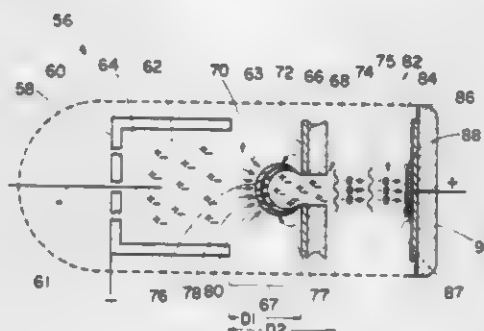
Michael C. De Jule, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 16, 1977, Ser. No. 769,127

Int. Cl. H01J 63/04, 61/06

U.S. Cl. 313-217

6 Claims



1. A very low pressure, high-voltage cathodoluminescent gas discharge image display panel having an ordered array of display elements, the panel including envelope means containing an ionizable gas at a predetermined very low pressure, said envelope means including a transparent faceplate on the inner surface of which are disposed cathodoluminescent target elements associated with said display elements, the panel comprising:

electron source means for producing at a given time at least one high-density electron beam, comprising: rearwardly disposed cathode means for receiving a relatively low applied voltage; grid means located forwardly of said cathode means and including at least an electron-transmissive anode means spaced a predetermined distance from said cathode means for receiving a relatively intermediate applied voltage, and further including a performance enhancement electrode located between said anode means and said cathode means, and co-extensive without interruption across the width and height of said panel, said performance enhancement electrode receiving through a single input terminal a voltage intermediate said relatively intermediate voltage on said anode means and said relatively low voltage on said cathode means, said performance enhancement electrode serving to stabilize said plasma sac in said constriction by conducting electrons from a surrounding area to said sac, thus discouraging the formation of a sac in non-energized neighboring constrictions, said performance enhancement electrode also serving to prime the contained gas in the region of said constriction and thereby permitting a plasma sac to be established in said constriction by application of a lower voltage on said anode means than otherwise possible;

constriction-forming means between said anode means and said cathode means defining a plurality of constrictions each respectively associated with one or more of said display elements, with said intermediate voltage, said predetermined distance, said very low gas pressure, and the individual width of said constrictions having values effective to support a gas discharge plasma between said cathode means and said anode means, and to cause a plasma sac to form in said plasma on the cathode side of said constriction-forming means about the constriction associated with any selected anode means, said plasma sac by its nature generating and gathering electrons from said

cathode means and accelerating them into said constriction to form a concentrated electron beam therein; an ultor electrode disposed contiguous to said cathodoluminescent target elements on said faceplate for receiving a predetermined relatively high ultor voltage, said ultor electrode being separated by a predetermined spacing from said grid means to define an acceleration section therebetween, said spacing being so small that at said predetermined very low pressure and at said ultor voltage, no gas discharge plasma can possibly occur in the acceleration section, said ultor voltage establishing a high-voltage gradient in the plasma-free acceleration section which is effective to straight-line accelerate said beam of electrons formed in said constriction in a substantially collision-free path directly into high-energy bombardment of said cathodoluminescent target elements disposed on said faceplate; and

light-stopping means for blocking from view light produced by said plasma, whereby the useful visible light produced by said panel is solely that produced by said high-energy electron bombardment of said cathodoluminescent target elements on said faceplate.

4,227,115

COLOR DISPLAY TUBE WITH SHADOW MASK HAVING ELONGATED APERTURES THEREIN

Leonardus A. M. Elshof, and Herman F. Van Heek, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 813,838, Jul. 8, 1977, Pat. No. 4,159,177.

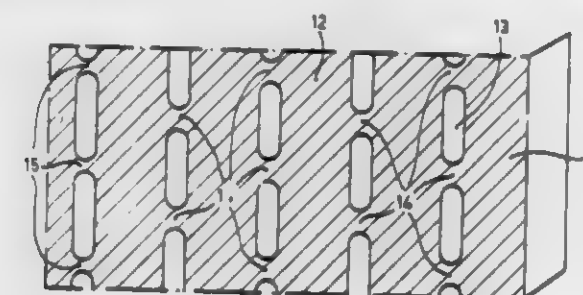
This application Feb. 21, 1979, Ser. No. 12,982

Claims priority, application Netherlands, Aug. 4, 1976, 760864J

Int. Cl. H01J 29/07

U.S. Cl. 313-403

3 Claims



1. In a color display tube having a shadow mask, the improvement wherein said mask comprises a metal sheet having a plurality of substantially parallel rows of elongated apertures, each pair of adjacent apertures in said rows being separated by a bridge, said bridges in each row having substantially the same width and said bridges in at least the three outermost rows nearest each of two opposite edges of the shadow mask being at least 20% wider than said bridges of a row at the center of said mask, said bridges in said outermost rows having a width between 120 μ m and 150 μ m.

4,227,116

ZERO-BIAS GRIDDED GUN

George V. Miram, Atherton, and Gerhard B. Kuehne, Santa Clara, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 24, 1978, Ser. No. 927,087

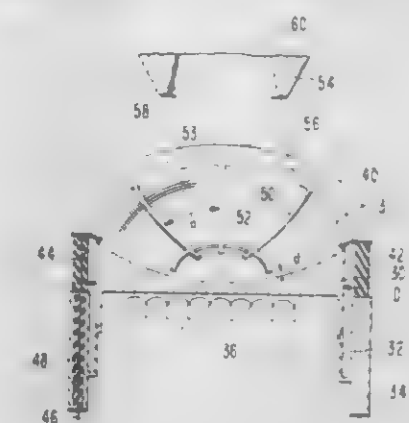
Int. Cl. H01J 29/46

U.S. Cl. 313-447

10 Claims

6. In an electron gun for producing a linear beam of electrons, and having a thermionic cathode with a generally concave electron-emissive surface and maintained at a given cathode potential, the improvement comprising an electron-permeable control grid for modulating the current of said electron beam with control grid potential no more positive than said cathode potential, said grid comprising a plurality of conduc-

tive elements having a predetermined average first spacing therebetween, said control grid covering said cathode and being spaced therefrom by a predetermined second spacing, said first spacing being at least five times said second spacing.



whereby the trajectories of electrons comprising said beam are not seriously disturbed, and useful electron current can be drawn from said emissive surface when said grid is at said cathode potential.

4,227,117

PICTURE DISPLAY DEVICE

Masanori Watanabe, Katano; Kinzo Nonomura, Hirakata, and Yoshinobu Takesako, Neyagawa, all of Japan, assignors to Matsuhita Electric Industrial Co., Ltd., Japan

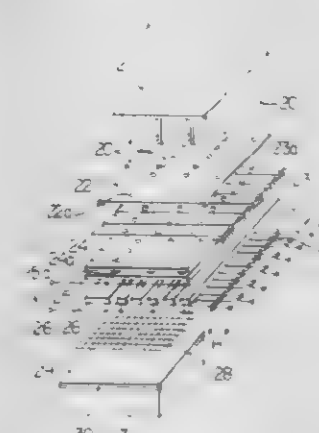
Filed Apr. 24, 1979, Ser. No. 32,752

Claims priority, application Japan, Apr. 28, 1978, 53/51808; Apr. 28, 1978, 53/51810; Aug. 30, 1978, 53/106788

Int. Cl. H01J 29/50, 29/70

U.S. Cl. 315-13 R

12 Claims



1. A picture display device comprising: a plurality of linear thermionic cathodes; partition means for separating said linear thermionic cathodes from one another; electron beam extraction electrode means having a plurality of apertures formed therethrough in correspondence with said thermionic cathodes in the axial direction thereof for producing electron beams; electron beam control electrode means comprising a plurality of electrodes including a plurality of apertures each thereof being coaxial with corresponding one of said apertures formed in said electron beam extraction electrode means, said control electrodes being arranged substantially perpendicular to said thermionic cathodes; deflection electrode means for deflecting said electron beams; acceleration electrode means for accelerating said electron beams; and display means coated with a fluorescent substance which emits light when hit by said electron beams and including a display screen, at least said display screen being housed in a transparent glass container.

4,227,118

CIRCUITS FOR OPERATING ELECTRIC DISCHARGE LAMPS

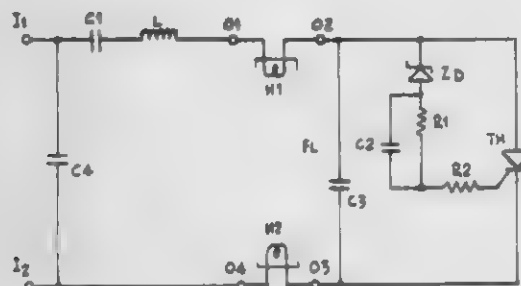
John Britton, West Kingsdown, England, assignor to The General Electric Company Limited, London, England
Filed Nov. 17, 1978, Ser. No. 961,651

Claims priority, application United Kingdom, Dec. 1, 1977, 50083/77

Int. Cl.² H05B 41/04, 41/18

U.S. Cl. 315—101

9 Claims



1. An electric discharge lamp circuit arrangement comprising: a pair of terminals for connection to an alternating current supply; a ballast impedance comprising a capacitance connected between one of said terminals and one of a pair of main discharge electrodes of the lamp; a connection between the other of said terminals and the other of said main electrodes; heating means for at least one of said main electrodes; a controllable switching device connected with the lamp to provide a current path between said pair of terminals comprising, in series, said capacitance, said heating means and said switching device; and a voltage breakdown device connected between the control electrode and a main electrode of said switching device; the voltage breakdown device being a reverse breakdown rectifying device so as to provide a unidirectional current conducting path whereby said capacitance charges from said supply while said switching device is open in a sense such as to bias said breakdown device towards breakdown.

4,227,119

CONTROLLED LIGHTING DEVICE

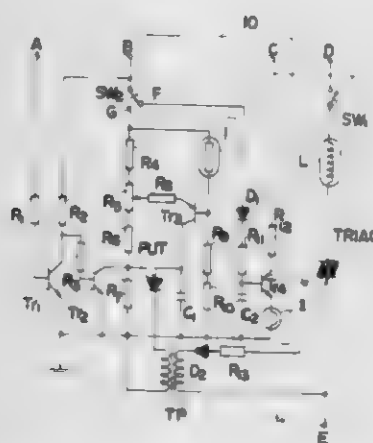
Tomoji Murata, Toyokawa; Kenji Shibasaki, Aichi, and Hideo Ito, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 740,218, Nov. 9, 1976, abandoned. This application Dec. 19, 1978, Ser. No. 970,957

Int. Cl.³ H05B 37/02; G03B 27/72

U.S. Cl. 315—151

4 Claims



1. A controlled lighting device including an illumination lamp, means for supplying an input voltage to the illumination lamp, a light receiving element for detecting an amount of light from the illumination lamp and a control circuit for controlling the input voltage for activating the illumination lamp commensurate with a variation in the amount of light emitted by the

illumination lamp and detected by the light receiving element, the controlled lighting device comprising:

a pre-illumination means for illuminating the light receiving element;

a further control circuit for supplying an input voltage for activating said pre-illumination means at least during the time required for the illumination lamp once activated to reach a predetermined level of illuminance, said further control circuit including: means for supplying an input voltage to said further control circuit; switching means for disconnecting the input voltage from said further control circuit when the input voltage for the illumination lamp is to be supplied; a condenser for storing an electrical charge until said switching means disconnects the input voltage from said further control circuit; means for discharging said condenser so as to supply another input voltage for said further control circuit at least during the time required for the illumination lamp to reach the desired level of illuminance;

during the period of operation of said pre-illumination means, said pre-illumination means preventing the input of an excessive voltage from being supplied to the illumination lamp during the time required for the illumination lamp to reach the predetermined level of illuminance.

4,227,120

STRESS-RELIEVED AMORPHOUS METAL TOROID-SHAPED MAGNETIC CORE

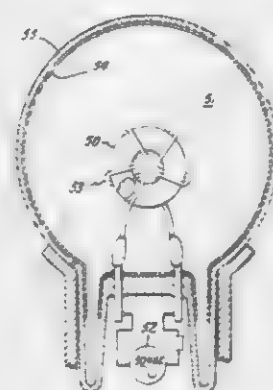
Fred E. Luborsky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,886

Int. Cl.³ H05B 41/16, 41/24

U.S. Cl. 315—248

9 Claims



1. An improved magnetic core comprising a stress-relieved toroid formed from a spirally wound unannealed ribbon of magnetic amorphous metal alloy of the formula: $(\text{Fe}_x\text{Ni}_{100-x})_{100-y}\text{R}_y$ wherein R is at least one glass former, x is an integer in the range of from 20 to 35 and y is an integer in the range of from 15 to 25, said toroid being stress-annealed as wound.

4. In an electrodeless fluorescent lamp means comprising a core; a mass of gaseous medium linking said core and adapted to sustain an electric discharge due to an electric field induced therein by said core and to emit radiation at a first wavelength when sustaining said discharge; a substantially spherical, evacuable light transmissive envelope containing said mass; a luminous phosphor on the surface of said envelope, said phosphor being adapted to emit visible light when excited by said first wavelength radiation; and means for energizing said core with a radio frequency magnetic field whereby said electric field is induced in said mass, the improvement in which said core comprises a stress-relieved toroid formed from a spirally wound unannealed ribbon of magnetic amorphous metal alloy of the formula: $(\text{Fe}_x\text{Ni}_{100-x})_{100-y}\text{R}_y$ wherein R is at least one glass former, x is an integer in the range of from 20 to 35 and y is an integer in the range of from 15 to 25, said toroid being stress-annealed as wound.

4,227,121

WAVEFORM OBSERVING METHOD AND APPARATUS
Yasumori Ishijima, Kodaira, and Rikichi Murooka, Komae, both of Japan, assignors to Tektronix, Inc., Beaverton, Oreg.

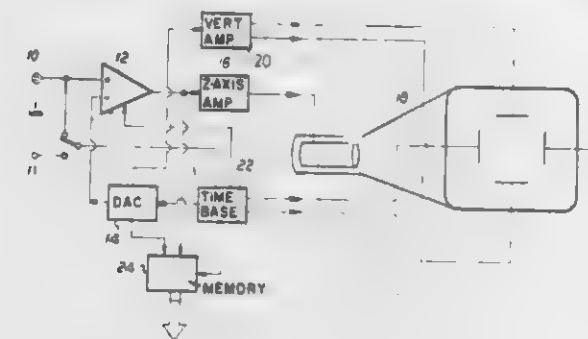
Filed Jul. 7, 1978, Ser. No. 922,927

Claims priority, application Japan, Jul. 7, 1977, 52/81352

Int. Cl.² H01J 29/70, 29/72

U.S. Cl. 315—367

9 Claims



1. A waveform display apparatus, comprising:
a timebase circuit for generating successive ramp signals;
a digital-to-analog converter responsive to said ramp signals for producing an analog output signal, the amplitude of which is proportional to the number of ramp signals received;
a comparator for generating display control signals in response to a comparison of said analog output signal and said display waveform; and
means for displaying said waveform wherein said ramp signals provide deflection along a first display axis, said analog output provides deflection along a second display axis substantially perpendicular to said first display axis, and said display control signals control writing of the display.

4,227,122

CONVERGENCE DEVICE FOR PROJECTION TYPE COLOR TELEVISION SYSTEM

Seiji Fujisawa, Ikoma, and Toshitaka Yukumoto, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

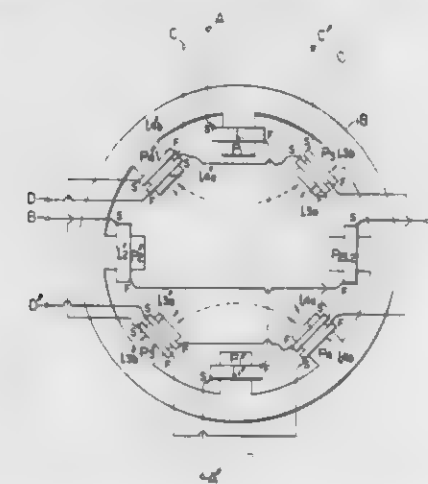
Filed Jun. 19, 1978, Ser. No. 916,529

Claims priority, application Japan, Jun. 23, 1977, 52-83233[U]

Int. Cl.² H01J 29/70, 29/76

U.S. Cl. 315—368

3 Claims



1. A convergence device for the projection type color television system wherein a plurality of primary-color images are projected by respectively different cathode-ray tubes to obtain a color picture on a screen comprising:
a substantially ring-shaped convergence core mounted around a neck of each of said cathode-ray tubes, eight pole pieces provided on the inner surface of said core, said eight pole pieces being aligned in pairs along a first axis passing through the center of said ring-shaped core, a

second axis perpendicularly intersecting with said first axis, and third and fourth axes each dividing into two halves the angle between said first and second axes, said third and fourth axes intersecting perpendicularly with each other,

a first two pairs of windings respectively disposed around a first two pairs of pole pieces (P_1-P_1' , P_2-P_2') the axes thereof intersecting perpendicularly, said two pairs of windings being adapted upon excitation to produce magnetic fields respectively in directions along the opposing pole pieces (P_1-P_1') and along the other opposing pole pieces (P_2-P_2'), and

a second two pairs of windings respectively disposed around the remaining second two pairs of pole pieces (P_3-P_3' , P_4-P_4'), said second two pairs of windings being adapted when excited with a current flowing therethrough to produce magnetic fields respectively in the directions along said first two pairs of pole pieces (P_1-P_1' , P_2-P_2') the axes thereof intersecting perpendicularly, the strength of said two sets of magnetic fields produced by said first two pairs of windings and said second two pairs of windings being controllable independently from each other along the two orthogonal directions, one of said two sets of magnetic fields being controlled by a static convergence control signal, and the other controlled by a dynamic convergence control signal.

4,227,123

SWITCHING AMPLIFIER FOR DRIVING A LOAD THROUGH AN ALTERNATING-CURRENT PATH WITH A CONSTANT-AMPLITUDE, VARYING DUTY CYCLE SIGNAL

Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,556

Int. Cl.² H01J 29/70, 29/76

U.S. Cl. 315—397

13 Claims



1. An amplifier for driving a switch arrangement through an alternating-current path comprising:

first and second controllable switch means, each including a controlled main current conducting path and a control electrode, said main current conducting paths being coupled at a juncture to form a first series arrangement and controlled for conduction during alternate on and off intervals to develop a switching voltage at said juncture inclusive of an AC voltage component of substantially square-wave form and a DC component;

a source of energizing potential;

inductance means serially coupled with said first series arrangement across said source of energizing potential for establishing the magnitude of said switching voltage during said on interval at less than the full potential of said source of energizing potential;

alternating-current coupling means coupled to said juncture and to said switch arrangement for applying to said switch arrangement said AC voltage component to the substantial exclusion of said DC component, the polarity of said AC voltage component during said on interval such as to make said switch arrangement conductive during said on interval; and

means coupled to said inductance means for controlling the

voltage across said inductance means during said off interval to vary the voltage across said inductance means during said on interval in a manner which precludes a decrease in the voltage applied to said switch arrangement during said on interval as the duration of said on interval increases relative to the duration of said off interval.

4,227,124

HIGH DUTY-CYCLE SWEEP GENERATOR FOR A CATHODE RAY OSCILLOSCOPE

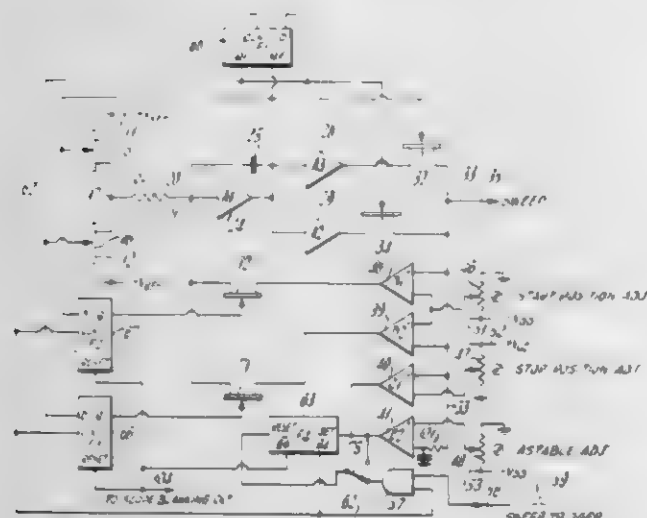
Lloyd E. Elliott, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,146

Int. Cl.² H01J 29/70, 29/76

U.S. Cl. 315-408

8 Claims



1. High duty-cycle sweep generator for a cathode ray oscilloscope, comprising an integrator including a timing capacitor and means for charging and discharging said timing capacitor at the same rate to provide linear ramp signals, means for amplifying said linear ramp signals, and means for reversing the polarity of alternate ones of said amplified linear ramp signals without delay to provide a sweep signal which eliminates any recovery time for said timing capacitor.

4,227,125

REGULATED DEFLECTION SYSTEM

Walter Bohringer, Schlieren, Switzerland, assignor to RCA Corporation, New York, N.Y.

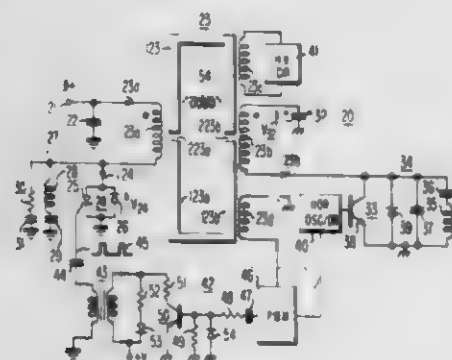
Filed Mar. 7, 1979, Ser. No. 18,361

Claims priority, application United Kingdom, Sep. 26, 1978, 38145/78

Int. Cl.² H01J 29/70

U.S. Cl. 315-411

7 Claims



1. A regulated deflection system, comprising: a source of unregulated energy; a regulator switch;

a first winding of a transformer coupled to said source of unregulated energy and to said regulator switch; a deflection winding; a trace switch coupled to said deflection winding for developing scanning current in said deflection winding; a second winding of said transformer coupled to at least one of said deflection winding and said trace switch for transferring energy from said source; control means coupled to said regulator switch and responsive to an energy level of said deflection system for varying the conduction phase angle of said regulator switch for regulating the amount of energy transferred from said source; a regulator commutating inductance coupled to said regulator switch; and a commutating and tuning capacitance coupled to said regulator commutating inductance and to an associated winding of said transformer, said capacitance tuning with said associated winding of said transformer for transferring energy from said source in a resonant manner, said capacitance forming a resonant regulator commutating circuit for controlling the duration of conduction of said regulator switch.

4,227,126

SHAFT ROTATION INTERLOCK SYSTEM FOR FILM EDITING TABLES AND THE LIKE

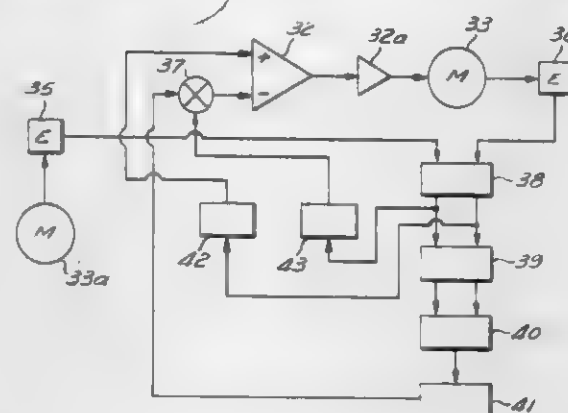
Henry M. Denecke, 629 W. Knoll Dr., Los Angeles, Calif. 90069

Filed Feb. 21, 1978, Ser. No. 879,280

Int. Cl.³ H02P 5/46; G05D 13/62; G03B 31/04

U.S. Cl. 318-55

23 Claims



1. A servo system for interlocking the rotation of a slave motor to that of a master motor, comprising:

- first and second means for deriving first and second digital signal pulse trains, each having a characteristic respectively representative of the speed of rotation of said master motor and said slave motor, and each having encoded directional information representative of the direction of rotation of said master and slave motor, respectively;
- quadrature decoder means for decoding said directional information to feed first and second pairs of up-down pulse lines;
- first order feedback loop means for controlling the speed and direction of rotation of said slave motor comprising first and second means each receiving pulses from one of said up down pulse line pairs for converting each of said first and second digital pulse trains, respectively, to first and second analog voltage signals, and differential amplifier means for combining said analog signals as inputs to produce an error signal output proportional to the sum or difference between said analog signals in the absence of any other signal for controlling the speed and direction of rotation of said slave motor; and
- second order feedback loop means connected for controlling the speed and direction of rotation of said slave motor connected in parallel to said first order feedback loop and comprising means including a digital mixer tak-

ing its input from said quadrature decoder means and up-down counter means for continuously digitally determining the sum or difference between said characteristic of said first and second digital signal pulse trains and for continuously producing a third digital signal representative of said sum or difference, means for converting said third digital signal to a third analog signal or magnitude proportional thereto, and of polarity determined by said digital mixer, and means for mixing said third analog signal with one of said first or second analog signals to produce a combined input to said differential amplifier means.

4,227,127

MOTOR SPEED CONTROL CIRCUIT HAVING IMPROVED STARTING CHARACTERISTICS

Hirokazu Fukaya, and Jun Kishi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 962,256

Claims priority, application Japan, Nov. 21, 1977, 52/138896

Int. Cl.² H02P 1/00, 5/16

U.S. Cl. 318-317

12 Claims



1. A combination comprising a first series connection of a motor and a first current source, a second series connection of a resistor and a second current source, said first and second series connections being arranged in parallel, a detector detecting a difference between a first voltage drop across said motor and a second voltage drop across said resistor and generating an output when a difference is detected between said first and second voltage drops, means for changing the currents supplied to said motor and said resistor by said first and second current sources, respectively, in response to said output of said detector, a comparator comprising the difference in said first and second voltage drops with a predetermined voltage value and generating an output when the difference between said first and second voltage drops is larger than said predetermined voltage, and means for enhancing the amount of said currents derived from said first and second current sources in response to said output of said comparator.

4,227,128

SPEED RESPONSIVE MOTOR CONTROL CIRCUIT

James B. Cockroft, Wauwatosa, and Peter J. Ernster, Glendale, both of Wis., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jun. 16, 1978, Ser. No. 915,977

Int. Cl.³ H02P 5/08

U.S. Cl. 318-325

20 Claims

1. A motor control circuit comprising: mechanical speed sensing means coupled to the motor being controlled for sensing the speed of rotation and for selectively connecting and interrupting a first circuit path as the speed of the motor varies with respect to an adjustable predetermined speed; power switching means having a control input and adapted to be connected in series with a power source connection and the motor to be controlled for selectively connecting the motor to the power source connections; manually controlled speed adjustment means connected to

said mechanical speed sensing means for selecting said adjustable predetermined speed; and phase control means having a first variable impedance element, said phase control means being responsive to said manually controlled speed adjustment means and con-

nected to said control input of said power switching means, said manually controlled speed adjustment means adjusting the impedance of said first variable impedance element, said first circuit path provided by said mechanical speed sensing means being connected in series with said phase control means.

4,227,129

APPARATUS FOR DETECTING THE SPEED OF AN ELECTRIC MOTOR

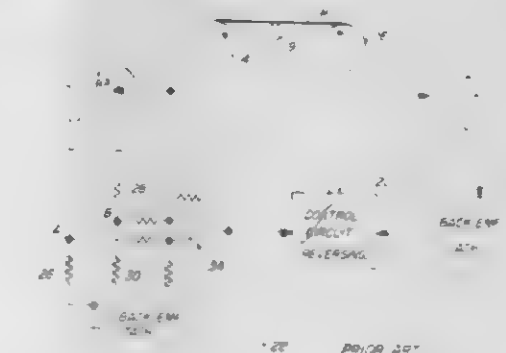
Steven W. Brooks, Pomona, Calif., assignor to Spin Physics, Inc., San Diego, Calif.

Filed Jan. 29, 1979, Ser. No. 7,288

Int. Cl.³ H02P 5/16

U.S. Cl. 318-331

12 Claims



1. In cooperation with an electric motor adapted for operation at various speeds, apparatus for determining the instantaneous speed of said motor comprising:

- a bridge circuit comprising the armature resistance of said motor and first resistance means in series with said armature resistance to form a first bridge leg, and second and third resistance means in series with each other to form a second bridge leg in parallel with said first bridge leg;
- differencing means responsive to the potential at the interconnection of said armature and said first resistance means and at the interconnection of said second and third resistance means to produce a motor speed representative signal corresponding to the difference between said potentials, said first, second, and third resistance means being of such resistance values as to cause said motor speed representative signal to be zero when said motor has zero speed;
- means for producing a reference signal corresponding to

the output that said differencing means should have when said motor has a reference speed,
 (d) means responsive when said motor has said reference speed for comparing said reference signal with the motor speed representative signal to produce a signal dependent on the difference between such signals, and
 (e) means cooperative with said comparing means for modifying the resistance value of at least one of the resistance means of said bridge circuit in accordance with the signal output of said comprising means.

4,227,130

TORQUE COMPENSATION SYSTEM

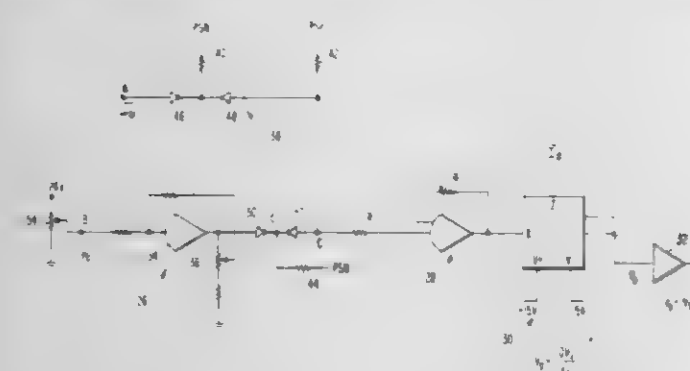
Mohammed Safiuddin, Amherst, N.Y., and Henry A. Dickerson, Bristol, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1978, Ser. No. 870,898

Int. Cl.³ H02P 7/28

U.S. Cl. 318—338

5 Claims



1. A torque compensation system for a speed regulated d.c. motor using field weakening for speed control in a production mill comprising:

- (a) linear switching means having first and second inputs and an output, the first input receiving a signal ω_m which is a function of the speed of the motor, the second input receiving a signal $\omega_m = 1$ which is a function of the rated speed of the motor, the output of said switching means being the greater of its inputs; and
- (b) divider means having a dividend input for receiving a current signal I_a from the motor armature which is a function of the rated armature current, and a divisor input connected to the output of said linear switching means and having circuit means for generating a quotient output which is a torque compensation signal V_f equal to I_a for all $\omega_m \leq 1$ and equal to

$$\frac{I_a}{\omega_m}$$

for all $\omega_m > 1$, and

- (c) means for regulating the speed of the d.c. motor in response to a mill speed reference and in response to the signal V_f so as to provide motor torque compensation for control of tension in material being operated upon in the production mill.

4,227,131

AUTOMATIC RETURN FOR PATIENT CHAIR

Paul G. Thiene, Laguna, Calif., assignor to Surgical Mechanical Research, St. Louis, Mo.

Filed Mar. 19, 1979, Ser. No. 22,203

Int. Cl.³ H02P 3/08

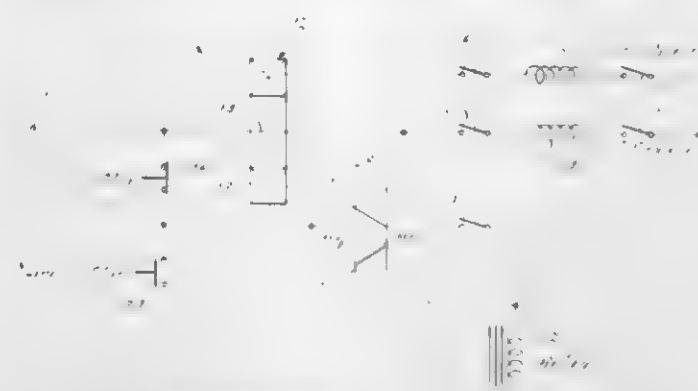
U.S. Cl. 318—467

10 Claims

1. A control circuit for a chair having at least one motor for electrically adjusting the position of the chair, which is adapted to automatically return the chair to a predefined position, comprising:

switching circuit means for energizing said motor in re-

sponse to a start signal, first switch means for deenergizing said motor when the chair has attained said predefined position, and current sensing means for sensing the load current to said motor and producing a first signal in accor-



dance therewith, said switching circuit means being additionally responsive to said first signal for maintaining said motor energized until said motor is deenergized by said first switch means.

4,227,132

THYRISTOR INTERLOCK AND INDICATOR LIGHT CIRCUIT FOR ELECTRIC VEHICLES

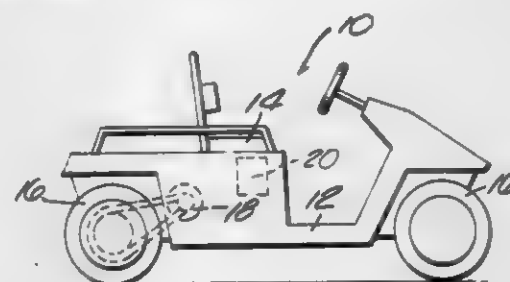
David T. Cavil, Menomonee Falls, Wis., and Gerald N. McAuliffe, Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 876,222, Feb. 9, 1978, abandoned. This application Jan. 15, 1979, Ser. No. 3,250

Int. Cl.² B60L 3/00

U.S. Cl. 318—549

14 Claims



1. A thyristor interlock circuit for energizing a DC motor, which circuit comprises a solenoid switch including an actuating coil, means for connecting said solenoid switch and the motor in series relation between the terminals of a DC source, a thyristor having an anode, a cathode, and a gate, means for connecting said anode to one terminal of the DC source, a first switch, means for connecting said first switch to the one terminal of the DC source and to said gate, a second switch including two terminals, and sub-circuit means for connecting said cathode and said actuating coil in series relation to the other terminal of the DC source, and for connecting one terminal of said second switch to said first switch and said gate, and for connecting the other terminal of said second switch to said cathode and said actuating coil, said sub-circuit means forcing an operator to sequentially close said first switch in order to gate said thyristor and close said second switch in order to energize said actuating coil and the DC motor.

4,227,133

STABILIZED SERVO MOTOR POSITIONING APPARATUS

Tomoatsu Imamura, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

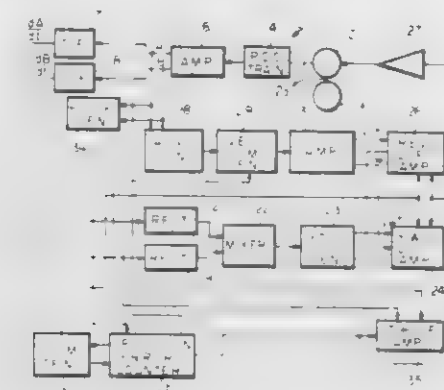
Filed Jan. 2, 1979, Ser. No. 63

Claims priority, application Japan, Jan. 10, 1978, 53-1241

Int. Cl.² G05B 5/01

U.S. Cl. 318—616

4 Claims



1. A servo positioning apparatus including a servo motor having a rotary shaft, transducer means for producing first and second periodic signals in response to rotation of the shaft, the first and second signals being substantially 90° out of phase with each other, first and second differentiating means for differentiating the first and second signals, first and second full wave rectifying means for rectifying the differentiated first and second signals and summing means for summing the differentiated and rectified first and second signals to produce a velocity signal having a magnitude corresponding to a rotational velocity of the shaft, characterized by comprising:

- position command means for generating a position signal having a magnitude corresponding to a difference between a present shaft position and a command shaft position;
- reference means for sampling peaks of the first and second signals and producing a reference signal having a magnitude corresponding thereto;
- velocity command means for reducing the magnitude of the reference signal in accordance with the magnitude of the position signal to produce a velocity command signal; and
- comparator means for comparing the velocity signal with the velocity command signal and producing a motor drive signal corresponding to a difference therebetween, the motor being energized for shaft rotation by the drive signal.

4,227,134

SPINDLE ROTATOR

Lambert Haner, Rocky River, Ohio, assignor to Acme-Cleveland Corporation, Highland Heights, Ohio

Filed Jan. 5, 1979, Ser. No. 1,151

Int. Cl.² G05B 19/40

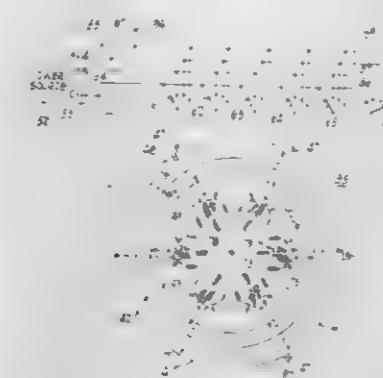
U.S. Cl. 318—685

20 Claims

1. A machine tool having a motor connectable to rotate a spindle,

- wherein the improvement comprises, spindle rotational means including, first and second torque couplings with said first coupling connected between said motor and said spindle to rotate the spindle directly in proportion to the motor speed and said second coupling connected to said spindle to establish a different speed condition of said spindle, means to partially engage each of said torque couplings for torque transmission therethrough, and means to control the relative average torque transmission of said first and second torque couplings to rotate said

spindle from said motor at a speed slower than rotation of said spindle from said motor by actuation of said first



torque coupling without actuation of said second torque coupling.

4,227,135

STEP MOTOR DRIVING CIRCUIT

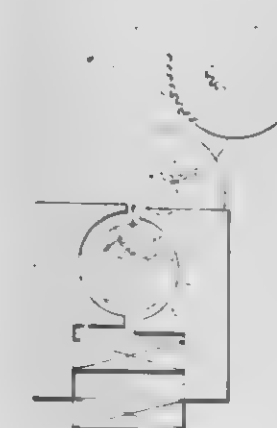
Yoshikazu Kawamura, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 1, 1978, Ser. No. 882,516

Int. Cl.² G05B 19/40

U.S. Cl. 318—696

10 Claims



1. In a step motor including a magnetic permeable stator means, a drive coil coupled to said stator means for magnetically orienting said stator means into different magnetic orientations in response to a drive signal being applied thereto, and a permanent magnet rotor means adapted to be rotated in response to changes in the magnetic orientation of the stator means, the improvement comprising drive circuit means coupled to said drive coil, said drive circuit means being disposable into a first mode for alternately applying to said drive coil a first drive pulse and a second drive pulse, each said first and second drive pulse having a duration sufficient to rotate said rotor means by a single step for effecting a periodic rotation of said rotor in a first rotational direction, said drive circuit means being disposable into a second mode for applying to said drive coil a third drive pulse having a duration that is insufficient to effect rotation of said rotor means in a first direction by a single step in response to said third pulse being applied to said drive coil, and a fourth drive pulse immediately after said third drive pulse, said fourth drive pulse having a duration larger than the duration of said third pulse to effect a periodic rotation of said rotor in the other rotational direction, in response to said fourth drive pulse being applied to said drive coil, and mode select means coupled to said drive means for selectively disposing said drive means into one of a first and second mode to thereby select the direction of rotation of said rotor.

10. In a step motor including a magnetic permeable stator means, a drive coil coupled to said stator means for magnetically orienting said stator means into different magnetic orien-

tations in response to a drive signal being applied thereto, and a permanent magnet rotor means adapted to be rotated in response to changes in the magnetic orientation of the stator means, the improvement comprising drive circuit means coupled to said drive coil, said drive circuit means being disposable into a first mode for alternately applying to said drive coil a first drive pulse and a second drive pulse, each said first and second drive pulse having a predetermined amplitude and a duration sufficient to rotate said rotor means by a single step for effecting a periodic rotation of said rotor in a first rotational direction, said drive circuit means being disposable into a second mode for applying to said drive coil a third drive pulse having said predetermined amplitude and a duration that is insufficient to effect rotation of said rotor in said first rotational direction in response to said third pulse being applied to said drive coil and a fourth drive pulse immediately after said third drive pulse, said fourth drive pulse having said predetermined amplitude and a sufficient duration to effect periodic rotation of said rotor in the other rotational direction, and mode select means coupled to said drive means for selectively disposing said drive means into one of a first and second mode to thereby select the duration of rotation of said rotor.

4,227,136

VARIABLE SPEED A.C. MOTOR

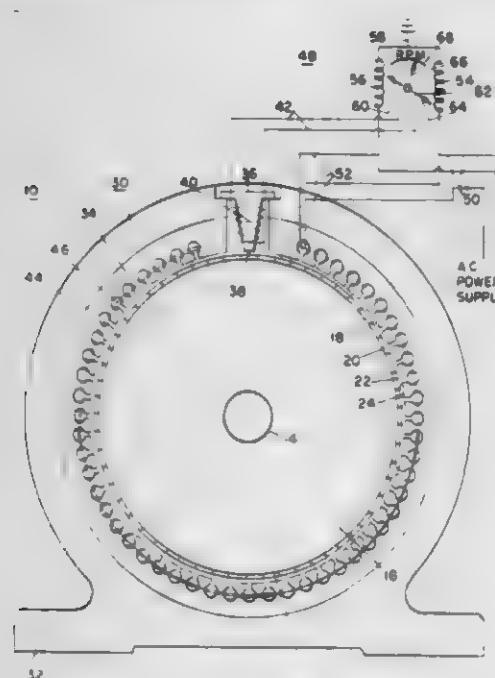
John F. Roedel, Jr., Bradenton, Fla., assignor to Precise Power Corporation, Bradenton, Fla.

Filed Jul. 17, 1978, Ser. No. 924,926

Int. Cl.² H02P 5/28

U.S. Cl. 318-701

8 Claims



1. In a controllably variable speed A.C. motor, in combination,

- (a) a rotor comprising a cylindrical body of soft magnetic material of high permeability with a peripheral layer of a magnetizable permanent magnetic material,
- (b) an excitation coil energizable with A.C. potential disposed about a relatively stationary magnetic pole member of soft magnetic material, located adjacent to the peripheral layer of magnetizable permanent magnetic material, whereby to magnetize the layer of permanent magnet material into a selected configuration of north and south magnetic poles during rotation of the rotor,
- (c) a stator comprising a plurality of poles of soft magnetic material of high permeability and windings on the poles energizable with A.C. potential whereby to produce a rotating magnetic field, the plurality of poles being operatively associated with the peripheral layer of permanent magnet material, so that the reaction of the rotating magnetic field with the configuration of north and south mag-

netic poles of the layer causes the rotor to rotate synchronously therewith in full running speed operation, and
(d) circuit means connectable to a source of A.C. potential for supplying A.C. potential to the windings on the stator and to the excitation coil, said circuit means including controllable phase shifting means in the portion of the circuit leading to the excitation coil, so that phase shifted, single phase A.C. potential can be supplied to the excitation coil to vary selectively the configuration of north and south magnetic poles induced in the layer of magnetizable permanent magnet material as the rotor moves with respect thereto, so that the speed of the rotor is correspondingly varied from the normal operating condition synchronous speed when no phase shifted A.C. is applied to the excitation coil.

4,227,137

DIGITAL TACH AND SLIP SIGNAL MOTOR CONTROL

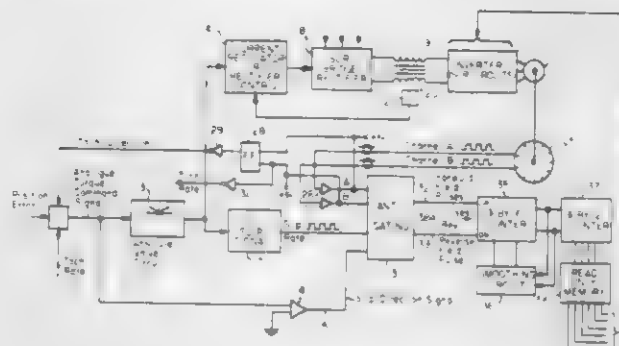
Peter W. Hartman, Rochester, N.Y., assignor to Hartman Metal Fabricators, Inc., Victor, N.Y.

Filed May 30, 1978, Ser. No. 910,601

Int. Cl.² H02P 5/40

U.S. Cl. 318-801

12 Claims



1. A digital control circuit for supplying gating signals to the inverter of a current controlling thyristor circuit for the stator winding of a three phase induction motor, comprising
 - a tachometer coupled to the rotor of said motor and operative to produce two sets of digital tach signals representing the direction of rotation and frequency of said rotor in revolutions per minute,
 - a command signal source producing digital slip signals representing the difference between the rotor frequency and the desired frequency of the stator winding of said motor, means for algebraically summing said tach and slip signals, and having a multi-bit binary output register the contents of which is cycled at least one per revolution of said rotor, and
 - decoder means interposed between said output register and said inverter and operative to convert the binary contents of said register into said gating signals for said inverter.

4,227,138

REVERSIBLE VARIABLE FREQUENCY OSCILLATOR FOR SMOOTH REVERSING OF AC MOTOR DRIVES

Paul M. Espelage, Ballston Lake, N.Y., and Loren H. Walker, Salem, Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 10, 1978, Ser. No. 895,136

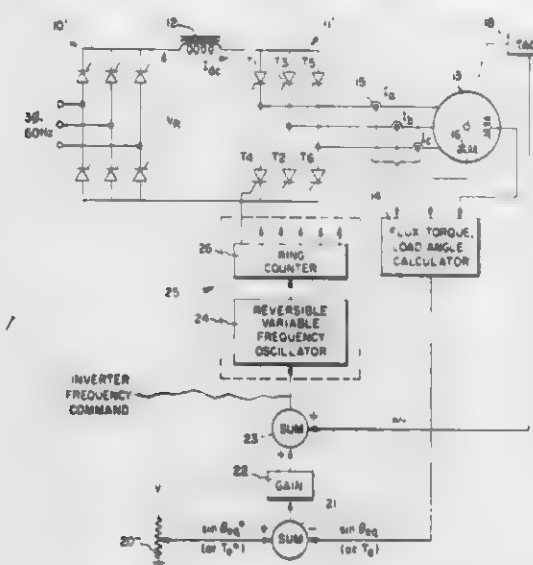
Int. Cl.² H02P 7/42

U.S. Cl. 318-802

11 Claims

1. In a static variable speed reversible ac motor drive including an inverter which supplies adjustable amplitude and adjustable frequency ac power to the motor and has an inverter frequency control circuit that is responsive to an inverter frequency command signal and generates gating pulses for the inverter main thyristors, the improvement wherein said inverter frequency control comprises:
 - a reversible variable frequency oscillator having as an input a frequency command signal varying in accordance with

the difference in magnitude between a reference value and a sensed machine parameter, said frequency command signal having a substantial ripple component and a dc component whose magnitude and polarity are indicative of the speed and direction of motor rotation;



said oscillator including an integrator and being operative to generate timing pulses and direction signals at a frequency dependent only upon the dc component of the input signal, and means responsive to said timing pulses and direction signals for generating gating pulses for the inverter main thyristors in the forward and reverse phase sequence.

4,227,139

MOTOR CONTROL ARRANGEMENT

Wilhelmus B. Rosink, and Cornelius P. J. Cox, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

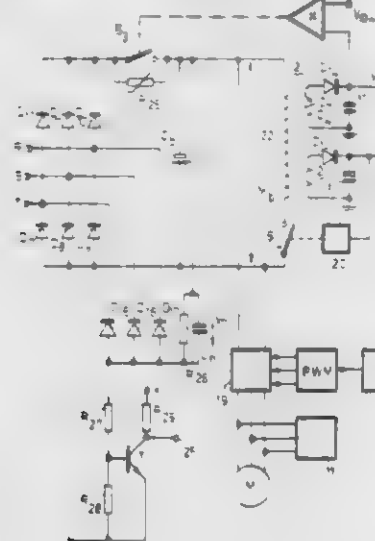
Filed May 12, 1978, Ser. No. 905,225

Claims priority, application Netherlands, Jun. 20, 1977, 7706751

Int. Cl.² H02P 5/40

U.S. Cl. 318-803

8 Claims



1. A motor control circuit for an a.c. motor energized from a source of direct voltage via power switches comprising, a direct voltage source including a rectifier for rectifying an a.c. supply voltage and a smoothing circuit, a frequency control circuit comprising a frequency reference signal input connected to an input of a first amplifier having means for limiting the output signal, means connecting an output of said first amplifier to an input of an integrator, an output of said integrator supplying a frequency control signal to a circuit which controls the power switches and further providing feedback to the input of the first amplifier, a negative current-feedback loop comprising first means for generating a motor current signal which is a measure of the current flowing in the motor

and a first comparator for comparing said motor current signal with a reference signal, means connecting an output of said first comparator to the input of the integrator so that the negative current-feedback loop is closed via the first comparator and the integrator when the motor current exceeds a predetermined value, a negative-voltage feedback loop comprising second means for generating a voltage signal which is a measure of the voltage across the direct voltage source and a second comparator for comparing said voltage signal with a reference signal, and means connecting an output of said second comparator to the integrator so that the negative voltage-feedback loop is closed via the second comparator and the integrator when the voltage of the direct voltage source exceeds a predetermined value.

4,227,140

BATTERY CHARGER

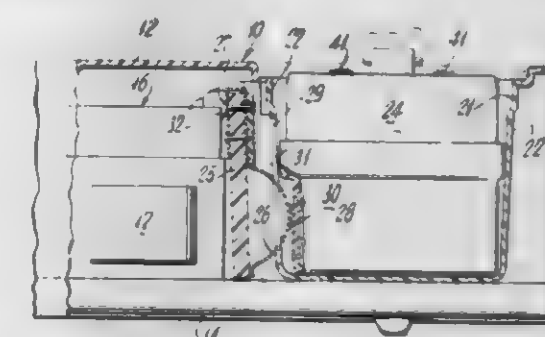
Paul C. Nardella, N. Easton; Joseph D. Feeney, Carver; Thomas A. Wrublewski, Braintree, and Anthony W. Gonsalves, Randolph, all of Mass., assignors to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Feb. 16, 1978, Ser. No. 878,494

Int. Cl.² H01M 10/46

U.S. Cl. 320-2

5 Claims



1. A battery charger comprising:
 - a housing having means therein for providing electrical energy suitable for recharging units capable of being electrically recharged,
 - said housing having at least one energy value indicating meter mounted on an outside surface thereof,
 - said meter adapted to indicate the recharged level of said unit,
 - said housing including two cavities therein each arranged to accommodate a unit to be recharged and defined by a bottom, two opposed side walls, and two opposed end walls;
 - two curved, resilient, electrical contact, leaf springs each having a pronounced arc projecting through one of said end walls into each cavity;
 - said recharging units having recesses in a side wall thereof aligned with said contact springs;
 - contact terminals disposed in said recesses of said unit inserted into each cavity and positioned to deflect said contact springs sufficiently to provide good electrical contact therebetween to deliver electrical energy to said unit whereby good electrical contact is provided between said contact springs and said terminals but without placing the entire weight of the units on the contact spring;
 - a switch projecting into each cavity activatable by insertion of the unit therein, said switch being separate from and free from direct contact with said electrical contacts but electrically connected to said energy providing means which, in turn, energizes said electrical contacts for recharging the unit upon activation of said switch;
 - and a pair of covers, one for placement over each of said cavities for protection thereof.

4,227,141

ELECTRIC BATTERY CHARGING APPARATUS
Bryan Cross, Bolton, England, assignor to Chloride Group Limited, London, England

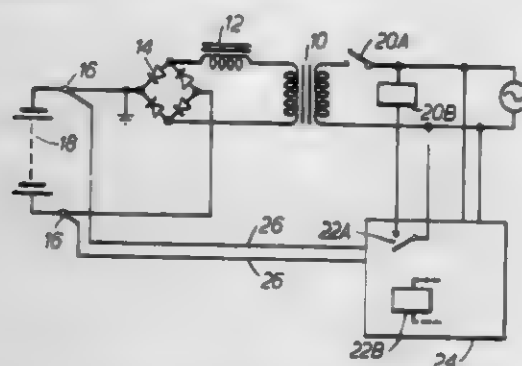
Filed May 31, 1978, Ser. No. 911,169

Claims priority, application United Kingdom, Sep. 13, 1977, 38134/77

Int. Cl.² H02J 7/04

U.S. Cl. 320—20

18 Claims



1. Means for terminating the charging of an electric storage battery, or a phase of such a charge, including: means for producing a battery signal dependent on battery voltage, a progressively increasing ramp signal, and a shiftable bias signal; signal combining means producing a combined signal comprising a combination of the battery signal, the ramp signal and the bias signal, which combined signal increases with increase of battery voltage, but decreases with increase of ramp signal, or increase of bias signal; and means for increasing the bias signal whenever the combined signal exceeds a higher predetermined value, to decrease the combined signal by a predetermined amount to a lower predetermined value, and means to terminate the charge, or a phase of the charge, when the combined signal falls below a value lower than the said lower predetermined value.

4,227,142

PULSED EXCITATION ALTERNATOR

Jacques H. Jarret, 11 rue des Chenes, Le Vesinet, Yvelines, and Jean M. B. Jarret, La Champanelle, Chemin du Clos Baron, Fourqueux, Yvelines, both of France

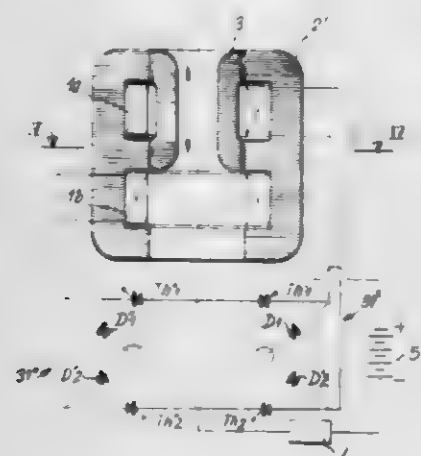
Continuation of Ser. No. 693,646, Jun. 7, 1976, abandoned. This application Sep. 15, 1978, Ser. No. 942,862

Claims priority, application France, Jun. 9, 1975, 75 17905

Int. Cl.³ H02K 35/00; H02P 9/00

U.S. Cl. 322—3

11 Claims



1. In an alternator having at least one coil surrounded by an iron magnetic circuit for picking up electrical power from the alternator and having two ends, the coil cooperating with a magnetic moving part of iron cyclically displaced between two positions to form a gap having a size dependent on instant position of the moving part, the improvement comprising:

a substantially constant voltage power supply source having a positive and a negative terminal; two controlled valves, said two ends of said at least one coil being respectively connected to said positive terminal and to said negative terminal of said substantially constant voltage power supply source through respective ones of said controlled valves; and monodirectional current connections between each of said two ends of said at least one coil and opposite terminal of the power supply source.

4,227,143

HIGH-VOLTAGE TRANSFORMER

Marius J. A. Elders, and Jan H. M. Hopmans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

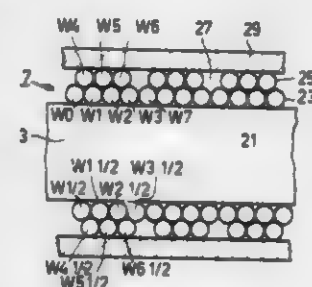
Filed Nov. 8, 1978, Ser. No. 958,767

Claims priority, application Netherlands, Nov. 29, 1977, 7713118

Int. Cl.² G05F 7/00

U.S. Cl. 323—48

8 Claims



1. A high voltage transformer, comprising a ferromagnetic core, at least one primary winding and one secondary winding disposed on said core with said secondary winding comprising a series of wire-wound coils, each of which is wound on the preceding coil and is separated therefrom by an insulating layer, every two successive coils being electrically connected by a diode with all diodes being connected in the same rectifying sense, and wherein each coil of the series of coils forming the secondary winding includes a number of series-connected sub-coils each of which comprises a first layer comprising a number of turns which contact each other over at least a part of their length and a second layer which comprises a smaller number of turns wound directly on the first layer, the first layers of every two successive sub-coils directly contacting each other whereas the second layers are separated from each other by a clearance space whose width approximately equals the thickness of the wire.

4,227,144

ERROR COMPENSATION OF SYNCHRO CONTROL TRANSMITTERS

Charles W. Lang, Wayne, and Thomas Beneventano, Washington Township, Burlington County, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jan. 16, 1979, Ser. No. 3,831

Int. Cl.³ H02K 24/00

U.S. Cl. 323—121

8 Claims

5. A compensated synchro transmitter comprising a synchro transmitter having a rotor winding and three Y-connected stator windings having outputs S1, S2 and S3 and first and second resistors across two selected pairs of said terminals, said resistors having values such that when placed across said selected pairs of said terminals such that they generate an

unbalanced second harmonic load error which has a phase and magnitude approximately opposite to the second harmonic



error in said synchro, thereby correcting said second harmonic error to improve the accuracy of said synchro.

4,227,145

APPARATUS FOR DETECTING FAULTS IN ELECTRIC CABLES

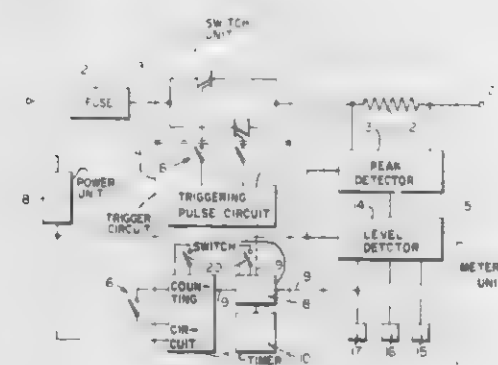
Zbigniew Bonikowski, Iver; Suhas Ghanashyamkulkarni, and Anthony A. Briant, both of London, all of England, assignors to BICC Limited, London, England

Filed Oct. 19, 1977, Ser. No. 825,227

Int. Cl.³ G01R 31/02; H02H 3/093

U.S. Cl. 324—51

15 Claims



1. For use in combination with an electric power distribution cable and the normal source of voltage supply to said cable, the cable being connected between said normal source of voltage supply and at least one load normally applied to said cable, apparatus for use in selectively detecting faults in said electric power cable, which apparatus comprises a solid state switch unit comprising two thyristors arranged in an inverse-parallel configuration and continuously conducting current up to a pre-set maximum and becoming non-conductive after conducting a current in excess of the pre-set maximum for a pre-set period, a metering unit connected to said solid state switch unit for indicating the size of a current flowing through said cable, said metering unit including means for measuring the current in the solid state switch unit, and a trigger circuit connected to said solid state switch unit and metering unit which includes a manually operated trigger switch so connection to said solid state switch unit that when the trigger switch is actuated the trigger circuit will render the switch unit conductive, period measuring means connected to said solid state switch unit maintaining said switch unit conductive for said pre-set period, said apparatus in use being connected in series between said cable and said normal source of voltage supply to the cable when said cable is on load, whereby the trigger circuit will maintain said switch unit electrically conductive for a pre-set period long enough to allow the metering unit to indicate the size of the current flowing through said cable and hence the existence or otherwise of a fault in said cable but not long enough for said current to damage the apparatus, the cable under test and the normal source of voltage supply to the cable.

4,227,146

CABLE TESTER FOR LOCATING SHORTS DISCONTINUITIES AND REVERSALS IN MULTI-CONDUCTOR CABLES

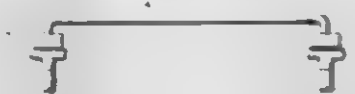
Stephen L. Hodge, 306 Thompson St., Richardson, Tex. 75080

Filed Oct. 24, 1978, Ser. No. 954,224

Int. Cl.² G01R 31/02

U.S. Cl. 324—51

10 Claims



1. A cable tester for a multi-conductor cable comprising a substantially constant-current power supply; connector means for connecting at least one end of said cable to said tester; circuit means for connecting all of the conductors of said cable in series with one another to form a circuit across said power supply; said circuit means including a plurality of "open" detector lines, one connected in parallel with each cable conductor, each of said "open" detector lines having a substantially higher resistance than the cable conductor with which it is connected in parallel, each of said "open" detector lines having therein a light source activatable upon the occurrence of an "open" in its associated cable conductor; said circuit means further including a plurality of "short" detector lines, one connected in series between each cable conductor and the next adjacent cable conductor each of said "short" detector lines having therein a light source activatable in the absence of a "short" in its associated cable conductor; and said "open" detector light sources and said "short" detector light sources being arranged in a display in a selected pattern with both of the light sources associated with a given cable conductor in predetermined spaced relationship to each other.

4,227,147

ELECTROMECHANICAL PARAMETRIC AMPLIFIER FOR MEASUREMENT OF ELECTRIC FIELDS

Gabriel L. Miller, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 16, 1978, Ser. No. 951,753

Int. Cl.² G01R 31/02

U.S. Cl. 324—72

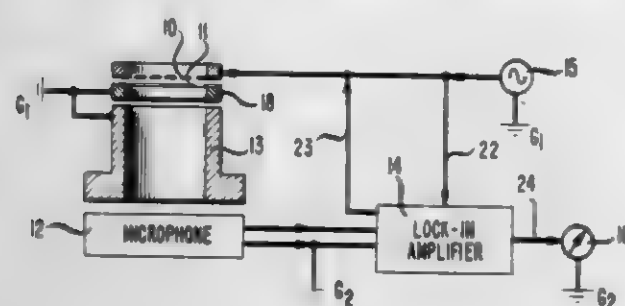
12 Claims

1. Apparatus for the measurement of an external electric field comprising

- (a) an electrically conducting partition, at least partially transparent to the external electric field;
- (b) a local oscillator electrically connected to the partition, for imposing an electrical drive signal on the partition at a drive frequency and for producing a phase reference signal;
- (c) an electrically conducting broad member whose edge is supported in a fixed position adjacent to the partition which said broad member is capacitively coupled to the partition and exposed to the external electric field

whereby the broad member is so situated as to experience a drive signal electrical force from the partition and an external electrical force;

(d) pickup means for sensing the amplitude of the motion of the broad member at the drive frequency, which amplitude is directly related to the external electric field; and



(e) an amplifier connected to the pickup means and the local oscillator for accepting the pickup means output signal and the phase reference signal and producing a measurement output signal related to the external electric field.

4,227,148

EXTERNAL MEANS FOR INCREASING THE SENSITIVITY OF A MOVING MAGNET TYPE OF METER

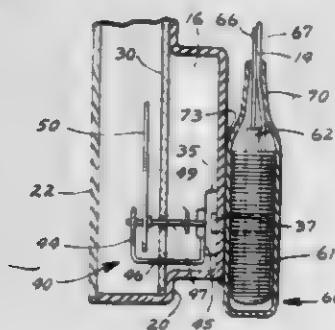
Leonard S. Smith, Eden Prairie, Minn., assignor to Century Mfg. Co., Minneapolis, Minn.

Filed Aug. 10, 1978, Ser. No. 932,562

Int. Cl.³ G01R 15/08, 1/38, 5/16

U.S. Cl. 324-115

4 Claims



1. External means influencing the basic movement of a DC ampere reading meter, having in combination a conventional DC ampere reading meter including a housing having mounted therein a moving magnet, a scale and a needle caused by said magnet to be moved to indicate a scale reading, a switch in series with said meter a current source in circuit with said series connected switch and meter, the improvement herein comprises a coil member, means mounting said coil member upon said housing externally thereof, said coil member including a soft iron core and a coil of appropriate windings about said core and connected across the series combination of said switch and meter, said current source being in circuit with said coil member and by-passing said meter with said switch in open position, the position of said coil member on said housing and the winding of said coil about said core being such that said current source energizes said coil member and creates a magnetic force field with magnetic coupling lines influencing said moving magnet to cause said needle to move such as to give a full scale reading to a current value which is less than the current value otherwise required for the basic movement of said meter with said switch in closed position the resistance of the coil being of such greater magnitude than the meter resistance that the current drawn by said coil causes no significant influence on the moving magnet with the switch in said closed position.

rent drawn by said coil causes no significant influence on the moving magnet with the switch in said closed position.

4,227,149

SENSING PROBE FOR DETERMINING LOCATION OF CONDUCTIVE FEATURES

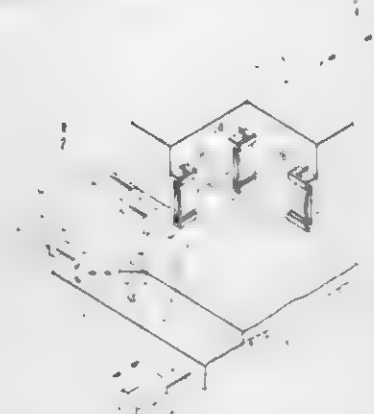
Louis H. Faure, Poughkeepsie, N.Y., and Philo B. Hodge, Roxbury, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1978, Ser. No. 910,253

Int. Cl.³ G01R 1/073, 31/02

U.S. Cl. 324-158 P

7 Claims



5. A sensing heads for determining the location of electrically conductive surface features on an insulating substrate comprising:

a mounting base,

a plurality of elongated closely packed flat flexible electrically conductive blade elements each having a major axis and supported on said mounting base, in generally parallel relationship one upon the other,

insulation means to electrically insulate said adjacent blade elements from each other, end portions on said blade elements that terminate in a plane generally perpendicular to the major axis of said blade elements for making contact with the conductive surface features on said insulating substrate,

means on said mounting base to hold said blade elements in a slightly bowed position, such that each successive element has a greater bow, said bowed position of said blade elements permitting retraction of individual blade elements without affecting adjacent unretracted blade elements to permit independent limited movement of the contact portions of said individual blade elements.

4,227,150

SYSTEM FOR INDICATING MEASURED VALUES

Gerhard Widi, Michelstadt, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG

Filed Jul. 6, 1978, Ser. No. 922,485

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730699

Int. Cl.³ G01P 3/36

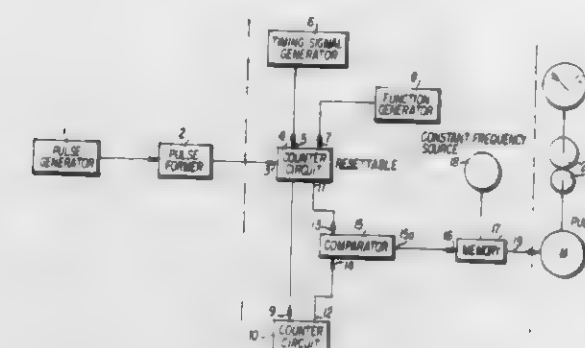
U.S. Cl. 324-175

11 Claims

1. A speed indicating system comprising: electric sensor means for generating electric pulses with a frequency proportional to the value of a measured speed;

first and second counter means connected with the sensor means and with each other for counting the number of said generated pulses in first and second equivalent periods of time, as determined by timer means for enabling the

counter means for said periods of time, the periods following one after each other; comparator means coupled to the output of both said counter means for comparing the number of counted pulses in the counter means and delivering a pulsed signal representative of the difference and the direction of said difference of said pulses; storing means connected with the comparator means for storing said signal representative of the pulse difference; a single



stepping motor drivable in two directions and connected with the storing means to receive stored signals therefrom and operated in an appropriate one of said directions depending upon said stored signals representative of the pulse difference; and an indicator element being fastened on the axis of said stepping motor giving speed information analogous to its angle deflection upon operation of the stepping motor.

4,227,151

MEASUREMENT AND MONITORING OF THE ELECTRICAL CONDUCTIVITY OF LIQUOR SAMPLES

Christopher I. A. Ellis, and Edward L. Naylor, both of Birkenhead, England, assignors to Malcom-Ellis (Liverpool) Limited, Liverpool, England

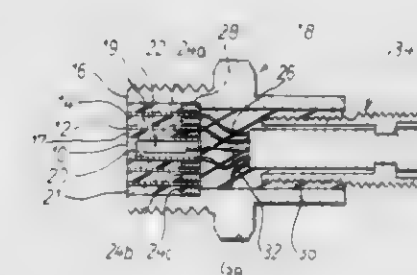
Filed Aug. 28, 1978, Ser. No. 937,175

Claims priority, application United Kingdom, Aug. 27, 1977, 36058/77

Int. Cl.³ G01N 27/42

U.S. Cl. 324-448

10 Claims



1. A measuring cell for use in measuring and monitoring the electrical conductivity of a liquid, comprising at least four concentric circular electrodes disposed in a surface and mutually separated by annular areas of electrically non-conductive material, said surface being flat and being supported by a main body portion of the cell, the body portion being adapted to be mounted in a vessel or machine for presenting said surface, and hence the concentric electrodes, to a liquid under test, the body portion being tubular and defining the outer one of said concentric electrodes, the inner electrodes being respectively defined by one end of each of a plurality of cylindrical metallic members coaxially disposed within the tubular body portion and mutually spaced apart by tubular spacers of electrically non-conductive material, and the central, inner electrode being hollow to receive a temperature sensitive element.

4,227,152

METHOD AND DEVICE FOR TRAINING AN ADAPTIVE EQUALIZER BY MEANS OF AN UNKNOWN DATA SIGNAL IN A QUADRATURE AMPLITUDE MODULATION TRANSMISSION SYSTEM

Dominique N. Godard, Le Rouret, and Philippe E. Thirion, St-Paul-de-Vene, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

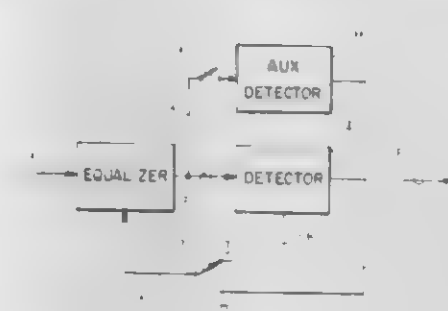
Filed May 23, 1979, Ser. No. 41,585

Claims priority, application France, Jun. 13, 1978, 78 18478

Int. Cl.³ H04B 3/06

U.S. Cl. 375-13

10 Claims



1. In a data receiver for a data transmission system using a QAM technique, of the type wherein the received signal is, in particular, equalized by an adaptive equalizer and then fed as an input signal to a data detection device which supplies the detected data after comparing said input signal with a first constellation, a method of training said equalizer, characterized in that it includes the steps of:

- comparing said input signal with a second constellation comprising fewer points than said first constellation;
- selecting that point of said second constellation which is nearest the point representative of said input signal;
- determining an error signal which is a function of the distance between the point representative of said input signal and the point of said second constellation selected during step b.; and
- deriving from said error signal control signals serving to adjust the coefficients of the equalizer.

4,227,153

PULSE GENERATOR UTILIZING SUPERCONDUCTING APPARATUS

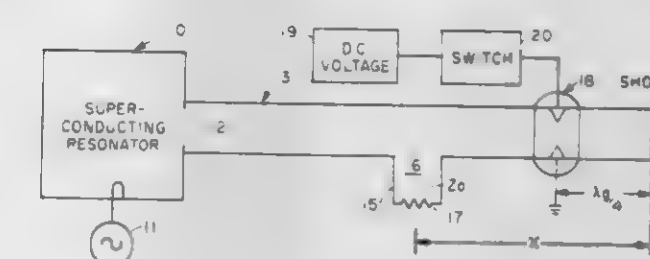
Daniel L. Birx, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 26, 1978, Ser. No. 928,218

Int. Cl.³ H03K 3/55, 5/12; H01P 7/06; H01J 17/64

U.S. Cl. 328-59

2 Claims



1. Apparatus for generating high power microwave pulses that have extremely fast rise times and are phase coherent with the signal from a microwave signal source, comprising in combination

- a superconducting cavity resonator;
- means for coupling a low power microwave signal source to said cavity resonator to charge it to a high energy level, the frequency of said signal source corresponding to the resonant frequency of said cavity resonator;
- a main waveguide section having one end thereof coupled to

said cavity and the other end thereof terminating in a short circuit;

a branch waveguide section connected at one end to said main waveguide section at a location which is an even multiple of $\lambda/4$ away from said short circuit, where λ is the wavelength of said microwave signal;

a load connected to the other end of said branch waveguide section and;

means for establishing at a particular time a short circuit condition across said main waveguide section at a location $\lambda/4$ from said short circuit,

the coupling between said microwave signal source and said resonant cavity being optimized when no short circuit condition exists across said main waveguide section,

the occurrence of said short circuit condition discharging said resonant cavity, generating a high power pulse which is phase coherent with the signal from said microwave signal source, and additionally decoupling said microwave signal source from said resonant cavity.

4,227,154

FREQUENCY GENERATOR WITH A CONTROLLED LIMIT ON FREQUENCY DEVIATION FROM A SYNCHRONIZING FREQUENCY

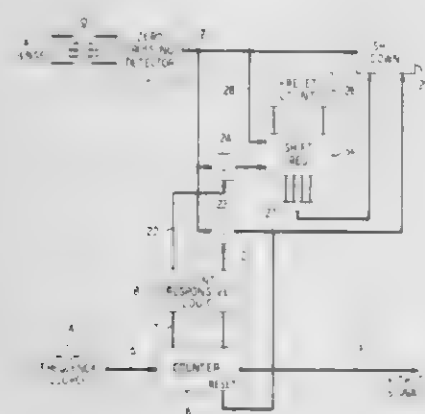
Harry K. Ebert, Jr., Hackettstown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1978, Ser. No. 953,428

Int. Cl.³ H03L 7/00

U.S. Cl. 328-141

7 Claims



1. A frequency deviation detector for monitoring synchronism of a first and second periodic signal, comprising dividing means for accepting a high frequency signal source and deriving a first periodic signal;

logic means for responding to preselected count states of said dividing means, said logic means including a coincidence gate responsive to a sequence of count digits less than a highest and more than a lowest order digit contained within said dividing means

gating means for accepting zero crossing signals responsive to said second periodic signal and responsive to said logic means to enable transmission of a zero crossing signal during time intervals defined by the preselected count states, said gating means including a first transmission gate responsive to an output of said coincidence gate and coupled to transmit zero crossing signals.

4,227,155

AMPLIFIER WITH DARK CURRENT COMPENSATION

Jesse P. Lerma, La Habra, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 14, 1978, Ser. No. 933,311

Claims priority, application United Kingdom, May 31, 1978, 15100/78

Int. Cl.³ H03F 21/00

U.S. Cl. 330-11

6 Claims

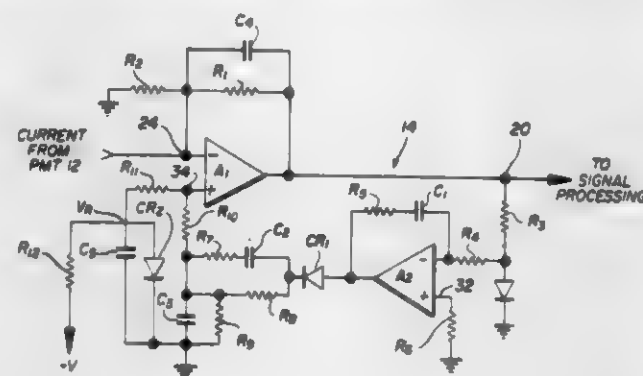
1. In a pre-amplifier for multilevel, pulsed electrical signals, said signals having a direct current signal component in the

presence of noise and undulating between levels with respect to ground, wherein the improvement comprises:

a feedback amplifier coupled to said signal at the output of said pre-amplifier to monitor said pre-amplifier output;

a compensating circuit coupled intermediate said feedback amplifier and said pre-amplifier input;

said feedback amplifier and said compensating circuit including means for enabling said feedback amplifier to monitor said pre-amplifier output and to operate in a linearly responsive state during levels of said multi-level, pulsed signal closest to ground for clamping the average value of



said noise to ground, thereby restoring optimum ground to said output signal;

said compensating circuit including a capacitor,

means for charging said capacitor through said feedback amplifier during its linearly responsive state to transfer a compensating charged voltage level to said pre-amplifier input sufficient to compensate for the average value of said noise with respect to ground, and

saturation means coupled to said feedback amplifier for enabling said feedback amplifier to saturate during other levels of said multi-level, pulsed signal and thereby cease monitoring of said pre-amplifier output.

4,227,156

CIRCUIT FOR AT LEAST TWO FREQUENCIES

Johann Mattfeld, Flein, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

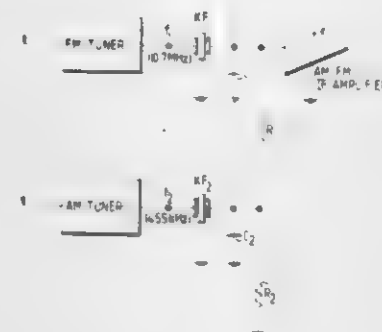
Filed Nov. 15, 1978, Ser. No. 960,785

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753578; Jun. 27, 1978, 2828090

Int. Cl.² H03F 3/68; H04B 1/06

U.S. Cl. 330-126

11 Claims



1. A circuit which is operated alternately with at least two frequencies through a common connection, and using filters, characterized in that the filters are ceramic; that two terminating resistors, each connected to a filter, are connected in series with the lower frequency filter connected to the connection point between the two resistors, and the higher frequency filter connected to the lower value resistor of said two resistors and is connected directly to the common circuit connection for both frequencies; and that the order of magnitude of said resis-

tors corresponds to the order of magnitude of the required terminating resistance required for the ceramic filters.

4,227,157

FREQUENCY COMPENSATED HIGH FREQUENCY AMPLIFIERS

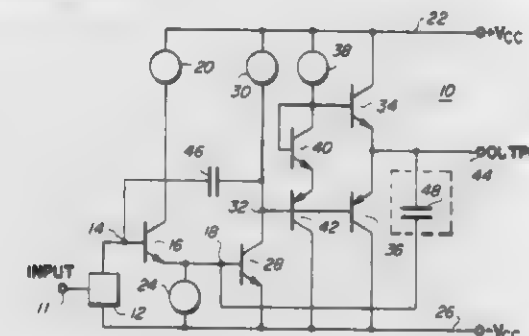
Robert B. Davies, and Don W. Zobel, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1979, Ser. No. 1,088

Int. Cl.² H03F 3/213

U.S. Cl. 330-265

8 Claims



1. A frequency compensated high frequency amplifier, including in combination:

a first gain stage;

a second gain stage having a first high impedance node coupled to said first gain stage, a second high impedance node, non-inverting amplifier means electrically connected between said first and second high impedance nodes, a third high impedance node, inverting amplifier means having an input terminal coupled to said second high impedance node for receiving signals therefrom, said inverting amplifier means having an output terminal connected to said third high impedance node for applying such signals to said third high impedance node after inverting such signals, the impedances at said first, second and third high impedance nodes being a function of frequency and said second high impedance node having a lower impedance at a given frequency than the impedances at said first and third high impedance nodes;

first frequency compensating capacitive means coupled between said first and third high impedance nodes; and

second frequency compensating capacitive means coupled between said third and second high impedance nodes.

4,227,158

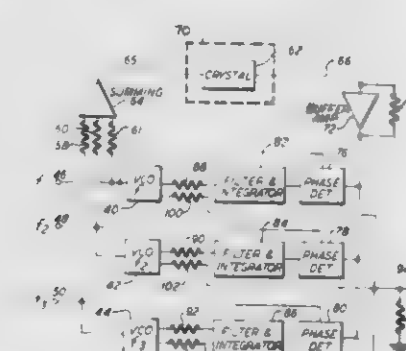
MULTIFREQUENCY CONTROL FROM A SINGLE CRYSTAL

George F. Schroeder, Wayne, and Lincoln S. Ferriss, Lincoln Park, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Feb. 1, 1979, Ser. No. 8,459

Int. Cl.³ H03L 7/02

U.S. Cl. 331-2



1. A circuit for regulating the output frequencies of a number of voltage controlled oscillators including a crystal capable of simultaneous vibration in more than one mode at different frequencies, the crystal being connected between the output of

a summing amplifier and the input of a buffer amplifier, a number of voltage controlled oscillators each being supplied with a variable DC voltage for controlling its frequency, the outputs of the voltage controlled oscillators being supplied to the summing amplifier, and a phase detector associated with each oscillator for receiving the output of each voltage controlled oscillator and the output of the buffer amplifier for the purpose of generating a DC voltage proportional to the phase difference between the output of the oscillator and the buffer amplifier and supplying it to the associated oscillator to control its frequency.

4,227,159

COMMON-RESONATOR PRE-LOCKED LASER

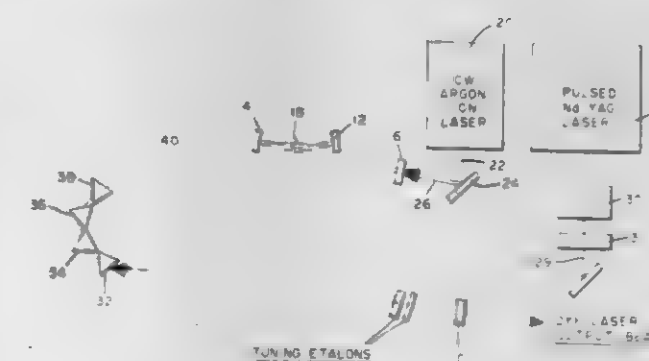
Joseph J. Barrett, Morris Plains, and Otis G. Peterson, Dover, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 24, 1978, Ser. No. 871,913

Int. Cl.² H01S 3/091

U.S. Cl. 331-94.5 P

27 Claims



1. A common resonator pre-locked laser comprising an optical resonator resonant at a given wavelength; an active medium having an emission band coincident with said wavelength placed in the resonator; first pumping means for pumping the full extent of said active medium with relatively low power optical radiation within a corresponding absorption band of said active medium to produce a population inversion of optically excitable states within said emission band for generating stimulated emission of radiation; and

second pumping means for pumping the full extent of said active medium with relatively high power optical radiation within said absorption band to generate strong laser radiation at said wavelength in the active medium;

said resonator including means for coupling radiation of said wavelength out of said resonator.

4,227,160

TRANSVERSAL TYPE AUTOMATIC EQUALIZER

Michitoshi Tamori; Katsuhiko Furuya, both of Tokyo; Hidetaka Yanagidaira, Omiya, and Hiroshi Sakaki, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

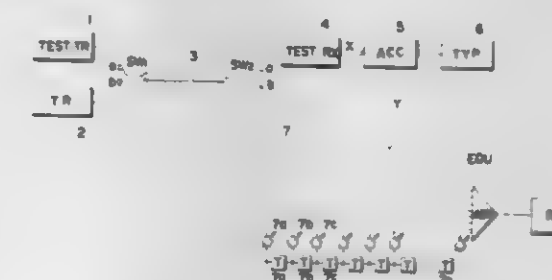
Filed Dec. 14, 1978, Ser. No. 969,364

Claims priority, application Japan, Dec. 26, 1977, 52-155612

Int. Cl.¹ H04B 3/04

U.S. Cl. 333-18

3 Claims



1. A transversal type automatic equalizer comprising a tran-

versal filter having a plurality of taps separated by time delay intervals, said transversal filter receiving input signals from a transmission line, a plurality of potentiometers being connected to each of said taps to provide a tap weight and the outputs of the potentiometers being summed up to provide an equalized output signal, means for measuring the amplitude characteristic on a logarithmic scale of the transmission line, means coupled to the measuring means for providing an inverse characteristic of said amplitude characteristic, a memory storing the elements of a predetermined matrix, a multiplier for providing the product of said inverse characteristic and the output of said memory to provide a series of cosine equalization components, a modified Bessel function generator for providing discrete time sequence signals in accordance with the output of said multiplier, means for performing a convolution integration to the output of said modified Bessel function generator, and means for applying the result of the convolution integration to said potentiometers to adjust the tap weights of the transversal filter.

4,227,161

CURRENT LIMITING CIRCUIT BREAKER WITH PIVOTING CONTACT ARM

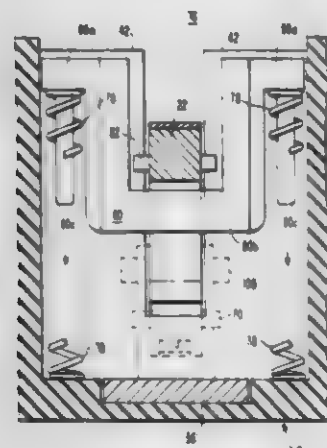
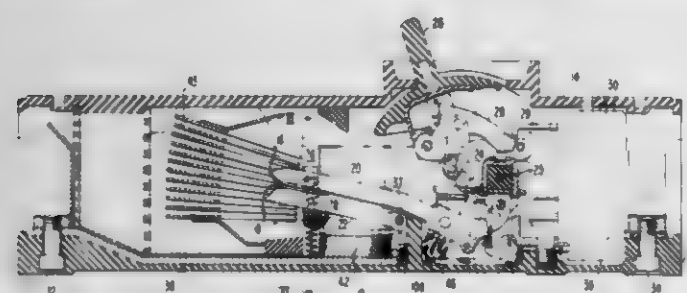
Miguel B. Yamat, Greendale, Wis.; John A. Wafer, Beaver, Pa., and Walter W. Lang, Rolla, Mo., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 16, 1978, Ser. No. 951,938

Int. Cl.³ H01H 77/10

U.S. Cl. 335—16

10 Claims



1. A circuit interrupter, comprising: separable contacts;

an arm assembly comprising first and second pivoting contact support arms supporting said contacts at the ends thereof and operable between open and closed positions; an operating mechanism connected to said second arm for moving said contacts between open and closed positions; a passive arm positioning member extending through said first contact support arm to limit travel of said first arm in a direction toward said second arm;

an active arm positioning assembly comprising a bearing member abutting said first contact arm on the side opposite said second contact arm and a spring biasing said bearing member against said first arm in a direction toward said second arm; and

conductor means connected to said contact support arms

adapted to connect said circuit interrupter in series with an electrical circuit being protected, said conductor means so arranged that current flow through said contact support arms is in opposite directions.

4,227,162

ELECTROMAGNET RELAY WITH SPECIFIC HOUSING STRUCTURE

Teizo Fujita, Ibaraki; Toyokazu Ikebata, Amagasaki, and Harumi Fujisato, Takashi, all of Japan, assignors to Izumi Denki Corporation, Osaka, Japan

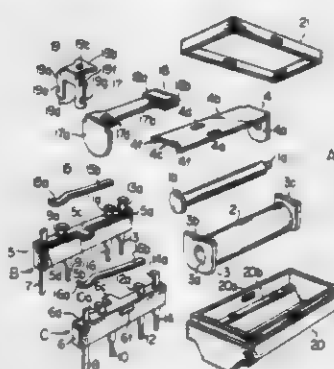
Filed Feb. 28, 1979, Ser. No. 16,704

Claims priority, application Japan, Mar. 8, 1978, 53-27069

Int. Cl.² H01H 45/02, 45/14

U.S. Cl. 335—202

30 Claims



1. An electromagnet relay comprising:

A. at least one electromagnet relay-contact assembly including

(i) relay contact means including at least one of a normally-open relay contact and a normally-closed relay contact,

(ii) electromagnet means including an elongated iron core, a coil wound on said iron core, and a relay armature actuated by the energization of said coil to actuate said relay contact means, and

(iii) a plurality of lead-out terminals for said relay contact means and said coil; and

B. a housing including an upper wall, side walls and a bottom wall for containing said relay-contact assembly in the inner space defined by said upper, side and bottom walls, said bottom wall having a downwardly-protruded expansion extending longitudinally substantially over the entire length of the outer surface of said bottom wall and a plurality of flat portions connected with and extending along said expansion, said lead-out terminals being led out of said housing through said bottom wall at least at one of said flat portions.

4,227,163

ELECTRICAL KEYSWITCH

Raymond Barnoski, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,875

Int. Cl.³ H01H 9/00

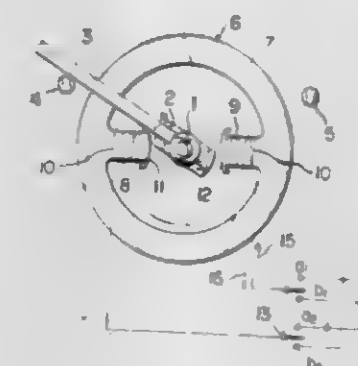
U.S. Cl. 335—205

4 Claims

1. In an electrical keyswitch comprising a base having a vertically extending guide chamber and a horizontal surface, a depressible plunger mounted for up and down movement within said guide chamber, a return bias spring positioned in said guide chamber so as to bias said plunger upwardly toward its undepressed position, a permanent magnet carried externally on one side of said plunger so as to move up and down therewith, a closed-saturable magnetic core, a U-shaped drive line having two substantially straight parallel legs that has one of said legs located in the loop of said core with an adjoining strip of said drive line running between its two legs and being located above said core and a U-shaped, sense line having two substantially straight parallel legs that has one of said legs

located in the loop of said core so as to run parallel to the leg of said drive line that is located in said loop with a joining strip of said sense line running between its two legs and being located above said core, wherein said permanent magnet is positioned adjacent said core when said plunger is not depressed so that said core is substantially magnetically saturated, and so that said permanent magnet moves away from said core when said plunger is depressed, thereby allowing said core to come out of magnetic saturation; the movement comprising a plurality of electrically insulating, elongated, parallel dividers that are integrally formed on said base and are located below said horizontal surface in the interior of said base adjacent the side of said base that is adjacent said permanent magnet so that said dividers in conjunction with said base provide four separate

positively or inversely, and first and second stoppers to limit the rotating of said permanent magnet within an angular range



of less than 180 degrees and make maximum the magnetic flux interlinking with said fixed coil.

4,227,165

CORRECTION OF LINEAR ERRORS IN POSITION MEASURING TRANSDUCERS

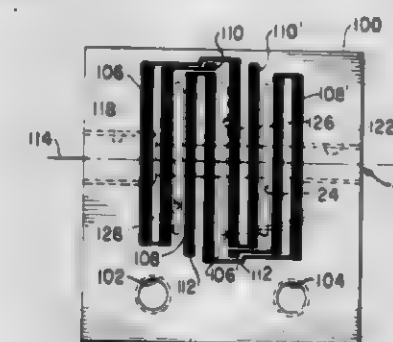
Clair L. Farrand, Bronxville, and William H. Clifford, Yonkers, both of N.Y., assignors to Farrand Industries, Inc., Valhalla, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,116

Int. Cl.³ H01F 21/04

U.S. Cl. 336—20

1 Claim



elongated passageways and a pair of walls that extend vertically upward from said horizontal surface that are shaped to form a retaining well for said core so that the bottom of said core rests on said horizontal surface and the top of said core is uncovered and the axis of said core is vertically oriented, said walls each having a groove therein, one of said grooves positioned to allow said drive line to pass therethrough and the other of said grooves positioned to allow said sense line to pass therethrough, said horizontal surface having a slot therein which allows both of said drive and sense lines to pass therethrough, with each of said legs of said drive and sense lines being confined to operate in one of said passageways that are provided by said dividers so that the lower ends of said legs extend out of the bottom of in said base at different, electrically insulated locations, said passageways.

1. A member of a position measuring transducer, said member being adapted for use with a transducer having two mutually spaced, relatively movable members with electrically coupled elements, said member comprising:

a base having a plurality of electrically coupling element circuits affixed to one surface thereof, said circuits being spaced from each other by a predetermined initial spacing distance, said circuits further having a common longitudinal axis; wherein said base has at least one cutout portion transverse to said axis between said circuits;

said base having an aperture therein parallel to said longitudinal axis; and means for insertion in said aperture for changing the spacing distance between said circuits.

4,227,164

ELECTROMAGNETIC ROTATING APPARATUS

Haruo Kitahara, Ijima, Japan, assignor to Shinano Tokki Corporation, Japan

Filed May 22, 1978, Ser. No. 908,250

Claims priority, application Japan, Aug. 20, 1977, 52/99725

Int. Cl.² H01F 7/00

U.S. Cl. 335—230

4 Claims

1. Electromagnetic rotating apparatus comprising a rotating shaft, a bi-polar permanent magnet fixed to said rotating shaft and radially magnetized, a non-magnetic insulating fixed core having a plurality of axially extending slots formed in the outer peripheral surface of a hollow cylinder which embraces rotating side and peripheral surfaces of said permanent magnet, a fixed solenoid coil wound around said core so as to surround said permanent magnet, a holding soft magnetic segment fixed to both opposite end portions of said outer peripheral surface of said fixed coil so as to close the open ends of said fixed coil, an energizing circuit to selectively energize said fixed coil

4,227,166

REACTOR

Toshihiko Tsuji, and Riyouji Sakai, both of Tokyo, Japan, assignors to Nippon Kinzoku Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 913,193

Claims priority, application Japan, Jun. 8, 1977, 52/67650

Int. Cl.² H01F 27/24

U.S. Cl. 336—229

5 Claims

1. A reactor comprising an annular iron core constituting a closed magnetic path and a conductor wound on the annular

core, said iron core being formed of particles of iron or an iron-based magnetic material each covered with an insulative



oxide film which contains 0.3 to 0.8% of oxygen by weight based on the particle.

4,227,167

HIGH-INTERRUPTING CAPACITY FUSE

Frederick J. Kozacka, South Hampton, N.H., and Howard G. Wilks, Newbury, Mass., assignors to Gould Inc., Rolling Meadows, Ill.

Filed May 16, 1979, Ser. No. 39,621
Int. Cl.³ H01H 85/12

U.S. Cl. 337-161

12 Claims



1. An electric high-interrupting capacity fuse complying with Underwriters Laboratories Inc. Standard for Class L fuses, said fuse comprising a casing of electric insulating material, a pulverulent arc-quenching filler including particles of quartz inside said casing, and a pair of terminal elements closing said casing on the ends thereof, and said fuse further comprising

- a plurality of fusible elements conductively interconnecting said pair of terminal elements, all of said plurality of fusible elements being of copper to the exclusion of any fusible element of silver;
- each of said plurality of fusible elements having a plurality of identical, serially related regions of reduced cross-section, each of said regions being formed by a rectangular perforation extending transversely across said plurality of fusible elements having almost the same width as each of said plurality of fusible elements and defining a pair of parallel current paths each being substantially point shaped and located at one of the two narrow sides of said rectangular perforation;
- each of said plurality of fusible elements including one pair of said parallel current paths that is situated immediately adjacent to the center thereof where the highest temperature prevails when the fuse is carrying current; and
- a plurality of M-effect causing overlays of a metal having a considerably lower fusing point than copper, each of said plurality of overlays extending transversely across the entire width of each of said plurality of fusible elements, each of said plurality of overlays, as long as in the

solid state, being arranged immediately adjacent to, but in spaced relation from, said one pair of parallel current paths where the highest temperature prevails when said fuse is carrying current, and said plurality of overlays, when liquefied, flowing from the initial locations thereof toward said one pair of parallel current paths where the highest temperature prevails when said fuse is carrying current.

4,227,168

FUSIBLE ELEMENT FOR ELECTRIC FUSES BASED ON M-EFFECT

Edward J. Knapp, Jr., Salisbury, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 31, 1979, Ser. No. 44,093
Int. Cl.³ H01H 85/12

U.S. Cl. 337-161

7 Claims



1. A ribbon-type fusible element for electric fuses including a base metal having a relatively high fusing point and an overlay metal having a relatively low fusing point and capable of severing by a diffusion process the current path through said base metal comprising in combination

- a base metal having a front side and a rear side and defining a point of reduced cross-section;
- a first overlay metal on said base metal arranged on said front side of said base metal in spaced relation from said point of reduced cross-section;
- a second overlay metal on said base metal arranged on said rear side of said base metal in spaced relation from said point of reduced cross-section; whereby
- upon fusion of said first overlay metal and upon fusion of said second overlay metal two oppositely directed metal jets flow toward said point of reduced cross-section of said base metal and sever said base metal at said point of reduced cross-section.

4,227,169

COMBINED THERMAL AND ELECTRICAL CUT-OFF DEVICE

John K. McVey, Bensenville, and Larry L. Sharp, Schaumburg, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed May 10, 1979, Ser. No. 37,988
Int. Cl.³ H01H 85/02, 85/20

U.S. Cl. 337-182

2 Claims

1. A combined thermal and electrical cut-off device comprising a radial lead thermal cut-off device having radial leads which opens a series circuit connection between said radial leads when the ambient temperature is exceeded wherein said radial lead thermal cut-off device has an elongated cylindrical body with a longitudinal axis, an open helical electrically conductive coil that has a central axis for receiving said elongated thermal cut-off device therein so that the central axis of

the coil and the longitudinal axis of the thermal cut-off device are approximately in alignment, a first terminal end of said electrical coil being electrically connected to one of the radial leads of said thermal cut-off device and the other radial lead of said thermal cut-off device being electrically connected to a first input wire of the protected circuit, and a general C-shaped electrically conductive support bracket for supporting both said thermal cut-off device and said coil which has a central

mined temperature to convert the MCS member to an electrical insulator.

4,227,171

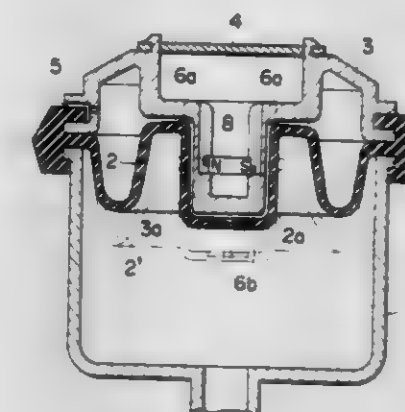
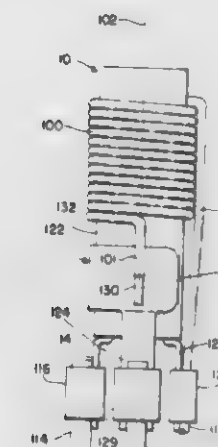
LIQUID LEVEL SENSING MEANS

Noboru Masuda, Tokyo, and Mitsuyuki Suzuki, Okazaki, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo and Aisin Seiki Kabushiki Kaisha, Kariya, both of Japan

Filed Dec. 21, 1978, Ser. No. 971,878
Claims priority, application Japan, Dec. 23, 1977, 52/156294
Int. Cl.³ H01H 35/18

U.S. Cl. 338-33

2 Claims



1. A liquid level sensing means in a liquid reservoir, said reservoir having a container base, a cap for enclosing said base, said cap having means permitting communication between said reservoir and the atmosphere, and a flexible diaphragm sealingly disposed between said cap and said base separating liquid in said reservoir from the atmosphere, said diaphragm moving responsive to the level of said liquid, said sensing means comprising:

- a cylindrically-shaped extension integrally depending from said cap into a cylindrically-shaped cup formed in said diaphragm proximate its center, said extension and said cup having corresponding, cooperative dimensions;
- a magnet means disposed within said cylindrical extension and a magneto-resistive element attached to each pole of said magnet means, said magneto-resistive elements being offset from each other and offset from the center line of said magnet means in a direction parallel to the movement of said diaphragm and being electrically in a circuit for effecting an electrical signal responsive to the magnetic flux applied to the magneto-resistive elements, each end of said magnet means including one said magneto-resistive element disposed in a respective vertical channel formed in the inside wall of said cylindrical extension; and
- switching means including at least one switching member of magnetic material disposed on the inside wall of said cylindrical cup, said switching means being carried by said movable diaphragm such that said switching member passes proximate said magneto-resistive elements outside the wall of said cylindrical extension as the diaphragm moves in response to change in fluid level, thereby affecting the magnetic flux applied to said magneto-resistive elements.

4,227,170

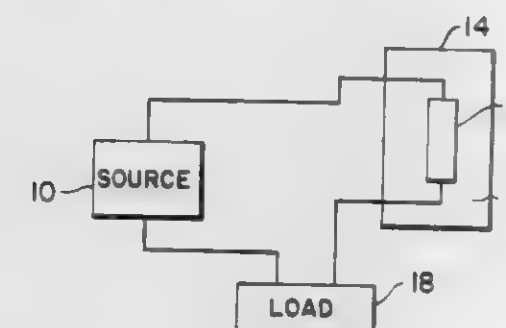
CURRENT-REDUCING DEVICE

Moshe Friedman, Washington, D.C., and Michael G. Ury, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1977, Ser. No. 808,839
Int. Cl.³ H01H 85/02

U.S. Cl. 337-204

6 Claims



1. A current-reducing device comprising: a modifiable-conductive-state (MCS) member; and a volume of fluid, said MCS member being immersed in said fluid, said MCS member being fabricated from an electrically conductive material and said fluid being a material which is substantially electrically non-conductive, said member and said fluid being of materials which chemically react exothermically with each other at a predeter-

4,227,172

TWO-DIGIT RESISTANCE DECADE BOX

Robert E. Sherman, 2421 Sheridan Ave. South, Minneapolis, Minn. 55405

Continuation of Ser. No. 833,870, Sep. 16, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 5,986
Int. Cl.³ H01C 10/18

U.S. Cl. 338-123

2 Claims

1. A resistance decade box for applications where the adjustment of a resistance value to a precision of two significant digits is sufficient, wherein the improvement consists of the

object to move closer to one of said stationary electrode plates to reduce the gap therebetween and further from the other of said stationary electrode plates to increase the gap therebetween, thereby causing the capacitance of one of said variable capacitors to increase and the capacitance of the other of said variable capacitors to decrease;

- (b) two oscillator circuits, each having an associated one of said variable capacitors incorporated therein as a frequency varying component; and
- (c) a mixer connected to said two oscillator circuits for providing a beat frequency signal of a frequency determined by the difference in the frequencies of said two oscillator circuits.

4,227,183

ANALOG TO DIGITAL CONVERTING DEVICE

Yuichi Ninomiya, Kawasaki, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

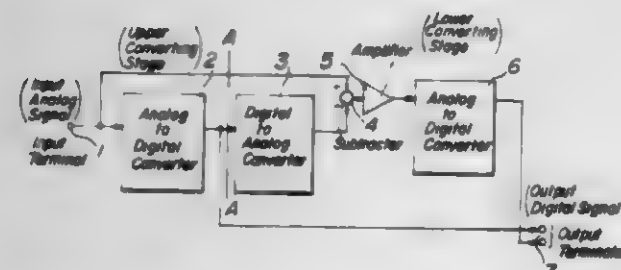
Filed Dec. 16, 1977, Ser. No. 861,357

Claims priority, application Japan, Dec. 20, 1976, 51/151885; Jun. 1, 1977, 52/63184

Int. Cl.² H03K 13/175

U.S. Cl. 340—347 AD

2 Claims



1. An analog to digital converting device comprising a plurality of analog to digital converting stages connected in cascade for converting an input analog signal to a digital signal consisting of a plurality of bits, a far lower order for converting stage of said plurality of analog to digital converting stages comprising

- a plurality of comparators for comparing an input analog signal with a respective reference level;
- a resistor ladder comprising a plurality of resistors connected successively with one another and with a constant current source in series for supplying said comparators with respective reference levels derived successively from connection points of said resistor ladder;
- an average level detector comprising a series connection of a resistor and a grounded capacitor for detecting the average level of said input analog signal, said average level being derived from a connection point of said series connection;
- a DC level shifter connected between said connection point of said series connection of said resistor and said grounded capacitor of said average level detector and a bottom of said resistor ladder for shifting said average level derived from said connection point to a level which corresponds to one of said respective reference levels derived successively from said connection points of said resistor ladder;

a code converter provided for converting successive output signals derived from said plurality of comparators to a binary code digital signal.

4,227,184

MODIFIED MILLER CODE ENCODER

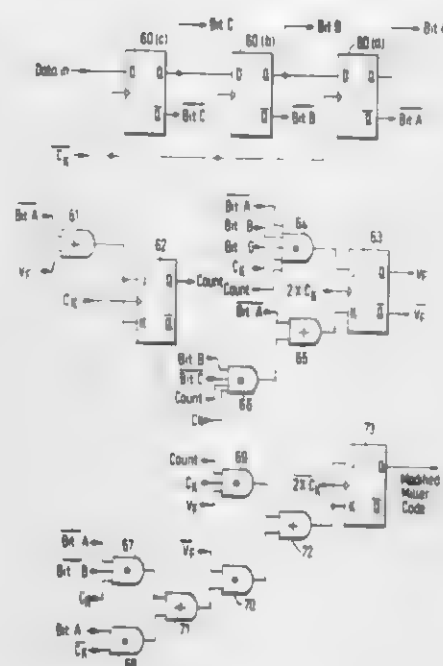
George A. Howells, Bishop's Stortford, and Douglas E. Woodman, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 19, 1978, Ser. No. 970,895

Int. Cl.² H04L 3/00

U.S. Cl. 340—347 DD

5 Claims



1. Apparatus for encoding a binary data stream into a modified Miller Code data stream comprising:
- first means responsive to said binary stream and a control signal indicating whether the bits of said binary stream are to be coded according to a conventional Miller Code or a modified version thereof to detect successive pairs of successive binary "0" bits in said binary stream and to detect the number of binary "1" bits in said binary stream disposed between each bit of each of said pairs of "0" bits;
- second means coupled to said first means responsive to said binary stream and the output signal of said first means to produce said control signal; and
- third means coupled to said first and second means responsive to said binary stream, the output signal of said first means and said control signal to produce said modified Miller Code data stream including a transition period of two bit periods for every pair of binary "1" bits disposed between each bit of each of said pairs of "0" bits, said transition period extending from the transition at the end of the first bit of an associated one of said pairs of "0" bits.

4,227,185

SINGLE CHIP INTEGRATED ANALOG-TO-DIGITAL CONVERTER CIRCUIT POWERED BY A SINGLE VOLTAGE POTENTIAL

John W. Kronlage, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 744,019, Nov. 22, 1976, abandoned.

This application Nov. 29, 1978, Ser. No. 964,774

Int. Cl.³ G01K 7/00; H03K 13/02, 13/20

U.S. Cl. 340—347 NT

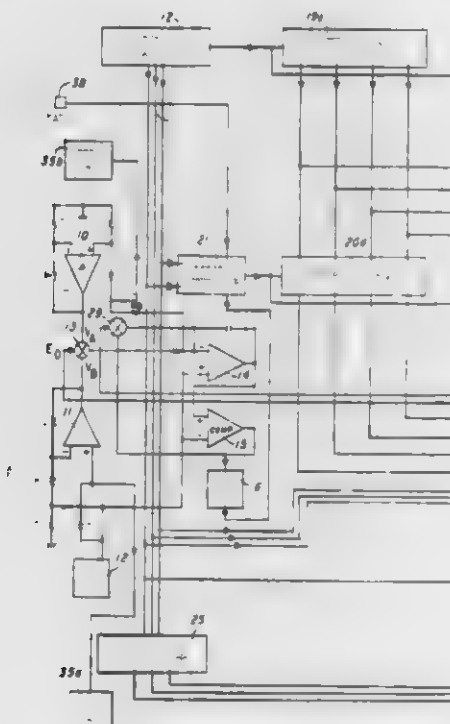
20 Claims

1. A single chip integrated dual slope analog-to-digital converter circuit comprising:

- (a) first terminal means for receiving a relatively low voltage potential, wherein said integrated circuit operates entirely from a single voltage potential applied to said first terminal means;
- (b) second terminal means for receiving analog input signals;
- (c) scaling amplifier means coupled to said first and second terminal means for generating a first voltage which is a representation of received analog input signals;
- (d) reference amplifier means coupled to said first terminal

means for generating a second voltage representative of the full scale of the received analog input signals;

- (e) integrator means having input and output means and means for coupling an integration capacitor thereto, said integrator means for generating a ramp voltage in one direction when said first voltage is applied to the input means thereof and for generating a ramp voltage in the opposite direction when said second voltage is applied to the input means thereof;
- (f) controllable switch means for selectively applying either said first or second voltage to the input means of said integrator;
- (g) comparator means coupled to the output means of said integrator means and to said first terminal means for producing a logical transition signal when said integrator ramp voltage crosses a threshold voltage in either direction;



- (h) triggerable storage means coupled to said comparator means, and responsive to said transition signal for storing an indication of the occurrence thereof;
- (i) digital counter means for generating a digital count;
- (j) means coupled to said counter means, and responsive to the indication stored in said triggerable storage means for storing said digital count upon the occurrence of said transition signal, said storage digital count being a digital representation of the analog input signals applied to said second terminal means;
- (k) voltage regulator means coupling said first terminal means to said scaling amplifier means, said reference amplifier means, said integrator means and said comparator means for regulating the low-voltage reference potential applied to each of said means.

4,227,186

SELF-STABILIZING ANALOG TO DIGITAL CONVERTER USEFUL IN PHASE LOCKED LOOP TUNING SYSTEMS

Felix Aschwend, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,868

Claims priority, application United Kingdom, Mar. 20, 1978, 10999/78; Apr. 19, 1978, 15509/78

Int. Cl.² H03K 13/20

U.S. Cl. 340—347 CC

10 Claims

1. Apparatus comprising: comparator means for generating an output signal having a first level when the amplitude of a first input signal exceeds the amplitude of a second input signal and a second level when the amplitude of said second input signal exceeds the amplitude of said first input signal;
- voltage divider means having a controllable voltage division

ratio for generating said first input signal by the voltage division of a reference voltage;

first capacitive means;

first charging means for selectively charging said first capacitive means during a first predetermined period to generate said second input signal, said output signal changing levels at a time within said first predetermined period determined by said controllable division ratio;

second capacitive means;



second charging means for selectively charging said second capacitive means during a second predetermined period after said first predetermined period in response to the magnitude of said second input voltage at the end of said first predetermined period to develop said reference voltage; and

utilization means responsive to said output signal for generating a binary word determined by the time interval between the beginning of said first predetermined period and said time when said output signal changes levels.

4,227,187

HIGH SPEED REAL TIME QUANTIZER AND ANALOG/DIGITAL CONVERTER

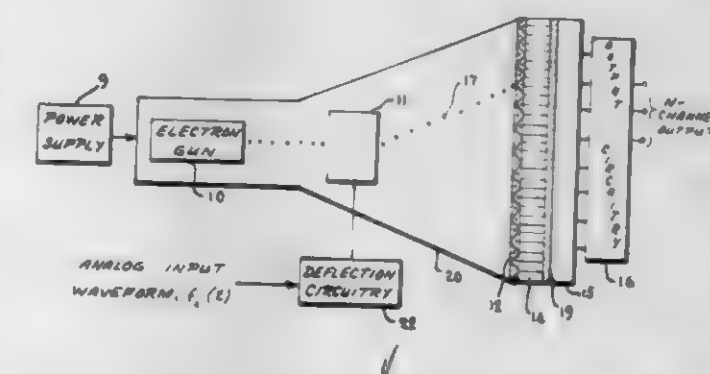
John V. McNamara, Rome, and Paul Van Etten, Clinton, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 30, 1979, Ser. No. 25,413

Int. Cl.³ H03K 13/00

U.S. Cl. 340—347 P

4 Claims



1. A real time large data rate quantizer and analog-to-digital converter for an input analog waveform being comprised of an electron gun providing a constant high energy electron beam, a fast phosphor cathode ray tube screen, a mosaic target of light sensitive detectors arranged in annular rings, and in juxtaposed light receiving relationship to said cathode ray tube screen, said mosaic target having a preselected number of sectors, each sector being in the form of a wedge shaped piece, each sector including a preselected number of segments, each segment being a separate light sensitive device, each sector corresponding to a specific time interval of said input analog signal and each segment corresponding to a finite range in

amplitude of said input analog waveform, a fiber optics face plate between said mosaic target and said fast phosphor cathode ray tube screen transmitting light therebetween, light filter means adjacent said mosaic target for blocking slow response time light emanating from said screen, a vertical and horizontal beam deflecting structure, vertical and horizontal beam deflection circuitry means connected to said vertical and horizontal beam deflection structure and operating in combination therewith to effect impingement of said electron in a circular pattern on said fast phosphor cathode ray tube screen, said vertical and horizontal beam deflecting circuitry means receiving said input analog waveform to provide an increasing diameter of said circular pattern in accordance with an increasing magnitude of said input analog waveform, said vertical and horizontal beam deflecting circuitry means including a power splitter receiving said input analog waveform and providing first and second split signals, a deflection oscillator, a quadrature coupler connected to said deflection oscillator and providing first and second oscillator deflection signals therefrom, first and second amplitude modulators, said first amplitude modulator receiving said first split signal and said first oscillator deflection signal, and second amplitude modulator receiving said second split signal and said second oscillator deflection signal, said first and second amplitude modulators providing first and second deflection signals to said vertical and horizontal beam deflection structure, a vacuum envelope for said electron gun, said vertical and horizontal beam deflection structure and said fast phosphor cathode ray tube screen, and a binary encoder circuit receiving the outputs of said light detectors to provide a binary digital output waveform.

4,227,188

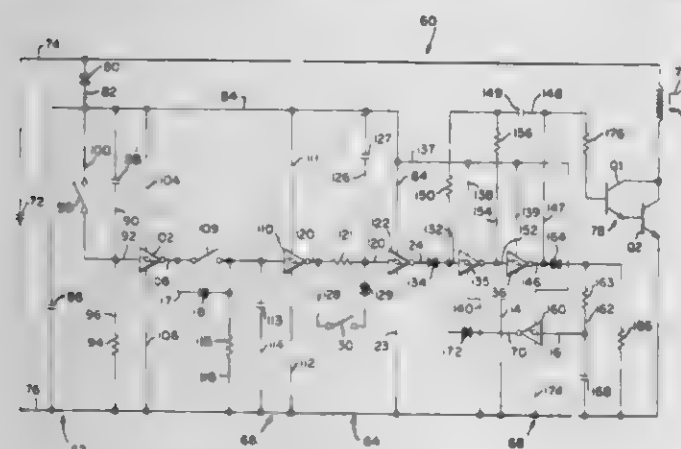
INTRUSION ALARM CONTROL SYSTEM

Christian C. Petersen, 206 Conant Rd., Westwood, Mass. 02090
Division of Ser. No. 750,667, Dec., 1976, Pat. No. 4,122,437,
which is a continuation-in-part of Ser. No. 554,717, Mar., 1975,
Pat. No. 4,012,611. This application Sep. 25, 1978, Ser. No.
945,643

Int. Cl.² G08B 13/08

U.S. Cl. 340-566

9 Claims



1. An alarm system comprising:
alarm means actuable from a power supply to provide a perceptible alarm;
arm switch means actuable from a first to a second orientation to enable said system;
timing circuit means responsive to said arm switch means actuation to said second orientation for deriving an arm condition signal at the termination of a predetermined initial delay interval, said interval commencing with said actuation;
sensor means electrically coupled with said timing circuit means, actuable in response to a sensed externally generated phenomena, for deriving a short, transient conveyance of said arm condition signal;
first control circuit means, electrically coupled with said sensor means and responsive to a said conveyance of said arm condition signal to derive a predetermined input condition for a first predetermined interval;
second control circuit means including alarm delay switch

means selectively actuable between instant response and delayed response orientations and responsive to said predetermined input condition when said alarm delay switch means is in said delayed response orientation for effecting the commencement of an output signal following a second predetermined interval from the receipt of said predetermined input condition, and responsive to said predetermined input condition when said alarm delay switch means is in said instant response orientation for substantially immediately effecting the commencement of said output signal;

oscillator means responsive to said output signal for deriving an oscillating output signal of predetermined frequency; and
means responsive to said oscillating output signal for actuating said alarm means at said predetermined frequency.

4,227,189

ALARM ACTIVATING DEVICE

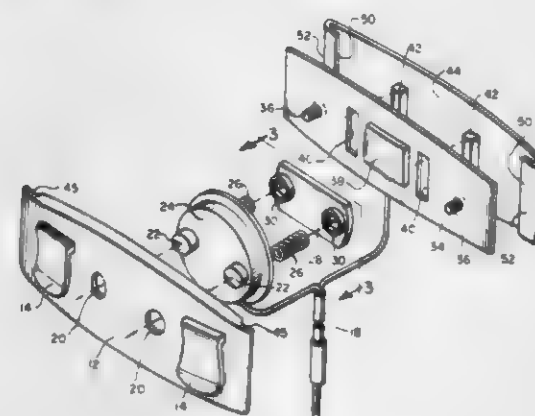
Albert F. Davis, 2148 W. Washburn, Chicago, Ill. 60608

Filed Mar. 5, 1979, Ser. No. 17,389

Int. Cl.² G08B 13/10, 1/08; H04Q 7/00

U.S. Cl. 340-573

8 Claims



1. An alarm activating device comprising:
a movable contact plate comprising a first contact and disposed in substantially parallel alignment with a fixed contact plate, which fixed contact plate supports a second contact, said fixed contact plate being stationarily secured to a mounting plate opposite said movable contact plate, and said first and said second contacts being disposed adjacent one another;
means for applying positive pressure to said movable contact plate about its face opposite said fixed contact plate;
a movable pressure plate disposed in substantially parallel alignment to said fixed contact plate opposite said movable contact plate;
means maintaining a minimum spaced-apart position of said movable pressure plate and said movable contact plate;
means allowing free movement of said movable pressure plate from a position abutting said fixed contact plate to a position spaced-apart a distance from said fixed contact plate at least equal to said minimum spaced-apart disposition of said movable pressure plate and said movable contact plate; and
an electric circuit that is closed upon contact of said first and second contacts.

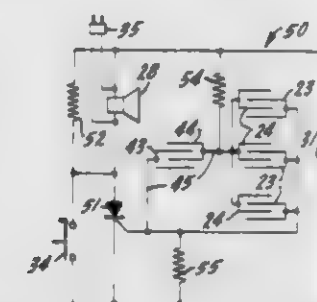
4,227,190 WATER ALARM FOR MONITORING FLOOR MOISTURE

Jerry K. Kelley, 3121 N. Nottingham, Chicago, Ill. 60634, and
Eugene V. Mateja, 7917 W. Courtland, Norridge, Ill. 60656
Filed Feb. 26, 1979, Ser. No. 14,976

Int. Cl.² G08B 21/00

U.S. Cl. 340-604

4 Claims



1. A self-contained water alarm for monitoring floor moisture comprising:

a housing having a plurality of support feet for supporting the housing on a floor with the bottom of the housing in close spaced relation to the floor;

a plurality of pairs of printed circuit sensor electrodes, each electrode pair being mounted on the outside of the bottom of the housing in a position protected from floor contact by the support feet, the sensor electrodes of each pair being in closely spaced relation to each other immediately above the floor on which the housing is supported, the resistance between the sensor electrodes being very high when the floor is dry and much lower when the floor is covered with water to a depth sufficient to contact the electrodes;

an electrically actuated audible alarm device, mounted within the housing;

battery mounting means for mounting a battery within the housing;

and an alarm circuit, mounted within the housing and interconnecting the alarm device, the battery, and the sensor electrodes, the alarm circuit comprising:

a solid-state switching device, connected to each pair of sensor electrodes and actuable from a normal non-conductive condition to a sustained conductive condition in response to a low resistance condition between any pair of the sensor electrodes, the switching device having a main discharge path connected in series with the alarm device and the battery;

and an auxiliary pair of sensor electrodes mounted on a small pad and electrically connected in parallel with the housing-mounted pairs of sensor electrodes through an elongated extension cord to permit simultaneous monitoring of floor moisture and of the water level in a sump or in a standpipe, the housing including a storage compartment for storing the auxiliary electrode pad and cord when not in use.

4,227,191

LIGHT EMITTING SMOKE DETECTOR

Samuel Raber, c/o Pyrotechnics, 8 Ridgedale Ave., Cedar Knolls, N.J.

Filed Feb. 21, 1978, Ser. No. 879,205

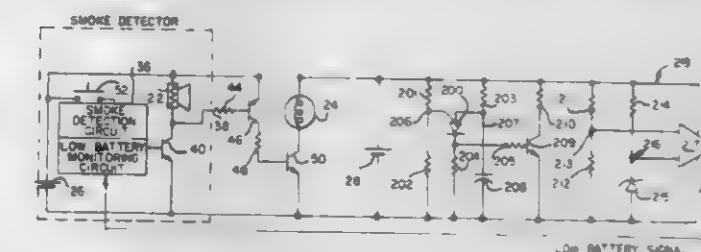
Int. Cl.² G08B 17/10; F21V 33/00

U.S. Cl. 340-628

5 Claims

1. A protection system including a smoke detector section and an escape light section, in which the smoke detector section includes means for detecting the presence of a predetermined level of smoke density and providing an electrical output signal when said level is reached, and means for receiving said signal and providing an audible alarm only as long as said smoke density remains above said predetermined level, the system improvement in which the escape light section comprises additional means for receiving said signal and providing

a high-intensity, continuous light of a level sufficient to illuminate the adjacent floor area only as long as the smoke density remains above said predetermined level, and in which said



system includes first and second power supply means, said first power supply means independently operating said smoke detector section, and said second power supply means independently operating said escape light section.

4,227,192

DRIVE SYSTEM FOR LIQUID CRYSTAL DISPLAY DEVICE

Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and
Takashi Yamada, Sayama, all of Japan, assignors to Citizen
Watch Co., Ltd., Tokyo, Japan

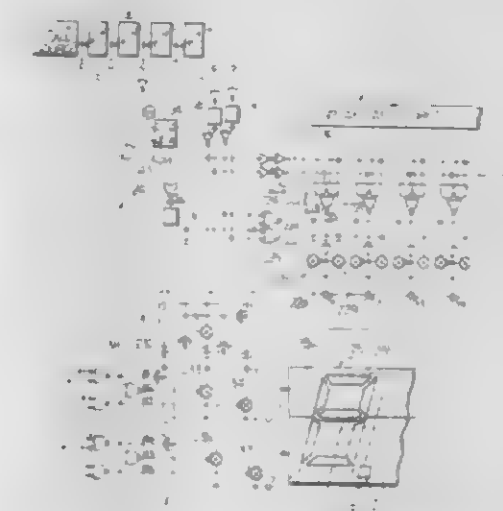
Filed May 26, 1978, Ser. No. 909,889

Claims priority, application Japan, May 31, 1977, 52-63560

Int. Cl.² G06F 3/44

U.S. Cl. 340-765

12 Claims



1. A drive system for a matrix type liquid crystal display device having a plurality of segment electrodes positioned to define a plurality of display figures and a plurality of digit electrodes, with each of said digit electrodes being common to all of said display figures, comprising:

a periodic signal source providing a plurality of periodic signals of fixed frequency, each of said periodic signals being mutually different in frequency;

a control circuit responsive to selected ones of said periodic signals for providing a control signal;

a source of first, second and third reference voltages;

a digit signal generating circuit coupled to receive said first, second and third reference voltages, with the difference between said second and first reference voltages being greater than a threshold level of said liquid crystal display device and the difference between said third and first reference voltages being less than said threshold level, said digit signal generating circuit being responsive to said control signal and to selected ones of said periodic signals for successively applying said first, second and third reference voltages to output terminals thereof in a predetermined sequence, said predetermined sequence being cyclically repetitive, for thereby producing digit signals on said output terminals of the digit signal generating circuit to be applied to corresponding ones of said digit electrodes, with voltage level transitions of said digit signals being

synchronized with voltage level transitions of said control signal;

a segment signal generating circuit composed of a display data source for producing display data signals, first selector circuit means responsive to said display data signals and selected ones of said periodic signals for providing output signals, gate circuit means controlled by said control signal for selectively passing said selected ones of the periodic signals, and second selector circuit means responsive to the periodic signals selectively passed by said gate circuit means and to said output signals from the first selector means for providing a plurality of segment signals which vary in potential between said first and second reference voltage levels, with voltage level transitions of said segment signals being synchronized with voltage level transitions of said control signal, and with each of said segment signals being applied in common to at least two of the segment electrodes of one of said display figures;

whereby selected ones of said segment electrodes are driven in a time-sharing manner by the voltage difference between said selected segment electrodes and the corresponding digit electrodes being periodically made to exceed said threshold voltage level.

4,227,193

METHOD AND APPARATUS FOR MATRIX ADDRESSING OPTO-ELECTRIC DISPLAYS

Ian A. Shanks, Malvern, England, assignor to National Research Development Corporation, London, England

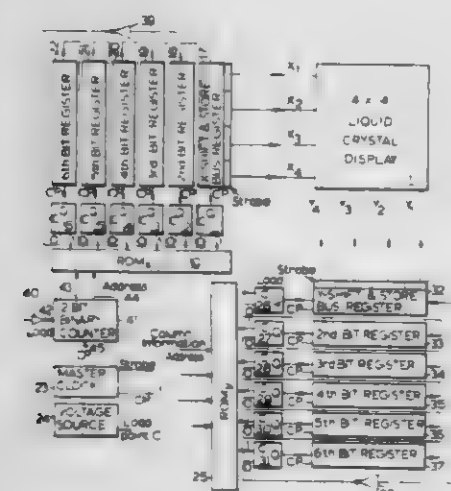
Filed Jul. 25, 1978, Ser. No. 927,823

Claims priority, application United Kingdom, Jul. 26, 1977, 31399/77

Int. Cl.² G06F 3/14

U.S. Cl. 340—784

13 Claims



1. A display apparatus comprising:

(i) An electro optic display having a layer of display material between two dielectric substrates, a first series of m electrodes on one substrate and a second series of n electrodes on the other substrate arranged to define a matrix of m×n elements across which electric signals may be applied to cause an observable display effect;

(ii) means for generating a first series of m different reference electrical waveforms, means for applying a different one of the m different waveforms simultaneously to each electrode in the first series of electrodes;

(iii) means for generating a second series of electrical waveforms different from one another and from each of the first series of waveforms;

(iv) means for selecting waveforms from the second series of waveforms for application to each electrode in the second series of electrodes, the selected waveform being related to the waveforms on the first series of electrodes and to the desired information to be displayed at each element

associated with each electrode in the second series of electrodes;

(v) means for applying the selected waveforms simultaneously to the second series of electrodes concurrently with the waveforms applied to the first series of electrodes;

(vi) whereby an rms voltage less than a display effect threshold voltage is maintained across selected elements and an rms voltage greater than the display effect threshold is maintained across the remaining elements to collectively display the desired information.

4,227,194

SYNTHETIC ARRAY PROCESSOR

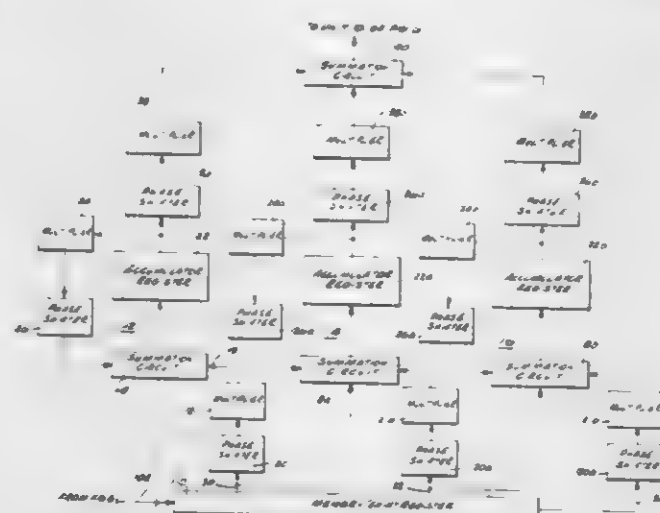
Elvin E. Herman, Pacific Palisades, and Frederick C. Williams, Topanga, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 4, 1971, Ser. No. 106,293

Int. Cl.¹ G01S 13/90

U.S. Cl. 343—5 CM

33 Claims



15. A device for processing radar signals to provide synthetic array line-by-line imagery data in the form of signals produced during each processing period of recurring cycles of said periods, said device comprising:

means for forming a plurality of subarray signals during each processing period; said forming means including a plurality of processor channels one of which is associated with each subarray signal, each processing channel including means for applying an incremental phase adjustment to the subarray signal of the corresponding period of the preceding processing cycle, and means for modifying the resultant phase shifted signal as a function of said radar signals to compensate for changes in the associated subarray between processing cycles; and

means for combining said plurality of subarray signals formed during each processing period; whereby data associated with each one of a plurality of range resolution elements is formed during a corresponding period of each cycle and subsequent lines of imagery data are formed during subsequent processing cycles.

4,227,195

FUZE

James Salerno, Rockville; Fabian T. Liss, Bethesda, both of Md., and Frank Weiss, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 19, 1963, Ser. No. 311,609

Int. Cl.¹ G01S 13/10, 13/52; H03B 11/00

U.S. Cl. 343—17.1 R

6 Claims

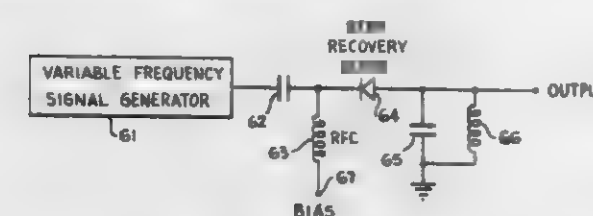
2. A radar signal code generator comprising:

a. a first oscillator for generating a first signal;

b. a second oscillator which is frequency variable and having a control input which is operatively connected to said first oscillator in such a manner that the frequency of the

output of said second oscillator is dependant on the instantaneous amplitude of said first signal; and

c. pulse generator means for producing a series of carrier



wave modulated pulses and operatively connected to said second oscillator in such a manner that the repetition rate of said pulses is equal to the instantaneous frequency of the output of said second oscillator.

4,227,196

DIRECTION FINDING APPARATUS

Huibert B. Langeraar, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

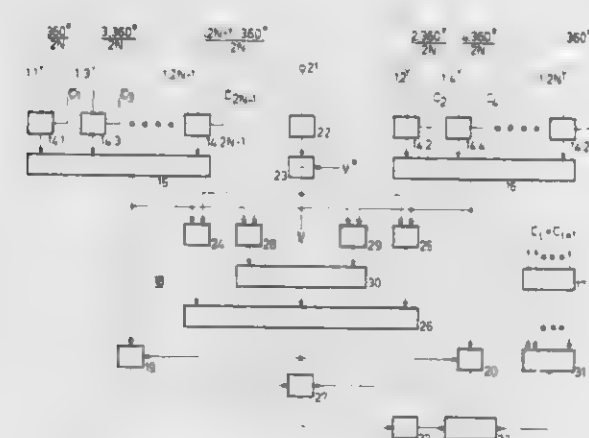
Filed Nov. 1, 1978, Ser. No. 956,753

Claims priority, application Netherlands, Nov. 14, 1977, 7712482

Int. Cl.² H04B 7/00

U.S. Cl. 343—100 CL

3 Claims



1. A radio direction finding apparatus comprising an omnidirectional receiving antenna element, an array of directional receiving antenna elements, two log video detectors, means for separately connecting pairs of contiguous elements of said array to said two detectors, a third log video detector connected to said omni-directional element, means coupled to each of said two detectors and said third detector for producing a control signal when the output signals from each of said two detectors differs from the output signal from said third detector by a predetermined value, a subtraction circuit for generating, in response to output signals from said two detectors, a signal representative of the azimuth of a transmitter transmitting a signal received by the pair of contiguous elements connected to said two detectors, and gate means coupled to each of said two detectors and responsive to said control signal for applying the output signals from said two detectors to said generating means upon occurrence of said control signal.

4,227,197

LOAD MOVING DEVICES

William M. Nimmo, East Kilbride, Scotland, and Richard Jarrett, Leigh-on-Sea, England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Dec. 8, 1978, Ser. No. 967,637

Claims priority, application United Kingdom, Dec. 8, 1977, 51236/77

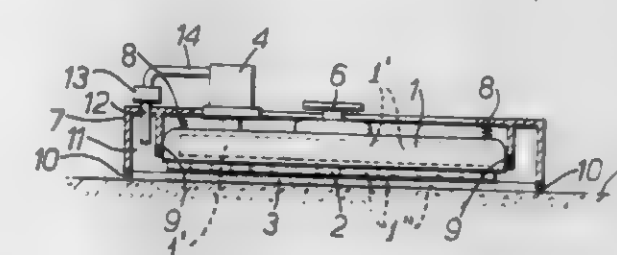
Int. Cl.² H01Q 1/12

U.S. Cl. 343—878

15 Claims

1. A load moving device including a base member provided to support at least part of a load to be moved; means for intro-

ducing a lubricant between said base member and a surface over which said load is to be moved; a skirt member surrounding said base member and having a seal operative between said



skirt member and said surface and tending to prevent the passage of said lubricant beyond said skirt, and means for scavenging said lubricant in the region between said skirt member and said base member.

4,227,198

SEISMIC TRIGGERED SEISMOGRAPH

Stanley V. Preskitt, Dallas, and Larry R. Cornelius, Quinlan, both of Tex., assignors to Dallas Instruments, Dallas, Tex.

Filed Jan. 2, 1979, Ser. No. 271

Int. Cl.² G01D 9/00

U.S. Cl. 346—1.1

16 Claims



1. A seismic triggered seismograph comprising in combination:

(a) means responsive to onset of earth vibrations to record three orthogonal components of earth movement on analog side-by-side magnetic traces, and simultaneously to record an analog representation of concomitant sound traveling through the air as an additional trace, and

(b) means operable upon cessation of said earth vibrations to record at least one of said traces a sequence of numerical data values related to said earth vibrations.

4,227,199

METHOD AND DEVICE FOR TIME-RECORDING

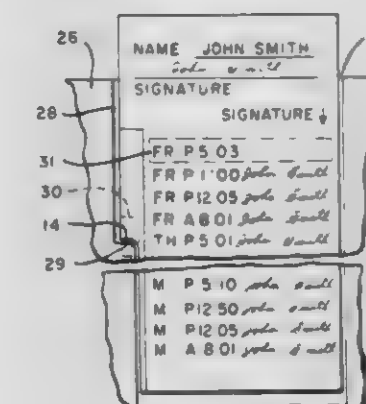
Stephen R. Sharkey, 43 Ventana Ct., Lawrence, N.Y. 11559

Filed May 9, 1979, Ser. No. 37,558

Int. Cl.¹ G01D 9/00

U.S. Cl. 346—1.1

6 Claims



1. Method for applying written and automatically-printed indicia to a record sheet and for correlating the time period during which said different indicia must be applied to said record sheet, comprising the steps of automatically wetting a

predetermined area of the record sheet with a color-permitting material which remains liquid on said sheet for a limited time period, automatically printing indicia on a predetermined area of said record sheet associated with said wetted area of said record sheet, and applying written indicia to said wetted area, while said color-permitting material is still liquid, using a substantially colorless writing liquid which is capable of developing colored written indicia in the presence of said liquid color-permitting liquid.

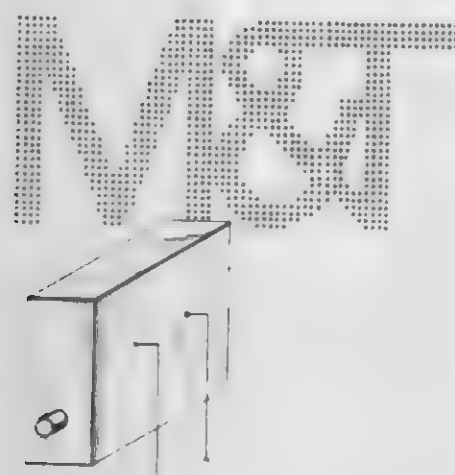
4,227,200

PIGMENTED JET PRINTING AND PRODUCT
Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Oct. 10, 1978, Ser. No. 950,245
Int. Cl.³ G01D 15/18

U.S. Cl. 346—75

2 Claims



1. A process for information recording comprising producing a fine jet of high solids liquid containing resin, modulating the charge density of the jet by applying an electric field in accordance with the information to be recorded, directing the jet of liquid to a recording medium to record said information, while said information is still in a tacky state applying a finely divided pigment under pressure of from 1 to 90 pounds per square inch for from 1 to 95 seconds to said recorded information, thereby binding said pigment to said resin and rendering said information opaque.

4,227,201

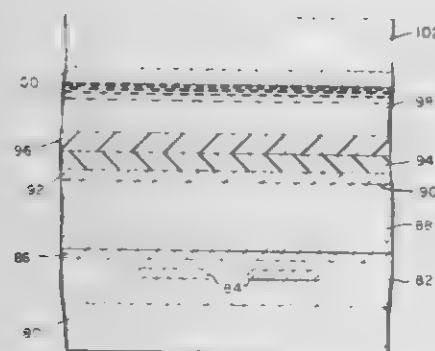
CCD READOUT STRUCTURE FOR DISPLAY APPLICATIONS

Jan Grinberg, Los Angeles; Michael Waldner, Woodland Hills, both of Calif., and Joe A. Jenney, Vienna, Va., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 796,641, May 13, 1977, abandoned.
This application Jan. 22, 1979, Ser. No. 5,418

Int. Cl.³ H01L 29/78; G11C 19/28; G02F 1/13
U.S. Cl. 357—24

11 Claims



1. A liquid crystal light valve activated by a charge-coupled device (CCD) comprising:

- (a) a semiconductor substrate characterized by first and second major opposite surfaces;
- (b) a CCD arrangement formed on said first major substrate surface and including a set of CCD electrodes for storage and transfer of charge carriers in charge depletion buckets adjacent to said set of CCD electrodes;
- (c) a liquid crystal layer adjacent to said second major substrate surface;
- (d) means for establishing within said substrate an electric field substantially below avalanche breakdown wherein the value of said field is selected to form a depletion region and an undepleted region between said first and second major substrate surfaces, said undepleted region separating said charge depletion buckets from said depletion regions; and
- (e) means for biasing said CCD electrodes so that said charge carriers are transferred from adjacent to said CCD electrodes through said undepleted region to said depletion region where they are then electric-field guided without avalanching through said depletion region to said second major substrate surface without substantial lateral spreading in order to activate said liquid crystal layer.

4,227,202

DUAL PLANE BARRIER-TYPE TWO-PHASE CCD

Al F. Tasch, Jr., Richardson, and Pallab K. Chatterjee, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

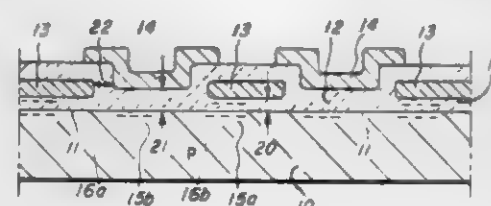
Filed Oct. 27, 1977, Ser. No. 846,009

The portion of the term of this patent subsequent to Feb. 6, 1996, has been disclaimed.

Int. Cl.³ H01L 29/78, 29/04; G11C 19/28

U.S. Cl. 357—24

8 Claims



- 1. A charge-coupled device comprised of:
- (a) a semiconductor substrate having dopant impurity atoms of a first type and a first surface;
- (b) a charge-transfer channel in said substrate near said first surface;
- (c) an insulating layer of non-uniform thickness on said first surface over said channel;
- (d) a plurality of first electrodes spaced apart from each other and lying on said insulating layer transversely to said channel;
- (e) a plurality of second electrodes lying on said insulating layer transversely to said channel in the spaces between said first electrodes;
- (f) a barrier region of dopant impurity atoms of said first type under each of said first and second electrodes; each of said barrier regions extending transversely across said channel and along said channel from one transverse edge of a respective one of said electrodes to a medial portion of said electrode; wherein said insulating layer underlies each of said first electrodes by a first uniform thickness, underlies each of said second electrodes by a second uniform thickness and separates each of said first electrodes from adjacent second electrodes by approximately said second thickness, with said second thickness being approximately 20% to 60% greater than said first thickness.

4,227,203

SEMICONDUCTOR DEVICE HAVING A POLYCRYSTALLINE SILICON DIODE

Hiroaki Mikoshiba, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,766

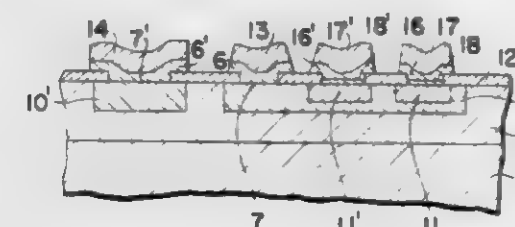
Claims priority, application Japan, Mar. 4, 1977, 52-23594

Int. Cl.³ H01L 29/04, 27/04

U.S. Cl. 357—59

6 Claims U.S. Cl. 358—28

4 Claims



1. A semiconductor device comprising a monocrystalline silicon substrate and a polycrystalline silicon layer including a first polycrystalline film of one conductivity type formed on a major surface of said monocrystalline silicon substrate, and a second polycrystalline film of an opposite conductivity type formed on a surface of said first polycrystalline film so as to form a P-N junction between said first and second polycrystalline films, said P-N junction being substantially flat and parallel with said major surface of said monocrystalline silicon substrate and ending at a peripheral side surface of said polycrystalline silicon layer.

4,227,204

METHOD AND APPARATUS FOR PCM-ENCODING NTSC COLOR TELEVISION AT SUB-NYQUIST RATE

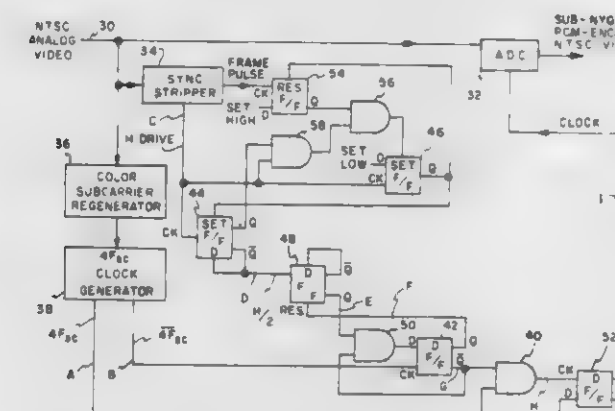
John P. Rossi, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,533

Int. Cl.² H04N 9/32

U.S. Cl. 358—13

11 Claims



1. A method of digitally encoding an NTSC color television signal having a color subcarrier frequency F_{sc} and a line scan frequency F_h , comprising the steps of:
generating a sampling signal having a frequency $2F_{sc}$, the sampling phase of which shifts by 180° every alternate time sequential television line;
sampling said television signal in response to the sampling signal; and
converting the sampled television signal into digital form.

4,227,205

HUE AND SATURATION CONTROL CIRCUITRY REQUIRING SINGLE COUPLING CAPACITOR

Hiroshi Gomi, Fukaya, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

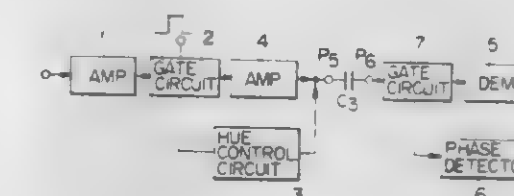
Filed Oct. 14, 1977, Ser. No. 842,323

Claims priority, application Japan, Oct. 16, 1976, 51-123431

Int. Cl.² H04N 9/535

6 Claims U.S. Cl. 358—28

4 Claims



1. A composite color signal-processing circuit for processing a time-shared composite color signal including burst and chrominance signals at distinct time periods comprising:
a vector signal generating circuit having an input coupled to said composite signal for generating first and second vector signals having different phases with respect to each other, said vector signal being generated during said burst signal period;
a vector signal synthesizing means coupled to said vector signal generating circuit for controlling the relative absolute values of said first and second vector signals and for synthesizing said first and second controlled vector signals;
a gain control circuit coupled to said composite color signal for extracting and controlling the gain of a chrominance signal from said composite color signal in response to a gate pulse;
a common load coupled to the outputs of said vector signal synthesizing means and to said gain control circuit for combining their respective outputs;
an AC coupling capacitor coupled to said common load for delivering an AC component of said combined outputs;
a first phase detector coupled to said coupling capacitor for responding to said burst signal period in response to the gate pulse; and
a second phase detector coupled to said AC coupling capacitor for responding to a chrominance signal in response to said gate pulse.

4,227,206

SOLID STATE TELEVISION CAMERA

Fumio Nagumo, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

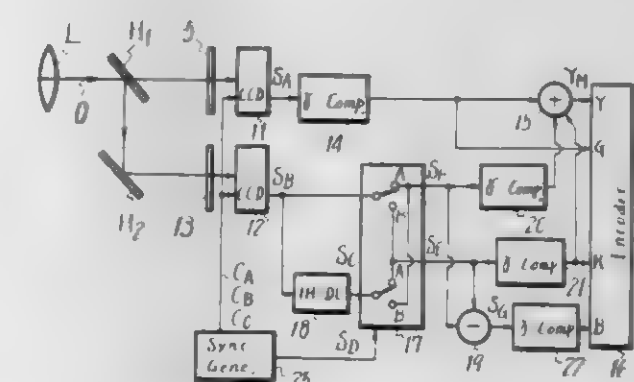
Filed Oct. 11, 1978, Ser. No. 950,458

Claims priority, application Japan, Oct. 13, 1977, 52-122736

Int. Cl.² H04N 9/07

U.S. Cl. 358—44

8 Claims



1. A solid state television camera having a solid state image sensing device including a plurality of individual light sensing units arranged in both horizontal and vertical rows comprising:

- (a) a plurality of color filter elements with different transmissibilities faced with said individual light sensing units including first and second color filter elements for transmitting first and second primary color signals and third color filter elements for transmitting both of a third and said first primary color signals as a composite color signal;
- (b) a switching circuit for converting line sequential signals produced from each of said light sensing units into a simultaneous color signal;
- (c) an adder for adding said first and second primary color components and said composite color signal produced from each of said light sensing units faced with said first, second and third color filter elements individually by which a luminance signal is composed;
- (d) a mixer for mixing said composite color signal and said first primary color signal from which said third primary color signal is produced; and
- (e) a color encoder for encoding said first, second and third primary color signal components from which a composite color television signal is produced.

4,227,207

CRT FILM SCANNER WITH COMPENSATION FOR LOCAL BRIGHTNESS VARIATIONS OF SCANNING BEAM

John D. Millward, Hitchin, England, assignor to The Rank Organisation Limited, London, England

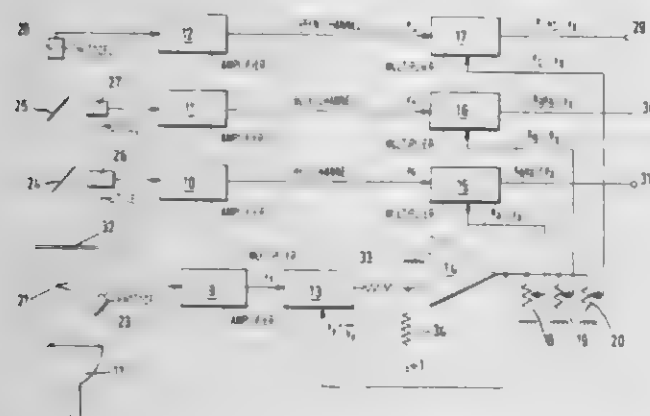
Filed Apr. 27, 1978, Ser. No. 900,489

Claims priority, application United Kingdom, Apr. 27, 1977, 52-17535

Int. Cl.² H04N 9/11

U.S. Cl. 358-54

6 Claims



1. A flying spot film scanner apparatus for producing colour television signals from photographic film, comprising: cathode ray tube means for producing a flying spot scanning beam of nominally constant intensity;
- first means for focussing said beam onto an image plane wherein a film is located in use of said apparatus;
- second means for sensing light modulated by the film to produce a plurality of television colour component signals corresponding to differently coloured components of the film;
- a plurality of colour channels for processing respective ones of the colour component signals;
- third means responsive to variations in the overall intensity of the scanning beam prior to modulation by the film to generate a further signal which varies with variations in the overall intensity of the beam; and
- fourth means responsive to the further signal to apply differential individual corrections to the plurality of colour component signals whereby to compensate at least in part for differential intensity variations across the colour spectrum of the scanning beam, the fourth means comprising means for generating individual correction signals as different proportions of the further signal and means for applying said individual corrections signals to respective ones of the colour channels.

4,227,208

OPTICAL COMB FILTER

Itsuo Takanashi, Yokohama; Koichiro Motoyama, Ninomiya; Tadayoshi Miyoshi, Yokohama; Shintaro Nakagaki, Yokohama; Sumio Yokokawa, Yokohama, and Kenichi Miyazaki, Sagami, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

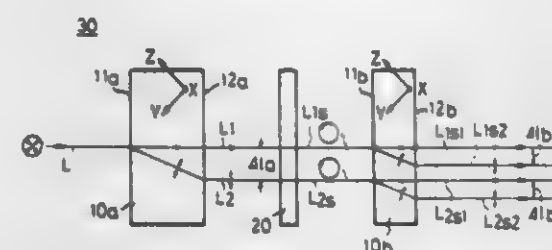
Filed Sep. 14, 1978, Ser. No. 942,283

Claims priority, application Japan, Sep. 17, 1977, 52-111841

Int. Cl.² H04N 9/04

U.S. Cl. 358-55

5 Claims



1. An optical comb filter comprising: a plurality of optical comb filter element means disposed successively in the advancing light direction, said successive element means respectively having optical comb filter characteristics for attenuating and removing specific space frequencies which do not have mutual relationships of odd-number multiples and frequencies that are respectively odd-number multiples of said specific space frequencies; and at least one phase plate means interposed between neighboring optical comb filter element means respectively in front and rear positions with respect to said light advancing direction, normal and abnormal linearly polarized light exiting from said front filter element means, said phase plate means converting said linearly polarized light into substantially circularly polarized light which enters a rear one of filter element means as incident light, said substantially circularly polarized light being divided in said rear filter element means into normal light and abnormal light exiting with mutually equal light quantity.

4,227,209

SENSORY AID FOR VISUALLY HANDICAPPED PEOPLE

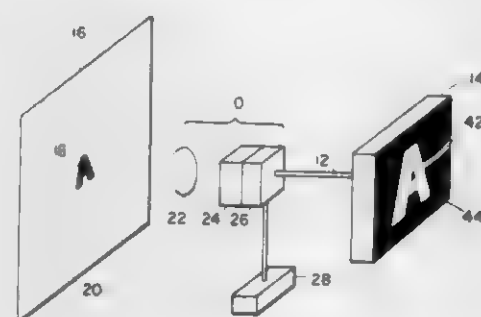
David A. Warner, Cambridge, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 9, 1978, Ser. No. 932,271

Int. Cl.² H04N 7/00

U.S. Cl. 358-94

24 Claims



1. A sensory aid system for visually handicapped persons, comprising:
- an image sensor including a lens assembly adapted to focus a graphic image on a plurality of detector networks, each detector network including means for converting a portion of a graphic image into an electrical signal representative of a picture element of that image; and
- display means including an array of display elements wherein at least one of said display elements is coupled to a corresponding one of said detector networks wherein said image sensor further comprises a control means, said control means being operable to couple each of said drive signals to groups of one or more adjacent elements in said display means.

detector array wherein the number of display elements in said groups is selectable.

4,227,210

RADIATION SHUTTERS

Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

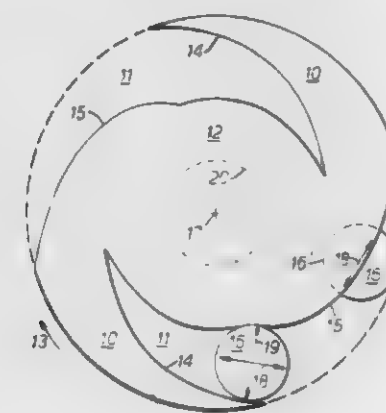
Filed Feb. 9, 1978, Ser. No. 876,266

Claims priority, application United Kingdom, Mar. 31, 1977, 13605/77

Int. Cl.² H04N 5/33, 3/14; H01L 17/00; G01J 1/00

U.S. Cl. 358-113

11 Claims



1. A pyroelectric television camera arrangement including a camera tube and a rotatable radiation shutter mounted so as to be capable of modulating thermal radiation incident upon the camera tube, the shutter having a plurality of blade portions arranged symmetrically about its axis of rotation and having opening and closing edges in the shape of a spiral, the camera tube being orientated in relation to the blade portions so that the line scan direction of the television raster is substantially aligned with said opening and closing edges as the thermal radiation is modulated by rotation of the shutter.

4,227,211

METHOD FOR ANALYZING SEASONAL GROWING CONDITIONS OF CROPS

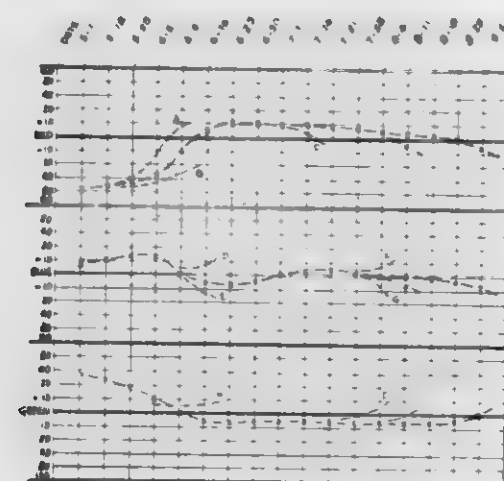
Lynnford E. Disbrow, Kennewick, Wash., assignor to Columbia Photograft, Inc., Pasco, Wash.

Filed Sep. 22, 1978, Ser. No. 944,702

Int. Cl.² H06N 5/18

U.S. Cl. 358-113

4 Claims



1. A method of evaluating the current growing condition of an agricultural crop within a defined field area at a selected time during its growing season, comprising the following steps: using infrared photographic techniques to photograph the field area from an aircraft under known daylight conditions;
- producing a color photographic image representative of the

infrared radiation emanated from the field area as photographed;

electronically integrating and measuring the average color density values contained in the photographic image over the total defined field area for a plurality of selected colors to arrive at a measured density value for each selected color;

and comparing the measured density value for each selected color to experientially derived density values for the respective colors representative of optimum conditions for the crop at a corresponding time during its growing season.

4,227,212

ADAPTIVE UPDATING PROCESSOR FOR USE IN AN AREA CORRELATION VIDEO TRACKER

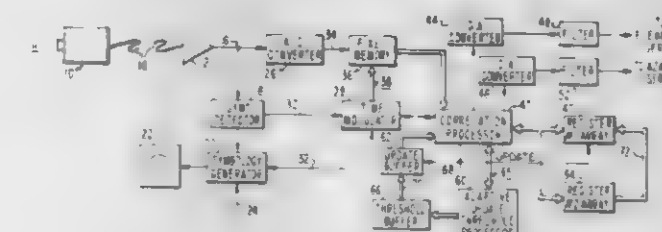
Martin G. Woolfson, and Floyd C. Bentley, both of Baltimore, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1978, Ser. No. 944,523

Int. Cl.² H04N 7/18

U.S. Cl. 358-126

16 Claims



1. In an area correlation video tracker including an electro-optical sensor which generates frames of video information representative of an intensity pattern of the field of view of said electro-optical sensor corresponding to discrete intervals in time; means for partitioning a preselected portion of said generated video frames into an array of picture elements, the value of each picture element being representative of the gray level intensity corresponding to its index in said array, said array being additionally partitioned into a predetermined number of indexed subarray zones; means for acquiring the gray level values of the picture element of a selected first subarray zone corresponding to an acquisition video frame; and correlation means for cross-correlating, based on a predetermined metric correlation function, the gray level values of the picture elements of said selected first subarray zone with the picture element gray level values of said partitioned subarray zones of each of a number of video frames generated subsequent said acquisition video frame to identify a second subarray zone of picture elements in each of said number of subsequently generated video frames and to derive a cross-correlation metric value associated with each of said identified second subarray zones, the improvement of an adaptive updating means comprising:

means operative to perform an autocorrelation of the gray level values of the picture elements of said selected first subarray zone with the gray level value of the picture elements of an at least one predetermined third subarray zone of said acquisition video frame in accordance with said predetermined metric correlation function to derive a reference threshold correlation metric value and to further perform an autocorrelation of the gray level values of the picture elements of said identified second subarray zone with the gray level values of the picture elements of at least one predetermined fourth subarray zone of the same video frame in accordance with said predetermined metric correlation function to derive another threshold correlation metric value, said another threshold correlation metric value being derived for each of said number of subsequently generated video frames;

means operative to render an update condition based on the results of a comparison between one derived cross-corre-

a lock member for locking said ejecting member and said slide member at their respective retired positions;
means for allowing one of said ejecting member and said slide member to move backwardly and forwardly while the other is locked by said lock member;
a power member provided along said side of the guide member and movable backwardly and forwardly;
a set spring member for normally urging said power member in the retreating direction;
means for disengageably connecting said slide member to said power member;
means for releasing the connection between said slide member and said power member when the cassette tape is ejected;
an ejecting spring member for normally urging said slide member in the advancing direction; and
means interlocked with said ejecting member for moving said guide member in the vertical direction to set the cassette tape into and remove the same from a recording/reproducing position.

4,227,225

MAGNETIC HEAD ASSEMBLY

Kowhei Nishikawa, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

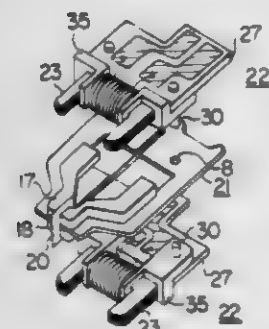
Filed May 8, 1978, Ser. No. 903,796

Claims priority, application Japan, May 12, 1977, 52-54898; May 13, 1977, 52-55628; May 13, 1977, 52-55629; May 13, 1977, 52-55630; May 13, 1977, 52-55631; Jun. 2, 1977, 52-65358

Int. Cl.³ G11B 5/12, 5/20

U.S. Cl. 360-128

7 Claims



1. A magnetic head of the type having a plurality of head elements and coil windings comprising:

a shield plate assembly comprising first and second nonmagnetic spacer plates disposed on each side of a magnetic plate, each of said spacer plates containing an aperture for receiving the windings of a head coil and having an auxiliary slot;

first and second U-shaped cores on the free side of each spacer plate and first and second back cores;

said first and second back cores each having a head coil winding supported thereon, said back cores being located on the free side of each of said U-shaped cores with said head coils disposed within said apertures, said back cores being in magnetic coupling relationship with an adjacent U-shaped core;

said shield plate assembly and U-shaped cores having a common magnetic gap located therein adjacent an edge thereof and remote from said head coils;

a spacer located within said common magnetic gap for maintaining the spacing of said magnetic gap; and

a shield case for housing said shield plate assembly, back cores, and U-shaped cores, said shield case having an opening for exposing said magnetic gap to a record medium, wherein two magnetic circuits are formed, each having a gap which is in precise alignment with the remaining gap but separated therefrom.

4,227,226

CASSETTE TAPE PLAYER

Takashi Tashiro, Kawasaki; Manabu Sugai, and Akira Matsumoto, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka, Japan

Filed Nov. 22, 1978, Ser. No. 963,045

Claims priority, application Japan, Nov. 28, 1977, 52-143197; Nov. 28, 1977, 52-143198; Nov. 28, 1977, 52-143199; Apr. 26, 1978, 53-50552

Int. Cl.² G11B 15/24, 21/22

U.S. Cl. 360-137

7 Claims



1. In a cassette tape player wherein a cassette tape is horizontally inserted and then vertically moved into a playing position and is ejected by a reverse vertical and then horizontal movement of the cassette tape, and which provides a fast forwarding operation and a rewinding operation, said cassette tape player includes a stopper means which swings through a predetermined angle when the cassette is horizontally inserted a predetermined distance and moves slightly backwards in the horizontal direction opposite to the cassette inserting direction together with the cassette when the cassette inserting force is relieved, thereby allowing the cassette to vertically move into the playing position;

a first means, including a member movable in one direction and rotatable, to set the fast forwarding operation or the rewinding operation through the rotation of said member, and to eject the cassette from the playing position or to reset to the playing mode from the fast forwarding operation or the rewinding operation through the movement of said member in said one direction;

a second means, operable independent of said first means, for detecting stopping of movements of the tape and to eject the cassette from the playing position when said member is displaced in said one direction or to reset to the playing mode from the fast forwarding operation or the rewinding operation, when said member is not displaced.

4,227,227

PROTECTIVE CIRCUIT FOR A POWER AMPLIFIER

Hiroyasu Yamaguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 6, 1978, Ser. No. 922,591

Claims priority, application Japan, Jul. 12, 1977, 52-83266; Jul. 12, 1977, 52-83268

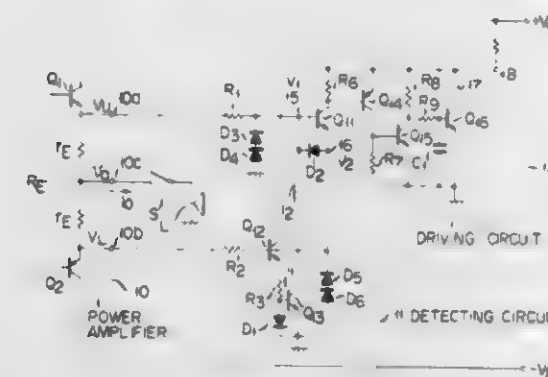
Int. Cl.² H02H 7/20

U.S. Cl. 361-86

8 Claims

1. A protective circuit for a push-pull power amplifier including a load current-detecting resistor connected between two transistors jointly constituting said power amplifier for detecting the load current of said power amplifier; a load connected to said power amplifier through said load current-detecting resistor; a switch for shutting off said load current; a load resistance detecting circuit for detecting the resistance of said load; and a driving circuit for causing said switch to be opened by an output of said load resistance detecting circuit when the resistance of said load falls to a lower level than prescribed, characterized in that said load resistance-detecting circuit comprises circuit means for drawing out a first signal from one end of said load current-detecting resistor; circuit

means for drawing out a second signal of lower potential than said first signal from the other end of said load current-detecting resistor; and control circuit means, which, when said load has a higher resistance than prescribed, holds the potential difference between said first and second signals to be lower than a predetermined level by causing the potential of said first signal to drop as a result of control on said first signal by said



second signal of lower potential than said first signal, and, when said load has a lower resistance than prescribed, increases the potential difference between said first and second signals over said predetermined level; and said driving circuit is supplied with said first and second signals, and includes circuit means for opening said switch, when the potential difference between said first and second signals has a larger value than said predetermined value.

4,227,228

MINIATURE SOCKETED FUSE FOR A DECORATIVE STRING OF SERIES-CONNECTED MINIATURE INCANDESCENT LAMPS

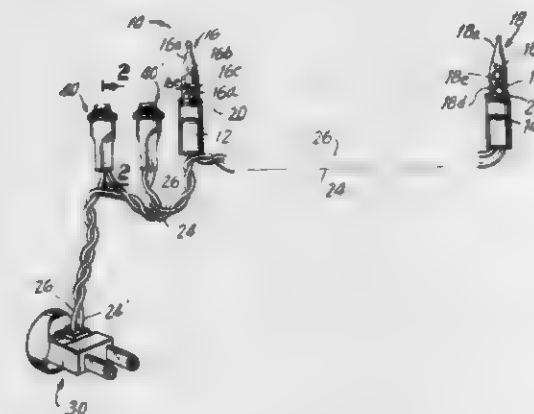
Paul S. Y. Cheng, P.O. Box 5714, Kowloon, Hong Kong, assignor to Albert V. Sadacca, Chicago, Ill. and Paul S. Y. Cheng, Kowloon, Hong Kong

Filed Dec. 21, 1978, Ser. No. 972,035

Int. Cl.² A47G 33/16; H01H 85/54

U.S. Cl. 361-104

15 Claims



15. An improved electrical fuse comprising:

(a) a fuse socket having fire-resistant and electrically-insulating wall portions bounding an elongated interior compartment which has an open end, and a pair of electrical contacts mounted in spaced-apart relationship within said compartment;

(b) an elongated fuse body insertable with frictional engagement into said compartment through said open end thereof, said fuse body having fire-resistant and electrically-insulating wall portions bounding a bore which has a base wall and an open end at one axial end region of said fuse body, and bounding a pair of interior passageways which extend from said base wall in direction lengthwise of said fuse body to the other opposite axial end region thereof;

(c) a bendable, electrically-conductive metallic fuse wire of uniform diameter on said fuse body, said fuse wire having a central wire portion located in said bore adjacent said

base wall thereof, a pair of intermediate wire portions each located in and extending through a respective passageway, and a pair of end wire portions each bent generally rearwardly in a direction from said other axial end region of said fuse body towards said one axial end region thereof.

(i) each bent end wire portion overlying the outer surface of said fuse body and engaging the respective contacts in said sockets to thereby establish an electromechanical connection therewith when said fuse body is inserted into said compartment of said socket;

(d) keying means on said fuse socket and said fuse body for properly locating the latter in the former; and

(e) a fuse plug insertable with frictional engagement into said bore through said open end of said fuse body, said fuse plug being of fire-resistant and electrically-insulating material and overlying said central wire portion of said fuse wire to thereby enclose the latter in an environment which is resistant to heat and fire.

4,227,229

LIGHTNING ARRESTER DEVICE

Mitsumasa Imataki, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

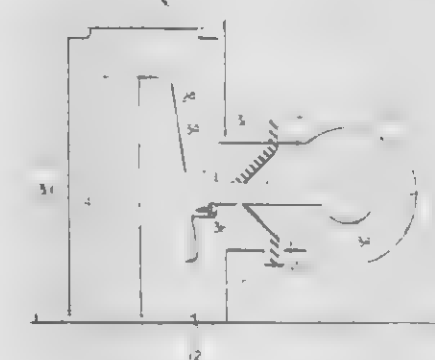
Filed Mar. 20, 1979, Ser. No. 22,360

Claims priority, application Japan, Mar. 20, 1978, 53/42070[U]

Int. Cl.² H02H 9/04

U.S. Cl. 361-117

11 Claims



1. A lightning arrester device comprising a housing, a main arrester body disposed within said housing axially thereof, a first electrical conductor extending from a higher voltage end of said main arrester body in a direction of length of said main arrester body to be disposed along said main arrester body, and a second electrical conductor connected to said main arrester body through said first electrical conductor to be disposed substantially perpendicularly to the longitudinal axis of said main arrester body.

4,227,230

SWITCH MODE DRIVER

William E. Bray, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 19, 1978, Ser. No. 943,822

Int. Cl.³ H01H 47/32

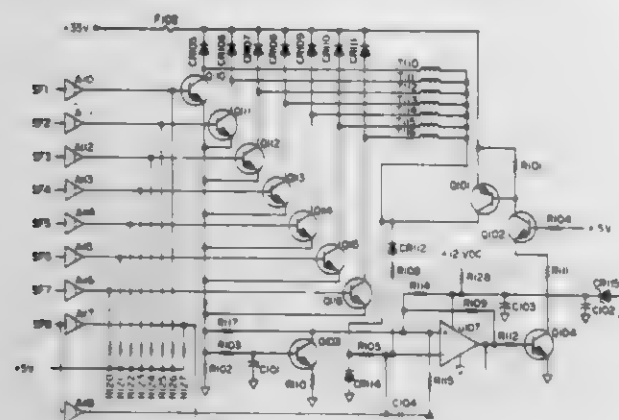
U.S. Cl. 361-152

12 Claims

1. A wire matrix switch mode driver for connection to a DC source of power for driving the armatures of a plurality of solenoids that are selectively connected across and disconnected from the DC source, including means for providing enable signals for a predetermined time for selecting each solenoid, comprising:

(a) enabling means connected to the plurality of solenoids and operatively connected to receive the enable signals and responsive thereto to provide a current path for each of the selected solenoids both when the plurality of solenoids is connected across the DC source and when it is disconnected from the DC source;

(b) a power switch adapted to drive any or all of the plurality of solenoids, connected to the DC source of power and to the plurality of solenoids, and having control means for permitting the power switch to close, thereby connecting the plurality of solenoids to the DC source and for permitting the power switch to open, thereby disconnecting the plurality of solenoids from the DC source; and



(c) timing means responsive to the means for providing enable signals and connected to the control means to permit the power switch to open after it has been closed a predetermined time, and to close after it has been open a predetermined time.

4,227,231

INTEGRAL RELAY LOW VOLTAGE RETENTIVE MEANS

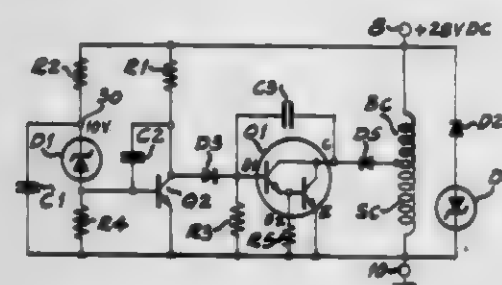
James E. Hansen, Oak Creek, and Willard S. Lorenz, Oconomowoc, both of Wis., assignors to Eaton Corporation, Columbus, Ohio

Filed Sep. 5, 1978, Ser. No. 939,858

Int. Cl.² H01H 47/04

U.S. Cl. 361-154

12 Claims



1. A D.C. actuatable electromagnetic device comprising:
a D.C. supply voltage source;
a low resistance boost coil and a higher resistance operating coil for said device connected for energization directly across said source;
solid state switching means for by-passing said operating coil and connecting said boost coil across said source and being effective when turned on for causing energization of said boost coil at high current across said source to provide a strong magnetic field for actuation of said electromagnetic device and being alternatively effective when turned off for reestablishing energization of said operating coil in series with said boost coil at lower current directly across said source to maintain said electromagnetic device actuated at normal supply voltage value;
and means for controlling said solid state switching means comprising:
control means responsive to drop in said supply voltage below a predetermined value for quickly turning said solid state switching means on thereby to energize said boost coil at high current across said source to prevent intermittent de-activation or chattering of said electromagnetic device.

4,227,232

CLUTCH PROTECTION CIRCUIT

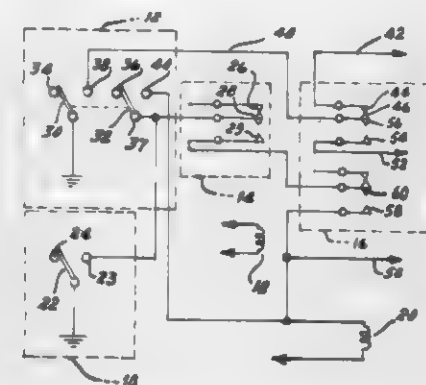
Jonathan M. Goode, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 806,434, Jun. 14, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,696

Int. Cl.³ H02H 3/24

U.S. Cl. 361-191

6 Claims



1. A protection circuit for use in devices having cyclic multiple clutch system including, an AC power supply, a motor control means and clutch drive motor, a feed control means and feed clutches, a protection cycle generator and data clutches, the improvement comprising:

a source of direct current power;
a first electromagnetic relay switch having an electromagnet and a plurality of switch contacts;
wherein one of the contacts is connected to the motor control means, the feed control means and the protection cycle generator and;
wherein another of the contacts is connected to the motor control motors and feed control means;
a second electromagnetic relay switch having an electromagnet and a plurality of switch contacts;
wherein one of the contacts is connected to a contact of the first said relay switch;
a biased switch having a plurality of switch contacts, wherein one of the contacts is connected to a contact of the first said relay switch, and wherein another of the contacts is connected to a contact of the second said relay switch;
and a mechanical switch means having a plurality of switch contacts;
wherein one of said contacts is connected to a contact of said bias switch.

4,227,233

CORONA DISCHARGE DEVICE FOR ELECTROGRAPHIC APPARATUS

Masaji Nishikawa, and Munio Kasuga, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

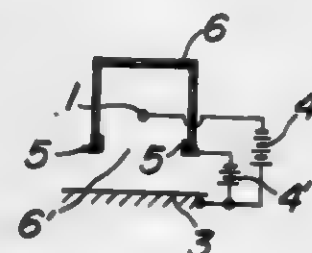
Filed Sep. 30, 1977, Ser. No. 838,233

Claims priority, application Japan, Oct. 1, 1976, 51/117118

Int. Cl.² G03G 15/00

U.S. Cl. 361-225

8 Claims



1. In a corona discharge device for electrographic apparatus employing a corona discharge wire, a field electrode for estab-

lishing a backing electric field and a high voltage source connected between said corona discharge wire and said field electrode, the improvement comprising: two corona electric field establishing electrodes (5, 5; 13, 13) are provided without any other electrically conductive electrode, said two electrodes (5, 5; 13, 13) being formed of two thin bar-shaped conductors, spaced apart from each other and arranged between said corona discharge wire (1) and said field electrode (3) in such a position that a flow of corona ions directed from said corona discharge wire (1) directly toward said field electrode (3) passes between said two electrodes (5, 5; 13, 13) without being disturbed by said two electrodes (5, 5; 13, 13), and means for applying an electrical potential intermediate between a potential of said corona discharge wire (1) and a potential of said field electrode (3) to said corona electric field establishing electrodes (5, 5; 13, 13).

4,227,234

CORONA CHARGING ELEMENT

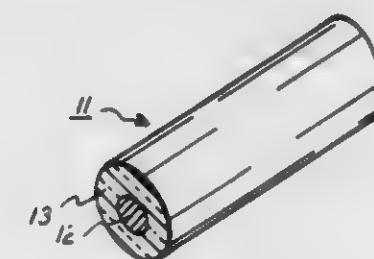
Donald A. Seanor, Pittsford, and Judy P. Nagel, Romulus, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 3, 1978, Ser. No. 921,421

Int. Cl.² H05F 3/04

U.S. Cl. 361-229

25 Claims



2. An improved corona discharge member of the type having an inner conductive electrode and an outer dielectric coating made by the process comprising applying stress to the inner conductive electrode; coating the inner conductive electrode with a dielectric coating capable of being compressed, said dielectric being in a molten state; cooling the dielectric after it has wet the surface of the inner conductive electrode; and releasing the stress on the inner conductive electrode, whereby the inner conductive electrode contracts causing a compression of the outer dielectric coating.

4,227,235

STATIC NEUTRALIZER

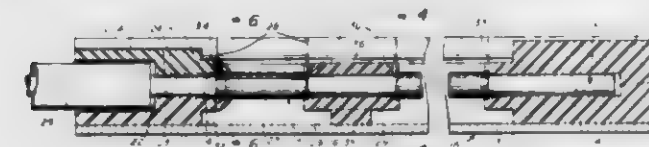
Peter Bishop, 1 Varney Sq., Freeport, Me. 04032

Filed Apr. 3, 1978, Ser. No. 893,059

Int. Cl.² H01T 19/04

U.S. Cl. 361-230

16 Claims



1. A static electric neutralizer comprising a bar in the form of a U-shaped channel of a predetermined length, a cable extending lengthwise thereof, the ratio between the width of the channel and the diameter of the cables within the approximate range of from 2.5:1 to 3.5:1, a series of discharge devices each including a portion of substantial length mounted on the insulation of the cable and capacitatively coupled to the conductor thereof and at least one emitter point, a series of supporting and spacing insulators within said channel through which the cable extends, one insulator between each two discharge devices against which proximate ends of the devices are seated, a dead end insulator at one end of the bar receiving an end of said cable and against which one end of the proxi-

4,227,236

FLEXIBLE BODY FOR USE IN LIQUID LEVEL INDICATING APPARATUS

Wolfgang Kübler, Industriestrasse 31, Ch-6300 Zug, Switzerland

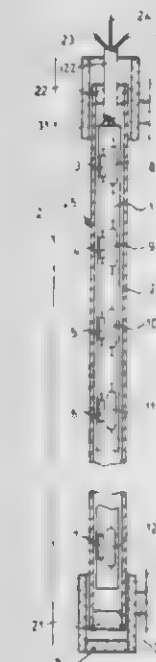
Filed Apr. 3, 1979, Ser. No. 26,672

Claims priority, application Switzerland, Apr. 13, 1978, 3982/78

Int. Cl.² H01H 35/18

U.S. Cl. 361-331

16 Claims



1. In an apparatus for ascertaining the upper level of a supply of flowable material which is confined in a vessel and wherein a switch-actuating element floats on said supply of flowable material, the combination of an elongated tubular sheath consisting of flexible insulating material; an elongated carrier consisting of flexible insulating material and being sealingly confined in said sheath; and a plurality of electrical components on said carrier, said components including a row of spaced-apart electric switches which extend in the longitudinal direction of said carrier and each of which is actuatable by said element, said carrier having regions disposed between the switches of said row and being readily flexible without damage to said components so as to allow for conversion of said carrier and said sheath into a package whose maximum dimension is a small fraction of the length of said sheath.

4,227,237

ELECTRONIC COMPONENT CABINET

Terrence H. Matthews, and Brian K. White, both of Ottawa, Canada, assignors to Mitel Corporation, Kanata, Canada

Filed Aug. 14, 1978, Ser. No. 933,539

Claims priority, application Canada, May 24, 1978, 303988

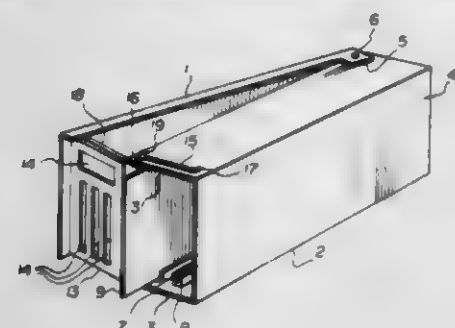
Int. Cl.² H02B 102

U.S. Cl. 361-415

10 Claims

1. A cabinet for housing at least one printed circuit board comprising a base member, an elongated generally U-shaped cover member having a pair of legs adjoining an outer surface,

having an open side generally facing the base member, and having at least one open end, a pair of parallel channel members disposed opposite and facing each other along the inside of the legs of the cover member parallel to the outer surface, one end of each of the channel members facing the open end of the cover member, means for hinging the other end of the cover member relative to the base whereupon said open end can be swung away from the base, means for latching the open end of the channel member in position against the base and in a predetermined alternative position away from the base, one



of the legs containing an enclosed narrow slot extending along one leg about parallel to said open end of the cover member, and the means for latching comprising a spring wire extending outwardly from the base along the leg, having an extension bent into the slot, whereby the extension is located adjacent one end of the slot with the cover member in position against the base and adjacent the other end of the slot with the cover member in position away from the base, thus limiting further movement of the cover member away from the base, and further including means for locking the extension in position at either end of the slot.

4,227,238

MOUNTING AND ELECTRICAL CONNECTION MEANS FOR OPERATION UNIT FOR ELECTRIC DEVICES

Masashi Saito, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

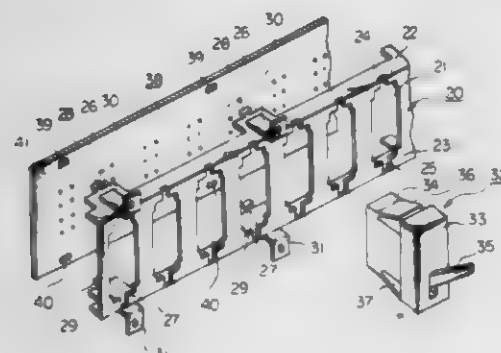
Filed Sep. 18, 1978, Ser. No. 942,969

Claims priority, application Japan, Sep. 28, 1977, 52-115515; Sep. 28, 1977, 52-129248[U]; Nov. 1, 1977, 52-145828[U]; Jan. 20, 1978, 53-4670[U]; Jan. 20, 1978, 53-4671[U]

Int. Cl.² H05K 7/18, 1/14

U.S. Cl. 361-415

22 Claims



1. An operation unit for electric devices comprising a plurality of electric operation components each having at least one electric terminal, a chassis provided with a plurality of mounting apertures receptive of said electric operation components, at least one printed circuit base block comprised of a first plate portion having at least a printed circuit and a second plate portion bent rearwardly from said first plate portion, said first plate portion facing said chassis and having at least one through hole receptive of said electric terminal of said electric operation component and in communication with an electrically conductive layer forming said printed circuit, and said second plate portion being provided with at least one printed circuit, said first and second plate portions having respective side

fringes, means coupling said chassis to said printed circuit base block including a holder firmly but separably in engagement with said side fringes of said first and second plate portions, and means for mounting said chassis to a panel of an electric device.

4,227,239

WIRE ROUTING CHANNEL

Ronald G. Boyer, Peoria, and Arthur E. Olt, Jr., Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

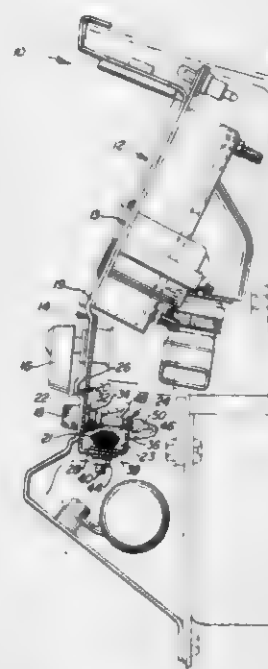
PCT No. PCT/US79/00226, §371 Date Apr. 12, 1979, §102(e) Date Apr. 12, 1979

This PCT application Filed Apr. 12, 1979, Ser. No. 83,995

Int. Cl.³ H02B 3/04

U.S. Cl. 361-422

4 Claims



1. A bracket assembly (20) for a wired panel (10) having at least two electrical components (18) extending therethrough, said bracket assembly (20) having a first part (22) connected to a second part (24) to form a trough (23) therebetween, said first part (22) having a back portion (26) for attaching said bracket assembly (20) to said panel (10), said electrical components (18) extending through said back portion (26) and projecting in spaced relation to said trough (23), said second part (24) having a support portion (36) with at least two open-ended keyhole slots (45) formed therein, a cable (21) disposed in said trough (23), a set of selected wires (46) from said cable (21) having connectors (50) attached at the free ends thereof, said connectors (50) being connected to a mating connector (54) on one of said electrical components (18), a grommet (52) snapped over a portion of each of said selected wires, said grommet (52) and wire (46) being seated in one of said keyhole slots (45) in close proximity to said electrical component (18), and a second set of selected wires (48) from said cable (21) having second connectors (58) attached at the ends thereof, said second connectors (58) engaging with mating connectors (60) on said electrical components (18).

4,227,240

PHOTOFLASH UNIT WITH FORMED INSULATING SHEET

John W. Shaffer, and Donald E. Armstrong, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,197

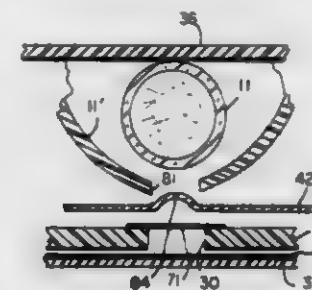
Int. Cl.² G03B 15/02

U.S. Cl. 362-13

13 Claims

1. A photoflash unit comprising a printed circuit board having circuitry on a surface thereof, a plurality of flashlamps positioned over said surface and having lead-in wires con-

nected to said circuitry, said circuitry being provided for sequentially igniting said flashlamps, a plurality of conductive reflectors respectively associated with said flashlamps and positioned between said lamps and said circuit board, at least one of said reflectors having an aperture therein, a radiant-energy-activated disconnect switch attached to said circuit board in alignment with said aperture in the reflector, said disconnect switch being electrically connected to said circuitry in series with a respective one of said flashlamps for interrupting the ignition circuit for said flashlamp after said



flashlamp is ignited, said disconnect switch comprising a conductive strip of heat-separable material attached at both ends to said circuit board with the midportion of said strip being spatially suspended to avoid contact with said circuit board, said strip midportion being positioned so as to be in operative relationship with the radiant output from a respective ignited flashlamp via said aperture in the reflector, a sheet of electrically insulating material interposed between said reflectors and said circuit board, and a deformation provided in said sheet of insulating material for spacing said sheet from the midportion of said strip to avoid contact therewith.

4,227,241

VISOR ASSEMBLY

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 766,367, Feb. 7, 1977, which is a continuation of Ser. No. 599,333, Jul. 28, 1975, which is a division of Ser. No. 343,198, Mar. 21, 1973, Pat. No. 3,926,470.

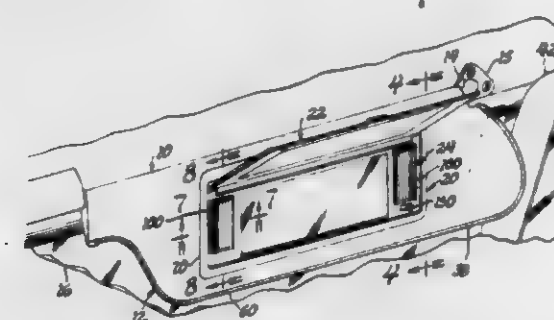
This application Oct. 23, 1978, Ser. No. 953,590

The portion of the term of this patent subsequent to Dec. 16, 1992, has been disclaimed.

Int. Cl.³ B60J 3/00

U.S. Cl. 362-61

13 Claims



1. A visor assembly for a vehicle or the like comprising a visor having two substantially opposing elongated top and bottom edges extending along the length thereof with means for supporting the same for rotation about an axis extending along the top edge for movement from an upper storage position against the vehicle ceiling, to a generally downward vertical position, and to a position beyond the vertical; said visor having a front side facing inwardly of the vehicle when the visor is in storage position and a back side on the opposite side of said visor from the front side; a vanity mirror supported by the visor at the back side; lighting means carried by the visor at the back side immediately adjacent said mirror; a vanity mirror cover having a size and shape approximating the combined size and shape of said mirror and lighting means for covering the same; hinge means supporting said cover on the visor for pivotal movement about an axis substantially parallel

to the axis of rotation of said visor and located between said mirror and lighting means and said top edge, the extent of said pivotal movement from a closed position uncovering the mirror being such as to cause said cover when in open position and when said visor is in vertical position to extend generally horizontally permitting said lighting means to direct light toward and illuminate the face of a person sitting in said vehicle opposite said visor whereby said person can view himself in said mirror; said visor, when located in the position beyond the vertical with said cover open, permitting light to shine downwardly from said lighting means to light a map or other such reading material, said cover slanting downwardly from the horizontal when said visor is in said position beyond the vertical to restrict the direct shining of light in areas above the cover; over center spring means operatively associated with said hinge means for releasably and selectively holding the cover in said closed or in said open position.

4,227,242

ILLUMINATED VISOR MIRROR ASSEMBLY

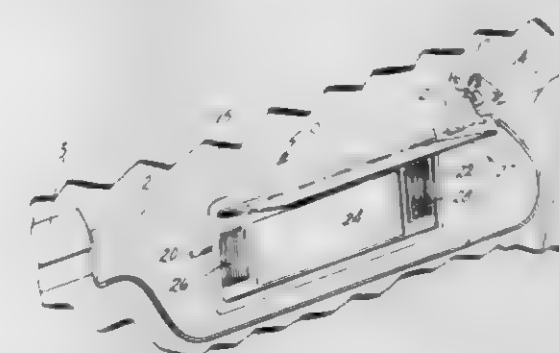
Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Mar. 19, 1979, Ser. No. 21,726

Int. Cl.² B60Q 1/00

U.S. Cl. 362-61

15 Claims



13. A covered, illuminated mirror assembly for installation in a vehicle comprising:
a mirror frame adapted to be mounted to a vehicle for supporting a mirror therein;
a cover pivotally mounted to said mirror frame for movement between a closed position covering a mirror mounted within said frame and to one or more opened positions;
lamp means supported by said mirror frame for directing illumination outwardly therefrom; and
means coupled between said frame and cover for applying electrical power to said lamp means in an increasing amount as said cover is moved from a closed position to opened positions such that the illumination from said lamp means increases as the cover is progressively opened.

4,227,243

CONVERTERS

David Gurwicz, Gateshead, and Keith Pacey, Sale, both of England, assignors to Chloride Group Limited, London, England

Filed Jun. 22, 1978, Ser. No. 918,096

Claims priority, application United Kingdom, May 30, 1978, 26680/77

Int. Cl.² H02M 7/537

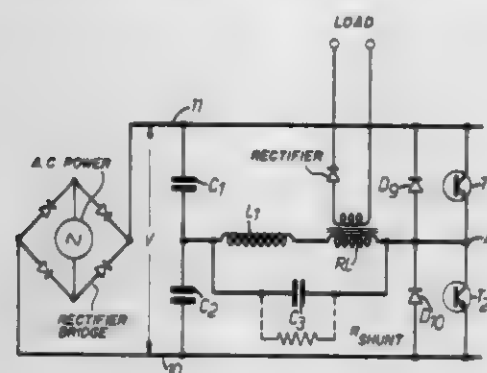
U.S. Cl. 363-132

11 Claims

1. A DC-AC converter of push-pull form comprising:
a direct current (D.C.) input supply having terminals providing a D.C. supply voltage;
a load circuit including a transformer;
an oscillatory circuit including at least one capacitor and an inductor connected to a primary winding of the load transformer;
a solid-state switching circuit including at least one switch-

ing device connected in series with said inductor across said D.C. terminals; and

means for synchronizing the operation of the switching circuit to the oscillation of the oscillatory circuit, said synchronizing means rendering said switching circuit non-conductive to allow the oscillatory circuit to oscillate freely for part of a cycle to transfer energy from the inductor to the capacitor to charge the latter to a certain



condition in which the voltage across the inductor is substantial relative to that across one of said switching devices, which then has negligible voltage thereacross, and only then actuate said one switching device to a conductive state to connect the inductor across half of the D.C. supply whereupon the inductor receives and stores energy from said supply;

wherein said load circuit is coupled to the oscillatory circuit in series with said inductor.

4,227,244

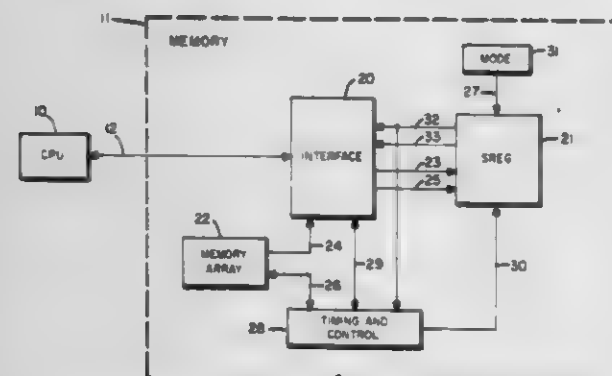
CLOSED LOOP ADDRESS

Lee T. Thorstad, St. Paul, and Gary A. Spencer, Richfield, both of Minn., assignors to Sperry Corporation, New York, N.Y.
Filed Nov. 30, 1978, Ser. No. 964,992

Int. Cl.² G06F 11/00; G11C 29/00

U.S. Cl. 364-200

8 Claims



1. In a computer having a central processing unit programmable through the execution of a series of software instructions and having a memory module containing a plurality of addressable locations and containing addressing circuits which permit said central processing unit to read from or write into at least one of said plurality of addressable locations by transferring to said addressing circuits an address specifying one of said plurality of addressable locations to read from or write into, the apparatus for permitting said central processing unit to test said addressing circuits, comprising:

means responsively coupled to said central processing unit for recording that said central processing unit is testing said addressing circuits; and

means responsively coupled to said addressing circuits, said central processing unit, and said recording means for transferring to said central processing unit the address transferred to said addressing circuits when said recording means indicates that said central processing unit is testing said addressing circuits.

4,227,245 DIGITAL COMPUTER MONITORED SYSTEM OR PROCESS WHICH IS CONFIGURED WITH THE AID OF AN IMPROVED AUTOMATIC PROGRAMMING SYSTEM

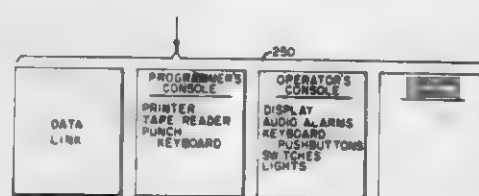
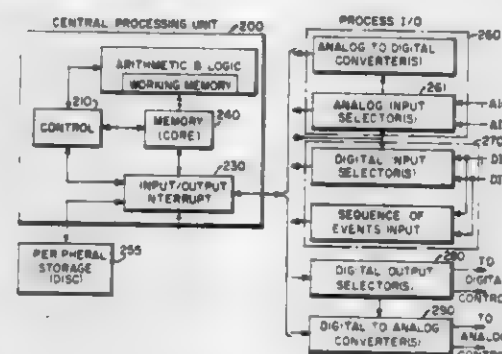
Warren A. Edblad; John W. Gomola, both of Pittsburgh; Frank E. Wallace, Irwin; William G. Wood, and F. David Jones, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 1, 1972, Ser. No. 258,800

Int. Cl.² B21B 37/00

U.S. Cl. 364-468

22 Claims



1. A data gathering system for collecting data from a plurality of analog signal sources, comprising:

a digital computer system;

means for converting an analog signal into a digital value when supplied with an analog signal address, said means connecting said plurality of analog signal sources to said digital computer system;

a plurality of machine readable definitions each defining an analog signal scanning operation, and each specifying an analog signal address and a variable scanning frequency or period;

means for operating said computer system to accept and to store said definitions;

means for operating said computer system to establish linkages between groups at least portions of said stored definitions such that each group includes portions of definitions which specify the same scanning frequency or period; and

means for operating said computer system to process each group of linked definition portions periodically at a rate determined by the scanning frequencies or periods specified by the definitions whose portions comprise each linked group, where processing comprises following the linkages from one definition to the next and carrying out the analog signal scanning operation called for by each definition.

4,227,246

MULTI-PARAMETER MEASUREMENT SYSTEM FOR FLUIDS

Warren T. Vaughan, III, and Gordon MacDonnell, both of San Francisco, Calif.

Continuation of Ser. No. 796,738, May 13, 1978, abandoned.

This application Nov. 6, 1978, Ser. No. 957,866

Int. Cl.² G06F 15/10

U.S. Cl. 364-571

11 Claims

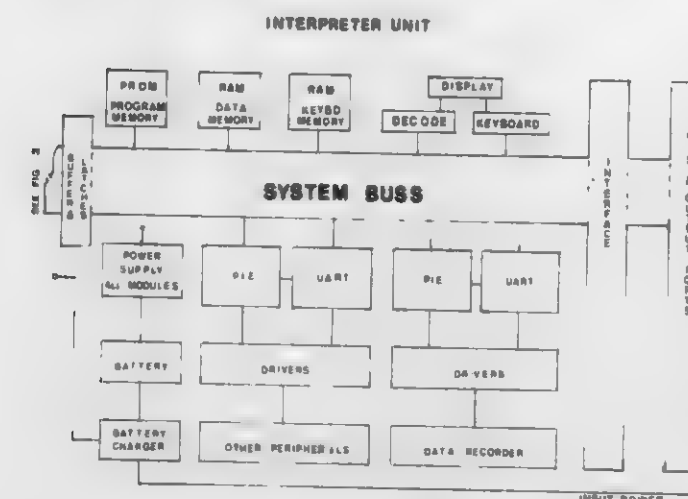
1. A self-contained, independent probe control unit for monitoring at least one parameter of a fluid, comprising:

(a) a housing immersible in the fluid;

(b) means, connected to said housing, for sensing the parameter and providing output parameter data;

(c) programmable, microcomputer control means, supported

in said housing, for processing the output data from said sensing means; and



(d) means, supported in said housing, for storing the processed data.

4,227,247

INTEGRATED CIRCUIT CONTROLLER PROGRAMMABLE WITH UNIDIRECTIONAL-LOGIC INSTRUCTIONS REPRESENTATIVE OF SEQUENTIAL WIRE NODES AND CIRCUIT ELEMENTS OF A LADDER DIAGRAM

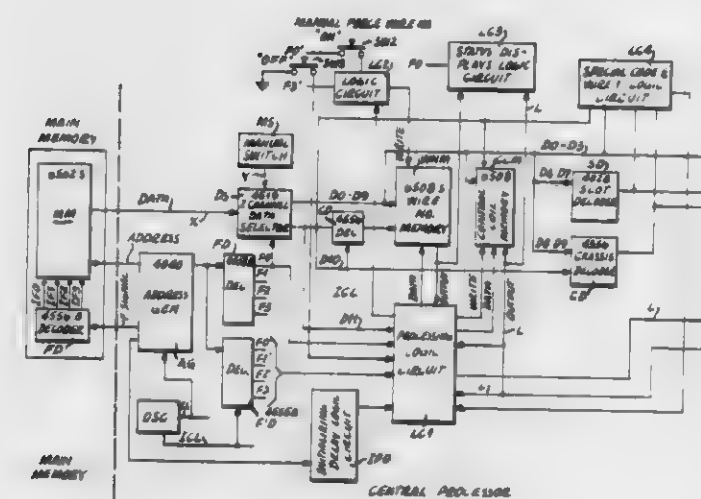
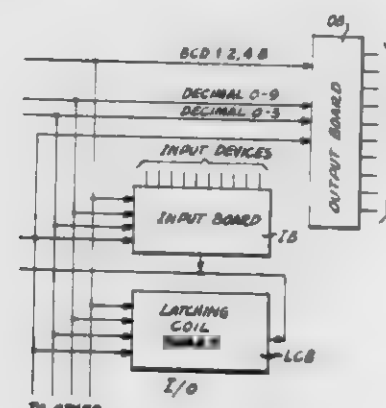
Paul M. Kintner, Bayside, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 12, 1977, Ser. No. 841,431

Int. Cl.³ G06F 9/06; G05B 11/01

U.S. Cl. 364-900

21 Claims



1. In a programmable controller:

main memory means for storing sets of instructions defining the configuration of a ladder diagram, said ladder diagram having rungs comprising numbered contacts connected in series by numbered wires such that the number of an output wire from a contact is the same as the number of an input wire to the next contact, each said instruction set

comprising a contact number and an output wire number from the contact;

control means for performing AND-logic functions and storing the logic value results comprising:

a first status signal storage device;

means for setting said first status signal storage device to provide a first signal indicative of the state of the input wire to a contact;

means for reading the instructions of said sets in sequence; a second status signal storage device;

a control clock;

a control coil memory for providing second signals indicative of the states of said contacts;

means responsive to reading of said contact number instruction for AND'ing the states of said first signal from said first status signal storage device and the respective second signal from said control coil memory and setting said second status signal storage device under said clock control to a state indicative of the AND-logic function thereof;

means responsive to said second status signal storage device and to reading of said output wire number instruction for providing a status signal indicative of the setting of said second status device which is also indicative of the state of said output wire;

an addressable wire number memory;

and means controlled by said clock for storing said state of said output wire in said wire number memory at an address corresponding to said output wire number.

4,227,248

PCM TONE SIGNAL GENERATOR

Ernst A. Munter, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

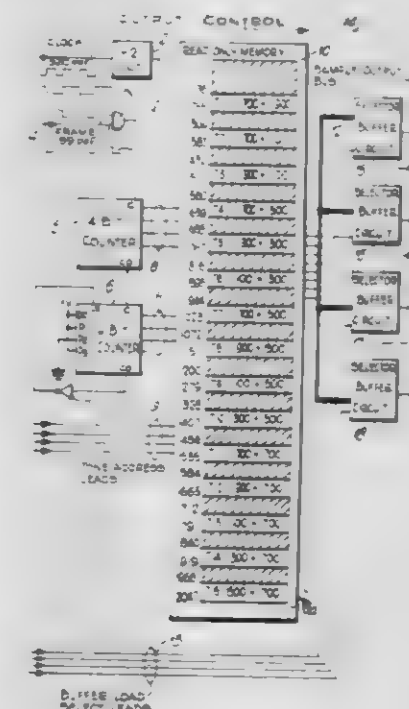
Filed Apr. 3, 1979, Ser. No. 26,790

Claims priority, application Canada, Mar. 1, 1979, 322547

Int. Cl.³ H04J 3/12

U.S. Cl. 370-110

10 Claims



9. A method for generating a tone signal compatible with the timing of a frame and channel operating format as represented by timing signals in an associated switching facility in a communication system, the method comprising the steps of:

(a) storing digital signal samples representing the tone signals at predetermined addresses in a memory means; and

(b) generating a sequence of addresses in response to said timing signals, a plurality of said addresses being generated during the period of each frame, such that the accessed digital signal samples represent at least two different phases of the tone signal whereby different ones of a

plurality of analog lines associated with a frame of said operating format may each receive a different phase of the tone being generated.

(2) modulating the amplitude of pulses by said encoded signals.

4,227,249

INJECTED CODED REFERENCE FOR ADAPTIVE ARRAY SYSTEMS

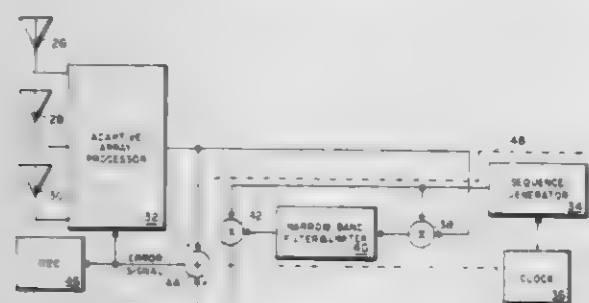
Peder M. Hansen, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 9, 1976, Ser. No. 713,006

Int. Cl.³ H04K 1/02

U.S. Cl. 375—34

5 Claims



1. In a communication system having adaptive signal processing the improvement comprising:

- first means for generating a coded reference signal filtered to match the bandpass of the system;
- second means for generating a signal representing information to be transmitted by said communication system;
- third means for combining said coded reference signal with said information signal;
- transmitter means for transmitting said combined signals;
- a receiving system for receiving the signal transmitted by said transmitter means, said receiving system including a reference signal recovery loop for recovering said reference signal that can be combined with the output signal from an adaptive array to form the error signal for adaptive signal processing.

4,227,250

MINIMIZATION OF EXCESS BANDWIDTH IN PULSE AMPLITUDE MODULATED DATA TRANSMISSION

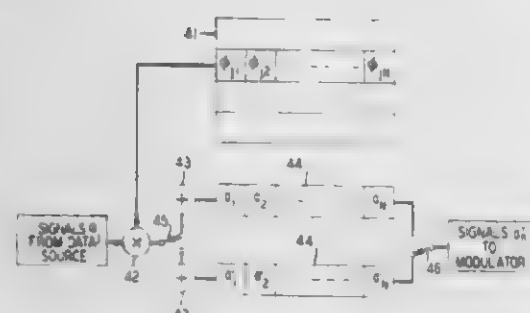
Aaron D. Wyner, Maplewood, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1978, Ser. No. 959,086

Int. Cl.³ H04L 3/00

U.S. Cl. 375—37

16 Claims



1. Method for transmitting data signals, here designated as first, comprising the steps of

- encoding a first block of v of said first signals into a second block of N encoded signals, N being greater than v , said second block being a linear combination of v characteristic sequences, said linear combination being defined by said first data signals of said first block, and said characteristic sequences being approximations of discrete prolate spheroidal sequences or of a nonzero multiple of discrete prolate spheroidal sequences, and

4,227,251

CLOCK PULSE REGENERATOR

Shigeru Kazama, Obihiro, and Kouzou Kage, Tokyo, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Nippon Electric Co., Ltd., both of Tokyo, Japan

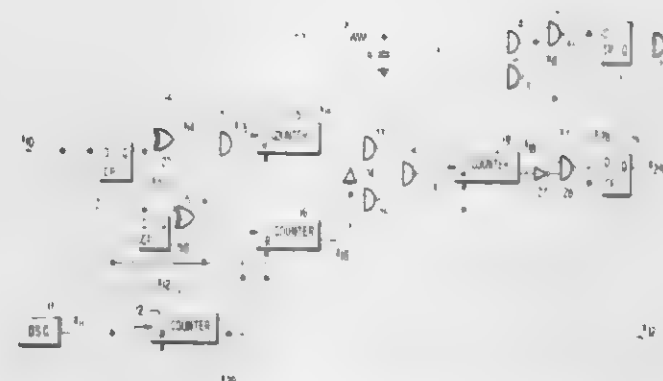
Filed Dec. 13, 1978, Ser. No. 969,120

Claims priority, application Japan, Dec. 20, 1977, 52-153849

Int. Cl.³ H04L 25/66

U.S. Cl. 375—110

9 Claims



1. A clock pulse regenerator for producing regenerated clock pulses in response to an incoming digital data signal, comprising:

- an oscillator for producing first pulses at a repetition rate higher than that of said incoming digital data signal;
- a first counter connected to said oscillator for counting said first pulses to produce said regenerated clock pulses therefrom;
- gate signal generating means responsive to said incoming digital data signal and said regenerated clock pulses for generating a gate pulse having a pulse width proportional to a phase difference between the two received signals;
- first gate means for selectively transmitting therethrough said first pulses under the control of said gate pulse;
- a second counter for counting said first pulses from said first gate means and producing a second pulse every time the counted number reaches a fixed number;
- a third counter for counting the number of leading and trailing edges of said incoming digital data signal and producing an output upon the counted number reaching said fixed number;
- a second gate means for selecting said first and second pulses in accordance with said output of said third counter and producing a series of pulses in response to the selected first and second pulses; and
- a fourth counter for counting said series of pulses to produce a pulse upon counting a predetermined number of pulses whereby said pulse from said fourth counter resets said first, second, third and fourth counters.

4,227,252

METHOD AND DEVICE FOR ACQUIRING THE INITIAL PHASE OF THE CLOCK IN A SYNCHRONOUS DATA RECEIVER

Dominique N. Godard, Le Rouret, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,917

Claims priority, application France, Feb. 28, 1978, 78 06562

Int. Cl.³ H04L 7/06

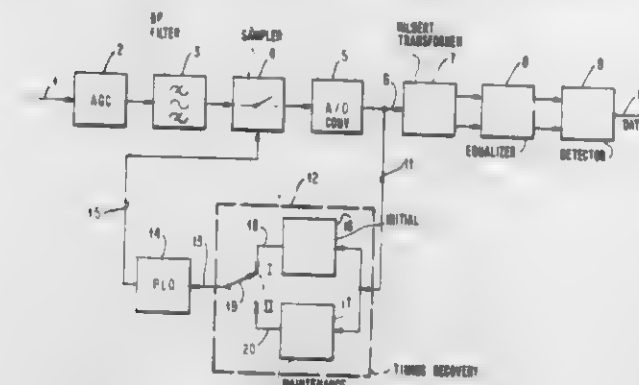
U.S. Cl. 375—113

7 Claims

1. In a synchronous data transmission system wherein the data are transmitted by modulating a carrier wave f_c at a signaling rate $1/T$, a method of determining the initial phase value by which the phase of the receiver clock must be varied during an

initial synchronization signal whose spectrum includes two distinct lines at frequencies $f_1 = f_c - 1/T$ and $f_2 = f_c + 1/T$ is transmitted, said method being characterized in that it includes the steps of:

- sampling the synchronization signal received at the input of the receiver at a rate $1/T$ which is a multiple of the



signaling rate, to obtain a signal $x(kT)$ where $k=0, 1, \dots$

- multiplied signal $x(kT)$ by itself to obtain a signal $s(kT)$,
- computing the complex coefficient C_0 , which corresponds to the frequency $1/T$, of the discrete Fourier transform of signal $s(kT)$ from a number N of samples thereof, in accordance with the following relation:

$$C_0 = \frac{1}{N} \sum_{k=0}^{N-1} s(kT) e^{-j \frac{2\pi}{T} kT}$$

said number N being given by

$$N = 1/R$$

where R is the resolution expressed in H_z and is equal to the difference between $2f_1$ and $1/T$, and

- computing the phase of complex coefficient C_0 , which represents the initial phase value by which the phase of the receiver clock must be varied.

4,227,253

CRYPTOGRAPHIC COMMUNICATION SECURITY FOR MULTIPLE DOMAIN NETWORKS

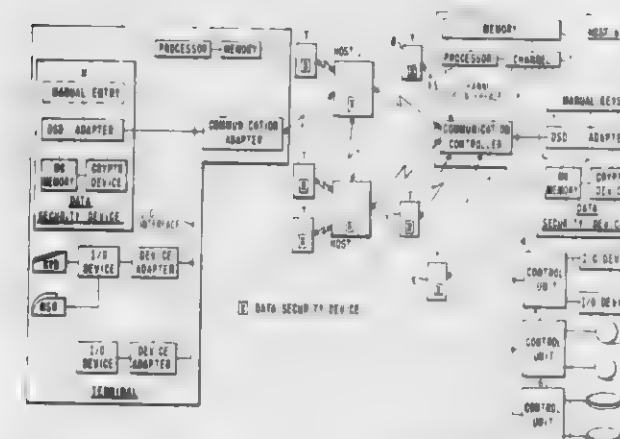
William F. Ehrsam, Kingston; Robert C. Elander, Saugerties, both of N.Y.; Lloyd L. Hollis, Cary, N.C.; Richard E. Lennon, Woodstock, N.Y.; Stephen M. Matyas, Poughkeepsie, N.Y.; Carl H. W. Meyer, Kingston, N.Y.; Jonathan Oseas, Hurley, N.Y., and Walter L. Tuchman, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,531

Int. Cl.³ H04L 9/00

U.S. Cl. 375—2

47 Claims



6. In a multiple domain data communication network providing communication security for communication sessions between a first host system in one domain having cryptographic apparatus provided with a first master key and a sec-

ond host system in another domain having cryptographic apparatus provided with a second master key where the cryptographic apparatus of each host system provides a cross domain key for cryptographic cross domain communication with the other host system, an arrangement in said first host cryptographic apparatus for protecting the cross domain key provided by said first host system cryptographic apparatus comprising:

- first host system working key storage means, means storing a first key encrypting key of said first host system in said first host working key storage means as a working key,
- means providing first input data representing said cross domain key provided by said first host system, and cipher means operable in a first cipher function to encipher said input data under control of said working key to obtain ciphertext representing said cross domain key provided by said first host system enciphered under said first key encrypting key.

45. In a multiple domain data communication network providing communication security for data communication sessions between a host system in one domain having cryptographic apparatus provided with multiple keys and a host system in another domain having cryptographic apparatus provided with multiple keys where each host system has a logical unit associated therewith and a logical unit communication key, the method of communicating a cryptographic operational key in protected form provided by one of said host systems to the logical unit associated therewith via the other of said host systems without revealing the multiple keys of either of said host systems to the other of said host systems comprising the steps of:

- providing at said one of said host systems said operational key enciphered under the logical unit communication key of the logical unit associated with said one of said host systems for communication from said one of said host systems to said other of said host systems,
- communicating said enciphered operational key from said other of said host systems to the logical unit associated with said other of said host systems, and
- communicating said enciphered operational key from the logical unit associated with said other of said host systems to the logical unit associated with said one of said host systems.

4,227,254

QUASI-ANALOG CHANNEL INDICATOR FOR RADIO RECEIVERS

Alfred Bauer, Neu-Isenburg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

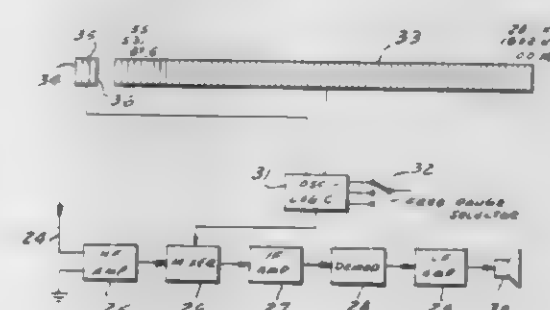
Filed Jun. 30, 1977, Ser. No. 811,484

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629606

Int. Cl.³ H04B 1/16; H03J 1/02

U.S. Cl. 455—154

3 Claims



1. In a radio receiver of the type comprising means for receiving a transmitted high-frequency signal, mixing means for receiving the high-frequency signal and also a local-oscillator-frequency signal and processing the two signals to form an intermediate-frequency signal, and means for converting the

4,227,260

ELECTRONIC ACTIVE STAR ELEMENT FOR AN OPTICAL DATA TRANSMISSION SYSTEM

Mario M. Vojvodich, Morris Plains, N.J., and Charles E. Theall, Jr., Weston, Conn., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 6, 1978, Ser. No. 958,281

Int. Cl.³ H04B 9/00; G02B 5/14

U.S. Cl. 455-601

14 Claims

4,227,261

TRANSMISSION OF INFORMATION BY SWEEPING FAN-SHAPED BEAMS

Hans R. Robertsson, Jönköping, Sweden, assignor to Saab-Scania AB, Linköping, Sweden

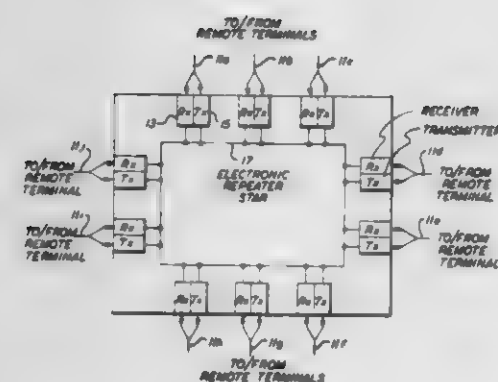
Filed Feb. 22, 1979, Ser. No. 14,116

Claims priority, application Sweden, Mar. 2, 1978, 7802349

Int. Cl.³ G01B 11/26; H04B 9/00; F41F 22/00; F41G 3/26

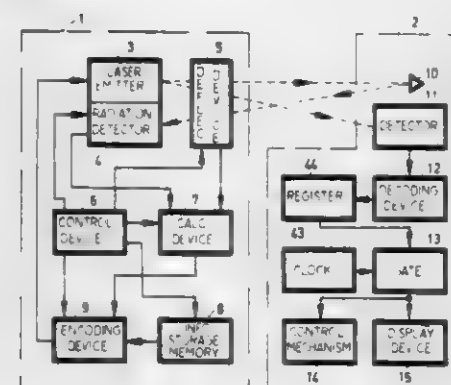
U.S. Cl. 455-600

7 Claims



1. An electronically active star element for interconnecting remote terminals in a multi-terminal fiber optic data communication system in which a plurality of remote terminals are coupled to each other over an optical transmission data bus, each terminal having the capability to transmit to every other terminal and to receive from every other terminal over an optical cable which forms the data bus, each remote terminal thus having associated therewith an optical cable which must be interconnected with the optical cable from each other data terminal, comprising:

- (a) first means to convert the optical signals on all of the optical cables into amplified electrical signals comprising at least first and second receivers and means for coupling the signal from each of said cables to both of said receivers;
- (b) second means to convert said amplified electrical signals back into an optical signal; and
- (c) third means to couple said optical signal to each of said optical cables.



1. A method whereby information that is transmitted from a location at the apex of a solid angle space in which a plurality of bodies may be present can be delivered exclusively to one of said bodies, selected on the basis of a criterion comprising a requirement that said body is at a distance from said location such that said information is appropriate for said body, said information being transmitted by modulation of at least two fan-shaped beams of radiation that are emitted from said location, each beam being long and narrow in cross-section and being swept angularly across said space substantially transversely to its long cross-section dimension, the several beams having their respective long cross-section dimensions differently oriented and being swept in a sweep cycle of a predetermined duration during which every beam makes at least one sweep across said space, and each of said bodies having means for reflecting beam radiation back to said location, means for detecting beam radiation received from said location and means for accepting or rejecting information contained in modulated beam radiation, said method being characterized by:

- A. at said location, by measurement of the time required for the radiation of each of said at least two beams to be returned to said location by reflection, ascertaining, as to each of the bodies from which reflected beam radiation is returned, whether or not the body is at said distance from said location;
- B. modulating each of said at least two beams in correspondence with said information only during the time in its sweep when reflection of the radiation of that beam is received at said location and ascertained to have been returned from a body at said distance from said location; and
- C. at each body, accepting said information only when radiation modulated in correspondence with said information is detected from each of said at least two beams within a predetermined time interval which is at least as long as said sweep cycle duration.

DESIGN PATENTS

GRANTED OCT. 7, 1980

ERRATA

For
CLASS
D15-127

See
PATENT NO.
257,262

DESIGNS

OCTOBER 7, 1980

257,184

FOOTBALL CAP

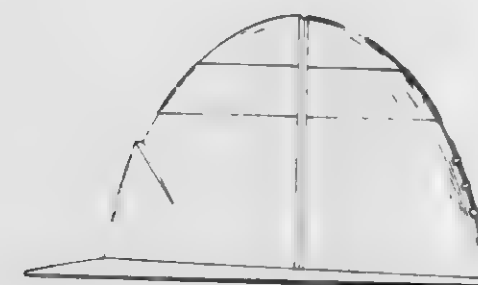
Engelbert J. Peham, St. Paul, Minn., assignor to Peham Plastics, Inc., St. Paul, Minn.

Filed Sep. 30, 1977, Ser. No. 838,257

Term of patent 14 years

Int. Cl. D2-03

U.S. Cl. D2-248



257,187

SOCK

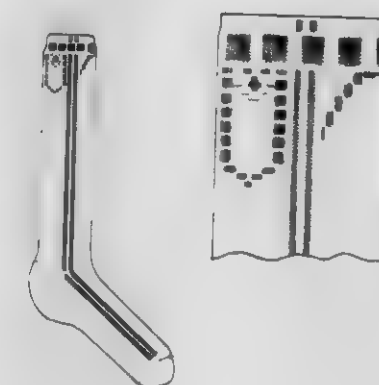
Jerry R. Phillips, Hickory, N.C., assignor to Phillips Hosiery Mill, Inc., Hickory, N.C.

Filed Jul. 21, 1977, Ser. No. 817,610

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-329



257,185

SHOE

Joseph P. Famolare, Jr., 4 W. 58th St., New York, N.Y. 10019

Filed Feb. 13, 1978, Ser. No. 877,359

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-309



257,188

BOOT JACK

Andrew Blich, 11535 Kelowna St., Lake View Terrace, Calif. 91342

Filed Oct. 11, 1978, Ser. No. 950,478

Term of patent 14 years

Int. Cl. D2-07

U.S. Cl. D2-378.2



257,186

SHOE SOLE

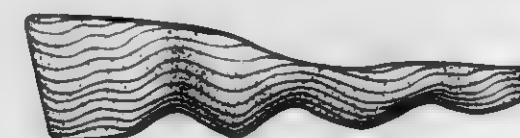
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,385

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-322

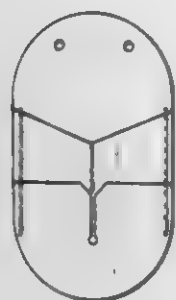


257,189

COMBINED GOLF TEE AND BALL MARKER HOLDER
Robert A. Winbauer, 301 NW. 35 Ct., Apt. 10, Pompano Beach, Fla. 33064

Filed Mar. 17, 1978, Ser. No. 887,644
Term of patent 14 years
Int. Cl. D02-99

U.S. Cl. D2-400



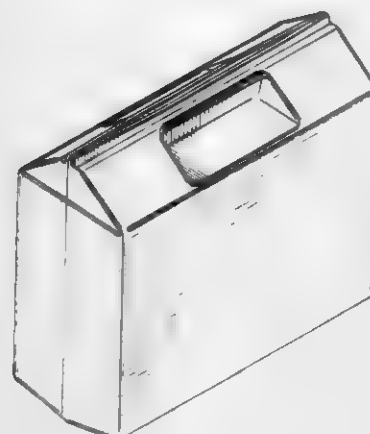
257,191

MOLDED PLASTIC CONTAINER

Donald G. Wilcox, P.O. Box 4030 Lunar Dr., Woodbridge, Conn. 06525, assignor to Donald G. Wilcox, Seymour, Conn. and Show-Pak Inc., Woodbridge, Conn.

Filed Dec. 15, 1978, Ser. No. 969,954
Term of patent 14 years
Int. Cl. D3-01

U.S. Cl. D3-73



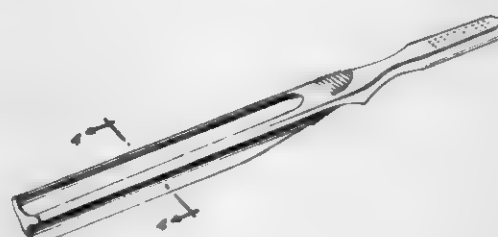
257,192

TOOTHBRUSH HANDLE

Horace C. Moses, Needham, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Oct. 5, 1978, Ser. No. 948,929
Term of patent 14 years
Int. Cl. D4-02

U.S. Cl. D4-25



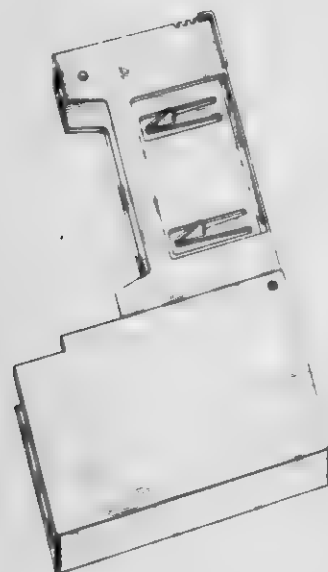
257,190

STORAGE CASE FOR RECORDING CASSETTE

Patrick Posso, Lausanne, Switzerland, assignor to Gefitec S.A., Lausanne, Switzerland

Filed Feb. 15, 1979, Ser. No. 12,512
Term of patent 14 years
Int. Cl. D3-02

U.S. Cl. D3-35



257,193

RACKET HOLDER

Peter E. Glage, Frankfurter Strasse 9, 624 Königstein, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,270
Term of patent 14 years
Int. Cl. D6-04

U.S. Cl. D6-125

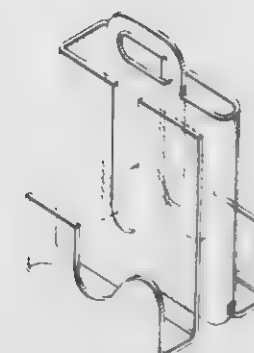


257,194

HOLDER FOR FOOD PROCESSOR ACCESSORIES
Fredrik G. R. von Roth, II, Peru, Vt., assignor to Acrylic Designs, Inc.

Filed Feb. 8, 1978, Ser. No. 876,185
Term of patent 14 years
Int. Cl. D6-04; D7-06

U.S. Cl. D6-130



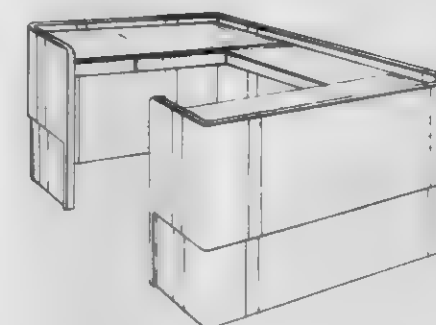
257,196

DESK OR SIMILAR ARTICLE

Lawrence Lerner, New York, N.Y., and Fred Schmitt, Nutley, N.J., assignors to Litton Business Systems, Inc.
Division of Ser. No. 770,328, Feb. 22, 1977. This application

Jun. 21, 1979, Ser. No. 50,883
Term of patent 14 years
Int. Cl. D6-04

U.S. Cl. D6-161



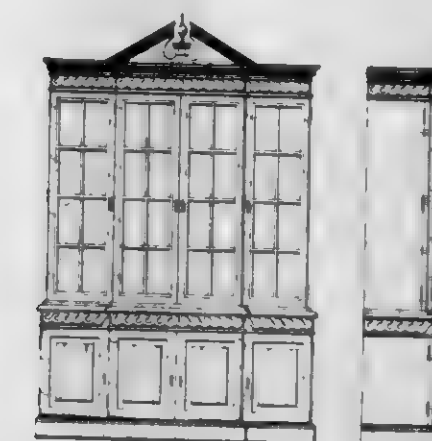
257,197

BREAKFRONT OR SIMILAR ARTICLE

Manuel P. Sanchez, Polig. Calonge, Parcela 12 - Nave 2, Seville, Spain

Filed Jul. 31, 1978, Ser. No. 929,677
Term of patent 14 years
Int. Cl. D06-04

U.S. Cl. D6-172



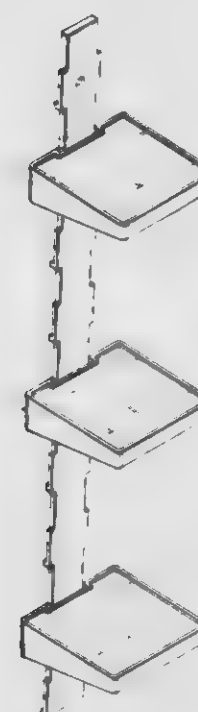
257,195

SHELVING UNIT OR THE LIKE

James B. Swett, Altamonte Springs, Fla., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 11, 1978, Ser. No. 933,006
Term of patent 14 years
Int. Cl. D6-04

U.S. Cl. D6-134



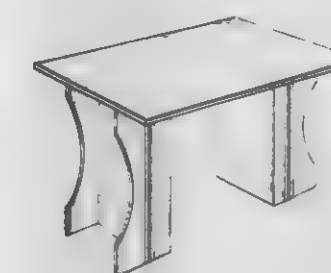
257,198

TABLE HAVING PIVOTAL PANELS

R. Cornelius Peters, 1016 Hollywood, Chicago, Ill. 60660, assignor to Robert C. Peters

Filed Apr. 3, 1978, Ser. No. 893,133
Term of patent 14 years
Int. Cl. D6-03

U.S. Cl. D6-177



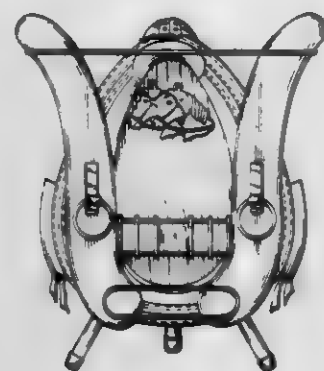
257,199

MAGAZINE RACK

Kendall E. Hoke, P.O. Box 272, Sidney, N.Y. 13838
Filed Oct. 25, 1978, Ser. No. 954,422

Term of patent 7 years
Int. Cl. D6—04

U.S. Cl. D6—184



257,200

TRAVELLING PILLOW

Elena T. LaRocca, 7D Oliva Dr., Novato, Calif. 94947, assignor
to Lyla F. Parrish; Vincent R. LaRocca; Patricia E. LaRocca
and Elena T. LaRocca, Novato, Calif.

Filed Oct. 23, 1978, Ser. No. 953,490

Term of patent 14 years
Int. Cl. D6—09

U.S. Cl. D6—201



257,201

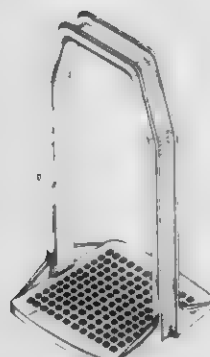
TRAY OR THE LIKE

Jack V. Croyle, North Providence, and Robert F. Bateman,
Greenville, both of R.I., assignors to Dart Industries Inc., Los
Angeles, Calif.

Filed Aug. 11, 1978, Ser. No. 933,001

Term of patent 14 years
Int. Cl. D07—99

U.S. Cl. D7—19



257,202

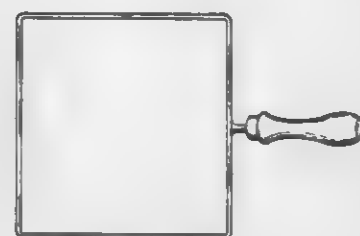
EGG COOKING FRAME

Ronald G. Schessl, RTA Campground, 12115 NW. Expressway,
Oklahoma City, Okla. 73131

Filed May 16, 1977, Ser. No. 797,042

Term of patent 14 years
Int. Cl. D07—02

U.S. Cl. D7—43



257,203

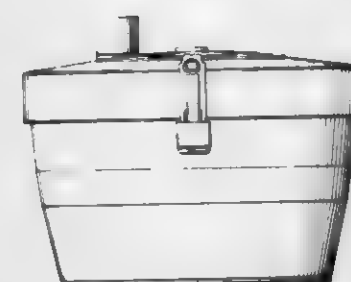
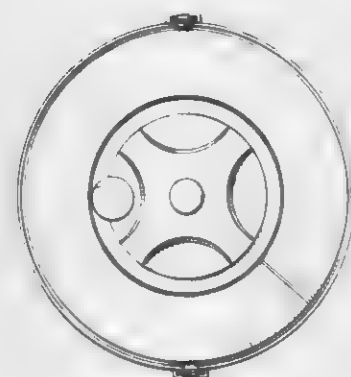
VEGETABLE DRYING IMPLEMENT

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Oct. 10, 1978, Ser. No. 949,534

Term of patent 14 years
Int. Cl. D7—04

U.S. Cl. D7—47



257,204

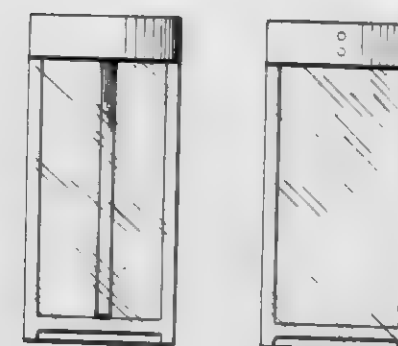
CONDIMENT SHAKER

William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif.
90505

Filed Jun. 5, 1978, Ser. No. 912,938

Term of patent 14 years
Int. Cl. D07—06

U.S. Cl. D7—57



257,206

TABLE GRILL

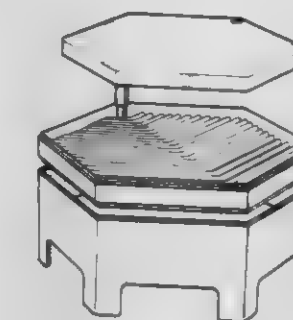
Michel Vincent, c/o Arreso Form ApS, 5 Havnevej, DK-3300
Frederiksvaerk, Denmark

Filed Mar. 8, 1978, Ser. No. 884,716

Claims priority, application Denmark, Sep. 12, 1977, 700/77

Term of patent 14 years
Int. Cl. D7—02; D6—03

U.S. Cl. D7—107



257,207

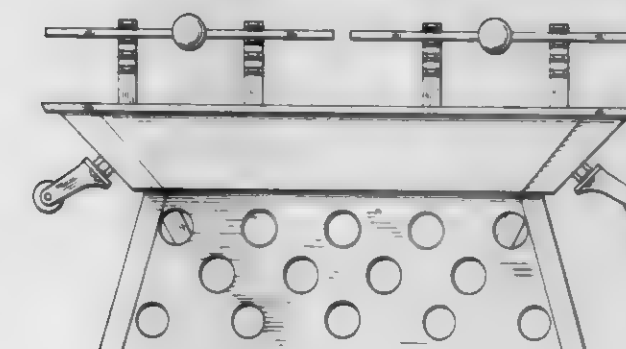
CHARCOAL GRILL WITH KINDLING STRUCTURE

Reynold D. Tisdale, 2 Atlantic Ave., Hampton Beach, N.H.
03842

Filed Apr. 13, 1978, Ser. No. 896,160

Term of patent 14 years
Int. Cl. D7—02

U.S. Cl. D7—110



257,205

CONDIMENT DISPENSER

William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif.
90505

Filed Jun. 16, 1978, Ser. No. 916,236

Term of patent 14 years
Int. Cl. D07—06

U.S. Cl. D7—57



257,208

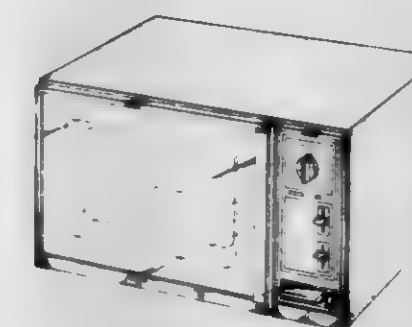
MICROWAVE OVEN

Masamichi Yamamura, Osaka; Toshio Harada, Nara, and Hanji
Takahashi, Toyonaka, all of Japan, assignors to Matsushita
Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 16, 1978, Ser. No. 934,331

Term of patent 14 years
Int. Cl. D7—02

U.S. Cl. D7—128



257,209

STEAM IRON

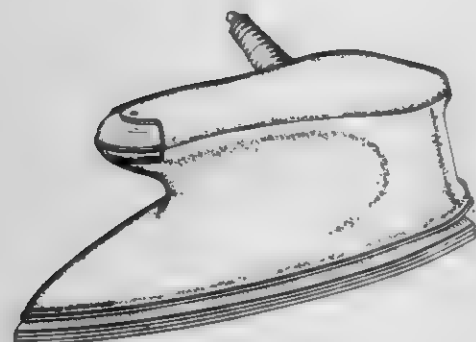
Erich R. Baumgartner; Peter Doehler, both of Munich; Dieter Rams, Kronberg, and Jürgen Greubel, Heidenrod, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 881,877

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 738649

Term of patent 7 years
Int. Cl. D7—05

U.S. Cl. D7—203



257,211

TOOL FOR MOUNTING MARKING SLEEVES ONTO WIRES, CABLES, OR THE LIKE

Torbjörn Lööf, and Lars Skarin, both of Otterbäcken, Sweden, assignors to Partex Fabriksaktiebolag, Gullspang, Sweden

Filed Aug. 8, 1977, Ser. No. 822,759

Claims priority, application Sweden, Feb. 10, 1977, 77324

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—14



257,212

EARTH PIERCING TOOL FOR SIGN INSTALLATION

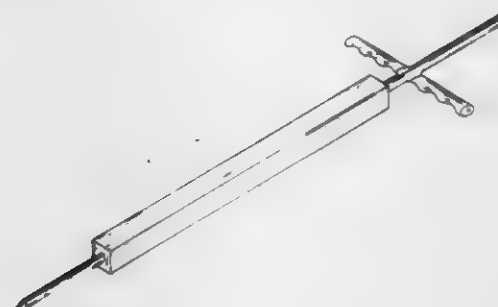
Gary D. Parker, 16500 W. Center Rd., Omaha, Nebr. 68130

Filed Sep. 18, 1978, Ser. No. 944,032

Term of patent 7 years

Int. Cl. D8—01

U.S. Cl. D8—14



257,213

BATTERY POWERED GREASE GUN

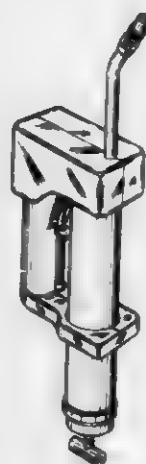
Jerome B. Wegmann, St. Louis County, and Norbert F. Cook, Florissant, both of Mo., assignors to McNeil Corporation, Akron, Ohio

Filed Nov. 13, 1978, Ser. No. 959,513

Term of patent 14 years

Int. Cl. D8—05

U.S. Cl. D8—14.1



257,210

SNOW SHOVEL SCOOP

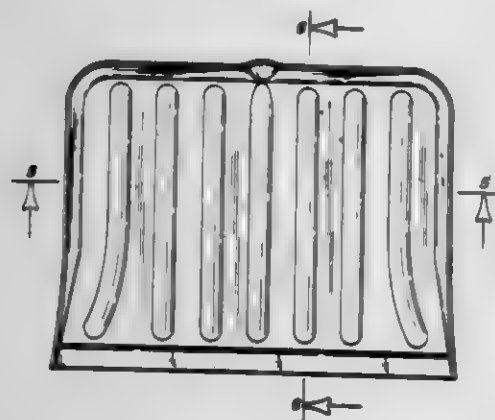
David R. Boones, Columbus, Ohio, assignor to The Union Fork & Hoe Company, Columbus, Ohio

Filed May 8, 1978, Ser. No. 903,986

Term of patent 14 years

Int. Cl. D08—01

U.S. Cl. D8—10



257,214

DRAWER KNOB OR THE LIKE

Joseph W. Withers, Los Angeles, Calif., and Gustav Elstner, Kaufbeuren, Fed. Rep. of Germany, assignors to Belwith International Ltd., Pico Rivera, Calif.

Continuation of Ser. No. 878,274, Feb. 16, 1978, abandoned.

This application Jan. 9, 1979, Ser. No. 2,007

Term of patent 14 years

Int. Cl. D8—06

U.S. Cl. D8—310



257,217

DRAWER KNOB OR THE LIKE

Joseph W. Withers, Los Angeles, Calif., and Gustav Elstner, Kaufbeuren, Fed. Rep. of Germany, assignors to Belwith International Ltd., Pico Rivera, Calif.

Continuation of Ser. No. 878,275, Feb. 16, 1978, abandoned.

This application Jan. 15, 1979, Ser. No. 3,484

Term of patent 14 years

Int. Cl. D8—06

U.S. Cl. D8—310



257,215

DRAWER KNOB OR THE LIKE

Joseph W. Withers, Los Angeles, Calif., and Gustav Elstner, Kaufbeuren, Fed. Rep. of Germany, assignors to Belwith International Ltd., Pico Rivera, Calif.

Continuation of Ser. No. 878,276, Feb. 16, 1978, abandoned.

This application Jan. 15, 1979, Ser. No. 3,463

Term of patent 14 years

Int. Cl. D8—06

U.S. Cl. D8—310



257,218

TOGGLE JOINT FASTENER

Lars Eriksson, Djurgårdsvägen 15, S-633 40 Eskilstuna, Sweden

Filed Dec. 20, 1977, Ser. No. 863,344

Claims priority, application Sweden, Nov. 8, 1977, 772277

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—336



257,216

DRAWER KNOB OR THE LIKE

Joseph W. Withers, Los Angeles, Calif., and Gustav Elstner, Kaufbeuren, Fed. Rep. of Germany, assignors to Belwith International Ltd., Pico Rivera, Calif.

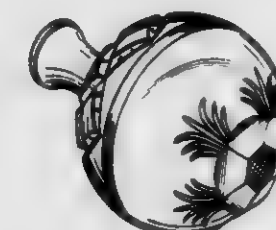
Continuation of Ser. No. 878,273, Feb. 16, 1978, abandoned.

This application Jan. 15, 1979, Ser. No. 3,464

Term of patent 14 years

Int. Cl. D8—06

U.S. Cl. D8—310



257,219

PICTURE-HANGING BRACKET

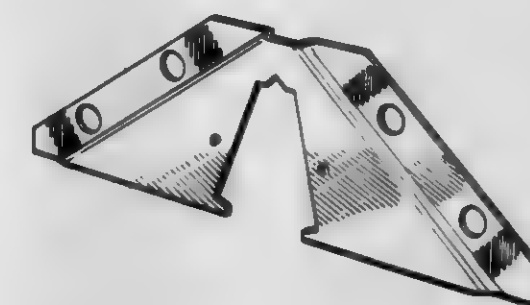
Robert D. Cook, 4475 Vieja Dr., Santa Barbara, Calif. 93110

Filed Sep. 25, 1978, Ser. No. 945,181

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—354



257,220

ANCHOR CONTROL DEVICE

Roy J. Dennis, 521 Henley Beach Rd., Fulham, South Australia, Australia

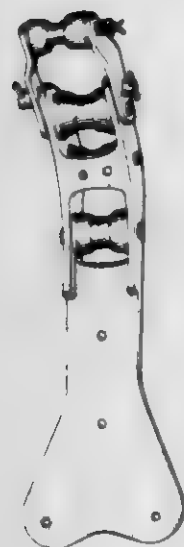
Filed Oct. 13, 1977, Ser. No. 841,957

Claims priority, application Australia, Sep. 19, 1977, 72844/77

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—356



257,222

MOULDING PROTECTOR

James M. Woodard, 5470 Glore Dr., Mableton, Ga. 30059

Filed Aug. 14, 1978, Ser. No. 933,732

Term of patent 14 years

Int. Cl. D6—06; D8—09

U.S. Cl. D8—402



257,223

DECANTER

Eric Lee, Elmhurst, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 21, 1978, Ser. No. 944,473

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—23



257,221

SUPPORT BRACKET SECTION FOR CYLINDRICAL ELEMENTS

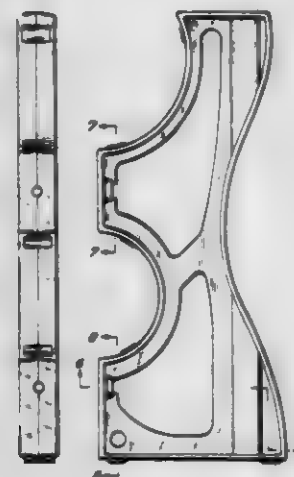
Barry J. Plesner, Brooklyn, N.Y., assignor to Homeland Industries Inc., Bobemia, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,868

Term of patent 14 years

Int. Cl. D8—08

U.S. Cl. D8—380



257,224

DECANTER

Eric Lee, Elmhurst, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 21, 1978, Ser. No. 944,475

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—26



257,225

COMBINED DECANTER AND STOPPER

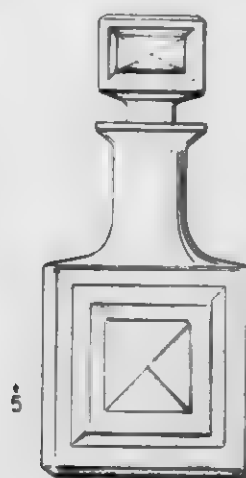
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed May 1, 1978, Ser. No. 902,021

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—159



257,226

DISPLAY CONTAINER

Alvan C. Kimball, 672 Baker, Wadsworth, Ohio 44281

Filed Jan. 13, 1978, Ser. No. 869,120

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—191



257,228

END CLOSURE FOR A CONTAINER

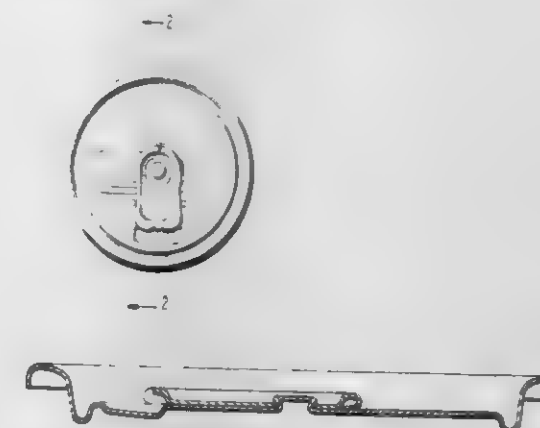
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1979, Ser. No. 4,586

Term of patent 14 years

Int. Cl. D09—99

U.S. Cl. D9—255



257,229

BOTTLE CAP

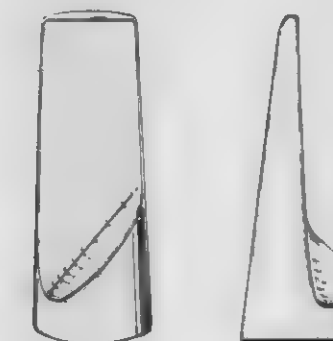
Jean Leger, 27 rue de Seine, Paris, France (75006)

Filed Mar. 29, 1978, Ser. No. 891,482

Term of patent 14 years

Int. Cl. D09—99

U.S. Cl. D9—283



257,230

STOPPER

James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Mar. 21, 1979, Ser. No. 22,585

Term of patent 14 years

Int. Cl. D09—07

U.S. Cl. D9—285



257,227

COMPARTMENTED PACKAGE OF TENNIS BALLS

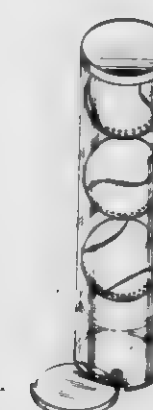
Phillip W. Youngberg, 22 Egret St., New Orleans, La. 70124

Filed Mar. 18, 1977, Ser. No. 779,246

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—193



257,231

COMBINED CLOCK AND PICTURE FRAME OR THE LIKE

Kathleen C. Boyland, and Larry D. Edmonds, both of 28800 Worth Dr., Porterville, Calif. 93257

Filed Oct. 30, 1978, Ser. No. 956,218

Term of patent 7 years

Int. Cl. D10-01

U.S. Cl. D10-2



257,232

WALL CLOCK

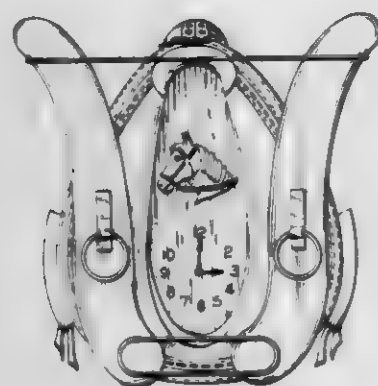
Kendall E. Hoke, P.O. Box 272, Sidney, N.Y. 13838

Filed Jul. 13, 1978, Ser. No. 924,851

Term of patent 7 years

Int. Cl. D10-01

U.S. Cl. D10-6



257,233

CLOCK OR LIKE ARTICLE

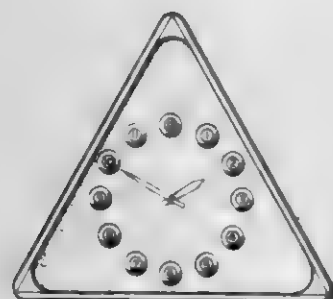
Robert G. Turner, 1723 Stevens St., Indianapolis, Ind. 46227

Filed Dec. 26, 1978, Ser. No. 973,376

Term of patent 14 years

Int. Cl. D10-01

U.S. Cl. D10-6



257,234

DIGITAL CLOCK

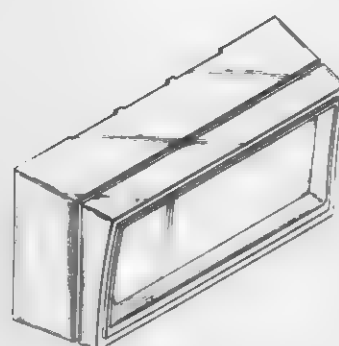
Dana L. Vickery, Gardner, Mass., assignor to Simplex Time Recorder Co., Gardner, Mass.

Filed Aug. 2, 1978, Ser. No. 930,431

Term of patent 14 years

Int. Cl. D10-01

U.S. Cl. D10-15



257,235

TRAVEL ALARM CLOCK

Michael Cheung, Shaueiwan, Hong Kong, assignor to Promotors Limited, Kowloon, Hong Kong

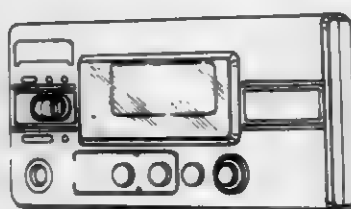
Filed Sep. 20, 1978, Ser. No. 944,159

Claims priority, application United Kingdom, May 9, 1978, 984516/78

Term of patent 14 years

Int. Cl. D10-01

U.S. Cl. D10-15



257,236

WATCH CASE

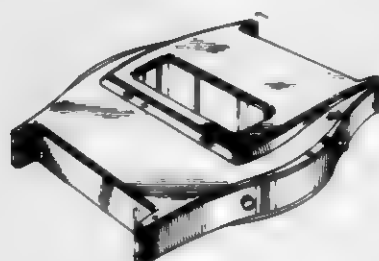
Cabanne H. Link, 727 Pleasant Valley La., Richardson, Tex. 75080

Filed Aug. 10, 1978, Ser. No. 932,528

Term of patent 14 years

Int. Cl. D10-02

U.S. Cl. D10-30



257,237

COMPASS HOOD

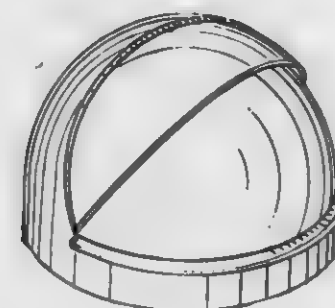
William Macowski, Caldwell, N.J., assignor to Aqua Meter Instrument Corp., Roseland, N.J.

Filed Sep. 26, 1978, Ser. No. 945,848

Term of patent 14 years

Int. Cl. D10-07

U.S. Cl. D10-68



257,238

PARKING SPACE RESERVER

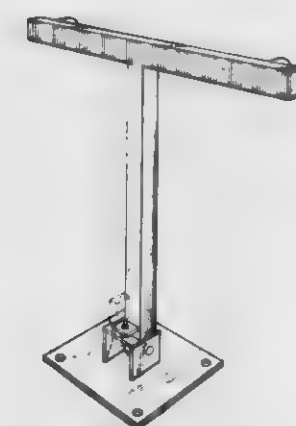
Samuel I. Landsman, 3213 Bonnie Rd., Baltimore, Md. 21208

Filed Dec. 10, 1979, Ser. No. 101,623

Term of patent 14 years

Int. Cl. D10-06

U.S. Cl. D10-109



257,240

SAFETY LIGHT FOR JOGGERS

Fred J. Leary, Natick, Mass., assignor to Professional Exchange Systems, Inc.

Filed Mar. 21, 1979, Ser. No. 22,530

Term of patent 14 years

Int. Cl. D10-06; D26-02

U.S. Cl. D10-114



257,241

MUSHROOM WALL ORNAMENT

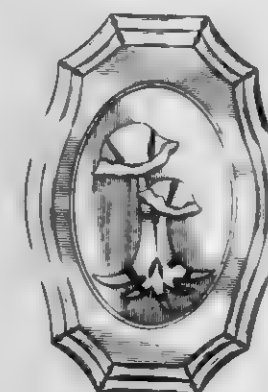
Donald R. Ditto, Rte. #2, Box #60F2, Winnsboro, Tex. 75494

Filed Aug. 9, 1978, Ser. No. 932,420

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-139



257,239

ELECTRICAL TEST PROBE

Philmore E. Johnson, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 10, 1978, Ser. No. 904,723

Term of patent 14 years

Int. Cl. D10-07

U.S. Cl. D10-103



257,242

DOOR WALL GREENHOUSE

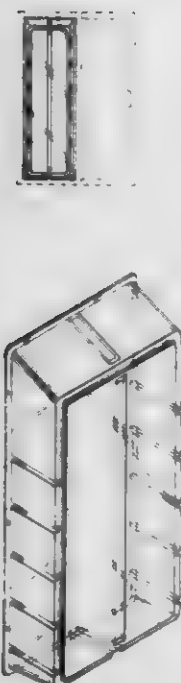
Donald R. Hunter, 20490 Olympia, Detroit, Mich. 48240

Filed Sep. 21, 1977, Ser. No. 835,408

Term of patent 14 years

Int. Cl. D11-99

U.S. Cl. D11-145



257,244

ATHLETIC TEAM FLAG

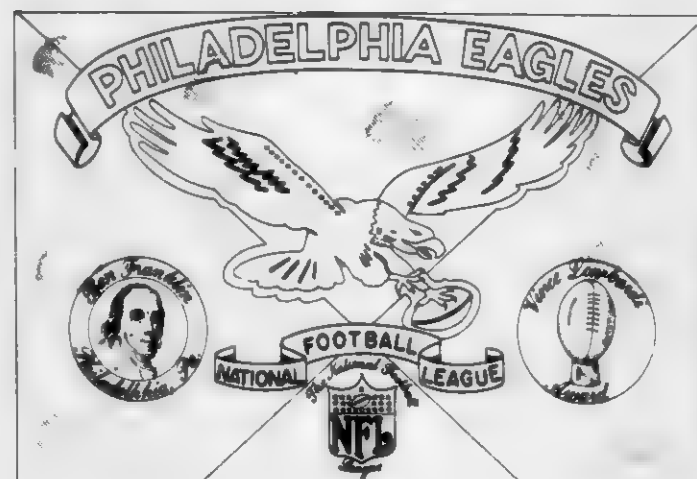
Norbert V. Filliben, 506 S. Elmwood Ave., Glenolden, Pa. 19036

Filed Nov. 24, 1978, Ser. No. 963,586

Term of patent 14 years

Int. Cl. D11-05

U.S. Cl. D11-172



257,245

SECTIONAL GOLF FLAG POLE

Keith A. Neal, 10718 Camino Real, Fountain Valley, Calif. 92708

Filed Oct. 16, 1978, Ser. No. 952,004

Term of patent 14 years

Int. Cl. D11-05

U.S. Cl. D11-181



257,243

ATHLETIC TEAM FLAG

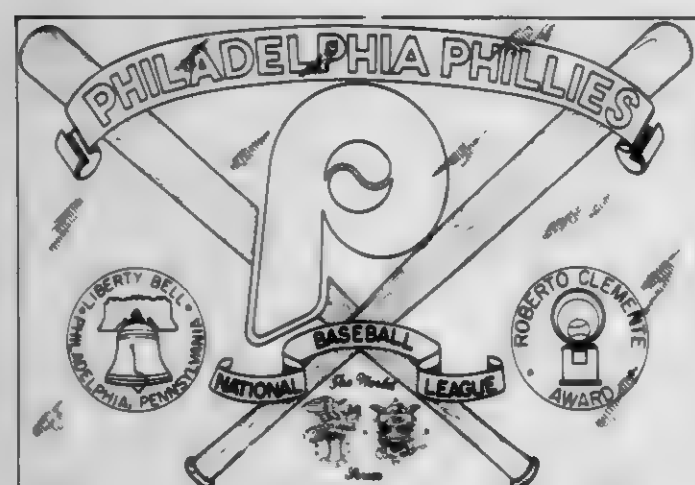
Norbert V. Filliben, 506 S. Elmwood Ave., Glenolden, Pa. 19036

Filed Nov. 24, 1978, Ser. No. 963,585

Term of patent 14 years

Int. Cl. D11-05

U.S. Cl. D11-172



257,246

HAND TRUCK FOR LIFTING AND TRANSPORTING A TIRE WHEEL

Yukiyoshi Hihara, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

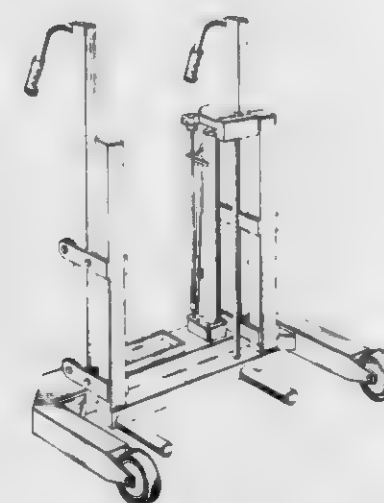
Filed Aug. 31, 1978, Ser. No. 938,979

Claims priority, application Japan, Jul. 14, 1978, 53-29760

Term of patent 14 years

Int. Cl. D12-05

U.S. Cl. D12-56



257,247

PALLET POST

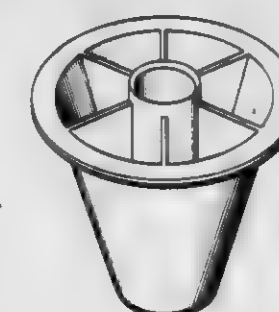
Richard J. Powers, 4340 N. Marmora, Chicago, Ill. 60639

Filed Jul. 30, 1979, Ser. No. 61,815

Term of patent 14 years

Int. Cl. D9-99

U.S. Cl. D12-60



257,248

CAM STOPPER

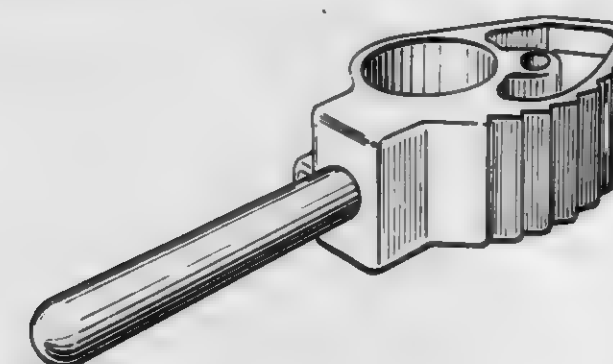
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.

Filed Jan. 6, 1978, Ser. No. 867,454

Term of patent 14 years

Int. Cl. D12-06

U.S. Cl. D12-70



257,249

BICYCLE PEDAL

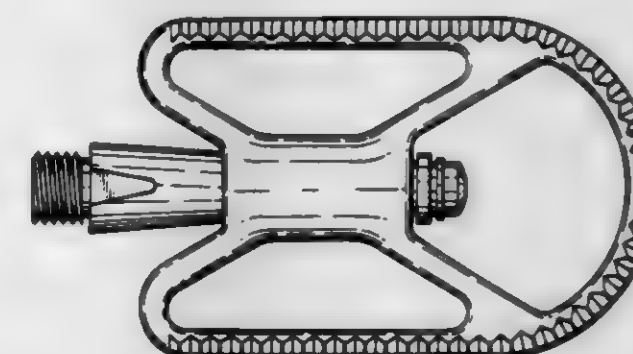
Robert M. Kingsbury, Jackson, Mich., assignor to Kingsbury Products Incorporated, Jackson, Mich.

Filed Jan. 2, 1979, Ser. No. 298

Term of patent 14 years

Int. Cl. D12-11

U.S. Cl. D12-125



257,250

RUNNING BOARD FOR TRUCKS

Bernard R. Stoltenberg, and Steven Heck, both of Luverne, Minn.,

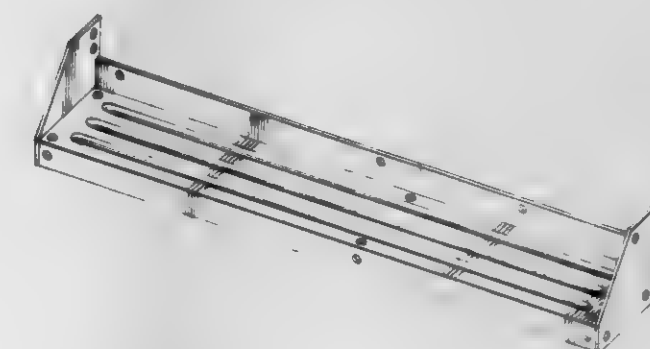
assignors to Luverne Truck Equipment, Inc., Luverne, Minn.

Filed May 1, 1978, Ser. No. 901,726

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-203



257,251

INDUCTION CHARGER

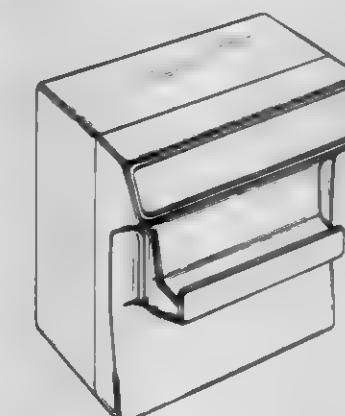
Paul O. Rawson, Easton, and Louis E. Nagy, Killingworth, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Nov. 28, 1977, Ser. No. 855,447

Term of patent 14 years

Int. Cl. D13-02; D10-04

U.S. Cl. D13-05



257,252

TAPE RECORDER

Yasuo Hattori, Hachio, Japan, and David Walz, Atlanta, Ga., assignors to Olympus Optical Co., Ltd., Tokyo, Japan and Lanier Business Products, Inc., Atlanta, Ga.

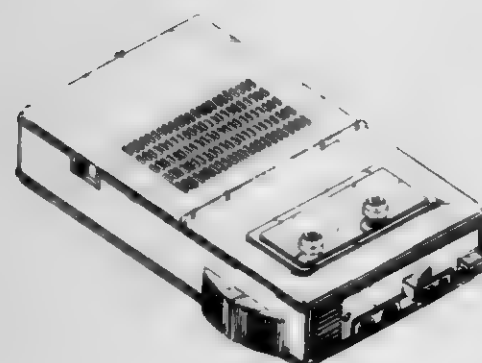
Filed Jun. 28, 1978, Ser. No. 919,810

Claims priority, application Japan, Mar. 2, 1978, 53-7917

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-6



257,254

FOAM GENERATOR FOR A CLEANING MACHINE

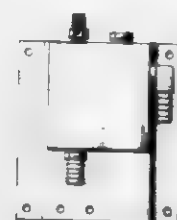
Thomas G. Lafferty, 916 Oak Grove Rd., North Little Rock, Ark. 72118

Filed May 19, 1978, Ser. No. 907,784

Term of patent 14 years

Int. Cl. D15-04; D23-01

U.S. Cl. D15-56



257,255

POWERED SUCTION CLEANER NOZZLE

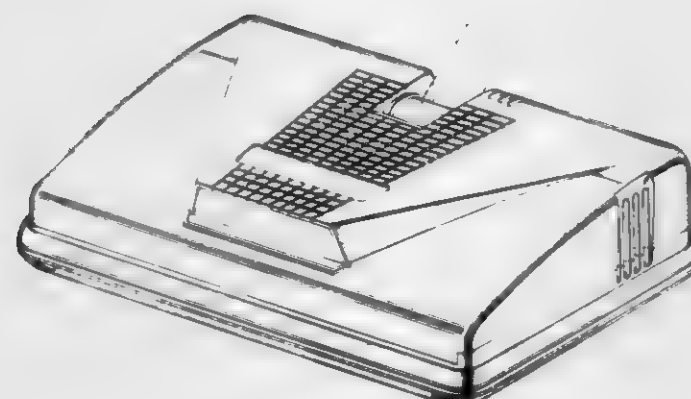
Nora Robinson, Cleveland, Ohio, assignor to Health-Mor, Inc., Chicago, Ill.

Filed May 22, 1978, Ser. No. 908,586

Term of patent 14 years

Int. Cl. D15-05

U.S. Cl. D15-64



257,253

TERMINAL

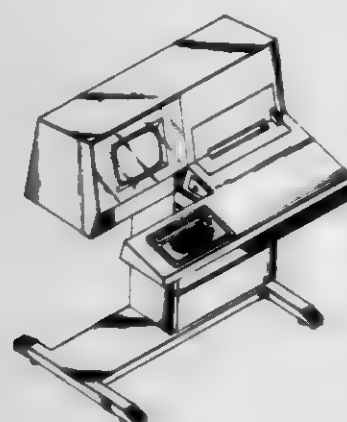
Gregory F. Fossella; John B. MacDonald, both of Boston, and Michael J. Mercadante, North Quincy, all of Mass., assignors to Simplex Time Recorder Co., Gardner, Mass.

Filed Nov. 17, 1978, Ser. No. 961,805

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-44



257,256

POWERED SUCTION CLEANER NOZZLE

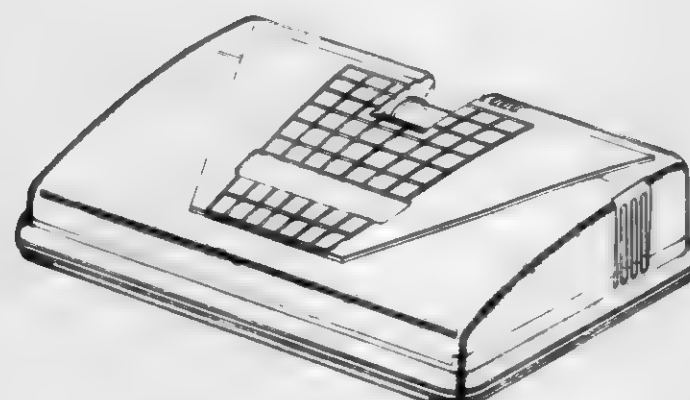
Nora Robinson, Cleveland, Ohio, assignor to Health-Mor, Inc., Chicago, Ill.

Filed May 22, 1978, Ser. No. 908,587

Term of patent 14 years

Int. Cl. D15-05

U.S. Cl. D15-64



257,257

HOLDER FOR WEAVING MATERIAL

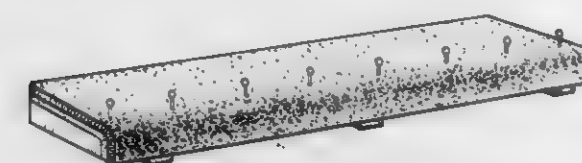
John W. McArthur, Nine Cottage St., Basking Ridge, N.J. 07920

Filed Jun. 6, 1978, Ser. No. 912,990

Term of patent 14 years

Int. Cl. D15-99

U.S. Cl. D15-66



257,258

MOVIE CAMERA

Norbert Schlagheck, and Herbert Schultes, both of Fuerstenfeldbruck, Fed. Rep. of Germany, assignors to GFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

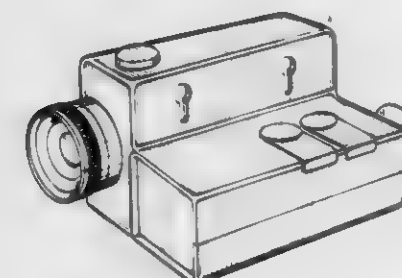
Filed Apr. 12, 1978, Ser. No. 895,659

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 5526149

Term of patent 14 years

Int. Cl. D16-01

U.S. Cl. D16-04



257,259

CAMERA UNIPOD

Yukinobu Shiraishi, Tokyo, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan

Filed Jun. 27, 1978, Ser. No. 919,615

Claims priority, application Japan, Mar. 10, 1978, 53-8712

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-44



257,260

CAMERA TRIPOD

Yukinobu Shiraishi, Tokyo, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan

Filed Apr. 24, 1978, Ser. No. 899,641

Claims priority, application Japan, Oct. 24, 1977, 52-41967

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-45



257,261

CAMERA TRIPOD

Yoshio Shinohara, Niiza, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan

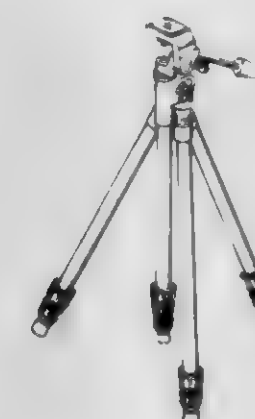
Filed Jun. 27, 1978, Ser. No. 919,720

Claims priority, application Japan, Feb. 24, 1978, 53-6497

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-45



257,262

AUTOMATED APPARATUS FOR CUTTING ROLLED STRIPS OF TRANSFORMER STEEL

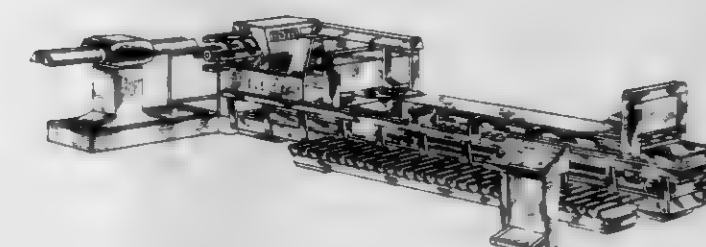
Alexandr I. Khodorov, Sadovy proezd, 1, kv. 89; Boris A. Makeev, ulitsa Novgorodskaya, 6, kv. 29; Lev M. Stepanov, ulitsa Komandarma Uborevicha, 40, a, kv. 22; Vadim I. Batzaky, Moskovsky prospekt, 28, kv. 21; Vladimir N. Sila, Streletsky pereulok, 14 a; Garri M. Korot, ulitsa Timurovtsev, 25 a, kv. 100; Adolf G. Eremenko, ulitsa III Internatsionala, 17, kv. 24, and Vitaly I. Zhuravlev, ulitsa Slinka, 14 a, kv. 50, all of Kharkov, U.S.S.R.

Filed Jun. 27, 1977, Ser. No. 810,289

Term of patent 3 1/2 years

Int. Cl. D15-09

U.S. Cl. D15-127



257,263

BOOK COVER OR SIMILAR ARTICLE

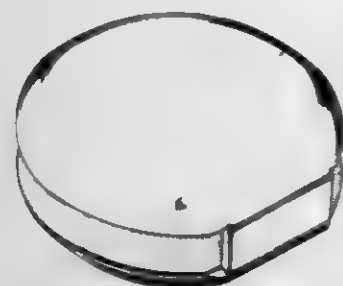
Hector A. Dauvergne, 419 E. Merle Ct., San Leandro, Calif. 94577

Filed Jan. 26, 1978, Ser. No. 872,735

Term of patent 14 years

Int. Cl. D19-04

U.S. Cl. D19-26



257,264

DESK PLANNER HOLDER

Charles Savatteri, New York County, N.Y., assignor to Forward Industries, Inc., Brooklyn, N.Y.

Filed May 17, 1978, Ser. No. 907,251

Term of patent 14 years

Int. Cl. D19-04

U.S. Cl. D19-26



257,265

ANIMATED PAPERWEIGHT

Mikeal W. Albert, 251 Westview, Columbus, Ohio 43214

Filed Apr. 19, 1978, Ser. No. 897,921

Term of patent 14 years

Int. Cl. D19-02

U.S. Cl. D19-97



257,266

PAPER WEIGHT

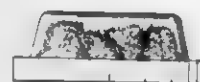
Patty L. Curry, P.O. Box 354, Mooreland, Okla. 73852; George Huggins, 3604 S. Shawnee, Oklahoma City, Okla. 73119, and Seth Pickering, III, 3841 S. 90 E. Ave., Tulsa, Okla. 74145

Filed May 1, 1978, Ser. No. 901,764

Term of patent 14 years

Int. Cl. D19-02

U.S. Cl. D19-97



257,267

GAME BOARD

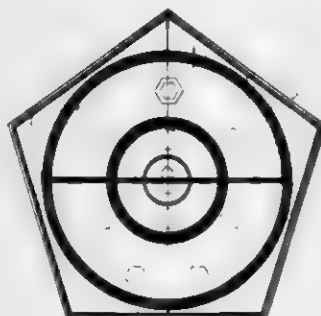
Edward L. Long, 5956 Atteentee Rd., Springfield, Va. 22150

Filed Aug. 15, 1978, Ser. No. 933,976

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-33



257,268

GAME BOARD

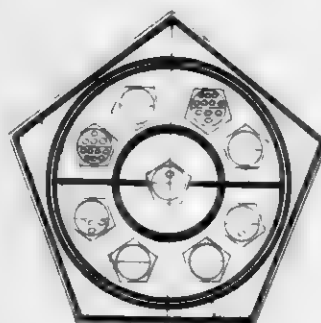
Edward L. Long, 5956 Atteentee Rd., Springfield, Va. 22150

Filed Aug. 15, 1978, Ser. No. 933,978

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-33



257,269

GLIDER

Gary L. Miller, 10300 Service Rd., Denair, Calif. 95316, and Robert M. Hibdon, 614 Lucerne Ave., Modesto, Calif. 95350

Filed Jan. 29, 1979, Ser. No. 7,630

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-88



257,272

TOY RACE TRACK FOR MINIATURE CARS

Fred D. Eddins, Mapleville; Donald H. Samuels, Warwick, both of R.I., and Sidney Tepper, Millburn, N.J., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Dec. 4, 1978, Ser. No. 966,773

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-143



257,273

STUFFED TOY ANIMAL

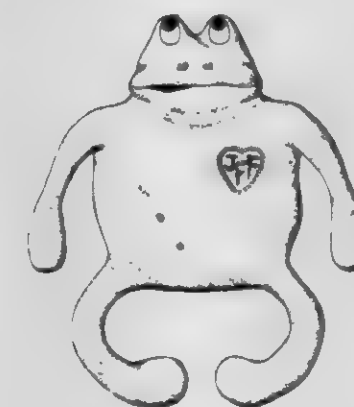
Alan M. Armstrong, and Robert A. Berdell, both of 2315 Lakeview Ave., Los Angeles, Calif. 90039

Filed Nov. 21, 1978, Ser. No. 962,461

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-158



257,270

JOINT ELEMENT FOR CONSTRUCTION SET

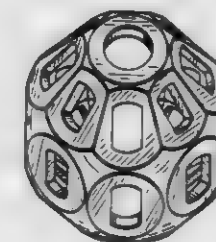
Richard J. Gabriel, Portland, Oreg., assignor to Matrix Toys, Inc., Beaverton, Oreg.

Filed May 8, 1978, Ser. No. 903,996

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-108



257,271

JOINT ELEMENT FOR CONSTRUCTION SET

Richard J. Gabriel, Portland, Oreg., assignor to Matrix Toys, Inc., Beaverton, Oreg.

Filed May 8, 1978, Ser. No. 903,979

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-108



257,274

TOY ANIMAL FIGURE

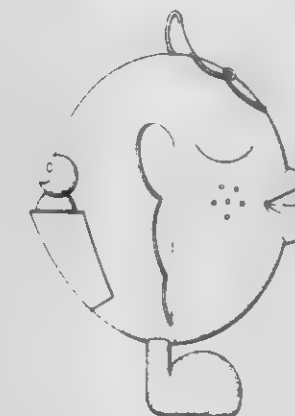
Sharon R. Pellerin, 182 Wightman Ave., Norwich, Conn. 06360

Filed Dec. 7, 1978, Ser. No. 967,158

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-160



257,275

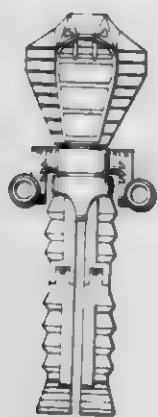
TOY FIGURE

Lawrence T. Jones, Playa Del Rey, and Robert S. Lee, Westlake, both of Calif., assignors to California R & D Center
Filed Feb. 2, 1979, Ser. No. 8,548

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-166



257,277

JOUNCING FOOT TOY

Maurice Gerak, 650 SW. 2nd Ave., Boca Raton, Fla. 33432
Filed Sep. 26, 1977, Ser. No. 836,692

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-240



257,278

STOVE

Patrick T. A. Burdock, Broadstairs, England, assignor to Rovex Limited, London, England

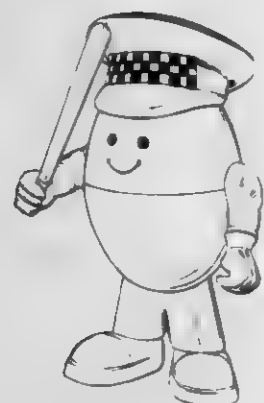
Filed Mar. 2, 1978, Ser. No. 882,588

Claims priority, application United Kingdom, Sep. 2, 1977, 981381/77

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-01



Henrik W. Sommerschild, Oslo, Norway, assignor to Aksjeselskapet Jotul, Oslo, Norway

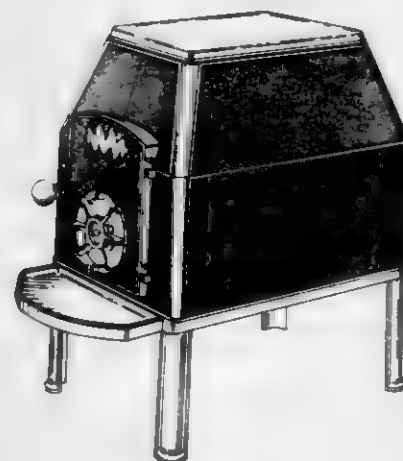
Filed Sep. 12, 1978, Ser. No. 941,806

Claims priority, application Norway, May 30, 1978, 59240/78

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-97



257,279

STOVE

Henrik W. Sommerschild, Oslo, Norway, assignor to Aksjeselskapet Jotul, Oslo, Norway

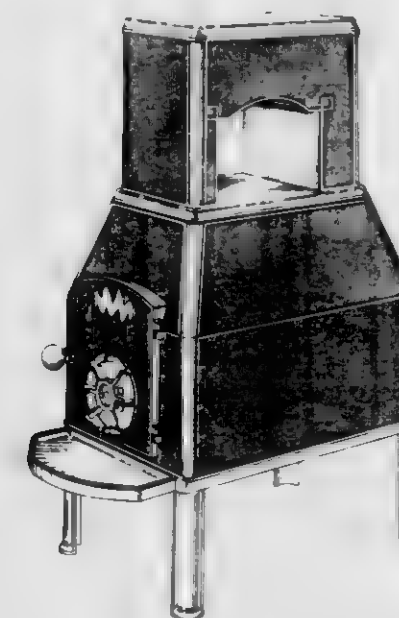
Filed Sep. 12, 1978, Ser. No. 941,807

Claims priority, application Norway, May 30, 1978, 59238/78

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-97



257,281

FOSSIL FUEL CATALYST GENERATOR

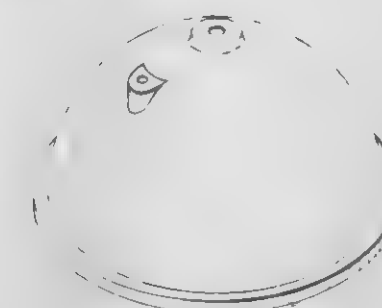
Robert Ganter, Mount Penn; Robert Whitmoyer, Selins Grove, and Palle Rye, Shillington, all of Pa., assignors to Thermics Corporation, Reading, Pa.

Filed Feb. 3, 1978, Ser. No. 874,437

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-127



257,282

ROOF STACK VENT

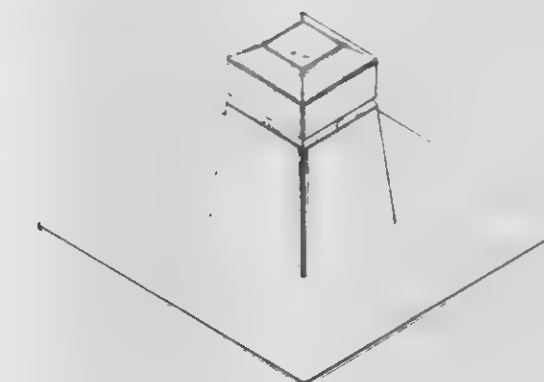
Luther L. Roberts, North Plainfield, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,410

Term of patent 14 years

Int. Cl. D23-04

U.S. Cl. D23-153



257,280

FIREPLACE STOVE

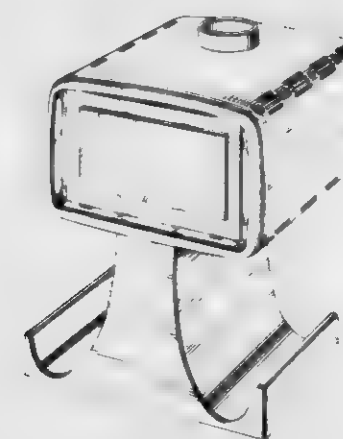
Michael A. Sands, 68 Ehret Ave., Harrington Park, N.J. 07640

Filed Oct. 2, 1978, Ser. No. 947,959

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-97



257,283

ROOF STACK VENT

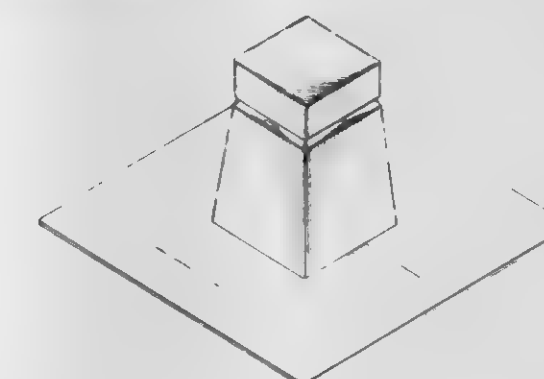
Luther L. Roberts, North Plainfield, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,411

Term of patent 14 years

Int. Cl. D23-04

U.S. Cl. D23-153



257,284

DENTAL HANDPIECE

Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., France

Filed Oct. 17, 1977, Ser. No. 843,162

Claims priority, application France, Jun. 20, 1977, 77 1150

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—12



257,285

MEDICAL DIAGNOSTIC INSTRUMENT CASE

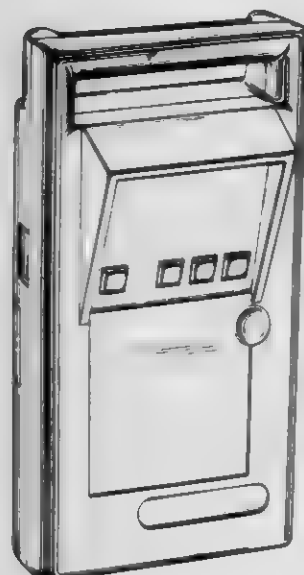
Paul O. Rawson, Easton, and Louis E. Nagy, Killingworth, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Nov. 28, 1977, Ser. No. 855,446

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D24—17



257,286

MEDICAL VALVE

Bern D. Folkman, Burbank, Calif., assignor to Tronomed International, Inc.

Filed Mar. 6, 1978, Ser. No. 884,027

Term of patent 14 years

Int. Cl. D23—01; D24—99

U.S. Cl. D24—53



257,287

COLLAPSIBLE CONTAINER SUITABLE FOR MEDICAL FLUIDS

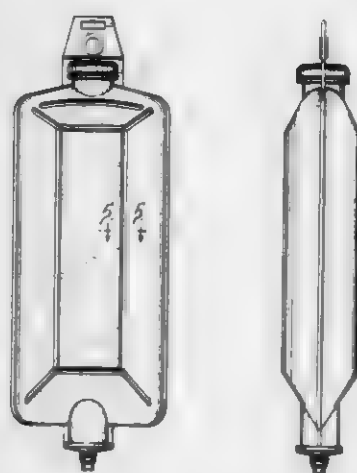
Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc.

Filed Feb. 10, 1978, Ser. No. 876,850

Term of patent 14 years

Int. Cl. D24—04; D9—01

U.S. Cl. D24—58



257,288

RECEPTACLE SUITABLE FOR MEDICAL FLUIDS

Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc.

Filed Feb. 10, 1978, Ser. No. 876,853

Term of patent 14 years

Int. Cl. D24—04; D9—01

U.S. Cl. D24—58



257,289

CRYOBIOLOGICAL VESSEL

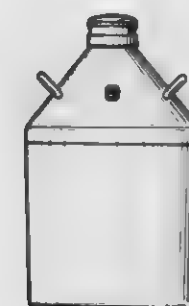
Boris M. Akimov, ulitsa Dzerzhinskogo, 81/85, kv. 16; Anatoly I. Voronov, ulitsa Chaikovskogo, 11, kv. 6; Viktor I. Morozov, ulitsa Zernovaya, 16, kv. 90; Vitaly I. Shalaev, ulitsa Bairona, 161 G, kv. 32; Viktor V. Demenko, poselok Khoroshevo, pereulok Gorkogo, 17; Georgy S. Tsoglin, ulitsa Geroev Truda, 38, kv. 68, and Albina T. Rjulina, ulitsa Gvardeitsev Sheronintsev, 67, kv. 138, all of Kharkov, U.S.S.R.

Filed Nov. 7, 1977, Ser. No. 849,458

Term of patent 14 years

Int. Cl. D24—99

U.S. Cl. D24—99



257,290

BONG BASE

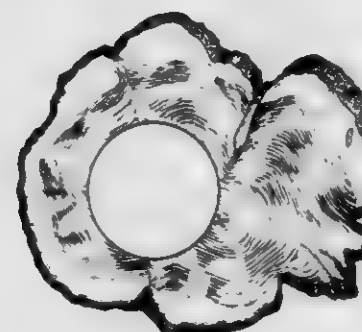
William V. Erickson, 4261 Paskay Dr., Salt Lake City, Utah 84120, and Fred L. Miller, 1440 Arapahoe, Salt Lake City, Utah 84104

Filed Feb. 13, 1978, Ser. No. 877,395

Term of patent 14 years

Int. Cl. D27—99

U.S. Cl. D27—05



257,291

VAPOR HOOD FOR HAIR CARE

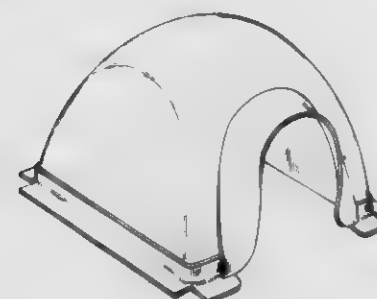
Luigi G. Losenno, 4525 Drexel Ave. South, Edina, Minn. 55424

Filed Jul. 3, 1978, Ser. No. 921,353

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D28—19



257,292

MODULAR HOUSE FOR SMALL PETS

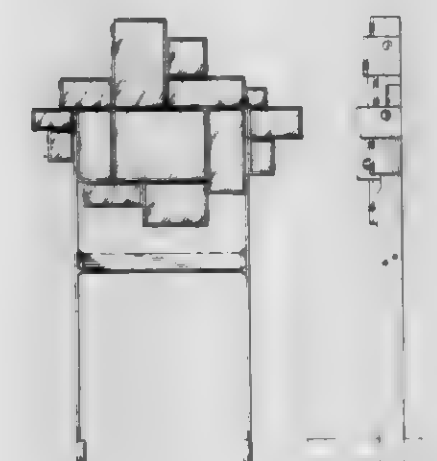
Desmond B. Brown, 1231 1/2 E. Genesee St., Syracuse, N.Y. 13210

Filed May 14, 1979, Ser. No. 38,863

Term of patent 14 years

Int. Cl. D30—02

U.S. Cl. D30—1



257,293

COMBINED CAT PLAYGROUND AND EXERCISER

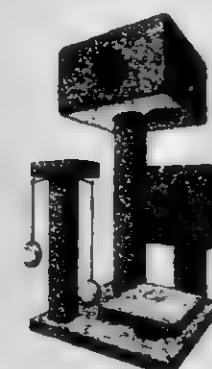
Robert J. Michalski, Paramus, N.J., assignor to Abeta Pet Supply, Inc.

Filed Jan. 23, 1979, Ser. No. 5,695

Term of patent 14 years

Int. Cl. D30—99

U.S. Cl. D30—42



257,294

EMBOSSED PAPER TOWELING

Donald A. Gilling, Neenah, and Lawrence A. Walbrun, Menasha, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 22, 1978, Ser. No. 936,580

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D59-2 B



257,295

NONWOVEN SHEET MATERIAL OR THE LIKE

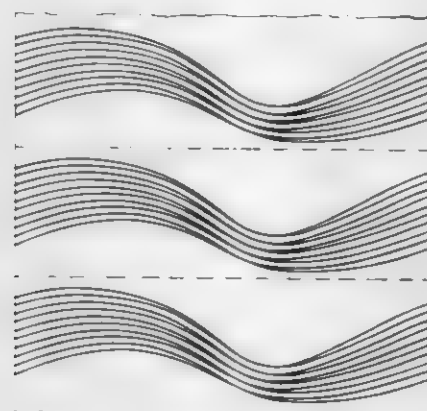
Charlotte D. Joachim, Cincinnati, Ohio; Alvin C. March, Aurora, Ind., and Kay S. Ratliff, Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 13, 1978, Ser. No. 960,136

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 P

**LIST OF PATENTEEES**

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF OCTOBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. H. Robins Company, Inc.: See—
Cale, Albert D., Jr., 4,226,861, Cl. 424-244.000.
- A/S Niro Atomizer: See—
Larsson, Finn H.; and Schwartzbach, Christian, 4,226,603, Cl. 55-260.000.
- A-T-O Inc.: See—
Carter, Sidney T., 4,226,660, Cl. 156-357.000.
- A 1000 Words Incorporated: See—
Skarman, John S., 4,226,517, Cl. 354-75.000.
- Abar Corporation: See—
Jones, William R.; and Gunther, Rush B., 4,227,032, Cl. 13-20.000.
- Abbott, Joseph L. Laminated tube for collapsible containers and method of making same. 4,226,337, Cl. 222-107.000.
- Abbott Laboratories: See—
Arendsen, David L., 4,226,877, Cl. 424-273.00P.
Genese, Joseph N., 4,226,236, Cl. 128-218.00M.
Kyncl, John J., 4,226,773, Cl. 424-273.00P.
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- Abbou, Clement: See—
Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, 4,225,979, Cl. 3-1.000.
- Abdullah, Mukhtar; and Armbruster, Frederick C., to CPC International Inc. Method using glucoamylase immobilized on porous alumina. 4,226,937, Cl. 435-96.000.
- Abramov, Jury V.: See—
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- Absolon, Victor J.; Hurst, George T.; Worboys, John C.; Barnett, George H.; and Dickson, Ross P., to ICI Australia Limited. Process of separating asbestos fibers and product thereof. 4,226,672, Cl. 162-3.000.
- ABU Aktiebolag: See—
Karlsson, Jarding U., 4,226,384, Cl. 242-84.420.
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- Achelpohl, Fritz; and Tetenborg, Konrad, to Windmoller & Holscher. Lifting tackle for filled sacks. 4,226,458, Cl. 294-88.000.
- Achenbach, Karl; and Turk, Gunter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for converting silicon dioxide containing waste flue dust to crystalline zeolitic molecular sieves of type Y with a Faujasite structure. 4,226,837, Cl. 423-118.000.
- Ackel, Sabet, to Daimler-Benz Aktiengesellschaft. Fastening arrangement for removable storage services. 4,226,461, Cl. 296-37.140.
- Ackerman, George, co-executor: See—
Cochrane, Ian W.; Tucker, Frederick R., deceased; Tucker, Mary, co-executrix; Ackerman, George, co-executor; and Canada Permanent Trust Co., co-executor, 4,225,982, Cl. 3-7.000.
- Acme-Cleveland Corporation: See—
Haner, Lambert, 4,227,134, Cl. 318-685.000.
- Acs, Miklos: See—
Paradi, Laszlo; Acs, Miklos; Szucs, Tibor; and Konkoly, Tibor, 4,227,065, Cl. 219-121.00M.
- Adachi, Akio: See—
Yasuda, Katsuya; and Adachi, Akio, 4,227,180, Cl. 340-166.00R.
- Adam, John E.: See—
Thomas, William J.; and Adam, John E., 4,225,997, Cl. 15-184.000.
- Adams, George. Fruit picking apparatus. 4,226,075, Cl. 56-334.000.
- Adams, Kenneth D., to Singer Company, The. Sewing machine six motion work feeding mechanism. 4,226,199, Cl. 112-308.000.
- AGA Aktiebolag: See—
Knoos, Stellan, 4,226,226, Cl. 126-432.000.
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Paquet, Denis; Thou, Kaing S.; and Alais, Charles, 4,226,893, Cl. 426-564.000.
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Plessers, Hendrik S.; and Hellemans, Julianus J., 4,227,089, Cl. 250-468.000.
Van Beeck, Walter P., 4,226,538, Cl. 356-430.000.
- Ahumada, Gregg D.: See—
Belcher, Robert A.; and Ahumada, Gregg D., 4,227,174, Cl. 340-81.00R.
- Aichert, Hans; Hoffmann, Otto-Horst; Stark, Friedrich; and Stephan, Herbert, to Leybold-Heraeus GmbH. Heating system for vacuum coating apparatus. 4,226,587, Cl. 432-122.000.
- Aiga, Makoto: See—
Miyata, Katsuharu; Aiga, Makoto; and Hasegawa, Seiji, 4,227,008, Cl. 560-25.000.
- Air & Refrigeration Corp.: See—
Yaeger, Ronald J.; and Keller, Gerald W., 4,226,606, Cl. 62-238.000.
- Airco, Inc.: See—
Van Don, Frank, 4,226,605, Cl. 62-52.000.
- Aisin Chemical Company, Limited: See—
Yamamoto, Yasunobu; Matsuo, Mitsumasa; and Nakagawa, Atsushi, 4,226,816, Cl. 264-29.400.
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Kagata, Tororu, 4,226,315, Cl. 192-38.000.
Masuda, Noboru; and Suzuki, Mitsuyuki, 4,227,171, Cl. 338-33.000.
- Aizawa, Tatsuo: See—
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- Ajisawa, Yukiyo: See—
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- Akademit for de Tekniske Videnskaber, Svejsecentralen: See—
Lund, Svend A.; Iversen, Sven E.; Petersen, Carl E. T.; Bogen, Erik T.; and Dam, Jorgen, 4,226,122, Cl. 73-609.000.
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Ostling, Sture; and Persson, Stig, 4,226,571, Cl. 417-63.000.
- Akzona Incorporated: See—
Bellino, Robert A., 4,226,504, Cl. 350-96.230.
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- Albe SA: See—
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- Albers, Edwin W.: See—
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- Albright, Jay D.: See—
McEvoy, Francis J.; and Albright, Jay D., 4,226,775, Cl. 260-326.330.
- Albright & Wilson Limited: See—
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- Albus, James F., to Aljet Equipment Company. Material feed system for jet mills and flash dryers. 4,226,027, Cl. 34-57.00R.
- Alcan Research and Development Limited: See—
Cooke, William E.; and Innes, Robert A., 4,226,680, Cl. 204-28.000.
Dewing, Ernest W.; and Southam, Frederick W., 4,226,618, Cl. 75-68.00A.
- Alcoa Nederland B.V.: See—
Maaijwee, Ludoricus C., 4,226,047, Cl. 47-1.100.
- Alcure, Louis F., Jr.: See—
Aliotta, Joseph; and Alcure, Louis F., Jr., 4,226,622, Cl. 75-251.000.
- Aldrich, Joe L., to Keystone International, Inc. Level detector. 4,226,118, Cl. 73-290.00V.
- Aldridge, Clyde L.: See—
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,226,742, Cl. 252-431.00C.
- Alexander, William M. Leather yarn producing machine. 4,226,098, Cl. 69-2.000.
- Aliev, Vagab S.: See—
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- Aliotta, Joseph; and Alcure, Louis F., Jr., to Engelhard Minerals & Chemicals Corporation. Corrosion-resistant dental alloy. 4,226,622, Cl. 75-251.000.
- Aljet Equipment Company: See—
Albus, James F., 4,226,027, Cl. 34-57.00R.
- Allen, Robert R. Portable disposable rack for an automobile. 4,226,354, Cl. 224-318.000.

- Allied Chemical Corporation: See—
Barrett, Joseph J.; and Peterson, Otis G., 4,227,159, Cl. 331-94.50P.
Booth, Robert E.; Evans, Francis E.; Eibeck, Richard E.; and Robinson, Martin A., 4,227,027, Cl. 585-465.000.
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Pieters, Wim J. M.; Gates, William E.; and Wenger, Franz, 4,226,812, Cl. 570-157.000.
Allied Products Corporation: See—
Watson, Charles R., Jr.; and Eichner, Mary A., 4,226,969, Cl. 528-93.000.
Allis-Chalmers Corporation: See—
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Alphadyne, Inc.: See—
Hansen, Lawrence F., 4,226,299, Cl. 181-284.000.
Alstom-Ailantique: See—
Lecoffre, Yves, 4,226,705, Cl. 209-164.000.
Aly Manufacturing Inc.: See—
Gindell, Alvin, 4,226,193, Cl. 108-111.000.
Alt, Gerard H., to Monsanto Company, Plant growth regulators, 4,226,615, Cl. 71-121.000.
Aluminum Pechiney: See—
Reh, Loihar; Plass, Ludolf; Marchessaux, Philippe; and Sood, Raman, 4,226,844, Cl. 423-625.000.
Amax Resource Recovery Systems, Inc.: See—
Styron, Robert W., 4,226,630, Cl. 106-85.000.
Amboss, Kurt, to Hughes Aircraft Company, Electron beam microfabrication apparatus and method, 4,227,090, Cl. 250-492.00A.
Amerace Corporation: See—
Goldberg, Bruce S.; and Shah, Mahendra, 4,226,926, Cl. 429-252.000.
Mazzeo, Charles F.; and Cotler, Catherine K., 4,226,494, Cl. 339-103.00R.
American Cyanamid Company: See—
Chen, Sow-Mei L.; and Grudzinskas, Charles V., 4,227,011, Cl. 560-121.000.
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McEvoy, Francis J.; and Albright, Jay D., 4,226,775, Cl. 260-326.330.
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Shepherd, Robert G., 4,227,014, Cl. 562-457.000.
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American Home Products Corporation: See—
Demerson, Christopher A.; and Humber, Leslie G., 4,226,860, Cl. 424-240.000.
American Machine & Hydraulics: See—
Cole, Richard O., 4,226,449, Cl. 285-382.200.
American Sterilizer Company: See—
Baran, Walter J., 4,226,642, Cl. 134-10.000.
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Amoco Production Company: See—
Jones, Loyd W., 4,226,722, Cl. 210-287.000.
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Anderson, Edwin A.: See—
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Anderson, Richard J.; and Baer, Ted A., to Zeecon Corporation, 2-(4-Trifluoromethylphenylamino)-3-methylbutanoic acid esters and intermediates therefor, 4,226,802, Cl. 260-465.00E.
Anfilov, Igor V.; Abramov, Jury V.; Ershov, Geny S.; Bogomolov, Valentin G.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; and Suvorov, Gennady P., Electrographic photocomposing machine, 4,226,514, Cl. 354-7.000.
Anic, S.p.A.: See—
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Antonov, Bogomil T.; Panayotov, Stoyan Y.; and Lyutakov, Ognian V., to BRV "Electronna Obrabotka na Materialite", Apparatus for the spark deposition of metals, 4,226,697, Cl. 204-298.000.
Antos, George J.: See—
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- Auger, Robert H., to Saint-Gobain Industries, Swiveling solar reflector with multiple reflecting elements supported by prefabricated cambered members, 4,226,506, Cl. 350-292.000.
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Ayres, Frederick C.; and Little, Philip V., to Bonnell Switches Limited, Locating means for an electric switch, 4,227,060, Cl. 200-296.000.
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Baas, Hendrik B., to B.V. Machinefabriek en IJzergieterij Holland-Filter press, 4,226,721, Cl. 210-225.000.
Babcock, Donner F.; Deber, Charles M.; Debono, Manuel; Molloy, R. Michael; and Pfeiffer, Douglas R., to Eli Lilly and Company, Halo-A-23187 derivatives, 4,227,002, Cl. 548-216.000.
Baboon, Robert; Haynes, Gardner S.; and Delagi, Richard G., to Texas Instruments Incorporated, Cathodic protection system for a motor vehicle, 4,226,694, Cl. 204-196.000.
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Barrett, Joseph J.; and Peterson, Otis G., to Allied Chemical Corporation, Common-resonator pre-locked laser, 4,227,159, Cl. 331-94.50P.
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Barten, Hans M.; and Pfister, Frieder K. H., to Pfister GmbH, Method for the contactless determination of features of meat quality, 4,226,540, Cl. 356-445.000.
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Schirmer, Ulrich; Wuerzer, Bruno; and Rohr, Wolfgang, 4,226,613, Cl. 71-100.000.
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- Gilmer, John L., 4,227,054, Cl. 179-16.0EA.
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- Logan, Ralph A., 4,226,667, Cl. 156-656.000.
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- Maydan, Dan; and Shepp, Lawrence A., 4,227,088, Cl. 250-445.00T.
- Miller, Gabriel L., 4,227,147, Cl. 324-72.000.
- Mogab, Cyril J., 4,226,665, Cl. 156-643.000.
- Wynar, Aaron D., 4,227,250, Cl. 375-37.000.
- Belli, John A. Flying saucer simulation game, 4,226,422, Cl. 273-368.000.
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- Bennett, Robert B., to Dow Chemical Company, The. Method for the preparation of low temperature structure, 4,226,071, Cl. 52-741.000.
- Bennett, Robert M., Jr., to Medtronic, Inc. System for detecting heart pacemaker pulses, 4,226,245, Cl. 128-419.0PT.
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- Beranek, Jaroslav; Pihert, Dobromil; and Engel, Oleg, to Ceskoslovenska akademie ved. Fluidized-bed seal, 4,226,835, Cl. 422-310.000.
- Berber, Viktor A.; Pervushin, Evgeny S.; Murtazin, Khafiz M.; and Kholin, Vladimir G. Device for granulometric analysis of particles in fluids, 4,226,532, Cl. 356-336.000.
- Berg, Rolf, to Asai Can Aktiebolag. Method and apparatus for joining a sealing element to a cylindrical container sleeve, 4,226,652, Cl. 156-69.000.
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- Bewert, Wolfgang; and Littmann, Wolfgang, to BASF Aktiengesellschaft. α -Aminomethylene- β -formylaminopropionitrile and its manufacture, 4,226,799, Cl. 260-465.00E.
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- BICC Limited: See—
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- Bieber, Theo; Schuster, Friedrich; Paul, Gunther; Schmitt, Gunther; and Schmucker, Wolfgang, to Kugelfischer Georg Schafer & Co. Loading device for false-twist apparatus, 4,226,080, Cl. 57-339.000.
- Bieker, Ron D., to Miller W. Corporation. Track-laying vehicle with improved suspension, 4,226,293, Cl. 180-9.500.
- Biermann, Peter; and Schmidt, Manfred, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Ski holding apparatus, 4,226,351, Cl. 224-325.000.
- Bies, Sylvester W., to Stanley Works, The. Saw guide subassembly for mitre box, 4,226,152, Cl. 83-764.000.
- Binstock, Morton H.; Lehmer, Robert C.; Johnson, Steven J.; Topolosky, John J.; and Smith, Thomas E., to Westinghouse Electric Corp. Automatic restart control for a power plant boiler, 4,226,086, Cl. 60-656.000.
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- Birk, Daniel L., to United States of America, Navy. Pulse generator utilizing superconducting apparatus, 4,227,153, Cl. 328-59.000.
- Bishop, Peter. Static neutralizer, 4,227,235, Cl. 361-230.000.
- Bjorhaug, Georg, to Svensk Hardbetongteknik AB. Method of and apparatus for forming an article from a mixture of a solidifying plastic material and a large portion of filler material, 4,226,820, Cl. 264-72.000.
- Black, Melvin L.; and Bowen, Robert C., to Weigh-Tech, Inc. Cement slurry reclamation system and method, 4,226,542, Cl. 366-17.000.
- Blaskovic, Silvio U.; and Cornell, Robert W., to International Business Machines Corporation. Forms feed tractor, 4,226,353, Cl. 226-74.000.
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- Blaupunkt-Werke GmbH: See—
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- Blodgett, Norman S.: See—
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- Blom, Hendrik, to U.S. Philips Corporation. Gamma correction circuit for television, 4,227,216, Cl. 358-164.000.
- Blount, David H. Process to break down cellulose polymers and produce cellular solid or solid reaction products, 4,226,982, Cl. 536-101.000.
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- Bode, Howard E., Sr.; and Williams, James B. Mat or rug cleaning process using roller brush, 4,226,641, Cl. 134-9.000.
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- Bogomolov, Valentin G.: See—
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- Boivin, Joseph R. G., to Consolidated-Bathurst Limited. Centrifugal cleaner, 4,226,707, Cl. 209-211.000.
- Bolhofer, William A.; and Prugh, John D., to Merck & Co., Inc. Heterocyclic carbamates, 4,226,871, Cl. 424-263.000.
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- Booth, David, to Firth Carpets Limited. Tufting machines, 4,226,196, Cl. 112-79.00R.
- Booth, Inc.: See—
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- Bourne, Henry A., Jr.; and Salama, Mamdouh, to Conoco, Inc. Mooring system for tension leg platform, 4,226,555, Cl. 405-224.000.
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- Bowers, Michael J., to Newell Companies, Inc. Universal shade bracket, 4,226,396, Cl. 248-268.000.
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- Bracke, William J. I.; and Brandli, Jacqueline, to Labofina S.A. Polymerization process, 4,226,955, Cl. 525-316.000.
- Bradshaw, Franklin C.; Conroy, Thomas P.; and Pague, Michael W., to Kroy Industries Inc. Printing cartridge, 4,226,547, Cl. 400-613.000.
- Branch, William C.: See—
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- Brandenburg, Klaus; Richter, Hermann; and Weber, Wendelin, to U.S. Philips Corporation. Electromagnetic drive for recording pins in a matrix printer, 4,226,545, Cl. 400-124.000.
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- Braun, Martin: See—
Waugh, John S.; and Braun, Martin, 4,227,112, Cl. 313-41.000.
- Braun, Valerie D.: See—
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- Bray, William E., to Texas Instruments Incorporated. Switch mode driver, 4,227,230, Cl. 361-152.000.
- Bressler, Terry L. Device for pleating draperies, 4,226,276, Cl. 160-348.000.
- Breston, Michael P.: See—
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- Bridgeford, Douglas J., to Teepak, Inc. Elastic amylose polymers, 4,226,264, Cl. 758-118.100.
- Bridgestone Tire Company Limited: See—
Yukuta, Toshio; Fukuda, Hiroya; Ishii, Seiji; and Utsumi, Kazuo, 4,226,947, Cl. 521-107.000.
- Brigante, Miguel F. Unitary package for water treatment for attachment to home hot water heater, 4,226,720, Cl. 210-222.000.
- Brittain, William J., to Ford Motor Company. Peripheral station in an information handling system, 4,227,181, Cl. 340-167.00R.
- Britton, John, to General Electric Company Limited, The. Circuits for operating electric discharge lamps, 4,227,118, Cl. 315-101.000.
- Brockway Glass Company, Inc.: See—
Joseph, James R., 4,227,029, Cl. 13-6.000.
- Brooks, Steven W., to Spin Physics, Inc. Apparatus for detecting the speed of an electric motor, 4,227,129, Cl. 318-331.000.
- Broom, Gilbert R. Method and device for indicating headlight alignment, 4,226,530, Cl. 356-121.000.
- Broom, Henry T., to Nalco Chemical Company. Method for inhibiting fouling of petrochemical processing equipment, 4,226,700, Cl. 208-48.0AA.
- Brouwer, Charles W.; and Valois, Rene J., to Leesona Corporation. Loom storage feeder improvement, 4,226,379, Cl. 242-47.010.
- Brower, Van Pelt; Esposito, Robert A.; and Soar, Thomas E., to Monsanto Company. Production of polyvinylbutyral sheet rolls, 4,226,818, Cl. 264-40.100.
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- Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., to General Electric Company. Solid state relay, 4,227,098, Cl. 307-311.000.
- Brown, Edward M.: See—
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- Brown, Hill; and Pippin, Jack M. Tape recording system, 4,227,220, Cl. 360-15.000.
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- Brown, Raymond C., to Superior Industries International, Inc. Wire spoke wheel, 4,226,478, Cl. 301-37.05S.
- Brown, Thomas H., to Smith Kline & French Laboratories Limited. Intermediates in the process for making histamine antagonists, 4,227,000, Cl. 544-321.000.
- Brown, William T. Multi-month calendar, 4,226,443, Cl. 283-2.000.
- Broyles, Harry C., to Raychem Corporation. Heat-recoverable metallic couplings, 4,226,448, Cl. 285-381.000.
- Bruce Plastics, Inc.: See—
Szabo, Bela G., 4,226,345, Cl. 223-91.000.
- Bruckenstein, Stanley, to Andco Industries, Inc. Process for purifying water containing fluoride ion, 4,226,710, Cl. 210-714.000.
- Brunsch, Klaus: See—
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- BRV "Electronna Obrabotka na Materialite": See—
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- Bryson, Charles E., III: See—
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- Bucken, Hans J.; and Horskorte, Helmut, to Henkel Kommanditgesellschaft auf Aktien. Rubber compositions expandable under vulcanization conditions, 4,226,945, Cl. 521-92.000.
- Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Amino-functionalized naphthalene-1,2-dicarboxylic acid hydrazides, 4,226,992, Cl. 544-234.000.
- Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Amino-functionalized phthalhydrazides, 4,226,993, Cl. 544-237.000.
- Budzich, Tadeusz. Load responsive control valve, 4,226,262, Cl. 137-596.130.
- Bugaut, Andree: See—
Kalopissis, Gregoire; and Bugaut, Andree, 4,226,784, Cl. 260-378.000.
- Bulwides, Jr., John J. Hand-operated remote control unit and mounting structure for an arc welding machine, 4,227,066, Cl. 219-132.000.
- Bunker Ramo Corporation: See—
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- Bunyan, Thomas W., to Pilgrim Engineering Developments Limited. Pipe joints, 4,226,444, Cl. 285-21.000.
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- Burd, John F.: See—
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- Burkall, Alvin E.: See—
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- Burkard, Willy; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Method of treating depression, 4,226,865, Cl. 424-248.500.
- Burrington, George C., to Dana Corporation. Hose coupling, 4,226,446, Cl. 285-256.000.
- Burroughs Wellcome Co.: See—
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- Busch, Peter: See—
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- Buser, Hansueli, to Ciba-Geigy Corporation. Sample introduction system, 4,226,119, Cl. 73-422.00C.
- Bush, John R., to B. F. Goodrich Company, The. Method for building a tire, 4,226,655, Cl. 156-132.000.

- Bush, William G.; and Braun, Valerie D., to Drackett Company, The. Dishwashing detergent gel composition. 4,226,736, Cl. 252-135.000.
- Butler, James R.; Turner, James E.; and Goodhart, Frank W., to Warner-Lambert Company. Removal of heparin from heparin-containing blood plasma samples using a triethylaminoethyl cellulose tablet. 4,226,599, Cl. 23-230.00B.
- Butler, Robert W. Rupture lines in flexible packages. 4,226,330, Cl. 206-620.000.
- Buzzi, Ugo, to Albe SA. Device for edging the points of ball pens in particular those made of hard material. 4,226,107, Cl. 72-121.000.
- B.V. Machinefabriek en IJzergieterij Holland. See—
- Baas, Hendrik B., 4,226,721, Cl. 210-225.000.
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- Essebaggers, Jan, 4,226,012, Cl. 29-157.30R.
- Cable Caddy, Inc. See—
- Douglas, Homer C., 4,226,383, Cl. 242-77.000.
- Caboitire Co-Operative Associates Limited. See—
- Siecker, Cornelis, 4,226,888, Cl. 426-36.000.
- Can, Huey A.; and Meneghetti, Leno M. Oil spill recovery method and apparatus. 4,226,711, Cl. 210-691.000.
- Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., to Ford Motor Company. Terminal block with fuse guards and identification surface. 4,226,493, Cl. 339-66.00M.
- Cale, Albert D., Jr., to A. H. Robins Company, Inc. N-Lower-alkyl 3-phenoxy-1-azetidinecarboxamides. 4,226,861, Cl. 424-244.000.
- California Institute of Technology. See—
- Collins, Earl R., Jr., 4,226,288, Cl. 175-62.000.
- Calkins, George B. See—
- Sarnoff, Stanley J.; Calkins, George B.; and Dalling, N. Lawrence, 4,226,235, Cl. 128-218.00F.
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- Cambria Spring Company. See—
- Lampert, Albert J., 4,226,441, Cl. 280-718.000.
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- Schulson, Erland M.; and Cameron, Donald J., 4,226,647, Cl. 148-32.500.
- Cameron, Wallace C., to Copper Alloys Corp. Reduction mill. 4,226,375, Cl. 241-88.400.
- Camilleri, Thomas M. Carpet belt. 4,226,417, Cl. 273-43.00R.
- Campagnuolo, Carl J.; Scheinine, Leon; and Mayercik, Paul M., to United States of America, Army. Hand cranked electrical power source. 4,227,092, Cl. 290-1.00C.
- Campbell Soup Company. See—
- Hildebolt, William M., 4,226,576, Cl. 425-69.000.
- Canada, Atomic Energy of, Limited. See—
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- Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. See—
- Armstrong, William A., 4,226,920, Cl. 429-94.000.
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- Capocchia, Anastasio. Device for removing the earth generated by tunneling. 4,226,477, Cl. 299-56.000.
- Caputo, Anthony J.; Costanzo, Dante A.; Lackey, Walter J., Jr.; Layton, Frank L.; and Stinton, David P., to United States of America, Energy. Method of evaluating the integrity of the outer carbon layer of triso-coated reactor fuel particles. 4,227,081, Cl. 250-321.000.
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- Fragnet, Jean, 4,226,246, Cl. 128-420.00R.
- Carlson, David E., to RCA Corporation. Method of enhancing the electronic properties of an undoped and/or N-type hydrogenated amorphous silicon film. 4,226,643, Cl. 136-89.0TF.
- Carlson, David W. See—
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- Carlson, Gene D.; and Ehrhardt, Gerry H., to Frye Copysystems, Inc. Water insensitive image receptor coating. 4,226,442, Cl. 282-27.500.
- Carlson, Robert F., to Stretch Wrap, Inc. Package supporting assembly means. 4,226,397, Cl. 248-274.000.
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- Carr, Nathaniel, to United States of America, Army. Method of removing a track pin from a track shoe. 4,226,016, Cl. 29-426.400.
- Carrick, Robert L.; Manning, William T.; and Grimes, Robert E., to Telcom, Inc. Signal classifier. 4,227,255, Cl. 455-226.000.
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- Carter, Brian, to Societe PRL. Convactor heater. 4,227,068, Cl. 219-366.000.
- Carter, Sidney T., to A-T-O Inc. Doctor blade for labeling machine. 4,226,660, Cl. 156-357.000.
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- Celanese Corporation. See—
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- Cheng, Paul S. Y., to Sadacca, Albert V.; and Cheng, Paul S. Y. Miniature socketed fuse for a decorative string of series-connected miniature incandescent lamps. 4,227,228, Cl. 361-104.000.
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- Espenschied, Helmut, to Robert Bosch GmbH. Automatic transmission gear change shock reduction system particularly for automotive drive trains, 4,226,141, Cl. 74-858.000.
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- Feldman, Martin L.; and DeGross, James T., to Tenneco Chemicals, Inc. Colored rigid thermoplastic resin compositions and a process for their production, 4,226,760, Cl. 260-42.140.
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- Fieldhouse, John W.; and Graves, Daniel F., to Firestone Tire & Rubber Company. The Process for the polymerization of cyclic polyhalophosphazenes using a catalyst composition of boron trihalide and oxygenated phosphorus compounds, 4,226,840, Cl. 423-300.000.
- Finomechanika Vallalat: See—
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- Firestone Tire & Rubber Company, The: See—
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- Schulz, Donald N.; and Trivedi, Prakash D., 4,226,956, Cl. 525-330.000.
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- Firmenich, S.A.: See—
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- Gurley, Thomas M.; Hopkins, Robert S., Jr.; and Fischer, Wolf-Dieter, to RCA Corporation. Television picture positioning apparatus. 4,227,215. Cl. 358-160.000.
- Gurwicz, David; and Pacey, Keith, to Chloride Group Limited. Converters. 4,227,243. Cl. 363-132.000.
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- Gutierrez, Eddie N., to Lever Brothers Company. 1,1,2,3-Propane tetracarboxylic acid compounds. 4,226,781. Cl. 260-346.740.
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- Haag, Charles W., to Whirlpool Corporation. Door seal assembly. 4,226,489. Cl. 312-296.000.
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- Hall, John N., to Hercules Incorporated. Process for producing a reticulated web net. 4,226,828. Cl. 264-555.000.
- Hall, Stewart: See—
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- Hallam, Dennis M., to E. Sachs & Co. Ltd. Fascia gutter. 4,226,056. Cl. 52-11.000.
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- Hamashima, Yoshio: See—
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- Hamman, Lyle J., to Eaton Stamping. Electric motor drive unit. 4,227,104. Cl. 310-75.00R.

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- Haner, Lambert, to Acme-Cleveland Corporation. Spindle rotator. 4,227,134. Cl. 318-685.000.
- Hanke, Merlin S. Adjustable pulley construction. 4,226,133. Cl. 474-42.000.
- Hanna, Arthur W. Multiple clamp and indexable anvil therefor. 4,226,409. Cl. 269-41.000.
- Hannah, John: See—
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- Hansen, Lawrence F., to Alphadyne, Inc. Acoustical panel. 4,226,299. Cl. 181-284.000.
- Hansen, Peder M., to United States of America, Navy. Injected coded reference for adaptive array systems. 4,227,249. Cl. 375-34.000.
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- Hanson, Robert L., to Bell Telephone Laboratories, Incorporated. Multifrequency receiver. 4,227,055. Cl. 179-84.0VF.
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- Hardiman, Russell J., to SPS Technologies, Inc. Hand operated yield tightening system. 4,226,127. Cl. 73-761.000.
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- Haren, Doyle V., to Dayco Corporation. Microporous elastomeric material and method of manufacture. 4,226,911. Cl. 428-375.000.
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- Harrison, Benjamin C.: See—
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- Harrison, Norman: See—
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- Hartl, Paul: See—
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- Hashimoto, Makoto, to Ricoh Company, Ltd. Magnetic brush development apparatus for an electrostatic copier. 4,226,524. Cl. 355-3.0DD.
- Hashimoto, Shigeru; Masuda, Akira; Mochizuki, Katura; Satoh, Akira; Takeuchi, Koshi; and Oda, Teruhisa, to Canon Kabushiki Kaisha. Holding device for a lens of an interchangeable lens assembly. 4,226,505. Cl. 350-252.000.
- Haslbeck, Peter; and Kocherscheidt, Hans, to Bayerische Motoren Werke Aktiengesellschaft. Internal combustion engine with sound-insulating capsule and water radiator arranged outside the capsule. 4,226,217. Cl. 123-41.620.
- Hatch Associates Ltd.: See—
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- Hatfield, Lowell D.; Blaszcak, Larry C.; and Fisher, Jack W., to Eli Lilly and Company. Process for halogenation of β -lactam compounds. 4,226,986. Cl. 544-16.000.
- Hatta, Shinichi; Egami, Takeshi; and Graham, Charles D., Jr., to Electric Power Research Institute, Inc. Amorphous alloy with high magnetic induction at room temperature. 4,226,619. Cl. 75-123.00K.
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- Hauser Laboratories: See—
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- Hawley, Wilbur W., to Atlantic Richfield Company. Solar panel assembly and support pad. 4,226,256. Cl. 136-244.000.
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- Hay, Robert D., personal representative: See—
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- Hayashi, Sadao: See—
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- Hayden, Percy; Clayton, Richard W.; and Cope, Alan F. G., to Imperial Chemical Industries Limited. Production of alkylene oxides and catalysts thereof. 4,226,782. Cl. 260-348.340.
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- Heitmann, Knut; Schneider, Eckart; and Lussem, Heribert, to Ernst Leitz Wetzlar GmbH. Object measuring method and apparatus. 4,226,535. Cl. 356-373.000.
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- Helfrich, Fred H., Jr., to Madden, Thomas P., a part interest. Ice cream holder. 4,226,355. Cl. 229-1.50H.
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- Hellouin de Cenival, Bruno; and Moulene, Jean-Louis, to Societe Anonyme Francaise du Ferodo. Liner for a perforate plate of a header tank of a heat exchanger having tubes. 4,226,280. Cl. 165-69.000.
- Henderson, Don J., to Exxon Research & Engineering Co. Polyparabanic acid/copper foil laminates obtained by direct solution casting. 4,226,913. Cl. 428-421.000.
- Henderson, George H. Gun barrel lock. 4,226,399. Cl. 248-553.000.
- Henderson, Harvey. Worm drive mechanism. 4,226,129. Cl. 74-89.150.
- Hendricks, Howard F.: See—
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- Hennequin, Petrus J., to Hunter Douglas International N.V. Locking device for raisable venetian blind. 4,226,455. Cl. 292-345.000.
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- Hermann, Joachim, to Bolkow Gesellschaft mit beschränkter Haftung. Optical position determining or tracking device. 4,227,076, Cl. 250-203.00R.
- Herro, Richard E. Golf shoe. 4,226,032, Cl. 36-127.000.
- Herzl, Peter J., to Fischer & Porter Co. Vortex-shedding flowmeter having drag-actuated torsional sensor. 4,226,117, Cl. 73-861.220.
- Hester, Jackson B., Jr., to Upjohn Company. The 1-[(Dialkylamino)methyl]-6-phenyl-4H-[4,3-a][1,4]triazolobenzodiazepine N¹-oxide. 4,226,772, Cl. 260-245.500.
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- Hilbert, Richard G., to Leesona Corporation. Method and apparatus for manufacturing wrapped yarns. 4,226,077, Cl. 57-18.000.
- Hildebolt, William M., to Campbell Soup Company. Protein texturization by centrifugal spinning. 4,226,576, Cl. 425-69.000.
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- Hoffman, Mark H., to SCI Systems, Inc. Printer control system. 4,226,546, Cl. 400-144.200.
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- Hoffmann-La Roche Inc.: See—
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- Godard, Dominique N.; and Thirion, Philippe E., 4,227,152, Cl. 375-13.000.
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Kabushiki Kaisha Toyota Jidoshokki Seisakusho: See—
Nakayama, Shozo; Hattori, Mitsuhiro; and Ono, Makoto, 4,226,572, Cl. 417-269.000.

Kabushikikaisha Anoa: See—
Shimizu, Takeshi, 4,226,421, Cl. 273-275.000.

Kaetsu, Isao: See—
Yoshida, Masaru; Kumakura, Minoru; and Kaetsu, Isao, 4,226,938, Cl. 435-176.000.

Kafka, Barbara, to Cuisinarts, Inc. Two level feed tube for food processor. 4,226,374, Cl. 241-37.500.

Kagami, Takashi: See—
Ishizawa, Hideo; Niwayama, Akira; Shimizu, Mitsuru; and Kagami, Takashi, 4,226,933, Cl. 430-320.000.

Kagata, Tooru, to Aisin Seiki Kabushiki Kaisha. Free wheel hub mechanism. 4,226,315, Cl. 192-38.000.

Kage, Kouzou: See—
Kazama, Shigeru; and Kage, Kouzou, 4,227,251, Cl. 375-110.000.

Kahn, Leonard R. Method and means for reducing false alarm rates in security systems. 4,227,052, Cl. 179-5.00P.

KAI Cutlery Center Co., Ltd.: See—
Sugiyama, Makoto, 4,226,019, Cl. 30-41.000.

Kaidoshko, Eduard A.: See—
Anfilov, Igor V.; Abramov, Jury V.; Ershov, Geny S.; Bogomolov, Valentin G.; Kaidoshko, Eduard A.; Remizov, Jury B.; Rozhenko, Anatoly L.; and Suvorov, Gennady P., 4,226,514, Cl. 354-7.000.

Kaiser, Emil T. Synthesis of steroids. 4,226,770, Cl. 260-239.55C.

Kajfez, Franjo; Sunjic, Vitomir; and Caplar, Vesna, to CRC Compagnia di Ricerca Chimica S.A. Novel method for preparing N(1)-alkylated-5-phenyl-7-substituted-2-deoxy-1,4-benzodiazepines. 4,226,766, Cl. 260-239.00D.

Kakei, Mitsuo: See—
Nishida, Keiji; Kakei, Mitsuo; Kamiya, Osamu; and Sekimura, Nobuyuki, 4,226,208, Cl. 118-706.000.

Kali-Chemie Aktiengesellschaft: See—
Hagedorn, Fritz, 4,226,117, Cl. 73-61.00R.

Kalman, Tibor: See—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istvan; Wentzely, Kalman; Zambó, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.

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Kamei, Takeji, to Nihon Automatic Machinery Mfg. Co., Ltd.. Method and apparatus for treating water containing wastes. 4,226,712, Cl. 210-710.000.

Kamijo, Yukio: See—
Iizuka, Kinji; Akahane, Kenji; Momose, Denichi; Kamijo, Yukio; and Aisawa, Yukiyo, 4,226,878, Cl. 424-273.00R.

Kamiya, Osamu: See—
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Kanazawa, Yasunori, to Hitachi, Ltd. PCM Recording apparatus. 4,227,221, Cl. 360-32.000.

Kang, Jung W.: See—
Schulz, Donald N.; Kang, Jung W.; and Spiewak, John W., 4,226,972, Cl. 528-168.000.

Kansai Paint Co., Ltd.: See—
Sugiura, Shinji; Watanabe, Tadashi; and Ito, Satoru, 4,226,901, Cl. 427-385.500.

Kanten, Thomas M., to Minnesota Mining and Manufacturing Company. Cobalt-doped acicular hyper-magnetite particles. 4,226,909, Cl. 428-329.000.

Kanzaki Paper Manufacturing Co., Ltd.: See—
Iwasaki, Hiroshi; Murakami, Takeshi; and Kondo, Mitsuru, 4,226,912, Cl. 428-411.000.

Kao Soap Co., Ltd.: See—
Iijima, Eiji; and Nishimura, Yoshimi, 4,226,915, Cl. 428-492.000.

Matsunaga, Kinjiro; Masuda, Shin-ichi; Nakagawa, Yunosuke; and Takaishi, Naotake, 4,226,748, Cl. 260-17.00A.

Kapolyi, Laszlo; Szentgyorgyi, Geza; Vámos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, to Tatabánya Szechenyi. Process for producing high-purity alumina and hydraulic cement. 4,226,632, Cl. 106-100.000.

Kappa Fertilizanti S.p.A.: See—
Mainardi, Anacleto C., 4,226,833, Cl. 422-189.000.

Karl Lutz, Firma: See—
Domken, Iwan, 4,226,607, Cl. 65-105.000.

Karlsson, Jarding U., to ABU Aktiebolag. Fishing reels with a level-wind mechanism. 4,226,384, Cl. 242-84.420.

Karlsson, Jarding U., to ABU Aktiebolag. Multiplying fishing reel with level-wind carriage. 4,226,387, Cl. 242-212.000.

Kashiwa, Norio: See—
Luciani, Luciano; Kashiwa, Norio; Barbe, Pier C.; and Toyota, Akinori, 4,226,741, Cl. 252-429.00B.

Kasuga, Munee: See—
Nishikawa, Masaji; and Kasuga, Munee, 4,227,233, Cl. 361-225.000.

Kasugai, Hiroshi: See—
Shigematsu, Taichiro; Shibahara, Tetsuya; Kasugai, Hiroshi; Nakajima, Tetsuo; and Motojima, Shozo, 4,226,855, Cl. 424-177.000.

Katata, Tetsuo, to Dai-ichi Seiko Co., Ltd. Tape reel. 4,226,381, Cl. 242-71.800.

Kato, Itsuo: See—
Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, 4,227,223, Cl. 360-73.000.

Katoh, Kazuhisa: See—
Teshima, Toru; Nozaki, Hiroshi; Koyama, Minoru; and Katoh, Kazuhisa, 4,226,929, Cl. 430-57.000.

Katz, Lawrence E.; Gay, Walter A.; and Schroeder, Hansjuergen A., to Olin Corporation. Selected 3-trichloromethyl-5-cyclic amine-1,2,4-thiadiazole compounds and their use as ammonium nitrification inhibitors. 4,226,609, Cl. 71-64.00F.

Kaufman, Robert J.: See—
Franz, John E.; and Kaufman, Robert J., 4,226,611, Cl. 71-87.000.

Kawaguchi, Hideo: See—
Yamagis, Kikuo; Okuyama, Hiroshi; and Kawaguchi, Hideo, 4,226,825, Cl. 264-235.000.

Kawai, Hisasi: See—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,226,222, Cl. 123-568.000.

Kawai, Yoshio: See—
Asano, Kiro; Tamura, Fumio; Kawai, Yoshio; and Yamaki, Kiyoshi, 4,226,633, Cl. 106-269.000.

Kawamata, Motoo; Kiyoura, Tadamsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihiko; and Kotani, Makoto, to Mitsui Toatsu Chemicals, Incorporated. Process for the selective ortho-alkylation of phenolic compounds. 4,227,023, Cl. 568-804.000.

Kawamura, Yoshikazu, to Kabushiki Kaisha Suwa Seikosha. Step motor driving circuit. 4,227,135, Cl. 318-696.000.

Kawasaki Jukogyo Kabushiki Kaisha: See—
Nakamizo, Keiichi, 4,226,432, Cl. 277-212.00F.

Kawasaki, Masahiro; and Takaoka, Yukio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera aperture controlling brake. 4,226,521, Cl. 354-271.000.

Kawashima, Syunichiro: See—
Nishida, Masamitsu; Kawashima, Syunichiro; Ueda, Ichiro; and Ouchi, Hiromu, 4,226,827, Cl. 264-332.000.

Kawashiri, Akio: See—
Ogasa, Katsuhiko; Kuboyama, Morio; Saito, Minoru; Kudo, Tsutomu; Harada, Yoshitsugu; Kawashiri, Akio; and Takahashi, Eiji, 4,226,847, Cl. 424-12.000.

Kawazumi, Kazuhisa: See—
Ishikawa, Toshikatsu; Kawazumi, Kazuhisa; Yamazoe, Hiroshi; and Sugiura, Isao, 4,226,821, Cl. 264-134.000.

Kay, Eric: See—
Coburn, John W.; and Kay, Eric, 4,226,896, Cl. 427-34.000.

Kay, Ian T., to Imperial Chemical Industries Limited. Triazine-diones. 4,226,990, Cl. 544-212.000.

Kayahara, Kenji, to Kyokado Engineering Co., Ltd. Injection process and injection apparatus for solidifying a ground. 4,226,556, Cl. 405-263.000.

Kayahara, Kenji, to Kyokado Engineering Co., Ltd. Injection process and injection apparatus for solidifying a ground. 4,226,557, Cl. 405-269.000.

Kazama, Kazuo; Oka, Akira; Shighara, Masayoshi; and Shinbashi, Sueo, to Fujitsu Limited. Electronic device having a printed circuit board unit therein. 4,226,491, Cl. 339-17.00M.

Kazama, Shigeru; and Kage, Kouzou, to Nippon Telegraph and Telephone Public Corporation; and Nippon Electric Co., Ltd. Clock pulse regenerator. 4,227,251, Cl. 375-110.000.

Keairns, Dale L.: See—
O'Neill, Eoin P.; and Keairns, Dale L., 4,226,839, Cl. 423-177.000.

Kedem, Ora; and Robinson, Tamar, to Yeda Research and Development Co. Ltd. Electrodialysis device. 4,226,688, Cl. 204-180.00P.

Keleman nee Gulyas, Francisca K.: See—
Dimitrov, Miklos; Keleman nee Gulyas, Francisca K.; Marko, Richard; Pazonyi, Tamas; Pukanszky, Bela; and Riczko, Andras, 4,226,750, Cl. 260-23.00H.

Keller, Gerald W.: See—
Yaeger, Ronald J.; and Keller, Gerald W., 4,226,606, Cl. 62-238.000.

Keller, Teddy M.; and Griffith, James R., to United States of America. Navy. Terminated bis(3,4-dicyanophenoxy) alkanes. 4,226,801, Cl. 260-465.00F.

Kelley, Jerry K.; and Mateja, Eugene V. Water alarm for monitoring floor moisture. 4,227,190, Cl. 340-604.000.

Kellner, Ferdinand. Photographic camera having long focal length objective. 4,226,518, Cl. 354-79.000.

Kelly, Calvin E.; and Nicely, Thomas E., to United States Steel Corporation. Latch mechanism for coke oven doors. 4,226,679, Cl. 202-248.000.

Kennecott Copper Corporation: See—
Portal, Charles; and Cook, Glenn M., 4,226,685, Cl. 204-105.00R.

Kenworthy, Grant F., to Weber Marking Systems, Inc. Applicator for liquid adhesive to a paper form for securing a stencil thereto. 4,226,209, Cl. 118-708.000.

Keppinger, Werner: See—
Lunzer, Friedrich; and Keppinger, Werner, 4,226,842, Cl. 423-465.000.

Kerr, Ada M.: See—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.

Kerr, Alan G.: See—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.

Kerr, Bruce K.: See—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.

Kerr, Colin F.: See—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.

Kerr, Keith E.: See—
Kerr, Kenneth G., 4,226,450, Cl. 292-59.000.

Kerr, Kenneth G., to Kerr, Ada M.; Kerr, Alan G.; Kerr, Keith E.; Kerr, Bruce K.; and Kerr, Colin F. Gate latch. 4,226,450, Cl. 292-59.000.

Kersten, Jean, to Baxter Travenol Laboratories, Inc. Pressure isolator. 4,226,124, Cl. 73-706.000.

Kessler, Gerald. Anti-leakage window frame construction for tilt-in window sash. 4,226,050, Cl. 49-181.000.

Keultjes, Henry B. Chair support. 4,226,391, Cl. 248-176.000.

Keystone International, Inc.: See—
Aldrich, Joe L., 4,226,118, Cl. 73-290.00V.

Kholin, Vladimir G.: See—
Berber, Viktor A.; Pervushin, Evgeny S.; Murtazin, Khafiz M.; and Kholin, Vladimir G., 4,226,532, Cl. 356-336.000.

Khosropour, Mostafa M., to Nelson Industries, Inc. Protective cap for an exhaust pipe. 4,226,173, Cl. 98-59.000.

- Kidd, Robert P.: See—
Booth, Jack J.; Branch, William C.; and Kidd, Robert P., 4,226,344, Cl. 222-504.000.
- Kikumoto, Ryoji: See—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.
- Kimura, Muneaki; Arakawa, Tatsumi; Ozaki, Masaru; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Thin metal-halogen cells, 4,226,924, Cl. 429-126.000.
- Kimura, Takeo: See—
Shibasaki, Ichiro; Ohmura, Kaoru; Kimura, Takeo; and Kobayashi, Hidehiko, 4,227,039, Cl. 174-68.500.
- Kind, Cornelis E.: See—
Bakker, Pieter M.; Kind, Cornelis E.; and Aurich, Volker G., 4,226,797, Cl. 260-460.000.
- Kinderman, Gerard H.; Rutledge, Robert L.; and Steelman, Ronald S., to Minnesota Mining and Manufacturing Company. Photographic speed transfer element with oxidized polyethylene stripping layer, 4,226,927, Cl. 430-14.000.
- Kindig, Alan L.: See—
Humes, Calvin, Jr.; Miller, Sammy L.; and Kindig, Alan L., 4,227,103, Cl. 310-71.000.
- Kindrick, Robert H.; and Harrison, Benjamin C., to Sherwin-Williams Company. The Extended BaCO₃ for brick scum prevention, 4,226,635, Cl. 106-306.000.
- King Minnow, Inc.: See—
Schweim, Donald E., 4,226,338, Cl. 222-162.000.
- King Radio Corporation: See—
Bazil, Ralph E., 4,227,095, Cl. 307-229.000.
- Kintner, Paul M., to Eaton Corporation. Integrated circuit controller programmable with unidirectional logic instructions representative of sequential wire nodes and circuit elements of a ladder diagram, 4,227,247, Cl. 364-900.000.
- Kirkpatrick, Joel L.; and Doyle, William C., Jr., to Gulf Oil Corporation. 5-Substituted-3-fluorosulfonyl-4H-1,2,4-triazoles and use as insecticides and miticides, 4,226,873, Cl. 424-269.000.
- Kirmer, Hans D.: See—
Peter, Richard; Kirmer, Hans D.; and Gehrlein, Rolf, 4,226,596, Cl. 8-532.000.
- Kirsch, Bernhard. Safety ski-bindings, 4,226,439, Cl. 280-628.000.
- Kishi, Jun: See—
Fukaya, Hirokazu; and Kishi, Jun, 4,227,127, Cl. 318-317.000.
- Kissei Pharmaceutical Co., Ltd.: See—
Iizuka, Kinji; Akahane, Kenji; Momose, Denichi; Kamijo, Yukio; and Ajiwawa, Yukiyo, 4,226,878, Cl. 424-273.000.
- Kitahara, Haruo, to Shinano Tokki Corporation. Electromagnetic rotating apparatus, 4,227,164, Cl. 335-230.000.
- Kitamoto, Tatsuji: See—
Shirahata, Ryuji; and Kitamoto, Tatsuji, 4,226,681, Cl. 204-38.0ST.
- Kitao, Chiaki: See—
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.
- Kitasato Institute, The: See—
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.
- Kiwala, Jacob: See—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,226,729, Cl. 252-8.900.
- Kiyoura, Tadimitsu: See—
Kawamata, Motoo; Kiyoura, Tadimitsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihide; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.
- Klaiber, George S.; Ippolito, Anthony C.; and Hoskinson, William R., to Wurliizer Company, The. Waveform synthesis for an electronic musical instrument, 4,226,157, Cl. 84-1.220.
- Klein, Gerold K. V.; and Houck, John C., to Klein, Gerold K. V. Debridement of devitalized tissue with hydrolytic enzyme product, 4,226,854, Cl. 424-94.000.
- Klein, Howard P.: See—
Waddill, Harold G.; and Klein, Howard P., 4,226,971, Cl. 528-162.000.
- Klein, Paul E. Orthodontic headgear release assembly, 4,226,589, Cl. 433-5.000.
- Klein, Schanzlin & Becker Aktiengesellschaft: See—
Stohr, Heinz; Kuntz, Gerhard; and Scheer, Gerhard, 4,227,043, Cl. 174-151.000.
- Kleinewefers GmbH: See—
Schiffer, Gunter, 4,226,598, Cl. 8-125.000.
- KLI, Inc.: See—
Polk, Todd J.; and McGowan, Francis E., 4,226,239, Cl. 128-303.00A.
- Klingler, Karl H.; and Traube, Horst, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for production of optically active bases, 4,226,803, Cl. 260-501.110.
- Klockner-Humboldt-Wedag AG: See—
Brachthausen, Kunibert; and Herchenbach, Horst, 4,226,586, Cl. 432-106.000.
- Deussen, Herbert, 4,226,585, Cl. 432-106.000.
- Kluger, Edward W.; and Su, Tien K., to Milliken Research Corporation. Polycycloaliphatic polyamines, 4,226,737, Cl. 252-182.000.
- Kmiec, Chester J.: See—
Albright, James A.; and Kmiec, Chester J., 4,226,813, Cl. 260-927.00R.
- Knapp, Edward J., Jr., to Gould Inc. Fusible element for electric fuses based on a M-effect, 4,227,168, Cl. 337-161.000.
- Knecht, Eduard, to Ciba-Geigy Corporation. Trimellitic acid ester and its use in a protective lacquer based on epoxide resin, 4,226,755, Cl. 260-31.4EP.
- Knickerbocker Toy Co., Inc.: See—
Lehmann, Roger W.; and Siravo, Vincent F., 4,226,045, Cl. 46-25.000.
- Knight, David. Sanding disc container, 4,226,329, Cl. 206-372.000.
- Knittel, Helmut: See—
Dimroth, Peter; Knittel, Helmut; Seitz, August; and Wolff, Dietrich, 4,226,634, Cl. 106-288.00Q.
- Knobel, Kenneth M.: See—
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- Knoos, Stellan, to AGA Aktiebolag. Solar energy collector, 4,226,226, Cl. 126-432.000.
- Knor-Bremse GmbH: See—
Pollinger, Hans; and Lohmeier, Paul, 4,226,481, Cl. 303-82.000.
- Stable, Georg; and Hintner, Josef, 4,226,482, Cl. 303-82.000.
- Staltmeier, Josef; Wosegien, Bernd; and Nadas, Julius, 4,226,168, Cl. 92-130.00A.
- Knosler, William M. Ultrasonic imaging system and improved signal processor therefor, 4,226,121, Cl. 73-602.000.
- Kobashi, Kiyoshi: See—
Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, 4,226,222, Cl. 123-568.000.
- Kobayashi, Akio; Endo, Kunio; and Omori, Norio, to Nippondenso Co., Ltd. Electronically-controlled fuel injection system for internal combustion engine having odd numbers of cylinders, 4,226,215, Cl. 123-487.000.
- Kobayashi, Eiji; and Takahashi, Hiroyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Damper assembly for keyboard musical instruments, 4,226,158, Cl. 84-239.000.
- Kobayashi, Hidehiko: See—
Kimura, Muneaki; Arakawa, Tatsumi; Ozaki, Masaru; and Kobayashi, Hidehiko, 4,226,924, Cl. 429-126.000.
- Shibasaki, Ichiro; Ohmura, Kaoru; Kimura, Takeo; and Kobayashi, Hidehiko, 4,227,039, Cl. 174-68.500.
- Kobayashi, Minoru: See—
Sato, Masaaki; and Kobayashi, Minoru, 4,227,222, Cl. 360-60.000.
- Kobayashi, Osamu: See—
Sato, Hideo; and Kobayashi, Osamu, 4,226,429, Cl. 277-96.200.
- Kobayashi, Yoshiro: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,226,788, Cl. 260-397.200.
- Kobe Steel, Limited: See—
Nakanishi, Sadayuki, 4,226,258, Cl. 137-208.000.
- Koch, Manfred; Handte, Reinhard; Horlein, Gerhard; Leditschke, Heinrich; Kocher, Helmut; and Langeluddeke, Peter, to Hoechst Aktiengesellschaft. Phenoxyphenoxy-propionic acid derivatives, 4,227,009, Cl. 560-61.000.
- Kocher, Helmut: See—
Koch, Manfred; Handte, Reinhard; Horlein, Gerhard; Leditschke, Heinrich; Kocher, Helmut; and Langeluddeke, Peter, 4,227,009, Cl. 560-61.000.
- Kocherscheidt, Hans: See—
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- Koenig, Karl-Heinz: See—
Oeser, Heinz-Guenter; Koenig, Karl-Heinz; and Mangold, Dietrich, 4,226,811, Cl. 568-937.000.
- Kogure, Yasuo: See—
Kawamata, Motoo; Kiyoura, Tadimitsu; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihide; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.
- Kohama, Tokio; Matsui, Takeshi; Kawai, Hisasi; Nishimatsu, Akira; Ina, Toshikazu; Nohira, Hidetaka; and Kobashi, Kiyoshi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engines, 4,226,222, Cl. 123-568.000.
- Koizumi, Yoshinori: See—
Shiraishi, Makoto; Uchida, Hiroshi; Koizumi, Yoshinori; and Saito, Akira, 4,226,966, Cl. 526-202.000.
- Kokubo, Eiichi; and Sugai, Akemi, to Laurel Bank Machine Co., Ltd. Coin counting and discharge machine having reciprocating pushers for transferring coins, 4,226,253, Cl. 133-4.00A.
- Kokusai Denshin Denwa Co., Ltd.: See—
Tamori, Michitoshi; Furuya, Katsuhiko; Yanagidaira, Hidetaka; and Sakaki, Hiroshi, 4,227,160, Cl. 333-18.000.
- Komanduri, Rangachary; and Reed, William R., Jr., to General Electric Company. Dressing and conditioning resin-bonded diamond grinding wheel, 4,226,055, Cl. 51-325.000.
- Komatsu, Kyozi: See—
Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, 4,226,687, Cl. 204-159.130.
- Komatsu, Toshiaki: See—
Yamada, Hirotada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,226,863, Cl. 424-246.000.
- Komeya, Katsutoshi; Inoue, Hiroshi; Kudo, Haruo; and Endo, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of producing silicon carbide powder, 4,226,841, Cl. 423-345.000.
- Kominek, Leo A.: See—
Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,226,936, Cl. 435-55.000.
- Komorita, Fujio: See—
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- Kondo, Mitsuru: See—
Iwasaki, Hiroshi; Murakami, Takeshi; and Kondo, Mitsuru, 4,226,912, Cl. 428-411.000.
- Konkoly, Tibor: See—
Paradi, Laszlo; Acs, Miklos; Szucs, Tibor; and Konkoly, Tibor, 4,227,065, Cl. 219-121.0EM.
- Konnai, Makoto: See—
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- Konstantinov, Mihail: See—
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- Koors, Carl W.: See—
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- Kopp, Clinton V.: See—
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- Koppehele, Hugh P.: See—
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- Koppel, Gary A.: See—
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- Koral, Marvin: See—
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- Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,975, Cl. 528-483.000.
- Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,976, Cl. 528-498.000.
- Korolov, Anatoly G.: See—
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- Kraemer, Rolf H., to Fansteel Inc. Toolholder anvil seat for indexable inserts, 4,226,560, Cl. 407-101.000.
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- Kramer, Friedrich, to Schaeffer-Homborg GmbH. Fastener for bands or the like, 4,226,008, Cl. 24-206.00B.
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- Krug, Albert E., to Becton, Dickinson and Company. Bracelet assembly for identification device, 4,226,036, Cl. 40-21.00C.
- Kubler, Wolfgang. Apparatus for ascertaining the upper level of liquids in tanks or the like, 4,227,057, Cl. 200-84.00C.
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- Kudo, Haruo: See—
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- Kung, Shin H. Fire extinguisher and fire extinguishing composition, 4,226,728, Cl. 252-8.000.
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- Kuntz, Gerhard: See—
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- Yoshikawa, Shinsuke; Hisazumi, Nobuyuki; and Yamamoto, Masataka, 4,226,822, Cl. 264-173.000.
- Kurz, Edward A., to Galileo Electro-Optics Corp. Beam detector, 4,227,087, Cl. 250-397.000.
- Kusaba, Masanobu: See—
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- Kyncl, John J., to Abbott Laboratories. Pyrazolyl amino imidazolines as diuretic agents, 4,226,773, Cl. 424-273.00P.
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- Lackey, Walter J., Jr.: See—
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- Lacombat, Michel: See—
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- Ladin, Eli M., to Federal-Mogul Corporation. Self-aligning clutch bearing assembly, 4,226,321, Cl. 192-110.00B.

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- Lahtinen, Paavo. Electro-mechanical winnings distribution assembly for slot machines. 4,226,252, Cl. 133-1.00R.
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- Morgan, George H., 4,226,318, Cl. 192-85.0CA.
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Akred, Brian J.; Lambie, Alan J.; and Maden, John, 4,226,796, Cl. 260-459.00R.
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Shaffer, Myron W., 4,226,664, Cl. 156-499.000.
- Lampert, Albert J., to Cambria Spring Company. Auxiliary vehicle spring for lightly loaded conditions. 4,226,441, Cl. 280-718.000.
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- Langeraar, Huibert B., to Hollandse Signaalapparaten B.V. Direction finding apparatus. 4,227,196, Cl. 343-100.0CL.
- Langham, Arvin L., to Elfab Corporation. Circuit board edge connec-tor. 4,226,496, Cl. 339-176.0MP.
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- Laurent, John A.: See—
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- Layton, Frank L.: See—
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- Layton, Paul L., to Gulf & Western Manufacturing Company. Shielded non-metallic container. 4,227,037, Cl. 174-35.0MS.
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- Leach, Bruce E., to Conoco, Inc. Preparation of 2,6-xylenol and cata-lyst composition useful therefor. 4,227,024, Cl. 568-804.000.
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- Leanza, William J.: See—
Christensen, Burton G.; Hannah, John; Leanza, William J.; Rat-cliffe, Ronald W.; and Shih, David H., 4,226,870, Cl. 424-263.000.
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- Leditschke, Heinrich: See—
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- Lengyel, Laszlo: See—
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- Levesque, Yvon G., to Johnson & Johnson. Layered absorbent struc-ture. 4,226,237, Cl. 128-285.000.
- Lew, Yon S. Air-spring return air cylinder. 4,226,167, Cl. 91-399.000.
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- Lewis, Gary W.; and Robinson, Alfred D., to Comsip Delphi, Inc. Method and apparatus for monitoring and measuring a gas. 4,226,675, Cl. 176-19.00R.
- Lewis, George D.; Russell, Paul L.; and Stettler, Jeffrey, to United Technologies Corporation. Method and apparatus for reducing nitrous oxide emissions from combustors. 4,226,083, Cl. 60-39.060.
- Lewis, Neal A., to Procter & Gamble Company. The Treatment of Robusta coffee. 4,226,891, Cl. 426-430.000.
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- Lindsey, Donnie R. Portable therapeutic water massage mechanism. 4,225,984, Cl. 4-541.000.
- Lipp, Xaver. Ensilage storing apparatus. 4,226,565, Cl. 414-467.000.

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- Little, Philip V.: See—
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- Little, John J.; Koors, Carl W.; Fussner, Richard F.; and Lengel, Frank, to Cincinnati Incorporated. Slitter having arbor pairs mounted on a caster supported base shiftable and orientable along the slitter frame. 4,226,151, Cl. 83-479.000.
- Littmann, Wolfgang: See—
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- Ljungberg, Sten H., to Nitro Nobel AB. Primer. 4,226,184, Cl. 102-24.00R.
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- Logan, David J.; and Pavone, Robert J., to Gulf & Western Corpora-tion. Device for translating and rotating a cutting platen with respect to a reciprocal cutter. 4,226,148, Cl. 83-71.000.
- Logan, Ralph A., to Bell Telephone Laboratories, Incorporated. Oxide masking of gallium arsenide. 4,226,667, Cl. 156-656.000.
- Lohmeier, Paul: See—
Pollinger, Hans; and Lohmeier, Paul, 4,226,481, Cl. 303-82.000.
- Loken, Philip I., to Horton Manufacturing Company, Inc. Mechanism for maintaining contact between the driving side of torque transferring surfaces of a first rotatable member and the driven side of matching torque transferring surfaces of a second rotatable member. 4,226,095, Cl. 64-27.0CT.
- Lonati, Francesco, to Costruzioni Meccaniche Lonati S.p.A. Pattern drum control device in a circular knitting machine. 4,226,096, Cl. 66-224.000.
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- Longi, Paolo: See—
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- L'Oreal: See—
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- Love, Jim: See—
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- Lowe, Charles T. Banjo construction. 4,226,159, Cl. 84-272.000.
- Luborsky, Fred E., to General Electric Company. Stress-relieved amorphous metal toroid-shaped magnetic core. 4,227,120, Cl. 315-248.000.
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- Lueddecke, Donald E.; Mottine, John J., Jr.; and Vesperman, William C., to Western Electric Inc.; and Bell Telephone Laboratories, Incor-porated. Telephone cords. 4,227,042, Cl. 174-120.0SR.
- Lugovskoi, Vladimir D.: See—
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- Lussem, Heribert: See—
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- Macchi, Giannino. Bread toaster. 4,226,176, Cl. 99-335.000.
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- Machlett Laboratories, Inc.: See—
Waugh, John S.; and Braun, Martin, 4,227,112, Cl. 313-41.000.
- MacMillan Bloedel Limited: See—
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- Madaliev, Shavkat: See—
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- Madan, Arun: See—
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- Madden, Thomas P.: See—
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- Maden, John: See—
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- Maeda Industries, Ltd.: See—
Ozaki, Nobuo, 4,226,310, Cl. 192-6.00R.
- Yamasaki, Kazuto, 4,226,131, Cl. 474-82.000.
- Maeda, Tadao: See—
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- Maes, Jean P., to s.a. Texaco Belgium n.v. Corrosion probe combina-tion. 4,226,693, Cl. 204-195.00C.
- Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, to Pioneer Elec-tronic Corporation. Auto-repeat mechanism for cassette tape re-corder. 4,227,223, Cl. 360-73.000.
- Magee, John S., Jr.: See—
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- Magyar Vagon- és Gépgyár: See—
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- Makowski, Henry S.: See—
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Ellis, Christopher I. A.; and Naylor, Edward L., 4,227,151, Cl. 324-448.000.
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- Malherbe, Roger; and Rusberger, Michael, to Ciba-Geigy Corporation. Piperidyl esters of phenolalkylene carboxylic acids. 4,226,999, Cl. 546-222.000.
- Malm, Arthur P. Waste water treatment. 4,226,717, Cl. 210-195.100.
- Malo, Russell V.; Gustafson, Gary A.; and Bockrath, Ronald E., to Standard Oil Company (Indiana). Process for upgrading prepolymer particles. 4,226,973, Cl. 528-481.000.
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- Mangold, Dietrich: See—
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- Manning, Gilbert B.: See—
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- Manning, William T.: See—
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- Manoli, Samir H. Phonocephalographic device. 4,226,248, Cl. 128-773.000.
- Mansukhani, Ishwar R., to Whittaker Corporation. Pigmented jet printing and product. 4,227,200, Cl. 346-75.000.
- Manufacture de Produits Chimiques Protex S.A.: See—
Veaute, Georges, 4,226,749, Cl. 260-17.300.
- Manus, Ray G. Playground apparatus. 4,226,411, Cl. 272-55.000.
- Marchese, Robert P.: See—
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- Marchessaux, Philippe: See—
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- Marcin, Benjamin G., to Pullman Incorporated. Floatable concrete pallet for lifting and bearing heavy loads. 4,226,203, Cl. 114-65.00A.
- Marconi Company Limited, The: See—
Nimmo, William M.; and Jarrett, Richard, 4,227,197, Cl. 343-878.000.
- Marcus, Konrad H., to Prince Corporation. Visor assembly. 4,227,241, Cl. 362-61.000.
- Marcus, Konrad H., to Prince Corporation. Illuminated visor mirror assembly. 4,227,242, Cl. 362-61.000.
- Marine Moisture Control Company, Inc.: See—
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- Mark Industries: See—
Rallis, Rallie P.; Cullity, Richard E.; and Tamplin, Lyle R., 4,226,300, Cl. 182-2.000.
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Dimitrov, Miklos; Keleman nee Gulyas, Franciska K.; Marko, Richard; Pazonyi, Tamas; Pukanszky, Bela; and Riczko, Andras, 4,226,750, Cl. 260-23.00H.
- Marquette Tool and Die Company: See—
Freber, Elmer C., 4,226,398, Cl. 248-415.000.
- Marsden, John H.; and Harrison, Norman, to Imperial Chemical Industries Limited. Process for making 4-methyl-4,5-dihydro-1,2,4-triazolo [1,5-a] quinoxalin-5-one. 4,226,994, Cl. 344-251.000.
- Marsh, David G. Formalinized allergen-containing substances and production thereof. 4,226,853, Cl. 424-91.000.
- Marsh, Frank D., to Du Pont de Nemours, E. I., and Company. α -Chlorination process. 4,226,783, Cl. 260-351.000.
- Marshall, Gerald F., to Energy Conversion Devices, Inc. Imaging device. 4,226,522, Cl. 355-1.000.
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- Marshall, Winston S.; and Pfeifer, William, to Eli Lilly and Company. Anti-inflammatory agents. 4,226,887, Cl. 424-356.000.
- Marsili, Leonardo; Rosetti, Vittorio; and Pasqualucci, Carmine, to Archifar Industrie Chimiche Del Trentino S.p.A. Novel rifamycin compounds of high antibiotic activity. 4,226,765, Cl. 260-239.30P.
- Martin, Robert B., to Petrolite Corporation. Process for dehydration and demineralization of diluted bitumen. 4,226,690, Cl. 204-190.000.
- Martin, Thomas J., to MacMillan Bloedel Limited. Space dividers. 4,226,357, Cl. 229-15.000.
- Martinez, Eugene F.; and Robinson, Nora, to Health-Mor Inc. Multi-motor suction cleaner construction. 4,225,999, Cl. 15-300.00A.
- Maruyama, Eiichi: See—
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- Maruyama, Jiro; and Suzuki, Seiji, to Hakodate Seimo Sengu Co., Ltd. Fishing net. 4,226,165, Cl. 87-12.000.
- Maruyama, Kazumasa: See—
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- Marvin Glass & Associates: See—
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- Masilamani, Drvakaran; and Rogic, Milorad M., to Allied Chemical Corporation. Regioselective substitution at carbon atom vinal to doubly bonded tertiary carbon atom by sulfur dioxide catalysts. 4,227,028, Cl. 585-941.000.
- Massachusetts Institute of Technology: See—
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- Masuda, Akira: See—
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- Masuda, Noboru; and Suzuki, Mitsuyuki, to Denki Onkyo Co., Ltd.; and Asin Seiki Kabushiki Kaisha. Liquid level sensing means. 4,227,171, Cl. 338-33.000.
- Masuda, Shin-ichi: See—
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- Matalon, Ralph. Novel method of making foundry molds and adhesively bonded composites. 4,226,277, Cl. 164-7.000.
- Mateja, Eugene V.: See—
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- Matera, Giancarlo: See—
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- Mathis, Eldon R. Unattached base for rocking chairs. 4,226,472, Cl. 297-270.000.
- Matson, Wayne R., to Environmental Sciences Associates, Inc. Electrochemical processing system. 4,226,695, Cl. 204-231.000.
- Matsuhita Electric Industrial Co., Ltd.: See—
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, 4,227,117, Cl. 315-13.00R.
- Matsui, Hiroto, to Sharp Kabushiki Kaisha. Type separator in a hammer actuated printer. 4,226,180, Cl. 101-111.000.
- Matsui, Makoto: See—
Yamamoto, Hideaki; Matsumaru, Haruo; Matsui, Makoto; Tsukada, Toshihisa; Hirai, Tadaaki; and Maruyama, Eiichi, 4,227,078, Cl. 250-227.000.
- Matsui, Takeshi: See—
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- Matsumaru, Haruo: See—
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- Matsumoto, Akira: See—
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- Matsuo, Mitsumasa: See—
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- Matsushita Electric Industrial Co., Ltd.: See—
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- Nishikawa, Kowhei, 4,227,225, Cl. 360-128.000.
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- Mattfeld, Johann, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit for at least two frequencies. 4,227,156, Cl. 330-126.000.
- Matthews, Terrence H.; and White, Brian K., to Mitel Corporation. Electronic component cabinet. 4,227,237, Cl. 361-415.000.
- Mattress, Albert, Jr., to Blodgett, Norman S., a part interest. Meter lock. 4,226,102, Cl. 70-164.000.
- Matyas, Stephen M.: See—
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Oseas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.
- Matyasi, Jozsef: See—
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- Mauk, Eugene M. Water release mechanism. 4,225,986, Cl. 4-324.000.
- Maurer, Edward H.: See—
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- Maust, Charles I. Security ventilating system. 4,226,049, Cl. 49-57.000.
- Maust, Gale E. Beet harvesting machine. 4,226,566, Cl. 414-519.000.
- Maydan, Dan; and Shepp, Lawrence A., to Bell Telephone Laboratories, Incorporated. High speed computer assisted tomography. 4,227,088, Cl. 250-445.00T.
- Mayercik, Paul M.: See—
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- Mayeux, Christian; and Micheron, Francois, to Thomson-CSF. Detector for detecting ionizing radiation. 4,227,082, Cl. 250-336.000.
- Mayse, Weldon D.; and Watson, Frederick D., to Petrolite Corporation. Apparatus and process for electrically resolving emulsions. 4,226,689, Cl. 204-188.000.
- Mazur, Peter O.; and Pallaver, Carl B., to United States of America. Energy. Adjustable expandable cryogenic piston and ring. 4,226,169, Cl. 92-206.000.
- Mazzeo, Charles F.; and Cotler, Catherine K., to Amerace Corporation. Circuit panel connector. 4,226,494, Cl. 339-103.00R.
- Mazzocchi, Romano: See—
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- McAlpine, James B., to Abbott Laboratories. Fortimicin AK. 4,226,979, Cl. 536-17.00R.
- McAuliffe, Gerald N.: See—
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- McCaffrey, Felix P., to Hatch Associates Ltd. Equalization system for overhead cranes. 4,226,332, Cl. 212-218.000.
- McCain, Wesley G.: See—
White, Russell P., Jr., 4,226,716, Cl. 210-193.000.
- McCartney, Walter T., to Coal Processing Equipment, Inc. Variable wall and vortex finder hydrocyclone classifier. 4,226,708, Cl. 209-211.000.

- McCole, Thomas P.: See—
Gervais, Theodore; and McCole, Thomas P., 4,226,519, Cl. 354-174.000.
- McCort, Ralph E., to Owens-Corning Fiberglass Corporation. Apparatus for treating fibrous boards. 4,226,662, Cl. 156-390.000.
- McCoy, David R., to Texaco Development Corp. Process for making ether sulfonates. 4,226,807, Cl. 260-512.00R.
- McCullough, William L. Load supporting frame assembly. 4,226,465, Cl. 296-182.000.
- McDaniel, Horace J.; and Young, James A. Collapsible sawhorse. 4,226,301, Cl. 182-155.000.
- McElroy, Arthur H. Heater adapter for making polyethylene pipe connections. 4,227,067, Cl. 219-243.000.
- McEvoy, Francis J.; and Albright, Jay D., to American Cyanamid Company. Substituted thio-substituted benzyl-propionyl-L-prolines. 4,226,775, Cl. 260-326.330.
- McGowan, Francis E.: See—
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- McGraw-Edison Company: See—
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- McGuire, Kevin C., to Gunderson, Arthur M. Reflective tracing device. 4,226,029, Cl. 35-26.000.
- McIntosh, Robert A., Sr.; Bernier, Richard G.; and Estabrooks, David A., to Centronics Data Computer Corporation. Stacking system for fanfold paper and the like. 4,226,410, Cl. 270-61.00F.
- McKelvey, Harold E., to Shatterproof Glass Corporation. Method and apparatus for curving glass sheets. 4,226,608, Cl. 65-106.000.
- McNamara, John V.; and Van Etten, Paul, to United States of America. Air Force. High speed real time quantizer and analog/digital converter. 4,227,187, Cl. 340-347.00P.
- McShane, Lawrence J.: See—
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- McSweeney, Lawrence H. Roof drilling system. 4,226,290, Cl. 175-320.000.
- McVey, John K.; and Sharp, Larry L., to Illinois Tool Works Inc. Combined thermal and electrical cut-off device. 4,227,169, Cl. 337-182.000.
- Meacham, Thomas E., Jr., to Refreshment Machinery Incorporated. Vending machine with self contained water supply. 4,226,267, Cl. 141-18.000.
- Mead Corporation, The: See—
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- Medical Laboratory Automation, Inc.: See—
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- Medishield Corporation Limited: See—
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- Medtronic, Inc.: See—
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- Coury, Arthur J.; and Wilary, Frank J., 4,226,244, Cl. 128-419.00P.
- Meidert, Helmut; Muller, Werner H.; and Pressler, Wilfried, to Hoechst Aktiengesellschaft. 8-Chloro-5,6,7,8-tetrahydro-2-quinolone and 8-bromo-5,6,7,8-tetrahydro-2-quinolone, the hydrochloride or hydrobromide thereof and process for their manufacture. 4,226,997, Cl. 546-157.000.
- Meiji Seika Kaisha, Ltd.: See—
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- Meiller, Hermann; Hocke, Horst; Kunst, Otto; and Hartl, Paul, to Messrs. Willibald Grammer. Retractor for safety belts. 4,226,385, Cl. 242-107.40R.
- Meldahl, Robert D.; and Borel, Robert J., to J. A. Masterson & Co. Clutch-brake system for rotary mower. 4,226,313, Cl. 192-18.00R.
- Memeger, Wesley, Jr., to Du Pont de Nemours, E. I., and Company. Wholly aromatic polyamide foam. 4,226,949, Cl. 521-184.000.
- Mende, Hanns; Beuler, Helmut; and Glaum, Rolf, to Luwa AG. Method and apparatus for the decontamination of a liquid containing contaminants. 4,226,678, Cl. 202-161.000.
- Mendoza, Fausto C. Process and apparatus for the instantaneous combustion of diaphanous liquid petroleum, diesel or similar fuels. 4,226,582, Cl. 431-239.000.
- Meneghetti, Leno M.: See—
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- Mentzel, Bodo: See—
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- Merck & Co., Inc.: See—
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- Christensen, Burton G.; and Ratcliffe, Ronald W., 4,226,866, Cl. 424-248.510.
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- Crage, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,226,867, Cl. 424-246.000.
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- Merrell Torau de et Compagnie: See—
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- Messenger, Edward J., to Garlock Inc. Semi-unitized shaft seal. 4,226,426, Cl. 277-37.000.
- Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: See—
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- Schulz, Ralf-Thilo; Brunsch, Klaus; and Woerndle, Rudolf, 4,226,916, Cl. 428-542.000.
- Messrs. Willibald Grammer: See—
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- Meyers, William G. Apparatus and tool for cutting animal carcasses by impinging air jets. 4,226,005, Cl. 17-1.00R.
- Michaels, Dennis C.; and Michaels, John W., to D.J.L.J., Inc. Viewing and angling device for ice fishing. 4,226,508, Cl. 350-319.000.
- Michaels, John W.: See—
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- Michalko, Edward; and deRosset, Armand J., to UOP Inc. Silica guard bed for adsorbent used in an aqueous system. 4,226,639, Cl. 127-46.00A.
- Micheron, Francois: See—
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- Micro-Cel Systems, Inc.: See—
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- Micro-Mega S.A.: See—
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- Microwave Semiconductor Corp.: See—
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- Mike, Andrew. Renewable vaporizer for air treatment and the like. 4,226,829, Cl. 422-123.000.
- Miktor, Mati, to Ford Motor Company. Volume efficient sodium sulfur battery. 4,226,923, Cl. 429-104.000.
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- Buckler, Robert T.; and Schroeder, Hartmut R., 4,226,992, Cl. 544-234.000.
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- Miller, Charles G.: See—
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- Miller, Donald E.; and Westak, Charles E., to SCM Corporation. Flavored spreadable emulsion. 4,226,895, Cl. 426-658.000.
- Miller, Gabriel L., to Bell Telephone Laboratories, Incorporated. Electromechanical parametric amplifier for measurement of electric fields. 4,227,147, Cl. 324-72.000.
- Miller, Georgia R.: See—
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- Miller, Guy W.: See—
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- Miller, Harry C.: See—
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- Miller, Robert S.: See—
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- Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,976, Cl. 528-498.000.
- Miller, Sammy L.: See—
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- Miller W. Corporation: See—
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- Milligan, Orley B. Wood burning stove for heating homes. 4,226,224, Cl. 126-83.000.
- Milliken Research Corporation: See—
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- Millward, John D., to Rank Organisation Limited, The. CRT film scanner with compensation for local brightness variations of scanning beam. 4,227,207, Cl. 358-54.000.
- Milwaukee Faucets, Inc.: See—
Schmitt, William C., 4,226,260, Cl. 137-315.000.
- Minchev, Pavel M.: See—
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- Minnesota Mining and Manufacturing Company: See—
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- Kanten, Thomas M., 4,226,909, Cl. 428-329.000.
- Kinderman, Gerard H.; Rutledge, Robert L.; and Steelman, Ronald S., 4,226,927, Cl. 430-14.000.

- Theiler, Werner C., Sr., 4,225,990, Cl. 7-107.000.
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 Mita Industrial Company, Ltd.: See—
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 Mitsui Petrochemical Industries, Ltd.: See—
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 Debono, Manuel; and Molloy, R. Michael, 4,227,003, Cl. 548-216.000.
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 Geissler, Hans-Juergen; Mueller, Peter; Oppelt, Manfred; Schoner, Horst; and Stuetzer, Franz A., 4,226,178, Cl. 99-447.000.
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Niederer, Kurt W.; and Terrell, Robert E., to Terrell Machine Company. The Apparatus and method for separating entrained particulate matter from a conveying fluid. 4,226,715, Cl. 210-783.000.
Niedermeyer, William P. Thermal overload release for solar energy collectors. 4,226,225, Cl. 126-422.000.
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Niessner, Norbert H.: See—
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Nifco Inc.: See—
Watanabe, Koji, 4,226,382, Cl. 242-74.000.
Nihon Automatic Machinery Mfg. Co., Ltd.: See—
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Nilsson, Sven R., to Lindova Aktiebolag. Tool for the stamping of holes or the like in sheet material such as metal plate. 4,226,109, Cl. 72-412.000.
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Ninomiya, Yuichi, to Nippon Hoso Kyokai. Analog to digital converting device. 4,227,183, Cl. 340-347.0AD.
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Nippon Electric Co., Ltd.: See—
Fukaya, Hirokazu; and Kishi, Jun, 4,227,127, Cl. 318-317.000.
Kazama, Shigeru; and Kage, Kouzou, 4,227,251, Cl. 375-110.000.
Mikoshiba, Hiroaki, 4,227,203, Cl. 357-59.000.
Morito, Hiroshi; and Yamashita, Kenji, 4,227,214, Cl. 358-148.000.
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Hyakutake, Seichi, 4,226,156, Cl. 84-1.140.
Kobayashi, Eiji; and Takahashi, Hiroyoshi, 4,226,158, Cl. 84-239.000.
Nagata, Yuichi, 4,227,048, Cl. 179-1.00D.
Saito, Masashi, 4,227,238, Cl. 361-415.000.
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Nippon Paint Co., Ltd.: See—
Takimoto, Yasuyuki; Tanabe, Kunsei; Saito, Shin; Nishimura, Masakatsu; and Umeda, Yasushi, 4,226,930, Cl. 430-126.000.
Nippon Soken, Inc.: See—
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Nippon Steel Corporation: See—
Horikawa, Kouetsu; Mori, Kiyosuke; and Ito, Yukito, 4,226,563, Cl. 414-10.000.
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Nakanishi, Takuji; Toshima, Tomoyuki; and Yanagisawa, Keiichi, 4,226,018, Cl. 29-603.000.
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Yamato, Motoyuki; and Natsuume, Tadao, 4,226,779, Cl. 260-346.300.
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Kobayashi, Akio; Endo, Kunio; and Omori, Norio, 4,226,215, Cl. 123-487.000.
Nishida, Keiji; Kakei, Mitsuo; Kamiya, Osamu; and Sekimura, Nobuyuki, to Canon Kabushiki Kaisha. Vapor deposition apparatus. 4,226,208, Cl. 118-706.000.
Nishida, Masamitsu; Kawashima, Syunichiro; Ueda, Ichiro; and Ouchi, Hiromu, to Matsushita Electric Industrial Co., Ltd. Method for preparing piezoelectric ceramics. 4,226,827, Cl. 264-332.000.
Nishida, Nobuo. Ornamental part for watches and method of producing the same. 4,226,082, Cl. 368-285.000.
Nishikawa, Kowhei, to Matsushita Electric Industrial Co., Ltd. Magnetic head assembly. 4,227,225, Cl. 360-138.000.
Nishikawa, Masaji; and Kasuga, Muneco, to Olympus Optical Company Limited. Corona discharge device for electrographic apparatus. 4,227,233, Cl. 361-225.000.
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Nishimura, Yoshimi: See—
Iijima, Eiji; and Nishimura, Yoshimi, 4,226,915, Cl. 428-492.000.
Nishiyama, Yukinori; and Yamamoto, Masachika, to Sumitomo Electric Industries, Ltd. Disc brake cover. 4,226,308, Cl. 188-218.00A.
Nisper, Kenneth J., to Muskegon Piston Ring Company. Two-piece oil control ring. 4,226,430, Cl. 277-139.000.
Nissan Motor Company, Limited: See—
Asano, Masaharu, 4,226,221, Cl. 123-440.000.
Sato, Hideo; and Kobayashi, Osamu, 4,226,429, Cl. 277-96.200.
Nissl, Norbert, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Analog accelerometer. 4,226,120, Cl. 73-517.00R.
Nitro Nobel AB: See—
Ljungberg, Sten H., 4,226,184, Cl. 102-24.00R.
Niwa, Tomizo: See—
Goi, Hitoshi; Miyado, Shinji; Shomura, Takashi; Suzuki, Akira; Niwa, Tomizo; and Yamada, Yujiro, 4,226,941, Cl. 435-280.000.
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Ishizawa, Hideo; Niwayama, Akira; Shimizu, Mitsuru; and Kagami, Takashi, 4,226,933, Cl. 430-320.000.
Nix, Donald F.; and Morrison, Howard J., to Marvin Glass & Associates. Game having illustration-bearing projectile. 4,226,423, Cl. 273-397.000.
Nixon, Ralph D., to English Electric Valve Company Limited. Radiation shutters. 4,227,210, Cl. 358-113.000.
NL Industries, Inc.: See—
Tajima, Yuji A., 4,226,792, Cl. 260-435.00A.
Yun, Han B.; and Whitton, Alfred J., 4,226,754, Cl. 260-29.6TA.
Nogami, Tomoyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Brake pressure control device of deceleration responsive type. 4,226,480, Cl. 303-24.00C.
Nohira, Hidetaka: See—
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Nozaki, Hiroshi: See—
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Nuclear Power Company Limited: See—
Barnes, Sidney, 4,226,676, Cl. 176-38.000.
Nutter, John F., to Tosco Corporation. Method and apparatus for conservation of heat from sludge produced by a retort. 4,226,699, Cl. 208-11.00R.
N.V. Optische Industrie "De Oude Delft": See—
Oosten, Hendrik v.; and Verbeek, Willem J. P. A., 4,226,512, Cl. 352-115.000.
O'Connor Engineering Laboratories, Inc.: See—
Ishikawa, Tokihiko, 4,226,584, Cl. 432-77.000.
Oda, Teruhisa: See—
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Oeser, Heinz-Guenter; Koenig, Karl-Heinz; and Mangold, Dietrich, to BASF Aktiengesellschaft. Preparation of substituted fluorobenzenes. 4,226,811, Cl. 568-937.000.
Oestreich, Ulrich, to Siemens Aktiengesellschaft. Method for the continuous production of an optical transmission element. 4,226,653, Cl. 156-73.500.
Off, Joseph W. A.; Early, Judson H.; and Greer, William B., to Haggard Company. Apparatus and method for prefabricating pockets. 4,226,661, Cl. 156-358.000.
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Ogawa, Seishi, to Tokyo Shibaura Denki Kabushiki Kaisha. Driving mechanisms for vacuum circuit breakers. 4,227,059, Cl. 200-153.00G.
O'Hanlon, Peter J.: See—
Rogers, Norman H.; and O'Hanlon, Peter J., 4,226,880, Cl. 424-283.000.
Ohara, Tadan. Smelting furnace. 4,226,588, Cl. 432-138.000.
Ohkubo, Kazuo: See—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.
Ohloff, Gunther: See—
Kovats, Ervin; Demole, Edouard; Ohloff, Gunther; and Stoll, Max, deceased, 4,226,892, Cl. 426-538.000.
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Ohr, Jack, to United States of America, Navy. Solubilization of hexavalent chromium compounds in organic materials. 4,226,624, Cl. 106-14.050.
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Kawamata, Motou; Kiyoura, Tadami; Ohshima, Kazushi; Kogure, Yasuo; Kudoh, Akihiko; and Kotani, Makoto, 4,227,023, Cl. 568-804.000.
Ohta, Kazutoshi; and Takano, Hironori, to Mitsubishi Denki Kabushiki Kaisha. Wire rope. 4,226,078, Cl. 57-213.000.
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Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Aways, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.
Oka, Akira: See—
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O'Keefe, Gerald T., to Quadracast Systems, Inc. AM Broadcast tuner with automatic gain control. 4,227,256, Cl. 455-251.000.
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Dwerr, Richard L., 4,226,597, Cl. 8-582.000.
Katz, Lawrence E.; Gay, Walter A.; and Schroeder, Hansjuergen A., 4,226,609, Cl. 71-64.00F.
Scardera, Michael; and Gavin, David F., 4,226,794, Cl. 556-443.000.
Oliver, Melvin D. Removable protector for locks. 4,226,104, Cl. 70-455.000.
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Olmstead, John A., to RCA Corporation. Engine timing circuit with noise immunity. 4,226,219, Cl. 123-424.000.
Olt, Arthur E., Jr.: See—
Boyer, Ronald G.; and Olt, Arthur E., Jr., 4,227,239, Cl. 361-422.000.
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Orban, Ferenc: See—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyas, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istvan; Wentzely, Kalman; Zambó, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.
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Frolov, Yuri F.; Pilyukov, Yuri F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabatina, Roza I.; Laker-nik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Yuri M.; Smelyarsky, Matvei Y., deceased; and Zeli-chenko, Fuina S., administrator, 4,226,406, Cl. 266-148.000.
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Membre, Karl W., 4,226,314, Cl. 192-18.00A.
Orzalesi, Henri; and Castel, Jean, to Choay S.A. Guanlylhydrazones and medicaments containing them. 4,226,885, Cl. 424-303.000.
Oscas, Jonathan: See—
Ehrsam, William F.; Elander, Robert C.; Hollis, Lloyd L.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Ocas, Jonathan; and Tuchman, Walter L., 4,227,253, Cl. 375-2.000.
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Reinhardt, Hans; and Ottertun, Harald D., 4,226,794, Cl. 260-429.00R.
Ottow, Alexander B., to Internationale Octrooi Maatschappij. Packag-ing container. 4,226,358, Cl. 229-44.00R.
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Cavil, David T.; and McLaughlin, Gerald N., 4,227,132, Cl. 318-549.000.
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Ovshinsky, Stanford R.; and Madan, Arun, to Energy Conversion Devices, Inc. Amorphous semiconductors equivalent to crystalline semiconductors produced by a glow discharge process. 4,226,898, Cl. 427-39.000.
Owens-Corning Fiberglass Corporation: See—
McCort, Ralph E., 4,226,662, Cl. 156-390.000.

- Oyama, Shiro: See—
Takahashi, Yuzo; Maeda, Yoshinari; Tanaka, Yasuyuki; Nagai, Kastumi; and Oyama, Shiro, 4,226,201, Cl. 113-12.000.
- Ozaki, Masaru: See—
Kimura, Muneki; Arakawa, Tatsumi; Ozaki, Masaru; and Kobayashi, Hidehiko, 4,226,924, Cl. 429-126.000.
- Ozaki, Nobuo, to Maeda Industries, Ltd. Bicycle free wheel hub with coaster brake, 4,226,310, Cl. 192-6.00R.
- Pacey, Keith: See—
Gurwicz, David; and Pacey, Keith, 4,227,243, Cl. 363-132.000.
- Pacini, Ermanno. Machine for sawing blocks of solid, especially stony materials, such as marble, granite and the like, 4,226,223, Cl. 125-16.00R.
- Packman, Elias W.; and Jeffkin, Ruth. Antihistamine containing antiperspirant compositions and methods for use thereof, 4,226,850, Cl. 424-47.000.
- Painter, Howard S., to GTE Products Corporation. Photoflash lamp with knurled foil strip, 4,226,583, Cl. 431-362.000.
- Palazzetti, Mario, to Fiat Auto S.p.A. Apparatus for the combined production of electrical energy and heat, 4,226,214, Cl. 123-2.000.
- Palladino, Gaetano: See—
Riva, Mario; Palladino, Gaetano; and Toscano, Lucian, 4,226,862, Cl. 424-243.000.
- Pallaver, Carl B.: See—
Mazur, Peter O.; and Pallaver, Carl B., 4,226,169, Cl. 92-206.000.
- Palles, Robert J.; Smith, Sidney R.; Rockwell, Kenton D.; and Napier, Charles F., to Texscan Corporation. Cable system subscriber tap with rotating center conductor seizure apparatus and spiral contact and method for using same, 4,226,495, Cl. 339-122.00R.
- Panayotov, Stoyan Y.: See—
Antonov, Bogomil T.; Panayotov, Stoyan Y.; and Lyutakov, Ognan V., 4,226,697, Cl. 204-298.000.
- Panepinto, Louis, to AMF Incorporated. Hand exerciser, 4,226,412, Cl. 272-68.000.
- Papanu, Victor D.: See—
Dyloff, David R.; and Papanu, Victor D., 4,226,959, Cl. 525-401.000.
- Dyloff, David R.; and Papanu, Victor D., 4,226,960, Cl. 525-401.000.
- Papizun, George J. Flexible seal and groove assembly, 4,226,428, Cl. 277-94.000.
- Paque, Michael W.: See—
Bradshaw, Franklin C.; Conroy, Thomas P.; and Paque, Michael W., 4,226,547, Cl. 400-613.000.
- Paquet, Denis; Thou, Kang S.; and Alais, Charles, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the production of foam products similar to egg white from milk serum, 4,226,893, Cl. 426-564.000.
- Paradi, Laszlo; Acs, Miklos; Szucs, Tibor; and Konkoly, Tibor, to Finommechanikai Vállalat. Method of joining current conducting components of wave guide elements and producing of the same, 4,227,065, Cl. 219-121.00M.
- Park, Chung P.; and Bouton, Richard A., to Dow Chemical Company. The Polyethylene blend foams having improved compressive strength, 4,226,946, Cl. 521-98.000.
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Jehnek, Jerry G.; and Bain, Orville J., 4,226,431, Cl. 277-165.000.
- Pasqualucci, Carmine: See—
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,226,765, Cl. 260-239.30P.
- Patchornik, Abraham: See—
Haviv, Fortuna; and Patchornik, Abraham, 4,226,806, Cl. 260-507.00R.
- Patel, Raman P.: See—
Coran, Aubert Y.; and Patel, Raman P., 4,226,953, Cl. 525-193.000.
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Garcia, Francisco E., 4,226,099, Cl. 70-41.000.
- Paterson, Malcolm M.; Grubbs, Michael R.; Coulombe, Eugene J.; and Paxson, William J., to Raytheon Company. Collector discharge apparatus, 4,226,704, Cl. 209-138.000.
- Paton, Boris E.; Latash, Yuri V.; Grigorenko, Georgy M.; Lisovoi, Yuri V.; Stepanenko, Viktor V.; and Asosants, Grigory B. Nonconsumable electrode for melting metals and alloys, 4,227,031, Cl. 13-18.00A.
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- Pauly, Peter D.: See—
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- Svatek, Thomas A., 4,226,510, Cl. 352-31.000.
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- Polk, Todd J.; and McGowan, Francis E., to K.L.I. Inc. Surgical ligating instrument and method, 4,226,239, Cl. 128-303.00A.
- Pollinger, Hans; and Lohmeier, Paul, to Knorr-Bremse GmbH. Spring-loaded brake device for railway vehicles, 4,226,481, Cl. 303-82.000.
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- Carlson, David E., 4,226,643. Cl. 136-89.0TF.
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- Reh, Lothar; Plass, Ludolf; Marchessaux, Philippe; and Sood, Raman, to Aluminum Pechiney. Method of thermally splitting hydrate of aluminum chloride. 4,226,844. Cl. 423-625.000.
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- Reid, Alister U. Hydraulically-operated machines. 4,226,573. Cl. 417-329.000.
- Reinbold, Richard J., to Bethlehem Steel Corporation. Metallurgical lance desulfurizer. 4,226,407. Cl. 266-226.000.
- Reinhardt, Russell R.; and Yaffe, Roberta, to Texaco Inc. Synthetic aircraft turbine oil. 4,226,732. Cl. 252-32.500.
- Reinhardt, Hans; and Otterlun, Harald D., to Berol Kemi AB. Method and a reagent mixture for removing metal ions from an aqueous solution by means of liquid-liquid extraction. 4,226,791. Cl. 260-429.00R.
- Reith, Kuno W., to Steam Stores, Inc. Parts cleaning apparatus. 4,226,548. Cl. 401-188.00R.
- Rembold, Helmut; and Linder, Ernst, to Robert Bosch GmbH. Automatic transmission utilizing a slider for pressure distribution to servo-elements controlling the gear ratio. 4,226,142. Cl. 74-867.000.
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- Herden, Werner, 4,226,126. Cl. 73-728.000.
- Reinbold, Helmut; and Linder, Ernst, 4,226,142. Cl. 74-867.000.
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- Robertson, Hans R., to Saab-Scania AB. Transmission of information by sweeping fan-shaped beams. 4,227,261. Cl. 455-600.000.
- Robins, Robert R. Tire bead breaking apparatus. 4,226,275. Cl. 157-1.200.
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Lewis, Gary W.; and Robinson, Alfred D., 4,226,675. Cl. 176-19.00R.
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- Robson, David P. NDB Instrument flight trainer. 4,226,028. Cl. 35-10.260.
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- Roesel, John F., Jr., to Precise Power Corporation. Variable speed A.C. motor. 4,227,136. Cl. 318-701.000.
- Rogers, Norman H.; and O'Hanlon, Peter J., to Beecham Group Limited. Antibacterial compounds. 4,226,880. Cl. 424-283.000.
- Rogers, Walter C., Jr.; and Hoffman, David S., to Royal Development Company, Inc. Recliner chair with wall-avoiding action. 4,226,469. Cl. 297-85.000.
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- Rohrer AG Pratein. See—
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- Rommel, Heinz, to Artos Dr.-Ing Meier Windhorst KG. Device for applying liquids onto a continuously-running web. 4,226,097. Cl. 68-205.00R.
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- Roodt, Guy S. R. Mechanical safety device for a winch. 4,226,405. Cl. 254-335.000.
- Root, James A.; and Baker, Arleigh B., to SCOPE Incorporated. Housing for a hand held transmitter-receiver. 4,227,258. Cl. 455-348.000.
- Rose, David; Lieske, Edgar; and Busch, Peter, to Henkel Kommanditgesellschaft auf Aktien. Oxidation hair-coloring preparation based upon N,N-bis-(β -hydroxyethyl)-m-phenylenediamines. 4,226,595. Cl. 8-406.000.
- Rose, Edward; and Roth, Robert A., to Peters Machinery Company, Subsidiary of Katy Industries, Inc. Tray loader. 4,226,073. Cl. 53-532.000.
- Rosen, Melvin H., to Ciba-Geigy Corporation. 1-Benzothiepin-4-carboxamides. 4,226,998. Cl. 546-202.000.
- Rosen, Perry. See—
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- Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,227,019. Cl. 562-503.000.
- Rosenberger, Michael, to Hoffmann-La Roche Inc. Acetylenic diols and monoethers thereof. 4,227,022. Cl. 568-591.000.
- Rosenthal Technik AG. See—
Zeibig, Anton, 4,225,981. Cl. 3-1.913.
- Rosink, Wilhelmus B.; and Cox, Cornelius P. J., to U.S. Philips Corporation. Motor control arrangement. 4,227,139. Cl. 318-803.000.
- Rossetti, Vittorio. See—
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- Rossi, John P., to CBS Inc. Method and apparatus for PCM-encoding NTSC color television at sub-Nyquist rate. 4,227,204. Cl. 358-13.000.
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- Roumens, Didier. Devices for fermentation of organic refuse and slurries. 4,226,832. Cl. 422-184.000.
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- Rowell, David G. See—
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- Royal Development Company, Inc. See—
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- Rozenfeld, Lev M.; Popov, Jury S.; and Korolkov, Anatoly G. Electrical machine with cryogenic cooling. 4,227,102. Cl. 310-52.000.
- Rozhenko, Anatoly L. See—
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- Rubi, Horst, to Blaupunkt-Werke GmbH. Tape recording/reproducing transport system, particularly for longitudinal video tape recording. 4,226,386. Cl. 242-192.000.
- Ruchel, Peter, to Diehl GmbH & Co. Brass material and a process for the preparation thereof. 4,226,621. Cl. 75-157.500.
- Runnels, Robert W.; and Wagenaar, Loren B., to Westinghouse Electric Corp. Modular condenser bushing. 4,227,035. Cl. 174-15.0BH.
- Rupert, Dorothy G.; and Stobberingh, Frieda A., to Rupert, Dorothy Gloria. Safety vest. 4,226,474. Cl. 297-484.000.
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- Ruti Machinery Works Ltd. See—
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- Rutledge, Robert L. See—
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- Rye, Grover W. See—
Long, Barry W.; and Rye, Grover W., 4,226,273. Cl. 152-326.000.
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- Saab-Scania AB. See—
Robertsson, Hans R., 4,227,261. Cl. 455-600.000.
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- Sailor, Robert A. See—
Graven, Richard G.; and Sailor, Robert A., 4,226,701. Cl. 208-121.000.
- Saint, David. See—
Hoffman, Ronald R.; Payne, Rex E., Jr.; and Saint, David, 4,226,452. Cl. 292-175.000.
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Auger, Robert H., 4,226,506. Cl. 350-292.000.
- Chenel, Pierre, 4,226,063. Cl. 52-172.000.
- St. John, Richard C., to Aspro, Inc. Centrifugal clutch construction. 4,226,320. Cl. 192-105.0CD.
- Saito, Akira; Miura, Yushichi; and Bando, Koichiro, to Nippon Kokan Kabushiki Kaisha. Earthquake-proof foundation structure for horizontal type coke oven battery. 4,226,677. Cl. 202-138.000.
- Saito, Akira. See—
Shiraishi, Makoto; Uchida, Hiroshi; Koizumi, Yoshinori; and Saito, Akira, 4,226,966. Cl. 526-202.000.
- Saito, Eisuke. See—
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- Saito, Masashi, to Nippon Gakki Seizo Kabushiki Kaisha. Mounting and electrical connection means for operation unit for electric devices. 4,227,238. Cl. 361-415.000.
- Saito, Minoru. See—
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- Saito, Nakaji. Apparatus for continuously dredging submarine mineral deposit. 4,226,035. Cl. 37-69.000.
- Saito, Shin. See—
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Okura, Akimitsu; Saito, Syobu; and Ukiana, Motohide, 4,227,080. Cl. 250-311.000.
- Sakabe, Yukio, to Murata Manufacturing Co., Ltd. Dielectric ceramic composition and process for its production containing MgTiO₃ and Pb₂O₄ having a quantitative relationship. 4,226,735. Cl. 252-63.200.
- Sakai, Ryouji. See—
Tsuiji, Toshihiko; and Sakai, Ryouji, 4,227,166. Cl. 336-229.000.
- Sakaki, Hiroshi. See—
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- Sakamoto, Koji; Miyakawa, Seichi; and Tatsumi, Susumu, to Ricoh Company, Ltd. Electrostatic copying machine. 4,226,525. Cl. 355-14.00D.
- Saklad, Eugene L., to New England Nuclear Corporation. Albumin microaggregates for radioactive scanning of reticuloendothelial systems. 4,226,846. Cl. 424-1.000.
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Bourne, Henry A., Jr.; and Salama, Mamdouh, 4,226,555. Cl. 405-224.000.
- Salerno, James; Liss, Fabian T.; and Weiss, Frank, to United States of America, Army. Fuse. 4,227,195. Cl. 343-17.10R.
- Salice, Luciano, to Arturo Salice S.p.A. Pivotal joint with position-stabilizing spring. 4,226,001. Cl. 16-145.000.
- Sammells, Anthony F., to Institute of Gas Technology. Sodium sulfur electrochemical cell or battery. 4,226,922. Cl. 429-104.000.
- Sandler, Stanley R. See—
Popoff, Ivan C.; and Sandler, Stanley R., 4,226,948. Cl. 521-167.000.
- Sandor, Steven D. Apparatus for making hot beverages. 4,226,175. Cl. 99-286.000.

Sanyo Electric Co., Ltd.: See—
Ikeda, Hironosuke; and Narukawa, Satoshi, 4,226,925; Cl. 429-161.000.

Sarnoff, Stanley J.; Calkins, George B.; and Dalling, N. Lawrence, to Survival Technology, Inc. Plural injecting device. 4,226,235; Cl. 128-218.00F.

Sasaki, Takashi; Hagiwara, Miyuki; Araki, Kunio; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyozi, to Furukawa Electric Co., Ltd., The; and Japan Atomic Energy Research Institute. Method of preventing fine cracks from occurring in rubber or plastic insulation of an insulated wire or cable exposed to electron beam irradiation. 4,226,687; Cl. 204-159.130.

Saskatchewan Power Corporation: See—
Mitchell, James, 4,227,038; Cl. 174-42.000.

Sato, Hideo; and Kobayashi, Osamu, to Nissan Motor Company, Limited. Fluid seal for use in rotary regenerator. 4,226,429; Cl. 277-96.200.

Sato, Isao: See—
Tsukahara, Satoshi; Sato, Isao; Uchiyama, Yoshihiro; and Kusaba, Masanobu, 4,226,088; Cl. 60-752.000.

Sato, Kunihiko: See—
Suzuki, Yukio; and Sato, Kunihiko, 4,226,220; Cl. 123-408.000.

Sato, Masaki; and Kobayashi, Minoru, to Olympus Optical Company Limited. Hand-operated tape recorder for dictation. 4,227,222; Cl. 360-60.000.

Sato, Moriyuki; Mochida, Kenichi; Yoshiie, Shigeo; and Mori, Yasuki, to Abbott Laboratories. Novel derivatives of fortimicin B and process for preparing same. 4,226,980; Cl. 536-17.00R.

Sato, Reisuke, to Pioneer Electronic Corporation. Power supply circuit for an electronic tuning type receiver with a memory element. 4,227,257; Cl. 455-343.000.

Sato, Shigeji: See—
Tsuji, Terutsugu; Sato, Shigeji; Fujioka, Keiji; Yamahira, Yoshiya; and Maeda, Tadao, 4,226,769; Cl. 260-239.100.

Sato, Shintaro. Floor plate for forming a foot path and method of laying a walking surface on a roof. 4,226,060; Cl. 52-99.000.

Sato, Yo, to Kabushiki Kaisha Sato. Ink supply device for label printing machine. 4,226,183; Cl. 101-295.000.

Satoh, Akira: See—
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Savant Instruments, Inc.: See—
Vilardi, Frank, 4,226,669; Cl. 159-6.00R.

Sawada, Mitsuo. Apparatus for injection molding of continuous slide fastener chain. 4,226,577; Cl. 425-111.000.

Scandella, Louis: See—
Quenot, Michel C.; and Scandella, Louis, 4,226,020; Cl. 30-162.000.

Scardera, Michael; and Gavin, David F., to Olin Corporation. Low-foaming alkoxy-bis(trialkoxysiloxy)-silane surfactants. 4,226,794; Cl. 556-443.000.

Schaeffer-Homborg GmbH: See—
Kramer, Friedhelm, 4,226,008; Cl. 24-206.00B.

Schafer, Arnold, to Schweizerische Lokomotiv- und Maschinenfabrik. Apparatus for actuating a braking unit. 4,226,306; Cl. 188-170.000.

Schechter, Paul J.: See—
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,226,882; Cl. 424-285.000.

Scheer, Gerhard: See—
Stohr, Heinz; Kuntz, Gerhard; and Scheer, Gerhard, 4,227,043; Cl. 174-151.000.

Scheinine, Leon: See—
Campagnuolo, Carl J.; Scheinine, Leon; and Mayercik, Paul M., 4,227,092; Cl. 290-1.00C.

Schenk, Peter, to Dzus-Fastener Co., Inc. Receptacle retainer. 4,226,009; Cl. 24-221.00R.

Scherba, Emil, to Scherba, Emil Stephen. Electrode coating method. 4,226,684; Cl. 204-105.00R.

Scherba, Emil Stephen: See—
Scherba, Emil, 4,226,684; Cl. 204-105.00R.

Schering Corporation: See—
Nagabhushan, Tattanahalli L., 4,226,808; Cl. 260-562.00B.

Schiffer, Gunter, to Kleinewefers GmbH. Method and apparatus for wet treatment, especially treating with lye solution and mercerizing, of knitted tubular fabric. 4,226,598; Cl. 8-125.000.

Schilling, Roger A., to Honeywell Inc. Safe start check circuit. 4,226,581; Cl. 431-26.000.

Schirmer, Ulrich; Wuerzer, Bruno; and Rohr, Wolfgang, to BASF Aktiengesellschaft. Bisthiocarbamic acid esters and herbicidal use thereof. 4,226,613; Cl. 71-100.000.

Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, to BASF Aktiengesellschaft. Diurethanes. 4,227,007; Cl. 560-25.000.

Schluter, Klaus, to Krauss-Maffei AG. Mixing head, especially for reactive components such as those in thermosetting synthetic resins. 4,226,543; Cl. 366-159.000.

Schmid, Ernst: See—
Schmid, Herbert; and Schmid, Ernst, 4,226,562; Cl. 409-233.000.

Schmid, Herbert; and Schmid, Ernst, to Schmid-Kosta KG. Tool holder. 4,226,562; Cl. 409-233.000.

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Schmidt, Klaus, to EWG Import u. Export GmbH & Co. Handelskommanditgesellschaft. Portable grilling device. 4,226,177; Cl. 99-372.000.

Schmidt, Manfred: See—
Biermann, Peter; and Schmidt, Manfred, 4,226,351; Cl. 224-325.000.

Schmidt, Werner; and Scholz, Walter. Long-distance truck cabin. 4,226,460; Cl. 296-37.700.

Schmitt, Frederick L.: See—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,226,729; Cl. 252-8.900.

Schmitt, Gunther: See—
Bieber, Theo; Schuster, Friedrich; Paul, Gunther; Schmitt, Gunther; and Schmucker, Wolfgang, 4,226,080; Cl. 57-339.000.

Schmitt, William C., to Milwaukee Faucets, Inc. Single lever faucet plastic cartridge valve. 4,226,260; Cl. 137-315.000.

Schmucker, Wolfgang: See—
Bieber, Theo; Schuster, Friedrich; Paul, Gunther; Schmitt, Gunther; and Schmucker, Wolfgang, 4,226,080; Cl. 57-339.000.

Schneider, Eckart: See—
Heitmann, Knut; Schneider, Eckart; and Lussem, Heribert, 4,226,535; Cl. 356-373.000.

Schnoes, Heinrich K.: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,226,787; Cl. 260-397.200.

DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,226,788; Cl. 260-397.200.

Schnur, Rodney C., to Pfizer Inc. Novel spiro-oxazolidinediones. 4,226,875; Cl. 424-272.000.

Schoener, Horst: See—
Geissler, Hans-Juergen; Mueller, Peter; Oppelt, Manfred; Schoener, Horst; and Stuetzer, Franz A., 4,226,178; Cl. 99-447.000.

Scholz, Walter: See—
Schmidt, Werner; and Scholz, Walter, 4,226,460; Cl. 296-37.700.

Schor, Joseph M., to Forest Laboratories Inc. Sustained release therapeutic compositions. 4,226,849; Cl. 424-19.000.

Schorling, Stefan H. G., to Atlas Copco Aktiebolag. Overload protection device in air-operated lifting devices. 4,226,403; Cl. 254-273.000.

Schreinemakers, Josephus, to Dental Holding N.V. Zero-degree posterior teeth for a lower and an upper denture. 4,226,592; Cl. 433-197.000.

Schroeder, George F.; and Ferriss, Lincoln S., to Singer Company, The. Multifrequency control from a single crystal. 4,227,158; Cl. 331-2.000.

Schroeder, Hansjuergen A.: See—
Katz, Lawrence E.; Gay, Walter A.; and Schroeder, Hansjuergen A., 4,226,609; Cl. 71-64.00F.

Schroeder, Hartmut R.: See—
Buckler, Robert T.; and Schroeder, Hartmut R., 4,226,992; Cl. 544-234.000.

Buckler, Robert T.; and Schroeder, Hartmut R., 4,226,993; Cl. 544-237.000.

Schroeder, Wilburn C. Ash removal and synthesis gas generation from heavy oils produced by coal hydrogenation. 4,226,698; Cl. 208-8.00R.

Schulson, Erlend M.; and Cameron, Donald J., to Canada Atomic Energy of Limited. Heat-treated zirconium alloy product. 4,226,647; Cl. 148-32.500.

Schulz, Donald N.; and Trivedi, Prakash D., to Firestone Tire & Rubber Company. The. Graft copolymers containing polyoxazoline and polyoxazine, and the preparation thereof. 4,226,746; Cl. 260-3.300.

Schulz, Donald N.; and Trivedi, Prakash D., to Firestone Tire & Rubber Company. The. Graft copolymers containing polyoxazoline and polyoxazine, and the preparation thereof. 4,226,956; Cl. 525-330.000.

Schulz, Donald N.; Kang, Jung W.; and Spiewak, John W., to Firestone Tire & Rubber Company. The. Process for preparing poly(organo-phosphazenes) from soluble or gelled poly(dichlorophosphazenes). 4,226,972; Cl. 528-168.000.

Schulz, Ralf-Thilo; Brunsch, Klaus; and Woernle, Rudolf, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung. Force transmitting loop made of fiber composite material. 4,226,916; Cl. 428-542.000.

Schuster, Dietrich. Cooling, lubricating, and cleaning agent. 4,226,734; Cl. 252-49.300.

Schuster, Friedrich: See—
Bieber, Theo; Schuster, Friedrich; Paul, Gunther; Schmitt, Gunther; and Schmucker, Wolfgang, 4,226,080; Cl. 57-339.000.

Schwartzbach, Christian: See—
Larsson, Finn H.; and Schwartzbach, Christian, 4,226,603; Cl. 55-260.000.

Schwein, Donald E., to King Minnow, Inc. Live bait dispenser. 4,226,338; Cl. 222-162.000.

Schweizerische Lokomotiv- und Maschinenfabrik: See—
Schafer, Arnold, 4,226,306; Cl. 188-170.000.

Schwieters, Clarence R.: See—
Holecek, Joseph J.; Plummer, William B.; Schwieters, Clarence R.; and Zell, Michael N., 4,226,570; Cl. 414-751.000.

SCI Systems, Inc.: See—
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SCM Corporation: See—
Erickson, James R.; and Seidewand, Robert J., 4,226,752; Cl. 260-29.6RB.

Gawrilow, Ilija, 4,226,894; Cl. 426-606.000.

Miller, Donald E.; and Werstak, Charles E., 4,226,895; Cl. 426-658.000.

SCOPE Incorporated: See—
Root, James A.; and Baker, Arleigh B., 4,227,258; Cl. 455-348.000.

Scordato, Emil A.: See—
Irazoqui, Carlos A.; and Scordato, Emil A., 4,226,503; Cl. 350-87.000.

Scott, William J., to Ideal Industries, Inc. Screw-on electrical connector. 4,227,040; Cl. 174-87.000.

SDI Welding Corporation: See—
Paulsen, Rex E.; and Moser, Harold, 4,226,187; Cl. 104-182.000.

Seachman, Ned J.: See—
Lama, William L.; and Seachman, Ned J., 4,226,527; Cl. 355-71.000.

Seanon, Donald A.; and Nagel, Judy P., to Xerox Corporation. Corona charging element. 4,227,234; Cl. 361-229.000.

Seese, Mark A.; Albers, Edwin W.; and Magee, John S., Jr., to W. R. Grace & Co. Silica-alumina hydrogel catalyst. 4,226,743; Cl. 252-453.000.

Seidenberger, James W., to J. T. Baker Chemical Company. Mercury contamination indicator and decontamination aid. 4,226,600; Cl. 23-232.00R.

Seidewand, Robert J.: See—
Erickson, James R.; and Seidewand, Robert J., 4,226,752; Cl. 260-29.6RB.

Seiler, Claus-Dietrich: See—
Kotzsch, Hans-Joachim; Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 4,226,793; Cl. 556-470.000.

Seitz, August: See—
Dimroth, Peter; Knittel, Helmut; Seitz, August; and Wolff, Dietrich, 4,226,634; Cl. 106-288.00Q.

Sekimura, Nobuyuki: See—
Nishida, Keijiro; Kakei, Mitsuo; Kamiya, Osamu; and Sekimura, Nobuyuki, 4,226,208; Cl. 118-706.000.

Sekiya, Fukuo: See—
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Semur, Pierre; and Basset, Marcel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Switching matrix for wide band electric transmission signals. 4,227,094; Cl. 307-113.000.

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Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Laker-nik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zeli-chenko, Faina S., administrator, 4,226,406; Cl. 266-148.000.

Shafer, David R., to Perkin-Elmer Corporation. The. Four mirror unobscured anastigmatic telescope with all spherical surfaces. 4,226,501; Cl. 350-55.000.

Shaffer, John W.; and Armstrong, Donald E., to GTE Products Corporation. Photoflash unit with formed insulating sheet. 4,227,240; Cl. 362-13.000.

Shaffer, Myron W., to Laminating Equipment, Inc. Laminating apparatus. 4,226,664; Cl. 156-499.000.

Shah, Mahendra: See—
Goldberg, Bruce S.; and Shah, Mahendra, 4,226,926; Cl. 429-252.000.

Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Surgical devices of polyesteramides derived from bis-oxamidodiol and dicarboxylic acids. 4,226,243; Cl. 128-335.500.

Shanks, Ian A., to National Research Development Corporation. Method and apparatus for matrix addressing opto-electric displays. 4,227,193; Cl. 340-784.000.

Sharkey, Stephen R. Method and device for time-recording. 4,227,199; Cl. 346-1.100.

Sharma, Nawal K.: See—
Griffith, Gary L.; and Sharma, Nawal K., 4,226,659; Cl. 156-305.000.

Sharma, Virendra N.: See—
Joshi, Devendra C.; and Sharma, Virendra N., 4,225,985; Cl. 4-324.000.

Sharp Kabushiki Kaisha: See—
Juso, Hiromi, 4,226,425; Cl. 274-15.00R.

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Sharp, Larry L.: See—
McVey, John K.; and Sharp, Larry L., 4,227,169; Cl. 337-182.000.

Sharp, Roy T., to Lucas Industries Limited. Screw and nut mechanism. 4,226,137; Cl. 74-459.000.

Shatterproof Glass Corporation: See—
McKelvey, Harold E., 4,226,608; Cl. 65-106.000.

Sheldon, Dana M. Stove bench. 4,226,363; Cl. 237-54.000.

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Shell Oil Company: See—
Bakker, Pieter M.; Kind, Cornelis E.; and Aurich, Volker G., 4,226,797; Cl. 260-460.000.

Denison, Early B., 4,226,116; Cl. 73-151.000.

Pilgram, Kurt H., 4,226,612; Cl. 71-88.000.

Shelton, Harold E. Glass breaking machine. 4,226,377; Cl. 241-99.000.

Shepherd, Robert G., to American Cyanamid Company. 4-[(Cycloalkyl or cycloalkenyl) substituted amino, alkylamino or alkenylamino]benzoic acids and salts thereof. 4,227,014; Cl. 562-457.000.

Shepp, Lawrence A.: See—
Maydan, Dan; and Shepp, Lawrence A., 4,227,088; Cl. 250-445.00T.

Sheranski, Lawrence R., to General Electric Company. Apparatus for infrared laser spectroscopy of room temperature vulcanizable silicone compositions. 4,227,083; Cl. 250-343.000.

Sherman, Robert E. Two digit resistance decade box. 4,227,172; Cl. 338-123.000.

Sherwin-Williams Company, The: See—
Kindrick, Robert H.; and Harrison, Benjamin C., 4,226,635; Cl. 106-306.000.

Sherwood-Selpac Corporation: See—
Trinkwalder, Joseph C., 4,226,257; Cl. 137-81.200.

Shibahara, Tetsuya: See—
Shigematsu, Taichiro; Shibahara, Tetsuya; Kasugai, Hiroshi; Nakajima, Tetsuo; and Motojima, Shozo, 4,226,855; Cl. 424-177.000.

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Shibayama, Shoichi: See—
Hiraga, Kunikazu; Shibayama, Showchi; Yanai, Isao; and Harada, Taisuo, 4,226,616; Cl. 71-124.000.

Shibazaki, Kenji: See—
Murata, Tomoji; Shibazaki, Kenji; and Ito, Hideo, 4,227,119; Cl. 315-151.000.

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Shigihara, Masayoshi: See—
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Shih, David H.: See—
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Shikibo Limited: See—
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Shimizu, Mitsuru: See—
Ishizawa, Hideo; Niwayama, Akira; Shimizu, Mitsuru; and Kagami, Takashi, 4,226,933; Cl. 430-320.000.

Shimizu, Takeshi, to Kabushikikaisha Anco. Bridge-linking table game. 4,226,421; Cl. 273-275.000.

Shimoma, Taketoshi; and Fukuda, Kumo, to Tokyo Shibaura Electric Co., Ltd. Exposure device for making a stripe screen on a faceplate of a color cathode ray tube. 4,226,513; Cl. 354-1.000.

Shin-Etsu Chemical Co., Ltd.: See—
Onda, Yoshiro; Muto, Hiroaki; and Maruyama, Kazumasa, 4,226,981; Cl. 536-66.000.

Shin, Hee J.; and Shin, Jung H. Multiple joint retractor with light. 4,226,228; Cl. 128-20.000.

Shin, Jung H.: See—
Shin, Hee J.; and Shin, Jung H., 4,226,228; Cl. 128-20.000.

Shinano Tokki Corporation: See—
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Shioyama, Tod R., to Phillips Petroleum Company. Hydrogenation of unsaturated dinitriles using catalyst comprising reaction products of nickel compound and of a palladium compound each with an alkali metal borohydride. 4,226,809; Cl. 260-583.00P.

Shirahata, Ryuji; and Kitamoto, Tatsuji, to Fuji Photo Film Co., Ltd. Process for the production of a magnetic recording medium. 4,226,681; Cl. 204-38.05T.

Shirashi, Makoto; Uchida, Hiroshi; Koizumi, Yoshinori; and Saito, Akira, to Kurara Co., Ltd. Method for producing vinyl chloride resins. 4,226,966; Cl. 526-202.000.

Shiraki, Manabu: See—
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Shomura, Takashi: See—
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Shudo, Taro; Kudo, Bosshi; and Tamai, Yasushi, to Mitsubishi Kinzoku Kabushiki Kaisha; and Japan Silicon Co., Ltd. Lateral pulling growth of crystal ribbons and apparatus therefor. 4,226,834; Cl. 422-249.000.

Shultz, Fred T.: See—
Lockwood, George S.; Shultz, Fred T.; and Bevelander, Gerri, 4,226,210; Cl. 119-4.000.

Shutt, Jeffrey G. Multiple positionable hand tool holder. 4,226,457; Cl. 294-15.000.

Sick, Erwin, to Erwin Sick GmbH, Optik-Elektronik. Optical monitoring apparatus. 4,227,091; Cl. 250-572.000.

Subtechnik GmbH: See—
Sturmer, Fritz G., 4,226,724; Cl. 210-376.000.

Siecker, Cornelis, to Cahoonite Co-Operative Associates Limited. Manufacture of pasta filata cheese. 4,226,888; Cl. 426-36.000.

Siegmán, Edwin J., to American Cyanamid Company. Purging for spinning hydrated acrylic polymer melt. 4,226,817; Cl. 264-39.000.

Siemens Aktiengesellschaft: See—
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- Oestreich, Ulrich, 4,226,653, Cl. 156-73.500.
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 Duenser, William F., 4,226,007, Cl. 24-20.0EE.
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 Lang, Charles W.; and Beneventano, Thomas, 4,227,144, Cl. 323-121.000.
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 Carlson, Robert F., 4,226,397, Cl. 248-274.000.
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 Studsvik Energiteknik AB: See—
 Nowacki, Jan-Erik A., 4,226,091, Cl. 62-323.000.
 Stuetzer, Franz A.: See—
 Geissler, Hans-Juergen; Mueller, Peter; Oppelt, Manfred; Scho-ener, Horst; and Stuetzer, Franz A., 4,226,178, Cl. 99-447.000.
 Sturmer, Fritz G., to Siebtechnik GmbH. Two-stage pusher centrifuge, 4,226,724, Cl. 210-376.000.
 Sturtz, Charles R., Jr.; and Joworski, Robert W., to Clark Equipment Company. Tree harvester, 4,226,270, Cl. 144-2.00Z.
 Stuwe, Botho, to Siemens Aktiengesellschaft. Hydrogen/oxygen fuel cell, 4,226,919, Cl. 429-25.000.
 Styron, Robert W., to Amax Resource Recovery Systems, Inc. Leach-resistant solid bodies from fly ash and heavy metal sludge, 4,226,630, Cl. 106-85.000.
 Su, Tien K.: See—
 Kluger, Edward W.; and Su, Tien K., 4,226,737, Cl. 252-182.000.
 Sugai, Akemi: See—
 Kokubo, Eiichi; and Sugai, Akemi, 4,226,253, Cl. 133-4.00A.
 Sugai, Manabu: See—
 Tashiro, Takashi; Sugai, Manabu; and Matsumoto, Akira, 4,227,226, Cl. 360-137.000.
 Suganuma, Yasuo, to Izumi Products Company. Hydraulic compression tool, 4,226,110, Cl. 72-416.000.
 Sugiura, Isao: See—
 Ishikawa, Toshikatsu; Kawazumi, Kazuhisa; Yamazoe, Hiroshi; and Sugiura, Isao, 4,226,821, Cl. 264-134.000.
 Sugiura, Shinji; Watanabe, Tadashi; and Ito, Satoru, to Kansai Paint Co., Ltd. Method for metallic finish coating, 4,226,901, Cl. 427-385.500.
 Sugiyama, Makoto, to KAI Cutlery Center Co., Ltd. Cleaning member for two-edge shaving blade unit, 4,226,019, Cl. 30-41.000.
 Suld, George; Lyons, James E.; and Shinn, Robert W., to Suntech, Inc. Oxidation of methyl benzenes in the presence of acetic acid and a dehydrating agent, 4,227,012, Cl. 560-131.000.
 Sulzer Brothers Ltd.: See—
 Pfeiffer, Hansjorg, 4,226,638, Cl. 127-37.000.
 Sumira, Arthur, to Gandy Frictions Limited. Friction material, 4,226,758, Cl. 260-38.000.
 Sumitomo Chemical Company, Limited: See—
 Tsuji, Terutsugu; Sato, Shigeji; Fujioka, Keiji; Yamahira, Yoshiya; and Maeda, Tadao, 4,226,769, Cl. 260-239.100.
 Yamada, Hirotsada; Nakagome, Takenari; and Komatsu, Toshiaki, 4,226,863, Cl. 424-246.000.
 Sumitomo Electric Industries, Ltd.: See—
 Nishiyama, Yukunori; and Yamamoto, Masachika, 4,226,308, Cl. 188-218.00A.
 Sumner, Emmons F.: See—
 Cairns, Thomas M.; Dewar, John H.; and Sumner, Emmons F., 4,226,493, Cl. 339-66.00M.
 Sumser, Richard D.: See—
 Hyatt, Robert L.; Niessner, Norbert H.; and Sumser, Richard D., 4,226,575, Cl. 417-423.00A.
 Sunbeam Corporation: See—
 Cockroft, James B.; and Ernster, Peter J., 4,227,128, Cl. 318-325.000.
 Sunde, Paul B., to Electrometer Corporation. Ionization-type particle detector, 4,227,085, Cl. 250-384.000.
 Sunjic, Vitimir: See—
 Kajfez, Franjo; Sunjic, Vitimir; and Caplar, Vesna, 4,226,766, Cl. 260-239.05D.
 Sunnen Products Company: See—
 Vanderwal, Frank E., Jr., 4,226,400, Cl. 248-646.000.
 Suntech, Inc.: See—
 Suld, George; Lyons, James E.; and Shinn, Robert W., 4,227,012, Cl. 560-131.000.
 Superior Industries International, Inc.: See—
 Brown, Raymond C., 4,226,478, Cl. 301-37.05S.
 Surgical Mechanical Research: See—
 Thiene, Paul G., 4,227,131, Cl. 318-467.000.
 Survival Technology, Inc.: See—
 Sarnoff, Stanley J.; Calkins, George B.; and Dalling, N. Lawrence, 4,226,235, Cl. 128-218.00F.
 Suvorov, Gennady P.: See—
 Anfilov, Igor V.; Abramov, Yuri V.; Ershov, Geny S.; Bogomolov, Valentin G.; Kaidoshko, Eduard A.; Remizov, Yuri B.; Ro-zhenko, Anatoly L.; and Suvorov, Gennady P., 4,226,514, Cl. 354-7.000.
 Suzuki, Akira: See—
 Goi, Hitoshi; Miyado, Shinji; Shomura, Takashi; Suzuki, Akira; Niwa, Tomizo; and Yamada, Yujiro, 4,226,941, Cl. 435-280.000.
 Takematsu, Tetsuo; Konnai, Makoto; Suzuki, Akira; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,226,610, Cl. 71-86.000.
 Suzuki, Mitsuyuki: See—
 Masuda, Noboru; and Suzuki, Mitsuyuki, 4,227,171, Cl. 338-33.000.
 Suzuki, Seiji: See—
 Maruyama, Jiro; and Suzuki, Seiji, 4,226,165, Cl. 87-12.000.
 Suzuki, Yoshiki: See—
 Nagai, Tsuneji; Machida, Yoshitaru; Suzuki, Yoshiki; and Ikura, Hiroshi, 4,226,848, Cl. 424-19.000.
 Suzuki, Yukio; and Sato, Kunihiko, to Toyota Jidosha Kogyo Kabu-shiki Kaisha. Ignition timing control system for an internal combus-tion engine, 4,226,220, Cl. 121-408.000.

Svatek, Thomas A., to Polaroid Corporation. Sound module for motion picture cameras. 4,226,510, Cl. 352-31.000.

Svevia Silkscreen Masking AB: See—
Ericsson, Sylve J. D., 4,226,181, Cl. 101-129.000.

Svensk Hardbetongteknik AB: See—
Bjorhaag, Georg, 4,226,820, Cl. 264-72.000.

Swanson, Harry R.: See—
Appleby, Paul E.; Folden, Denver C.; Stalter, Joseph F., Jr.; and Swanson, Harry R., 4,226,656, Cl. 156-132.000.

Symons, John J.: See—
Carr, Keith E.; and Symons, John J., 4,226,269, Cl. 141-361.000.

Szabo, Bela G., to Bruce Plastics, Inc. Plastic garment hangers with integrally molded clasps therefor. 4,226,345, Cl. 223-91.000.

Szekely, Fred J.; and Ray, Charles A., to Clemar Manufacturing Corp. Regulator module. 4,226,259, Cl. 137-269.000.

Szentgyorgyi, Geza: See—
Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, 4,226,632, Cl. 106-100.000.

Szita, Jenő G.: See—
DiLecne, Roland R.; and Szita, Jenő G., 4,226,989, Cl. 544-198.000.

Szucs, Tibor: See—
Paradi, Laszlo; Acs, Miklos; Szucs, Tibor; and Konkoly, Tibor, 4,227,065, Cl. 219-121.000.

Tabuchi, Heizi; and Itoh, Toshiaki, to Central Glass Company, Limited. Electrofusion method of producing boron aluminum oxide refractory. 4,226,629, Cl. 106-65.000.

Tachibana, Kunitaka: See—
Takematsu, Tetsuo; Konnai, Makoto; Suzuki, Akira; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,226,610, Cl. 71-86.000.

Taga, Genji: See—
Mizutani, Yukio; Watanabe, Yoshiaki; and Taga, Genji, 4,226,636, Cl. 106-306.000.

Tajima, Yuji A., to NL Industries, Inc. Lead chelate complex compounds. 4,226,792, Cl. 260-435.00A.

Takahashi, Eiji: See—
Ogasa, Katsuhiko; Kuboyama, Morio; Saito, Minoru; Kudo, Tsutomu; Harada, Yoshitsugu; Kawashiri, Akio; and Takahashi, Eiji, 4,226,847, Cl. 424-12.000.

Takahashi, Hiroyoshi: See—
Kobayashi, Eiji; and Takahashi, Hiroyoshi, 4,226,158, Cl. 84-239.000.

Takahashi, Kouichi; Ishida, Hidekuni; and Yonezawa, Toshio. Method of reducing emitter dip in transistors utilizing specifically paired dopants. 4,226,650, Cl. 148-188.000.

Takahashi, Shiro; and Tsuchimoto, Yoshihiro, to Asahi Glass Company, Limited. Apparatus for feeding glass batch materials into a glass melting furnace. 4,226,564, Cl. 414-166.000.

Takahashi, Yohji: See—
Yamamoto, Izuru; Takahashi, Yohji; and Kyomura, Nobuo, 4,226,883, Cl. 424-300.000.

Takahashi, Yuzo; Maeda, Yoshinari; Tanaka, Yasuyuki; Nagai, Katsumi; and Oyama, Shiro, to Hokkai Can Co., Ltd. Equipment for forming can bodies. 4,226,201, Cl. 113-12.000.

Takai, Kazuki: See—
Umezawa, Hiroyuki; Ito, Yukio; Takai, Kazuki; and Okada, Hitoshi, 4,227,224, Cl. 360-96.500.

Takaishi, Naotake: See—
Matsunaga, Kinjiro; Masuda, Shin-ichi; Nakagawa, Yunosuke; and Takaishi, Naotake, 4,226,748, Cl. 260-17.00A.

Takanashi, Itsuo; Motoyama, Koichiro; Miyoshi, Tadayoshi; Nakagaki, Shintaro; Yokokawa, Sumio; and Miyazaki, Kenichi, to Victor Company of Japan, Ltd. Optical comb filter. 4,227,208, Cl. 358-55.000.

Takano, Hironori: See—
Ohta, Kazutoshi; and Takano, Hironori, 4,226,078, Cl. 57-213.000.

Takao, Toshinori: See—
Tsurushige, Normitsu; Takao, Toshinori; and Yamada, Shinichi, 4,226,943, Cl. 521-73.000.

Takaoka, Yukio: See—
Kawasaki, Masahiro; and Takaoka, Yukio, 4,226,521, Cl. 354-271.000.

Takematsu, Tetsuo; Konnai, Makoto; Suzuki, Akira; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha, Ltd. Herbicidal compounds, preparation thereof and herbicides containing the same. 4,226,610, Cl. 71-86.000.

Takemoto, Takeshi, to Ricoh Company, Ltd. Carriage guide mechanism for use in scanning device. 4,227,219, Cl. 358-289.000.

Takesako, Yoshinobu: See—
Watanabe, Masanori; Nonomura, Kinzo; and Takesako, Yoshinobu, 4,227,117, Cl. 315-13.00R.

Takeuchi, Koshi: See—
Hashimoto, Shigeru; Masuda, Akira; Mochizuki, Katura; Satoh, Akira; Takeuchi, Koshi; and Oda, Teruhisa, 4,226,505, Cl. 350-252.000.

Takimoto, Yasuyuki; Tanabe, Kunsei; Saito, Shin; Nishimura, Masakatsu; and Umeda, Yasushi, to Nippon Paint Co., Ltd. Electrophotographic method for producing photopolymer printing plate. 4,226,930, Cl. 430-126.000.

Talos Systems, Inc.: See—
Fencel, George A., 4,227,044, Cl. 178-19.000.

Tamai, Yasushi: See—
Shudo, Taro; Kudo, Bosshi; and Tamai, Yasushi, 4,226,834, Cl. 422-249.000.

Tamao, Yoshikuni: See—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.

Tamori, Michio; Furuya, Katsuhiko; Yanagidaira, Hidetaka; and Sakaki, Hiroshi, to Kikaku Denshin Denwa Co., Ltd. Transversal type automatic equalizer. 4,227,160, Cl. 333-18.000.

Tamplin, Lyle R.: See—
Rallis, Rallie P.; Caltay, Richard E.; and Tamplin, Lyle R., 4,226,300, Cl. 182-2.000.

Tamura, Fumio: See—
Asano, Kiro; Tamura, Fumio; Kawai, Yoshio; and Yamaki, Kiyoshi, 4,226,633, Cl. 106-269.000.

Tanabe, Kunsei: See—
Takimoto, Yasuyuki; Tanabe, Kunsei; Saito, Shin; Nishimura, Masakatsu; and Umeda, Yasushi, 4,226,930, Cl. 430-126.000.

Tanaka, Eiji: See—
Tanaka, Toru; Okano, Shigeaki; and Tanaka, Eiji, 4,226,964, Cl. 526-114.000.

Tanaka, Haruo: See—
Omura, Satoshi; Kitao, Chiaki; Nakagawa, Akira; Tanaka, Haruo; Awaya, Juichi; and Oiwa, Ruiko, 4,226,879, Cl. 424-278.000.

Tanaka, Kazuhiro: See—
Motegi, Masahiko; Tanaka, Kazuhiro; and Fujita, Saburo, 4,226,826, Cl. 264-235.800.

Tanaka, Toru; Okano, Shigeaki; and Tanaka, Eiji, to Mitsubishi Chemical Industries Ltd. Process for polymerizing olefin. 4,226,964, Cl. 526-114.000.

Tanaka, Yasuyuki: See—
Takahashi, Yuzo; Maeda, Yoshinari; Tanaka, Yasuyuki; Nagai, Katsumi; and Oyama, Shiro, 4,226,201, Cl. 113-12.000.

Tanaka, Yoko: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,226,788, Cl. 260-397.200.

Tanco, Juan J.: See—
Uram, Robert; and Tanco, Juan J., 4,227,093, Cl. 290-40.00R.

Tarpley, William B., Jr.; Huzinec, John R.; and Freeman, Marion K., to Energy & Minerals Research Co. Persistent fire suppressant composition. 4,226,727, Cl. 252-8.000.

Tarrer, Harold M. Grill and rack cleaning container. 4,226,255, Cl. 134-117.000.

Tasch, Al F., Jr.; and Chatterjee, Pallab K., to Texas Instruments Incorporated. Dual plane barrier-type two-phase CCD. 4,227,202, Cl. 357-24.000.

Tashiro, Takashi; Sugai, Manabu; and Matsumoto, Akira, to Matsushita Electric Industrial Co., Inc. Cassette tape player. 4,227,226, Cl. 360-137.000.

Tatabanyai Szenbanyak: See—
Kapolyi, Laszlo; Szentgyorgyi, Geza; Vamos, Gyorgy; Grzymek, Jerzy; Grzymek, Anna D.; Bethke, Stanislaw; and Werynski, Bronislaw, 4,226,632, Cl. 106-100.000.

Tateoka, Masamichi: See—
Minoura, Kazuo; and Tateoka, Masamichi, 4,226,500, Cl. 350-6.100.

Tatsumi, Susumu: See—
Sakamoto, Koji; Miyakawa, Seiichi; and Tatsumi, Susumu, 4,226,525, Cl. 355-14.00D.

Tauber, Arthur: See—
Rothwarf, Frederick; Bergner, Robert L.; Leupold, Herbert A.; and Tauber, Arthur, 4,226,620, Cl. 75-134.00C.

Taylor, Leonard H. Positive identification system for authenticating the identity of a card user. 4,226,361, Cl. 235-380.000.

Tazima, Kenji: See—
Nakahara, Yutaka; Haruna, Tohru; and Tazima, Kenji, 4,226,991, Cl. 544-221.000.

Tazuke, Shigeo; and Nagahara, Hajime, to Asahi Kasei Kogyo Kabushiki Kaisha. Highly charge-transferable polycondensation polymer and process for preparation. 4,226,967, Cl. 528-74.000.

Technical Systems Co.: See—
Rehm, William A., 4,226,726, Cl. 210-512.00M.

Teepak, Inc.: See—
Bridgeford, Douglas J., 4,226,264, Cl. 738-118.100.

Teijin Limited: See—
Nagai, Tsuneji; Machida, Yoshiharu; Suzuki, Yoshiki; and Ikura, Hiroshi, 4,226,848, Cl. 424-19.000.

Teitel, Sidney: See—
Gurien, Harvey; and Teitel, Sidney, 4,226,774, Cl. 260-315.000.

Tektronix, Inc.: See—
Ishijima, Yasumori; and Murooka, Rikichi, 4,227,121, Cl. 315-367.000.

Telcom, Inc.: See—
Carrick, Robert L.; Manning, William T.; and Grimes, Robert E., 4,227,255, Cl. 455-226.000.

Temme, George H.: See—
Smith, Curtis P.; and Temme, George H., 4,226,958, Cl. 525-356.000.

Tenneco Chemicals, Inc.: See—
Feldman, Martin L.; and DeGross, James T., 4,226,760, Cl. 260-42.140.

Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,974, Cl. 528-483.000.

Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,975, Cl. 528-483.000.

Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,226,976, Cl. 528-498.000.

Stone, Herman; and Pauly, Peter D., 4,226,944, Cl. 521-76.000.

Terner, Leslie L.; Moskowitz, David; and Van Alsten, Roy L., to Ford Motor Company. Novel spraying composition, method of applying the same and article produced thereby. 4,226,914, Cl. 428-446.000.

Terrell Machine Company, The: See—
Niederer, Kurt W.; and Terrell, Robert E., 4,226,715, Cl. 210-783.000.

Terrell, Robert E.: See—
Niederer, Kurt W.; and Terrell, Robert E., 4,226,715, Cl. 210-783.000.

Teshima, Toru; Nozaki, Hiroshi; Koyama, Minoru; and Kato, Kazuhisa, to Stanley Electric Co., Ltd. Flexible multi-layer photoreceptor of electrophotography. 4,226,929, Cl. 430-57.000.

Tesmann, Holger; Weinrich, Erwin; and Lieske, Edgar, to enkel Kommanditgesellschaft auf Aktien. Two-component peroxide hair bleaching compositions. 4,226,852, Cl. 424-62.000.

Tetenborg, Konrad: See—
Achelphohl, Fritz; and Tetenborg, Konrad, 4,226,458, Cl. 294-88.000.

Texaco Development Corp.: See—
Hunter, Walter D., 4,226,730, Cl. 252-8.55D.
Hunter, Walter D., 4,226,731, Cl. 252-8.55D.
McCoy, David R., 4,226,807, Cl. 260-512.00R.
Waddill, Harold G.; and Klein, Howard P., 4,226,971, Cl. 528-162.000.

Texaco Inc.: See—
Elliott, Lloyd E., Jr., 4,227,124, Cl. 315-408.000.
Reinhard, Russell R.; and Yaffe, Roberta, 4,226,732, Cl. 252-32.500.

Texas Instruments Incorporated: See—
Babolian, Robert; Haynes, Gardner S.; and Delagi, Richard G., 4,226,694, Cl. 204-196.000.
Bray, William E., 4,227,230, Cl. 361-152.000.
Kronlage, John W., 4,227,185, Cl. 340-347.00NT.
Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,227,202, Cl. 357-24.000.

Texscan Corporation: See—
Palle, Robert J.; Smith, Sidney R.; Rockwell, Kenton D.; and Napierki, Charles F., 4,226,495, Cl. 339-122.00R.

Thayer, Philip C.: See—
Tiffany, Thomas O.; Manning, Gilbert B.; Thayer, Philip C.; and Coelho, Chris M., 4,226,531, Cl. 356-246.000.

Theall, Charles E., Jr.: See—
Vojvodich, Mario M.; and Theall, Charles E., Jr., 4,227,260, Cl. 455-601.000.

Theiler, Werner C., Sr., to Minnesota Mining and Manufacturing Company. Crimping tool for automotive ignition terminals and the like. 4,225,990, Cl. 7-107.000.

Thesing, Wilhelm: See—
Pollmeier, Konrad; and Thesing, Wilhelm, 4,226,197, Cl. 112-121.110.

Thiel, Ronald A.; and Maurer, Edward H., to General Dynamics Corporation Electronics Division. Method for fabricating controlled TCR thin film resistors. 4,226,899, Cl. 427-101.000.

Thielen, James E., to Minnesota Mining and Manufacturing Company. Dust mop frame. 4,225,998, Cl. 15-231.000.

Thiene, Paul G., to Surgical Mechanical Research. Automatic return for patient chair. 4,227,131, Cl. 318-467.000.

Thirion, Philippe E.: See—
Godard, Dominique N.; and Thirion, Philippe E., 4,227,152, Cl. 375-13.000.

Thoma, Georg. Hydraulic damping element, in particular for damping of the swivel movement of a movie or television camera which is secured on a head of a tripod. 4,226,303, Cl. 188-1.00B.

Thomann, Helmut; and Grabmaier, Christa, to Siemens Aktiengesellschaft. Method of detecting high energy radiation via a bismuth oxide compound. 4,227,084, Cl. 250-370.000.

Thomas, Alan F., to Firmenich, S.A. Cis-10,10-dimethyl-tricyclo[7,1,1,0^{2,7}]undec-2-en-4-one as perfuming ingredient. 4,226,745, Cl. 252-522.00R.

Thomas J. Lipton, Inc.: See—
Danielsen, Kennet; and Nielsen, Torben, 4,226,182, Cl. 101-129.000.

Thomas, Ulrich H., to Banthrico Inc. Drive-in teller coin bank. 4,226,044, Cl. 46-4.000.

Thomas, Walter C.: See—
Thomas, Wayne W.; and Thomas, Walter C., 4,227,051, Cl. 179-1.00E.

Thomas, Wayne W.; and Thomas, Walter C. Loud speaker and enclosure system. 4,227,051, Cl. 179-1.00E.

Thomas, William J.; and Adam, John E. Self-cleaning brush. 4,225,997, Cl. 15-184.000.

Thompson, John H.: See—
Douglas, George R.; and Thompson, John H., 4,227,110, Cl. 310-316.000.

Thompson, Norman, to Beta Aluminium Products Limited. Louvre Windows. 4,226,051, Cl. 49-403.000.

Thomson-CSF: See—
Gerard, Rene; and Lacombe, Michel, 4,226,569, Cl. 414-737.000.
Mayeux, Christian; and Micheron, Francois, 4,227,082, Cl. 250-336.000.

Thomson, Ian W.; Limbaugh, Charles D.; and Burch, JoEllen. Audio system for isolating sounds from individual components of drum set-up for selectively mixing. 4,227,049, Cl. 179-1.00M.

Thorsrud, Lee T.; and Spencer, Gary A., to Sperry Corporation. Closed loop address. 4,227,244, Cl. 364-200.000.

Thou, Kaing S.: See—
Paquet, Denis; Thou, Kaing S.; and Alais, Charles, 4,226,893, Cl. 426-564.000.

Tick, Paul A.: See—
Bartholomew, Roger F.; Dorfeld, William G.; Murphy, James A.; Pierson, Joseph E.; Stookley, Stanley D.; and Tick, Paul A., 4,226,628, Cl. 106-47.00R.

Tiffany, Thomas O.; Manning, Gilbert B.; Thayer, Philip C.; and Coelho, Chris M., to Instrumentation Laboratory Inc. Disposable multicuvette rotor. 4,226,531, Cl. 356-246.000.

Tilghman, Bill W. Toy parachute releasable from a kite string. 4,226,388, Cl. 244-155.00R.

Tisue, James G. Method and apparatus for suppressing the effects of surface light scatter in optical reflective scanning system. 4,226,541, Cl. 356-446.000.

Tobler, Bruno; and Sigrist, Hugo, to Werkzeugmaschinenfabrik Oerlikon-Bührle AG. Projectile with a payload. 4,226,185, Cl. 102-35.400.

Toeniskoetter, Richard H.; and Spivak, John J., to Ashland Oil, Inc. Binder composition containing alcohol. 4,226,626, Cl. 106-38.350.

Tokuyama Soda Kabushiki Kaisha: See—
Mizutani, Yukio; Watanabe, Yoshiaki; and Taga, Genji, 4,226,636, Cl. 106-306.000.

Tokyo Shibaura Denki Kabushiki Kaisha: See—
Komeya, Katsutoshi; Inoue, Hiroshi; Kudo, Haruo; and Endo, Hiroshi, 4,226,841, Cl. 423-345.000.
Ogawa, Seishi, 4,227,059, Cl. 200-153.00G.
Yamaguchi, Hiroyasu, 4,227,227, Cl. 361-86.000.

Tokyo Shibaura Electric Co., Ltd.: See—
Gomi, Hiroshi, 4,227,205, Cl. 358-28.000.
Shimoda, Takatoshi; and Fukuda, Kumo, 4,226,513, Cl. 354-1.000.
Washizu, Teruo; and Goto, Eizo, 4,227,108, Cl. 310-214.000.

Tomita, Takao; and Morita, Isamu, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic shock absorber for vehicles. 4,226,408, Cl. 267-64.00B.

Tomyn, Dmytro. Electronic currency counter. 4,227,071, Cl. 235-92.05B.

Tonomura, Shinji: See—
Okamoto, Shosuke; Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; and Ohkubo, Kazuo, 4,227,006, Cl. 560-10.000.

Toots, Jaan: See—
United States of America, National Aeronautics and Space Administration; Holdeman, Louis B.; Toots, Jaan; and Chang, Chu-Cheng, 4,227,096, Cl. 307-233.00R.

Topolosky, John J.: See—
Binstock, Morton H.; Lehmer, Robert C.; Johnson, Steven J.; Topolosky, John J.; and Smith, Thomas E., 4,226,086, Cl. 60-656.000.

Toppan Printing Co., Ltd.: See—
Ishizawa, Hideo; Niwayama, Akira; Shimizu, Mitsuru; and Kagamu, Takashi, 4,226,933, Cl. 430-320.000.

Toray Industries, Inc.: See—
Motegi, Masahiko; Tanaka, Kazuhiro; and Fujita, Saburo, 4,226,826, Cl. 264-235.800.

Toro Company, The: See—
Hunter, Edwin J., 4,226,368, Cl. 239-542.000.

Torossian, Kevork A.: See—
Gottung, William H.; and Torossian, Kevork A., 4,226,903, Cl. 428-195.000.

Toscano, Lucian: See—
Riva, Mario; Palladino, Gaetano; and Toscano, Lucian, 4,226,862, Cl. 424-243.000.

Tosco Corporation: See—
Nutter, John F., 4,226,699, Cl. 208-11.00R.

Toshima, Tomoyuki: See—
Nakanishi, Takuji; Toshima, Tomoyuki; and Yanagisawa, Kenchi, 4,226,018, Cl. 29-603.000.

Toth, Bela: See—
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- Transcoil, Inc.: See—
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- Traube, Horst: See—
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- Trbolet, Herbert: Wet and dry vacuum cleaning system, 4,226,000, Cl. 15-321.000.
- Trinkwalder, Joseph C., to Sherwood-Selpac Corporation: Scuba regulator, 4,226,257, Cl. 137-81.200.
- Trivedi, Prakash D.: See—
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- Schulz, Donald N.; and Trivedi, Prakash D., 4,226,956, Cl. 525-330.000.
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- Trudeau, Curtis A., to CMI Corporation: Axle-load distributing apparatus, 4,226,437, Cl. 280-405.00R.
- TRW Inc.: See—
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- Tsang, Floris Y., to Dow Chemical Company: The selective plugging of broken fibers in tubsheet-hollow fiber assemblies, 4,226,921, Cl. 429-104.000.
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- Tsuchimoto, Yoshihiro: See—
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- Tsuji, Teruji: See—
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- Tsuji, Toshihiko; and Sakai, Riyouji, to Nippon Kinzoku Co., Ltd.: Reactor, 4,227,166, Cl. 336-229.000.
- Tsukada, Toshihisa: See—
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- Tsukahara, Satoshi; Sato, Isao; Uchiyama, Yoshihiro; and Kusaba, Masanobu, to Hitachi, Ltd.: Gas turbine combustor, 4,226,088, Cl. 60-752.000.
- Tsunekawa, Tokuchio, to Canon Kabushiki Kaisha: Camera and viewfinder display device therefor, 4,226,516, Cl. 354-60.00E.
- Tsuruoka, Masao; Yagi, Hideyuki; Morita, Keiichi; and Kuniya, Keiichi, to Hitachi, Ltd.: Composite joint system including composite structure of carbon fibers embedded in copper matrix, 4,226,917, Cl. 428-111.000.
- Tsuruoka, Takashi: See—
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- Tsurushige, Normitsu; Takao, Toshinori; and Yamada, Shinichi, to Otsuka Kagaku Yakuhin Kabushiki Kaisha: Foamable composition of vinyl chloride polymers and method of producing open cell sheet, 4,226,943, Cl. 521-73.000.
- Tuchman, Walter L.: See—
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- Tucker, Frederick R., deceased: See—
Cochrane, Ian W.; Tucker, Frederick R., deceased; Tucker, Mary, co-executrix; Ackerman, George, co-executor; and Canada Permanent Trust Co., co-executor, 4,225,982, Cl. 3-7.000.
- Tucker, Mary, co-executrix: See—
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- Turk, Gunter: See—
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- Turner, James E.: See—
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- Turner, Posie C.: Compact foldable bootjack with positive locking device, 4,226,346, Cl. 223-115.000.
- Tuson, Samuel, to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H.: Off-shore mooring device for a large-sized floating body, 4,226,204, Cl. 114-230.000.
- Ubiennykh, Svetlana N.: See—
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- Uccellini, Anthony J.: Carton grip, 4,226,349, Cl. 224-45.00P.
- Uchida, Hiroshi: See—
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- Uchiyama, Yoshihiro: See—
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- Ueda, Nobuo: See—
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- Uesugi, Kyojo, to Minolta Camera Kabushiki Kaisha: Shock resistant lens device, 4,226,520, Cl. 354-195.000.
- Ukiana, Motohide: See—
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- Kupcikevicius, Vytautas, 4,226,003, Cl. 17-49.000.
- Potts, James E., 4,226,230, Cl. 128-90.000.
- United Oil Company of California: See—
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- United Kingdom Atomic Energy Authority: See—
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French, Herbert A., 4,226,529, Cl. 356-5.000.
- United States of America
Air Force: See—
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- McNamara, John V.; and Van Eiten, Paul, 4,227,187, Cl. 340-347.00P.
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- Carr, Nathaniel, 4,226,016, Cl. 29-426.400.
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- Mazur, Peter O.; and Pallaver, Carl B., 4,226,169, Cl. 92-206.000.
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- Navy: See—
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- Birx, Daniel L., 4,227,153, Cl. 328-59.000.
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- Davey, John E.; and Christou, Aristos, 4,226,649, Cl. 148-175.000.
- Friedman, Moshe; and Ury, Michael G., 4,227,170, Cl. 337-204.000.
- Hansen, Peder M., 4,227,249, Cl. 375-34.000.
- Keller, Teddy M.; and Griffith, James R., 4,226,801, Cl. 260-465.00F.
- Ohr, Jack, 4,226,624, Cl. 106-14.050.
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- U.S. Philips Corporation: See—
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- Brandenburg, Klaus; Richter, Hermann; and Weber, Wendelin, 4,226,545, Cl. 400-124.000.
- Elders, Marius J. A.; and Hopmans, Jan H. M., 4,227,143, Cl. 323-48.000.
- Elshof, Leonardus A. M.; and Van Heek, Herman F., 4,227,115, Cl. 313-403.000.
- Harupa, Gerhard, 4,226,227, Cl. 126-442.000.
- Houkes, Henk, 4,227,099, Cl. 307-315.000.
- Jacobs, Jacobus H., 4,226,509, Cl. 350-343.000.
- Rosink, Wilhelmus B.; and Cox, Cornelius P. J., 4,227,139, Cl. 318-803.000.
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- United States Surgical Corporation: See—
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- Lewis, George D.; Russell, Paul L.; and Stettler, Jeffrey, 4,226,083, Cl. 60-39.060.
- Norris, James R.; Miller, Guy W.; Jamison, John C.; and Ransom, Ralph D., 4,226,365, Cl. 239-66.000.
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- University Patents, Inc.: See—
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- Zeitlin, Harry; and Fernando, Quintus, 4,226,836, Cl. 423-41.000.
- UOP Inc.: See—
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- Michalko, Edward; and deRosset, Armand J., 4,226,639, Cl. 127-46.00A.
- Neuzil, Richard W.; and Priegnitz, James W., 4,226,977, Cl. 536-1.000.
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- Hester, Jackson B., Jr., 4,226,772, Cl. 260-245.500.
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- Walker, Jerry A., 4,226,790, Cl. 260-429.00R.
- Wovcha, Merle G.; Antosz, Frederick J.; Beaton, John M.; Garcia, Alfred B.; and Kominek, Leo A., 4,226,936, Cl. 435-55.000.
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- Ury, Michael G.: See—
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- Utesch, Alfred L.: Single conduit air conditioning system, 4,226,364, Cl. 237-63.000.
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- Valchev, Alexander: See—
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- Valve Concepts International: See—
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- Van Alsten, Roy L.: See—
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- Van Beeck, Walter P., to AGFA-GEVAERT N.V.: Device for detecting irregularities in a moving sheet material, 4,226,538, Cl. 356-430.000.
- Vandas, Edward B., to McGraw-Edison Company: Conveyor lubricating and washing apparatus, 4,226,325, Cl. 198-493.000.
- Vanderwal, Frank E., Jr., to Sunnen Products Company: Guide means for honing and like machines, 4,226,400, Cl. 248-646.000.
- Vandiver, John K.; and Mitome, Shuhei, to Massachusetts Institute of Technology: Method and apparatus for absorbing dynamic forces on structures, 4,226,554, Cl. 405-195.000.
- Vandling, John M., to Exxon Research & Engineering Co.: Method and apparatus for generating a digital facsimile signal, 4,227,218, Cl. 358-282.000.
- Van Don, Frank, to Airco, Inc.: Flameless vaporizer, 4,226,605, Cl. 62-52.000.
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- van Rijswijk, Bernard P. J. M.: Earth ground assembly including an electrode and rod means which may be driven into the ground, 4,227,034, Cl. 174-7.000.
- Varian Associates, Inc.: See—
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- Varlamov, Gennady D.; Bekbulatov, Ildgam A.; Madaliev, Shavkat; Mamatov, Juldash; Proshkina, Alexandra V.; and Ubiennykh, Svetlana N.: Method of producing furan-epoxy powder-like binder, 4,226,968, Cl. 528-91.000.
- Vaseen, Vesper A.: Method and apparatus for hydrogen production in an absorber liquid by electrochemical of coal and water, 4,226,683, Cl. 204-101.000.
- Vassiliou, Eustathios, to Du Pont de Nemours, E. I., and Company: Process of coating a ferrous metal substrate with an aqueous fluoropolymer coating, 4,226,646, Cl. 148-6.14R.
- Vaughan, Warren T., III; and MacDonnell, Gordon: Multi-parameter measurement system for fluids, 4,227,246, Cl. 364-571.000.
- Vaughn, Howard A., Jr.: See—
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- Sienkowski, Kenneth J.; Nicholson, Richard R.; and Smith, Ray E., 4,226,907, Cl. 428-288.000.
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- Venturello, Carlo; and D'Aloisio, Rino, to Montedison S.p.A.: Process for the manufacture of alkylene carbonates, 4,226,778, Cl. 260-340.200.
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- Verbeek, Willem J. P. A.: See—
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- Vermeer Manufacturing Co.: See—
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- Vilardi, Frank, to Savant Instruments, Inc.: Vacuum centrifuge with magnetic drive, 4,226,669, Cl. 159-6.00R.
- Villette, Guy J.: Magnetically driven pump, 4,226,574, Cl. 417-420.000.
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- Vinatieri, James E., to Phillips Petroleum Company: Addition of water to emulsions to accelerate coalescence, 4,226,702, Cl. 208-188.000.
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- Vock, Manfred H.: See—
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- Vogler, Kathleen R.: See—
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- Voitko, Andrei M.: Rapid-freezing apparatus for food products, 4,226,093, Cl. 62-381.000.
- Vojvodich, Mario M.; and Theall, Charles E., Jr., to Singer Company, The: Electronic active star element for an optical data transmission system, 4,227,260, Cl. 455-601.000.
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- Wadsworth, Walter J., to Fern Engineering: Appearance system, 4,226,068, Cl. 52-508.000.
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- Waid, George M.; and Ault, Robert T., to Republic Steel Corp. Steel well casing and method of production. 4,226,645, Cl. 148-2.000.
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- Watson, Charles L. Soil processing device and method. 4,226,370, Cl. 241-30.000.
- Watson, Charles R., Jr.; and Eichner, Mary A., to Allied Products Corporation. Epoxy composition for threadlocking. 4,226,969, Cl. 528-93.000.
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- Weber Marking Systems, Inc.: See—
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- Wehrman, Floyd L. Key ring holder. 4,226,105, Cl. 70-456.00R.
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- Weigh-Tech, Inc.: See—
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- Weinrich, Erwin: See—
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- Wentzely, Kalman: See—
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- Mulach, Arthur, 4,227,109, Cl. 310-258.000.
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- Uram, Robert; and Tanco, Juan J., 4,227,093, Cl. 290-40.00R.
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- White, Dwain M., to General Electric Company. Block polymers of polyphenylene oxide and polystyrene. 4,226,951, Cl. 525-92.000.
- White, Russell P., Jr., to McCain, Wesley G. Rotary filter. 4,226,716, Cl. 210-193.000.
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- Whitcotton, Walley E.: See—
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- Whittaker Corporation: See—
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- Whitton, Alfred J.: See—
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- Widen, Bo G.: See—
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- Williams, Frederick C.: See—
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- Williams, James B.: See—
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- Williams, James E., to Wilson Research & Development, Inc. Feed tube protector for a food processor. 4,226,373, Cl. 241-37.500.
- Williams, Ralph E.; Brown, Larry L.; Marchese, Robert P.; Russell, Philip A.; and Armstrong, James A., to United States of America. Environmental Protection Agency. Remote controlled air sampler. 4,226,115, Cl. 73-28.000.
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- Wilson, John E. Retractable propulsive means for small boats. 4,226,206, Cl. 440-112.000.
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- Wilson, Phillip S.: See—
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- Wolcott, William G. Self-cleaning invertible gutter system. 4,226,057, Cl. 52-11.000.
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- Wolpoff, Sharon A. Finger ring. 4,226,094, Cl. 63-15.400.
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- Woltman, Robert B. Treating device for large bodies of water. 4,226,719, Cl. 210-220.000.
- Wong, James K. Sandal. 4,226,031, Cl. 36-11.500.
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- Wright, Joseph H., to Polaroid Corporation. Film strip/audio tape arrangement for audio-visual cassette. 4,226,511, Cl. 352-72.000.
- Wright, Nathaniel. Universal exercise apparatus for performing hamstring flex and other exercises. 4,226,415, Cl. 272-130.000.
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- Wyner, Aaron D., to Bell Telephone Laboratories, Incorporated. Minimization of excess bandwidth in pulse amplitude modulated data transmission. 4,227,250, Cl. 375-37.000.
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- Xerox Corporation: See—
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- Yaffe, Roberta: See—
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Yoshikawa, Shinsuke; Hisazumi, Nobuyuki; and Yamamoto, Masataka, to Kureha Kagaku Kogyo Kabushiki Kaisha. Biaxially stretched

five-layer film and method for manufacture thereof. 4,226,822, Cl. 264-173.000.

Yoshino, Akira; Iwami, Isamu; and Wakabayashi, Tsuneo, to Asahi-Dow Limited. Water repellent inorganic foam and method for producing the same. 4,226,908, Cl. 428-310.000.

Yoshioka, Mitsuru: See—
Narisada, Masayuki; Tsuiji, Teruji; Yoshioka, Mitsuru; Hiromu, Matsumura; Hamashima, Yoshio; Hayashi, Sadao; and Nagata, Wataru, 4,226,864, Cl. 424-248.500.

Young, Harold A. Apparatus for dispensing the contents of a tube having a movable platen. 4,226,336, Cl. 222-102.000.

Young, James A.: See—
McDaniel, Horace J.; and Young, James A., 4,226,301, Cl. 182-155.000.

Young, Maurice A., to Dunlop Limited. Manufacture of tires. 4,226,654, Cl. 156-123.00R.

Young, Raymond R., to Wilson Jones Company. Multi-pocketed holder for film and card storage. 4,226,039, Cl. 40-373.000.

Yuhas, Edward R., to Dragoco, Inc. Cosmetic stick composition. 4,226,889, Cl. 424-59.000.

Yukumoto, Toshitaka: See—
Fujisawa, Seiji; and Yukumoto, Toshitaka, 4,227,122, Cl. 315-368.000.

Yukuta, Toshio; Fukuda, Hiroya; Ishii, Seiji; and Utsumi, Kazuo, to Bridgestone Tire Company Limited. Flexible urethane foams having a low density and a method for producing said foams. 4,226,947, Cl. 521-107.000.

Yun, Han B.; and Whitton, Alfred J., to NL Industries, Inc. Synthetic polymer. 4,226,754, Cl. 260-29.6TA.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: See—
Winter, August, 4,226,135, Cl. 74-330.000.

Zambo, Janos: See—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istvan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.

Zapletnyak, Vitaly M.: See—
Grigoriev, Vasily A.; Arkhipova, Zinaida V.; Balaev, Guren A.; Bakajutov, Nikolai G.; Vysotskaya, Vera I.; Polyakov, Arkady V.; and Zapletnyak, Vitaly M., 4,226,965, Cl. 526-116.000.

Zaugg, Ernst. Assembly transformable into furniture. 4,226,471, Cl. 297-118.000.

Zeibig, Anton, to Rosenthal Technik AG. Endo prosthesis with a metal-ceramic union. 4,225,981, Cl. 3-1.913.

Zeinalov, Bagadur K.; Aliev, Vagab S.; Akhundov, Arif A.; Bocharov, Jury N.; Lugovskoi, Vladimir D.; and Miramarian, Akop A. Method of preparing naphthenic acids. 4,227,020, Cl. 562-511.000.

Zeitlin, Harry; and Fernando, Quintus, to University Patents, Inc. Method for separating molybdenum values from sea nodules. 4,226,836, Cl. 423-41.000.

Zelichenko, Faina S., administrator: See—
Frolov, Jury F.; Piljukov, Jury F.; Cherednichenko, Vladimir S.; Orlov, Gennady I.; Kurapin, Igor N.; Shabalina, Roza I.; Laker-nik, Mark M.; Gavrilenko, Alexandr F.; Yakovenko, Anatoly A.; Elkina, Alla K.; Golovachev, Anatoly I.; Egorova, Tatyana S.; Vlasov, Jury M.; Smelyansky, Matvei Y., deceased; and Zelichenko, Faina S., administrator, 4,226,406, Cl. 266-148.000.

Zell, Michael N.: See—
Holecck, Joseph J.; Plummer, William B.; Schwieters, Clarence R.; and Zell, Michael N., 4,226,570, Cl. 414-751.000.

Zenith Radio Corporation: See—
De Jule, Michael C., 4,227,114, Cl. 313-217.000.

Zens, Rene J. L., to Breston, Michael P., a part interest. Universal long stroke pump system. 4,226,404, Cl. 254-359.000.

Zigman, Seymour; and Gilman, Paul B., Jr., to Eastman Kodak Company. Processes for inhibiting the growth of sea urchin eggs. 4,226,863, Cl. 424-258.000.

Zilahi-Szabo, Imre, to Magyar Vagon- és Gepgyar. Viscous shear dampers. 4,226,139, Cl. 74-574.000.

Zimmerman, Jessie G.; and Snider, Robert T., Sr. Fish scale remover. 4,226,004, Cl. 17-67.000.

Zimmermann, Peter: See—
Grobl, Werner; and Zimmermann, Peter, 4,226,578, Cl. 425-186.000.

Zindler, Hugh A. Clutch and brake mechanism. 4,226,312, Cl. 192-14.000.

Zobel, Don W.: See—
Davies, Robert B.; and Zobel, Don W., 4,227,157, Cl. 330-265.000.

Zocon Corporation: See—
Anderson, Richard J.; and Baer, Ted A., 4,226,802, Cl. 260-465.00E.

Henrick, Clive A., 4,226,872, Cl. 424-263.000.

Zoldi, Jozsef: See—
Boros, Jozsef; Csillag, Zsolt; Ferenczi, Tibor; Kalman, Tibor; Lengyel, Laszlo; Matyasi, Jozsef; Orban, Ferenc; Solymar, Karoly; Toth, Bela; Toth, Lajos; Voros, Istvan; Wentzely, Kalman; Zambo, Janos; and Zoldi, Jozsef, 4,226,838, Cl. 423-121.000.

Zollinger, Hans, to Ruti Machinery Works Ltd. Withdrawing carrier for looms with removal of the filling thread from stationary bobbins. 4,226,265, Cl. 139-448.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF OCTOBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Akwell Corporation, The: See—
Povlacs, Lawrence, Re. 30,410, Cl. 406-87.000.

Asahi Glass Company, Limited: See—
Nakaya, Keiichi; Hirata, Suekazu; and Sato, Kunio, Re. 30,411, Cl. 23-299.000.

Eastman Kodak Company: See—
Raychaudhuri, Pranab K., Re. 30,412, Cl. 136-255.000.

Eli Lilly and Company: See—
Holmes, Richard E., Re. 30,415, Cl. 424-250.000.

Fujii, Akio: See—
Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, Re. 30,413, Cl. 260-112.50R.

Hirata, Suekazu: See—
Nakaya, Keiichi; Hirata, Suekazu; and Sato, Kunio, Re. 30,411, Cl. 23-299.000.

Holmes, Richard E., to Eli Lilly and Company. Substituted pyroloquinolines and diones. Re. 30,415, Cl. 424-250.000.

Kinoshita, Yoshiro, to Toray Industries, Inc. Process for producing a high tensile strength, high Young's modulus carbon fiber having excellent internal structure homogeneity. Re. 30,414, Cl. 423-447.600.

Nakaya, Keiichi; Hirata, Suekazu; and Sato, Kunio, to Asahi Glass Company, Limited. Process for purifying sodium hydroxide. Re. 30,411, Cl. 23-299.000.

Povlacs, Lawrence, to Akwell Corporation, The. Apparatus for loading prophylactic devices on test apparatus. Re. 30,410, Cl. 406-87.000.

Raychaudhuri, Pranab K., to Eastman Kodak Company. CdTe Barrier type photovoltaic cells with enhanced open-circuit voltage, and process of manufacture. Re. 30,412, Cl. 136-255.000.

Sato, Kunio: See—
Nakaya, Keiichi; Hirata, Suekazu; and Sato, Kunio, Re. 30,411, Cl. 23-299.000.

Sharp Kabushiki Kaisha: See—
Yasunaga, Tatsuhiro, Re. 30,416, Cl. 360-72.100.

Shirai, Tadashi: See—
Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, Re. 30,413, Cl. 260-112.50R.

Takahashi, Yasushi: See—
Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, Re. 30,413, Cl. 260-112.50R.

Toray Industries, Inc.: See—
Kinoshita, Yoshiro, Re. 30,414, Cl. 423-447.600.

Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Bleomycinic acid and process for preparing thereof. Re. 30,413, Cl. 260-112.50R.

Yasunaga, Tatsuhiro, to Sharp Kabushiki Kaisha. Automatic program locator for tape decks. Re. 30,416, Cl. 360-72.100.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: See—
Umezawa, Hamao; Takahashi, Yasushi; Shirai, Tadashi; and Fujii, Akio, Re. 30,413, Cl. 260-112.50R.

LIST OF DESIGN PATENTEEES

Abeta Pet Supply, Inc.: See—
Michalski, Robert J., 257,293, Cl. D30-42.000.

Acrylic Designs, Inc.: See—
von Roth, Fredrik G. R., II, 257,194, Cl. D6-130.000.

Akimov, Boris M.; Voronov, Anatoly I.; Morozov, Viktor I.; Shalaev, Vitaly I.; Demenko, Viktor V.; Tsoglin, Georgy S.; and Rjumina, Albina T. Cryobiological vessel. 257,289, 10-7-80, Cl. D24-99.000.

Aksjeselskapet Jotul: See—
Sommerschild, Henrik W., 257,278, Cl. D23-97.000.

Sommerschild, Henrik W., 257,279, Cl. D23-97.000.

Albert, Mikeal W. Animated paperweight. 257,265, 10-7-80, Cl. D19-97.000.

American Can Company: See—
Gilling, Donald A.; and Walbrun, Lawrence A., 257,294, Cl. D59-2.00B.

American Cyanamid Company: See—
Lee, Eric, 257,223, Cl. D9-23.000.

Lee, Eric, 257,224, Cl. D9-26.000.

Aqua Meter Instrument Corp.: See—
Macowski, William, 257,237, Cl. D10-68.000.

Armstrong, Alan M.; and Berdell, Robert A. Stuffed toy animal. 257,273, 10-7-80, Cl. D21-158.000.

Automatic Liquid Packaging, Inc.: See—
Pagels, Louis T., 257,287, Cl. D24-58.000.

Pagels, Louis T., 257,288, Cl. D24-58.000.

Bateman, Robert F.: See—
Croyle, Jack V.; and Bateman, Robert F., 257,201, Cl. D7-19.000.

Batozsky, Vadim I.: See—
Khodorov, Alexandr I.; Makeev, Boris A.; Stepochkin, Lev M.; Batozsky, Vadim I.; Sila, Vladimir N.; Korot, Garri M.; Eremenko, Adolf G.; and Zhuravlev, Vitaly I., 257,262, Cl. D15-127.000.

Baumgartner, Erich R.; Doehler, Peter; Rams, Dieter; and Greubel, Jurgen, to Braun Aktiengesellschaft. Steam iron. 257,209, 10-7-80, Cl. D7-203.000.

Belwith International Ltd.: See—
Withers, Joseph W.; and Elstner, Gustav, 257,214, Cl. D8-310.000.

Withers, Joseph W.; and Elstner, Gustav, 257,215, Cl. D8-310.000.

Withers, Joseph W.; and Elstner, Gustav, 257,216, Cl. D8-310.000.

Withers, Joseph W.; and Elstner, Gustav, 257,217, Cl. D8-310.000.

Berdell, Robert A.: See—
Armstrong, Alan M.; and Berdell, Robert A., 257,273, Cl. D21-158.000.

Blich, Andrew. Boot jack. 257,188, 10-7-80, Cl. D2-378.200.

Bonnes, David R., to Union Fork & Hoe Company, The. Snow shovel scoop. 257,210, 10-7-80, Cl. D8-10.000.

Bounds, William E. Condiment shaker. 257,204, 10-7-80, Cl. D7-57.000.

Bounds, William E. Condiment dispenser. 257,205, 10-7-80, Cl. D7-57.000.

Boylard, Kathleen C.; and Edmonds, Larry D. Combined clock and picture frame or the like. 257,231, 10-7-80, Cl. D10-2.000.

Braun Aktiengesellschaft: See—
Baumgartner, Erich R.; Doehler, Peter; Rams, Dieter; and Greubel, Jurgen, 257,209, Cl. D7-203.000.

Brown, Desmond B. Modular house for small pets. 257,292, 10-7-80, Cl. D30-1.000.

Burdock, Patrick T. A., to Rovex Limited. Toy figure. 257,276, 10-7-80, Cl. D21-01.000.

California R & D Center: See—
Jones, Lawrence T.; and Lee, Robert S., 257,275, Cl. D21-166.000.

Cheung, Michael, to Promotors Limited. Travel alarm clock. 257,235, 10-7-80, Cl. D10-15.000.

Conti, Rino: See—
Swett, James B.; and Conti, Rino, 257,195, Cl. D6-134.000.

Cook, Norbert F.: See—
Wegmann, Jerome B.; and Cook, Norbert F., 257,213, Cl. D8-14.100.

Cook, Robert D. Picture-hanging bracket. 257,219, 10-7-80, Cl. D8-354.000.

Croyle, Jack V.; and Bateman, Robert F., to Dart Industries Inc. Tray or the like. 257,201, 10-7-80, Cl. D7-19.000.

Curry, Patty L.; Huggins, George; and Pickering, Seth, III. Paper weight. 257,266, 10-7-80, Cl. D19-97.000.

Dart Industries Inc.: See—
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Swett, James B.; and Conti, Rino, 257,195, Cl. D6-134.000.

Dauvergne, Hector A. Book cover or similar article. 257,263, 10-7-80, Cl. D19-26.000.

Demenko, Viktor V.: See—
Akimov, Boris M.; Voronov, Anatoly I.; Morozov, Viktor I.; Shalaev, Vitaly I.; Demenko, Viktor V.; Tsoglin, Georgy S.; and Rjumina, Albina T., 257,289, Cl. D24-99.000.

Dennis, Roy J. Anchor control device. 257,220, 10-7-80, Cl. D8-356.000.

Ditto, Donald R. Mushroom wall ornament. 257,241, 10-7-80, Cl. D11-139.000.

Doehler, Peter: See—
Baumgartner, Erich R.; Doehler, Peter; Rams, Dieter; and Greubel, Jurgen, 257,209, Cl. D7-203.000.

- Doyel, John S. Vegetable drying implement. 257,203, 10-7-80, Cl. D7-47.000.
- Eddins, Fred D.; Samuels, Donald H.; and Tepper, Sidney, to Hasbro Industries, Inc. Toy race track for miniature cars. 257,272, 10-7-80, Cl. D21-143.000.
- Edmonds, Larry D.: See—
Boyland, Kathleen C.; and Edmonds, Larry D., 257,231, Cl. D10-2.000.
- Elstner, Gustav: See—
Withers, Joseph W.; and Elstner, Gustav, 257,214, Cl. D8-310.000.
Withers, Joseph W.; and Elstner, Gustav, 257,215, Cl. D8-310.000.
Withers, Joseph W.; and Elstner, Gustav, 257,216, Cl. D8-310.000.
Withers, Joseph W.; and Elstner, Gustav, 257,217, Cl. D8-310.000.
- Eremenko, Adolf G.: See—
Khodorov, Alexandr I.; Makeev, Boris A.; Stepanchkin, Lev M.; Batozsky, Vadim I.; Sila, Vladimir N.; Korot, Garri M.; Eremenko, Adolf G.; and Zhuravlev, Vitaly I., 257,262, Cl. D15-127.000.
- Erickson, William V.; and Miller, Fred L. Bong base. 257,290, 10-7-80, Cl. D27-05.000.
- Eriksson, Lars. Toggle joint fastener. 257,218, 10-7-80, Cl. D8-336.000.
- Famolare, Inc.: See—
Famolare, Joseph P., Jr., 257,186, Cl. D2-322.000.
Famolare, Joseph P., Jr. Shoe. 257,185, 10-7-80, Cl. D2-309.000.
Famolare, Joseph P., Jr., to Famolare, Inc. Shoe sole. 257,186, 10-7-80, Cl. D2-322.000.
- Filliben, Norbert V. Athletic team flag. 257,243, 10-7-80, Cl. D11-172.000.
- Filliben, Norbert V. Athletic team flag. 257,244, 10-7-80, Cl. D11-172.000.
- Folkman, Bern D., to Tronomed International, Inc. Medical valve. 257,286, 10-7-80, Cl. D24-53.000.
- Forward Industries, Inc.: See—
Savatteri, Charles, 257,264, Cl. D19-26.000.
- Fossella, Gregory F.; MacDonald, John B.; and Mercadante, Michael J., to Simplex Time Recorder Co. Terminal. 257,253, 10-7-80, Cl. D14-44.000.
- Gabriel, Richard J., to Matrix Toys, Inc. Joint element for construction set. 257,270, 10-7-80, Cl. D21-108.000.
- Gabriel, Richard J., to Matrix Toys, Inc. Joint element for construction set. 257,271, 10-7-80, Cl. D21-108.000.
- GAF Corporation: See—
Roberts, Luther L., 257,282, Cl. D23-153.000.
Roberts, Luther L., 257,283, Cl. D23-153.000.
- Ganter, Robert; Whitmoyer, Robert; and Rye, Palle, to Thermics Corporation. Fossil fuel catalyst generator. 257,281, 10-7-80, Cl. D23-127.000.
- Gefitec S.A.: See—
Posso, Patrick, 257,190, Cl. D3-35.000.
- Gerak, Maurice. Jouncing foot toy. 257,277, 10-7-80, Cl. D21-240.000.
- GFA-Gevaert, A.G.: See—
Schlagheck, Norbert; and Schultes, Herbert, 257,258, Cl. D16-04.000.
- Gilling, Donald A.; and Walbrun, Lawrence A., to American Can Company. Embossed paper toweling. 257,294, 10-7-80, Cl. D59-2.000.
- Glage, Peter E. Racket holder. 257,193, 10-7-80, Cl. D6-125.000.
- Greubel, Jürgen: See—
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- Harada, Toshio: See—
Yamamura, Masamichi; Harada, Toshio; and Takahashi, Hanji, 257,208, Cl. D7-128.000.
- Hasbro Industries, Inc.: See—
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- Hattori, Yasuo; and Walz, David, to Olympus Optical Co., Ltd.; and Lanier Business Products, Inc. Tape recorder. 257,252, 10-7-80, Cl. D14-6.000.
- Health-Mor, Inc.: See—
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Robinson, Nora, 257,256, Cl. D15-64.000.
- Heck, Steven: See—
Stoltenberg, Bernard; and Heck, Steven, 257,250, Cl. D12-203.000.
- Hibdon, Robert M.: See—
Miller, Gary L.; and Hibdon, Robert M., 257,269, Cl. D21-88.000.
- Hihara, Yukiyoshi, to Yasui Sangyo Co., Ltd. Hand truck for lifting and transporting a tire wheel. 257,246, 10-7-80, Cl. D12-56.000.
- Hoke, Kendall E. Magazine rack. 257,199, 10-7-80, Cl. D6-184.000.
- Hoke, Kendall E. Wall clock. 257,232, 10-7-80, Cl. D10-6.000.
- Homeland Industries Inc.: See—
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- Huggins, George: See—
Curry, Patty L.; Huggins, George; and Pickering, Seth, III, 257,266, Cl. D19-97.000.
- Hunter, Donald R. Door wall greenhouse. 257,242, 10-7-80, Cl. D11-145.000.
- Joachim, Charlotte D.; March, Alvin C.; and Ratliff, Kay S., to Procter & Gamble Company, The. Nonwoven sheet material or the like. 257,295, 10-7-80, Cl. D92-1.00P.
- Johnson, Philmore E., to Superior Electric Company, The. Electrical test probe. 257,239, 10-7-80, Cl. D10-103.000.
- Jones, Lawrence T.; and Lee, Robert S., to California R & D Center. Toy figure. 257,275, 10-7-80, Cl. D21-166.000.
- Kendall Company, The: See—
Moses, Horace C., 257,192, Cl. D4-25.000.
- Khodorov, Alexandr I.; Makeev, Boris A.; Stepanchkin, Lev M.; Batozsky, Vadim I.; Sila, Vladimir N.; Korot, Garri M.; Eremenko, Adolf G.; and Zhuravlev, Vitaly I. Automated apparatus for cutting rolled strips of transformer steel. 257,262, 10-7-80, Cl. D15-127.000.
- Kimball, Alvan C. Display container. 257,226, 10-7-80, Cl. D9-191.000.
- Kingsbury Products Incorporated: See—
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- Kingsbury, Robert M., to Kingsbury Products Incorporated. Bicycle pedal. 257,249, 10-7-80, Cl. D12-125.000.
- Korot, Garri M.: See—
Khodorov, Alexandr I.; Makeev, Boris A.; Stepanchkin, Lev M.; Batozsky, Vadim I.; Sila, Vladimir N.; Korot, Garri M.; Eremenko, Adolf G.; and Zhuravlev, Vitaly I., 257,262, Cl. D15-127.000.
- Kretz, Edward J., to Owens-Illinois, Inc. Combined decanter and stopper. 257,225, 10-7-80, Cl. D9-159.000.
- Lafferty, Thomas G. Foam generator for a cleaning machine. 257,254, 10-7-80, Cl. D15-56.000.
- Landsman, Samuel I. Parking space reserver. 257,238, 10-7-80, Cl. D10-109.000.
- Lanier Business Products, Inc.: See—
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- LaRocca, Elena T., to Parrish, Lyla F.; LaRocca, Vincent R.; LaRocca, Patricia E.; and LaRocca, Elena T. Travelling pillow. 257,200, 10-7-80, Cl. D6-201.000.
- LaRocca, Patricia E.: See—
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- Leary, Fred J., to Professional Exchange Systems, Inc. Safety light for joggers. 257,240, 10-7-80, Cl. D10-114.000.
- Lee, Eric, to American Cyanamid Company. Decanter. 257,223, 10-7-80, Cl. D9-23.000.
- Lee, Eric, to American Cyanamid Company. Decanter. 257,224, 10-7-80, Cl. D9-26.000.
- Lee, Robert S.: See—
Jones, Lawrence T.; and Lee, Robert S., 257,275, Cl. D21-166.000.
- Leger, Jean. Bottle cap. 257,229, 10-7-80, Cl. D9-283.000.
- Leonard, Henri, to Micro-Mega S.A. Dental handpiece. 257,284, 10-7-80, Cl. D24-12.000.
- Lerner, Lawrence; and Schmitt, Fred, to Litton Business Systems, Inc. Desk or similar article. 257,196, 10-7-80, Cl. D6-161.000.
- Link, Cabanne H. Watch case. 257,236, 10-7-80, Cl. D10-38.000.
- Litton Business Systems, Inc.: See—
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- Lo f, Torbjorn; and Skarin, Lars, to Partex Fabrikaktiebolag. Tool for mounting marking sleeves onto wires, cables, or the like. 257,211, 10-7-80, Cl. D8-14.000.
- Long, Edward L. Game board. 257,267, 10-7-80, Cl. D21-33.000.
- Long, Edward L. Game board. 257,268, 10-7-80, Cl. D21-33.000.
- Losenno, Luigi G. Vapor hood for hair care. 257,291, 10-7-80, Cl. D28-19.000.
- Luverne Truck Equipment, Inc.: See—
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- MacDonald, John B.: See—
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- Macowski, William, to Aqua Meter Instrument Corp. Compass hood. 257,237, 10-7-80, Cl. D10-68.000.
- Makeev, Boris A.: See—
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- March, Alvin C.: See—
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- McArthur, John W. Holder for weaving material. 257,257, 10-7-80, Cl. D15-66.000.
- McNeil Corporation: See—
Wegmann, Jerome B.; and Cook, Norbert F., 257,213, Cl. D8-14.100.
- Mercadante, Michael J.: See—
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- Merry, Carl A., to Schaefer Marine, Inc. Cam stopper. 257,248, 10-7-80, Cl. D12-70.000.
- Michalski, Robert J., to Abeta Pet Supply, Inc. Combined cat playground and exerciser. 257,293, 10-7-80, Cl. D30-42.000.
- Micro-Mega S.A.: See—
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- Miller, Fred L.: See—
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- Miller, Gary L.; and Hibdon, Robert M. Glider. 257,269, 10-7-80, Cl. D21-88.000.
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- Bevan, Ronald. Sack handling device, T999,001, 10-7-80, Cl. 414-82.000.
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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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		172	4,226.063	CLASS 130		CLASS 151		16 R	4,226.223		
		172	4,226.063	CLASS 131		CLASS 152		16 R	4,226.223		
		172	4,226.063	CLASS 132		CLASS 153		16 R	4,226.223		
		172	4,226.063	CLASS 133		CLASS 154		16 R	4,226.223		
		172	4,226.063	CLASS 134		CLASS 155		16 R	4,226.223		
		172	4,226.063	CLASS 135		CLASS 156		16 R	4,226.223		
		172	4,226.063	CLASS 136		CLASS 157		16 R	4,226.223		
		172	4,226.063	CLASS 137		CLASS 158		16 R	4,226.223		
		172	4,226.063	CLASS 138		CLASS 159		16 R	4,226.223		
		172	4,226.063	CLASS 139		CLASS 160		16 R	4,226.223		
		172	4,226.063	CLASS 140		CLASS 161		16 R	4,226.223		
		172	4,226.063	CLASS 141		CLASS 162		16 R	4,226.223		
		172	4,226.063	CLASS 142		CLASS 163		16 R	4,226.223		
		172	4,226.063	CLASS 143		CLASS 164		16 R	4,226.223		
		172	4,226.063	CLASS 144		CLASS 165		16 R	4,226.223		
		172	4,226.063	CLASS 145		CLASS 166		16 R	4,226.223		
		172	4,226.063	CLASS 146		CLASS 167		16 R	4,226.223		
		172	4,226.063	CLASS 147		CLASS 168		16 R	4,226.223		
		172	4,226.063	CLASS 148		CLASS 169		16 R	4,226.223		
		172	4,226.063	CLASS 149		CLASS 170		16 R	4,226.223		
		172	4,226.063	CLASS 150		CLASS 171		16 R	4,226.223		
		172	4,226.063	CLASS 151		CLASS 172		16 R	4,226.223		
		172	4,226.063	CLASS 152		CLASS 173		16 R	4,226.223		
		172	4,226.063	CLASS 153		CLASS 174		16 R	4,226.223		
		172	4,226.063	CLASS 154		CLASS 175		16 R	4,226.223		
		172	4,226.063	CLASS 155		CLASS 176		16 R	4,226.223		
		172	4,226.063	CLASS 156		CLASS 177		16 R	4,226.223		
		172	4,226.063	CLASS 157		CLASS 178		16 R	4,226.223		
		172	4,226.063	CLASS 158		CLASS 179		16 R	4,226.223		
		172	4,226.063	CLASS 159		CLASS 180		16 R	4,226.223		
		172	4,226.063	CLASS 160		CLASS 181		16 R	4,226.223		

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449	4.226.278	296	4.227.060	45 P	4.226.349	63.2	4.226.735	CLASS 267	CLASS 301
CLASS 165		CLASS 202		247	4.226.350	135	4.226.736	64 B	4.226.408
1	4.226.279	138	4.226.677	318	4.226.354	182	4.226.737	CLASS 269	CLASS 303
69	4.226.280	161	4.226.678	325	4.226.351	188.3 CL	4.226.738	41	4.226.409
80 A	4.226.281	248	4.226.679	CLASS 225		389 R	4.226.739	CLASS 270	24 C
105	4.226.282	CLASS 204		100	4.226.352	429 B	4.226.741	61 F	4.226.410
114	4.226.283	CLASS 204		CLASS 226		431 C	4.226.742	CLASS 272	CLASS 307
CLASS 166		28	4.226.680	74	4.226.353	453	4.226.743	55	4.227.094
64	4.226.284	38 ST	4.226.681	CLASS 229		522 R	4.226.744	68	4.227.095
65 M	4.226.285	55 R	4.226.682	1.5 H	4.226.355	2 B	4.226.401	70.4	4.226.412
85	4.226.286	101	4.226.683	7 S	4.226.356	30	4.226.402	117	4.226.414
CLASS 173		105 R	4.226.684	44 R	4.226.358	273	4.226.403	130	4.226.415
126	4.226.287	129 55	4.226.685	CLASS 233		335	4.226.405	CLASS 273	CLASS 308
CLASS 174		180 P	4.226.687	24	4.226.359	359	4.226.404	1.5 A	4.226.416
7	4.227.034	188	4.226.689	CLASS 235		43 R	4.226.417	75	4.226.418
15 BH	4.227.035	190	4.226.690	92 CA	4.227.072	260	4.226.419	201	4.226.484
16 HS	4.227.036	192 E	4.226.691	92 SB	4.227.071	269	4.226.420	207 R	4.226.485
35 MS	4.227.037	195 C	4.226.693	CLASS 237		275	4.226.421	CLASS 310	CLASS 312
42	4.227.038	195 S	4.226.692	54	4.226.363	37	4.226.426	13	4.227.100
68.5	4.227.039	196	4.226.694	63	4.226.364	80	4.226.427	49 R	4.227.101
87	4.227.040	231	4.226.695	CLASS 239		94	4.226.428	52	4.227.102
117 F	4.227.041	290 R	4.226.696	112 R	4.226.368	96.2	4.226.429	71	4.227.103
120 SR	4.227.042	298	4.226.697	CLASS 241		139	4.226.430	75 R	4.227.104
151	4.227.043	CLASS 206		327	4.226.367	165	4.226.432	153	4.227.105
CLASS 175		320	4.226.327	542	4.226.368	212 F	4.226.432	184	4.227.106
62	4.226.288	364	4.226.328	CLASS 242		CLASS 274		198	4.227.107
297	4.226.289	372	4.226.329	18 G	4.226.378	9 B	4.226.424	214	4.227.108
320	4.226.290	620	4.226.330	47.01	4.226.379	15 R	4.226.425	258	4.227.109
325	4.226.291	CLASS 208		55	4.226.380	CLASS 277		358	4.227.111
CLASS 176		8 R	4.226.698	71.8	4.226.381	47.21	4.226.434	CLASS 313	CLASS 315
19 R	4.226.675	11 R	4.226.699	74	4.226.382	283	4.226.435	21	4.226.486
38	4.226.676	48 AA	4.226.700	77	4.226.383	404	4.226.436	42	4.226.487
CLASS 178		121	4.226.701	84.42	4.226.384	405 R	4.226.437	257 R	4.226.488
19	4.227.044	188	4.226.702	107.4 R	4.226.385	477	4.226.438	296	4.226.489
66 I	4.227.045	CLASS 209		192	4.226.386	628	4.226.439	331	4.226.490
CLASS 179		127 B	4.226.703	212	4.226.387	660	4.226.440	CLASS 314	CLASS 316
1 D	4.227.048	138	4.226.704	CLASS 244		718	4.226.441	13 R	4.227.117
1 E	4.227.047	164	4.226.705	155 R	4.226.388	CLASS 282		101	4.227.118
1 GA	4.227.050	170	4.226.706	CLASS 248		27.5	4.226.442	151	4.227.119
1 M	4.227.049	211	4.226.707	96	4.226.389	CLASS 283		248	4.227.120
1 SD	4.227.046	315	4.226.708	124	4.226.390	2	4.226.443	367	4.227.121
5 P	4.227.052	315	4.226.709	176	4.226.391	CLASS 285		368	4.227.122
6 R	4.227.053	193	4.226.716	178	4.226.392	21	4.226.444	397	4.227.123
16 EA	4.227.054	195.1	4.226.717	205 R	4.226.393	39	4.226.445	408	4.227.124
84 VF	4.227.055	219	4.226.718	225	4.226.394	316	4.226.446	411	4.227.125
CLASS 180		220	4.226.719	225	4.226.395	381	4.226.448	CLASS 318	CLASS 320
6.5	4.226.292	222	4.226.720	231	4.226.396	382.2	4.226.449	55	4.227.126
9.5	4.226.293	225	4.226.721	231	4.226.397	CLASS 290		317	4.227.127
54 B	4.226.294	287	4.226.722	231	4.226.398	1 C	4.227.092	325	4.227.128
219	4.226.296	332	4.226.723	231	4.226.399	40 R	4.227.093	331	4.227.129
335	4.226.295	376	4.226.724	231	4.226.400	CLASS 292		338	4.227.130
CLASS 181		400	4.226.725	231	4.226.401	59	4.226.450	467	4.227.131
213	4.226.297	449.5	4.226.726	231	4.226.402	169.21	4.226.451	549	4.227.132
226	4.226.298	512 M	4.226.727	231	4.226.403	175	4.226.452	616	4.227.133
284	4.226.299	691	4.226.728	231	4.226.404	268	4.226.453	685	4.227.134
CLASS 182		710	4.226.729	231	4.226.405	336.5	4.226.454	696	4.227.135
2	4.226.300	723	4.226.730	231	4.226.406	345	4.226.455	701	4.227.136
155	4.226.301	783	4.226.731	231	4.226.407	CLASS 294		801	4.227.137
178	4.226.302	CLASS 212		231	4.226.408	1 B	4.226.456	802	4.227.138
CLASS 188		96	4.226.389	231	4.226.409	15	4.226.457	803	4.227.139
1 B	4.226.303	124	4.226.390	231	4.226.410	88	4.226.458	CLASS 320	CLASS 322
18 A	4.226.304	176	4.226.391	231	4.226.411	99 R	4.226.459	2	4.227.140
65.2	4.226.305	178	4.226.392	231	4.226.412	CLASS 296		3	4.227.142
170	4.226.306	205 R	4.226.393	231	4.226.413	37.14	4.226.461	48	4.227.143
196 V	4.226.307	225.1	4.226.394	231	4.226.414	37.7	4.226.462	121	4.227.144
218 A	4.226.308	263	4.226.395	231	4.226.415	68	4.226.463	51	4.227.145
CLASS 192		268	4.226.396	231	4.226.416	78.1	4.226.464	72	4.227.146
3.31	4.226.309	274	4.226.397	231	4.226.417	153	4.226.465	115	4.227.148
6 R	4.226.310	274	4.226.398	231	4.226.418	182	4.226.466	158 P	4.227.149
8 R	4.226.311	274	4.226.399	231	4.226.419	190	4.226.467	175	4.227.150
14	4.226.312	274	4.226.400	231	4.226.420	CLASS 297		448	4.227.151
18 A	4.226.313	274	4.226.401	231	4.226.421	5	4.226.468	CLASS 324	CLASS 326
18 R	4.226.314	274	4.226.402	231	4.226.422	84	4.226.469	72	4.227.147
38	4.226.315	274	4.226.403	231	4.226.423	85	4.226.470	115	4.227.148
56 R	4.226.316	274	4.226.404	231	4.226.424	108	4.226.471	175	4.227.150
64	4.226.317	274	4.226.405	231	4.226.425	118	4.226.472	448	4.227.151
85 CA	4.226.318	274	4.226.406	231	4.226.426	270	4.226.473	CLASS 328	CLASS 330
105 CD	4.226.320	274	4.226.407	231	4.226.427	316	4.226.474	59	4.227.153
110 B	4.226.321	274	4.226.408	231	4.226.428	484	4.226.475	141	4.227.154
135	4.226.322	274	4.226.409	231	4.226.429	CLASS 299		11	4.227.155
CLASS 194		274	4.226.410	231	4.226.430	13	4.226.476	126	4.227.156
100 A	4.226.323	274	4.226.411	231	4.226.431	56	4.226.477	265	4.227.157
CLASS 196		274	4.226.412	231	4.226.432	CLASS 300		CLASS 330	
405	4.226.324	274	4.226.413	231	4.226.433	CLASS 301		CLASS 331	
493	4.226.325	274	4.226.414	231	4.226.434	CLASS 302		CLASS 332	
758	4.226.326	274	4.226.415	231	4.226.435	CLASS 303		CLASS 333	
CLASS 200		274	4.226.416	231	4.226.436	CLASS 304		CLASS 334	
44	4.227.056	274	4.226.417	231	4.226.437	CLASS 305		CLASS 335	
84 C	4.227.057	274	4.226.418	231	4.226.438	CLASS 306		CLASS 336	
151 G	4.227.059	274	4.226.419	231	4.226.439	CLASS 307		CLASS 337	
151 J	4.227.058	274	4.226.420	231	4.226.440	CLASS 308		CLASS 338	

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CLASS 331	75	4.226.517	159	4.226.543	12	4.226.847	126	4.226.923	CLASS 520		
2	4.227.158	79	4.226.518	19	4.226.848	126	4.226.924	74	4.226.967		
94.5 P	4.227.159	174	4.226.519	CLASS 368	161	4.226.849	161	4.226.925	91	4.226.968	
CLASS 333	271	195	4.226.520	66	4.226.081	47	4.226.850	252	4.226.926	91	4.226.969
18	4.227.160	271	4.226.521	285	4.226.082	53	4.226.851	CLASS 430	128	4.226.970	
CLASS 335	1	4.226.522	CLASS 355	4	4.227.075	59	4.226.852	14	4.226.927	162	4.226.971
16	4.227.161	4.226.523	110	4.227.248	62	4.226.853	57	4.226.928	168	4.226.972	
202	4.227.162	4.226.524	CLASS 375	2	4.227.253	91	4.226.854	126	4.226.929	481	4.226.973
205	4.227.163	4.226.525	13	4.227.152	94	4.226.855	302	4.226.930	483	4.226.974	
230	4.227.164	4.226.526	34	4.227.249	177	4.226.856	312	4.226.931	498	4.226.975	
CLASS 336	53	4.226.527	37	4.227.250	195	4.226.857	320	4.226.932	CLASS 536		
20	4.227.165	4.226.528	110	4.227.251	200	4.226.858	443	4.226.933	1	4.226.977	
229	4.227.166	CLASS 356	113	4.227.252	240	4.226.859	240	4.226.934	17 R	4.226.978	
CLASS 337	5	4.226.529	CLASS 400	124	4.226.544	243	4.226.860	243	4.226.935	66	4.226.979
161	4.227.167	4.226.530	124	4.226.545	244	4.226.861	246	4.226.936	101	4.226.980	
182	4.227.168	4.226.531	144.2	4.226.546	246	4.226.862	248	4.226.937	113	4.226.981	
204	4.227.169	4.226.532	613	4.226.547	248	4.226.863	248	4.226.938	CLASS 542		
CLASS 338	367	4.226.533	CLASS 401	188 R	4.226.548	248	4.226.864	248	4.226.939	426	4.226.984
33	4.227.171	4.226.534	CLASS 403	92	4.226.549	250	4.226.865	250	4.226.940	426	4.226.985
123	4.227.172	4.226.535	157	4.226.550	258	4.226.866	263	4.226.941	CLASS 544		
CLASS 339	445	4.226.536	219	4.226.551	263	4.226.867	269	4.226.942	16	4.226.986	
17 CF	4.226.492	4.226.537	CLASS 357	219	4.226.551	269	4.226.868	269	4.226.943	64	4.226.987
17 LM	4.226.491	4.226.538	CLASS 404	92	4.226.552	272	4.226.869	272	4.226.944	176	4.226.988
66 M	4.226.493	4.226.539	CLASS 405	106	4.226.553	273 P	4.226.870	273 P	4.226.945	198	4.226.989
103 R	4.226.494	4.226.540	CLASS 406	195	4.226.554	273 R	4.226.871	273 R	4.226.946	212	4.226.990
122 R	4.226.495	4.226.541	87	Re 30.410	278	4.226.872	278	4.226.947	221	4.226.991	
176 MP	4.226.496	4.226.542	101	4.226.560	283	4.226.873	283	4.226.948	234	4.226.992	
184 M	4.226.497	4.226.543	232	4.226.561	285	4.226.874	285	4.226.949	237	4.226.993	
205	4.226.498	4.226.544	233	4.226.562	111	4.226.875	111	4.226.950	251	4.226.994	
258 R	4.226.499	4.226.545	CLASS 414	10	4.226.563	186	4.226.876	186	4.226.951	321	4.226.995
CLASS 340	59	4.227.173	CLASS 417	63	4.226.571	218	4.226.877	218	4.226.952	334	4.226.996
81 R	4.227.174	4.227.175	CLASS 418	101	4.226.572	504	4.226.878	504	4.226.953	89	4.226.997
146.2	4.227.175	4.227.176	CLASS 419	232	4.226.573	36	4.226.879	36	4.226.954	157	4.226.998
146.3 R	4.227.176	4.227.177	CLASS 420	423 A	4.226.574	92	4.226.880	92	4.226.955	202	4.226.999
147 LP	4.227.177	4.227.178	CLASS 421	123	4.226.575	92	4.226.881	92	4.226.956	222	4.227.000
147 R	4.227.178	4.227.179	CLASS 422	143	4.226.576	101	4.226.882	101	4.226.957	345	4.227.001
166 R	4.227.180	4.227.181	CLASS 423	41	4.226.577	101	4.226.883	101	4.226.958	CLASS 546	
167 R	4.227.181	4.227.182	CLASS 424	118	4.226.578	228	4.226.884	228	4.226.959	89	4.226.996
347 AD	4.227.183	4.227.184	CLASS 425	111	4.226.579	385.5	4.226.885	385.5	4.226.960	157	4.226.997
347 CC	4.227.186	4.227.187	CLASS 426	7	4.226.902	34	4.226.886	34	4.226.961	202	4.226.998
347 DD	4.227.188	4.227.189	CLASS 427	111	4.226.917	39	4.226.887	39	4.226.962	222	4.226.999
347 NT	4.227.189	4.227.190	CLASS 428	111	4.226.917	101	4.226.888	101	4.226.963	345	4.227.000
347 P	4.227.187	4.227.191	CLASS 429	111	4.226.917	101	4.226.889	101	4.226.964	CLASS 548	
566	4.227.188	4.227.192	CLASS 430	111	4.226.917	101	4.226.890	101	4.226.965	216	4.227.002
573	4.227.189	4.227.193	CLASS 431	111	4.226.917	101	4.226.891	101	4.226.966	216	4.227.003
573	4.227.190	4.227.194	CLASS 432	111	4.226.917	101	4.226.892	101	4.226.967	216	4.227.004
628	4.227.191	4.227.195	CLASS 433	111	4.226.917	101	4.226.893	101	4.226.968	216	4.227.005
765	4.227.192	4.227.196	CLASS 434	111	4.226.917	101	4.226.894	101	4.226.969	216	4.227.006
784	4.227.193	4.227.197	CLASS 435	111	4.226.917	101	4.226.895	101	4.226.970	216	4.227.007
870.37	4.227.182	4.227.198	CLASS 436	111	4.226.917	101	4.226.896	101	4.226.971	216	4.227.008
CLASS 343	128	4.227.199	CLASS 437	111	4.226.917	101	4.226.897	101	4.226.972	216	4.227.009
5 CM	4.227.194	4.227.200	CLASS 438	111	4.226.917	101	4.226.898	101	4.226.973	216	4.227.010
17.1 R	4.227.195	4.227.201	CLASS 439	111	4.226.917	101	4.226.899	101	4.226.974	216	4.227.011
100 CL	4.227.196	4.227.202	CLASS 440	111	4.226.917	101	4.226.900	101	4.226.975	216	4.227.012
878	4.227.197	4.227.203	CLASS 441	111	4.226.917	101	4.226.901	101	4.226.976	216	4.227.013
CLASS 346	152	4.227.204	CLASS 442	111	4.226.917	101	4.226.902	101	4.226.977	216	4.227.014
1.1	4.227.198	4.227.205	CLASS 443	111	4.226.917	101	4.226.903	101	4.226.978	216	4.227.015
75	4.227.199	4.227.206	CLASS 444	111	4.226.917	101	4.226.904	101	4.226.979	216	4.227.016
CLASS 380	225	4.227.207	CLASS 445	111	4.226.917	101	4.226.905	101	4.226.980	216	4.227.017
6.1	4.226.500	4.227.208	CLASS 446	111	4.226.917	101	4.226.906	101	4.226.981	216	4.227.018
55	4.226.501	4.227.209	CLASS 447	111	4.226.917	101	4.226.907	101	4.226.982	216	4.227.019
83	4.226.502	4.227.210	CLASS 448	111	4.226.917	101	4.226.908	101	4.226.983	216	4.227.020
87	4.226.503	4.227.211	CLASS 449	111	4.226.917	101	4.226.909	101	4.226.984	216	4.227.021
96.23	4.226.504	4.227.212	CLASS 450	111	4.226.917	101	4.226.910	101	4.226.985	216	4.227.022
252	4.226.505	4.227.213	CLASS 451	111	4.226.917	101	4.226.911	101	4.226.986	216	4.227.023
292	4.226.506	4.227.214	CLASS 452	111	4.226.917	101	4.226.912	101	4.226.987	216	4.227.024
295	4.226.507	4.227.215	CLASS 453	111	4.226.917	101	4.226.913	101	4.226.988	216	4.227.025
319	4.226.508	4.227.216	CLASS 454	111	4.226.917	101	4.226.914	101	4.226.989	216	4.227.026
343	4.226.509	4.227.217	CLASS 455	111	4.226.917	101	4.226.915	101	4.226.990	216	4.227.027
CLASS 352	132	4.227.218	CLASS 456	111	4.226.917	101	4.226.916	101	4.226.991	216	4.227.028
31	4.226.510	4.227.219	CLASS 457	111	4.226.917	101	4.226.917	101	4.226.992	216	4.227.029
72	4.226.511	4.227.220	CLASS 458	111	4.226.917	101	4.226.918	101	4.226.993	216	4.227.030
115	4.226.512	4.227.221	CLASS 459	111	4.226.917	101	4.226.919	101	4.226.994	216	4.227.031
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1	4.226.513	4.227.223	CLASS 461	111	4.226.917	101	4.226.921	101	4.226.996	216	4.227.033
7	4.226.514	4.227.224	CLASS 462	111	4.226.917	101	4.226.922	101	4.226.997	216	4.227.034
21	4.226.515	4.227.225	CLASS 463	111	4.226.917	101	4.226.923	101	4.226.998	216	4.227.035
60 E	4.226.516	4.227.226	CLASS 464	111	4.226.917	101	4.226.924	101	4.226.999	216	4.227.036

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	322	257,186		257,205		26	257,224		172	257,243		257,261			257,280	
	329	257,187	107	257,206		159	257,225			257,244		257,262			257,281	
	378.2	257,188	110	257,207		191	257,226			257,245	D19—	26	127			
	400	257,189	128	257,208		193	257,227			257,246		257,264	153		257,282	
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	4226.259	4226.300	4227.174	4226.720	4226.773	4226.490
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	4226.075	4226.896	4227.170	4226.393	4226.033	4226.402
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	4226.226	4227.070	4226.349	4226.492	4226.275	4226.519
	4226.231	4227.085	4226.353	4226.560	4226.330	4226.549
	4226.251	4227.116	4226.360	4226.625	4226.383	4226.553
	4226.256	4227.126	4226.463	4226.711	4226.873	4226.622
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4,227,176		4,226,739		4,227,147		4,226,703		4,226,104		4,226,370
4,227,177		4,226,957		4,227,154		4,226,715		4,226,117		4,226,404
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee.....	\$85.00
Search fee.....	300.00
Basic fee (first 30 pages).....	190.00
Basic fee supplement (each sheet over 30).....	3.50
Designation fee.....	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

June 17, 1980.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Nov. 3, 1980:

Ansher, Harold, 11708 Fulham St., Silver Spring, Md. 20902
Ansher, Norton, 18103 Middlevale Lane, Silver Spring, Md. 20904

Arnold, Donald J., 2811 Sudberry Lane, Bowie, Md. 20715
Carlson, Walter L., 3519 Kirkwood Dr., Fairfax, Va. 22031

Champion, Marvin A., 1600 S. Eads St., #836-N, Arlington, Va. 22202

Drummond, Douglas J., Route 1, Box 389, Berkeley Springs, W. Va. 25411

Ferber, David, Zion Canyon Campground, P.O. Box 99, Springdale, Utah 84767

Jones, DeWalden W., Sr., 1810-42nd St., S.E., Washington, D.C. 20029

Kelmachter, Barry L., 130 Brooklawn Circle, New Haven, Conn. 06511

Latham, R. Brant, Suite 2900, 2 Bloor St. East, Toronto, Canada

Levine, Herbert, 10803 Calvalier Dr., Silver Spring, Md. 20901

Lipman, Steven E., 5223 Lewisham Rd., Fairfax, Va. 22030
Nelson, Loren D., 22288 Blue Jay Rd., Morrison, Colo. 80465

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,767,054, Re. S.N. 170,961, Filed Jul. 21, 1980, Cl. 210/232, SELF-SEALING FILTER TUBE, Roger M. Farrow, et al., Owner of Record: *Whatman Reeve Angel Limited, Kent, England*, Attorney or Agent: Frank P. Porcelli, Ex. Gp.: 176

3,907,884, Re. S.N. 170,337, Filed Jul. 21, 1980, Cl. 562/609, FORMIC ACID SYNTHESIS BY LOWER ALKYL FORMATE HYDROLYSIS, James B. Lynn, et al., Owner of Record: *Bethlehem Steel Corporation, Bethlehem, Pa.*, Attorney or Agent: Joseph J. O'Keefe, Ex. Gp.: 126

3,909,598, Re. S.N. 170,932, Filed Jul. 21, 1980, Cl. 236/364, AUTOMATIC VOLATILITY COMPUTER, Michael John Collins, et al., Owner of Record: *Cem Corporation, Indian Trail, N.C.*, Attorney or Agent: Joell T. Turner, Ex. Gp.: 236

3,968,997, Re. S.N. 170,433, Filed Jul. 21, 1980, Cl. 406/71, FEED MATERIAL HANDLING APPARATUS, Aquila D. Mast, et al., Owner of Record: *Sperry Rand Corporation, New Holland, Pa.*, Attorney or Agent: Frank A. Seemar, et al., Ex. Gp.: 313

4,005,252, Re. S.N. 164,796, Filed Jun. 30, 1980, Cl. 13/33, APPARATUS FOR GAS COLLECTION IN OPEN ELECTRIC SMELTING FURNACES, Harald Krogsrud, Owner of Record: *Elkem-Spigerverket A/S, Oslo, Norway*, Attorney or Agent: William D. Lucas, Ex. Gp.: 213

4,071,312, Re. S.N. 170,933, Filed Jul. 21, 1980, Cl. 8/7, GREEN-YELLOW TO ORANGE MONOAZO PAPER DYES, John Blackwell, Owner of Record: *Mobay Chemical Corporation, Pittsburgh, Pa.*, Attorney or Agent: Robert E. Black, Ex. Gp.: 144

4,083,686, Re. S.N. 169,391, Filed Jul. 16, 1980, Cl. 8/41 R, UNIFORMLY DYED WATER-SWELLABLE CELLULOSE FIBERS, Peter Dimroth, et al., Owner of Record: *BASF Aktiengesellschaft, Rheinland-Pfalz, Germany*, Attorney or Agent: Herbert B. Keil, et al., Ex. Gp.: 144

4,095,343, Re. S.N. 170,279, Filed Jul. 21, 1980, Cl. 33/11E, BUILDING LAYOUT TEMPLATES, J. C. McPhail, Owner of Record: *Inventor*, Attorney or Agent: B. Franklin Griffin, Jr., et al., Ex. Gp.: 243

4,100,502, Re. S.N. 168,777, Filed Jul. 11, 1980, Cl. 330/264, CLASS B FET AMPLIFIER CIRCUIT, Osamu Yamashiro, Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Paul M. Craig, Jr., et al., Ex. Gp.: 252

4,106,819, Re. S.N. 171,603, Filed Jul. 23, 1980, Cl. 303/038, EMERGENCY PORTION FOR A BRAKE CONTROL VALVE, James E. Hart, Owner of Record: *American Standard, Inc., Wilmerding, Pa.*, Attorney or Agent: R. W. McIntire, Jr., et al., Ex. Gp.: 315

4,138,807, Re. S.N. 164,155, Filed Jun. 30, 1980, Cl. 52/309.3, GLAZING STRIP AND METHOD, Martin Trachtenburg, et al., Owner of Record: *Inventors*, Attorney or Agent: John C. Hilton, Ex. Gp.: 354

4,170,929, Re. S.N. 168,362, Filed Jul. 10, 1980, Cl. 93/53 SD., APPARATUS FOR SETTING UP FOLDED CAR-TONS, James E. McDowell, Owner of Record: *Inventor*, Attorney or Agent: Richard H. Stern, Ex. Gp.: 324

4,184,430, Re. S.N. 166,646, Filed Jul. 7, 1980, Cl. 102/24 R, METHOD AND APPARATUS FOR SEVERING TUBING, Wayne E. Mock, Owner of Record: *Jet Research Center, Inc., Arlington, Tex.*, Attorney or Agent: John H. Tregoning, et al., Ex. Gp.: 221

OCTOBER 14, 1980

U. S. PATENT AND TRADEMARK OFFICE

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4,184,519, Re. S.N. 170,403, Filed Jul. 21, 1980, Cl. 139/425 A, FABRICS FOR PAPERMAKING MACHINES, Robert L. McDonald, et al., Owner of Record: *Wisconsin Wires, Inc., Appleton, Wis.*, Attorney or Agent: Frank J. Benasutti, et al., Ex. Gp.: 353

4,194,709, Re. S.N. 162,365, Filed Jun. 23, 1980, Cl. 244/155 R, MECHANISM FOR RELEASABLY ATTACHING AN OBJECT TO A KITE, James M. Segerson, et al., Owner of Record: *Inventors*, Attorney or Agent: John R. Walker, III, et al., Ex. Gp.: 315

4,194,409, Re. S.N. 169,226, Filed Jul. 15, 1980, Cl. 74/217 B, FRONT DERAILLEUR FOR A BICYCLE PROVIDED WITH A SWINGINGLY MOVABLE CHAIN GUIDE, Masashi Nagano, Owner of Record: *Shimano Industrial Company, Limited, Osaka, Japan*, Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 352

4,201,274, Re. S.N. 170,140, Filed Jul. 18, 1980, Cl. 181/156, SYMMETRICAL SPEAKER HAVING STRUCTURAL REINFORCING PORTS, Christopher Carlton, Owner of Record: *Inventor*, Attorney or Agent: Jack E. Dominik, Ex. Gp.: 211

PATENT NOTICES

Certificates of Correction for the Week of Oct. 14, 1980

3,936,966	4,166,187	4,199,545	4,208,461
3,987,859	4,166,912	4,200,198	4,208,468
3,993,631	4,172,093	4,200,380	4,208,498
4,046,075	4,172,598	4,201,224	4,208,586
4,055,636	4,174,431	4,201,464	4,208,581
4,076,961	4,175,135	4,202,215	4,208,559
4,083,306	4,176,219	4,202,282	4,209,160
4,098,992	4,176,577	4,202,328	4,209,563
4,104,500	4,180,166	4,203,099	4,210,104
4,105,789	4,182,927	4,203,950	4,210,330
4,110,289	4,186,537	4,204,514	4,210,475
4,112,685	4,188,343	4,204,851	4,210,739
4,119,567	4,188,797	4,204,979	4,210,978
4,120,543	4,188,904	4,205,065	4,211,015
4,125,156	4,189,096	4,206,247	4,212,240
4,130,591	4,189,387	4,206,979	4,212,718
4,141,859	4,189,972	4,207,070	4,212,740
4,146,482	4,190,568	4,207,556	4,213,001
4,146,499	4,194,814	4,207,730	4,213,421
4,152,773	4,195,102	4,207,835	4,213,743
4,157,433	4,195,569	4,208,009	4,213,924
4,157,582	4,196,324	4,208,076	4,214,016
4,162,583	4,198,343	4,208,197	4,214,469
4,164,041	4,198,386	4,208,272	4,215,698
		4,208,436	4,216,188

Disclaimers

3,994,990.—*Danny R. Foote, Spirit Lake, Iowa. OPTICALLY BRIGHTENED NYLON MONOFILAMENT FISHING LINE.* Patent dated Nov. 30, 1976. Disclaimer filed Aug. 20, 1980, by the assignee, *Berkley & Company, Inc.*
The term of this patent subsequent to November 30, 1993 has been disclaimed.

4,144,742.—*Morris T. Covington and Steven M. Griffin, Houston, Tex. ELECTRONIC FLUID PIPELINE LEAK DETECTOR AND METHOD.* Patent dated Mar. 20, 1979. Disclaimer filed Aug. 25, 1980, by the assignee, *Shaffer Valve Company.*

Hereby enters this disclaimer to claim 3 of said patent.

4,195,565.—*August V. Cordeiro, East Greenwich, R.I. FLUID-OPERATED PRESS.* Patent dated Apr. 1, 1980. Disclaimer filed Aug. 18, 1980, by the assignee, *Electric Terminal Corporation.*

Hereby enters this disclaimer to claims 1 and 5 of said patent.

Dedication

4,147,705.—*Thomas M. Brennan, Old Lyme; Daniel P. Branagan, Pawcatuck; Paul D. Weeks and Donald E. Kuhls, Galea Ferry, Conn. PREPARATION OF GAMMA-PYRONES.* Patent dated Apr. 3, 1979. Dedication filed Aug. 6, 1980, by the assignee, *Pfizer Inc.*

Hereby dedicates to the Public the entire term of said patent.

Erratum

All reference to Defensive Publication No. T998,011 to Kenneth Harvey of New York for DENTIFRICES appearing in the OFFICIAL GAZETTE of Sept. 2, 1980 should be deleted since the application was not published.

National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

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Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,

Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6-133,767. Aircraft Self-Sealing Fuel Tank and Method of Fabricating. Filed Mar. 25, 1980.

Patent application 6-133,769. All-Flexure Linear Isolation/Suspension System. Filed Mar. 25, 1980.

Patent 4,199,175. Ribbed Flange Modified Seal. Filed Apr. 28, 1978. Patented Apr. 22, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-015,675. Fluidic Controlled Diffusers for Turbopumps. Filed Feb. 27, 1979.

Patent application 6-095,860. Nitrile Rubber Adhesion. Filed Nov. 19, 1979.

Patent application 6-101,292. Teletype Loop Switching Matrix. Filed Dec. 7, 1979.

Patent application 6-117,323. Universal Firing Device. Filed Jan. 31, 1979.

Patent application 6-117,702. Two Stage Parachute Fuse Recovery System. Filed Feb. 1, 1980.

Patent application 6-117,708. An Improved Self-Powered Vehicle Detection System. Filed Feb. 1, 1980.

Patent application 6-121,948. Transmissive and Reflective Liquid Crystal Display. Filed Feb. 15, 1980.

Patent application 6-122,388. Cooling Apparatus for Electronic Modules. Filed Feb. 19, 1980.

Patent application 6-126,269. The Recrystallization of Hexanitrostilbene From Nitric Acid and Water. Filed Mar. 3, 1980.

Patent application 6-129,061. Sulfur Dioxide Detector. Filed Mar. 10, 1980.

Patent application 6-135,392. Fill Machine. Filed Mar. 31, 1980.

Patent application 6-136,858. Blocking Feed Through for Coaxial Cable. Filed Apr. 3, 1980.

Patent application 6-137,026. Coupling for Quick Attachment to Plate-Like Structure. Filed Apr. 3, 1980.

Patent application 6-137,177. Multi-Mode Microwave Lens Antenna. Filed Apr. 4, 1980.

Patent application 6-137,681. Submarine Rescue Cable Reel. Filed Apr. 7, 1980.

Patent application 6-138,640. Improved Chirp Filters/Signals. Filed Apr. 9, 1980.

Patent application 6-138,950. Fiber Optic Sensors. Filed Apr. 9, 1980.

Patent application 6-139,315. Fiber Optic Light Valve. Filed Apr. 11, 1980.

Patent 4,169,257. Controlling the Directivity of a Circular Array of Acoustic Sensors. Filed Apr. 28, 1978. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,170,904. Single-Axis Disturbance Compensation System. Filed Dec. 12, 1977. Patented Oct. 16, 1979. Not available NTIS.

Patent 4,183,316. Variable Volume Depth Control. Filed Dec. 5, 1977. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,184,078. Pulsed X-Ray Lithography. Filed Aug. 15, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,185,552. Mine Firing Control System. Filed May 16, 1945. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,185,556. Mine Firing System. Filed June 6, 1945. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,185,881. Underwater Cable Cutting Device. Filed Dec. 6, 1951. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,187,290. Carrier and Dispersal Mechanism for a Microorganism Larvicide. Filed Apr. 18, 1978. Patented Feb. 5, 1980. Not available NTIS.

Patent 4,187,549. Double Precision Residue Combiners/Coders. Filed Sept. 5, 1978. Patented Feb. 5, 1980. Not available NTIS.

Patent 4,187,779. Marine Mine. Filed Apr. 19, 1945. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,189,999. Vector Acoustic Mine Mechanism. Filed Mar. 5, 1956. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,190,701. V₃Ga Composite Superconductor. Filed Apr. 6, 1979. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,191,028. Dry Ice, Liquid Pulse Pump Cooling System. Filed June 22, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,192,573. Variable Power Attenuator for Light Beams. Filed Oct. 13, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,193,072. Combination Infrared Radio Fuse. Filed Mar. 13, 1962. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,193,088. Optical Heterodyne System for Imaging in a Dynamic Diffusive Medium. Filed Aug. 2, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,193,130. Fiber Optic Hydrophone for Use as an Underwater Electroacoustic Standard. Filed Sept. 7, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,194,150. Method and Apparatus for Reducing Magnetometer Errors. Filed Sept. 26, 1958. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,244. Angle Sensing System. Filed Aug. 17, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,195,166. Alkanediamide-Linked Polyphthalocyanines Coordinated With SnCl₄. Filed Oct. 23, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,280. Tuned Electrolytic Detector. Filed May 5, 1955. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,361. Variable Frequency Acoustic Filter. Filed Apr. 27, 1956. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,798. Universal Tow Target Adapter. Filed Sept. 15, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,401. Method and Apparatus for Injecting Gas Into a Laser Cavity. Filed Apr. 17, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,870. Banner Towing Adapter. Filed July 18, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,507. Suppressing Pulse Synthesizer. Filed Apr. 7, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,544. Windowed Dual Ground Plane Microstrip Antennas. Filed Sept. 28, 1977. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,198,703. Submarine Simulating Sonar Beacon. Filed May 12, 1960. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,199,006. Pneumatic Valve. Filed Feb. 28, 1978. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,201,952. Gas Laser Aerodynamic Window. Filed Apr. 11, 1978. Patented May 6, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code G-2, Washington, D.C. 20546

Patent application 6-100,611. Mechanical End Joint System for Structural Column Elements. Filed Dec. 5, 1979.

Patent application 6-135,039. An Image Readout Device With Electrically Variable Spatial Resolution. Filed Mar. 28, 1980.

Patent application 6-135,040. Wind Tunnel Supplementary Mach Number Minimum Section Insert. Filed Mar. 28, 1980.

Patent application 6-135,057. Decoupler Pylon: Wing/Store Flutter Suppressor. Filed Mar. 28, 1980.

Patent application 6-136,660. Method for Making Patterns for Resin Matrix Composites. Filed Apr. 2, 1980.

Patent application 6-138,944. Open Ended Ratchet Type Tubing Cutter. Filed Apr. 9, 1980.

Patent 4,192,290. Combined Solar Collector and Energy Storage System. Filed Apr. 28, 1978. Patented Mar. 11, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent application 6-141,676. Microtome With Refrigerant Container for Cooling Paraffin Blocks During Sectioning. Filed Apr. 18, 1980.

Patent application 6-129,982. Steel Wire Pressure Aesthetometer. Filed Mar. 11, 1980.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 738-5580
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
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	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
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New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director.....	10-10-79
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director.....	8-11-79
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director.....	6-7-79
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director.....	11-14-79
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director.....	7-11-79
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director.....	2-4-78
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director.....	3-29-79
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director.....	6-29-79
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director.....	1-22-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluid Material Handling.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director.....	11-9-78
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—C. D. QUARFORTH, Director.....	10-4-78
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director.....	6-3-79
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director.....	8-29-79
Manufacturing Processes; Assembling; Combined Machines; Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director.....	7-3-79
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director.....	4-2-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director.....	3-19-79
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

Expiration of patents: The patents within the range of numbers indicated below expire during August 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,099,837 to 3,102,269, inclusive
Plant Patents..... Numbers 2,271 to 2,276, inclusive

999 OG 15

REISSUES

OCTOBER 14, 1980

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,417

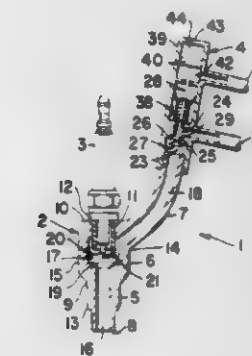
FUEL SAVING APPARATUS FOR MULTIPLE CYLINDER INTERNAL COMBUSTION ENGINES

Earl W. Rand, Jr., 2101 Washington, Kansas City, Mo. 64108
Original No. 4,018,204, dated Apr. 19, 1977, Ser. No. 646,361,
Jan. 2, 1976. Application for reissue Oct. 2, 1978, Ser. No.
947,713

Int. Cl. F02D 9/00

U.S. Cl. 123—198 F

10 Claims



1. A fuel saving apparatus for multiple cylinder spark ignition internal combustion engines having a carburetor filtered air portion, said apparatus comprising:

- a. an elongated tubular body member including an externally threaded first body portion adapted for sealing engagement within an engine cylinder spark plug aperture;
- b. an apertured second body portion being internally threaded and adapted for sealingly receiving and engaging therein a spark plug;
- c. a third body portion disposed adjacent said second body portion and including an aperture therethrough;
- d. said body member including a central longitudinal aperture interconnecting the first, second and third body portions; and
- e. a valve member in said third body portion and adapted to move between an open and a closed condition respectively for opening and closing said third body portion aperture, said valve member having first and second ends; said valve member first end being sealingly attached to said third body portion about the aperture therein; said valve member second end being adapted for connection with said filtered air portion; said valve member, in said open condition causing cylinder intake vacuum to be reduced to the extent that an engine cylinder having connection therewith is rendered temporarily ineffective and engine fuel consumption is thereby reduced.

PLANT PATENTS

GRANTED OCTOBER 14, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing

4,601

SWEET GUM

John D. Siebenthaler, Dayton, Ohio, assignor to The Siebenthaler Company, Dayton, Ohio

Filed Aug. 21, 1978, Ser. No. 936,410

Int. Cl.¹ A01H 5/00

U.S. Cl. Plt.—51

1 Claim

1. A new and distinctive variety of *Liquidamber styraciflua* substantially as herein shown and described characterized particularly in the extent to which the multitude of fall colors are developed randomly throughout the tree and sustained and in the hardness of the tree to survive colder temperatures.

PATENTS

GRANTED OCT. 14, 1980

ERRATA

For CLASS	See PATENT NO.
474-156.....	4,227,422
474-177.....	4,227,423
474-256.....	4,227,424
474-213.....	4,227,425
440-063.....	4,227,480
440-061.....	4,227,481
410-012.....	4,227,734
416-186 R.....	4,227,868
430-323.....	4,227,983
264-321.....	4,228,076
556-422.....	4,228,092
556-482.....	4,228,093
568-379.....	4,228,104
568-325.....	4,228,105
570-197.....	4,228,106
570-134.....	4,228,107
428-288.....	4,228,194
525-058.....	4,228,218
568-563.....	4,228,306
455-012.....	4,228,401
179-001 VL.....	4,228,402
356-004.....	4,228,521

PATENTS

GRANTED OCTOBER 14, 1980

GENERAL AND MECHANICAL

4,227,262

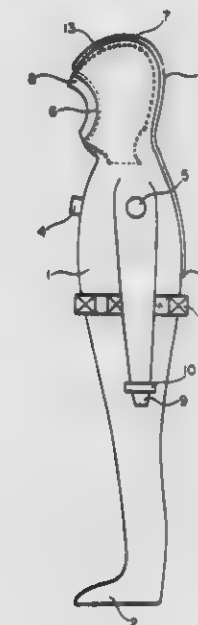
PROTECTIVE SUIT WITH INSULATED HEAD PIECE

Stig G. E. Insulan, Brasted, Sweden, and Jorn Stubbald, Fagstrand, Norway, assignors to Viking-Askim A/S, Norway
Continuation-in-part of Ser. No. 831,557, Sep. 8, 1977, Pat. No. 4,136,402. This application Nov. 14, 1978, Ser. No. 960,599
Claims priority, application Norway, Sep. 9, 1976, 763090
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.² B63C 11/04

U.S. Cl. 2—2.1 R

21 Claims



1. A dry protective water and air/gas-impervious suit adapted to cover the entire body of a wearer except the hands and face,
arranged and constructed to be donned and taken off by the wearer,
comprising
a hood having an opening for the wearer's face;
said hood including in overlapping relationship a water and air/gas-impervious outer layer and
an inner layer,
said layers being sealed to one another at said face opening to define with one another an inflatable clearance surrounding the head of the wearer;
a body part covering the body of the wearer below the neck;
having an upper portion to sealingly surround the neck of the wearer and being sealingly connected to said hood;
said body part being inflatable to provide heat insulation between said body part and the body of the wearer;
means for communicating said inflatable clearance of the hood with the interior of said body part to provide insulation in form of a thermally insulating layer which surrounds the entire body of the wearer except for the hands and face;
a sealable opening in said suit to enable the wearer to don and take off said suit; and
wearer-operated sealing means for sealingly closing said opening in said body part.

4,227,263

REVERSIBLE BASEBALL GLOVE

Israel Zidele, 1303 Ditmas Ave., Brooklyn, N.Y. 11226

Filed Jun. 8, 1979, Ser. No. 46,798

Int. Cl.² A41D 13/10

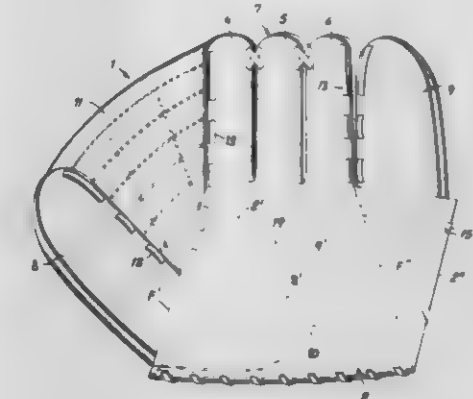
U.S. Cl. 2—19

13 Claims

1. In a baseball glove comprising juxtaposed front and rear pieces of tough flexible sheet material provided with a middle finger stall, two intermediate finger stalls and two outer finger stalls, lacing means for peripherally interconnecting said

pieces, and a web between one of said outer finger stalls and the adjoining intermediate finger stall.

the improvement wherein said outer finger stalls are of symmetrically identical shape and wide enough to accommodate the thumb of a user, said web being selectively



retainable by said lacing means between either of said outer finger stalls and the respectively adjoining intermediate finger stall for enabling use with either hand, said outer finger stalls being attached to said front and rear pieces only by said lacing means.

4,227,264

CONVERTIBLE WOMEN'S ENSEMBLE

Donald Spector, and Anita Burch, both of 380 Mountain Rd., Union City, N.J. 07087

Filed Jul. 26, 1979, Ser. No. 61,012

Int. Cl.² A41D 9/00

U.S. Cl. 2—84

6 Claims



1. A convertible women's ensemble capable of satisfying a range of apparel requirements, said ensemble comprising:

- A. a pair of slacks;
- B. a jacket matching the slacks to define a pants suit, said jacket having arm holes and a removable hood which is convertible into a carrying bag for the slacks; and
- C. a removable liner whose long edges are attachable to the inside of said jacket in a liner mode and to each other in a skirt mode to define a skirt to replace the slacks said liner having zippered slits at positions corresponding to the arm holes of the jacket which slits are open in the liner mode and closed in the skirt mode.

4,227,265

BONE IMPLANT WITH PLASTIC INSERT BETWEEN ELEMENTS OF DIFFERENT MECHANICAL PROPERTIES

Otto Frey, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

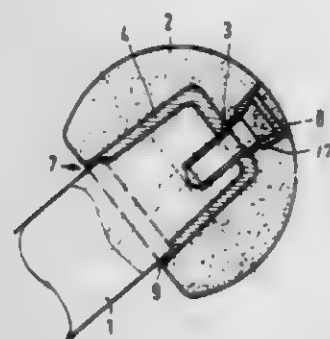
Filed May 23, 1978, Ser. No. 908,688

Claims priority, application Switzerland, May 23, 1977, 6310/77

Int. Cl. A61F 1/03

U.S. Cl. 3-1,913

11 Claims



1. A bone implant construction comprising a pair of elements of different mechanical properties disposed in relative movable relation, said elements being disposed to transfer loading forces therebetween and to define a shaped predetermined gap therebetween with an abrupt transition to a narrowing section at at least one end of said gap, said section extending at least substantially in the direction of said loading forces; and a resiliently distortable removable plastic member confined in said gap to maintain said elements out of contact with each other, said plastic member having a cylindrical portion to surround one element and a narrowed thin-walled extension coaxial with said cylindrical portion and engaged in said narrowing section to inhibit cold plastic creep of said cylindrical portion from said gap at said one end.

4,227,266

GROUND WATER LEVEL CONTROL SYSTEM

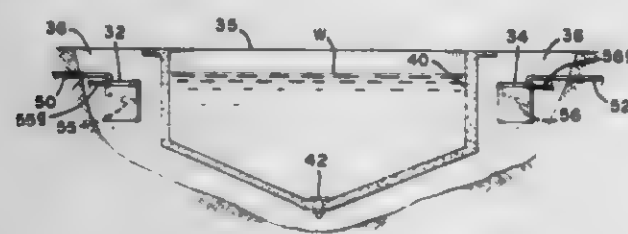
Clayton C. Russell, York, Pa., assignor to Fox Pool Corporation, York, Pa.

Filed Nov. 20, 1978, Ser. No. 962,343

Int. Cl. E04H 3/16; F16L 5/00

U.S. Cl. 4-496

10 Claims



1. A system for controlling ground water in an area which would be disrupted by rising ground water, comprising a water permeable container positioned in said area, a porous substrate contiguous to said container through which ground water freely passes into the container from the area to be controlled, a cover for said container wherein means for detecting the level of ground water in the container and means for evacuating water from the container are mounted, separator means on the lower surface of said cover, said water level detecting means extending through a side of said cover in a horizontal fashion and downwardly through said separator means, said evacuating means being attached to said separator means said means for detecting the level of ground water including water level indicator comprising a float depending into said container to indicate the rise above a predetermined level of ground water in said area, and means remote from said container and

responsive to said indicator to effectively evacuate from said container water which is above the predetermined level in said container.

4,227,267

COVER FOR WATER CLOSET SEAT

Carl L. Robertson, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 945,200, Sep. 25, 1978,

abandoned. This application Jan. 25, 1979, Ser. No. 6,427

Int. Cl. A47K 13/14

U.S. Cl. 4-234

10 Claims



1. A cover for a water closet seat comprising: an annular panel of flexible fabric having an inner peripheral edge and an outer peripheral edge; a band of resilient material mounted around the outer peripheral edge of the panel; a hem channel around the inner peripheral edge of the panel and having an opening thereinto; a channel closure means; a resilient, flexible stiffening member of tubular configuration in the hem channel having a first end positioned immediately adjacent said channel closure means, and a second end positioned immediately adjacent said channel closure means on the opposite side thereof from said first end, said stiffening member having a portion between said first and second ends which bridges across said channel opening; and said channel closure means extending transversely across and blocking the hem channel at one point around its peripheral extent which is spaced from said opening into the channel for preventing said stiffening member from shifting in said hem channel thereby to prevent the inadvertent exiting of either end of said stiffening member through the channel opening.

4,227,268

CONVERTIBLE FURNITURE

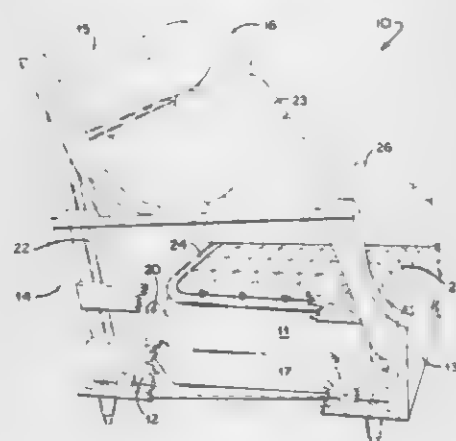
William V. Gerth, 451 Phillip St., Waterloo, Ontario, Canada

Filed Oct. 30, 1978, Ser. No. 956,103

Int. Cl. A47C 17/10

U.S. Cl. 5-13

1 Claim



1. Improvements in convertible furniture comprising in

combination; a frame structure having a pair of end members attached between a front panel and a back frame; a bed assembly comprising:

- a rear section pivotally attached intermediate its length by a pair of pivotable swing links, to a rearward part of an upwardly extending part of a base plate fixed to said end member; said rear section being storable upwardly within a back part of said sofa frame and outwardly and downwardly moveable therefrom to provide when horizontally disposed the inward part of the convertible bed;
- a mid section and a forward section foldable over one another with a mattress member therebetween and storable within said frame below said front panel and being upwardly and outwardly moveable together to provide, when horizontally outfolded a mid part and the outward part of the convertible bed herein, said mid section being pivotally attached to said rear section and pivotally attachable to channel spacer members pivotally attached to said forward section;

support levers pivotally attachable between a forward part of said end members and first brace means, said support levers providing an upward thrust and a forward locking means to said bed assembly when in outfolded position and loaded with human occupants, by having in said position a forwardly disposed position;

said first brace is pivotally attached intermediate its length to said support lever and has a forward end linked intermediate the mid section and a rearward end linked to said rear section by one of said pair of swing levers, to maintain said rear section in an upwardly inclined position within the furniture frame until said mid section and attached forward section are pulled upwardly from out of the cavity formed in the sofa frame by the end members and the front panel, to thereby clear the upper edge of said front panel;

a pair of leg members pivotally attached forwardly of said forward section to maintain the bed assembly in horizontal plane when outfolded and loaded with occupants;

a box-like configuration of link means for locking said legs in an outfolded position when the assembly is outfolded, said box-like configuration serving to maintain the forward section in substantially level position when the assembly is in the stored position, to provide the seat support for the furniture when in use as a sofa;

and a rear section lock assembly for operational use when the bed assembly is in stored posture with said rear section extending upwardly but not substantially backwardly to maintain said mattress thereon and forwardly facing to provide a sofa occupants back support, and wherein the pivot point of the mid section and rear section is below the point of attachment of said pair of swing levers and said base plate, comprising a second brace means pivotally attachable between a point intermediate the length of said support lever and intermediate the one pair of swing levers attached to said base plate to maintain the other of said swing levers in alignment with said rear section, said second brace means providing with said first brace means with its attachment to the other of said swing levers and with the combination of the support lever, a bridge box for locking the rear section upwards to maintain the weight of a seated occupant.

4,227,269

ADJUSTABLE BED

Bruce L. Johnston, Prairie Village, Kans., assignor to Burke, Inc., Kansas City, Kans.

Filed Sep. 1, 1978, Ser. No. 938,950

Int. Cl. A61G 7/14

U.S. Cl. 5-66

1. An adjustable bed comprising:

- (a) a ground engaging, stationary frame;
- (b) a mattress support having a center portion;
- (c) an arm having one end thereof pivotally connected with

- said frame at a first pivot and the other end thereof pivotally connected with said center portion at a second pivot;
- (d) means selectively rotating said arm about said first pivot for raising and lowering said mattress support and adjusting patient height;
- (e) a longitudinally extending motor having one end thereof pivotally connected with said frame and the other end thereof pivotally connected with said center portion at a point spaced apart from said second pivot, whereby motor extension and retraction pivots said center section about said second pivot and tilts said mattress support for adjusting patient inclination;
- (f) said mattress support includes a head section, a center section, and a foot section, each being pivotally interconnected;
- (g) said other end of said arm and said motor each being connected with said center section; and including
- (h) means pivoting said head section with respect to said center section;
- (i) means pivoting said foot section with respect to said center section;
- (j) said longitudinally extending motor, said arm rotating means, said head section providing means, and said foot section pivoting means each includes an electric ball-and-screw motor;



(k) control means connected with said longitudinally extending motor, said arm rotation means, and said foot section pivoting means for preventing said mattress support foot section from being pivoted thereby into engagement with the ground;

(l) said longitudinally extending motor includes a first power conductor activating the same for upward tilting of said mattress support;

(m) said arm rotation means includes a second power conductor activating the same for downward elevation of said mattress support;

(n) said foot section pivoting means includes a third power conductor activating the same for downward pivoting of said foot section with respect to said center section;

(o) said control means comprises:

- (1) first and second level sensing switches electrically connected in said first and second power conductors respectively, and each being mounted on said bed for rotation with raising and lowering of the bed;
- (2) a third level sensing switch electrically connected in said third power conductor and mounted on said foot section for movement therewith; and
- (3) said first, second and third level sensing switches being oriented on said bed for deactivating an associated one of said ball-and-screw motors for preventing inadvertent engagement of the foot section with the ground or the stationary frame.

4,227,270

COMBINED BABY PILLOW CASE AND BOTTLE HOLDER

Rafael R. Rivera, 32-47 68th St., Flushing, N.Y. 11377

Filed Apr. 26, 1979, Ser. No. 33,750

Int. Cl. A45C 9/00

U.S. Cl. 5-436

3 Claims

1. A combined baby pillow case and bottle holder assembly, comprising in combination a pillow case member, comprised of

a rectangular upper and lower fabric panels secured together along three side edges thereof, a pocket between said panels accessible from an opening along a fourth side edge of said pillow case, said fourth side edge forming said opening having a flap extending from an upper one of said panels, a pillow inserted through said opening into said pocket, and said upper



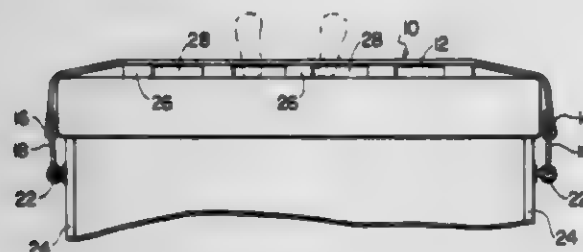
panel having said flap extending therefrom also having a small rectangular fabric panel stitched upon an upper side thereof, said small rectangular fabric panel being stitched along three side edges thereof to said upper panel to form a pocket therebetween, a fourth side edge of said small panel being unstitched to said upper panel, and forming an opening for said pocket for insertion of a baby bottle therein.

4,227,271

FOOT SUPPORTING STRAP FOR HOSPITAL BED
Thomas S. Kulka, 2108 Payne Ave., Cleveland, Ohio 44114
Filed Aug. 9, 1979, Ser. No. 65,151
Int. Cl.² A47C 21/00

U.S. Cl. 5-443

8 Claims



1. A foot supporting strap for beds comprising:

- (a) a strap having a length longer than the width of the bed whereby the ends of the strap extend downwardly over the sides of the bed;
- (b) fastening means secured respectively to the ends of said strap and the frame of said bed for detachably mounting said strap to said frame;
- (c) means on the underside of said strap for spacing said strap from the mattress of the bed at two or more longitudinally spaced locations whereby in the regions adjacent said spacing means there is formed a space into which the feet of the patient can at least partially extend, said strap providing a brace against which the feet of the patient can push to permit movement of the patient to a more comfortable position.

4,227,272

SUPPORTIVE FRAMEWORK FOR A BOAT
William E. Masters, P.O. Box 64, Liberty, S.C. 29657
Filed Jan. 22, 1979, Ser. No. 5,494
Int. Cl.¹ B63B 3/00, 5/00

U.S. Cl. 9-6 R

6 Claims



1. In a boat of the type having a hull constructed from a

generally flexible plastic skin material and a supportive framework for supporting and maintaining the configuration of said hull, wherein said framework comprises:

- longitudinally extending frame means carried centrally within said hull;
- said longitudinally extending frame means including an elongated bulbous bottom frame element which includes an outwardly bulging bottom wall presenting a convexly curved exterior surface to the skin material of a bottom portion of said hull; and
- said bottom frame element being constructed of a sufficiently flexible material enabling said convexly curved bottom wall to flex inwardly compressing said bottom frame element upon impact of said bottom portion of said hull skin with the water or obstacles therein to distribute and relieve stress concentration on said hull effectively preventing over-flexing of said skin material and hull disfiguration (stress produced thereby).

4,227,273

AQUATIC SWIMMING AID

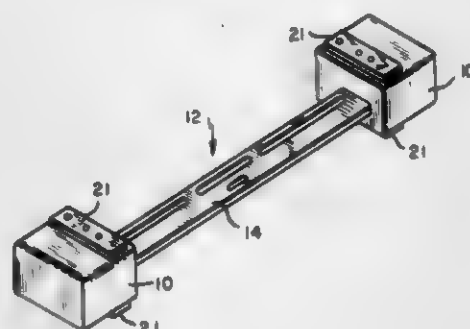
Benjamin A. Lucciola, R.R. 1, Box 3056 Sunrise Lake, Milford, Pa. 18337

Filed Apr. 26, 1978, Ser. No. 900,266

Int. Cl.³ A63B 31/02

U.S. Cl. 9-307

2 Claims



1. An aquatic swimming aid comprising spaced-apart floats, a rigid, elongate support structure and means connecting the ends of the support structure to the floats, said rigid, elongate support structure comprising a relatively long, flat wooden board wider than thick, said board having along one edge longitudinally-spaced slots, three in number, arranged symmetrically, two long slots and intermediate the long slots a short slot and at the other edge a slot shorter than the intermediate slot at the one edge, said slots being parallel to their respective edges, said means attaching the ends of the support structure to the floats comprising in combination openings in the confronting faces of the floats for snugly receiving the ends of the board partway but not all the way through, spaced through holes perpendicular to the openings, at least two of such holes passing through the openings, said board having in the end portions occupying the openings pairs of holes corresponding in spacing to said through holes, reinforcing members at the top and bottom sides of the floats overlying the holes, said reinforcing members containing holes corresponding in spacing to the through holes in the floats and bolts headed at one end and provided with nuts at their other ends extending through the reinforcing members, ends of the board and floats, securing the ends of the board to the floats.

4,227,274

PIGGY BACK SKI

Richard N. Richardson, 1209 Kiowa Dr. West, Lake Kiowa, Tex. 76240

Filed Jan. 22, 1979, Ser. No. 5,398

Int. Cl.³ A63C 35/29 R

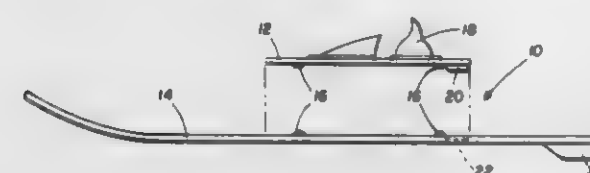
U.S. Cl. 9-310 R

7 Claims

1. In a water ski of the shoe type having a relatively short

length with a foot binding mounted thereon, the improvement comprising:

- a relatively longer ski blank located beneath the ski and extending parallel to said ski;
- a downwardly projecting first skag secured to the rear of the ski blank for directional stability; and



means for snap-releasably interconnecting the ski and the ski blank such that said ski blank can be released by a skier while underway, thereby allowing the skier to proceed on said ski alone.

4,227,275

METHOD AND APPARATUS FOR ALIGNING AND STAPLING SHEETS OF PAPER

Terje Söderberg, Farsta, Sweden, assignor to Guterne AB, Stockholm, Sweden

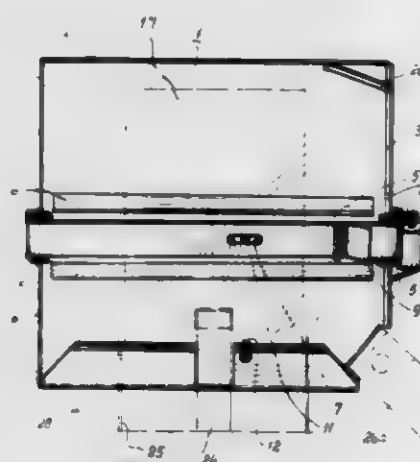
Filed Oct. 26, 1978, Ser. No. 954,985

Claims priority, application Sweden, Nov. 11, 1977, 7712798

Int. Cl.³ B27F 7/17

U.S. Cl. 11-1 R

4 Claims



1. A device for automatically arranging individual paper sheets in a set of papers with the edges of said paper sheets in alignment with each other in combination with stapling said set of papers, said device comprising:

- (a) a paper-receiving table, said table having a lower engagement edge and a lateral engagement edge;
- (b) means for vibrating said table;
- (c) a belt member;
- (d) a motor, said motor being adapted to drive said belt member for conveying it over said table parallel to said lower engagement edge and at right angles to a lateral engagement edge;
- (e) a pusher member affixed to said belt member, said pusher member comprising a portion of a first dog member adapted to urge the set of papers against the lateral engagement edge of said table when said belt member is driven by said motor;
- (f) a stapler, located to receive and staple said set of papers after their edges have been aligned in the final phase of operation of said pusher member;
- (g) switch means disposed in said lateral engagement edge for sensing the engagement of said set of papers with said engagement edge and causing said motor to reverse direction; and
- (h) an engagement member, said engagement member comprising a portion of a second dog member adapted to convey the stapled set of papers away from the table for discharging the same when said motor is reversed.

4,227,276

TOOTHBRUSH WITH THERMALLY DEFORMABLE HANDLE

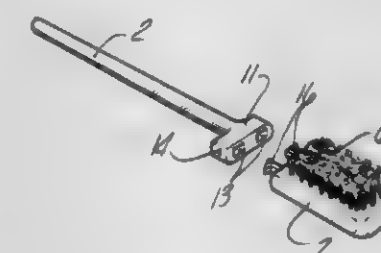
Stephen J. Ginsburg, 1478 Mark Twain Ct., Ann Arbor, Mich. 48103, and Frederick E. Draheim, 4781 Surfwood Dr., Milford, Mich. 48042

Filed Feb. 7, 1979, Ser. No. 10,111

Int. Cl.¹ A46B 17/00

U.S. Cl. 15-176

7 Claims



7. The toothbrush of claim 6 wherein said brush portion consists of:

- a flat, rectangular bristle-bearing tray having a cleft in its underside running substantially the entire length of said tray;
- a horizontal flange running the entire length of each of the two lateral sides of said tray; and
- a knob near each of the two corners of one end of said tray; wherein said handle portion consists of: an elongated shaft; a flat, rectangular bed at one end of said shaft; sidewalls extending vertically upward at the lateral edges of said bed and running the entire length of said bed, each sidewall having a horizontal groove along the inside, said grooves running marginally less than the length of said sidewalls, not extending through at either end, and being equal in length to said flanges on said brush portion, such that as pressure is applied to the opposed, flange-bearing sides of said brush portion, said cleft is compressed, narrowing said brush portion, and said brush portion is slid into said handle portion such that said flanges are engaged by and held securely in said grooves, removal of said brush portion from said handle portion being achieved by pressing said knobs inward toward one another, thereby narrowing said brush portion and sliding said flanges free at said grooves.

4,227,277

MOP HEAD

H. William McNeley, Jr., Blairsville, Ga., assignor to American Associated Companies, Atlanta, Ga.

Filed Feb. 21, 1979, Ser. No. 13,040

Int. Cl.¹ B05C 17/10

U.S. Cl. 15-229 R

3 Claims



1. A mop head comprising:

a fixture; and
a plurality of hanging, glass yarns maintained in a bundle by said fixture, each yarn including a plurality of entangled, randomly disposed glass fibers.

4,227,278

FEATHER DUSTER

Sidney Raskin, Sioux City, Iowa, and Nate Mantel, Jr., Omaha, Nebr., assignors to H. K. Specialty Co., Inc., Omaha, Nebr.

Filed Dec. 20, 1978, Ser. No. 971,246

Int. Cl. A47L 13/38

U.S. Cl. 15—234

1 Claim



1. A feather duster comprising a tubular handle having a closed end and a flared open end, a cylindrical plug slidably mounted in said tubular handle, a plurality of feathers having their shafts secured in said plug in the formation of a plurality of rings, said shafts of the feathers being equally spaced from each other around the rings, said rings being spaced radially equal distances apart, an elongated slot in said handle, said elongated slot having a laterally extending portion adjacent the open end of said handle, a laterally extending bore in said plug, an actuating button comprising a thumb piece mounted on a pin having a barbed member on its end, said actuating button being frictionally held within said bore and projecting outwardly through said elongated slot in said handle for extending and retracting said feathers, said actuating button adapted to be positioned in said laterally extending portion of said elongated slot to lock said feathers in extended position, a ring having a barbed portion extending through a hole in the closed end of said handle for hanging the feather duster when not in use.

4,227,279

DOUBLE INSULATED APPARATUS

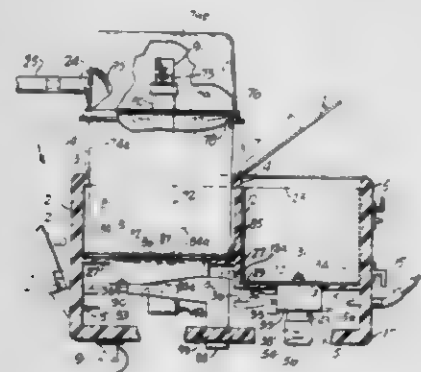
Herbert Tribolet, 1250 N. Third St., Grand Junction, Colo.

Filed Mar. 29, 1979, Ser. No. 25,244

Int. Cl. A47L 11/30

U.S. Cl. 15—321

31 Claims



6. Double insulated, electrically energized liquid handling apparatus, usable without a separate ground line connection,

and having an exteriorly and interiorly electrically isolated electrical system comprising

an exteriorly electrically insulating container of non-conductive material, thereby providing a first insulating barrier, a cleaning liquid dispensing reservoir protectively contained completely within the container,

a liquid delivery pump protectively contained completely within the container including a pump housing having an intake portion flow connected to the reservoir and a delivery portion adapted for flow connection in turn with an external applicator for applying dispensed cleaning liquid to a surface to be cleaned, and liquid pumping means operatively mounted in the pump housing and adapted to be driven by a rotatable shaft for pumping cleaning liquid from the intake portion to the delivery portion of the pump housing,

an electrically isolated delivery induction motor protectively contained completely within the container including a rotatably mounted shaft operatively connected for driving the pumping means, electrically insulating rotor mounting means of non-conductive material, an induction armature rotor operatively mounted by the rotor mounting means on the shaft for rotation with the shaft and arranged thereon in electrically isolating non-conductive relation with respect thereto, electrically insulating stator mounting means of non-conductive material, and an electrically energizable field coil stator radially spaced from the shaft and rotor and stationarily mounted by the stator mounting means in the container for induction rotation of the rotor and arranged thereat in electrically isolating non-conductive relation to the shaft, thereby providing a second insulating barrier, and

electrically insulated conductive power and return line circuit conduit means for energizing the delivery motor with a source of current without a separate ground line, for double insulated operation of the motor in the container for driving the pumping means by the shaft.

4,227,280

VACUUM/BLOWER ATTACHMENT FOR FILAMENT TRIMMER

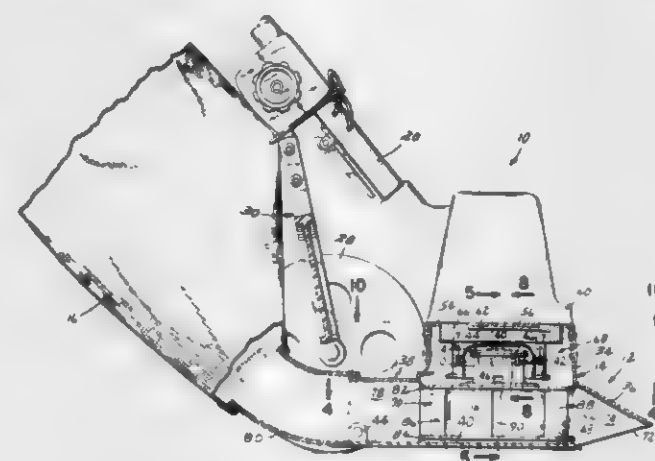
Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Dec. 18, 1978, Ser. No. 970,628

Int. Cl. A47L 5/14

U.S. Cl. 15—330

3 Claims



1. An attachment for use with a filament line trimmer which has a shaft and means for rotatably driving the shaft, the shaft further having means thereon for normally securing a filament line spool thereto, comprising:

(a) a fan member having a central axis and at least one blade member disposed about said axis, said fan member further having means thereon cooperating with the securing means on the shaft for removably mounting said fan mem-

ber to the shaft with said central axis aligned with the rotational axis of the shaft; and

(b) a housing removably attached to said trimmer and defining an enclosed air chamber in which said fan member is disposed, said housing having an air inlet and an air outlet opening whereby, upon rotation of said fan, air is drawn into said housing through said inlet and discharged from said housing through said outlet, said housing including:

(i) a generally cylindrical central portion defining an enclosed air chamber in which said fan member is disposed;

(ii) a scoop portion defining said air inlet opening, said scoop portion disposed peripherally with respect to said central portion and opening into said enclosed air chamber; and

(iii) a discharge chute portion extending from said central portion and opening into said enclosed air chamber, said discharge chute portion further defining said air discharge outlet;

and wherein said housing may be attached to said trimmer in a first position corresponding to a vacuum mode of operation with said inlet scoop extending forwardly and said discharge chute extending rearwardly with respect to said trimmer, and wherein said housing may be attached in a second position corresponding to a blower mode of operation with said discharge chute extending forwardly and said air scoop portion extending rearwardly with respect to the trimmer.

4,227,281

CASTER PAD

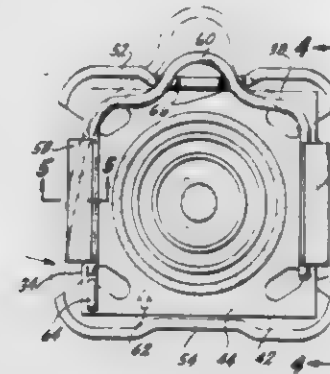
Tai H. Chung, Rancho Palos Verdes, and Damong Lee, Los Angeles, both of Calif., assignors to P. J. Company, Carson, Calif.

Continuation-in-part of Ser. No. 916,742, Jun. 19, 1978, abandoned. This application Jan. 29, 1979, Ser. No. 7,415

Int. Cl. B60B 33/00

U.S. Cl. 16—29

5 Claims



1. A caster pad permanently attachable to the underside of a receptacle permitting a caster to be quickly mounted thereto by insertion into the caster pad and to be quickly removed therefrom by release from the caster pad, said caster including a rectangular caster plate from which a wheel is typically mounted in a yoke, said caster pad comprising in combination:

a base adapted to be attached to the receptacle;

a pair of lateral flanges extending downward from said base and spaced to lie adjacent a first pair of opposite sides of the caster plate when said caster plate is mounted in said caster pad;

a pair of end flanges extending downward from said base and spaced to be adjacent a second pair of opposite sides of the caster plate when said caster plate is mounted in said caster pad, and terminating in lips directed inwardly from the second pair of opposite sides to loosely embrace the second pair of opposite sides so that some space remains between the lips and said caster plate;

one of said pair of lateral flanges extending downward far enough to prevent said caster plate from sliding laterally out of said caster pad when said caster plate is mounted flush against said base, but not so far as to interfere with

insertion of said caster plate under said lips to its mounted position in said caster pad;

spring means including legs urged outwardly from the central portion of said caster plate into said space between the lips and said caster plate to hold said caster plate flush against said base.

4,227,282

SLIDERS AND RAIL FOR DOOR SUPPORT

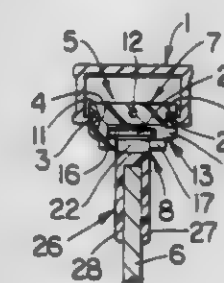
James A. Ford, Sherman Township, St. Joseph County, Mich., assignor to Kirsch Company, Sturgis, Mich.

Filed May 22, 1978, Ser. No. 908,057

Int. Cl. E05D 13/02

U.S. Cl. 16—93 R

1 Claim



1. In a traverse rod system for supporting a drapery, the combination comprising:

an elongated traverse rod having a downwardly opening slot formed therein and extending longitudinally thereof, said rod having a pair of opposed and inwardly directed flanges defining the opposite sides of said slot;

a drapery hanger slidably supported on said rod for slidable displacement along said slot, said drapery hanger including an upper part which is slidably but nonrotatably supported on said rod within said slot and a lower part which is supported on said upper part for swivelling movement relative thereto about a substantially vertical axis, said lower part depending downwardly from said upper part; said upper part comprising a substantially rectangular block-like head member positioned slidably but nonrotatably within said slot and on said flanges, said head member having guide means formed on opposite sides thereof for receiving therein said flanges;

a portion of said head member extending below said traverse rod and including sidewardly opening slot means formed therein, said slot means extending at substantially a right angle relative to the direction of movement of said head member along said traverse rod;

said slot means including a first sidewardly opening slot disposed directly below said traverse rod and being spaced upwardly from the lower surface of said head member, said first slot being of a predetermined height and opening outwardly through one side of the head member with the other end of said first slot being closed by a wall defining the opposite side of said head member;

said slot means including a second sidewardly opening slot positioned below, facing in the same direction as, and in axial alignment with said first sidewardly opening slot, said second slot extending between said first slot and the bottom surface of said head member, said second slot also opening outwardly through the same side of said head member as said first slot, the other end of said second slot being closed;

said second slot being narrower than said first slot for providing an upwardly facing support ledge on both sides thereof;

said lower part including an upper substantially cylindrical head fixedly attached to and coaxially aligned with a cylindrical neck which projects downwardly from said head, said head having a height substantially the same as said predetermined height and a diameter greater than the

width of said second slot so that said head when being moved into or removed from said slot means is solely sidewardly slidable and is swivelably supported within the closed end of said first slot due to said head being supported on said ledges, said head when supported within the closed end of said first slot being prevented from upward displacement by a wall on said head member defining the top of said first slot, said cylindrical neck being sidewardly slidably inserted into said second slot and being swivelably supported within the closed end of said second slot, said cylindrical neck projecting downwardly from said second slot beyond the lower surface of said head member;

said second slot adjacent the open end thereof being of a reduced width for creating a snap fit between said head member and said lower part when said cylindrical head and neck are sidewardly slidably inserted into or removed from said slot means, the width of said second slot adjacent the open end thereof being reduced to a spacing which is smaller than the diameter of said cylindrical neck for tending to hold said lower part within said slot means during normal operation of said traverse rod system; and means fixedly attached to the lower end of said neck for engaging and supporting said drapery.

4,227,283

INTEGRAL HINGE STRUCTURE

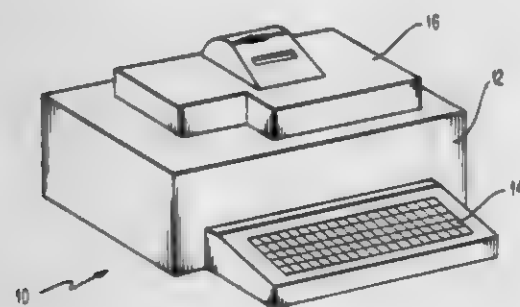
James A. Mathewson, Raleigh, and Harry Pasterchick, Jr., Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1979, Ser. No. 747

Int. Cl.² E05D 9/00

U.S. Cl. 16—128 R

7 Claims



1. A hinge structure for providing a concealed, hinged connection between one edge of an inwardly-extending opening in one surface of a base and an adjacent edge of a cover which can be pivoted to a closed position in which it conceals the opening, said hinge structure comprising:

a generally cylindrical strip integral with the base and extending along the one edge thereof within the opening, said strip being spaced from the one edge by an integral web substantially the same length as said cylindrical strip; and

a generally C-shaped strip integral with the cover and extending along the adjacent edge thereof, said C-shaped strip being spaced from the cover by an integral web of substantially the same length as said C-shaped strip with the C opening outward and circumscribing an angle of at least 180° to permit the cover to be secured to the base with the C-shaped strip being concealed from view by the overlying cylindrical strip and integral web when the cover is in its closed position.

4,227,284

BASE OR ADJUSTMENT PLATE FOR CABINET HINGES

Ernst Zernig, Hemer, Fed. Rep. of Germany, assignor to Firma Richard Heinze GmbH & Co. KG, Fed. Rep. of Germany

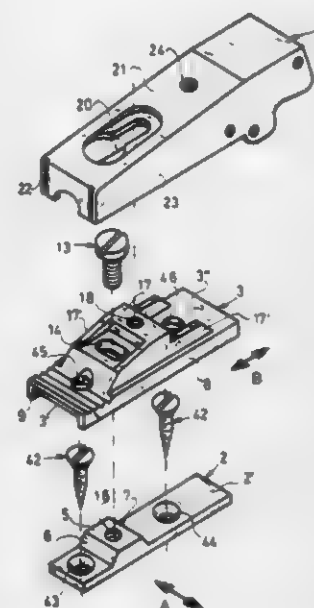
Filed May 12, 1978, Ser. No. 905,525

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721625

Int. Cl.² E05D 7/04

U.S. Cl. 16—129

8 Claims



1. A cabinet hinge base plate permitting adjustable attachment of a hinge arm to a cabinet component, said plate consisting of

(a) an intermediate carrier having upper and lower faces, parallel end faces and parallel side faces, said upper face having defined thereon intermediate to said end faces a guide extension, said guide extension having an upper surface disposed across the width of said carrier and parallel to said upper face and two guide surfaces disposed across the width of the carrier and transverse to said guide extension upper face and said upper surface of said intermediate carrier;

(b) means operable to fix said intermediate carrier to said cabinet component;

(c) a bearing element having a recess defined in its lower surface, said recess being operable to receive said intermediate carrier and having a width greater than the width of said carrier, said bearing element having a pair of bearing surfaces defined within said recess and complementing said guide surfaces so as to permit positioning of said bearing element relative to said intermediate carrier along a first spacial axis parallel to the width of said intermediate carrier, said bearing element further having a pair of longitudinal legs defined on either side of said recess so as to straddle said intermediate carrier, said legs being of such length as to extend to the lower face of said carrier when said carrier is received in said recess;

(d) means operable to fix said bearing element to said intermediate carrier after positioning along said first axis; and

(e) means operable to position said hinge arm along a second spacial axis parallel to the length of said intermediate carrier and to fix said hinge arm to said bearing element after said positioning.

4,227,285

TEXTILE CARD CLEANING APPARATUS

Marvin Hamrick, P.O. Box 603, Rte. 1, Grover, N.C. 28073

Filed Feb. 2, 1979, Ser. No. 8,547

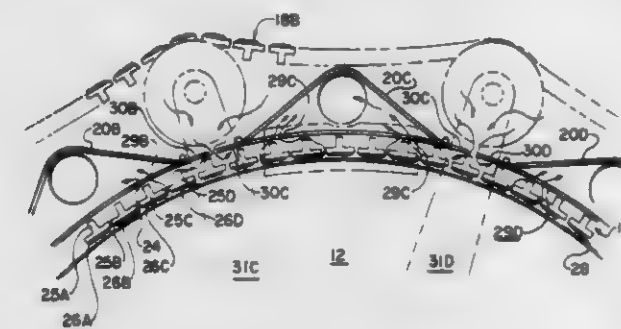
Int. Cl.³ D01G 15/82

U.S. Cl. 19—107

14 Claims

1. In combination with a textile card having a main cylinder, a plurality of flats disposed parallel to the longitudinal axis of said main cylinder in an arcuate continuous belt above the

surface of a portion of the circumference of said main cylinder, said belt comprising a lower operative run movable adjacent the surface of a portion of the circumference of said main cylinder so as to form a working space therebetween and a higher inoperative run movable in the opposite direction and in a radially spaced-apart relationship to the lower run, the lower operative run and the higher inoperative run of the continuous belt of flats defining an arcuate open space therebetween, a



card cleaning system for removing cotton dust and lint comprising: a plurality of suction hoods disposed within said arcuate open space adjacent to the lower operative run of said flats and adapted to pull the dust and lint from said arcuate space and from between said flats and the working space therebeneath during the lower operative run thereof; and suction means fluidly communicating with said plurality of suction hoods for removing the cotton dust and lint from the textile card to a remote location.

4,227,286

STRAP TIGHTENER

Göte E. Y. Holmberg, Anderstorp, Sweden, assignor to Broderna Holmbergs Fabriks AB, Anderstorp, Sweden

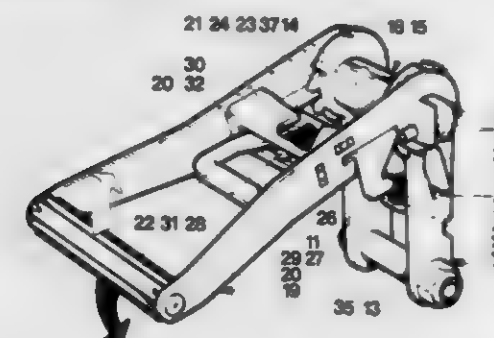
Filed Apr. 26, 1979, Ser. No. 33,521

Claims priority, application Sweden, Apr. 28, 1978, 7804911

Int. Cl.² B25B 25/00; B66D 1/02

U.S. Cl. 24—68 CD

6 Claims



1. A strap tightener comprising an element for fixedly anchoring the strap tightener, an operating lever pivoted to the anchoring element, a strap reel mounted coaxially with the pivot axis, at least one ratchet wheel non-rotatably connected to the strap reel, a holding pawl displaceably mounted to the anchoring element, which is spring-biased to engage the ratchet wheel, a driving pawl displaceably mounted to the operating lever, which is spring-biased to engage the ratchet wheel, the operating lever being drivingly connected to the strap reel by means of the driving pawl and the ratchet wheel when being swung in one direction, and being disengaged from the strap reel when being swung in the opposite direction, and means operatively connected to the driving pawl to lock the operating lever in a rest position adjacent to the anchoring element with the holding pawl locked in engagement with the ratchet wheel, said means including a hook projecting from the driving pawl transversely of the path of movement thereof and open towards the pivot axis of the operating lever to receive, in the rest position of the operating lever, the holding pawl at the end thereof which is remote from the ratchet wheel said hook providing a force component transversely of the path of movement of the driving pawl by pressure applied to the holding pawl in a direction away from the ratchet wheel said

4,227,287

FULL EJECTION STUD ASSEMBLY

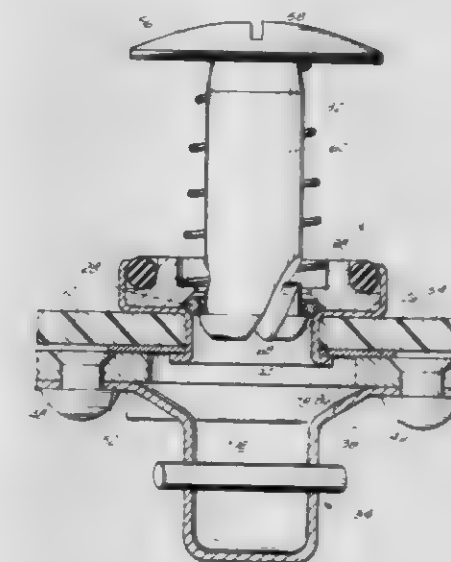
Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,075

Int. Cl.² A44B 17/00

U.S. Cl. 24—221 K

10 Claims



7. A full ejection stud assembly adapted to be coupled to one member and removably interconnected with a receptacle coupled to a second member to form a fastener assembly for holding the two members together, the stud assembly comprising: a stud having an enlarged head and a reduced diameter shank extending from one side of the head and having means thereon for interconnecting with a receptacle; a cup having a through passageway for slidably extension of the shank therethrough;

the cup having mounting means thereon for mounting the cup on the one member in position with respect to an opening in the one member so that the shank of the stud can pass reciprocally therethrough;

retention means on the cup and stud to limit the reciprocal movement of the stud shank through the passageway of the cup and the opening in the one member between a closed position for interconnecting with a receptacle to hold the two members together and an open position free of the receptacle to permit separation of the two members; spring means normally biased in the closed position with the stud interconnected to a receptacle so as to eject the stud to the open position free of the receptacle when the stud is disconnected from the receptacle;

the retention means including a substantially disc shaped retainer housed in the cup between the undersurface of the head of the stud and an opposing surface in the cup;

the retainer having a central aperture therethrough and the surface surrounding the central aperture having a beveled portion;

a retaining ring in the cup and held in position between the beveled surface of the retainer and an adjacent opposing surface of the cup;

a lateral extension on the end of the shank of the stud distal from the head end; and

the stud being restricted from full displacement from the cup in one direction by engagement between the lateral extension on the end of the shank and the retaining ring and in the other direction by engagement between the undersurface of the head and the upper surface of the retainer.

4,227,288

COMPACTOR SHOE CONSTRUCTION

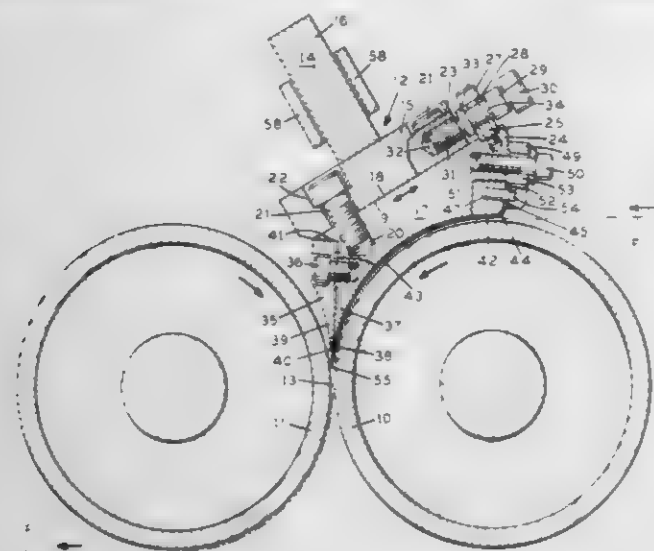
Paul Moser, Harrington Park, N.J., assignor to Compax Corp., Woodside, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,346

Int. Cl. D06C 21/00

U.S. Cl. 26—18.6

4 Claims



1. In a mechanical compressive shrinkage apparatus of the type comprising:

- (a) feeding and retarding rollers arranged in opposed relation and forming a working nip;
- (b) a confining shoe having roll-confronting surface portions cooperating with said feeding roller and tip portions located upstream of said working nip, the improvement in said confining shoe characterized by
- (c) a rigid supporting beam extending continuously across the full effective working width of the feeding and retarding rollers in a region generally opposite said working nip;
- (d) a plurality of confining shoe segments secured individually to said supporting beam in end-to-end alignment;
- (e) a continuous liner element extending over the full working width of the aligned shoe segments;
- (f) said liner being formed of thin, conformable sheet material and being pre-contoured to conform generally to the contours of the roll-confronting surface portions of the shoe segments;
- (g) said continuous liner extending in a circumferential direction over the full confronting surface areas of the shoe segments and projecting beyond said tip portions to form a working edge located between said nip and said tip portions;
- (h) said continuous liner element being secured at its upstream edge;
- (i) said liner having an unsecured portion extending downstream from its secured edge, between said feeding roller and said shoe segments;
- (j) said rigid shoe-supporting beam being of generally inverted Tee-shaped cross section, including a plate section and an upwardly extending web section;
- (k) said plurality of said shoe segments being secured individually to said plate section;
- (l) means for adjusting said shoe segments independently with respect to said plate section;
- (m) said continuous liner having, adjacent its upstream edge, an upturned flange portion overlying the upstream side edge regions of said shoe segments; and
- (n) means securing said flange portion to said side edge regions.

4. In a mechanical compressive shrinkage apparatus of the type comprising:

- (a) feeding and retarding rollers arranged in opposed relation and forming a working nip;
- (b) a confining shoe having roll-confronting surface portions cooperating with said feeding roller and tip portions lo-

cated upstream of said working nip, the improvement in said confining shoe characterized by

- (c) a rigid supporting beam extending continuously across the full effective working width of the feeding and retarding rollers in a region generally opposite said working nip;
- (d) a plurality of confining shoe segments secured individually to said supporting beam in end-to-end alignment;
- (e) a continuous liner element extending over the full working width of the aligned shoe segments;
- (f) said liner being formed of thin, conformable sheet material and being pre-contoured to conform generally to the contours of the roll-confronting surface portions of the shoe segments;
- (g) said continuous liner extending in a circumferential direction over the full confronting surface areas of the shoe segments and projecting beyond said tip portions to form a working edge located between said nip and said tip portions;
- (h) a plurality of adjusting screws connecting said shoe segments individually with said supporting beam;
- (i) said adjusting screws being individually adjustable to effect precision across-the-width alignment of a plurality of said shoe segments; and
- (j) mounting bolts, independent of said adjusting screws, for securely locking said shoe segments to said supporting beam.

4,227,289

AUTOMATION SYSTEM FOR MOUNTING FILM SEGMENTS INTO FIXTURES

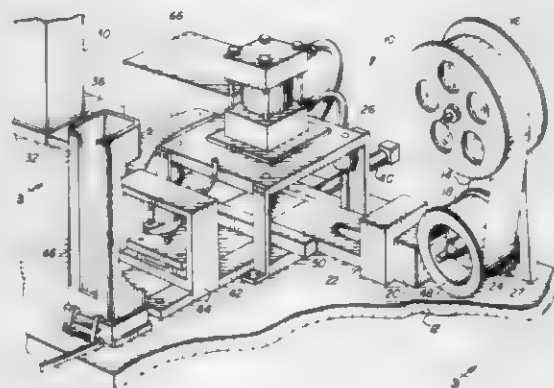
Max Avalon; John L. Kowalski, both of Phoenix, and K. Boyd Tippetts, Glendale, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jul. 3, 1978, Ser. No. 921,638

Int. Cl. B23Q 7/00

U.S. Cl. 29—33 K

9 Claims



1. In combination:

- a reel, said reel adapted to have a strip of film having a plurality of equal sized segments wound thereon;
- film advance means having a cycle of operation adapted to advance a strip of film a segment at a time during each cycle of operation;
- film guide means through which a strip of film is adapted to advance;
- loading means having a cycle of operation, said loading means during each cycle of operation adapted to sever a segment, one segment at a time from a strip of film as each segment occupies a predetermined position with respect to the film guide means, and to load a severed segment into a fixture;
- a transferor magazine adapted to have a plurality of fixtures stacked in said magazine;
- first fixture guide means;
- first fixture transfer means having a cycle of operation adapted to remove one fixture at a time from the transferor magazine and moving a fixture so removed into the first fixture guide means during each cycle of operation;
- said loading means adapted to load a severed segment into a

4,227,291

ENERGY EFFICIENT PROCESS FOR CONTINUOUS PRODUCTION OF THIN SEMICONDUCTOR FILMS ON METALLIC SUBSTRATES

John C. Schumacher, Oceanside, Calif., assignor to J. C. Schumacher Co., Oceanside, Calif.

Filed Jun. 22, 1978, Ser. No. 918,034

Int. Cl. B01J 17/00

U.S. Cl. 29—572

5 Claims



1. A method for producing a semiconductor matrix having an electrically conductive cathode substrate comprising the steps of:

- (a) coating said substrate with a solution containing ions of a semiconductor element and an appropriate dopant;
- (b) contacting said solution with an alkali metal anode to produce a layer of doped elemental semiconductor on said cathode substrate, generation of alkali ions, and release of energy; and
- (c) forming a p-n junction by introducing to said elemental semiconductor layer an opposite type dopant.

4,227,290

DRIVE MANDREL FOR HELICAL THREAD INSERTS

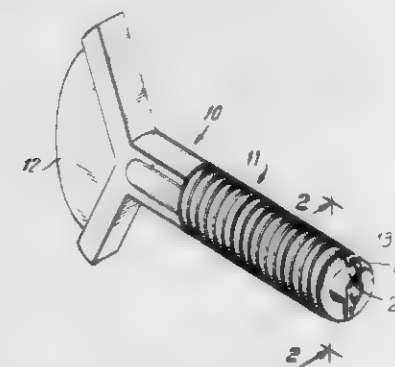
Robert P. Wallace, Dean's Corner, Rt. 22, Brewster, N.Y. 10509

Filed May 7, 1979, Ser. No. 36,829

Int. Cl. B23P 19/04

U.S. Cl. 29—240.5

6 Claims



1. An improved drive mandrel for the insertion of helical inserts having drive tangs into tapped bores which are undersized as respects the diameter of said inserts comprising, in combination, an axially elongated, generally cylindrical resilient polymeric body portion including torquing means at one end and a drive insert receiver portion at the other end, said body portion having an external peripheral thread portion for supporting said inserts, said thread portion beginning at said drive end and extending at least part way toward said torque applying end, said thread portion including crests and lands disposed between said crests, the improvement which comprises a substantially radially incompressible metallic drive blade extending axially within said body portion, said blade including a drive tooth projecting axially beyond said drive end of said body portion for engagement with the drive tang of an insert mounted on said threaded portion, said blade including diametrically opposed, axially extending side edges, said side edges being disposed substantially at the level of the said lands for at least the first convolution of said thread portion at said other end whereby radial inward constriction of said first convolution of said insert member is limited by said substantially radially incompressible drive blade.

4,227,292

PROCESS FOR REMANUFACTURING A MASTER CYLINDER

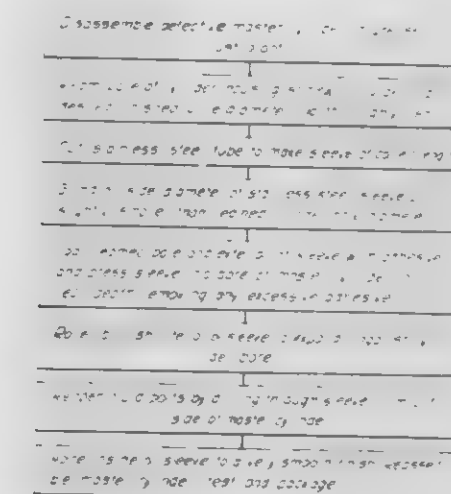
Edward R. Kipling, Dunwoody, Ga., assignor to Rayloc, Atlanta, Ga.

Filed May 4, 1978, Ser. No. 902,944

Int. Cl. B23P 7/00, 15/00

U.S. Cl. 29—402.04

3 Claims



1. A method of remanufacturing a brake master cylinder comprising the steps of disassembling a defective brake master cylinder having a housing bore and a lateral port extending through its wall, degreasing the empty brake master cylinder housing, blasting the housing bore of the disassembled cylinder with a solid abrasive to remove rust and corrosion therefrom, rust-proofing the empty cylinder housing, reaming said housing bore to a diameter slightly larger than the desired finished bore diameter of said cylinder making a corrosive resistant metal sleeve of proper length for insertion in said bore, grind-

ing the exterior of the sleeve to a diameter slightly smaller than the diameter of the reamed housing bore, coating said bore and the exterior of said sleeve with adhesive, inserting said sleeve into said bore to a correct depth, removing excess adhesive near the mouth of the bore following said insertion, expanding the sleeve against the surface of the bore by roller burnishing the bore of the sleeve, drilling through the sleeve from the exterior of said housing to reopen said lateral port, and honing the interior of said sleeve to a smooth finish.

4,227,293

METHOD OF CATHETER MANUFACTURE

Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

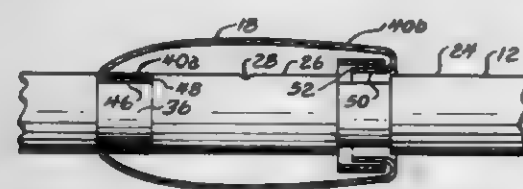
Division of Ser. No. 792,823, May 2, 1977, Pat. No. 4,147,169.

This application Dec. 11, 1978, Ser. No. 968,239

Int. Cl. B23P 11/02

U.S. Cl. 29-447

3 Claims



1. A method of securing a flexible annular balloon on a catheter shaft, comprising the steps of: forming a pair of spaced annular grooves in an outer surface of the shaft; positioning a first end portion of the balloon intermediate a first shrinkable annular sleeve and one of said grooves in a configuration with an end edge of the first end portion directed toward the other of said grooves; shrinking said first sleeve over said first end portion to secure said first end portion of the balloon in said one groove; positioning the remote end portion of the balloon intermediate a second shrinkable annular sleeve and the other of said grooves in a configuration with an end edge of the remote end portion directed toward said one groove; and shrinking said second sleeve over said remote end portion to secure said remote end portion of the balloon in said other groove.

4,227,294

METHOD OF INSTALLING A FERRULE

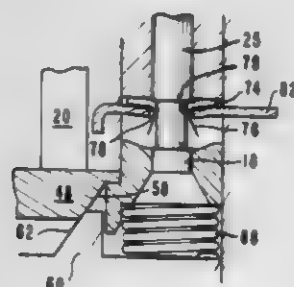
Robert R. Mercer, Ortonville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1978, Ser. No. 934,751

Int. Cl. B21D 39/00; B23P 11/00

U.S. Cl. 29-509

3 Claims



1. A method of sequentially cutting out an installation area and fastening a reinforcing member in the cut out area of a panel member composed of a permanently deformable material through use of engageable male and female cutting dies; said male and female dies capable of being mounted on a conventional press so that one of said dies may be advanced toward the other and retracted therefrom; the male die including an annular groove receiving fastening portions of the reinforcing

member to be installed in said panel; said male die further including a shank countersinking surface; an abutment surface movable with said male die and positioned for engagement with said female die when one of said dies is advanced toward the other; the female die being normally spring biased to a cutting position and movable to a spring compressed position by said abutment when one of said dies is advanced toward the other; the method comprising the steps of: positioning the panel on said female cutting die; placing a reinforcing member on said male cutting die with its fastening portions in said annular groove; punching a cut out area in said panel by initially advancing one of said dies toward the other moving said male die into said female die; moving said female die against and compressing its biasing spring through engagement of said abutment with said female die; moving said reinforcing member fastening portions through said cut out area as the one said moving die is advanced toward the other; forming a countersink surface in said panel adjacent said cut out as said male die continues movement into said female die engaging its shank countersinking surface with said fastening portions in an interference engagement with the peripheral edges of said cut out; moving said fastening portions outwardly from said male die as said countersink is formed; and securing said reinforcing member to said panel by releasing said female die permitting its biasing spring to rapidly move it into engagement with said fastening portions clenching them on the underneath side of said panel.

4,227,295

METHOD OF POTTING THE ENDS OF A BUNDLE OF HOLLOW FIBERS POSITIONED IN A CASING

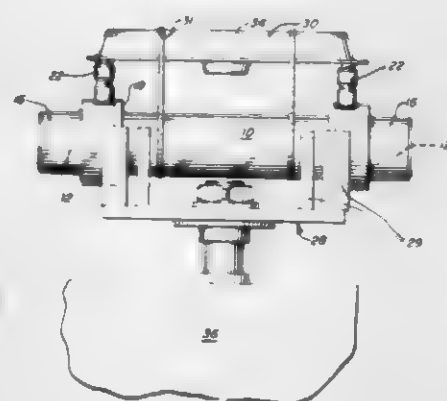
Bert S. Bodnar, Park Ridge, and William J. Schnell, Wheeling, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 888,071, Mar. 20, 1978, abandoned. This application Jul. 27, 1978, Ser. No. 928,477

Int. Cl. B22D 11/126; B28B 1/20

U.S. Cl. 29-527.3

9 Claims



1. The method of potting the ends of a bundle of hollow fibers positioned in a casing, which comprises: inserting said bundle of hollow fibers into said casing through an open end thereof; sealingly closing the ends of said casing by attaching casing closure member means to said casing; attaching opposed, side-mounted outlet ports of a hollow, elongated potting boat member to side apertures positioned in fluid communication with said casing; placing curable liquid sealant into said hollow, elongated member; and spinning said casing ends about an axis of rotation extending through a central portion of said casing; whereby said liquid sealant migrates by the centrifugal force of said spinning to the interior ends of said casing through said side apertures to pot the ends of the fiber bundle within the casing; and, after said liquid sealant has cured, removing said casing ends and cutting through said sealant and hollow fibers at each casing end to expose the bores of said hollow fibers.

4,227,296

TOOL-CHANGING DEVICE

Eduard Wittenbreder, Bielefeld, Fed. Rep. of Germany, assignor to Firma Droop & Rein, Bielefeld and Herr Dipl.-Ing. M. G. Dronsek, Klingen, both of, Fed. Rep. of Germany

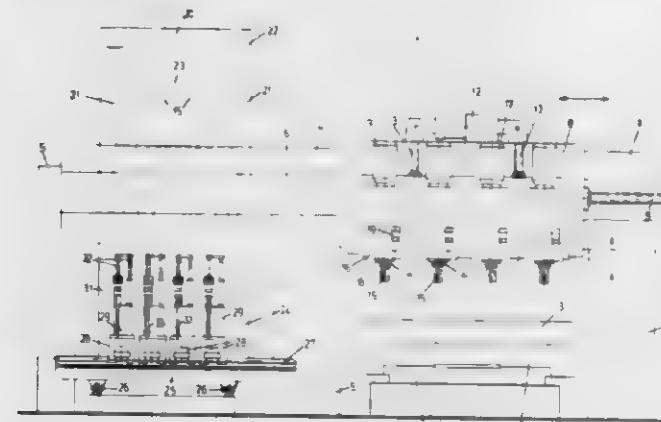
Filed Sep. 1, 1978, Ser. No. 938,872

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739534

Int. Cl. B23Q 3/157

U.S. Cl. 29-568

6 Claims



1. A tool-changing apparatus for a multiple-spindle milling machine having a workpiece table comprising, a gantry which extends across the workpiece table and on which the individual working spindles are movable side by side together from working positions to a tool change position that is lateral to the workpiece table, a tool-storage unit comprising a plurality of parallel tool pickup devices, each device adapted to hold a tool and a delivery station at which tools are presented to be exchanged arranged on the same side of the workpiece table near the milling machine, whereby said tool-pickup devices are separated from each other by intervals that are smaller than the intervals between said working spindles, a delivery station as part of said tool-storage unit, tool gripping devices movable between said delivery station and the working spindles in the tool-change position each gripping device being turnable and arranged in said tool-change position of each of the working spindles, and separate swinging devices for supporting each of said tool gripping devices, said swinging device being movable relative to one another for changing the distance therebetween, said swinging devices supporting the tool gripping devices which tool gripping devices move at least in the direction of the working spindles.

4,227,297

METHOD FOR PRODUCING A SINGLE TRANSISTOR STORAGE CELL

Joerg Angerstein, Flein, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,787

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2738008

Int. Cl. B01J 17/00

U.S. Cl. 29-571

8 Claims



1. A method for producing a single transistor storage cell, comprising the steps of:

- (a) providing a semiconductor body of first conductivity type and having a major surface;
- (b) doping a first zone of second conductivity type opposite to the first conductivity type from said major surface into the semiconductor body to a given depth;
- (c) doping through a doping mask window on the major surface a second zone of second conductivity type adjacent and having a contiguous portion with the first zone but to a different depth than the first zone, one of the zones being dimensioned so as to form a pn junction with the semiconductor body which is substantially shorter than a pn junction of the other zone after a V-shaped gate recess is subsequently etched so that a capacitance of the completed storage cell is predominantly provided by the zone with the longer pn junction;
- (d) anisotropically etching the V-shaped gate recess by use of the same doping mask window into said second zone, said contiguous portion with the first zone, a portion of the first zone, and a portion of the semiconductor body so as to separate unetched portions of the first and second zones by part of the semiconductor body; and
- (e) applying a gate insulation layer and a gate electrode in the V-shaped recess.

4,227,298

METHOD FOR INTERCONNECTING PHOTOVOLTAIC DEVICES

Michael C. Keeling, Tempe; William L. Bailey, Scottsdale; Michael G. Coleman, Tempe; Israel A. Lesk, Scottsdale, and Robert A. Pryor, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

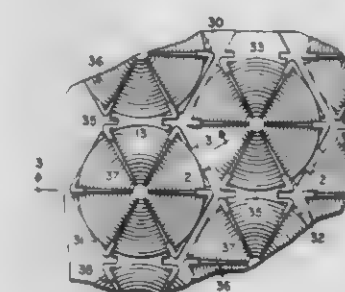
Division of Ser. No. 807,462, Jun. 17, 1977, Pat. No. 4,131,755.

This application Sep. 5, 1978, Ser. No. 939,650

Int. Cl. H01R 43/00, 43/04

U.S. Cl. 29-837

11 Claims



1. A method of interconnecting a plurality of photovoltaic devices using a laminate of dielectric material and of electrically conductive material, comprising the steps of: configuring a plurality of patterns in the electrically conductive material, the patterns having an extended portion; providing a void in the dielectric material over the extended portion; punching a plurality of angled tabs in each pattern through the laminate, the extended portion and the angled tabs formed in a single plane; lifting upward the angled tabs so that photovoltaic devices can be placed on the dielectric material; placing photovoltaic devices on the dielectric material; pressing the angled tabs toward the photovoltaic devices so that a portion of the angled tabs comes in contact with the photovoltaic device; bonding the angled tabs to the photovoltaic device; and bonding the extended portion to an adjacent photovoltaic device.

4,227,299

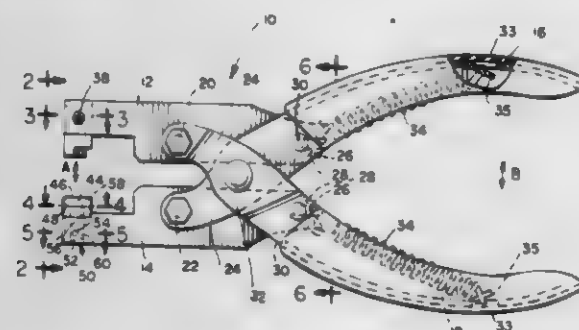
HAND TOOL FOR TERMINAL CONNECTION OF ELECTRICAL CABLE TO AN ELECTRICAL CONNECTOR

Guenter Kuehling, Berwyn, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 935,395, Aug. 21, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,057
Int. Cl.¹ H01R 43/04

U.S. Cl. 29—751

21 Claims



1. A hand tool for assembling an insulated electrical cable to a terminal conductor or the like which has a receptacle portion and an insulation piercing contact for receiving the insulated cable, comprising: a pair of handle operated opposing jaws for movement toward and away from each other, one of said jaws having means defining a bearing surface for engaging the terminal connector, and the other jaw having a stuffer portion for engaging the cable and inserting the cable into the insulation piercing contact in the receptacle portion of the connector, and means defining a resiliently yieldable backing member in the form of a cushion pad on at least one of said jaws between the jaw and the respective bearing surface or the stuffer portion providing yielding movement therebetween to accommodate variable sized terminal connectors positioned between the jaws and to prevent damage to the electrical cable due to excess pressure applied when the cable is assembled to the connector, said cushion pad being fabricated of a material providing sufficient back-up to permit the contact to pierce the insulation of the cable but being sufficiently resilient to prevent the contact from damaging the conductive wire of the cable.

4,227,300

METHOD FOR THE ELECTRICAL BONDING OF THIN FILM TANTALUM CAPACITOR NETWORKS TO OTHER NETWORKS

Wilfried Anders, Riemerling, and Werner Piepenburg, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 670,900, Mar. 26, 1976, abandoned.

This application Sep. 18, 1978, Ser. No. 943,151

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1975, 2513859

Int. Cl.¹ H05K 3/34, 3/36

U.S. Cl. 29—830

1 Claim



1. A method for electrically bonding a network including at least one alpha-tantalum capacitor with another network con-

taining at least one other component, such as a tantalum resistor network, including the steps of:

mounting said alpha-tantalum capacitor on a first non-conducting substrate having metal elements;

mounting said other component on a second non-conducting substrate having metal elements;

placing said first and second non-conducting substrates back to back so that said capacitor and said other component are remote from one another;

electrically bonding said capacitor to said other component to form a bonded network by connecting said first and second substrates together with electrical contact elements;

dipping said bonded network into a molten solder bath to form a solder coating on said metal elements of said first and second non-conducting substrates and the ends of said contact elements to interconnect said metal elements on said first and second non-conducting substrates and couple said first and second non-conducting substrates together in a back-to-back relationship.

4,227,301

SHAVING APPARATUS

Dirk J. Van Hemmen, and Albert Hoekstra, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

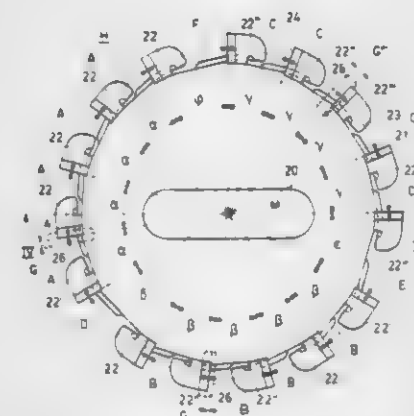
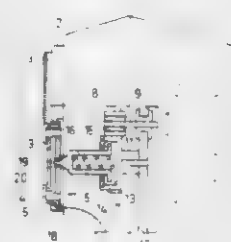
Filed Sep. 28, 1978, Ser. No. 946,512

Claims priority, application Netherlands, Nov. 28, 1977, 7713040

Int. Cl.¹ B26B 19/14

U.S. Cl. 30—43.6

3 Claims



1. A shaving apparatus having a circular shear plate provided with hair-entrance apertures; a cutting member associated with and rotatable relative to the shear plate, said cutting member being substantially constituted by a circular central body; and cutters extending only from the circumference of said central body toward the shear plate, said cutters being arranged in a plurality of groups, the intervals between adjoining cutters of each group being equal, said intervals differing from the respective intervals between the two adjacent cutters of two different groups.

4,227,302

SHAVING APPARATUS

William L. Torrance, 5 Lamont Ave., Agincourt, Canada

Filed Jan. 5, 1979, Ser. No. 1,366

Int. Cl.¹ B26B 21/06, 21/54

U.S. Cl. 30—47

3 Claims



1. A razor assembly comprising in combination: a handle member having a spoon-like end thereon; an upturned wall formed perpendicular to said handle at said end; a double-edged pair of parallel blade members enclosed in a cartridge means exposing the blades for use therefrom and having in said cartridge a pair of oppositely spaced sides adjacent the blade edges; bearing means situate at the mid-point of each of said sides; a Y-shaped spring yoke member adjustably situated within the spoon-like cavity of said handle end; said Y-shaped yoke comprising two arm members, each having inwardly facing hooks on the ends thereof adapted to mate with the bearings of said cartridge when the yoke arms are sprung outwardly over the cartridge by the pressure of the inside of each yoke arm against the wall at the handle end; and a push rod integrally formed with the leg of said Y-shaped yoke and reciprocally moveable within an aperture in said handle to and from contact with said wall.

4,227,303

FOLDING KNIFE

Dennis B. Brooker, Des Moines, Iowa, assignor to Brooker

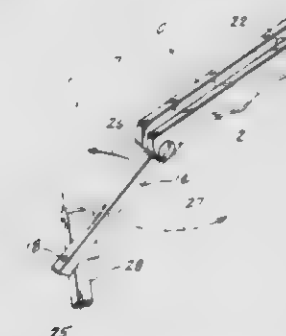
Folding Knives, Inc., Des Moines, Iowa

Filed Feb. 23, 1979, Ser. No. 14,605

Int. Cl.¹ B26B 1/04

U.S. Cl. 30—154

12 Claims



1. A knife comprising: a handle having a slot formed therein; an arm member; means for pivotally attaching one end of the arm member to the handle along a first axis, said arm member being pivotable between a first position disposed in said slot and a second position substantially outside of said slot; a knife blade; means for pivotally attaching one end of the knife blade to the other end of said arm member along a second axis, the second axis being generally transversely disposed with respect to the first axis, said knife blade being pivotable

when said first arm member is in the second position thereof between a first position wherein said knife blade is adjacent to said arm member and a second position wherein the knife blade extends away from the arm member.

4,227,304

DEVICE FOR REMOVAL OF ICE FIXED TO ROD OF CONTROL CABLE

Koshiro Okamura, Takarazuka, Japan, assignor to Nippon Cable System Inc., Hyogo, Japan

Filed Oct. 24, 1978, Ser. No. 954,247

Int. Cl.¹ B08D 11/00

U.S. Cl. 30—169

4 Claims



1. A device for the removal of ice fixed to a rod of a control cable, which comprises a tubular fitting having at its opening a deicing surface including at least one sharp-pointed portion and inclined at an acute angle with respect to the axis of the rod, and a rigid guide pipe, the fitting being secured onto the end thereof in which the rod connected to an inner cable of the control cable is slidably disposed.

4,227,305

HAND TOOL FOR CUTTING BLIND STRIPS AND THE LIKE

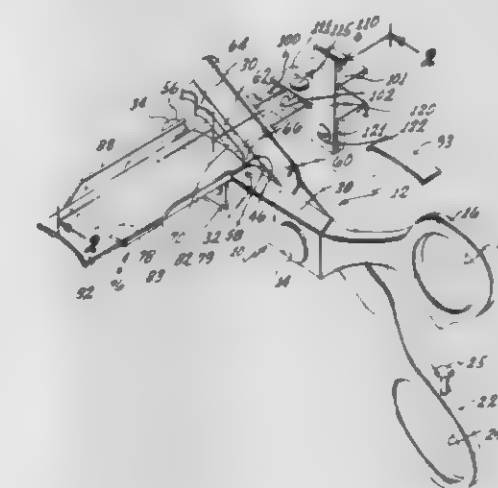
Jerry C. Newman, 5410 W. 134th St., Hawthorne, Calif. 90250

Filed Mar. 12, 1979, Ser. No. 19,867

Int. Cl.¹ B26B 13/10

U.S. Cl. 30—229

11 Claims



1. A tool for cutting blind strips and the like including relatively reciprocable members, each one of which carries a cutting blade, and means for guiding a strip to be cut to a cutting position, said blade having contoured portions along their length whereby to provide a cut having a corresponding contour at the cut edge of the strip, and guide means to guide said strip accurately to said contoured portions.

4,227,306

UTILITY KNIFE WITH IMPROVED SAFETY FEATURE

Avram Meshulam, Edison, N.J., assignor to CBS Inc., New York, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,197

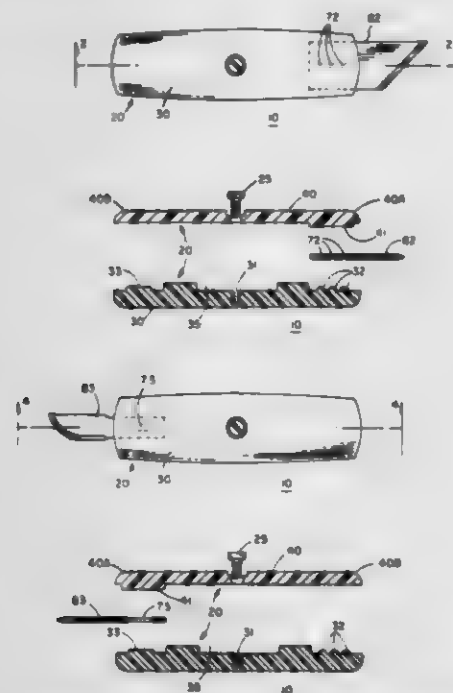
Int. Cl.¹ B25G 3/00

U.S. Cl. 30—342

20 Claims

1. A utility knife suitable for mounting at least two different types of blades and having an improved safety feature, comprising:

a handle which includes a pair of elongated mateable handle elements, one of said handle elements having a pair of blade-engaging units, one near each end thereof; blade-securing means disposed near one end only of the other handle element; and



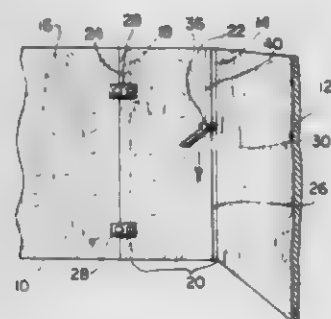
means for removably mating said handle elements with a blade mounted in one of said blade-engaging units, whereby said blade-securing means secures said blade and the absence of a blade-securing means at the other end of said other handle element prevents securing of another blade at said other end.

4,227,307

APPARATUS FOR SCRIBING WALL PANELS
Robert Tassoni, 5 Rosewood Dr., Greenville, R.I. 02828
Filed Feb. 21, 1979, Ser. No. 13,791
Int. Cl.³ B43L 13/02

U.S. Cl. 33-41 F

7 Claims



1. In an apparatus for scribing a rough sized second wall panel for insertion into a wall area defined by a first reference line formed by the proximal edge of an already mounted first wall panel and a second reference line spaced therefrom, including jig means for positioning said second panel relative to said wall section such that a first edge thereof is in overlapping relationship with and spaced a predetermined distance from said first reference line and the opposite edge of said second panel is positioned proximal to said second reference line; and scribing means including a reference line follower and a scribe spaced said predetermined distance therefrom for scribing a trim line corresponding to said second reference line along said second panel at a position inwardly spaced from the opposite edge thereof a distance generally equal to said predetermined distance such that the shape of the area of said second panel between said first edge and said trim line is substantially equal to the shape of the said wall area; the improvement comprising, jig means having a generally S-shaped body, first and second open ended longitudinally oriented generally U-shaped slots adapted to receive said proximal edge of said first panel and said first edge of said second panel respectively therein, said

slots respectively opening on opposite sides of said jig body, each said slot including a base wall defining the longitudinal extent thereof with said base walls longitudinally spaced said predetermined distance apart from each other, said panel edges received in said slots adapted to abut said base walls, said slots further including opposed inner and outer sidewalls longitudinally extending from respective base walls thereof, the inner sidewall of said first slot forming a flange in turn forming the lower run of said generally S-shaped body, said flange adapted to extend behind said first panel and in contact with both said first panel and said wall, first holding means adapted to extend onto said first slot for releasably and securely holding said first panel in said first slot and second holding means adapted to extend into said second slot to releasably and securely hold said second panel in said second slot said first and second holding means extending into said first and second slots from the same side of said S-shaped body.

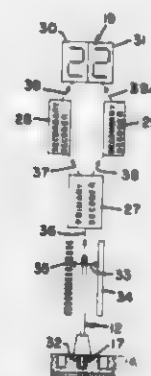
4,227,308

INTERFACE DEVICE

Alan R. Talansky; Herman M. Respass, both of Greensboro, and William A. Borst, Brown Summit, all of N.C., assignors to Tibar Corporation, Reidsville, N.C.
Filed Sep. 15, 1978, Ser. No. 942,743
Int. Cl.² G01B 3/28

U.S. Cl. 33-169 B

18 Claims



1. A measuring device comprising: a displaceable material contacting means, circuit means engageable with said material contacting means, a display means connected to said circuit means, a first and a plurality of secondary electrical contact means included within said circuit means, said secondary contact means being uniformly spaced from each other the width of said secondary contact means and spaced from said first contact means, said secondary contact means being of uniform width, a conducting means joined to said material contacting means, said conducting means being displaceable along said first and secondary contact means, said conducting means having a width greater than the width of said secondary contact means whereby said conducting means is capable of contacting two secondary contact means simultaneously.

4,227,309

PIPELINE PIG HAVING GAUGING PLATE

Trevor C. Jones, Stroud, England, assignor to Underground Location Services Limited, Gloucestershire, England
Continuation of Ser. No. 630,502, Nov. 10, 1975, abandoned.
This application Apr. 6, 1977, Ser. No. 785,073
Claims priority, application United Kingdom, Dec. 21, 1974, 55359/74

Int. Cl.³ G01B 7/12, 7/28

U.S. Cl. 33-178 E

12 Claims

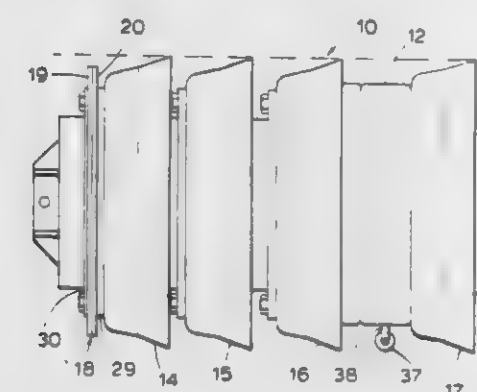
1. A pipeline pig movable along a pipeline for detecting surface projections on the internal wall thereof which reduce the nominal internal cross-section of the pipeline by more than a predetermined amount comprising:

a pig body

a flexible disc of dimensions less by said predetermined

amount than the nominal internal cross-section of the pipeline, said disc being mounted in its central region on said pig body so that the planar circular surfaces of said disc lie generally parallel to the cross-section of the pipeline;

circular supporting means mounted on, and extending radially from, said pig body coaxially with said disc and having a radius larger than said disc for supporting said pig



body in the pipeline with said disc substantially coaxial with the pipeline;

a plurality of strain gauges secured to the peripheral region of said disc, said strain gauges being radially orientated outwardly with respect to the center of the disc; and circuit means coupled to the plurality of strain gauges and electrically responsive thereto for detecting bending of the peripheral region of said flexible disc responsive to striking internal surface projections.

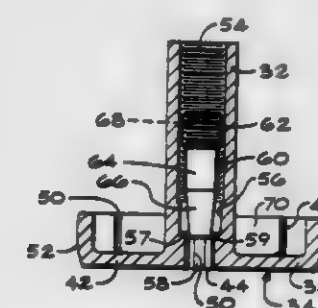
4,227,310

HEADS FOR GAGING DEVICES AND FIXTURE FOR SETTING SAME

Frank E. Vanderwal, Jr., St. Louis, Mo., assignor to Sunnen Products Company, St. Louis, Mo.
Filed Mar. 27, 1978, Ser. No. 890,127
Int. Cl.³ G01C 3/34

U.S. Cl. 33-178 R

15 Claims



1. A head for an in process gaging device comprising integral tube and gaging portions, said tube portion having first and second ends, the first of which is connected to the gaging portion, said tube portion having internal threads over a portion of the length thereof including the portion adjacent the second end, axial extending groove means dividing the gaging portion and the adjacent first tube end portion into at least three spaced segments capable of being deflected radially with respect to the tube portion, means forming an annular segmented adjustment edge in the tube portion inwardly of the gaging portion, each of said segments of the gaging portion having an outer peripheral flange portion with a work engaging surface which surfaces establish the gaging diameter of the head, and an adjustment member having a first portion threadedly engageable with the internally threaded portion of the tube portion and a second axially tapered portion cooperatively engageable with the annular segmented adjustment edge in said tube portion whereby rotation of said adjustment mem-

ber axially displaces the axially tapered second portion to change the gaging diameter.

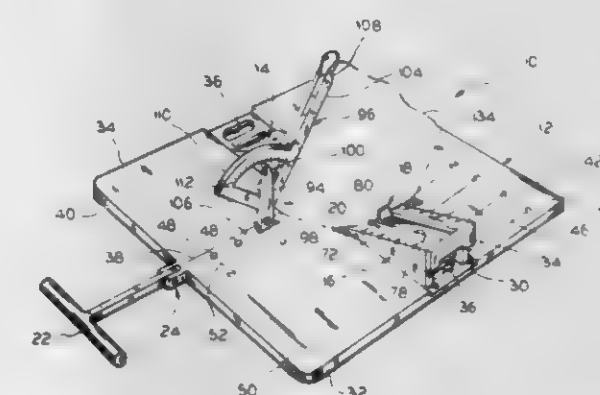
4,227,311

METHOD AND APPARATUS FOR ALTERING AN EQUINE LEG CONFORMATION

Charles A. Behney, Box 4337, Bisbee, Ariz. 85603
Filed Feb. 28, 1979, Ser. No. 16,280
Int. Cl.³ A01L 11/00

U.S. Cl. 33-195

17 Claims



1. Apparatus for use in altering an equine leg conformation and which comprises:

a base providing a supporting surface for an equine hoof, means on the base for bracing the hoof against shifting movement, and

a wedge advanceable on the base in the direction of the bracing means to wedge the hoof for tilting it with respect to the supporting surface into an attitude which serves to provide a desired altered leg conformation.

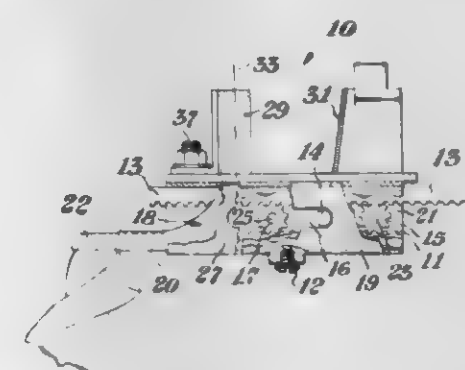
4,227,312

DRILL SHARPENING GAUGE

Wilbur A. Marshall, Rt. 2, Box 96 C., Aurora, Mo. 65605
Filed Oct. 1, 1979, Ser. No. 80,707
Int. Cl.¹ G01B 5/02; B27G 23/00; B23B 3/00

U.S. Cl. 33-201

4 Claims



1. A drill point gauge comprising a first rack and a second rack, said racks being opposed and cooperatively engaging two pinions spaced apart in the same place and positioned in a rectangular carriage, comprising two opposed plates, said pinions being individually mounted between said plates on individual stationary axes affixed between said plates and being adapted to rotate on said axes in cooperation with a stationary and a moving rack; said carriage, pinions and racks being positioned in a rectangular housing, having a bumper blade adjustably affixed thereto at any desired angle from the longitudinal axes thereof, said first rack being held stationary in said housing and said second rack and said carriage being movable with respect to said housing and said first rack, said first rack having an extended end portion without teeth and displaying a measuring section and one plate having an extended finger portion operating parallel and adjacent to a portion of the first

rack, said second rack being adapted to move a jaw blade which is adapted to cooperate with said bumper blade to measure the width of a drill at a given angle while said extended finger portion measures the length of one cutting edge of said drill on said extended end portion.

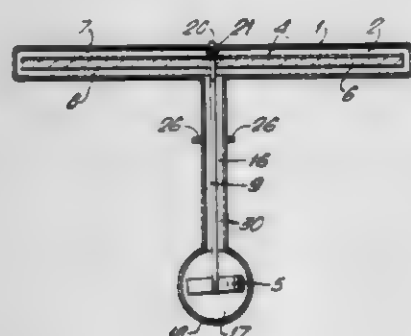
4,227,313 COMPASSES

John B. Hennessy, Ahuroa, North Auckland, New Zealand
Filed Apr. 12, 1978, Ser. No. 896,014
Claims priority, application New Zealand, Apr. 14, 1977, 183868

Int. Cl. G01C 17/08, 17/18

U.S. Cl. 33-364

8 Claims



1. A compass comprising:

an enclosed chamber;
a flat card, needle or the like positioned within said chamber;
said chamber comprising a cylinder having upper and lower end walls;
pivot suspension means, operably connected between said card, needle or the like and said upper end wall of said cylinder, for allowing said card, needle or the like to pivot within said cylinder about an axis perpendicular to said card, needle or the like;

said chamber containing therein liquid means for floating said card, needle or the like within said cylinder and for causing said card, needle or the like to rise upwardly against said pivot suspension means;

magnet mounting means engaged with and depending from said card, needle or the like within said chamber;

a magnet supported by said magnet mounting means within said chamber in a manner such that in use said magnet is rotatable at least in a plane normal to the plane of said card, needle or the like, such rotation not causing any substantial movement of said card, needle or the like;

said magnet mounting means and said magnet being free of any support from or connection to any walls of said chamber, whereby said card, needle or the like, said magnet mounting means and said magnet are supported within said chamber against said pivot suspension means solely by said liquid means;

said upper and lower end walls of said cylinder being positioned and dimensioned such that in directions normal to the plane of said card, needle or the like there are small clearances between said card, needle or the like and said end walls, whereby said end walls form means for limiting any tilting movement of said card, needle or the like with respect to said axis; and

said chamber further comprising an extension depending from the mid point of said cylinder, said magnet mounting means extending from said card, needle or the like into said extension, said magnet being pivotally affixed to said magnet mounting means, and the dimension of said extension being such that the diameter of said extension in a plane substantially parallel to the plane of said card, needle or the like is substantially less than the diameter of said cylinder in the plane of said card, needle or the like.

4,227,314 CARPENTER SQUARE WITH TAPE HOLDER

Edward Schliep, 3218 Twin City Dr., Mandan, N. Dak. 58554
Filed Feb. 22, 1979, Ser. No. 14,181
Int. Cl. B43L 7/08

U.S. Cl. 33-480

6 Claims



1. A carpenter square with tape holding means comprising:

(a) a square having first and second legs arranged perpendicular to each other,

(b) a tape holding section mounted on one of said legs, said tape holding section comprising a flat base on which the tape housing is supported, a straight side wall portion spaced from and parallel to said one leg, a curved portion which interconnects said side wall portion and said one leg, said curved portion having therebelow a slot the bottom of which is in the same plane as said base so that a tape can be directed through said slot for measuring purposes, whereby tapes having different size housings can be inserted between said one leg and said side wall portion, in contact with said one leg, and the leading edge of such a housing moved into contact with said curved portion to position such housing in contact both with said curved portion and said leg, and

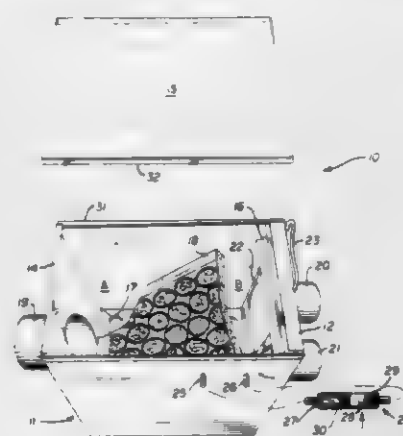
(c) means carried by said side wall portion for contacting the adjacent side of such tape housing positioned as aforesaid for holding such tape housing in such position.

4,227,315 CLOTHES DRYER HEAT ECONOMIZER

Jesse G. Hight, 313 Augustus, St. Marys, Ohio 45885
Filed Jun. 8, 1978, Ser. No. 913,594
Int. Cl. F26B 11/04

U.S. Cl. 34-82

2 Claims



1. A filter unit for use with a clothes dryer comprising a five sided housing with an open top, a cover having down-turned portions for closing said top, opposite sides of said open top having out-turned portions for receiving said down-turned portions of said cover, flange means on the top of said housing for retaining said cover on said housing, supports located at the far opposite ends of the housing for supporting a filter element

in a slanting position, said filter element and housing forming first and second chambers, a second means adapted for connecting the exhaust of a clothes dryer to said first chamber, third and fourth means connected to said second chamber for conducting air from said second chamber, fifth means for alternatively closing said third or fourth means.

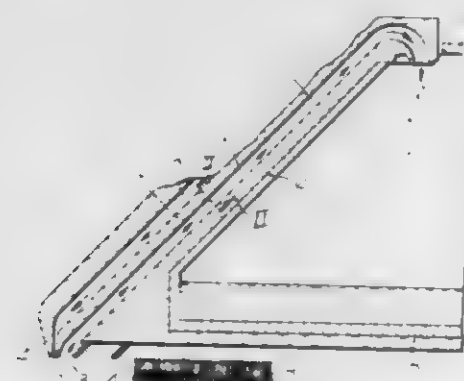
4,227,316 DISCHARGE DUCT FOR APPARUSES FOR EXTRACTING WATER FROM CARPETS

Helmut Schneider, Mainz, Fed. Rep. of Germany, assignor to Werner & Mertz GmbH, Mainz, Fed. Rep. of Germany
Filed Feb. 8, 1979, Ser. No. 10,718
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806681

U.S. Cl. 34-151

Int. Cl. F26B 9/00

11 Claims



1. An apparatus for extracting liquid from a wetted carpet by blowing gas through the carpet, which comprises

a gas duct for blowing gas through the carpet and which has a gas exit slot at the lower end thereof;

a discharge duct for discharge of a gas/liquid mixture from the carpet and having at a lower end an entry slot adjacent said gas exit slot and an upper end communicating with a liquid container, the discharge duct having an overall cross-section substantially the same as the cross-section of the entry slot;

means subdividing said discharge duct into a plurality of separate upwardly extending channels, each of said channels having a base which is curved in cross-section, the channels being inclined at an angle not greater than 60° with respect to the horizontal.

4,227,317 APPARATUS FOR THE HEAT TREATMENT OF TEXTILES

Hans Fleissner, Egelsbach bei Frankfurt am Main, Fed. Rep. of Germany, assignor to Vepa Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 768,382, Feb. 14, 1977, Pat. No. 4,137,649, which is a continuation of Ser. No. 463,146, Apr. 22, 1974, abandoned. This application Jun. 28, 1978, Ser. No. 919,839
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1973, 2320479; Apr. 21, 1973, 2320480; Apr. 21, 1978, 2320481; Nov. 17, 1973, 2357459

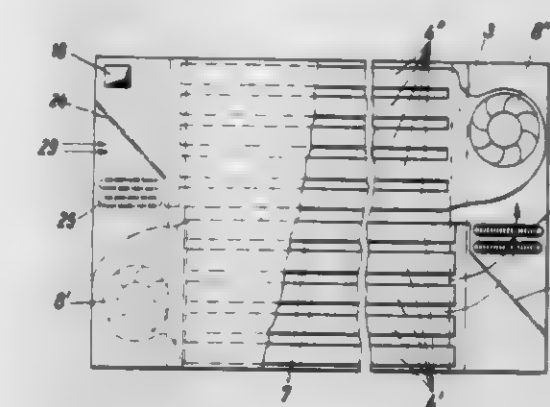
U.S. Cl. 34-155

Int. Cl. F26B 13/10

26 Claims

1. An apparatus for the heat treatment of textiles, especially for the heat treatment of a passing length of material extending in a plane, which comprises a plurality of sections of nozzle boxes extending across the operating width at least on one side of the length of the material, said nozzle boxes being fed from a front face and having openings discharging in a direction toward the length of material, a fan being disposed at the feed end of these nozzle boxes for introducing a gaseous treatment medium into said nozzle boxes, said fan being a radial-flow fan and being arranged, with its axis of rotation, at right angles to the plane of the length of material on a longitudinal side of the

apparatus, two sections of said nozzle boxes and associated radial fans being arranged adjacent to each other in a mirror-image transpositional relationship and being disposed in series



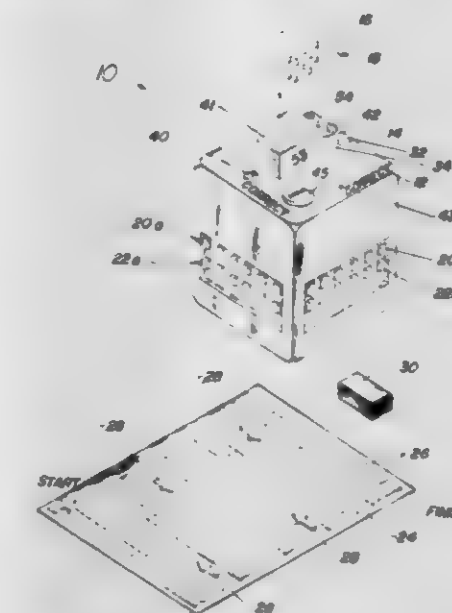
communication with each other to form a treatment compartment wherein the gaseous treatment medium is circulated through said two sections.

4,227,318 A QUIZ GAME WITH RESPONSE INDICATION FOR CORRECT AND INCORRECT ANSWERS

Calvin Mims, 427 N. Ridgeland Ave., Oak Park, Ill. 60302
Filed Feb. 21, 1979, Ser. No. 12,970
Int. Cl. G09B 7/06

U.S. Cl. 35-9 B

8 Claims



1. A game, comprising in combination: a multi-sided hollow game box having an opening in the top thereof; a set of selector switches arranged in a row on each side of said game box; a set of indicators arranged in a row on each side of said game box, said selector switches and said indicators being in registry with one another; means in said opening for receiving a game card; a game card having coded information thereon for energizing selective ones of said indicator in each of said sets of indicators, said game card having questions printed thereon to be answered by actuating at least one of the selector switches in said set of selector switches, and code reader means within said hollow game box to read the coded information on said game card and provide an indication of the correct answer to the question on said game card, whereby alignment of an energized selector switch and an energized indicator will indicate a correct answer, and misalignment of an energized selector switch and an energized indicator will indicate a wrong answer.

4,227,319

FLIGHT-CONTROL ELECTRO-HYDRAULIC SIMULATOR

Bernard F. R. Guy, Versailles, and Michel A. B. Lacroix, Velizy, both of France, assignors to Le Materiel Telephonique, Boulogne-Billancourt, France

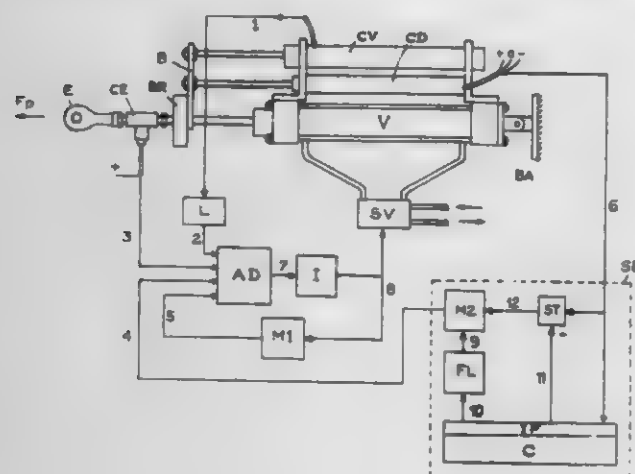
Filed Mar. 5, 1979, Ser. No. 16,963

Claims priority, application France, Mar. 9, 1978, 78 06832

Int. Cl.¹ G09B 9/08; B64C 13/46

U.S. Cl. 35—12 S

10 Claims



1. An electro-hydraulic control simulator for generating a reaction force for a control which is displaced by an operator, which comprises:

a double-action, hydraulic actuator including a piston which moves an amount X which is proportional to the displacement of said control by said operator;

a displacement sensor associated with said piston for producing an output signal which is proportional to the piston displacement X ; and

an hydraulic actuator servocontrol loop for producing a servo signal of amplitude F , $F=f(X)$, which represents part of the reaction force opposing the control force generated by the operator and which is also a function of the displacement X , the function $F=f(X)$ being represented by a curve having a central linear region corresponding to a threshold zone about $X=X_0$, said servo-control loop including:

- means, connected to said displacement sensor, for generating an output signal of value $X-X_0$;
- means, connected to said displacement sensor, for generating an output signal of value $F/X-X_0$, the amplitude of said signal being constant over the central region of said curve and being staircased over the outer regions of said curve; and
- an analog multiplication circuit connected to the outputs of said $X-X_0$ and $F/X-X_0$ signal generating means for performing an analog multiplication thereof.

4,227,320

CUSHIONED SOLE FOR FOOTWEAR

Alexander T. Borgeas, 129 W. Catalina Dr., Phoenix, Ariz. 85013

Filed Jan. 15, 1979, Ser. No. 3,535

Int. Cl.² A43B 7/14, 13/20, 13/40, 19/00

U.S. Cl. 36—88

11 Claims

1. An insert for covering at least a part of the sole position of footwear comprising:

- a pad portion, said pad portion comprising a relatively flat sole engageable member having a circular aperture therein, a resilient tubular member secured within said aperture in said flat sole engageable member in a coiled configuration substantially flush with the flat engaging surface of said sole engaging member,

said tubular member comprises a hollow configuration filled with a fluid material and means for anchoring the pad to the sole portion of the footwear used.



whereby when the sole of a user is applied to said tubular member, it momentarily distorts under its pressure and returns to its initial position when the force is changed thereby serving as a shock and torque absorber for the footwear.

4,227,321

SAFETY WRAPPER AND STRAP

Stephen C. Kling, 1151 Warrington Rd., Deerfield, Ill. 60015, and William A. Sands, 1441 Paddock, Northbrook, Ill. 60062

Filed Dec. 18, 1978, Ser. No. 970,240

Int. Cl.² A43B 7/22, 5/04

U.S. Cl. 36—91

2 Claims



1. A device of the class described for lessening injury by over-dorsiflexion of the foot and leg of a wearer during certain gymnastic maneuvers comprising a main elongated body having angular ends and a lower side, means for securing the ends together, an elongated tongue anchored to one end of the body on the lower side with the remaining portion extending outwardly, an elongated strap anchored at one end to said lower side of said body medially of the ends of the body with the remaining portion extending outwardly from said body where anchored, whereby said body is secured to the mid-foot of the wearer and the strap extends around the heel of the foot and is removably anchored thereto while the heel is slightly elevated.

4,227,322

SPORT FOOTWEAR OF INJECTED PLASTICS MATERIAL

Giuseppe Annovi, Montebelluna, Italy, assignor to Dolomite, S.p.A., Treviso, Italy

Filed Oct. 13, 1978, Ser. No. 950,999

Int. Cl.² A43B 5/04, 11/00

U.S. Cl. 36—117

7 Claims

1. Sporting footwear, such as mountain footwear, hockey or training footwear, comprising an upper of injected plastics material having a front opening formed by a pair of flaps, projection means integrally formed on the flaps from the same injected plastics material and being engageable with crossed lacing operable to hold the front opening of the footwear

closed, and separate protrusion means integrally formed on the flaps from the same injected plastics material near the projection means and coacting with the projection means to hinder



sliding of the lace relative to the projection means when the lace is engaged between the projection and protrusion means at least when the lace is slackened.

4,227,323

HYDRAULIC DREDGE SUCTION DIVERSION FLAP

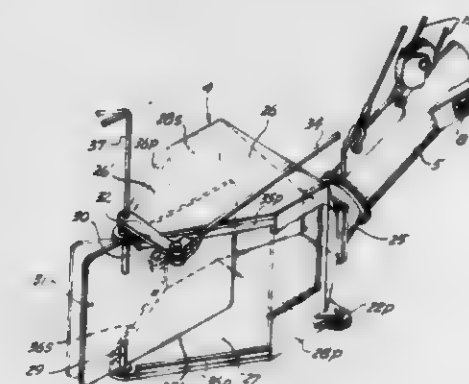
Thomas O. Quigg, Hoquiam, and Robert E. Deleard, Montesano, both of Wash., assignors to Twin Harbor Dredging Co., Aberdeen, Wash.

Filed Jan. 20, 1978, Ser. No. 871,106

Int. Cl.¹ E02F 3/92

U.S. Cl. 37—58

7 Claims



1. In a dredge including a suction head swingable along the bottom of a body of water, such head having opposite sides and upper and lower lips between such sides forming an end-opening mouth therebetween through which material is sucked, the improvement comprising a suction pipe connected to such head remote from the head's end-opening mouth and the head being symmetrical about an upright plane bisecting the suction pipe connection, upright pivot means carried by the outer portions of said lips in the plane of symmetry of the head, an upright flap swingably mounted by said pivot means for swinging through the plane of symmetry of the suction head to alternative extreme positions at opposite sides, respectively, of said plane of symmetry, said flap having an inner portion and an outer portion at opposite sides of said pivot means, respectively, in coplanar relationship, said flap inner portion extending inward from said pivot means a distance sufficient for engagement with a selected one of the head sides to limit outward swinging of the inner portion of the flap and said flap outer portion projecting outward from said pivot means a distance less than the inward extension of said inner portion from said pivot means for scooping material to be sucked into the suction head mouth.

4,227,325

GRAVE MARKER

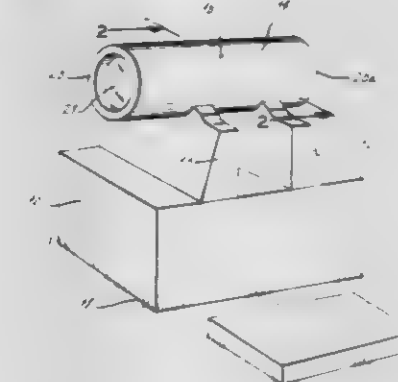
Leon Whitford, 1015 S. 5th St., Greenville, Ill. 62246

Filed Nov. 3, 1978, Ser. No. 957,524

Int. Cl.¹ G09F 19/00

U.S. Cl. 40—124.5

5 Claims



1. A grave marker comprising a base and a horizontally extending, elongate chamber mounted on said base, retaining means spaced from the ends of said chamber for holding a picture or the like in a position disposed within a plane extending longitudinally within the chamber and spaced from the ends of the chamber in facing relation to a side wall of the chamber, said chamber having through said side wall a view port aligned with the picture or the like and there being lens means sealing said view port for viewing said picture or the like, and indirect light transmitting means closing at least one end of said chamber for passing sunlight into said chamber without direct impingement upon said picture or the like.

4,227,326

AMUSEMENT DEVICE

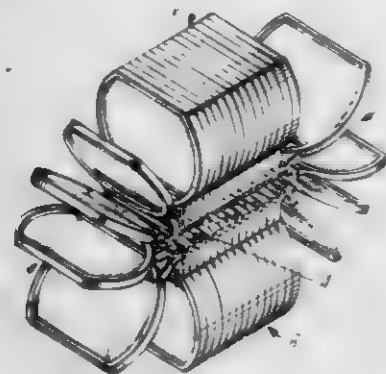
Alan J. Adler, 752 La Para Ave., Palo Alto, Calif. 94306

Filed Nov. 28, 1978, Ser. No. 964,198

Int. Cl. G09F 11/14; G03B 25/00

U.S. Cl. 40-527

24 Claims



1. An amusement device comprising:

a plurality of thin, planar segments, each segment having a pair of opposed faces, an elongated base portion defining one edge of the planar segment and an elongated flat edge located at the side of the segment opposite the base portion;

rib and socket means on the base of each segment for press fit engagement of the base portion of one segment with adjacent segment base portions, said rib and socket means pivotally interconnecting adjacent segments thereby defining an axis of rotation of said segments between a position of face to face abutment and a position of angular separation of adjacent segments; and means on each segment for preventing translation of engaged segments along the axis.

4,227,327

SOLAR SIGN ASSEMBLY

Marion E. Thompson, P.O. Box 460, Colorado Springs, Colo. 80901

Filed Apr. 11, 1979, Ser. No. 30,608

Int. Cl. G09F 11/12

U.S. Cl. 40-473

16 Claims



1. An assembly comprising

a base;
a d.c. motor mounted in said base and completely surrounded thereby, said motor having a shaft;
a solar cell;
means for operatively connecting said solar cell to said base while providing electrical interconnection between said cell and said motor;
a sign member having a substantially planar surface with word indicia formed thereon;
an elongated shaft-like member operatively connected to said sign member and elongated in a plane substantially

coincident with or parallel to said sign member planar surface;

means for interconnecting said sign member shaft-like member and said motor shaft so that said motor rotates said sign member with respect to said base when incident radiation of sufficient intensity strikes said solar cell;
said d.c. motor normally rotating its shaft at a speed too fast for normal recognition of the word indicia on said sign member; and
the area of said sign member being chosen, and said means for interconnecting said sign member shaft-like member and said motor shaft being so constructed, that said sign member rotates at a speed, slower than the motor shaft, appropriate for normal recognition of the word indicia on said sign member.

4,227,328

DISPLAY DEVICE

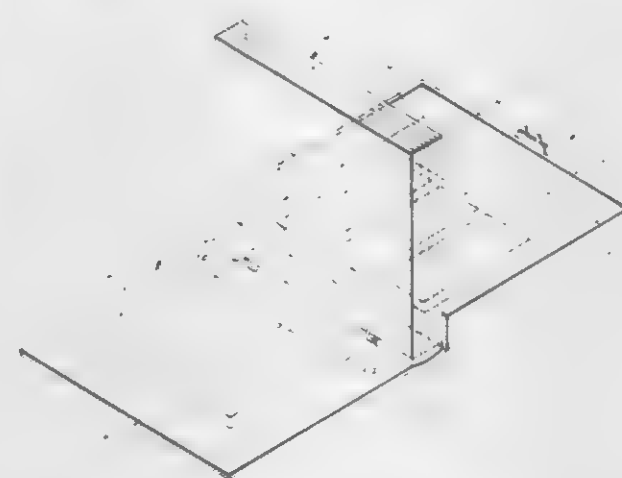
Eddie L. Clipper, Jr., 686 Lafayette Ave., Brooklyn, N.Y. 11216

Filed Jul. 24, 1978, Ser. No. 927,387

Int. Cl. G09F 19/00

U.S. Cl. 40-530

7 Claims



1. A display, for holding picture storing elements, of the type that opens like a book comprising:

a first rectangular display side;
a second rectangular display side;
a rectangular backing side having one edge flexibly connected to one edge of the first side and the parallel edge of the backing side flexibly connected to one edge of the second side;
a wall portion attached to the three edges, of the second side, that are not connected to the backing side, said wall being perpendicular to the plane of the side whereby the wall and sides form a closed receptacle when the first side is folded over the second side;

means for attaching a plurality of picture storing elements to the backing side, said means for attaching are positioned such that the picture storing elements are within the receptacle when the first side is folded over the second side, said means of attaching permit rotation of the picture storing elements from a position atop the first side to a position atop the second side;

fastening means on the first and second sides for removably attaching display elements to the first and second sides, such that the display can be within the closed receptacle; the display element attached to the first side comprising: two rectangular sheets sealed along three sides whereby forming a storage pocket between the sheets;
and a plurality of pockets attached to the front sheet that is not fastened to the first side;
and the display element attached to said second side comprising:

a rectangular storage box;
and a plurality of pockets attached to the front face opposite to the face attached to the second side.

4,227,329

SIGN POST

Jean-Claude Decaux, 53 Av. du Mal Lyautey, 75016 Paris, France

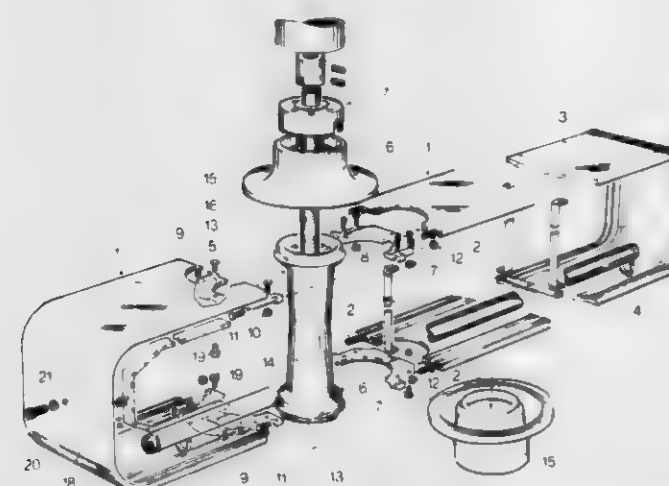
Filed Oct. 31, 1978, Ser. No. 956,377

Claims priority, application France, Dec. 7, 1977, 77 36825

Int. Cl. G09F 15/00

U.S. Cl. 40-607

4 Claims



1. In a sign post comprising a supporting tube structure having a longitudinal axis, at least an elongated box structure which comprises a first half-shell and a second half-shell, the half-shells being engaged with the tube structure on opposite sides of the tube structure and having a joint line substantially contained in a plane which contains said axis and is transverse to the length of the box structure, first half-rings associated with the first half-shell and second half-rings associated with the second half-shell, first fixing means fixing the first half-rings to the first half-shell, second fixing means fixing the second half-rings to the second half-shell, and third fixing means fixing the first half-rings to the second half-rings to form substantially a ring unit gripping the tube structure and holding the box structure in position on the tube structure; the improvement wherein said first means are releasable from outside the box structure, said first half-rings and second half-rings are engaged with the tube structure on opposite sides of said plane and are shaped and disposed to be withdrawable from the tube structure transversely of said plane, said third fixing means are releasable laterally of said axis and accessible from the side of said plane adjacent to the first half-shell and the tube structure has at least an upwardly facing abutment surface against which surface first and second half-rings bear axially downwardly of the tube structure.

4,227,330

BREECH-LOADING TO MUZZLE-LOADING FIREARM CONVERTING DEVICE

Paul D. Chapin, 1936 Fifth St., Ceres, Calif. 95307

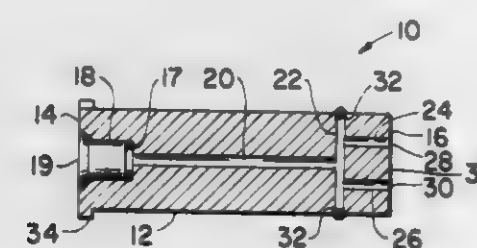
Continuation-in-part of Ser. No. 822,493, Aug. 8, 1977,

abandoned. This application Jun. 29, 1978, Ser. No. 920,614

Int. Cl. F41C 21/10

U.S. Cl. 42-77

13 Claims



1. A device for installation in the breech of a breech-loading firearm to convert said firearm to one of a muzzle-loading variety, comprising:

an elongate body member having an outer surface that is

conformably shaped for mating engagement with the interior of the breech of the firearm and having a pair of opposed ends, the body member being formed with a primer-receiving chamber at one end and means for establishing communication between the primer-receiving chamber and the opposite end, the communicating means including a passageway to the primer-receiving chamber, at least a pair of generally parallel, non-axial passages to the opposing end, and an intermediate passage establishing communication between each one of the pair of non-axial passages and the axial passage.

4,227,331

FISH LURE

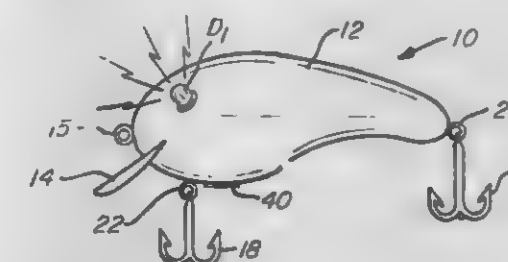
Curtis W. Ursrey, and Richard L. Tillery, both of Hemphill, Tex., assignors to Lite-Bait, Inc., Hemphill, Tex.

Continuation-in-part of Ser. No. 774,853, Mar. 7, 1977. This application Mar. 7, 1978, Ser. No. 884,359

Int. Cl. A01K 85/01

U.S. Cl. 43-17.6

4 Claims



1. A fishing lure comprising:

a lure body;
at least one light emitting diode light source rigidly secured to and protruding outwardly from said body, said light emitting diode being of a type which emits a green light having a peak emission wave length between about 550 to about 575 nm;
power supply means disposed internally of said body for energizing said light source;
hook means secured to said body, and
a solid state, electronic water sensor means including a transistor and connected to said power supply and said light source, said water sensor means serving to automatically energize said light source when said lure is in contact with water, said water sensor means comprising at least two sensing elements for contacting with said water, said water sensor being of a type in which the water acts as a resistance effective to bias said transistor into conducting.

4,227,332

STONE FLY NYMPH

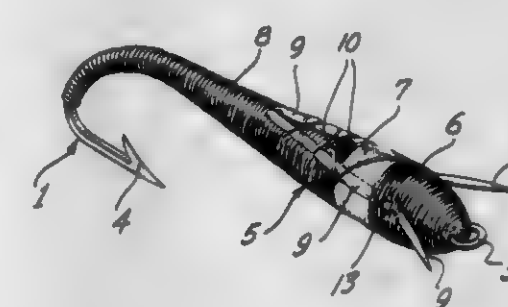
Percy P. Crofoot, and James A. Crofoot, both of P.O. Box 130, Silver Lake, Oreg. 97638

Filed Mar. 26, 1979, Ser. No. 23,822

Int. Cl. A01K 85/08

U.S. Cl. 43-42.25

8 Claims



1. In a nymph including a hook having an eye and a yarn body wrapped around the hook shank, the improvement com-

prising two narrow strips of buoyant material secured outside the yarn body, each of said strips being at least several times greater in length than in width and extending generally longitudinally of and above the hook shank, said strips diverging forward and outward from the hook shank, resembling antennae, and in contact with water when the nymph is placed in water for maintaining the hook with its barbed end substantially directly below its shank.

4,227,333

METHOD FOR THE EARLY DETECTION, LOCALIZATION AND CONTROL OF KHAPRA BEETLES AND THEIR LARVAE, AND AN ODOR, TASTE AND/OR CONTACT-RESPONSIVE TRAP FOR CARRYING OUT THE METHOD

Hermann Levinson; Anna-Rose Levinson, both of Oberholzstrasse 4, 8131 Starnberg, Fed. Rep. of Germany; Wendell Burkholder, University of Wisconsin, Madison, Wis. 53706; Robert M. Silverstein, and Robert Cassidy, both of State University of N.Y., Syracuse, N.Y. 13210

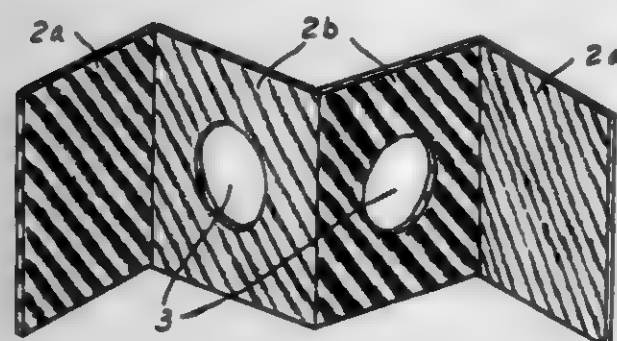
Filed Sep. 28, 1977, Ser. No. 837,648

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644217

Int. Cl.³ A01M 1/00

U.S. Cl. 43-107

1 Claim



1. A contact and odor responsive device for trapping Khapra beetles and their larvae comprising in combination a feed luring means, a synthetic pheromone and a lethal means contained within a trap constructed of a corrugated paper board strip, which is folded together to form two cover sections and two center stations provided with recesses in a manner such that the recesses of the center sections define an inner cavity.

4,227,334

POLYHEDRAL ANNULAR STRUCTURES, AND BLANKS THEREFOR

Rea F. Hooker, 170 W. 74 St., New York, N.Y. 10023

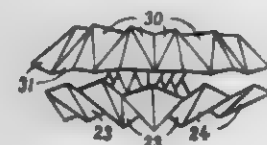
Filed Jan. 10, 1978, Ser. No. 868,328

The portion of the term of this patent subsequent to Jan. 11, 1994, has been disclaimed.

Int. Cl.³ A63H 33/16

U.S. Cl. 46-1 L

10 Claims



1. A polyhedral structure which is radially substantially symmetrical about a central axis, said structure comprising a number of planar trapezoids hinged together at their sides so as to form a continuous, multiplanar toroidal web having two edges, which structure can be rotated, about its core, into a plurality of different stable configurations each of which is radially substantially symmetrical about said central axis, said structure comprising plane elements arranged in at least two

interfitting rows of adjacent elements, at least one of said rows being a trapezoid-row which is a ring of single trapezoids arranged in alternation so that each trapezoid has a hinged longer side in common with one of its two neighbors of its row and has a hinged shorter side in common with the other of its neighbors of its row, said rows interfitting so that each of said trapezoids of said trapezoid-row has a side in common with a plane element of the adjacent row, the longer and shorter common sides within said trapezoid-row being respectively, infold and outfold hinges arranged within planes which radiate from and include said axis and the sides which adjacent rows have in common being outfold hinges.

5. A flat blank of sheet material, said blank having means, including score lines at which said blank can be folded and edges adapted to be secured together to form a continuous web after said blank is folded at said score lines, for converting said blank to a polyhedral structure which is radially substantially symmetrical about a central axis, said structure comprising a number of planar trapezoids hinged together at their sides so as to form a continuous multiplanar toroidal web having two edges, which structure can be rotated, about its core, into a plurality of different stable configurations each of which is radially substantially symmetrical about said central axis, said structure comprising plane elements arranged in at least two interfitting rows of adjacent elements, at least one of said rows being a trapezoid-row which is a ring of single trapezoids arranged in alternation so that each trapezoid has a hinged longer side in common with one of its two neighbors of its row and has a hinged shorter side in common with the other of its neighbors of its row, said rows interfitting so that each of said trapezoids of said trapezoid-row has a side in common with a plane element of the adjacent row, the longer and shorter common sides within said trapezoid-row being respectively, infold and outfold hinges arranged within planes which radiate from and include said axis and the sides which adjacent rows have in common being outfold hinges.

4,227,335

GRAPHIC ART TOY

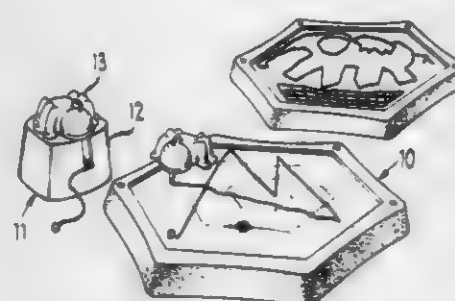
Wayne A. Kuna, Elmhurst, and Rouben T. Terzian, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 5, 1979, Ser. No. 1,179

Int. Cl.³ A63H 33/00, 13/00; D05C 5/00, 15/00

U.S. Cl. 46-1 R

16 Claims



1. A graphic arts toy, comprising:

a base;

a wall on the base provided with an exposed surface, said wall having a flexible substrate and being provided with a plurality of openings extending from said surface at least partially into said substrate and positioned in spaced apart relationship around said surface to form a variety of graphic patterns;

an elongated flexible string adapted to be pushed into said openings at spaced intervals to form loops entirely within said substrate and thus interconnect selected ones of said openings to form a graphic pattern on said surface; and means for storing and dispensing said elongated flexible string including a housing shell which is manually movable over the exposed surface of said wall, spool means

rotatably mounted within the housing for feeding said string and manually actuatable means on the exterior of said housing for engagement by the user to rotate the spool in a direction to store the string on the spool within the housing.

4,227,336

MINIATURE HOUSE CONSTRUCTION

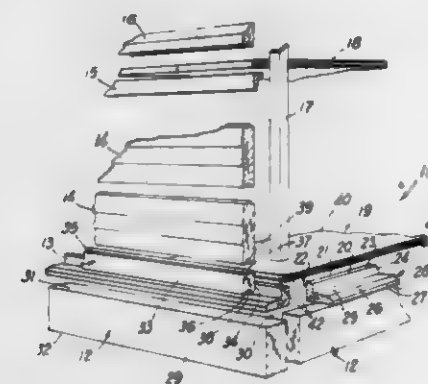
Robert J. Misterka, 702 Sugar Creek Trail, Conners, Ga. 30207

Filed Dec. 11, 1978, Ser. No. 968,355

Int. Cl.³ A63H 33/14

U.S. Cl. 46-12

1 Claim



1. An improvement in the construction of a miniature home comprising ground flooring having a top surface, an underside and outer edges and an exterior side wall section having front, back and bottom surfaces, the improvement comprising:

means for simultaneously supporting said flooring and said exterior side wall section in perpendicular relationship to each other, said supporting means comprising an L-shaped member having a top ledge portion, a bottom ledge portion and a vertical section interconnecting said top and bottom ledge portions with said top ledge portion terminating in said vertical section and said bottom ledge portion laterally extending from the bottom of said vertical section for a distance at least equal to the width of said exterior wall section, whereby said flooring is supported on said underside adjacent said outer edges on said top ledge portion and said exterior wall section is supported along said bottom surface on said bottom ledge portion, the bottommost member of said exterior wall section being a single unit and the remaining portion of said exterior wall section being formed of multiple units of said single unit and wherein said ground flooring is supported on said top ledge portion so that said top surface of said ground flooring is so-planar with the upper surface of said single unit when said exterior wall section is supported on said bottom ledge portion.

4,227,337

TOY BUILDING UNITS

Dale L. Murray, Hopkins, and Jerry L. Dohse, St. Louis Park, both of Minn., assignors to Tonka Corporation, Spring Park, Minn.

Filed Feb. 9, 1979, Ser. No. 10,795

Int. Cl.³ A63H 33/08

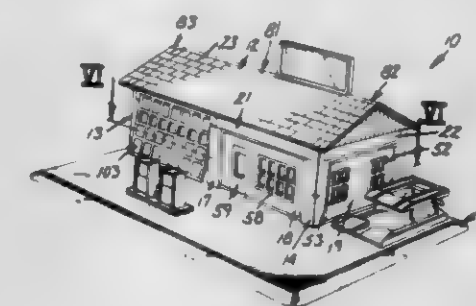
U.S. Cl. 46-12

12 Claims

1. A toy building construction comprising:

a base member, a plurality of spaced upstanding support posts mounted on said base member, a plurality of wall panels, each of said panels being fitted between a pair of said support posts, and a roof structure mounted above said support posts and wall panels, said base member including a plurality of pairs of upwardly extending projections, each pair of said projections being adapted to coact with one of said support posts to frictionally secure said support post to said base in a clamp-like manner, said support posts each including wall means defining at least a pair of channels extending the length of said support

post, said wall means serving to frictionally engage one of said projections in the end of each of said pair of channels,



said wall means further serving to entrap one end of one of said wall panels in one of said channels.

4,227,338

THERMOMETER AND DOLL HAVING CAPACITY TO REGISTER TEMPERATURE

Walter D. Colquitt, 18673 Wisconsin, Detroit, Mich. 48221

Filed Aug. 11, 1978, Ser. No. 932,765

Int. Cl.³ A63H 33/26, 3/36, 11/00; G09B 23/28

U.S. Cl. 46-45

11 Claims



1. A doll and thermometer in combination wherein said doll is provided with an aperture and an electric circuit comprising:

a power source;

at least one resistive heating element; and

means operable to open and close said circuit and wherein said thermometer, when inserted into the doll through said aperture, disposes said resistive heating element in electrical connection with said power source with the heat generated by said resistive heating element being registered on said thermometer.

4,227,339

TOY ANIMAL

Walter Moe, Los Angeles, Calif.; Charles M. Diker, New York, N.Y., and Harley Wolf, Studio City, Calif., assignors to Diker Moe Associates, West Los Angeles, Calif.

Filed Feb. 1, 1979, Ser. No. 8,436

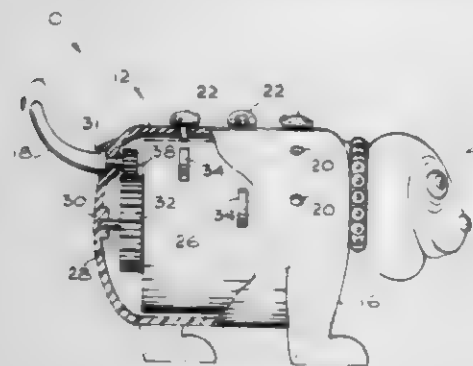
Int. Cl.³ A63H 11/00

U.S. Cl. 46-123

3 Claims

1. A toy comprising a generally-cylindrical hollow central portion having a number of apertures from its exterior to its interior, a cylinder mounted to rotate in the interior of the central portion, means for rotating the cylinder, a thing having

a projecting appendage selected to extend through said apertures into the interior of the central portion, and means includ-



ing a spring mounted to said cylinder for causing said thing to fly off of the exterior of the central portion.

4,227,340 PLAY SET

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Elonne Dantzer, Redondo Beach, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.

Filed Feb. 12, 1979, Ser. No. 11,445

Int. Cl.¹ A63H 3/00

U.S. Cl. 46-151

18 Claims



1. A play set comprising:

- (a) a three-dimensional doll figure having a front surface which is contoured and bears indicia to represent original posturing and related objects;
- (b) at least one attachment piece for releasibly attaching to said doll figure, said piece having a contoured portion for overlying a portion of the front surface of the doll figure and an attachment means for engaging said doll figure to releasibly attach the piece to the doll figure, said piece being contoured and bearing indicia to represent posturing and related objects different from said original posturing and related objects, said piece being proportioned and arranged to block from view portions of said original posturing and related objects and to present to view different posturing and related objects from those which are blocked, and
- (c) wherein said doll figure is self-standing and said piece is also self-standing, said doll figure being supported by said piece when they are attached together and said piece rests on a supporting surface for the play set.

4,227,341 RING TOY

William A. Kaul, Jr., 10009B Spearfish Ave., Ellsworth AFB, S. Dak. 57706

Filed Dec. 5, 1978, Ser. No. 966,617

Int. Cl.¹ A63H 33/02

U.S. Cl. 46-220

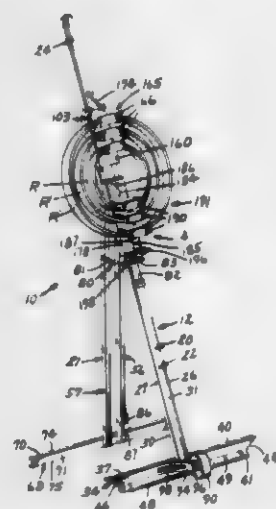
6 Claims

1. A ring toy, comprising:

- a generally T-shaped first member having an elongated generally linear center piece, said center piece having a front generally planar surface a back generally planar surface, opposite generally parallel side surfaces, a first, handle end, a second end spaced from said first end, and a

first cross piece perpendicularly connected to said front surface of said center piece at said second end of said center piece and extending transversely beyond said side edges, said first cross piece having a front surface, a back surface, a top surface, a bottom surface and a pair of opposite spaced ends, each of said ends of said first cross piece having notches formed therein;

a generally T-shaped second member having a pair of parallel elongated side pieces spaced the width of said center piece, each of said side pieces having a front surface, a back surface, opposite generally parallel spaced inner and outer side surfaces and first and second spaced ends, and a second cross piece connected transversely to said front surface at said second ends of said side pieces and extending beyond said outer surfaces, said second cross piece having a front surface, a back surface, a top surface, and a bottom surface; said side pieces being pivotally connected at said first ends to said center piece between said first and second ends thereof, for pivotal movement of said second cross piece toward and away from said first cross piece so that said bottom surface of said second cross piece abuts said top surface of said first cross piece, and so that said second and first cross pieces are generally coplanar and



said side pieces and center piece are generally coplanar when said back surface of said second cross piece is in planar contact with said front surface of said center piece;

- a wheel;
- a pair of spaced wheel support members connected to and extending from said back surface of said first cross piece to rotatably mount said wheel;
- a latch pivotally connected to said back surface of one of said side pieces for pivotal movement across said back surfaces of said center pieces and the other of said side pieces to releasibly secure said first member to said second member;
- a generally U-shaped member including a pair of arms having first bent ends, and a bottom portion transversely interconnecting said arms, each of said first bent ends being pivotally secured to said outer edge of one of said side pieces;
- a guide member secured to said back surface of said center piece and configured to define therewith a slot within which said bottom portion of said U-shaped member slides to limit said pivotal movement of said second member with respect to said first member; and
- a cylindrical roller rotatably mounted within said bottom edge of said first cross piece.

4,227,342

THUMB TWIDDLING TOY

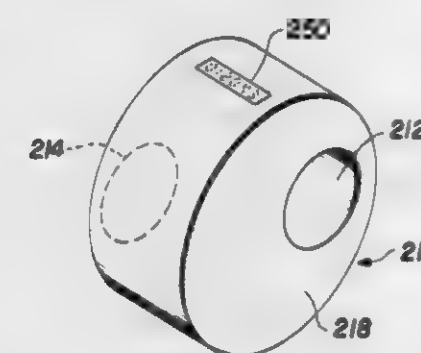
Horace A. Knowles, 506 G St., SW., Washington, D.C. 20024, assignor to Horace A. Knowles, Washington, D.C.

Filed Jul. 6, 1979, Ser. No. 55,746

Int. Cl.¹ A63H 33/26, 1/32; A63B 67/00, 59/00

U.S. Cl. 46-228

14 Claims



1. A device for use in twiddling the thumbs comprising: first means to rotate about the first digit of a first thumb comprising a first cylindrical wall member defining a first hole of diameter slightly larger than the diameter of the thumb, said first wall member being smooth and of a length approximately equal to the length of the first digit of the thumb, second means to rotate about the first digit of a second thumb comprising a second cylindrical wall member defining a second hold of diameter slightly larger than the diameter of the thumb, said second wall member being smooth and of length approximately equal to the length of the first digit of the thumb; said first circular wall member being spaced from said second circular wall member by an intermediate portion of width no greater than about 1/2 the thickness of the thumb.

4,227,343

HORTICULTURE DEVICE FOR ROTATING PLANTS DUE TO TRANSPIRATION AND EVAPORATION OF MOISTURE

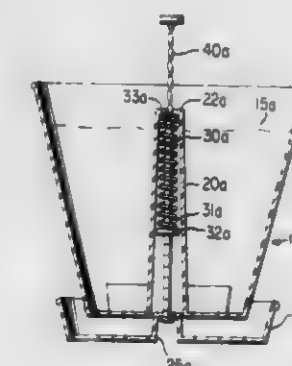
Calvin Espy, 2303 Riverbrook Rd., Decatur, Ga. 30032, and Thomas Goddly, Atlanta, both of Ga., assignors to Calvin Espy, Decatur, Ga.

Filed May 30, 1979, Ser. No. 43,896

Int. Cl.¹ A47G 7/00

U.S. Cl. 47-39

5 Claims



1. A horticulture device for rotating a plant, comprising: a container means for holding the plant and water for the plant;

- means for supporting the container;
- motion converting means disposed between the container means and the support means for converting linear motion to rotary motion;
- compression spring means disposed between the container means and support means for compression when gravitational force is applied to the container means by adding water to the container means, whereby as the water is lost from the container means the compression spring means moves the container means upward relative to the support means, said motion converting means being connected to

rotate the container means as the spring means expands due to loss of water from said container means.

4,227,344

AUTOMATIC PARKING LOT GATE WITH FOUR-WAY FLEX CONNECTOR

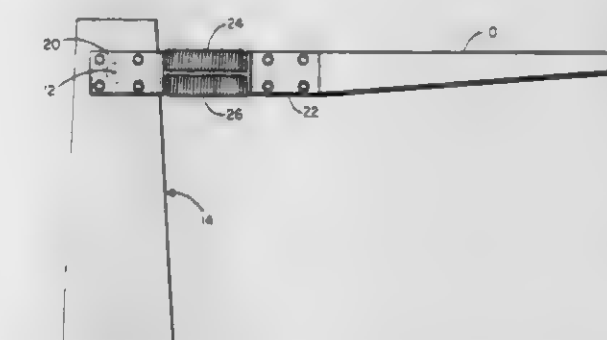
David Poppke, 1414 N. 16th St., Bismarck, N. Dak. 58501

Filed Feb. 15, 1979, Ser. No. 12,330

Int. Cl.¹ E01F 13/00

U.S. Cl. 49-9

15 Claims



1. A parking lot gate for selectively blocking a path of a vehicle, the parking lot gate comprising:

- an elongated gate arm for blocking the path when in an essentially horizontal position and being pivotable about a pivot axis in an essentially vertical plane to an upraised position out of the path;
- arm drive means for selectively pivoting the gate arm about the pivot axis;
- a first connection plate connected to the arm drive means;
- a second connection plate connected to the gate arm;
- a first coil spring having a first end connected to the first connection plate and a second end connected to the second connection plate;
- a second coil spring having a first end connected to the first connection plate and a second end connected to the second connection plate, the first and second coil springs being positioned essentially parallel to one another in an essentially vertical plane;
- first connecting means for connecting the first ends of the first and second coil springs to the first plate, wherein the first connecting means comprises first inserts which extend into and are welded to the first ends of the first and second coil springs and are connected to first connection plate; and
- second connecting means for connecting the second ends of the first and second coil springs to the second plate, and wherein the second connecting means comprise second inserts which extend into and are welded to the second ends of the first and second coil springs and are connected to the second connection plate.

4,227,345

TILT-LOCK SLIDE FOR WINDOW SASH

Robert C. Durham, Jr., 2416 NE. 27 Terrace, Fort Lauderdale, Fla. 33305

Filed Jan. 26, 1979, Ser. No. 6,653

Int. Cl.¹ E05D 13/12

U.S. Cl. 49-181

2 Claims

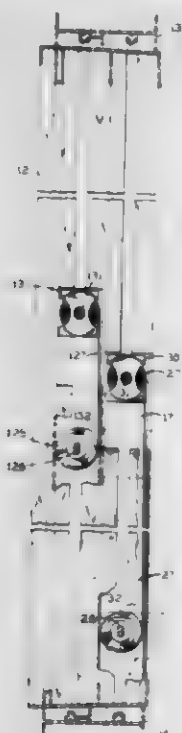
- 1. In combination with
- a window frame presenting opposite vertical sides which define respective vertically elongated tracks with vertically elongated openings which face toward each other at the inside of the window frame, each of said opposite vertical sides of the window frame having opposite lateral side walls along the respective track which extend laterally outward from the respective vertically elongated opening at the inside of the window frame, and wherein said window frame at each side presents a pair of verti-

cally elongated lips along the front and back of said vertically elongated opening at the inside of the frame, with the lips of each pair extending toward each other substantially perpendicularly away from said opposite side walls of the respective track in the window frame to confine said slide member and said spring in the respective track, and a transverse side wall at the outside of the frame extending perpendicularly between said opposite lateral side walls; and a window sash fitting closely and slidably inside said frame;

the improvement which comprises:

a respective flat leaf spring with a spirally wound upper end fastened to said window frame and disposed in each of said tracks with the axis of said spirally wound upper end parallel to said lateral side walls, each said spring being extensible downward along the respective track substantially contiguous to and parallel to one of said lateral side walls thereof and having a width extending across said last-mentioned lateral side wall which is substantially greater than its thickness front-to-back of the window frame;

and a respective one-piece resilient slide member with a cam-shaped periphery fastened to the lower end of each spring and disposed in the respective track in the window



frame, each said slide member being rigidly coupled to the window sash for movement in unison therewith vertically along the window frame and pivotally with respect to the window frame, each said slide member having a minimum diameter extending substantially horizontally when the window sash is vertical and being readily slidable vertically along the respective window frame track when its minimum diameter is substantially horizontal, and each slide member having a portion of larger diameter which is frictionally wedged between said opposite lateral side walls of the respective window frame track when the slide is turned by tilting the window sash substantially from its vertical position, whereby to lock the window sash against vertical movement in the window frame when so tilted;

said slide member having an axis substantially parallel to said lateral side walls and having means forming a substantially C-shaped opening therein extending about said axis which makes said slide member resiliently yieldable from both lateral side walls when wedged between said opposite lateral side walls to assist in said locking action;

and the lower end of said spring being partially wrapped around said periphery of said slide member when said slide member is turned.

4,227,346 MODULAR CASE SECTION AND FRAME SECTION FOR LIFTING AND/OR SLIDING WINDOWS OR DOORS

Hans Kubik, Bodenwöhr, Fed. Rep. of Germany, assignor to Golde GmbH, Geretsried, Fed. Rep. of Germany

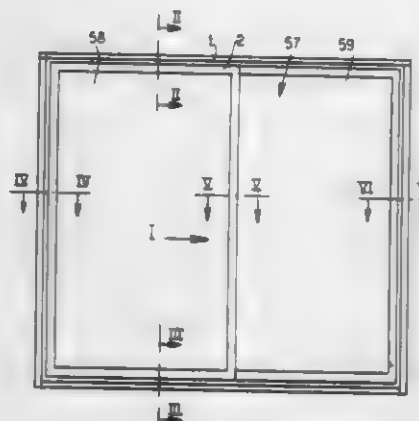
Filed May 12, 1978, Ser. No. 905,202

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 7725150[U]

Int. Cl.² E05D 13/02

U.S. Cl. 49—425

16 Claims



1. In a lifting and/or sliding closure assembly such as windows and/or doors of the type which include case and frame sections formed of modular elongate first and second hollow elements, the first elements arrangeable end to end within a building opening to define a casement construction and said second elements arrangeable end to end to define a sash construction receivable within said casement construction for defining said closure, a running carriage mechanism and a closing mechanism, and means operable to couple the sash construction within the casement construction, the invention comprising each of said sections having plural enclosed chambers therein, said first and second elements each having circumferential walls defining a generally rectangular cross-sectional configuration, a plurality of elongate guide sections, first flange means formed on said guide sections and first recess means formed along the length of one of said circumferential walls of said first element receiving said first flange means coupling said guide sections to said first element, the running carriage mechanism being received within a selected one of said second elements, the closing mechanism being received within a selected one of said second elements, an elongate hollow connection section coupled to said guide section and outwardly opening channel defining means formed on said guide section along the length thereof receiving a portion of said connection section, second recess means formed in said second element of size and configuration to receive a selected one of said connection section, a running carriage mechanism and closing mechanism respectively therein, said second recess means being of conforming cross-sectional configuration to the cross-sectional configuration of said connection section, and plural groove means formed in said second elongate elements along the length thereof and plural sealing members seated within said grooves and extending outward therefrom.

4,227,347 TWO MOTOR DRIVE FOR A WAFER PROCESSING MACHINE

Johann Tam, Saratoga, Calif., assignor to Silicon Valley Group, Inc., Sunnyvale, Calif.

Filed Sep. 14, 1978, Ser. No. 942,268

Int. Cl.¹ B24B 47/00

U.S. Cl. 51—235

1 Claim

1. A drive mechanism for a wafer processing machine of the kind in which a silicon wafer is held on the top of a rotatable chuck and is rotated at a relatively low and precisely controlled speed during a first processing operation, such as an edge contouring or upper surface cleaning operation, and in

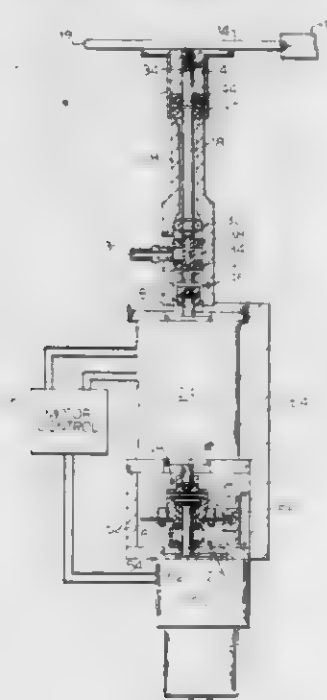
which the wafer is then rotated at high speed during a subsequent operation, such as rinsing and drying, said drive mechanism comprising:

a chuck constructed to hold a wafer on top of the chuck with the periphery of the wafer extending outwardly from the chuck;

a drive shaft connected to rotate the chuck;

low-speed gear motor means operatively connected with the drive shaft for rotating the chuck and wafer in one direction of rotation with relatively high torque at low speed during the first processing operation;

high-speed motor means directly connected to the drive shaft for rotating the chuck and wafer in said one direction of rotation with relatively low torque at high speed during the subsequent processing operation;



the operative connection between the low-speed motor means and the drive shaft including overrunning clutch means for permitting the high-speed motor means to overrun the low-speed motor means and to rotate the chuck and wafer in said one direction of rotation at high speed during the subsequent processing operation and biasing means for energizing the high-speed motor toward rotation in a direction opposed to said one direction and for applying a counter torque to the drive shaft in a direction counter to the direction of rotation of the drive shaft by the low-speed motor means to insure against any slack or rebounding through the overrunning clutch means which could result in the wafer rotating, momentarily or continuously, at a speed greater than the low-speed motor and thereby producing loss of speed control or chattering during the first processing operation.

4,227,348 METHOD OF SLICING A WAFER

Robert R. Demers, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,458

Int. Cl.¹ B24B 1/00

U.S. Cl. 51—283 R

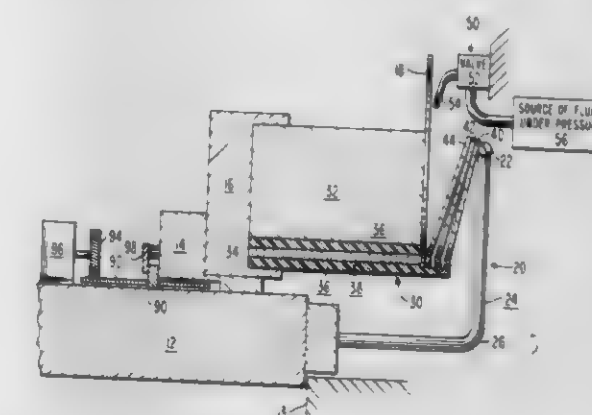
3 Claims

1. A method of slicing wafers from an ingot which comprises a boule of the material to be sliced into wafers and a binding material for retaining the wafers as part of said ingot after they have been sliced, wherein said method comprises slicing a plurality of wafers from said boule prior to severing any of said plurality of wafers from said ingot, said method comprising:

- slicing a wafer from said boule with the blade of a wafer saw, without severing said wafer from said ingot;
- applying a force to said wafer to lean said wafer a sufficient distance away from said blade to prevent said blade

from contacting said wafer during the return stroke of said blade, all without severing said wafer from said ingot;

(c) returning said blade to its initial position clear of said ingot while said wafer is leaned away from said blade;



- repeating steps a, b and c until said plurality of wafers has been sliced; and
- severing said plurality of wafers from said ingot after completing step (d).

4,227,349 PRECISION BLOCKING OF LENS BLANK

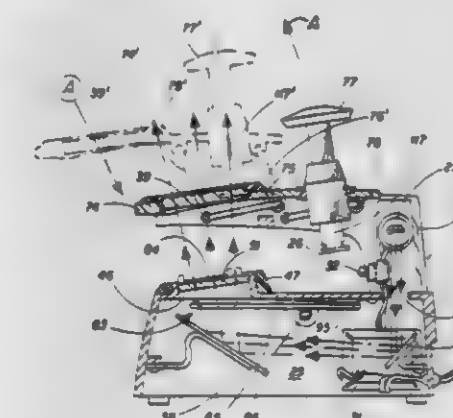
Bela J. Bicskel, 7 Hememway Rd., Framingham, Mass. 01701
Continuation-in-part of Ser. No. 893,078, Apr. 3, 1978. This application Oct. 31, 1978, Ser. No. 956,244

The portion of the term of this patent subsequent to Feb. 6, 1996, has been disclaimed.

Int. Cl.¹ B24B 1/00

U.S. Cl. 51—284 E

5 Claims



- The method of blocking a lens blank at a prescribed optical position comprising the steps of:
 - adjusting a lens blank in an instrument until said lens blank satisfies a prescribed optical condition; and
 - pivoting a pivotable member of said instrument to said lens blank without disturbing the position of said lens blank; and
 - using a plunger mechanism of said pivotable member to bring a releasable block bearing a double-faced adhesive strip into contact with the lens blank to adhesively secure the block to the blank.

4,227,350 LOW-DENSITY ABRASIVE PRODUCT AND METHOD OF MAKING THE SAME

Robert C. Fitzer, Birchwood Village, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Nov. 2, 1977, Ser. No. 847,922

Int. Cl.¹ B24D 11/02

U.S. Cl. 51—295

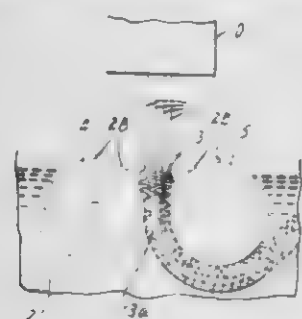
19 Claims

1. A method for making low-density abrasive product, comprising:

- extruding high yield strength thermoplastic organic

filament-forming material to provide at least one row of equally spaced molten filaments which are permitted to fall through an air space and into a quench bath where they coil and undulate to form a uniform cross-section, open, porous, lofty continuous filament web having at least one layer comprised of a multitude of three-dimensionally undulated filaments having a filament diameter of about 5 to 125 mils with adjacent filaments being inter-engaged and from the most part autogenously bonded where they touch one another;

- (2) coating said web to provide a wet coating sufficient to initially adhere abrasive granules throughout the web by a first resin binder having an initial liquid state and being capable of being cured to a strong, tough adherent material having a tensile strength of at least about 3000 psi, an ultimate elongation of at least about 180% and a Shore D hardness value of at least about 40;
- (3) depositing a multitude of abrasive granules throughout the resin-coated web;
- (4) curing said first binder resin coating;
- (5) coating the abrasive granule coated web with a coating of a second binder resin having an initial liquid state and



being capable of being cured to a strong, tough, adherent material having a tensile strength of at least about 3000 psi, an ultimate elongation of at least 180% and a Shore D hardness value of at least about 40 to provide the coating, which when cured, will expose the abrasive granules on the surface of the filaments, yet, together with said first binder resin, will firmly adherently bond the abrasive granules to the filaments and the filaments to each other to provide a long-life abrasive product; and

- (6) curing said second binder resin.
9. A low-density abrasive product comprising a uniform cross-section, open, porous, lofty web having at least one layer, each layer being comprised of a multitude of continuous three-dimensionally undulated filaments of high yield strength filament-forming organic thermoplastic material with adjacent filaments being inter-engaged and autogenously bonded where they touch one another, said filaments having a diameter of about 5 to 125 mils, and a multitude of abrasive granules uniformly dispersed throughout and adherently bonded to the filaments of said web by a tough adherent binder having a tensile strength of at least 3000 psi, an ultimate elongation of at least about 180% and a Shore D hardness of at least about 40.

4,227,351

CENTRIFUGAL WHEEL ASSEMBLY FOR SPRAYING APPARATUS

Wolfgang Jahn, Hagen, Fed. Rep. of Germany, assignor to Firma Maschinen und Werkzeugfabrik Kabel Vogel & Schemmann, Hagen-Kabel, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,673

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816602

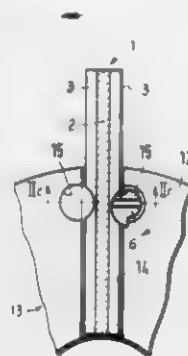
Int. Cl. B24C 3/02

U.S. Cl. 51-434

11 Claims

1. In a centrifugal wheel assembly including a disc-type guide wheel having a rotary axis; a plurality of impeller vanes oriented radially with respect to the guide wheel; each impeller vane having a longitudinal axis and oppositely located particle propelling surfaces being of identical shape and being arranged symmetrically with respect to the longitudinal axis;

and securing means for releasably fastening each impeller vane to the guide wheel; the improvement wherein each said impeller vane is of symmetrical structure with respect to a transverse axis oriented perpendicularly to said longitudinal axis and contained in a central plane passing through the respective



impeller vane and being parallel to said particle propelling surfaces; the improvement further comprising means defining recesses in each impeller vane at mid length thereof; said recesses being arranged symmetrically with respect to said longitudinal and transverse axes; said securing means comprising clamping elements received in said recesses.

4,227,352

ROOF GUTTER

Dennis M. Hallam, Zillmere, Australia, assignor to E. Sachs & Co. Ltd., Zillmere, Australia

Filed Jan. 18, 1979, Ser. No. 4,524

Claims priority, application Australia, Jan. 19, 1978, PD3080

Int. Cl. E04D 13/04

U.S. Cl. 52-11

2 Claims



1. A roof gutter assembly comprising:

(a) a series of mounting brackets adapted to be secured to a roof assembly, each of said brackets being integrally formed and including a back member engaging said roof assembly, an upper arm extending forwardly from said back member, and a vertically extending front upright member, said back member forming an acute angle with said upper arm and being formed with a locking notch at its lower end; and

(b) a channel-shaped gutter having substantially vertical front and back flanges, and a bottom wall interconnecting said flanges, said front flange including a hooked support flange at its upper end which extend rearwardly over said front upright member, a longitudinal groove formed in said front flange approximately intermediate the height thereof, said groove having rearwardly convergent top

and bottom faces, said bottom face being below the top of the back flange of said gutter and having overflow ports formed therein, a locking bead formed at the juncture of said back flange and said bottom wall and engaging said locking notch of said back member of said bracket when said gutter is installed, said back flange of said gutter having a top return flange which is tightly positioned in the acute angle juncture of said back member and upper arm of said mounting bracket whereby said gutter is supported against movement on said bracket at at least three locations.

4,227,353

BUILDING CONSTRUCTION

Ronald H. Lewis, Southport, Australia, assignor to Jess Lewis, Southport, Australia, a part interest

Filed Oct. 19, 1978, Ser. No. 952,927

Int. Cl. E04D 13/06; E04C 1/39

U.S. Cl. 52-15

6 Claims



1. A roof for a building including: a plurality of adjacently disposed roofing units each comprising a pyramid-shaped main section the lower edges of which are secured to and lead down into an assembly of channel ducts at the periphery of the roof, means supporting the corner portions of the assembly of channel ducts, means connecting in sealed manner the adjacent channel ducts of successive roofing units, fascia units engaged with the channel ducts at the periphery of the roof, each fascia unit including a top secured over the outer flange of a channel duct and substantially co-planar with an inclined surface of the pyramid-shaped main section, an upright outer part, and a substantially horizontal bottom part forming a soffit, and rainwater outlets from said channel ducts connected by conduits to discharge outlets on the soffit.

4,227,354

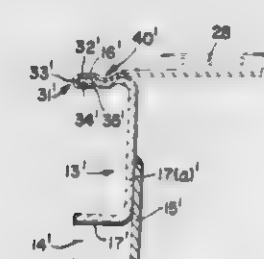
ROOF TO WALL CONNECTION FOR A RAILWAY CAR
George S. McNally, South Holland, Ill., and Richard C. Snyder, Michigan City, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jan. 5, 1979, Ser. No. 1,081

Int. Cl. B61D 17/12

U.S. Cl. 52-56

8 Claims



1. A connection for attaching a roof to a wall of a railway car, said connection comprising:

means having an outwardly extending flange at the upper edge of said wall, said flange having a first upper surface, a free edge and a second lower surface, a roof sheet having an edge portion, said edge portion having first and second sections and a fold nose disposed therebetween, said fold nose overlapping said free edge of said flange and spaced therefrom, said first section being in abutment with said first surface of said flange and said second section extending from said fold nose and in abutment with second surface of said flange, and means for interlocking said roof sheet portion and said outwardly extending flange including complementary downwardly offset portions formed in said first section of said roof sheet edge portion and said flange thereby forming a weather-tight joint.

4,227,355

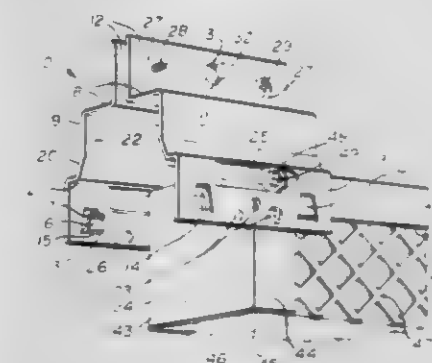
SUPPORT SYSTEM FOR SOUND ABSORBING PANELS
Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Mar. 30, 1978, Ser. No. 891,864

Int. Cl. E04B 7/16

U.S. Cl. 52-64

25 Claims



1. A hanger bracket comprising two opposing substantially identical bracket members for securing one or more sound absorbing panels to a fixed support member wherein the bracket members comprising the hanger bracket are of one piece integral construction, said bracket members have upper and lower generally vertical plates residing in offset substantially parallel planes and the lower plate having at least one punched-out tab portion extending generally inward then upward from the lower plate and said members have a horizontal portion extending outwardly a distance less than one-half the width of the panel frame member at generally right angles to the upper plate from a lower edge thereof and said horizontal portion terminating at an edge opposite the upper plate in an intermediate vertical plate depending downwardly at generally right angles to the horizontal portion and said intermediate vertical portion having a lower skewed portion skewed obliquely outwardly therefrom and said skewed portion terminating at an edge opposite the intermediate vertical portion in a lip portion extending outwardly in a generally horizontal plane and said lip is connected at an edge opposite the said skewed portion to the lower vertical plate portion, said hanger bracket adapted to secure sound absorbing panels having a top frame member with a depending lip portion wherein said bracket members are oppositely connected to each other, and adapted to be secured to a support member by connector means at said upper vertical plates, whereby, said punched-out tab portions are adapted to engage the depending lip of a panel frame to thereby support the panel, and the lip portions of each bracket member positioned to contact opposing outer corner portions of a panel top frame and the vertical plate portions contact outer surfaces of the depending lip portions of a panel frame member, and said connected bracket members form a hollow generally rectangular opening therebetween.

4,227,356

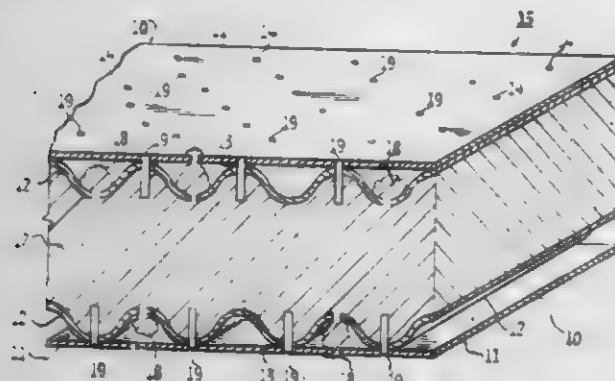
COMPOSITE FOAM ROOF INSULATION

Eric P. Stern, Dollard Des Ormeaux; George J. Venta, Pointe Claire; Riad Mia, Pont Rouge, and Solomon M. Vines, Montreal, all of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 23, 1978, Ser. No. 889,793
Int. Cl.² E04C 2/26

U.S. Cl. 52—309.4

8 Claims



1. A heat-insulating sandwich-like foam composite roofing panel comprising a core of foamed resin compound in adhering contact with, sandwiched between and penetrating into corrugated material comprising an outer liner and corrugated medium, the corrugated medium containing a plurality of pre-perforations, the outer liner containing a plurality of post-perforations for receiving roofing adhesive, the corrugated medium and outer liner being bonded together with a wet strength adhesive selected from adhesives which maintain the bond between the outer liner and corrugated medium over long periods of immersion in water.

4,227,357

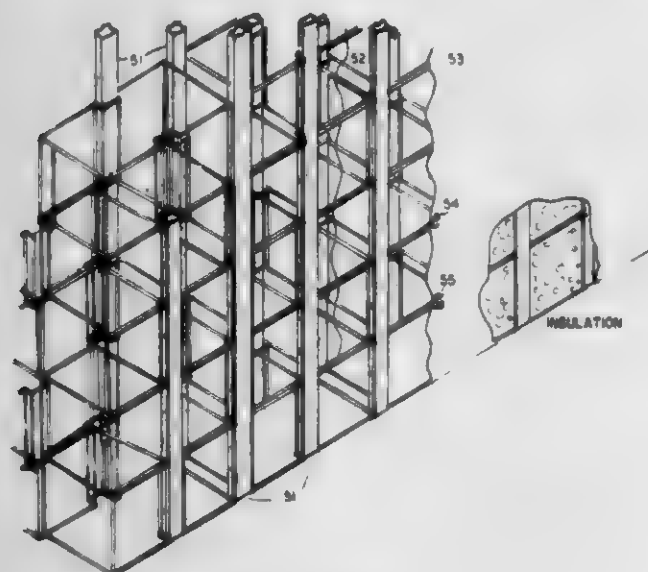
CONSTRUCTION BLOCKS

Bobby G. Newsom, General Delivery, Etty, Ky. 41523

Filed Feb. 16, 1978, Ser. No. 12,949
Int. Cl.² E04B 5/52

U.S. Cl. 52—344

23 Claims



1. A construction block, comprising:
a top frame;
a bottom frame shaped identical to said top frame and forming the bottom perimeter of said construction blocks;
a plurality of support members secured between said top frame and said bottom frame, said support members dimensioned to cause said top frame and said bottom frame to lie in superposed and parallel orientation with respect to each other;
said top and bottom frames configured to form a rectangle with a furring strip receiving recess formed in the mid-section of one side to create the top and bottom perimeters of said construction block, said top and bottom perimeters

including first and second sections encompassing equal areas joined by an area of lesser width created by said recess; and
said construction block fabricated from formed and welded metal rods.

4,227,358

BUILDING ELEMENT FOR CONSTRUCTION OF INTERLOCKING GRIDS

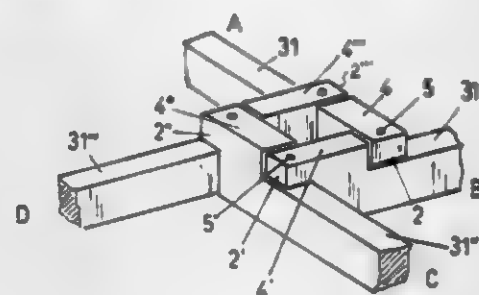
Daniel Gat, Haifa, Israel, assignor to Technion Research & Development Foundation, Haifa, Israel

Filed Nov. 28, 1978, Ser. No. 964,434

Claims priority, application Israel, Aug. 21, 1978, 55404
Int. Cl.² E04H 12/00

U.S. Cl. 52—648

16 Claims



1. A building element for the construction of floor and roof grids comprising: a beam, girder or truss having two ends and which is provided in the upper portion of at least one of said ends with a longitudinally protruding first projection of a vertical dimension less than the vertical dimension of the beam, girder or truss, the element being further provided with a first recessed portion disposed in its upper surface, of a width not less than the width of said projection and of a depth not more than half the vertical dimension of the beam, truss or girder at said ends, said first recess beginning a distance from said end of the element which is greater than the protruding length of the said first projection but which is small relative to the entire longitudinal length of the element, wherein said beam, girder or truss is symmetrical and is provided with a second protruding projection and a second recessed portion beginning at the other of said ends symmetrically disposed with respect to said first projection and said first recessed portion at said at least one end, and wherein said recessed portions beginning at each said end consist of a single central recess extending over the entire central portion of the element at equal depth.

4,227,359

ADJUSTABLE SINGLE UNIT MASONRY REINFORCEMENT

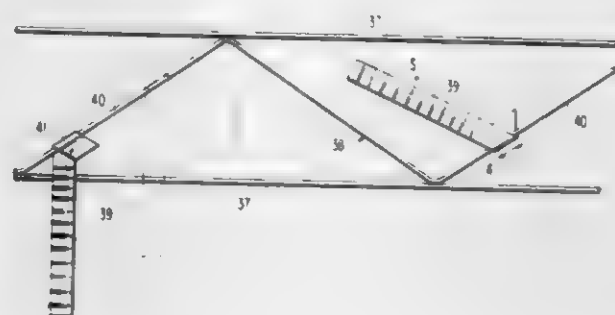
Robert W. Schlenker, Baltimore, Md., assignor to National Wire Products, Baltimore, Md.

Filed Nov. 21, 1978, Ser. No. 962,620

Int. Cl.² E04B 2/30

U.S. Cl. 52—713

13 Claims



1. An adjustable prefabricated masonry reinforcing unit comprising a block mesh reinforcement body portion of the truss type including parallel longitudinal rod members rigidly

4,227,361

METHOD OF CONSTRUCTING A SWIMMING POOL

Clarence J. Miller, Canton, Ohio, assignor to Bradley Enterprises, Inc., Canton, Ohio

Filed Mar. 16, 1979, Ser. No. 20,950

Int. Cl.² E04H 3/16

U.S. Cl. 52—742

7 Claims



interconnected in a substantially common plane by cross-connecting rod members, said parallel longitudinal rod members defining the side boundaries of the width of said body portion, said body portion being of a width adapted for placement wholly within a bed joint of one wythe in a wall structure, and a plurality of elongated corrugated strip ties pivotally and slidably connected through closed loops in permanently assembled relationship with at least one of said rod members of said body portion with said pivotal and slidable closed loop connections positioned on said at least one of said rod members for placement bodily within the bed joint of said one wythe, said ties being independently adjustable lengthwise of the body portion and also being independently adjustable laterally of the body portion to vary their distances of projection outwardly of one of said longitudinal rod members defining the longitudinal side boundaries of the body portion, said ties following their adjustments on the body portion being engageable in bed joints of a second wythe in a wall structure, and said ties being independently shiftable through said closed loop connections to protected shipping positions on the body portion where the ties are located substantially within the side boundaries of the body portion formed by said parallel longitudinal rod members and substantially in said common plane of the body portion forming a compact, integral shipping unit.

4,227,360

RESILIENT FURRING MEMBER

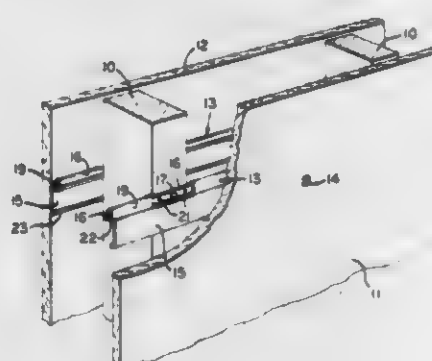
Henry A. Balinski, Hoffman Estates, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed May 5, 1977, Ser. No. 794,185

Int. Cl.² E04C 3/30; E04B 5/52; E06B 3/54

U.S. Cl. 52—720

1 Claim



1. A sheet metal resilient runner for the attachment of gypsum wallboard to substantially vertical stud members, said runner comprising a base attaching flange disposed in a first plane, a turned over curved section integral with the base flange and merging into a flexible web having a width substantially equal to said base flange and laterally offset from the base flange thereby being disposed in a second plane in generally parallel spaced relation to said base flange, wherein said flexible web is provided with cut-out portions at longitudinally spaced intervals to expose a portion of said base attaching flange and said base attaching flange is provided with longitudinally spaced groups of attachment holes coinciding with said intervals of the cut-out portions in said flexible web, a first flange integral with said flexible web extending laterally at an obtuse angle from a continuous longitudinal edge of said web, a support portion coextensive and integral with the opposite edge of said first flange and disposed in a third plane in laterally offset generally parallel relation to said web, and a stop flange extending laterally from the opposite longitudinal edge of the support portion, said stop flange being disposed at an obtuse angle and inclined in a direction opposite to the inclination of said first flange so that the stop flange and said first flange incline toward each other.

1. In a method of constructing a swimming pool of the type in which an excavation is formed in the ground, in which the excavation has a bottom and a horizontal footing area which supports a vertical wall member that forms at least a portion of a wall of the swimming pool, and in which the wall member has a bottom portion; the improvement which includes the steps of:

- (a) forming a concrete footing on the horizontal footing area with the bottom portion of the vertical wall member embedded in the concrete footing;
- (b) attaching removable groove-forming means generally horizontally to the vertical wall member at a desired distance above the concrete footing;
- (c) pouring additional concrete over at least a portion of the concrete footing and upwardly against a portion of the vertical wall member to a position in which a portion of the groove-forming means is embedded in the additional concrete;
- (d) removing the groove-forming means from the vertical wall member to expose a groove formed in the additional poured concrete; and
- (e) filling the groove with waterproof caulking material to seal a seam formed between the additional concrete and the vertical wall member.

4,227,362

METHOD OF FORMING A MULTIPLE PACK OF VESSELS

Hans I. Wallsten, Chemin de la Lisiere 6, Lausanne, Switzerland (CH-1018)

Filed Dec. 29, 1978, Ser. No. 974,442

Claims priority, application Sweden, Jan. 19, 1978, 7800642

Int. Cl.² B28B 11/08; B65B 35/50

U.S. Cl. 53—447

5 Claims

1. A method of forming a multiple pack from a plurality of pre-formed, substantially bowl-shaped, disposable vessels each having a bottom wall and adjoining side wall made of thin, flexible material and a stiff, upper, peripheral collar joined to the upper end of said side wall, said bottom wall, side wall, and collar defining an interior, substantially bowl-shaped space, wherein said vessels are capable of being stacked one inside of another, comprising the steps of folding said side wall of each

of a plurality of said vessels individually to move the bottom wall into said space at least substantially to the upper collar and nesting a plurality of the folded vessels into stacked relation.

2. A method of forming a multiple pack from a plurality of pre-formed, substantially bowl-shaped, disposable vessels each having a bottom wall and adjoining side wall made of thin, flexible material and a stiff, upper, peripheral collar joined to



the upper end of said side wall, said bottom wall, side wall, and collar defining an interior, substantially bowl-shaped space, wherein said vessels are capable of being stacked one inside of another, comprising the steps of nesting a plurality of said vessels in stacked relation, and folding said side walls to move the nested bottom walls into said space at least substantially to the nested upper collars.

4,227,363

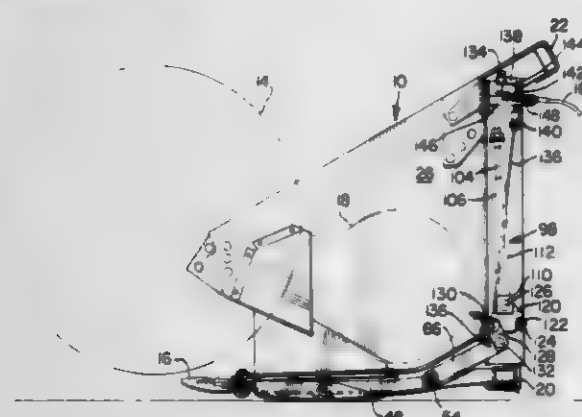
FLOATING CUTTERBAR HEADER AND HEIGHT CONTROL

Dathan R. Kerber, Bettendorf, Iowa; Orlin W. Johnson, East Moline, Ill.; Robert D. Week, Bloomington, Minn.; Richard E. Benson, East Moline, Ill.; John L. VandeWiele, and James R. Lucas, both of Moline, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Sep. 1, 1978, Ser. No. 939,001
Int. Cl.³ A01D 67/00

U.S. Cl. 56-10.2

3 Claims



1. A harvesting header for a mobile harvesting machine comprising:

a header frame adapted for mounting on the harvesting machine for powered movement vertically relative to the machine;

a cutterbar floatably mounted on the header frame for ground-induced movement relative thereto as ground level varies during harvesting;

means for applying a counterbalancing force on the cutterbar to floatably support the cutterbar;

and means for raising and lowering said header frame in response to sensing the vertical position of said cutterbar, said means including:

(a) a member connected to the cutterbar for movement therewith and having an end disposed proximate to the rear of the header frame.

(b) a rockshaft mounted on the header frame,

(c) a link connected between said end of said member and

said rockshaft for translating vertical movement of the cutterbar into rotational movement of the rockshaft,

(d) a hydraulic system for raising and lowering the header frame,

(e) and a cable connected between said rockshaft and said system for actuating the system in response to rotation of the rockshaft to raise or lower the header frame, said hydraulic system including means for varying the rate of header movement in response to variable rate of ground-induced movement of the cutterbar, whereby the header will lift progressively faster as the cutterbar moves progressively higher over a rise in the ground.

4,227,364

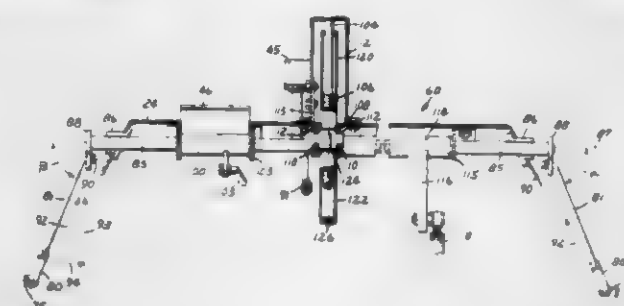
SELF-COMPENSATING BRAKE SYSTEM FOR A MOWING MACHINE

David J. Scherbring, Edina, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Feb. 7, 1978, Ser. No. 875,785
Int. Cl.³ A01D 69/10

U.S. Cl. 56-10.8

7 Claims



1. A self-compensating brake system for a drive vehicle having a body which rotatably carries a least two opposed drive wheels, which comprises:

(a) a brake shaft rotatably journaled in the body and being slidably mounted for movement relative to the body along a transverse axis of the brake shaft;

(b) a brake assembly carried on each opposed drive wheel, each brake assembly including an actuating lever which operates the brake assembly in an amount equal to an activating force applied to the actuating lever; and

(c) two opposed brake rods operatively connecting opposite ends of the brake shaft to one of the actuating levers, each brake rod extending between the brake shaft and the corresponding actuating lever at an oblique angle relative to the transverse axis such that rotation of the brake shaft applies a force along the brake rod having at least a first component along the transverse axis, whereby the brake shaft will be moved transversely until the first components of force along the transverse axis provided by the opposed brake rods are substantially equal to achieve equal braking of the drive wheels.

4,227,365

MOWING MACHINE

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N. V., Maasland, Netherlands

Filed May 18, 1977, Ser. No. 798,136

Claims priority, application Netherlands, May 20, 1976, 7605371

Int. Cl.³ A01D 55/18

U.S. Cl. 56-13.6

35 Claims

1. A mowing machine comprising a frame which includes a beam and plurality of cutting rotors mounted along the length of said beam of said frame, driving means engaging said rotors, said rotors including upwardly extending drive shafts and being rotatable about corresponding axes defined by said upwardly extending drive shafts and said driving means engaging said rotors, said beam extending transverse to the rear of said

axes with respect to the normal direction of travel, each of said rotors being releasably fastened as a unit to said beam and



each said unit comprising an upper rotatable hub and lower stationary body, a respective said drive shaft of said rotor being supported by said body.

4,227,366

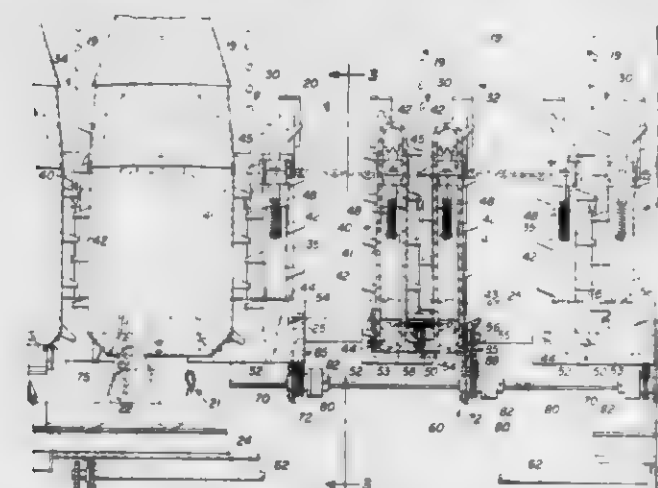
CORN HEADER DRIVE SYSTEM

Richard A. Pucher, Leola, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 6, 1979, Ser. No. 64,327
Int. Cl.³ A01D 45/00, 69/00

U.S. Cl. 56-14.2

15 Claims



1. A corn harvesting header attachable to a mobile crop treating unit comprising:

a main frame having a transverse substantially horizontal beam;

a plurality of forwardly extending row units supported by said beam, each respective said row unit having gathering means for harvesting and delivering the crop material rearwardly thereof, each said respective row unit being operable to harvest a row of corn;

a gear housing corresponding to each said respective row unit, said gear housing including gears for drivingly operating each respective said gathering means;

at least one transverse power input shaft supported by said frame externally of said gear housings for delivering rotational power thereto from a prime mover;

a clutch means corresponding to each said respective said gear housing, mounted on said at least one power input shaft and operable for terminating the transmission of power from said at least one power input shaft to each respective corresponding gear housing if the associated gathering means becomes overloaded, each respective

said clutch means being operable without affecting the transmission of power to any other gear housing; and a power transfer means interconnecting each respective said clutch means and the associated gear housing for transferring the rotational power delivered by said at least one power input shaft to said associated gear housing.

4,227,367

COTTON HARVESTING APPARATUS

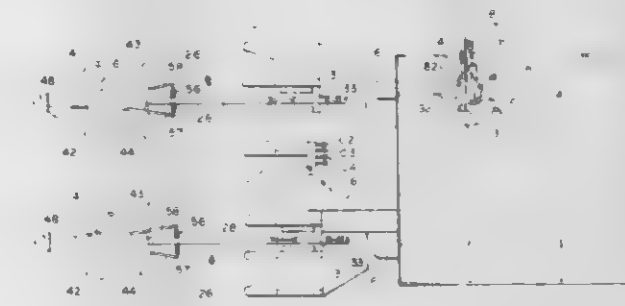
John L. Fagundes, 8576 Fargo Ave., Hanford, Calif. 93230

Filed Feb. 12, 1979, Ser. No. 11,485

Int. Cl.³ A01D 46/08

U.S. Cl. 56-36

10 Claims



1. In a cotton harvesting apparatus for harvesting cotton from cotton plants planted in spaced generally parallel rows, a wheeled framework having ground engaging means for permitting movement over the ground, a cotton picking mechanism carried by the wheeled framework and adapted to engage the cotton plants to remove the cotton therefrom, and at least one boom mechanism carried by the framework and adapted to engage the cotton plants before they are engaged by the cotton picker mechanism to shake the plants to cause leaf and stem fragments to fall therefrom and means for moving said boom mechanism between the plant engaging position and an out-of-the-way position.

4,227,368

GATHERER SHEET ARRANGEMENT FOR A ROW CROP HARVESTING HEADER

Michael W. Mossman, Rock Island, and Glen W. Rohweder, Moline, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Jul. 18, 1979, Ser. No. 58,690

Int. Cl.³ A01D 45/02

U.S. Cl. 56-106

7 Claims



1. In a row crop harvesting header for a harvesting machine adapted to advance over a field of row planted crops and having a transversely elongated main frame, a plurality of transversely spaced row units extending forwardly from the

main frame, each row unit including a row unit frame, means mounting the row unit frame on the main frame for independent vertical floating adjustment of the forward end of the row unit, a pair of laterally spaced elements mounted on the row unit frame and defining a generally fore-and-aft passageway adapted to receive a row of crop material as the machine advances, conveyor means mounted on the row unit frame and having opposite rearwardly moving inner runs on opposite sides of the passageway and operative to engage the crop material and move it rearwardly along the passageway and cutting means mounted on the row unit frame generally below the forward end of the conveyor means for severing the crop material relatively close to the ground as the crop material moves rearwardly along the passageway, an improved hood arrangement overlying the space between the adjacent row units to prevent the loss of material between adjacent units, respectively mounted on each pair of adjoining row units and covering the area between the passageways of the adjoining row units comprising:

- opposite left and right-hand hood members, each member having an operating position and a passageway edge at least partly forming one of the laterally spaced elements defining the edge of the passageway when the hood member is in the operating position and each hood member being respectively attached to and independently vertically adjustable with the respective adjoining row units;
- pivot means connected between each hood member adjacent its passageway edge and the row unit frame for permitting upward pivoting about a pivot axis generally parallel to the passageway into an access position;
- a pair of opposite left and right-hand support brackets carried by each row unit frame, each support bracket including a first latching member;
- a second latching member carried by each hood member, each second latching member being disposed to engage a first latching member upon downward pivoting of the hood member from the access position and, responsive to downward pressure on the hood member after engagement, to latch the latching members one to the other so that the hood member is secured in the operating position and, responsive to upward pressure on the hood after latching, to release one from another permitting upward pivoting of the hood element into the access position; and
- a forwardly converging divider member respectively mounted on each pair of adjoining row units and extending forwardly from adjacent hood elements, the forward end of each divider member moving between the adjacent rows as the machine advances.

4,227,369

CONTROL SYSTEMS FOR APPARATUS

Peter J. Williams, Bristol, England, assignor to Rolls-Royce Limited, Bristol, England

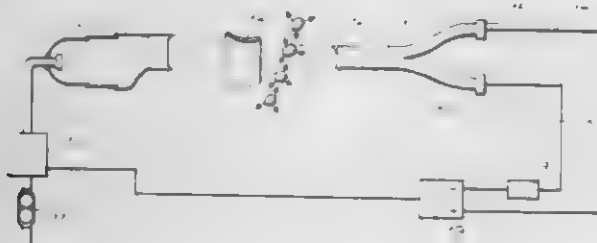
Filed May 1, 1978, Ser. No. 901,805

Claims priority, application United Kingdom, May 13, 1977, 20323/77

Int. Cl. F02C 9/28

U.S. Cl. 60-734

3 Claims



1. A fuel control system for a gas turbine engine comprising: first and second radiation detectors positioned to monitor radiation emanating from combustion equipment of the engine, the first detector being responsive to radiation in the infra-red frequency range to produce a first signal

representative of the radiation in the infra-red frequency range, the second detector being responsive to radiation in the visible frequency range produced by a transient radiation event which also produces radiation in the infra-red frequency range to produce a second signal representative of the radiation in the visible frequency range, a function generator operative to receive the second signal and derive therefrom a third signal indicative of the radiation in the infra-red frequency range corresponding to the detected radiation in the visible frequency range, a comparator means for comparing the first and third signals and operative to produce a fourth signal, and control means responsive to said fourth signal for regulating the fuel supplied to the combustion equipment of the engine.

4,227,370

BY-PASS GAS TURBINE ENGINES

Timothy J. Kirker, Alvaston, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 24, 1978, Ser. No. 954,921

Claims priority, application United Kingdom, Nov. 4, 1977, 45976/77

Int. Cl. F02K 3/04

U.S. Cl. 60-262

2 Claims



1. For a by-pass gas turbine engine of the type having a core engine, a by-pass duct surrounding the core engine, and an exhaust system including a final exhaust nozzle, an improvement in an exhaust flow mixer for installation in said exhaust system between an aft end of said core engine and said final exhaust nozzle, said mixer comprising first and second sets of discrete, elongated, substantially planar flow surfaces arranged in an annular array, said mixer being installed in said exhaust system with said planar flow surfaces extending generally downstream of said aft end of said core engine and attached thereto at their upstream ends, said planar flow surfaces of said first set having downstream extending edges along a major portion of their lengths unattached to downstream extending edges of said planar flow surfaces of said second set, each of said flow surfaces being circumferentially spaced apart from an adjacent one of said flow surfaces in the same set, said first set of flow surfaces defining a first truncated conoid converging in a downstream direction so as to extend through a region of the core engine exhaust flow whereby some of the by-pass exhaust flow is deflected into the region of said core engine exhaust flow, and said second set of flow surfaces defining a second truncated conoid surrounding said first conoid and diverging in the downstream direction so as to extend through a region of by-pass exhaust flow whereby some of said core engine exhaust flow is deflected into the region of said by-pass exhaust flow.

4,227,371

AUTOMOTIVE BRAKE BOOSTER DEVICE

Hiroo Takeuchi, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

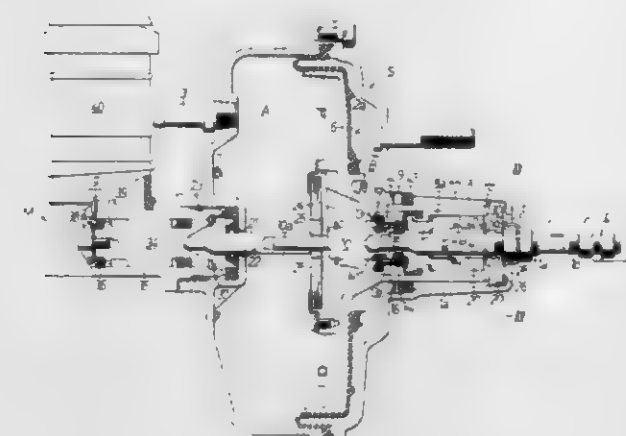
Filed Mar. 15, 1978, Ser. No. 887,414

Claims priority, application Japan, Dec. 24, 1977, 52/174854[U]

Int. Cl. B60T 13/00

U.S. Cl. 60-547 R

6 Claims



1. An automotive brake booster device of the type including a booster shell, a booster piston slidably accommodated in the booster shell, a first working chamber defined in the booster shell by the booster piston on the front side thereof and continuously held in communication with a source of vacuum supply, a biasing means for urging the booster piston in a retracting direction, a second working chamber defined in the booster shell by the booster piston on the rear side thereof, an input rod connected with a brake pedal and arranged opposite the booster piston for movement toward and away from the latter, control valve means for selectively placing the second working chamber in communication with the first working chamber and the external atmosphere, said control valve means being arranged between said input rod and said booster piston and being operable upon forward movement of the input rod to produce a pressure differential between the first and second working chambers which is effective to cause the booster piston to follow the movement of the input rod, and an output rod operatively connected with the booster piston and held in a position opposite the operating piston of a brake master cylinder, said device comprising adjustable stop means for limiting the extent of retracting movement of the input rod in such a manner that, with the input rod fully retracted, said control valve means is held in a neutral position to keep the second working chamber out of communication with the first working chamber as well as with the external atmosphere while the output rod is held in direct abutting engagement with the operating piston of the brake master cylinder.

4,227,372

MOTOR VEHICLE EQUIPPED WITH TURBOCHARGER

Kunihiko Kakimoto, Yokohama, and Masaru Kodaira, Kodaira, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 22, 1978, Ser. No. 935,853

Claims priority, application Japan, Aug. 24, 1977, 52-101946

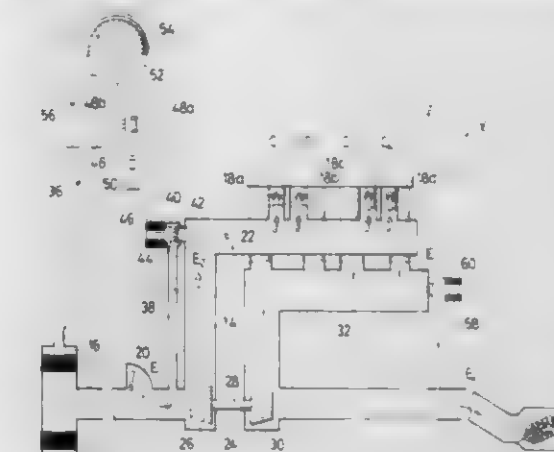
Int. Cl. F02B 37/00

U.S. Cl. 60-602

15 Claims

1. A motor vehicle having an engine body formed with combustion chambers, comprising: means defining an intake passageway through which the combustion chambers are communicable with atmospheric air to supply the combustion chambers with air; a turbocharger having a compressor wheel rotatably disposed in said intake passageway to pressurize air passing through said intake passageway, said turbocharger being driven by the pressure of exhaust gases discharged from the combustion chambers; vehicle speed sensing means for sensing a vehicle cruising

speed of a predetermined level or higher to produce an electric signal; and means, responsive to said vehicle speed sensing means, for



decreasing the pressure of air passing through said intake passageway downstream of said compressor wheel on receiving said electrical signal from said vehicle speed sensing means.

4,227,373

WASTE HEAT RECOVERY CYCLE FOR PRODUCING POWER AND FRESH WATER

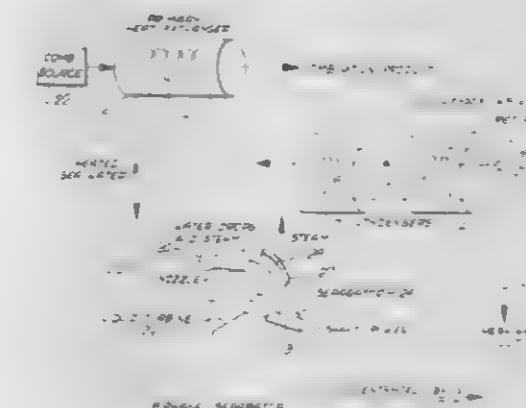
William E. Amend, Rolling Hills Estates, and Walter R. Studhalter, Woodland Hills, both of Calif., assignors to Biphase Energy Systems, Inc., Santa Monica, Calif.

Filed Nov. 27, 1978, Ser. No. 963,786

Int. Cl. F01K 23/10

U.S. Cl. 60-618

44 Claims



1. In a method for producing steam from aqueous brine, employing hot fluid, nozzle means, and rotary separator means, the steps that include
 - (a) transferring heat from said hot fluid to said brine,
 - (b) passing the heated brine in pressurized state to the nozzle means for flow therethrough, and expanding the flow therein thereby to form steam and liquid droplets, and
 - (c) causing said expanded flow to rotate the rotary separator means for forming a layer of said brine on the separator means and accompanied by steam separation and for subsequent removal.

4,227,374

METHODS AND MEANS FOR STORING ENERGY

Alan J. Oxley, Sheepstead Folly, Frilford Heath, Abingdon, Oxon OX13 6QG, England

Filed Oct. 20, 1978, Ser. No. 956,411

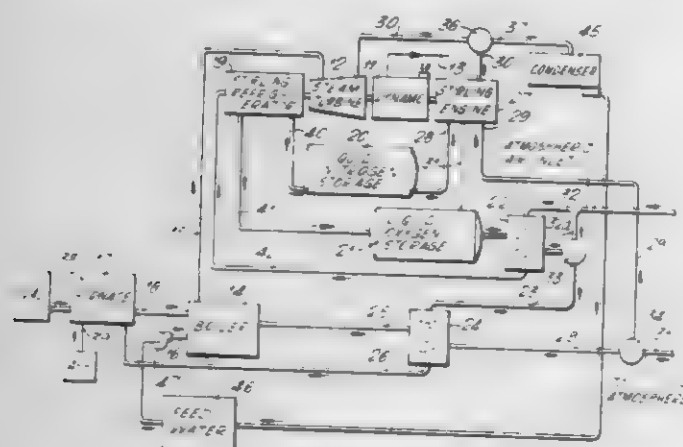
Int. Cl. F01K 25/08

U.S. Cl. 60-651

10 Claims

1. A plant including means for storing energy and subsequently releasing said energy when required, said means comprising: refrigeration means, responsive to said energy, for refriger-

ating gas and liquefying said gas at substantially below atmospheric temperature;
 storage means for storing said liquefied gas at substantially below atmospheric temperature;
 a closed cycle heat engine having an upper temperature end and a lower temperature end; means for utilizing said liquefied gas to maintain said



- charging circuit includes a return duct which discharges to the atmosphere;
 (d) a withdrawal circuit connected to said at least three bins including means for selectively varying the moisture content of the desiccant material by circulating a moisture laden gas through said charged desiccant material to cause said gas to reject moisture to the desiccant material and to thereby raise the gas temperature within said withdrawal circuit;
 (e) valve means for isolating said bins from said charging and withdrawal circuits; and
 (f) means for detecting and selectively withdrawing energy from a bin having the highest indicated charge and charging a bin having the lowest indicated charge.

4,227,376

COOLING SYSTEM

Yoshihiro Ishizaki, Kamakura, Japan

Filed Nov. 21, 1978, Ser. No. 962,761

Int. Cl. F25D 11/04

U.S. Cl. 62-434

5 Claims

lower temperature end at substantially below atmospheric temperature and means for maintaining said upper temperature end at not significantly below atmospheric temperature, thereby driving said heat engine and yielding mechanical energy, said engine including a working fluid independent of said liquefied gas.

4,227,375

DESICCANT THERMAL ENERGY STORAGE SYSTEM FOR COMPACT HEATING AND COOLING

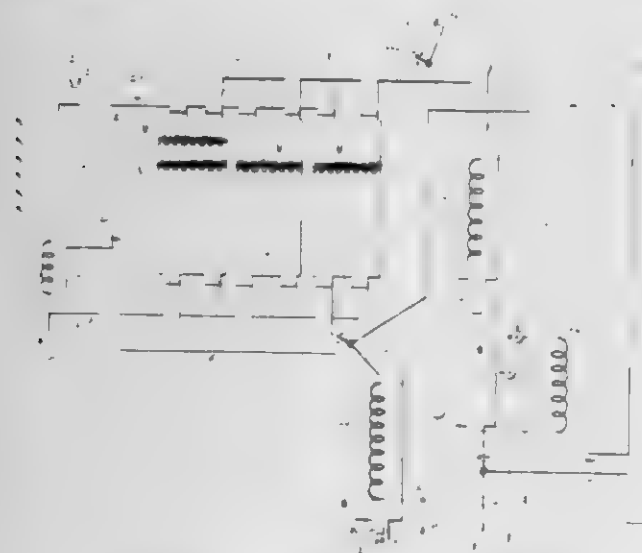
Leo Tompkins, 127 Wacaster St., Jackson, Miss. 39209, and Harold Strain, 345 Woodstone Rd., F-5, Clinton, Miss. 39056

Filed Aug. 30, 1977, Ser. No. 829,106

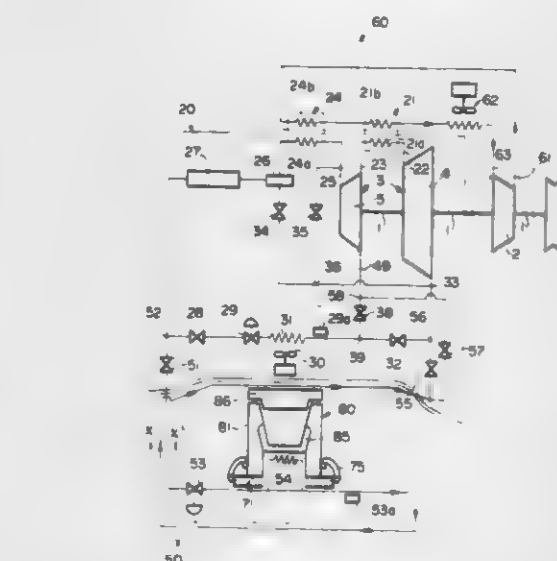
Int. Cl. F25B 27/00; F25D 23/00

U.S. Cl. 62-2

10 Claims



1. A thermal energy storage system comprising:
 (a) at least three enclosed isolatable storage bins;
 (b) desiccant material within said at least three storage bins to provide for the prolonged storage of energy in the form of dryness of the desiccant material, said energy being derived from an unreliable or discontinuous source of heat;
 (c) a charging circuit for varying the moisture content of said desiccant material by circulating a heated, dry gas through at least one of said bins and over said desiccant material to cause said desiccant material to give up moisture to said charging circuit gas and to render said desiccant material to a dry, charged state wherein said charging circuit includes a supply duct which is open at one end to the atmosphere and includes a heat reclaim/solar collector therein for raising the temperature of the ambient air entering said charging circuit supply duct, and said



1. A system for cooling portions of a transportation vehicle, said system comprising:

- (a) a compressor means for providing compressed refrigerant;
 (b) an air conditioning circuit connected to said compressor means for receiving compressed refrigerant therefrom and returning refrigerant thereto, said air conditioning circuit including condensing means and first evaporating means;
 (c) a refrigeration circuit connected to said compressor means for receiving compressed refrigerant from said compressor means and returning refrigerant thereto, said refrigeration circuit including second evaporating means and a cooling plate disposed to receive refrigerant from said second evaporating means; and
 (d) a storage container detachably affixed to said vehicle, said container including a heat conducting surface maintained in a heat exchange relationship with said cooling plate when said storage container is affixed to said vehicle, said container further including means for accumulating the low temperature conducted to said heat conducting surface from said cooling plate.

4,227,377

CONTROL SYSTEM FOR ICE DISPENSER AND METHOD

Benjamin D. Miller, Chicago, Ill., assignor to Remeor Products Company, Franklin Park, Ill.

Filed Jul. 26, 1978, Ser. No. 928,242

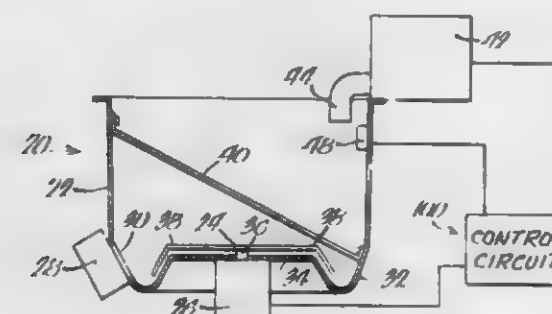
Int. Cl. F25C 1/00

U.S. Cl. 62-66

9 Claims

1. A method of operating an ice dispenser of the type having a hopper for storage of a mass of small particles of ice, compris-

ing the steps of introducing ice into an upper end of the hopper; sensing when ice reaches a selected level in the hopper; commencing timing of a predetermined time interval in response to the sensed level of ice reaching the selected level; agitating the mass of ice in the hopper after ice reaches said selected level and during said timing step while continuing to introduce ice into the hopper; and, after agitation and at the expiration of the predetermined interval, continuing or interrupting introduction of ice into the hopper in accordance with the sensed level



thereof being below or at least equal to, respectively, said selected level said timing step comprising timer first and second discrete periods of time which together equal the predetermined time interval, said agitating step comprising agitating the ice for the first period of time after it reaches said selected level; said continuing or interrupting step comprising sensing whether the ice is at said selected level at the end of the second period time following the first period, and continuing or interrupting said manufacturing and introducing steps in accordance therewith.

4,227,378

METHOD AND DEVICE FOR IMPROVING THE EFFICIENCY OF A HEAT GENERATOR

Sten Thoren, c/o Stén Thorens Elektriska, 870 15 Utansjö, Sweden

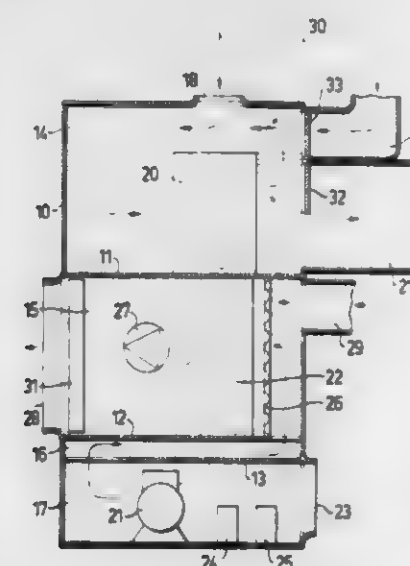
Filed May 30, 1978, Ser. No. 910,893

Claims priority, application Sweden, Jun. 2, 1977, 77 064665

Int. Cl. F25D 21/12, 23/02, 29/00; F25B 47/00

U.S. Cl. 62-82

11 Claims



1. In the method of heat generation in a heat pump in which a heat-transfer fluid is circulated between an evaporator section and a condenser section and in which the heat-transfer fluid in the evaporator section is heated by means of an initial indirect heat exchange with a primary fluid medium circulating through said evaporator section, said heat-transfer fluid being evaporated and circulated to the condenser section in which a second indirect heat exchange transfers the heat from the heat-transfer fluid to a secondary fluid medium passing through the condenser section, the improvement for increasing the efficiency of the heat pump comprising the steps of intensively heating at least a portion of the evaporator section by

means of circulating said primary fluid medium through said portion of said evaporator section by diverting at least a portion of the primary fluid medium downstream of the evaporator section to flow several times through said evaporator section to intensify the heating thereof.

4,227,379

COOLING APPARATUS

Toshiyuki Oonishi, Takatsuki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

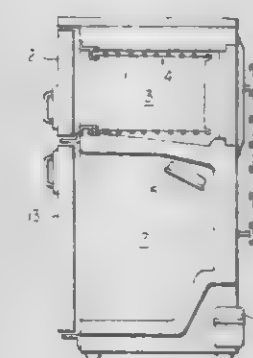
Filed Feb. 23, 1979, Ser. No. 14,228

Claims priority, application Japan, Feb. 23, 1978, 53/20197; Feb. 28, 1978, 53/24820[U]

Int. Cl. F25B 41/00

U.S. Cl. 62-198

10 Claims



1. A cooling apparatus comprising:

- a freezing chamber;
 a cold chamber;
 a compressor having an intake, a condenser, and a capillary tube, all connected in series;
 a first coolant pipe for said freezing chamber, said first coolant pipe being connected in series with said compressor, condenser and capillary tube, said first coolant pipe forming a low temperature portion cooling region for said freezing chamber;
 a second coolant pipe for said freezing chamber, said second coolant pipe being connected in series with said first coolant pipe and being connected adjacent said compressor intake side thereof, said second coolant pipe forming a very low temperature portion cooling region for said freezing chamber; and
 a third coolant pipe for said cold chamber, said third coolant pipe being connected between, and in series with, said first and second coolant pipes,
 whereby said very low temperature portion is cooled to a lower temperature by said second coolant pipe than said low temperature region is cooled by said first coolant pipe.

4,227,380

SINGLE CASING, MULTIPLE DUTY VALVE

F. Michael Laucks, Chambersburg, and Rudolph Stegmann, Wellsville, both of Pa., assignors to Frick Company, Waynesboro, Pa.

Continuation of Ser. No. 859,635, Dec. 12, 1977, abandoned.

This application Nov. 9, 1979, Ser. No. 92,901

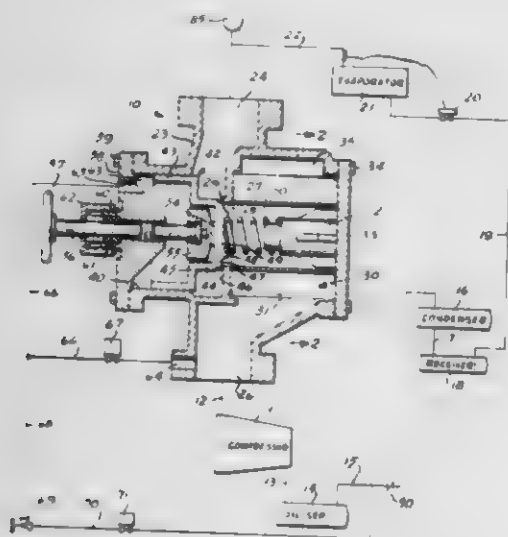
Int. Cl. F25B 41/04; F16K 31/00

U.S. Cl. 62-217

4 Claims

1. A flow control valve system for use in the suction line to a compressor of a vapor refrigeration system having a compressor discharge line to a condenser and an evaporator, comprising a valve housing having inlet and outlet passages, a first wall means within said housing intermediate said inlet and outlet passages, said first wall means having a first opening defining a valve seat, a second wall means within said housing, a substantially cup shaped valve member having a base portion

forming a seat engaging portion and outer wall portions slidably received within second wall means of said housing and movable from a first position in engagement with said seat to a second position remote therefrom. spring means in said housing in a position to engage said valve member and urge it toward the second position, said second wall means and the internal portion of said valve member forming an expansion chamber, said valve housing having a second opening communicating with said expansion chamber and a third opening communicating with said outlet passage, a first pipe means connecting said second and third openings, first auxiliary valve means for selectively opening and closing said first pipe means, a second pipe means connecting said compressor discharge line with said second opening, a second auxiliary valve means for selectively opening and closing said second pipe means, control means responsive to the operation of said compressor for controlling said first and second auxiliary valve means to close said first auxiliary valve means and to open said second auxiliary valve means concurrently with the stopping of compressor operation, and timer means for controlling said first and second auxiliary valve means to open said first auxiliary valve means and to close said second auxiliary valve means after a predetermined startup time of said compressor, whereby dur-



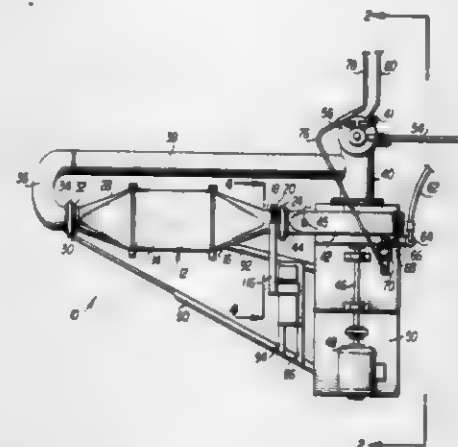
4,227,381

WIND TUNNEL FREEZER

John J. Sullivan, Poynette, and Eugene D. Prine, Madison, both of Wis., assignors to W. R. Grace & Co., New York, N.Y.
Filed Mar. 13, 1979, Ser. No. 20,026
Int. Cl.¹ F25B 41/04

U.S. Cl. 62—223

14 Claims



1. An apparatus for cryogenic batch freezing of a large volume of material comprising
 - a freezing chamber with entry means to permit insertion of the material to be frozen in the chamber;
 - a gas inlet means on one side of the chamber;
 - a gas outlet means on the opposite side of the chamber;
 - gas recycle conduit means positioned outside the freezing chamber connecting the gas outlet means of the chamber with the gas inlet means of the chamber to thereby form a gas conduit system;
 - fan means positioned in the gas recycle conduit means outside the freezing chamber to circulate gas throughout the apparatus;
 - container means within said chamber adapted to hold said material to be frozen and being removable from said chamber to withdraw the frozen product, said container means having openings in the sides adjacent the gas inlet and gas outlet means to permit the circulating cold gas to pass through the container means so the gas is in direct contact with said material being frozen; and
 - control means to add a variable amount of the cooling gas into the gas conduit system at any desired cooling rate whereby the fan means circulates the resulting cold gas mixture rapidly through the freezing chamber to control the temperature.

4,227,382

SPLIT SYSTEM AIR CONDITIONER ADAPTED TO RECEIVE A WATER PREHEATER

Gerard G. Coyne, Tyler, Tex., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 4, 1978, Ser. No. 948,594

Int. Cl.¹ F25B 13/00, 27/02

U.S. Cl. 62—324

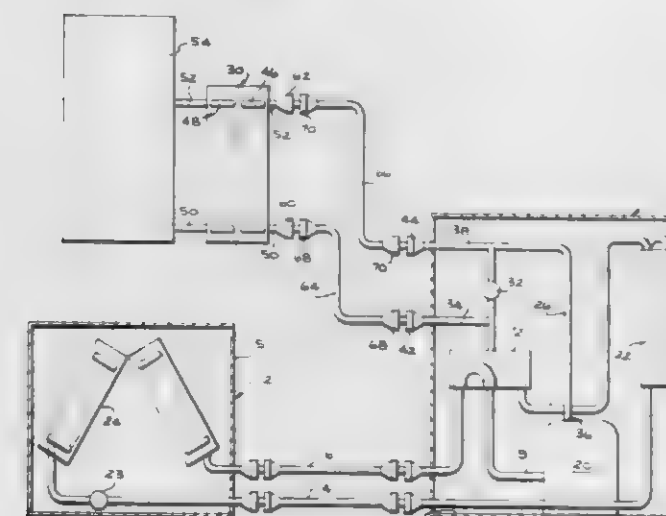
1 Claim

ing normal running operation of said compressor, said first auxiliary valve means is open and said second auxiliary valve means is closed, thereby connecting the compressor suction line to said expansion chamber and maintaining said chamber under suction pressure, said spring being operative to urge said valve member off of said seat into fully retracted position to permit free passage of refrigerant vapor through said valve housing, and when said compressor operation is shut down, said first auxiliary valve means is closed and said second auxiliary valve means is open, thereby disconnecting the compressor suction line from the expansion chamber and concurrently connecting the compressor discharge line with the expansion chamber thereby increasing the pressure therewithin to that of the compressor discharge and operative to move said valve member onto said seat against the resistance of said spring, and during start-up of said compressor, said timer means causing said first auxiliary valve means to remain closed and said second auxiliary valve means to remain open for a predetermined start-up time to avoid overloading said compressor at low speed, and thereafter said first auxiliary valve means is opened and said second auxiliary valve means is closed to permit said valve member to open fully and positively and maintain said expansion chamber under suction pressure.

1. In a split refrigeration heat pump system air conditioner for operation in a heating or cooling mode comprising an outdoor section including a housing having a compressor and an outdoor heat exchanger, and an indoor section having an indoor heat exchanger, one end of said indoor heat exchanger being interchangeably connected by a reversing means to said compressor inlet through a suction line or said compressor outlet through a discharge refrigerant line, the other end of said indoor heat exchanger being connected to one end of said outdoor heat exchanger by a second refrigerant line, the other end of said outdoor heat exchanger being interchangeably connected by said reversing means to the outlet of said compressor through said discharge line or said suction line, means adapting said outdoor section for selectively connecting an auxiliary heat exchanger in permanent series flow relationship

with the heat exchanger in said system functioning as the system condenser comprising:

- a valve means in said discharge line being arranged intermediate said compressor outlet and said other end of said outdoor heat exchanger;
- a first line means in said outdoor section having one end connected to said discharge line between said compressor outlet and said reversing means, the other end of said line being provided with sealed connector means arranged outside said outdoor section;
- a second line means in said outdoor section having one end connected to said discharge line between said reversing means and said valve, the other end of said line being provided with sealed connector means arranged outside said outdoor housing;



- an auxiliary heat exchanger connected in bypass relationship to said flow interrupting means;
- means for placing water in heat exchange relationship with said auxiliary heat exchanger;
- connecting means associated with the inlet and outlet of said auxiliary heat exchanger, said connecting means being operable when selectively connected to said first and second line means connectors to establish a series flow between said auxiliary heat exchanger and said heat exchanger functioning as the condenser when said valve means is selectively closed so that all of the hot gaseous refrigerant flowing through said discharge line will always flow in series through said auxiliary heat exchanger, regardless of the system operating mode.

4,227,383

REFRIGERATOR INCLUDING THROUGH-THE-DOOR ICE SERVICE

Julius B. Horvay, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 4, 1979, Ser. No. 35,954

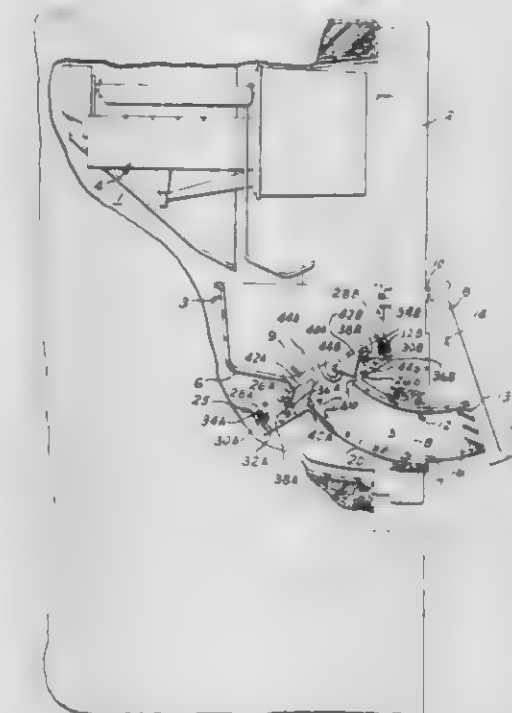
Int. Cl.¹ F25C 5/18

U.S. Cl. 62—344

8 Claims

6. In a refrigerator comprising a freezer compartment and a door for closing the access opening to said compartment;
 - an ice storage receptacle supported on the inner surface of said door;
 - said door having a passage with an opening area communicating with the interior of the receptacle;
 - a closure member mounted on the outer surface of said door for opening and closing said passage, said member being pivotally mounted on said door above said passage;
 - a tubular member having an external end carried on the inner surface of said closure member, said tubular member extending within said passage and having an internal end opening upwardly toward said receptacle, said tubular member having an arcuate shape for clearing the walls of said passage during pivotal movement of said closure member and a length sufficient to extend at least into the opening area when the closure member is closed, said

tubular member having a discharge opening in the bottom wall portion thereof intermediate the ends of said member for dispensing ice pieces contained in said tubular member when said closure member is in its open position and said discharge opening being normally closed by the walls of the passage when the closure member is in its closed position;



4,227,384

KNITTING-MACHINE PATTERNING SYSTEM

Helmut Irmischer, Karl-Marx-Stadt, Fed. Rep. of Germany, assignor to VEB Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, Fed. Rep. of Germany

Filed Mar. 31, 1978, Ser. No. 893,325

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1977, 198225

Int. Cl.² D04B 15/70, 15/74

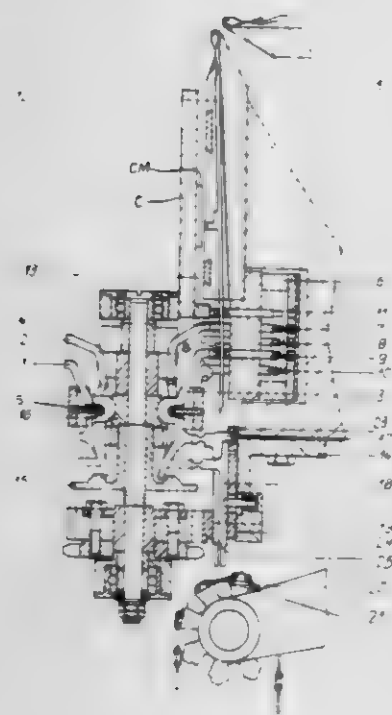
U.S. Cl. 66—75.1

10 Claims

1. In a knitting machine which includes an elongated needle bed and a series of knitting needles disposed in said bed for longitudinal shifting movement, a novel patterning arrangement, the patterning arrangement comprising, in combination,
 - a bolt carrier structure extending along the length of the needle bed, the bolt carrier structure being provided with pattern-bolt guide bores accommodating pattern bolts guided within said bores for movement in a direction which is transverse to both the direction of elongation of the needles and the direction in which adjoining needles in the needle bed are spaced from each other;
 - each pattern bolt having a guide passage through which the shank of a respective needle extends;
 - the shank of each individual needle extending through the guide passage of one and only one of the pattern bolts, the pattern bolts of different needles being located at different heights, measured in the direction of needle elongation;
 - a cam carriage mounted for travel along the length of the needle bed, the cam carriage being provided with a rotating pattern wheel, the rotating pattern wheel accommodating a first circumferential succession of jacks each

tiltable between operative and inoperative positions, each such jack when in the operative position being capable of engaging and moving pattern bolts which are located at first predetermined heights in order to cause the needles associated with those pattern bolts to be transversely displaced, the circumferential spacing between adjoining ones of the jacks in the first circumferential succession corresponding to the interneedle interval of said needle bed.

the rotating pattern wheel furthermore accommodating a second circumferential succession of jacks, the jacks of the second circumferential succession being equal in number to those of the first, the jacks of the second succession likewise each being tiltable between operative and inoperative positions and when in the operative position each being capable of engaging and moving pattern bolts which are located at respective second predetermined heights in order to cause the needles associated with those pattern bolts to be transversely displaced, the circumferential spacing between adjoining ones of the jacks in the second circumferential succession corresponding to the interneedle interval of said needle bed.



the jacks of the first and second successions each having a bolt-engaging portion, the bolt-engaging portions of corresponding jacks in the two successions being located one directly above the other.

the jacks of the first and second successions each having an activating portion, the activating portions of corresponding jacks in the two successions being located spaced from each other in the direction circumferentially of the pattern wheel.

the pattern wheel accordingly being provided with two jacks per interneedle interval.

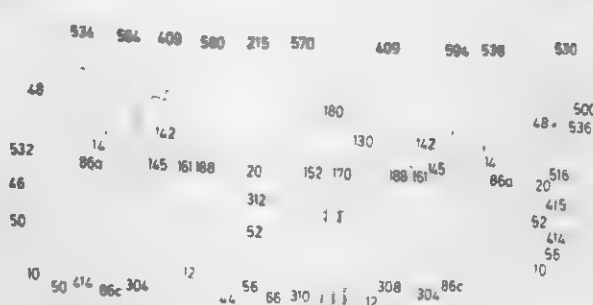
the cam carriage furthermore being provided with cam means upstream of the pattern wheel, the cam means being operative for causing those needles which have not been transversely displaced by their pattern bolts to perform predetermined knitting motions;

and jacquard patterning means operative for acting upon the activating portions of the jacks and causing different ones of the jacks of the first and second circumferential successions to assume operative and inoperative positions previous to the performance of an operating stroke by the cam carriage.

4,227,385
STRAIGHT BAR KNITTING MACHINES
Leonard B. Whittaker, Desford; William Clayton, Leicester; Eric W. Marriott, Shepshed, and Barry C. Strong, Syston, all of England, assignors to William Cotton Limited, Leicester-shire, England

Filed Jan. 15, 1979, Ser. No. 3,731
Claims priority, application United Kingdom, Jan. 17, 1978, 1735/78

Int. Cl.² D04B 11/00, 21/00
U.S. Cl. 66—82 R 12 Claims



1. Straight bar knitting machine having knitting instrumentalities, a plurality of elongate bars mounting the knitting instrumentalities, a longitudinally extending pivot area, levers for a predominant number of motions pivotably supported in the pivot area at one end to locate in a longitudinally extending substantially L-shaped zone links connected to the other end of the respective levers governing in-out and up-down motion of the respective bars to reciprocate them side-ways, a fabric formation zone defined by the area in which the respective bars reciprocate, said fabric formation zone, links, levers and pivot areas defining an approximately quadrangular configuration when seen from the side and the pivot area and the fabric formation zone being arranged diagonally opposite in the quadrangular configuration.

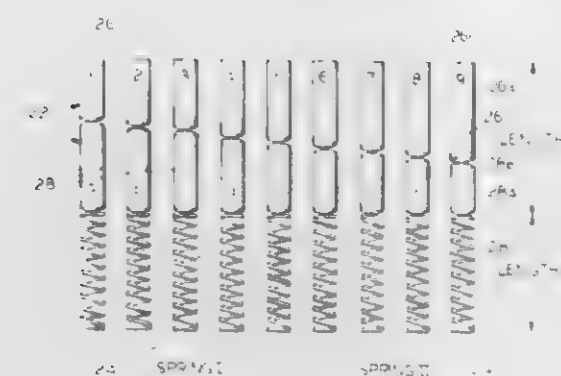
4,227,386
LOCK
Mattie Crockett, 406 E. Baltimore, Flint, Mich. 48505
Filed Jun. 8, 1978, Ser. No. 913,660
Int. Cl.² E05B 63/02, 63/12, 63/14; E05C 1/00
U.S. Cl. 70—118 6 Claims



1. A dead-bolt lock, comprising:
(a) a sliding bar of a first magnetic polarity,
(b) a jamb mounted keeper of a second magnetic polarity,
(c) means for moving the sliding bar into and out of the keeper,
(d) locking means for locking the moving means, and
(e) a cover translatable to enshroud the sliding bar and the keeper.

4,227,387
AXIAL SPLIT-PIN TUMBLER-TYPE LOCK MECHANISM
Robert L. Steinbach, Glendale Heights, Ill., assignor to Chicago Lock Co., Chicago, Ill.

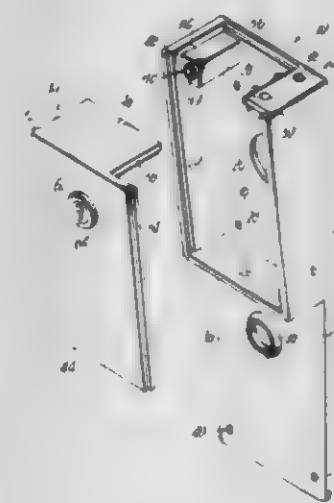
Filed Dec. 11, 1978, Ser. No. 968,438
Int. Cl.² E05B 27/08
U.S. Cl. 70—363 11 Claims



1. In an axial split-pin tumbler-type lock mechanism, said mechanism including a lock cylinder, a barrel assembly secured within said cylinder and having a longitudinal axis extending between front and rear ends thereof, said barrel assembly including a forwardly disposed operating part rotatable about said axis and a rearwardly disposed stationary part adjoining the operating part at a transverse interfacial plane, means forming longitudinal bores in said operating and stationary parts, respectively, and disposed radially outwardly of said axis therearound, said bore-forming means in respective parts being relatively movable into and out of longitudinal alignment of their bores upon rotation of said operating part, tumblers each including a forwardly disposed driver element carried in one of said operating part bores and a separate rearwardly disposed follower element carried in one of said stationary part bores with the elements adjoining each other when in aligned bores, said tumblers each being reciprocally movable in the axial direction in aligned bores between respective positions wherein the joint between said elements thereof is disposed on opposite sides of said interfacial plane, said operating and stationary parts being secured against rotation relative to each other when at least one of said tumbler elements bridges said interfacial plane and being rotatable relative to each other when said tumbler joints coincide with said interfacial plane, and spring means yieldingly urging said tumblers in aligned bores forwardly to positions wherein said interfacial plane is bridged by a plurality of said follower elements, said driver elements having front ends engageable with a key, whereby rearward movement of the key moves said tumblers in aligned bores rearwardly to positions wherein said tumbler joints coincide with said interfacial plane, the improvement for obtaining increased pick-resistance which comprises providing said tumblers in substantially equal overall lengths, said tumblers including at least two tumblers having driver elements differing in length, and providing said spring means in at least two different spring rates respectively to act upon said tumblers having elements differing in length, one of said spring means which has a relatively high spring rate acting upon a tumbler having a relatively short driver element, and another of said spring means which has a relatively low spring rate acting upon a tumbler having a relatively long driver element.

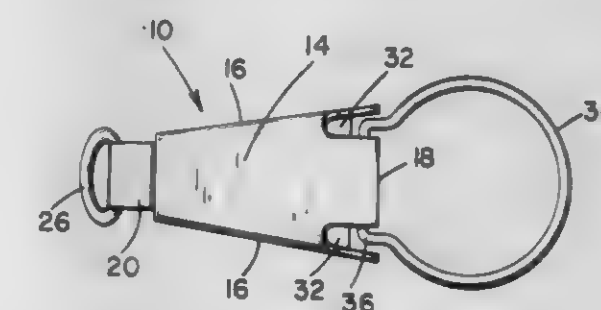
4,227,388
SECURITY COVERING BOX
Gus Nigrelli, and Bruce Baron, both of 1036 E. 99 St., Brooklyn, N.Y. 11236
Filed Feb. 12, 1979, Ser. No. 11,180
Int. Cl.² E05B 17/18
U.S. Cl. 70—427 11 Claims

1. A protective box for providing a secure covering for a closure device disposed on a support surface, such as a lock, bolt, and the like, said protective box comprising:
a housing having a rear wall and perimeter walls forwardly extending from said rear wall;
an opening in said rear wall for providing access to the closure device to be protected;
means for fastening said housing onto the support surface;
cover means for closing said housing, said cover means including a cover member covering a front portion of said housing defined by said perimeter walls, said cover member including slide means for permitting said cover member to slide on said perimeter walls between a closed position providing an enclosed area within said housing to protect the closure device, and an open position permitting access to the closure device;



lock means coupled between said cover member and said housing for securely retaining said cover member in said closed position;
said lock means including a lock disposed on said cover means, a latch coupled to said lock and operated thereby between a locked position and an unlocked position, and latching means disposed on said housing for engaging said latch in said locked position to prevent sliding of said cover member to said open position; and
said latching means including a roller assembly comprising a bracket fastened to said housing, a laterally displaceable roller supported in said bracket, and biasing means for biasing said roller in a lateral direction toward said latch, said latch having upper and lower edges, said lower edge including a cam surface for displacing said roller and said upper edge including a substantially flat edge for engaging against said roller.

4,227,389
KEY HOLDER
Alfred Kartinian, 65 New Rd., Apt. 31, Rumford, R.I. 02916
Filed Apr. 30, 1979, Ser. No. 34,939
Int. Cl.² A47G 29/10
U.S. Cl. 70—456 R 9 Claims



1. A key holder comprising a housing having a bottom wall, side and end walls, and a top wall, said top wall comprising a

resilient tongue normally in abutting relation to one of said end walls but adapted to be depressed to a second position wherein an opening is provided between said tongue and said one end wall, said one end wall being positioned between said side walls in spaced relation thereto so as to define slots on opposite sides of said one end wall, and a ring member comprising a first portion having a lateral dimension greater than the distance between said side walls, and a generally rectangular shaped second portion being dimensioned so as to extend through said slots beneath said one end wall, said ring member being readily releasable from said housing by depressing said tongue and removing said rectangular portion through the aforesaid opening provided thereby, said rectangular portion having a slit extending therethrough for permitting keys to be attached and detached, said slit being covered by said one end wall when said ring member is attached to said housing whereby keys can only be attached to and detached from said ring member after the latter has been separated from said housing.

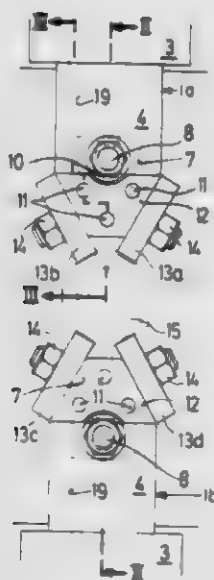
4,227,390

TRANSFER MECHANISM FOR MULTIPLE PUNCH PRESSES

Raymond Schoenenberger, Rosenau, France, assignor to Hategur Umformmaschinen AG, Basel, Switzerland
Filed Jun. 29, 1978, Ser. No. 920,324
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730490

Int. Cl.¹ B21D 43/10, 55/00

U.S. Cl. 721—4



1. A transfer mechanism for a multiple punch press, said mechanism comprising:

- two cooperating pairs of conveyor tong means,
- holding means for connecting each pair of tong means to a movably mounted carrier member,
- each said carrier member including a bore effective to direct a lubricating fluid therethrough,
- lubricating fluid lines connected to supply lubricating fluid to said bore at a desired fluid pressure,
- said bore having an outlet opening contiguous to said tong means while maintaining said fluid pressure,
- said holding means being breakable upon the occurrence of a predetermined maximum resistance to cause tong means to break away from the carrier member and uncover said bore outlet opening, and
- actuation means responsive to a drop in pressure within said lubricating fluid lines when said bore outlet opening is uncovered,
- said actuation means being effective to stop the press when said drop in pressure occurs.

4,227,391 PROCESS FOR MAKING TUBE IN SHEET HEAT EXCHANGERS

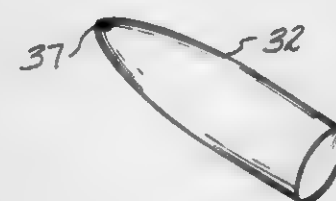
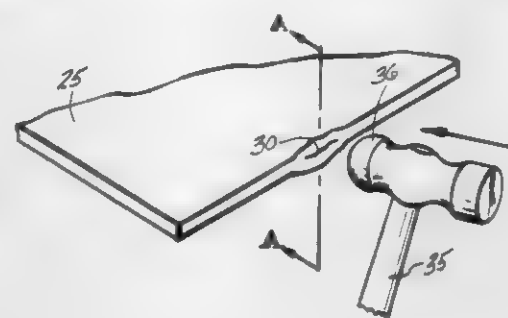
Kenneth Belangee, Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Jan. 29, 1979, Ser. No. 7,556

Int. Cl.³ B23P 15/26

U.S. Cl. 72—54

4 Claims



1. A process for forming an opening in a composite metal panel comprising at least two sheets of metal having a bond therebetween which can be broken by inflation, said opening extending between said sheets and inwardly of said panel from an edge thereof, said composite metal panel being free of stop weld material sandwiched between said sheets and being adapted for forming a heat exchanger therefrom having a desired pattern of inflated tubular passageways therein, said process comprising:

- providing a hammering member having a blunt surface; hammering with said blunt surface said edge of said panel at a position wherein said opening is to be formed for delineating a bond interface between said sheets of said composite metal panel, said hammering being adapted to upset said metal at said position of said edge of said panel so that said bond interface is delineated by a crack formed between said sheets;
- providing a tool having a sharp end adapted to be positioned at said crack formed between said sheets; and forming said opening at said edge of said panel by inserting said sharp end of said tool into said crack.

4,227,392

SPRING WINDING MACHINE

Reijiro Itaya, Tokyo, Japan, assignor to Itaya Seisakusho Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1978, Ser. No. 946,517

Claims priority, application Japan, Oct. 5, 1977, 52-119605; Oct. 5, 1977, 52-119606

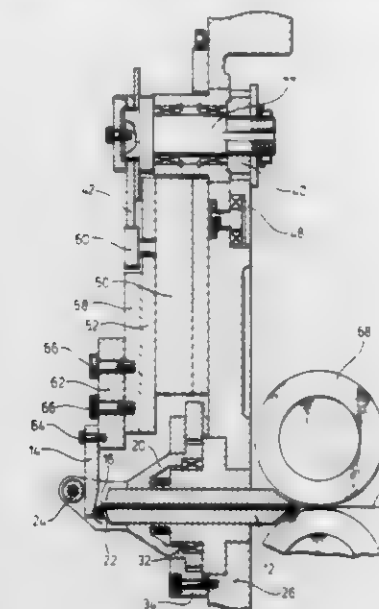
Int. Cl.² B21S 35/02

U.S. Cl. 72—137

6 Claims

1. A coil winding machine comprising a wire guide member having a wire feed channel therein, and a support member turnably arranged in relation to the wire guide member and provided with a turnable core bar member of semi-circular shape and at least one tool member movable toward and away from the core bar member, characterized in that the edge of the turnable core bar member is engaged with an open end of the wire feed channel with a round surface confronting the tool

member, and the tool member is turnable with the support member, so that the core bar member in its longitudinal direc-



tion is always directed normal to the direction of movement of the tool.

4,227,393

METHOD AND APPARATUS FOR PUNCHING OPENINGS IN TUBES

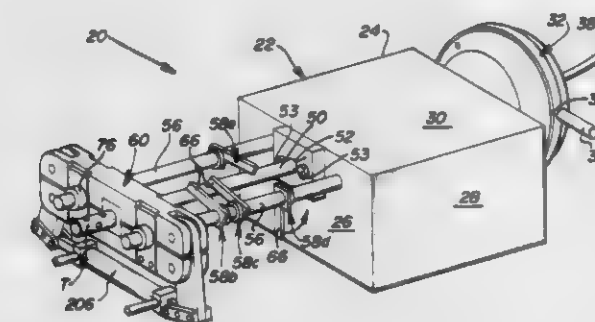
William G. McElhane, Jacksonville, Tex., assignor to Anvil Corporation, Jacksonville, Tex.

Filed Jan. 3, 1979, Ser. No. 688

Int. Cl.¹ B21D 31/02

U.S. Cl. 72—327

13 Claims



1. An apparatus for punching an opening through tubing comprising:

- a stationary mandrel having a guide aperture through the wall thereof and being insertable within the tubing,
- a moving actuator having an inclined ramp on one end thereof and receivable within the stationary mandrel,
- a punch having an inclined end for engagement on the inclined ramp of said actuator and an opposite end for engagement through the guide aperture in the wall of said stationary mandrel,

interlocking structure on the inclined end of said punch and the inclined ramp of the moving actuator for slidable engagement of the punch on the actuator, such that said punch moves up the inclined ramp of said moving actuator as said actuator is advanced into said stationary mandrel and said punch moves down the inclined ramp of said moving actuator as it is withdrawn from said stationary mandrel, and

power means for moving said moving actuator into said stationary mandrel whereby said punch is caused to move upwardly on the inclined ramp of said moving actuator and forced radially outward through the guide aperture of said stationary mandrel to punch an opening through the side wall of the tubing and for withdrawing said actuator out of said stationary mandrel to move said punch down the inclined ramp and radially inwardly within the tubing.

4,227,394

PROCESS FOR THE AUTOMATIC MANUFACTURE OF DROP FORGING

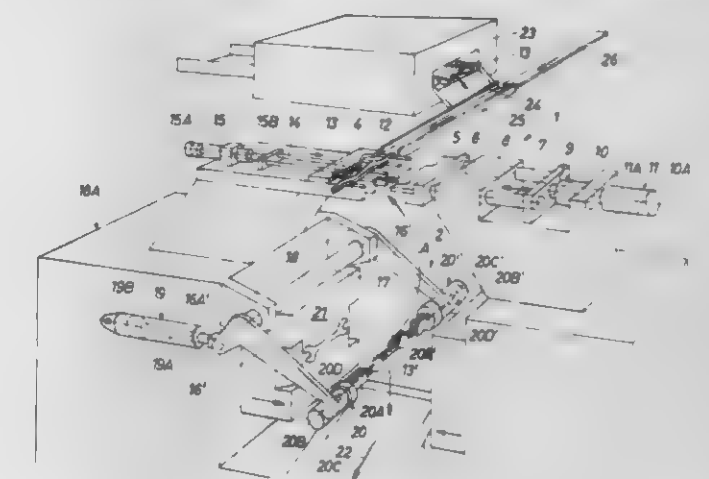
Othmar Heimel, Behamberg, Austria, assignor to "Wefoba" Werkzeug-und Formenbau Gesellschaft mbH & Co., KG, Steyr, Austria

Filed Aug. 8, 1978, Ser. No. 931,920

Claims priority, application Austria, Sep. 26, 1977, 6850/77
Int. Cl.¹ B21D 22/00

U.S. Cl. 72—356

9 Claims



1. Apparatus for the automatic manufacture of drop forgings comprising prebending means having two cooperating jaws facing each other and operable to prebend a slit off and stamped workpiece, at least one of the jaws being movable towards the other in a horizontal direction;

support means positioned below one of said two cooperating jaws for supporting a workpiece, said support means including a grate having a plurality of horizontally spaced apart members for supporting the workpiece;

transfer means for transferring the prebent workpiece, said transfer means including a pair of pivoted transfer arms having grippers on ends of the arms for gripping and releasably holding ends of the prebent workpiece, the transfer arms being pivotable so that the grippers engage both ends of the supported prebent workpiece, the gripped workpiece being rotated by said transfer arms from a horizontally oriented position to a vertically oriented position; and

a power hammer for forging a transferred and gripped prebent workpiece and having horizontally movable dies for forging the prebent workpiece to a finished product.

4,227,395

TUBE CRIMPING DEVICE

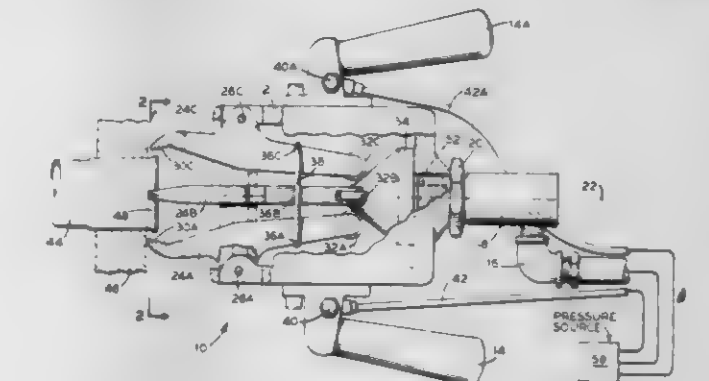
Louis Plavsky, Barberton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 26, 1979, Ser. No. 24,236

Int. Cl.¹ B21D 41/04

U.S. Cl. 72—402

6 Claims



1. An apparatus for crimping the ends of tubes preparatory of their removal from tube support structures, the apparatus

comprising a housing, the housing having a central symmetrical axis, a plurality of members pivotally mounted within the housing and equidistantly disposed about the axis, each member having a crimping end extending beyond the housing, roller means attached to the non-crimping end of each member, a movable cone positioned within the housing and in communication with the rollers, means for extending and retracting the cone, and means for separating the crimping ends from one another so as to position the crimping ends at an angle away from the axis of symmetry of the housing when the cone has been retracted.

4,227,396

CONTOURED STAMPING DIE

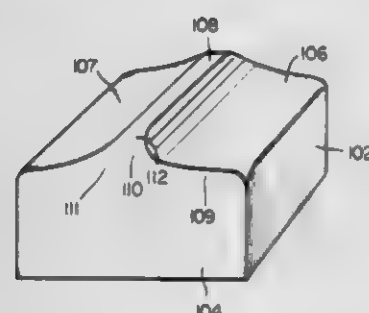
John J. Crowe, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,674

Int. Cl. B21J 13/02; B21D 37/00

U.S. Cl. 72-469

14 Claims



1. A contoured metal die suitable for stamping heat exchange channel element wall members from thin sheet metal, of block-like form having vertically extending side surfaces and vertically extending front and back surfaces, with each of said side surfaces being parallel to the other side surface and perpendicular to said front and back surfaces, whereby said die has a rectangular cross-section in plan view over its entire vertical extent, with a top surface comprising ridge projections extending elongately across said top surface parallel to said side surfaces of said die with flat top surface portions at the extremities of said ridge projections, said flat top surface portions having an aspect ratio (d_2/d_1) of at least 10, wherein d_2 is the longitudinal dimension of the ridge projection flat top surface portion as measured in a horizontal plane containing said flat top surface portions and d_1 is the transverse dimension of the ridge projection flat top surface portion as measured in said horizontal plane containing said flat top surface portions along a direction perpendicular to said side surfaces of said die, with said flat top surface portions being surrounded by top surface portions having a concave elevational contour of constant radius of curvature R_1 as viewed in a vertical plane perpendicular to said side surfaces of said die, such that the dimensional ratio of said radius of curvature R_1 to the flat top surface portion transverse dimension d is between 0.375 and 30,000, and with said ridge projections having smoothly contoured edge surfaces between said top surface of said die and the front and back surfaces thereof, including edge surface portions extending between and joining said front and back surfaces with said flat top surface portions, said edge surface portions each having an inwardly directed elevational contour from a lower extremity adjacent said front or back surface to an upper extremity adjacent said flat top surface portion, as viewed in a vertical plane parallel to said side surfaces of said die and passing through the flat top surface portion.

4,227,397

METHOD FOR TESTING CIGARETTES

Bruno Neri, Bologna, Italy, assignor to Cir S.p.A. Divisione Sasib, Bologna, Italy

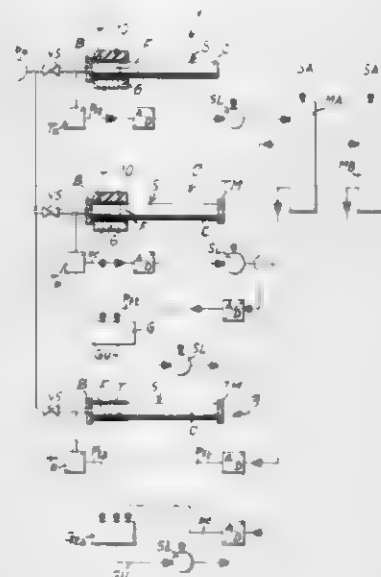
Filed Mar. 15, 1979, Ser. No. 20,726

Claims priority, application Italy, Mar. 22, 1978, 12526 A 78

Int. Cl. G01N 15/08

U.S. Cl. 73-38

3 Claims



1. In a method for the electropneumatical testing of the composite wrapper of filter cigarettes, said composite wrapper consisting of a paper wrapper surrounding a tobacco filler and a tipping band surrounding a filter plug and attaching the said filter plug to the said paper wrapper, which method includes applying a controlled-flow gas pressure to one end of each cigarette, the improvement wherein said method further comprises subjecting each cigarette, individually, to:

- a first testing in order to determine the gas permeability of the cigarette along its longitudinal direction, i.e. the gas permeability of the filter and of the tobacco filler, said first testing comprising maintaining the cigarette end opposed to the end to which the gas pressure is applied open, maintaining the outer surface of the tipping band sealed in a gas tight manner, and deriving a first testing signal representative of the resulting gas pressure applied to the cigarette;
- a second testing in order to determine the gas permeability of the paper wrapper which envelopes the tobacco filler, said second testing comprising maintaining the cigarette end opposed to the end to which the gas pressure is applied is closed in a gas tight manner, maintaining the outer surface of the tipping band sealed in a gas tight manner, and deriving a second testing signal representative of the resulting gas pressure applied to the cigarette;
- a third testing in order to determine the gas permeability of the whole composite wrapper, said third testing comprising maintaining the cigarette end opposed to the end to which the gas pressure is applied closed in a gas tight manner, and deriving a third testing signal representative of the resulting gas pressure applied to the cigarette, and comparing the second and third testing signal with respective levels of acceptability each presenting a determined value beyond which a cigarette is not acceptable, said value of acceptability being determined for the second testing signal as a function of the value of the first testing signal, and for the third testing signal as a function of the values of the first and second testing signals.

4,227,398

PIEZOELECTRIC GUM MEASUREMENT DEVICE

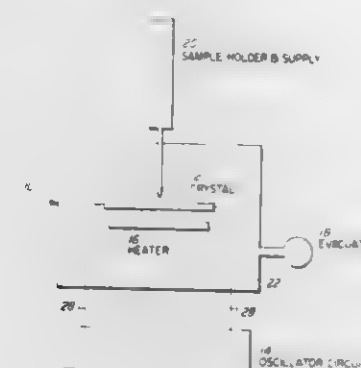
Mary H. Keirns, Edison, and Robert S. Lunt, III, N. Plainfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 14, 1979, Ser. No. 48,501

Int. Cl. G01N 5/04, 33/22

U.S. Cl. 73-61 R

10 Claims



1. An apparatus for measuring high boiling point components and gum present in a liquid stream comprising:
 - (a) piezoelectric crystal means;
 - (b) a lipophobic coating applied to said crystal means for controlling sample location;
 - (c) means for applying a sample to said crystal;
 - (d) heater means for heating sample on said crystal;
 - (e) oscillator means associated with said crystal for measuring the resonant frequency thereof;
 - (f) evacuator means; and
 - (g) insulated housing means for said crystal and heater.

4,227,399

APPARATUS FOR CONTACTING SAMPLES WITH WATER VAPORS

Kurd Grüniger, Büelstrasse 556, CH-5626 Lengnau, Switzerland

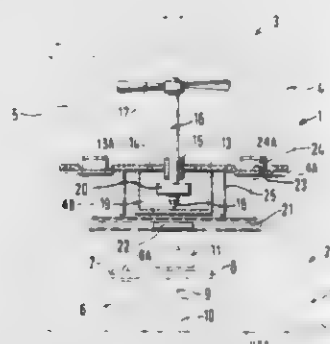
Filed Dec. 15, 1978, Ser. No. 969,651

Claims priority, application Switzerland, Dec. 27, 1977, 16039/77

Int. Cl. G01N 5/02

U.S. Cl. 73-76

25 Claims



1. Apparatus for measuring sorption of water vapors by a variety of samples, comprising an exsiccator including a vessel defining a space having humidity standard liquid and vapor portions which is sealable from the surrounding atmosphere; means for maintaining the percentage of water vapors in said space at a predetermined value; at least one sample-containing container provided in the vapor portion in said space to absorb water vapors in said vessel; and means for agitating at least the vapor portion contents of said space, said agitating means including a shaft, means for rotatably supporting said shaft with a minimum of friction, impeller means mounted on said shaft in said vapor space, and means for rotating said shaft including a magnetic body on said shaft and means for selecting transmitting torque to said shaft via said magnetic body.

4,227,400

MEASURING CIGARETTE CHARACTERISTICS DURING PYROLYSIS SMOKING

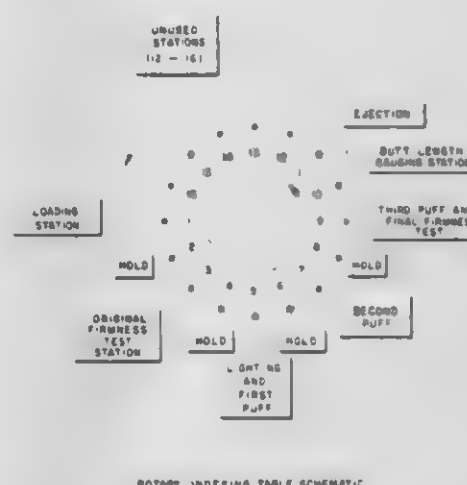
John F. Nienow, Christopher L. Irving, and Lynwood V. Shaw, all of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,454

Int. Cl. G01N 3/48

U.S. Cl. 73-81

25 Claims



1. Apparatus for measuring the firmness of a cigarette comprised of a paper wrapped cylinder of tobacco during the smoking of same, said apparatus comprising
 - a holder for receiving the cigarette,
 - means for advancing said holder in stepwise movement to a succession of stations,
 - means for igniting and then effecting puffing of said cigarette at one of said stations, and
 - means located at a succeeding one of said stations for concurrently applying a first reference magnitude deflection force to said cigarette and a second greater magnitude deflection force to said cigarette, said means including signal generating devices associated with the application of the respective deflection forces for producing signals indicative of the extent to which the respective forces have deflected the wrapper.

4,227,401

SURFACE ELEVATION MEASURING APPARATUS

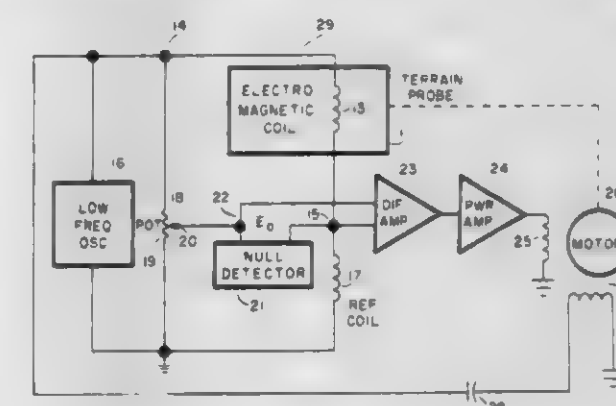
John C. McKechnie, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1979, Ser. No. 39,241

Int. Cl. G01B 5/28

U.S. Cl. 73-105

16 Claims



1. A surface elevation measuring apparatus comprising in combination:
 - terrain probing means for sensing the elevation of a terrain surface whose profile is being measured and followed;
 - oscillating means, having first and second outputs for gener-

ating a sinusoidal reference signal having a predetermined frequency;

bridge circuit means having a quartet of arms, with one of said arms being enclosed within said terrain probing means; and having a first input terminal connected to the first output of said oscillating means, a second input terminal connected to the second output of said oscillating means, a first output terminal, and a second output terminal for providing a first sinusoidal signal, having a fixed amplitude, and a second sinusoidal signal, having a variable amplitude, in response to said sinusoidal reference signal generated by said oscillating means;

amplifier means having a first input connected to the first terminal output of said bridge circuit means, a second input connected to the second terminal output of said bridge circuit means, and an output for providing a sinusoidal drive signal whose amplitude is proportional to the difference between the amplitude of the first sinusoidal signal and the amplitude of the second sinusoidal signal provided by said bridge circuit means; and

servo drive motor means having an input connected to the output of said amplifier, and a shift output effectively connected to said terrain probing means for raising or lowering said terrain probing means along a vertical axis above said terrain surface in response to the sinusoidal drive signal provided by said amplifier means.

4,227,402

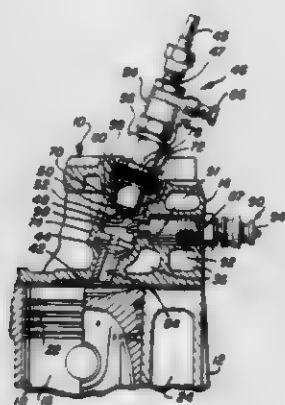
COMBUSTION MONITORING SYSTEM FOR FUEL INJECTED ENGINES

Daniel J. Dooley, Burr Ridge; Terrence L. Dooley, and Joseph L. Dooley, both of Chicago, Ill., assignors to Creative Tool Company, Lyons, Ill.

Filed Nov. 14, 1978, Ser. No. 960,600
Int. Cl. G01M 15/00

U.S. Cl. 73-115

18 Claims



1. For use in a diagnostic system for a diesel engine of the type having a combustion chamber associated with each cylinder and a threaded port extending from each combustion chamber to the outer surface of the engine which is adapted to accept a glow plug, a transducer assembly comprising a metal housing having a shank portion threaded for a screw-type engagement with said threaded port and a head portion external to said shank portion and having a recessed cavity extending along the axis of said port, said shank portion having a forward end for extending into said port and acting as a pressure face within the cylinder and closing the inside surface of said cavity transverse to the axis of the port, said metal housing at least partially seating against said engine at said head portion and a piezoelectric element coupled to the inner end of the cavity in substantially the same plane in which said head portion is seated against said engine so as to develop an electrical signal during flexure of said housing resulting from pressure against said pressure face, and an electrical output means coupled to the outer end of said piezoelectric element for transmitting the electrical signal from said element.

4,227,403

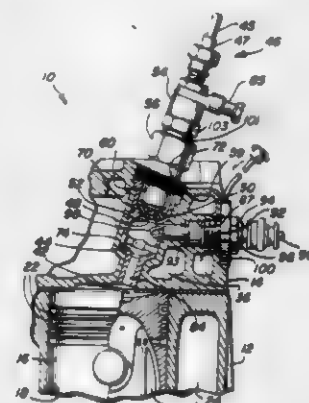
CYLINDER PRESSURE MONITORING SYSTEM

Daniel J. Dooley, Burr Ridge; Terrence L. Dooley, and Joseph L. Dooley, both of Chicago, Ill., assignors to Creative Tool Company, Lyons, Ill.

Continuation-in-part of Ser. No. 960,590, Nov. 14, 1978, abandoned. This application Jan. 29, 1979, Ser. No. 7,347
Int. Cl. G01M 15/00

U.S. Cl. 73-115

16 Claims



1. A transducer for developing an electrical signal in response to pressure variations within the combustion chamber of an engine of the type having (a) a threaded port extending from the combustion chamber to the outer surface of the engine and (b) a glow or spark plug having a shank portion threaded into said port and an enlarged head portion exterior to said shank portion, said transducer comprising:

a housing sized and shaped for insertion around said shank portion while underlying said enlarged head portion, said housing having a thickness sufficient to insure that said glow or spark plug head portion compresses said housing against said engine and seats against said housing;

a piezoelectric element disposed within said housing for developing an electrical signal in response to pressure variations on said glow or spark plug from within said combustion chamber; and

terminal means for transmitting the electrical signal from said piezoelectric element.

4,227,404

DIGITAL MINERAL LOGGING SYSTEM

Jerry B. West, Tulsa, Okla., assignor to Century Geophysical Corporation, Tulsa, Okla.

Filed Apr. 17, 1978, Ser. No. 897,184
Int. Cl. E21B 47/024

U.S. Cl. 73-151

10 Claims

1. A digital mineral logging system for obtaining logging data from a single logging run through the borehole, comprising:

a mineral logging tool;

a plurality of mineral logging sensors housed within said mineral logging tool for obtaining the logging data on a single pass of the logging tool through the borehole, one of said sensors being a deviometer for determining the location and orientation of the borehole;

means for converting data from said sensors to a digital signal format;

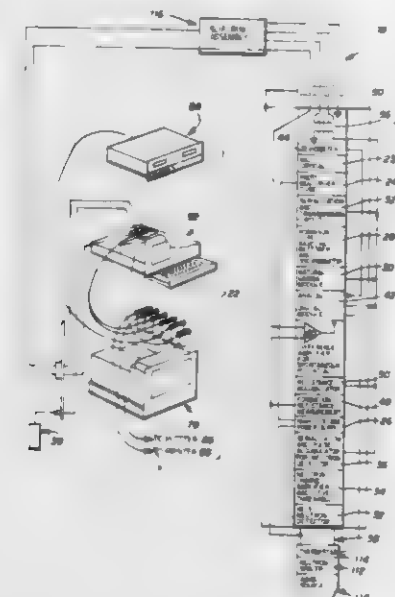
means for storing said digital signals of said sensors;

a cable connected at one end to said mineral logging tool for lowering and raising said mineral logging tool within the borehole and for energizing said sensors housed within said tool;

memory means within said mineral logging tool for storing a predetermined tool identification code;

an electronic digital signal processing means connected to said sensors of said mineral logging tool through said

cable for processing the data from said plurality of sensors; and



means for periodically transmitting said digital signal of said plurality of sensors and said tool identification code up said cable to said electronic signal processing means.

4,227,405

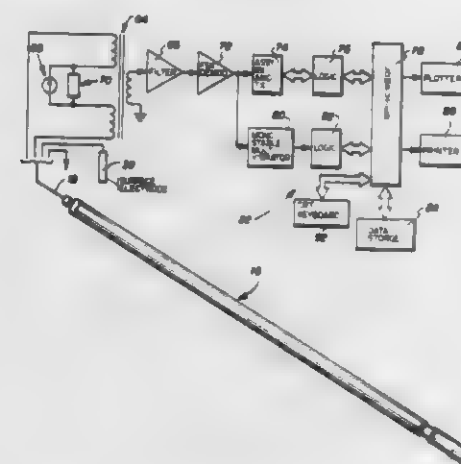
DIGITAL MINERAL LOGGING SYSTEM

Jerry B. West, Tulsa, Okla., assignor to Century Geophysical Corporation, Tulsa, Okla.

Division of Ser. No. 897,184, Apr. 17, 1978. This application Apr. 6, 1979, Ser. No. 27,676
Int. Cl. E21B 47/022

U.S. Cl. 73-151

26 Claims



26. A mineral logging tool connected by a cable to an electronic digital signal processing means for determining the true path of a borehole through an ore formation and for acquiring additional mineral logging data for a digital logging system during a single pass of the logging tool in the borehole, comprising:

a deviometer data sensor and at least one other mineral logging data sensor housed within the mineral logging tool for providing the mineral logging data on a single pass of the mineral logging tool through the borehole;

means for converting the deviometer sensor data and other analog sensor data from analog signals to digital signals;

means for storing said digital signals from said sensors; and

means for periodically batch transmitting said stored digital signals up the cable at a predetermined rate to the electronic digital signal processing means to perform computations to determine the location and orientation of the borehole and additional logging information from said other sensor.

4,227,406

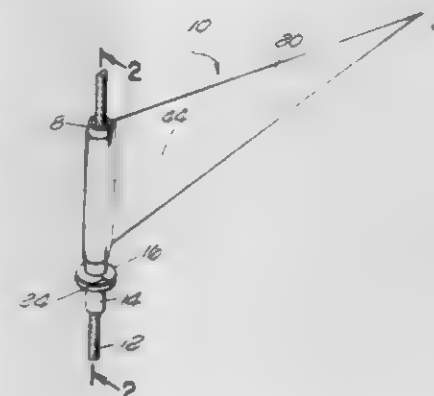
WIND DIRECTION DEVICE

James M. Coffey, 320 E. Walnut Ave., El Segundo, Calif. 90245
Filed Apr. 27, 1979, Ser. No. 34,494

Int. Cl. G01W 1/00

U.S. Cl. 73-188

14 Claims



1. In combination with a boat shroud, a wind direction device comprising:

an upwardly facing shoulder secured to said shroud at a mid portion thereof;

a bearing resting on said shoulder and having a hole therethrough with a slit connecting said hole and the periphery of said bearing, said shroud passing through said hole, said bearing being made of a material of sufficient flexibility and resilience such that the size of said slit can be varied to position said bearing around said shroud and retain said bearing on said shroud;

a tubular mandrel engaging said bearing, said mandrel having a bore therethrough with a slit traversing the length of said mandrel connecting said bore and the periphery of said mandrel, said shroud passing through said bore, said mandrel being made of a material of sufficient flexibility and resilience such that the size of said slit in said mandrel can be varied to position said mandrel around said shroud and retain said mandrel on said shroud; and

a resilient vane connected to the periphery of said mandrel.

4,227,407

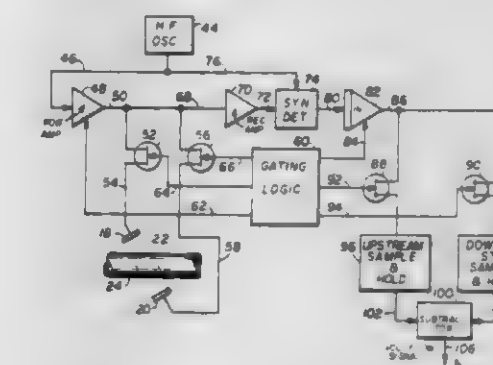
VOLUME FLOW MEASUREMENT SYSTEM

Cornelis J. Drost, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,456
Int. Cl. G01F 1/66

U.S. Cl. 73-861.28

13 Claims



11. A flow measurement system for obtaining a resultant signal representative of the volume flow of a fluid stream, comprising:

first and second acoustic wave transducers adapted to be located adjacent the fluid stream, said transducers being so located that an acoustic wave beam transmitted by one transducer will pass through said fluid stream and will impinge on the other transducer;

means for generating a drive signal for activating said trans-

ducers, said drive signal being of an amplitude and frequency sufficient to drive said transducers to produce ultrasonic wave beams, said transducers each producing a wave beam of sufficient dimension to illuminate with uniform intensity the entire cross section of the portion of the fluid stream to be measured;

control means for periodically and alternately switching said transducers between transmit and a receive modes, whereby said drive signal is applied to said first transducer and the resulting acoustic wave beam is received by said second transducer and thereafter said drive signal is applied to said second transducer and the resulting acoustic wave beam is received by said first transducer;

synchronous detector means for comparing the signal received by said second transducer with said drive signal to provide a first variable signal and for comparing the signal received by said first transducer with said drive signal to provide a second variable signal;

means for integrating each of said first and second variable signals to produce first and second output signals; and means responsive to the difference between said first and second output signals for producing a resultant signal which is proportional to the volume flow of said fluid stream.

4,227,408

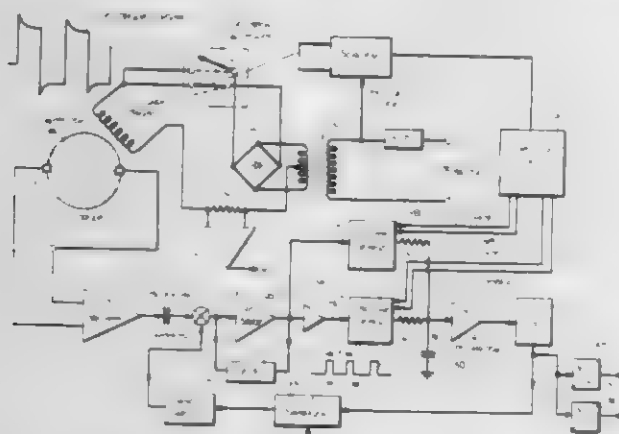
HARMONIC NOISE SUPPRESSION IN ELECTROMAGNETIC FLOWMETER

Roy F. Schmooch, Yardley, and John S. Yard, Doylestown, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Dec. 7, 1978, Ser. No. 967,137
Int. Cl.³ G01F 1/60

U.S. Cl. 73-861.17

8 Claims



1. In an electromagnetic flowmeter in which fluid to be metered passes through a flow tube to intersect a magnetic field whereby the voltage induced in the fluid is transferred to a pair of electrodes mounted on the tube to yield a flow-induced signal, the field being established by an electromagnet supplied with excitation current through a periodically-operated switch to create a magnetic field which during each operating cycle is alternately turned on and off or reversed in flux direction at a predetermined drive frequency, as a consequence of which the signal includes undesirable noise components formed by even and odd harmonics of the drive frequency; a converter responsive to said flow-induced signal to produce an output signal as a function of flow rate that is substantially free of said noise components, said converter comprising:

- A. a pair of synchronous demodulators;
- B. means to apply said flow-induced signal to said demodulators in phase opposition;
- C. an integrator coupled to the outputs of both demodulators; and
- D. gating means synchronizing the demodulators with said periodically-operated switch to cause one demodulator to pass its output to said integrator during the first half cycle of the drive frequency only in a first gating interval in which the magnetic field is turned on and is at a constant

flux level, and thereafter to cause the other demodulator to pass its output to said integrator during the second half cycle of the drive frequency only in a second gating interval in which the magnetic field is turned off or is at a constant flux level in the reverse direction.

4,227,409

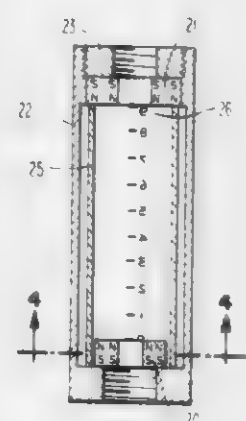
FLOWMETER

Douglas J. Bingler, Furlong, Pa., assignor to Milton Roy Company, Ivyland, Pa.

Filed Jan. 12, 1979, Ser. No. 3,073
Int. Cl.³ G01F 1/28

U.S. Cl. 73-861.71

5 Claims



1. Apparatus for measuring the flow of a fluid through an untapered straight section of tube, the flow of said fluid through said apparatus being substantially linear, comprising: a magnet being disposed within said tube at an end thereof and fixed with respect thereto and a magnet disposed within said tube and adapted to be moved along the axis of said tube from a rest position at an end of said tube in response to fluid passing through said tube, whereby said movable magnet moves a distance from its rest position under the influence of a flow of fluid through said tube such that the force exerted on said movable magnet by said fluid is equal to the force exerted on said movable magnet by said stationary magnet.

4,227,410

ATTITUDE COMPENSATING INDICATOR

Samuel Ruben, New Rochelle, N.Y., and Philip E. Kalker, Demarest, N.J., assignors to eMDee Corporation, Northvale, N.J.

Continuation-in-part of Ser. No. 824,046, Aug. 12, 1977. This application Apr. 13, 1979, Ser. No. 29,967
Int. Cl.³ G01F 23/14; G01L 4/04; H01C 1/08

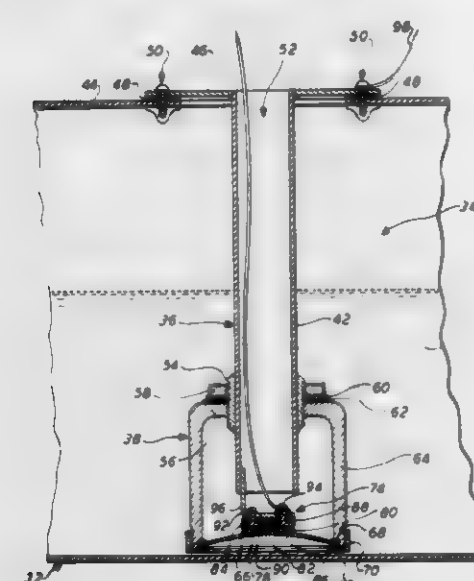
U.S. Cl. 73-301

20 Claims

1. An indicator for measuring the liquid content of a container comprising:

an attitude compensating sensor comprising at least two variable resistor assemblies individually mounted at opposite ends of said container and disposed for electrical series connection with each other, each resistor assembly comprising a housing mounted within said container and attached to one wall thereof, said housing comprising a fluid-tight chamber supported and located near the bottom of said container, said chamber having at least one stationary wall and at least one movable wall, said movable wall capable of movement with respect to said stationary wall in response to changes in liquid weight, a weight-responsive variable resistor mounted within said chamber in contact with said stationary wall and said movable wall, and a conduit providing fluid registry between said chamber and the ambient atmosphere outside said container, said conduit mechanically supporting said chamber within said container, said conduit attached at one end thereof to said stationary wall,

and extending into attachment at the other end thereof to a wall of said container, an electrical connection means extending into contact between said resistor assemblies,



wherein the movement of said movable wall causes a change in the electric current output of said resistor and the total resistance of said sensor received from each of said variable resistor assemblies remains constant for a particular level of liquid content.

4,227,411

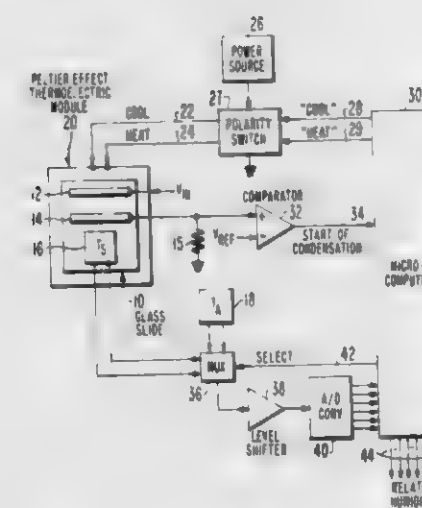
RELATIVE HUMIDITY MEASUREMENT

Abe Abramovich, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,913
Int. Cl.³ G01N 31/00

U.S. Cl. 73-336.5

9 Claims



1. A relative humidity measuring instrument, comprising two spaced electrodes on an insulating substrate, a substrate thermometer and an ambient thermometer, means to cool, and then heat, said substrate, a comparator connected to said electrodes to detect a decrease in resistance between said electrodes due to condensation of moisture therebetween, and a computer receptive to temperature signals from said thermometers and operative in response to an output from said comparator to compute the relative humidity.

4,227,412

TEMPERATURE RESPONSIVE ACTUATOR

Eugene Stratynski, West Chicago, and Charles Zilic, Mt. Prospect, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 16, 1979, Ser. No. 30,596
Int. Cl.³ G01K 5/32

U.S. Cl. 73-368.3

7 Claims



1. A temperature responsive actuator, comprising:

- (a) housing means defining a cavity, said housing means including a cup-shaped base member and a guide casing connected to said base member, said guide casing having a first opening formed therethrough and a registration surface provided within said cavity adjacent said first opening;
- (b) a flexible diaphragm disposed within said cavity and sealingly connected around the outer periphery thereof to said housing means;
- (c) thermally expansible material received in said cavity intermediate said base member and said diaphragm;
- (d) an elongated actuator member having one end received through said first opening in said guide casing and operably connected to said diaphragm for movement therewith, said actuator member having an outer diameter sized to define a first clearance with said opening in said guide casing;
- (e) an anti-chafe member having an opening therethrough with said actuator member slidably received therethrough, said member having surface portions thereof in abutment with said diaphragm; and
- (f) a rigid support washer having a central guide passage therethrough, said washer having said actuator rod slidably received therethrough, said actuator rod outer diameter defining with said guide passage a second clearance substantially less than said first clearance, said washer having face portions thereof in abutment with said anti-chafe member and said guide casing, said washer having the outer periphery thereof defining with said registration surface a third clearance substantially less than said first clearance to permit a predetermined amount of radial movement thereof, wherein said washer substantially limits the radial play of said actuator member relative to said first opening in said guide casing and wipes contaminant build-up from portions of the periphery of said actuator member, said washer providing axial support for said anti-chafe ring, said second and third clearance surfaces sized to prevent said actuator member from contacting the inner periphery of said first opening.

4,227,413

URINE SPECIMEN COLLECTOR

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301
Filed Jan. 10, 1979, Ser. No. 2,403

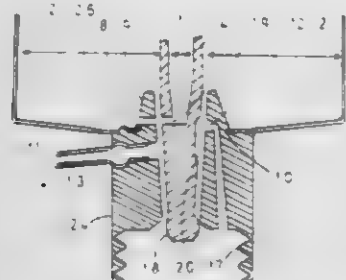
Int. Cl.³ G01N 1/18

U.S. Cl. 73-421 R

6 Claims

1. An aliquot sampling apparatus comprising: an outer elongate container having an upper inlet and a bottom outlet port; an inner elongate container spaced from the outer container

and concentric therewith to provide an annular chamber therebetween, said inner container having a bottom access port; resilient sealing valve means at the bases of said containers and connected thereto, said resilient valve means snapped into the base of said outer container; first and second outlet means, said inner container being adjustable in said valve means to position



said access port for communication with the outlet port of said outer container in a first position of said inner container; and to position said access port in communication with said first outlet means in a second position of said inner container, said second position also positioning the outlet port of said outer container in communication with said second outlet means.

4,227,414

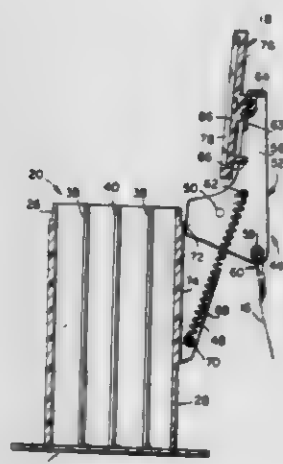
LIQUID TESTING KIT

Joseph R. Elkins, Brooklyn, N.Y., assignor to J & M Instruments Corp., Farmingdale, N.Y.

Filed May 2, 1979, Ser. No. 35,330

Int. Cl.³ G01N 1/12

U.S. Cl. 73-425.4 R



1. A kit for rendering an in situ property measurement of a liquid, said kit comprising a vessel adapted to be lowered into the liquid, the vessel having an open mouth for receiving a specimen of the liquid and an instrument for measuring the liquid property, the vessel being so dimensioned as to accommodate the instrument, the vessel including a plurality of ribs projecting inwardly and defining an area for supporting the instrument, the instrument including a pair of electrodes, the ribs being spaced from the electrodes so as to permit intimate contact between the liquid specimen and the electrodes whereby accurate measurement is facilitated.

4,227,415

METHOD AND APPARATUS FOR TESTING SOLDERABILITY AND DE-SOLDERING WICKS

Ernst Spirig, P.O. Box 160, CH-8640 Rapperswil, Switzerland

Filed Jul. 16, 1979, Ser. No. 58,119

Claims priority, application United Kingdom, Jun. 26, 1979, 79/22181

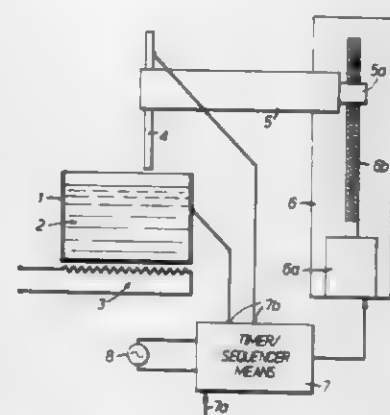
Int. Cl.³ G01M 19/00; G01N 33/00

U.S. Cl. 73-432 R

7 Claims

1. Testing apparatus for solderability and de-soldering wick tests, comprising holder means for holding a workpiece to be

tested, drive means for driving the holder means selectively up and down, a molten solder bath into which the workpiece is dipped as the drive means drives the holder means first downwards and then upwards, an electrical circuit coupled to the workpiece and solder bath and completed through the workpiece and molten solder when the workpiece first touches the



solder upon being driven downwards, and timing control means controlling the driving means and arranged to continue the downwards driving of the holder means for a predetermined interval after said circuit is completed, then to maintain the holder means stationary for a predetermined time period, and finally to raise the holder means so that the workpiece leaves the molten solder.

4,227,416

SPEED INDICATING APPARATUS FOR AUTOMOBILE

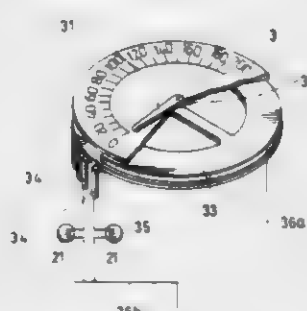
Jun-Feng Lee, 4th Fl., 103, Sec. 2, Wu-Chang St., Taipei, Taiwan

Filed May 24, 1979, Ser. No. 42,120

Int. Cl.³ G01P 3/50, 1/11

U.S. Cl. 73-499

4 Claims



1. A speed indicating apparatus for an automobile comprising a plurality of indicator lights, a half-circular magnet pivoted on a shaft of a speedometer in the automobile, a plurality of contact metal plates of certain elasticity situated below said speedometer and connected to a lead wire of each said indicator lights separately, and a ground connection circular metal plate pivoted on said shaft of said speedometer and connected to the cathode of an electrical source; said magnet following said shaft to rotate so as to attract said contact metal plates to come into contact with said ground connection circular metal plate, and the indicator lights glowing in turn so as to give indications of the travelling speed to other drivers at all times.

4,227,417

DYNAMIC FOCUSING APPARATUS AND METHOD

William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Jun. 13, 1977, Ser. No. 806,005

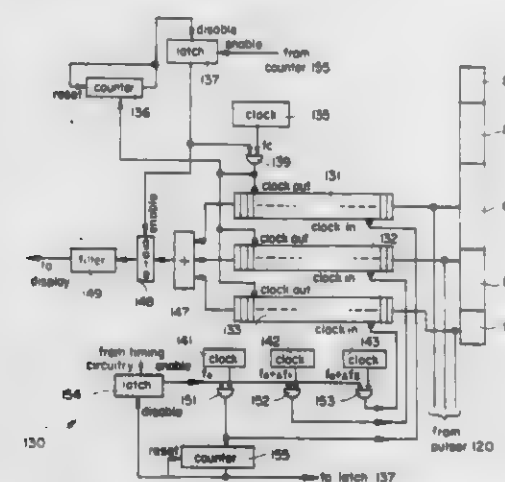
Int. Cl.² G01N 29/00

U.S. Cl. 73-625

29 Claims

1. Apparatus for imaging a body, comprising: means for transmitting energy into the body; p1 a transducer for converting energy reflected from said body to electri-

cal signals, said transducer being divided into a plurality of defined segments; a plurality of register devices, the input of each of said register devices being coupled to a respective one of said transducer segments; a first clock associated with each of said register devices; a plurality of second clocks, each associated with one of said plurality of register devices, each of said second clocks having a different characteristic clock rate;



timing means for effecting clocking of said electrical signals from said segments into their respective devices with one of its associated clocks and for subsequently effecting the clocking of the stored information out of each of said devices with the other of its associated clocks; and means for combining the signals clocked out of said devices to form an image-representative signal.

4,227,418

CAPACITIVE PRESSURE TRANSDUCER

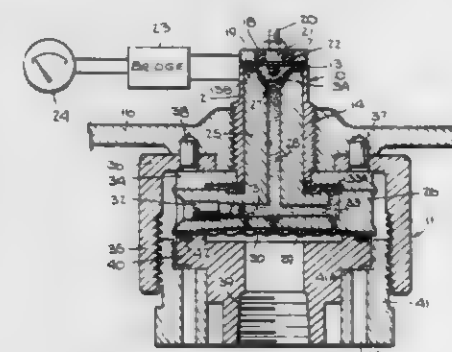
John J. Bonner, Philadelphia, and C. William Clayton, Hatboro, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Sep. 24, 1979, Ser. No. 78,203

Int. Cl.³ G01L 9/12

U.S. Cl. 73-706

9 Claims



1. A capacitive pressure transducer for measuring fluid pressure comprising:

- a pressure sensor formed by a cylinder having one end enclosed by a deformable metal diaphragm that serves as one plate of a capacitor whose second plate is spaced from the diaphragm by an air gap constituting the dielectric of the capacitor, deformation of the sensor diaphragm in response to pressure acting to vary the air gap to produce a corresponding change in the value of the capacitance; and
- a coupling assembly adapted to hydraulically convey the pressure of the fluid to be measured to the pressure sensor while isolating the structure of the sensor from the fluid, said assembly including a body component having a column section and a base section, the column section being received within the cylinder with its head spaced from the sensor diaphragm to define therewith a sensor chamber

which communicates through a passage in the column section with an isolation chamber formed at the bottom of the base section, and sealed by a barrier diaphragm, the chambers and the passage being filled with hydraulic fluid whereby the pressure of fluid imposed on the barrier diaphragm is transferred to the sensor diaphragm.

4,227,419

CAPACITIVE PRESSURE TRANSDUCER

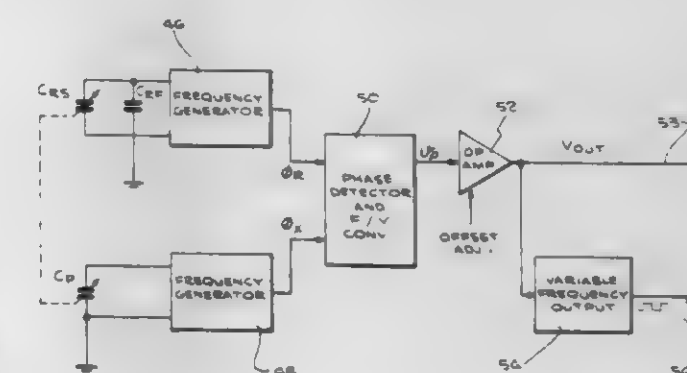
Kyong Park, Chatsworth, Calif., assignor to Kavlico Corporation, Chatsworth, Calif.

Filed Sep. 4, 1979, Ser. No. 72,016

Int. Cl.³ G01L 9/12

U.S. Cl. 73-724

13 Claims



1. An accurate pressure transducer system comprising: transducer means including a main variable capacitor and having a diaphragm including a conductive plate for deflecting toward and away from a second conductive plate in response to variations in pressure with the variations in capacitance being slightly non-linear over the desired operating pressure range; a reference capacitance, said reference capacitance including a principal fixed capacitor, and a small variable correction capacitor having a capacitance which is a minor fraction of that of said main variable capacitor; means for mounting said small variable compensation capacitor to change its capacitance in response to the variations in pressure applied to said main variable capacitor; and means for comparing the capacitance of said main variable capacitor and said reference capacitance and for producing an output signal of increased linearity through compensation provided by the variable correction capacitor.

4,227,420

PRESSURE COUPLING MECHANISM IN A PRESSURE MONITORING ASSEMBLY

Rene G. Lamadrid, Bethesda, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 11, 1979, Ser. No. 47,568

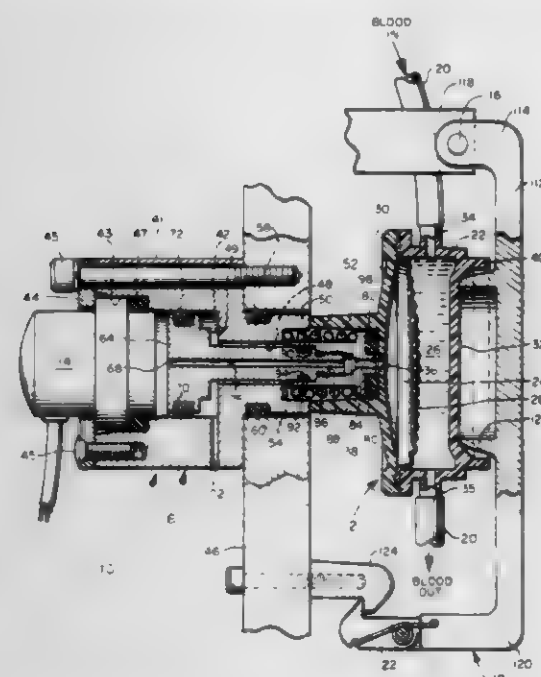
Int. Cl.³ G01L 7/08

U.S. Cl. 73-756

32 Claims

1. Pressure coupling means for coupling a first chamber in a fluid pressure transfer device to a pressure transducer, the chamber having one wall thereof defined by a flexible diaphragm against which fluid pressure to be monitored acts, for establishing a fluid tight air passageway communicating the first chamber in the pressure transfer device to the pressure transducer and for establishing, when coupled between the pressure transfer device and the pressure transducer, a biasing force in said air passageway and the first chamber whereby the diaphragm is urged toward the fluid to be monitored so that when such fluid is present at its expected normal pressure, the diaphragm is in a relaxed unstretched state, said pressure coupling means comprising means for trapping a volume of air in said air passageway and the first chamber when said pressure

coupling means is coupled to the pressure transfer device and means for compressing the volume of air in said air passageway



and the first chamber to establish a biasing pressure in said air passageway and the first chamber.

4,227,421

CARRIAGE RECIPROCATOR AND POSITIONER WITH CONTINUOUSLY MOVING CHAIN

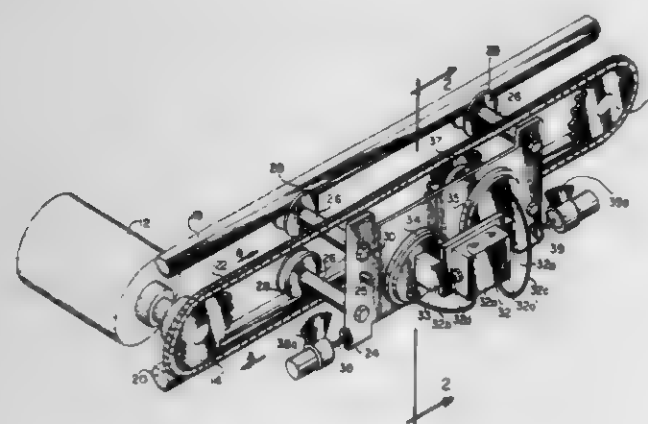
Joseph F. Weisbaw, 3934 Davisville Rd., Hatboro, Pa. 19040

Filed Mar. 20, 1978, Ser. No. 888,190

Int. Cl.² F16H 21/16, 19/06

U.S. Cl. 74-27

4 Claims



1. A carriage reciprocator comprising:

a housing;
a carriage movably mounted on said housing;
a chain movably mounted on said housing and arranged to continuously present a first chain portion, moving in a first direction, to a first portion of said carriage and to present a second chain portion, moving in a second direction, to a second portion of said carriage;

means, secured to the housing, for moving said chain;

a first chain sprocket rotatably mounted on said carriage, and arranged to operatively engage said first chain portion and arranged to normally idly spin with chain motion;
a second chain sprocket rotatably mounted on said carriage, and arranged to operatively engage said second chain portion and arranged to normally idly spin with chain motion;

a first air brake secured to said carriage and arranged to permit the spinning of said first chain sprocket when in a first state and to prevent the spinning of said first chain sprocket when in a second state;

a second air brake secured to said carriage and arranged to permit the spinning of said second chain sprocket when in

a first state and to prevent the spinning of said second chain sprocket when in a second state;

an air control valve secured to said carriage, operatively connected to said first and second air brakes, and arranged to shift between first and second control states wherein said first air brake is in its first state and said second air brake is in its second state when said air control valve is in said first control state and wherein said first air brake is in its second state and said second air brake is in its first state when said air control valve is in said second control state; and

means movably mounted on said housing for shifting said air control valve between said first and second control states.

4,227,422

CHAIN DEVICE

Yoshinori Kawashima, Sakado, and Masaki Watanabe, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,437

Claims priority, application Japan, May 19, 1978, 53/67297[U]

Int. Cl.³ F16H 55/30

U.S. Cl. 474-156

7 Claims



1. a chain device comprising:

a sprocket wheel;
a buffer ring provided on one side of said sprocket wheel for rotation relative thereto;
a chain meshing with said sprocket wheel, said chain including a plurality of link plate pairs;
said buffer ring having an outer diameter greater than the inner diameter dimension of a semicircular-shaped portion of said chain which is in mesh with said sprocket wheel; and

each of said link plates being provided with a depressed portion having a curved shape coinciding, in the radius of curvature thereof, with the maximum radius of curvature of the outer periphery of said buffer ring when said buffer ring is deformed into an elliptical shape by meshing engagement between said chain and said sprocket wheel.

4,227,423

LINE GRIPPING PULLEY FOR A LINE HAULER

Robert E. Crowe, Rockland Industrial Park, Rockland, Me. 04841

Filed Apr. 21, 1978, Ser. No. 898,641

Int. Cl.² F16H 55/36, 55/46

U.S. Cl. 474-177

4 Claims

1. A line gripping pulley for a line hauler for marine use, having a drive shaft with a free end and a flange close to but adjacent said end, said pulley including a pair of identical metal backing discs and a pair of identical thin and resilient and relatively flexible steel wear discs, one for each braking disc, each backing disc including an inner flat portion, an intermedi-

ate portion that is inclined away from the plane defined by the inner portion, and an outer portion sharply curved to provide a rim extending away from said plane, each wear disc including an inner flat portion to overlie the inner portion of a backing disc and an outer portion dimensioned to overlie the intermediate portion thereof, the flat portions of each disc having an axial hole to accommodate said shaft end and a circular series of holes enabling said discs to be bolted to said shaft flange



with the wear discs proximate and said rims disposed away from each other, the intermediate portion of the backing disc holding the outer portions of the wear disc to provide a narrow, V-shaped line receiving and line gripping channel dimensioned at its mouth freely to receive the line, at least the marginal portions of the wear discs resiliently engaging and sealing the intermediate portions of the backing discs adjacent their rims.

4,227,424

UNIVERSAL DRIVE BELT

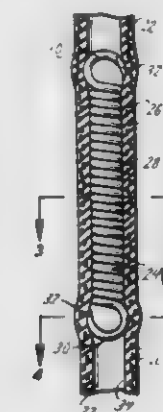
Alvin E. Schleppe, Star Rte. 1, Box 212, Fredericktown, Mo. 63643

Filed Nov. 2, 1978, Ser. No. 956,890

Int. Cl.³ F16B 7/00; F16G 9/00

U.S. Cl. 474-256

4 Claims



3. An endless drive belt for use as a fan belt or the like comprising:

a length of flexible reinforced tubing, said tubing having a sidewall defining a hollow core extending along at least part of the interior thereof, said tubing having its ends fastened together with a fastener, said fastener including a length of coiled spring, a semicircular head formed in each end thereof, the diameter of said heads being larger than the diameter of said hollow core, said heads having means to resist removal from said hollow core including a pointed tip formed into the end of said head, said pointed tip being oriented to slide freely into the hollow core but dig into the sidewall in response to a force tending to

remove said head from said tubing, said pointed tips cooperating with said coiled spring to resiliently resist rotation of one end of tubing with respect to said spring and the other end of tubing.

4,227,425

SINGLE ROCKER JOINT DRIVE CHAIN

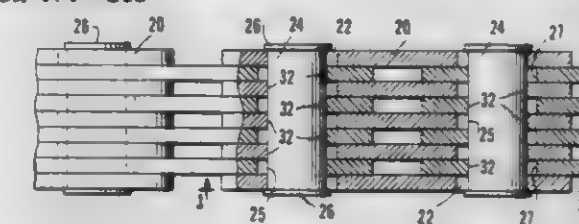
Wilfrid H. Bendall, Saybrook Rd., Essex, Conn. 06426

Filed Apr. 4, 1979, Ser. No. 26,830

Int. Cl.³ F16G 13/02

U.S. Cl. 474-213

6 Claims



1. A rocker joint drive chain comprising a plurality of apertured link members assembled end to end with overlapping end portions and registering apertures interconnected by pivot pins extending through the apertures and constituting pitch centers for a pivotal rocking action of the links on the pins, said apertures being substantially larger than the pins to provide clearance for the rocking action and for removal of the pins, said pins having end portions larger than the pin portions between their end portions and constituting chain transverse assembly retention means, said end portions also being smaller than the link apertures to facilitate insertion and removal therethrough, said pins being free to rotate independently of the link rocking action, the pin centers thereof constituting the center to center pitch dimension of an assembled chain.

4,227,426

DEVICE FOR LONGITUDINAL DISPLACEMENT OF A FLEXIBLE DRIVE WIRE

Wilfried Schwanz, Ahnsen, and Ulrich Seiffert, Braunschweig, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,192

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2827153

Int. Cl.² F16H 1/20

U.S. Cl. 74-424.8 R

5 Claims



1. A device for driving a flexible wire having a helical coil therearound along its length comprising a hollow shaft adapted to receive the wire, motor means for rotating the hollow shaft in either direction about its longitudinal axis, and wherein said shaft has a projection extending into the interior of said shaft adapted to engage said wire in the gap between adjacent turns of the helical coil, such that upon rotation of said shaft and thereby said projection, the wire is driven longitudinally through said shaft.

4,227,427

DRIVE UNIT ASSEMBLY

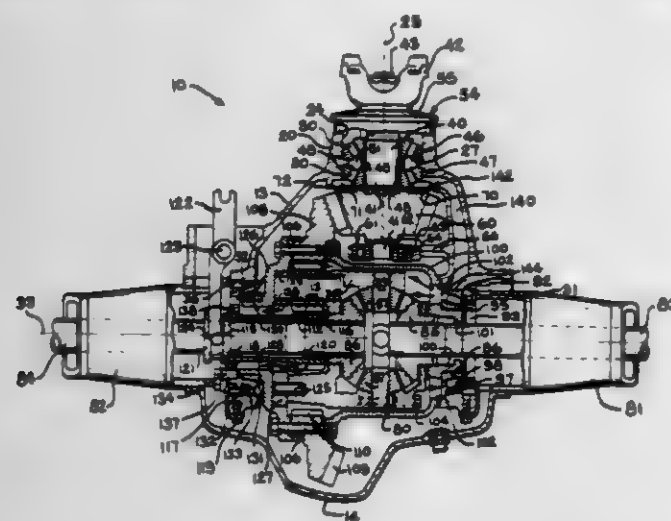
Wesley M. Dick, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Sep. 8, 1977, Ser. No. 831,588

Int. Cl.³ F16H 57/04; F01M 1/00

U.S. Cl. 74-467

8 Claims



1. A drive unit comprising a housing for containing a body of lubricant, said housing having a shaft opening; a gear assembly positioned within said housing; a shaft axially extending through said shaft opening and rotatable about said axis, said shaft spaced from said gear assembly; an annular baffle rigidly affixed to an axially inner portion of said shaft and positioned axially inwardly of said shaft opening, said baffle rotatable with said shaft about said axis; a bearing assembly positioned between said shaft opening and said baffle, a generally annular lubricant chamber at least partially defined by said baffle and said bearing assembly, said annular chamber being generally closed, and a lubricant passageway having an inlet in communication with said lubricant chamber and an outlet adjacent said gear assembly said inlet axially positioned between said baffle and said bearing assembly.

4,227,428

THROTTLE SYNCHRONIZER FOR INTERNAL COMBUSTION ENGINES

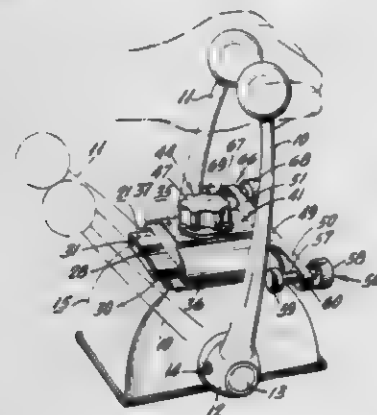
Morton F. Zifferer, and Donald E. Flinchbaugh, both of York, Pa., assignors to Mordco Company, Mount Joy, Pa.

Filed Jan. 17, 1979, Ser. No. 4,015

Int. Cl.³ G05G 5/04

U.S. Cl. 74-526

9 Claims



1. A throttle synchronizer for plural internal combustion engines, each engine having a separate throttle valve control lever mounted for selected forward and reverse longitudinal movement relative to a fixed location, said throttle synchronizer comprising

- (a) a support extending longitudinally in the direction of movement of the levers,
- (b) a transverse yoke mounted slidably on the support with

capacity for selected longitudinal positioning relative to the support,

- (c) locking means for locking the yoke securely in a selected position on the support,
- (d) throttle lever stops mounted on the yoke, said stops limiting the forward movement of the levers, and
- (e) adjustment means for the throttle lever stops to permit the levers to be maintained in synchronous engine settings relative to each other, when the levers have been advanced into contact with the stops.

4,227,429

SPANNER SOCKET WRENCH

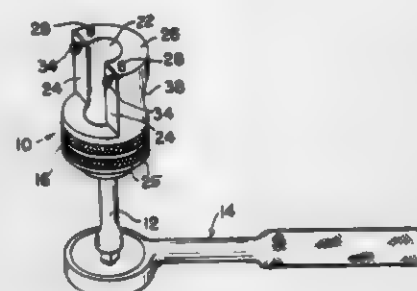
William Bowers, Jr., 2425 Nassau St., and William L. Grooms, Jr., 3307 Lexington St., both of Sarasota, Fla. 33581

Filed Aug. 14, 1978, Ser. No. 933,277

Int. Cl.³ B25B 13/48

U.S. Cl. 81-90 C

4 Claims



1. A spanner socket comprising a tubular body member open at one end forming a partially annular face and having an end wall at the other end, a lateral cut-out portion forming a pair of co-planar lateral faces, disposed proximate said one end, a polygonal aperture through said end wall for engagement by a polygonal driver, a pair of adjustable cylindrical pins outwardly projecting from said at least partially annular end face, said pins being slidably and removably disposed each in one of a pair of substantially parallel longitudinal bores diametrically opposed, a compressed coil spring disposed in each of said bores below each of said pins and longitudinally urging each of said pins in a direction causing each of said pins to project from said partially annular end face, and means for locking said pins in position each in one of said bores, said means for locking said pins in position comprising a set screw for each of said pins passed through from each of said lateral surfaces through a threaded bore leading in said bore accepting said pin.

4,227,430

HAND TOOL

Conny Jansson, and Ulf Wahlberg, both of Enköping, Sweden, assignors to AB Bahco Verktyg, Enköping, Sweden

Filed Jun. 4, 1979, Ser. No. 45,192

Claims priority, application Sweden, Jun. 30, 1978, 7807425

Int. Cl.³ B25G 1/08

U.S. Cl. 81-177 M

2 Claims

1. A rotatable hand tool, especially a screwdriver, with a handle having a holder (1) for a tool bit (2) at one end and formed with handle cavities (4) for storing at least one such bit (2) which fits the holder (1), characterized in that the handle consists of an outer tubular part (5) also forming one end of the handle, and a rotor (6) accommodated in the tubular part (5), said rotor simultaneously forming the opposing free end of the handle, the cavities (4) being disposed about the rotor (6) and consisting of radial recesses in the periphery thereof, while the tubular part has an opening (12) which, by mutual rotation between the rotor (6) and the tubular part (5) can be localized radially outside an optional recess (4) in the rotor, thereby allowing removal and replacement of a bit from and into the rotor, said rotor (6) being movably connected to the tubular part (5) with limited axial movement, their being coaxial locking means (13, 14) on the rotor and in the tubular part

disposed such that when rotor and tubular part are pressed axially towards each other, the rotor and tubular part are non-rotatably locked to each other, and when rotor and tubular



lar part are moved slightly in the opposite axial direction said locking means allow the rotor to rotate in relation to the tubular part for adjusting the opening (12) therein the relation to the recesses (4) in the rotor.

4,227,431

AXIAL TUBE CUTTER FOR SEVERING ELECTRICAL CONNECTOR COUPLING RINGS

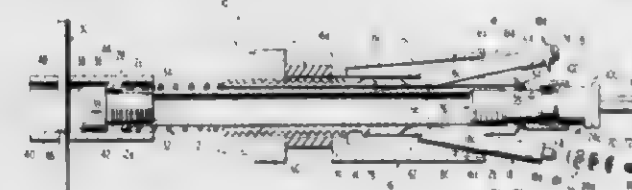
Royzell F. Wells, Littleton, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Feb. 8, 1979, Ser. No. 10,344

Int. Cl.³ B23B 5/14

U.S. Cl. 82-76

13 Claims



1. An apparatus for circumferentially severing a tubular bayonet coupling ring of an electrical connector plug or the like, said mechanism comprising:

- an elongated cylindrical mandrel,
 - a tubular carrier concentrically mounted on said mandrel and slidable thereon,
 - a dummy electrical connector receptacle fixedly mounted on one end of said mandrel for detachably receiving said bayonet coupling ring,
 - means forming a longitudinal stop for said carrier against biasing movement,
 - biasing means for biasing said carrier axially towards said dummy receptacle,
 - a plurality of circumferentially spaced spindles hinge mounted at one end to said carrier for pivoting angularly with respect to said carrier axis,
 - a slide closer concentrically surrounding said carrier, being axially displaceable thereto and having cam surface means contacting said spindles to cause said spindles to pivot towards said dummy receptacle, and
 - cutter wheels mounted for rotation on the other ends of said spindles;
- whereby, said cylindrical mandrel may be first shifted axially with respect to said carrier against said biasing means to project said dummy receptacle axially beyond the cutter wheels to permit said bayonet coupling ring of said con-

ductor plug to be concentrically mounted upon said dummy receptacle; secondly, upon release of said mandrel, said mandrel shifts axially to position said ring in proper axial cutting position with respect to said cutter wheels; thirdly, said slide closer may be shifted towards the end of said mandrel bearing said bayonet coupling ring to cause said cutter wheels to be pressed into contact with the periphery of said bayonet coupling ring, and rotation of said slide closer and said tubular carrier with respect to said elongated cylindrical mandrel causes said cutter wheels to sever said bayonet coupling ring into multiple axial segments.

4,227,432

ELECTRONIC MUSICAL INSTRUMENT HAVING MULTIPLEXED KEYING

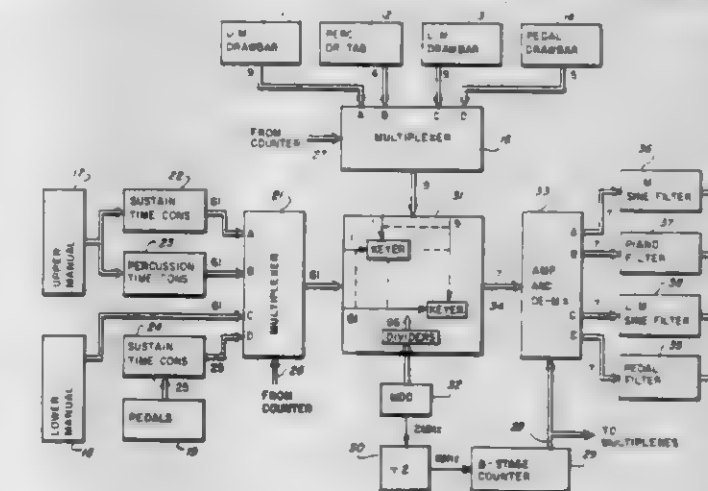
Brian M. Bagus, Bartlett, Ill., assignor to Marmon Company, Chicago, Ill.

Filed Feb. 23, 1978, Ser. No. 880,819

Int. Cl.² G10H 1/00

U.S. Cl. 84-1.01

10 Claims



1. An electronic musical instrument comprising: a plurality of key down selection sources, each having a group of key down output lines and each providing key down selection signals on respective ones of said group of key down output lines;

first multiplexer means having a plurality of first multiplier output lines for time division multiplexing different ones of said key down selection signals from selected ones of said groups of key down output lines into a plurality of time intervals on each of said plurality of first multiplexer output lines;

a plurality of analog harmonic signal sources, each having a group of harmonic output lines and each providing harmonic value signals on respective ones of said group of harmonic output lines;

second multiplexer means having a plurality of second multiplier output lines for time division multiplexing different ones of said harmonic value signals from selected ones of said groups of harmonic output lines into a plurality of time intervals on each of said plurality of second multiplexer output lines;

a top octave signal source having a plurality of top octave output lines and providing various frequency range signals on each of said top octave output lines;

a plurality of keyer means each having a keyer output line and each being coupled to said first multiplexer means for receiving a different one of said time division multiplexed key down signals, to said second multiplexer means for receiving said time division multiplexed harmonic value signals and to said top octave signal source for receiving selected ones of said various frequency range signals; each of said plurality of keyer means providing on said keyer output line a time divisioned multiplexed signal related to

said selected various frequency range signals received by said keyer;
demultiplexer means having a plurality of demultiplexer output lines and being coupled to said plurality of keyer means for receiving said time division multiplexed signals related to said selected various frequency range signals received by each said keyer and providing on said plurality of demultiplexer output lines a plurality of demultiplexed output signals; and
output circuit means coupled to said demultiplexer means for receiving said plurality of demultiplexed output signals and producing a plurality of audio frequency range signals.

4,227,433

ELECTRONIC MUSICAL INSTRUMENTS

Masanobu Chibana, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Sep. 18, 1979, Ser. No. 76,561
Int. Cl.³ G10H 1/06, 7/00

U.S. Cl. 84-1.01

9 Claims



1. An electronic musical instrument wherein a musical tone is generated by repeatedly reading out amplitude values at sampling points in one period of a musical tone waveshape stored in a first waveshape memory device at a period corresponding to a tone pitch of a depressed key, said electronic musical instrument comprising:

a second waveshape memory device for storing amplitude values at sampling points in one period of a new musical tone waveshape to be generated subsequent to said musical tone waveshape stored in said first waveshape memory device;

first calculating means for calculating differences in amplitude values at sampling points stored in corresponding addresses of said first and second waveshape memory devices respectively;

renewal rate control means for generating a waveshape renewal signal having a period corresponding to difference information produced by said first calculating means;

renewal means for effecting renewal of the memory content of said first waveshape memory device at a speed corresponding to the period of said waveshape renewal signal.

4,227,434

ADJUSTABLE SOUNDHOLE MOUNT FOR A MUSICAL PICKUP

Lawrence P. DiMarzio, 210 Davis Ave., Staten Island, N.Y. 10310

Filed Feb. 21, 1978, Ser. No. 879,206

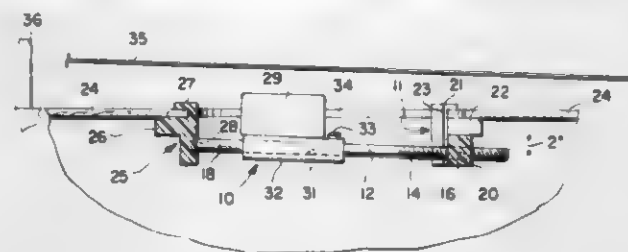
Int. Cl.³ G10H 3/00

U.S. Cl. 84-1.14

13 Claims

1. An adjustable soundhole mount for a stringed musical instrument pickup comprising a first bracket, said first bracket including means to engage the perimeter of an instrument soundhole, a second bracket, said second bracket including means to engage the perimeter of said soundhole, pickup mount supporting means, said pickup mount supporting means

comprising two parallel elements, said pickup mount supporting means extending from one of said brackets, said pickup mount supporting means include a length extending means, said pickup mount supporting means being parallel to the strings on said instrument on the same slope, means to engage said pickup mount supporting means with said other bracket,



said first bracket and second bracket and pickup mount supporting means adapted to interact when mutually engaged to firmly support themselves within said soundhole, pickup mount means, said pickup mount means slidable on said pickup mount supporting means, and stop means, said stop means adapted to fix the position of said pickup mount means on said pickup mount supporting means along its length.

4,227,435

ELECTRONIC MUSICAL INSTRUMENT

Shigeo Ando, Iwata, and Takayasu Kondou, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

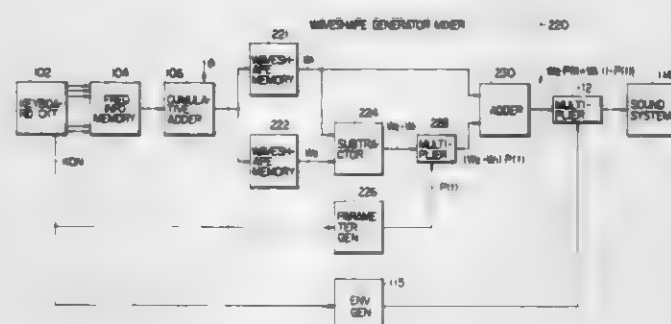
Filed Apr. 20, 1978, Ser. No. 898,523

Claims priority application Japan, Apr. 28, 1977, 52-48412; May 9, 1977, 52-51970

Int. Cl.³ G10H 1/02

U.S. Cl. 84-1.19

6 Claims



1. An electronic musical instrument of a waveshape memory type, comprising:

a plurality of waveshape memories for storing different waveshapes which are identical in fundamental wave but different in harmonic components;

tone-identifying means for giving access to said waveshape memories to reproduce different waveshape signals;

mixing means for mixing these different waveshape signals together respective mixing coefficients determined by time-dependent parameter generating means, and for generating a resulting composite waveshape signal consisting of signal components each representing each of said different waveshapes and being in a linear relationship with each of said mixing coefficients which are respectively

such functions of time that the total sum of all of such functions is always held constant, at least one of said mixing coefficients being multiplied by at least one of said different waveshape signals;

means for imparting an amplitude envelope to said composite waveshape signal for time-dependent controlling of tone amplitude; and

means for converting said composite waveshape signal into a corresponding musical tone, thereby attaining separate time-dependent controlling of tone color and of tone amplitude.

2. An electronic musical instrument of a waveshape memory type, comprising:

a plurality of waveshape memories for storing different waveshapes which are identical in fundamental wave but different in harmonic components;

tone-identifying means for giving access to said waveshape memories to reproduce different waveshape signals;

mixing means for mixing these waveshape signals delivered from said plurality of waveshape memories, which mixing means comprising:

means for generating at least one time-dependent parameter, arithmetic means for achieving multiplication on said waveshape signals with said time-dependent parameter or parameters, and

means for generating a composite waveshape signal in accordance with an output of said arithmetic means so that the composite waveshape signal comprises said different waveshape signals having respective mixing coefficients determined by said means for generating at least one time-dependent parameter, each of said mixing coefficients being such a function of time that the total sum of all of such functions is always held constant, at least one of said mixing coefficients being multiplied by at least one of said different waveshape signals;

means for imparting an amplitude envelope to said composite waveshape signal for time-dependent controlling of tone amplitude; and

means for converting a resulting envelope-imparted composite waveshape signal into a corresponding musical tone, thereby attaining separate time-dependent controlling of tone color and of tone amplitude.

4,227,436

MUSICAL INSTRUMENT KEYBOARD

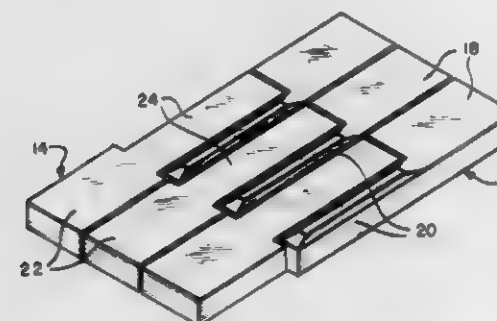
Dmytro M. Kryzanowsky, 32-85 37th St., Long Island City, N.Y. 11103

Filed Nov. 20, 1974, Ser. No. 525,370

Int. Cl.³ G10C 3/12

U.S. Cl. 84-423 A

2 Claims



1. In a keyboard for a musical instrument of the type including a plurality of keys adapted for connection to means for producing the twelve fundamental tones in an octave, each key corresponding to a different one of said tones, said keyboard being of the type including a plurality of keys having upper surfaces for manipulating said keys to activate said tone producing means, the improvement comprising:

said keys being arranged in two confronting rows, each key having a main part and an extension, said rows being arranged with said main parts on opposite sides of said keyboard with their upper surfaces in a common plane with said extensions interleaved therebetween, the upper surfaces of the extensions in one of the rows of keys being raised relative to the upper surfaces of the extensions in the other row of keys which lie in said plane, whereby said keys may be connected to said tone producing means with the extensions of said keys corresponding to continuously

increasing tones from one end of said keyboard to the other.

4,227,437

FREQUENCY DETECTING APPARATUS

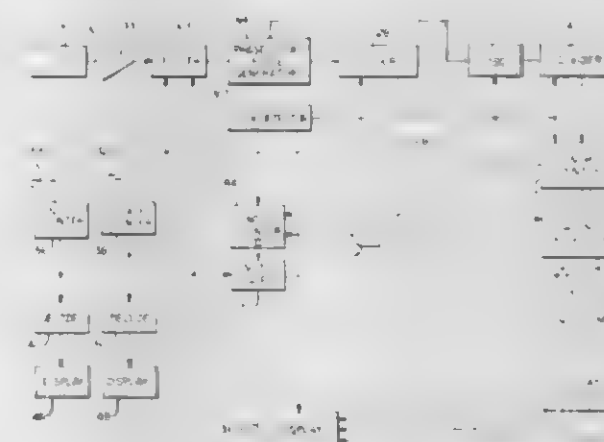
Thomas L. Inloes, 032 SW. Seymour, and Darwin E. George, 031 SW. Slavin, both of Portland, Oreg. 97201

Filed Oct. 11, 1977, Ser. No. 841,004

Int. Cl.³ G10G 7/02

U.S. Cl. 84-454

18 Claims



16. Frequency detection apparatus for tuning a stringed instrument or the like, comprising:

transducer means for receiving sound information from a vibrating string on said instrument and for generating an electrical signal in response thereto,

first means for supplying a first output responsive to said electrical signal starting in synchronism with said electrical signal, said first means comprising an oscillator,

second means substantially independent of said first means for supplying a second output responsive to said electrical signal starting in synchronism with said electrical signal,

said second means comprising an oscillator and means responsive to said electrical signal for starting oscillation of the last mentioned oscillator in synchronism with said electrical signal,

the first means being responsive to said electrical signal to provide a first output indicative of the frequency of said electrical signal, and the second means providing a standard second output signal, and

comparison means for comparing said first output with a predetermined number of cycles of said second output signal to provide an indication whether the first output substantially matches a predetermined standard.

4,227,438

WEAPON SYSTEM, NOTABLY INFANTRY ANTI-TANK WEAPON

Michel Precoul, Paris, France, assignor to Societe d'Etudes, de Realisations et d'Applications Techniques, Paris, France

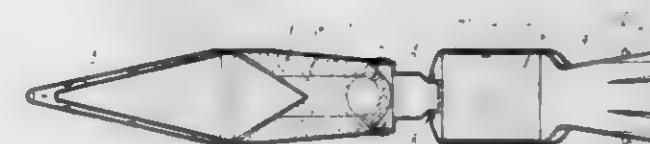
Filed Jul. 24, 1978, Ser. No. 927,570

Claims priority, application France, Sep. 9, 1977, 77 27285

Int. Cl.³ F41F 3/04

U.S. Cl. 89-1.816

6 Claims



1. A disposable anti-tank weapon system for infantry comprising

I. a launching tube acting as a sealed container and

II. a rocket propelled projectile unit comprising

A. an explosive head,

- B. a rocket propulsion unit and
 C. a fuse which interconnects the explosive head and the propulsion unit,
 D. said rocket propulsion unit comprising
 1. a propulsive charge,
 2. a tuyere at the after end of the propulsion unit,
 3. an inner sleeve loaded with said propulsive charge and made of a coiled fiber and resin structure, there being a wide pitch angle between adjacent fiber coils and
 4. an external structure made of a coiled fiber and resin structure, the coils of which are coiled directly on said inner sleeve and extend over said fuse and said tuyere.

4,227,439

ANTI-BOUNCE APPARATUS FOR RECIPROCATING BOLT ASSEMBLIES OF AUTOMATIC CANNON

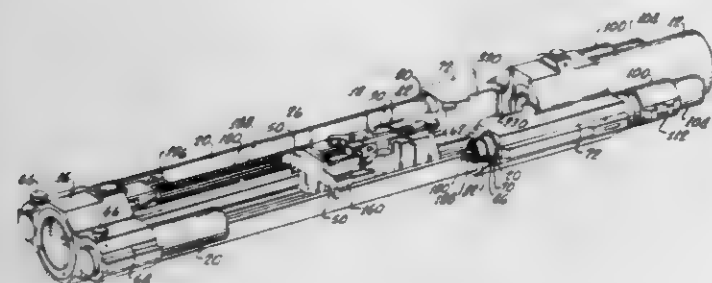
Richard R. Gillum, Marblehead, Ohio, assignor to Ares, Inc., Port Clinton, Ohio

Filed Mar. 27, 1979, Ser. No. 24,188

Int. Cl.³ F41D 5/04

U.S. Cl. 89—190

12 Claims



10. For an automatic cannon having a breech and a bolt assembly mounted for axially reciprocating movement to and from the breech, the bolt assembly including a bolt and a bolt carrier mounted thereto for relative axial movement therewith, bolt assembly anti-bounce apparatus, which comprises:

bolt-to-breech locking means including at least one locking lug pivotally mounted to the bolt, means defining a corresponding recess in the breech for receiving a locking portion of the locking lug, means defining portions of the bolt carrier for engaging corresponding portions of the locking lug to cam the locking portions thereof outwardly into the breech recess in response to continued forward movement of the bolt carrier after the bolt has impacted the breech, and means defining mating engagement surfaces on said bolt carrier and locking lug portions, said engagement surfaces being shaped to cause said bolt carrier and locking lug to maintain engagement during said camming outwardly of the locking portions;
 a member connected to the bolt carrier for reciprocating movement therewith;
 frictional locking means disposed, when the bolt carrier is proximate to the breech, between said member and portions of the cannon fixed to the breech; and,
 inertial means, responsive to forward impact by the bolt carrier with the breech, for causing the frictional locking means to instantaneously lock said member to said portions of the cannon fixed to the breech.

4,227,440

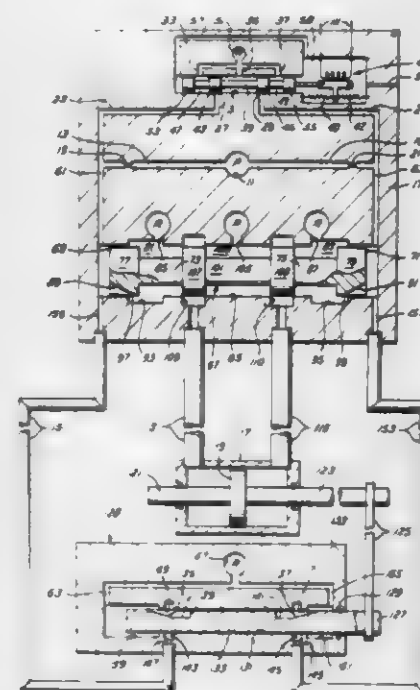
FLUIDIC REPEATER

Willie B. Leonard, 5902 Royalton, Houston, Tex. 77036

Continuation-in-part of Ser. No. 772,560, Feb. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 622,760, Oct. 15, 1975, Pat. No. 4,094,229, which is a continuation-in-part of Ser. No. 521,036, Nov. 11, 1974, Pat. No. 4,046,059, which is a continuation-in-part of Ser. No. 489,829, Jul. 18, 1974, Pat. No. 3,988,966. This application Aug. 26, 1977, Ser. No. 828,045 Int. Cl.³ F15B 13/16

U.S. Cl. 91—51

30 Claims



1. A fluidic repeater system comprising:
 transmitter means,
 receiver means,
 connector conduit means including first and second conduit means,
 said first conduit means connecting said transmitter means to said receiver means, said first conduit means including two high pressure conduits,
 source means for supplying fluid under pressure to said first conduit means, said source means including for each said high pressure conduit a fluid supply passage having an inlet and an outlet with a restriction therebetween whereby when said inlet is connected to a source of pressure fluid said outlet will provide a fluid supply having a drooping pressure versus rate of flow characteristic, said outlets being connected to the high pressure conduits;
 said receiver means including load means and load feedback means,
 said load means including responder means for producing mechanical movement and including a piston in cylinder connected to each said high pressure conduit for relative axial movement of the piston and cylinder in response to variation in the pressure in one of said high pressure conduits;
 reservoir means including a reservoir of fluid at a lower pressure than said source,
 said second conduit means interconnecting said reservoir means with said transmitter means and said receiver means, said second conduit means constituting low pressure conduit means,
 said transmitter means serving for venting at least one of said high pressure conduits to said low pressure conduit means in accordance with the position of the transmitter means, thereby to vary the pressure in said high pressure conduit, said transmitter being positionable over a range of positions including a first position of maximum venting and various positions in between said first and second positions to produce different amounts of movement of the responder means for each of the several positions of the transmitter means within said range of positions,

said load feedback means being responsive to movement of said load means for venting at least one of said high pressure conduits to said low pressure conduit means, and fluid resistance means in said connector conduit means for balancing

- (i) the fluid resistance between said source means and said reservoir means along a transmitter path extending through said transmitter means, excluding the resistance of said transmitter means, with
 (ii) the fluid resistance between said source means and said reservoir means along a feedback path extending through said load feedback means, excluding the resistance of said load feedback means,

such that such fluid resistance along said transmitter path is approximately equal to such fluid resistance along said feedback path.

4,227,441

HYDRAULIC SERVO-MOTOR FOR A REGULATING VALVE HAVING A HYDRAULIC CLOSING MECHANISM

Kamil Prochazka, Windisch, and Franz Suter, Gebenstorf, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

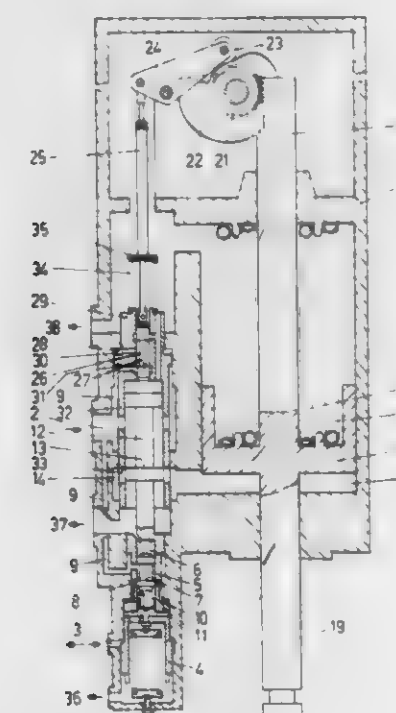
Filed Sep. 29, 1978, Ser. No. 946,738

Claims priority, application Switzerland, Sep. 29, 1977, 11899/77

Int. Cl.³ F15B 9/10, 13/16

U.S. Cl. 91—374

14 Claims



1. A valve actuator comprising:
 servo-motor means
 a housing;
 control valve means, contained within said housing, for selectively placing said servo-motor means in fluid communication with a source of fluid under pressure and with a drain;
 cam means responsive to movement of said servo-motor means for closing said control valve means;
 said control valve means including a valve sleeve, which valve sleeve is movable with respect to said housing; and
 said control valve means further including a regulating valve slideably arranged within said valve sleeve and movable with respect to said housing, movement of said regulating valve being responsive to movement of said cam means and movement of said valve sleeve being responsive to movement of said regulating valve, said valve sleeve being movable to close said control valve means.

4,227,442

CYLINDER CONTROL DEVICE OF HYDRAULIC CYLINDER APPARATUS

Hiroshi Oguni, Akashi; Masahiro Ishiko, Miki, and Kazuyoshi Nakayama, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

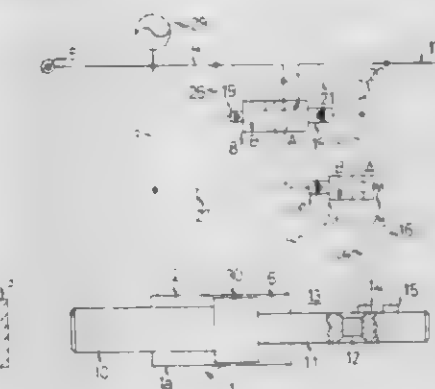
Filed Jul. 25, 1979, Ser. No. 60,541

Claims priority, application Japan, Jul. 29, 1978, 53-93009

Int. Cl.³ F15B 15/22

U.S. Cl. 91—392

10 Claims



1. A cylinder control device of a hydraulic cylinder apparatus comprising a cylinder body, a piston arranged in said cylinder body for reciprocating movement, a plurality of working fluid chambers defined by the cylinder body and the piston, a working fluid source, and a plurality of conduits for supplying working fluid from the working fluid source to the working fluid chambers and discharging working fluid therefrom to a fluid discharging place of a working fluid circuit, the cylinder control device comprising:

a two-position, directional control valve operation to control the supply of working fluid to the working fluid chambers and the discharge of working fluid therefrom to thereby switch the movement of the piston from one direction to the other direction, the two-position, directional control valve having a pilot chamber containing working fluid therein for moving the two-position, directional control valve between two positions when a change occurs in the pressure of working fluid in the pilot chamber which is connected to the fluid discharging place of the working fluid circuit; and

a control valve connected to the pilot chamber of said two-position, directional control valve and movable between two positions or open and closed positions for causing the pressure in the pilot chamber to vary, the control valve being moved between the closed position and the open position by a change in the pressure in the conduit in communication with the working fluid source, and the pressure in the conduit in communication with the working fluid source being raised when the piston is in one end position to move the control valve from one position to the other position, thereby causing the pressure in the pilot chamber to vary and moving the two-position, directional control valve from one position to the other position.

4,227,443

FAIL-FIXED SERVOVALVE

Peter D. Toot, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 25, 1978, Ser. No. 945,165

Int. Cl.³ F16B 13/044

U.S. Cl. 91—459

8 Claims

1. A servovalve system comprising:
 a sleeve having a plurality of ports therethrough, one of said ports receiving an inlet flow of pressurized fluid, at least one of said ports communicating pressurized fluid to a relatively lower pressure sump, and at least two of said ports comprising separate output ports;

a jet pipe for discharging a jet of pressurized fluid received from said inlet port;

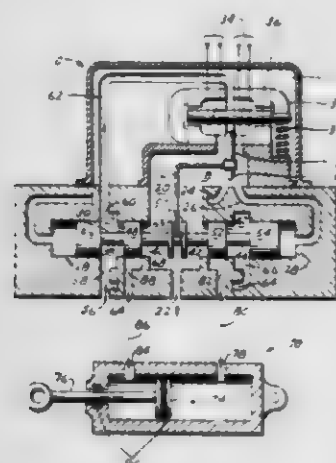
means for producing an electrical input signal having rated input current values from zero to a maximum rated value; deflecting means responsive to said electrical input signal for deflecting the jet pipe;

a pair of receiver conduits in flow communication with opposite ends of the sleeve and disposed to receive fluid discharged from the jet pipe, wherein:

said conduits receive equal amounts of said jet pipe fluid when the jet pipe is in a balanced flow deflected position, a first of said conduits receives more of said jet pipe fluid when the jet pipe is located between a non-deflected position and the balanced flow deflected position, and the second of said conduits receives more of said jet pipe fluid when the jet pipe is located between the balanced flow deflected position and a fully deflected position; a spool movable solely by fluid pressure and disposed within the sleeve to axially translate in the direction of lower sleeve end pressure, said spool having a plurality of circumferentially relieved areas interspaced between a plurality of circumferential lands;

feedback means connected to said jet pipe and said spool; a servopiston unit having a piston translatable disposed within a bore, each side of said piston respectively being in fluid communication with one of said two separate output ports in said sleeve; and

passage means, formed by the translation of the spool within



the sleeve causing selected relieved areas to interconnect selected sleeve ports with said two output ports for: delivering pressurized fluid to a first side of the piston and porting pressurized fluid away from the second side of the piston when the spool translates between a position near a first end of the sleeve and the midpoint of its axial stroke within the sleeve;

delivering pressurized fluid to the second side of the piston and porting pressurized fluid away from the first side of the piston when the spool translates between a position near the second end of the sleeve and the midpoint of its axial stroke within the sleeve; and

delivering no pressurized fluid to and porting no pressurized fluid away from the servopiston unit to lock the unit in place when the spool is located near either end of the sleeve at a respective one of a first and second extreme position or is at the midpoint of its axial stroke within the sleeve;

wherein:

when no electrical input signal is applied to the deflecting means the jet pipe is in said non deflected position and the spool is at the first extreme position within the sleeve;

when an electrical input signal is applied to the deflecting means the jet pipe is in a proportionally deflected position and the spool moves proportionally from the first extreme position toward the second extreme position as the magnitude of the electrical signal is increased; and

when a maximum rated electrical input signal is applied to

the deflecting means the jet pipe is in said fully deflected position and the spool is at the second extreme position.

4,227,444

ANEROID BELLOWS ASSEMBLY

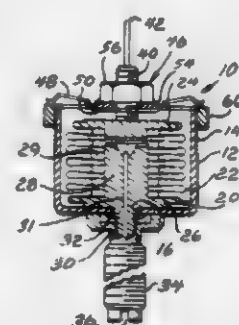
Thomas N. Lincicome, Elgin, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 30, 1978, Ser. No. 956,112

Int. Cl.³ F01B 19/00; F16J 3/04

U.S. Cl. 92—40

3 Claims



1. An aneroid bellows assembly for use in automatically controlling the flow of emergency oxygen in an aircraft cabin when pressurization is lost at varying altitudes comprising an open ended tubular housing member having a hermetically sealed, evacuated bellows spring mounted therein; said bellows having a threaded adjustment member integrally attached thereto and extending axially thereof beyond the open end of said housing member, said adjustment member having a tip portion on its outer end which is adapted to move axially with variations in cabin pressure and is adapted to control the flow of oxygen from a source thereof and a bellows adjustment nut assembly threadably mounted thereon; said nut assembly including a leaf spring member integrally attached thereto and extending on opposite sides of the bellows axis and generally normal thereto, the ends of said leaf spring member being in engagement with and normally deflected by a spring adjustment ring which is externally threadably mounted on the open end portion of said tubular housing adjacent the open end thereof.

4,227,445

MOTOR WITH MULTIPLE OUTPUT MEMBERS

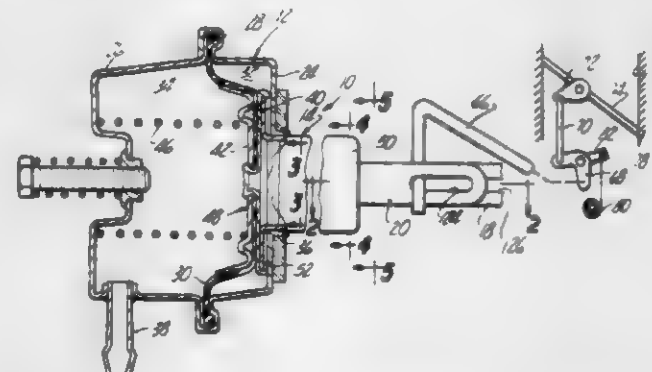
Charles A. Detweiler, and Dennis A. Rainwater, both of Durand, Mich., assignors to Schmelzer Corporation, Durand, Mich.

Filed Sep. 29, 1978, Ser. No. 946,747

Int. Cl.³ F16J 1/10

U.S. Cl. 92—84

4 Claims



1. A fluid pressure motor comprising a housing, a movable wall in said housing forming chambers at opposite sides and being movable in response to differential pressure at opposite sides of said wall, means for varying the pressures in said chambers to create said differential pressure, an output assembly having a carriage member connected to said wall and a plurality of output members movably supported relative to said carriage member, all of said output members being mounted with their axes parallel and movable in one direction

during movement of said wall from a first to a second position, a first biasing means resisting movement of a first output member in one direction relative to said carriage, and a second biasing means resisting movement of a second output member in said one direction relative to said carriage and assisting movement of said first output member in the opposite direction relative to said carriage, a third output member, said third output member being connected to said carriage member for movement with said wall as a unit, a seat member mounted in carriage member and engaged by said first and second biasing means, each of said first and second output members having a lost motion connection with said seat member permitting movement of said output members relative to said wall, the third output member being connected to said seat member.

4,227,446

ELECTRONIC AIR CLEANER FOR PASSENGER COMPARTMENT OF VEHICLE

Masazumi Sone, Yokohama; Kazuhiko Suzuki, Yokosuka, and Yukitsugu Fukumori, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

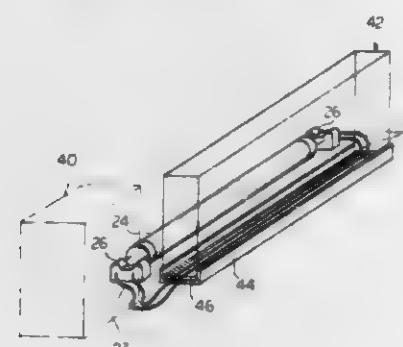
Filed Apr. 10, 1979, Ser. No. 28,867

Claims priority, application Japan, May 30, 1978, 53/72352

Int. Cl.³ B60H 3/06; B03C 3/01, 3/32

U.S. Cl. 98—2.11

6 Claims



1. An electronic air cleaner comprising an electrostatic precipitator for removing dust particles suspended in air, an ultraviolet lamp for sterilizing air, a deodorizing filter for eliminating smell in air, a holder supporting said deodorizing filter and at least one lead wire extending along said deodorizing filter from an electric power source to said ultraviolet lamp, said lead wire having a tendency to radiate electrical noise, wherein said deodorizing filter has a frame and said holder has wall portions defining a channel, a part of said frame being snugly seated in said channel to form an enclosed space bounded by said wall portions, said enclosed space receiving therein said lead wire, said wall portions being constructed of electrically grounded conductive material to conduct to ground electrical noise.

5. In a vehicle having an electric device sensitive to electric noise and having an electric air cleaner for cleaning air in a passenger compartment, said cleaner being positioned close to the electrically sensitive device and comprising an electrostatic precipitator for removing fine dust particles suspended in the air, said precipitator including electrically insulated first and second groups of electrodes between which a high electric potential is applied; an ultraviolet lamp for sterilizing the air; a deodorizing filter for eliminating smell in air; a holder by which said deodorizing filter is supported; and at least one lead wire which extends along said deodorizing filter from an electric power source to said ultraviolet lamp for providing said lamp with electric power, said lead wire having a tendency to radiate electrical noise;

an improvement for reducing the effect of electrical noise generated by said lead wire, wherein said deodorizing filter has a frame and said holder has wall portions defining a channel, a part of said frame being snugly seated in said channel to form an enclosed space bounded by said wall portions, said enclosed space receiving therein said

lead wire, and said wall portions being constructed of an electrically conductive material to conduct to ground electrical noise generated by said lead wire.

4,227,447

MACHINE FOR MANUFACTURING PANCAKES OR SIMILAR PRODUCTS

Jean A. L. Bronnec, Brest, France, assignor to Etablissements Generaux de Mecanique de l'Ouest EGMO (Societe Anonyme), Brest, France

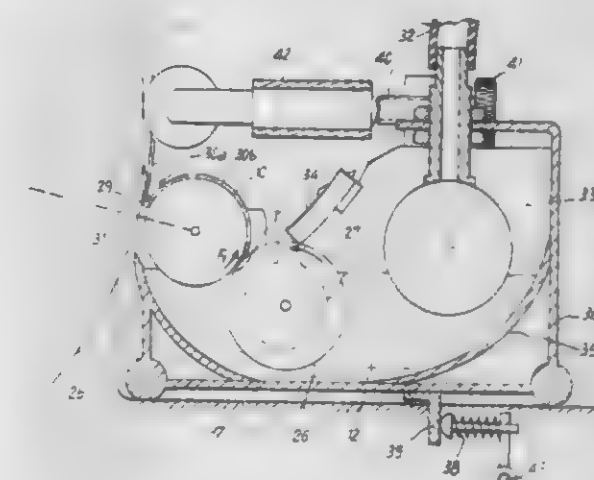
Filed Nov. 8, 1977, Ser. No. 849,566

Claims priority, application France, Nov. 10, 1976, 76 33927

Int. Cl.³ A47J 37/10

U.S. Cl. 99—423

7 Claims



1. Machine for manufacturing pancakes or other products obtained by baking or heating a paste spread thinly in a given configuration, comprising a smooth and continuous baking surface, a paste tank, a spreader constituted by a cylinder with a smooth surface dipping into said paste tank at a substantially constant level, two close generators situated respectively on the baking surface and on the spreader and called transfer generators, said spreader being arranged to transport and to transfer the paste onto the baking surface at the level of said close generators, said baking surface and said spreader being actuated in relative movement, a flap obturator arranged in the immediate vicinity of the generator of the spreader situated at the level of the surface of the paste on the emergence side, and called extraction generator, eliminating the contact necessary for the drawing of the paste by the spreader at certain points of the generator, said obturator being arranged so that for each of its relative positions, these points vary along the extraction generator and being driven in to and fro movement, and wherein the obturator is constituted by a flap concentric with the spreader, laying on it with gentle rubbing, having a cut-out or channel corresponding to half of the shape of the pellicle to be transferred to the baking surface and mounted to rock around the axis of rotation of the spreader in a movement connected to the speed of the baking surface and whose amplitude corresponds at least to the depth of the cut-out.

4,227,448

PELLET PRE-COOLER FOR PELLET MILL

Richard L. Ronning, Overland Park, Kans., assignor to Ronning Engineering Company, Inc., Overland Park, Kans.

Filed Jun. 7, 1978, Ser. No. 915,070

Int. Cl.³ A23K 1/14, 1/20; A23N 17/00; A23B 4/06

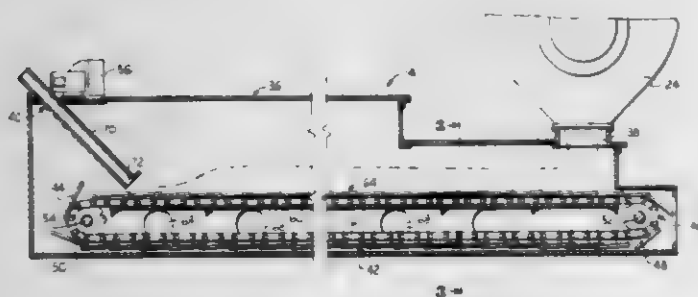
U.S. Cl. 99—489

1 Claim

1. A mill system for processing crops, comprising: a pelletizing machine for receiving comminuted crops and producing pellets therefrom; and pellet cooling and conveying means operably coupled to said machine for receiving said pellets therefrom, said cooling and conveying means including a precooler having a hot pellet inlet operably coupled to

said pelletizing machine, a pellet outlet spaced from said inlet, generally horizontal conveyor means for gently transporting pellets from said inlet to said outlet without significant breakage and erosion of the pellets, a housing substantially enclosing said conveyor means for defining a precooling chamber, structure de-structure defining at least one air inlet proximal to said conveyor means and communicating the interior of said chamber with a source of air, and means for dispersing air from said source in proximity to said pellets on said conveyor means,

said pickup structure having means defining an elongated, pellet inlet opening above and closely adjacent to said conveyor means and extending transversely across substantially the full width of said conveyor means with the height of said inlet opening being less than the width thereof and substantially less than the height of said housing, and an elongated tubular extension coupled to said inlet-defining means and extending upwardly therefrom at an acute angle relative to said conveyor means and generally in the direction of travel of said pellets on said conveyor means for permitting the pellets to enter said pellet pickup opening without an abrupt change of direction of the pellets and consequent significant breakup thereof into fines, said extension being of a cross-sectional configuration which is substantially similar to the configuration of said pellet inlet opening, said inlet opening being the only substantial outlet for air from said housing;



a primary cooler for additional cooling of pre-cooled pellets from said pre-cooler;
conduit means operably coupling and communicating said primary cooler and the end of said extension remote from said pellet inlet opening;

air-moving structure operably associated with said pellet cooling and conveying means, including fan means in communication with said conduit for drawing air through said air inlet and creating a negative pressure airflow through said housing, pellet inlet opening, extension and conduit, for moving air currents from said source thereof through said air inlet, into and through said chamber for dispersal of the air by said air-dispersal means, out of said chamber through said pellet inlet opening and extension, and through said conduit means to said primary cooler, such that:

(a) the air currents cooperatively created and dispersed by said structure and air dispersal means gently pre-cool said initially hot pellets on said conveyor means without significant deterioration thereof into fines; and

(b) said air currents at the region of said pellet inlet opening have increased velocity by virtue of the airflow restriction presented by the pellet inlet opening for pneumatically conveying said pellets out of said chamber through said pellet inlet opening and upwardly through said extension to said primary cooler through said conduit means for rapid final cooling of the pellets in said primary cooler.

4,227,449

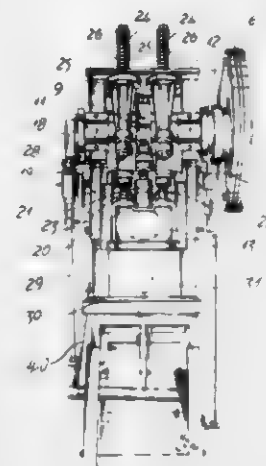
PUNCHING PRESS

Leu C. Ping, No. 74, Jong Shiao Rd., Baan Chyau, Taiwan
Filed Apr. 30, 1979, Ser. No. 34,396

Int. Cl.³ B30B 1/26, 15/32

U.S. Cl. 100—98 R

3 Claims



1. A punching press comprising:

a frame having a bolster plate;

a slide element for pressing against said bolster plate and having a hole through the central portion of said slide in the direction of pressing;

a crank comprising a crank shaft rotatably mounted to said frame above the bolster plate and slide, said crank further comprising a crank pin carried upon two crank arms, said arms having identical planar profiles in the plane perpendicular to said crankshaft and having circumferential bearing surfaces;

a flywheel and clutch assembly mounted at one end of said crank shaft;

a cam attached to the end of said crankshaft which is opposite said flywheel and clutch assembly;

lever means movably mounted on said frame and actuated by said cam to eject finished work;

two pressure rods, said rods having bearing means at an upper end, the lower ends of said rods being attached to said slide with one rod on each side of said hole in the slide;

spring means, attached between the upper ends of said pressure rods and the frame, said spring means providing resilient bias of the rods and slide to an upward position, and resiliently retaining said rods and said slides in said upward position;

a punching ram slidably movable within the hole in the slide; and

a connecting rod mounted on said crank pin and pivotally connected to said punching ram, said two pressure rods being spaced on each side of the connecting rod with the upper bearing ends of said rods in contact with the circumferential bearing surfaces on the respective crank arms, whereby rotation of said crank shaft causes the crank arms to force the pressure rods downward, thereby forcing said slide against said bolster plate so as to provide a pressing stroke, said crank pin being located within the profile of said crank arms to provide a punching stroke for said connecting rod and said ram, whereby both pressing and punching strokes are provided during one rotation of said crank shaft.

4,227,450

PRESS WITH SMALL RAM STROKE

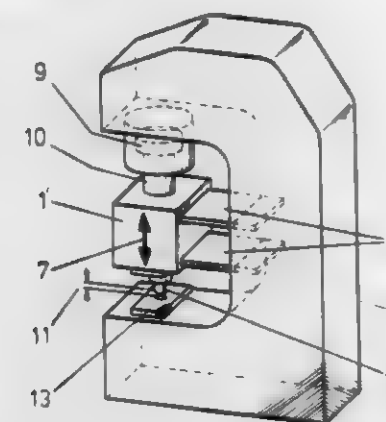
Heinz Kreiskorte, Dortmund, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany
Filed Feb. 1, 1979, Ser. No. 8,515

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2805013

Int. Cl.³ B30B 15/04

U.S. Cl. 100—214

10 Claims



7. A press having a short ram stroke in which the ram is movable in a single plane in a working direction and in a return direction and particularly for high speed cutting presses, comprising, a press frame, spring elements having an end rigidly connected to said press frame, a ram rigidly connected to another end of said spring elements and resiliently supported solely by said spring elements from said frame for movement in a working direction and return direction such that said spring elements guide said ram relative to said frame while holding said ram rigidly in all other planes.

4,227,451

DEVICE FOR DELIVERY OF BULK MATERIALS

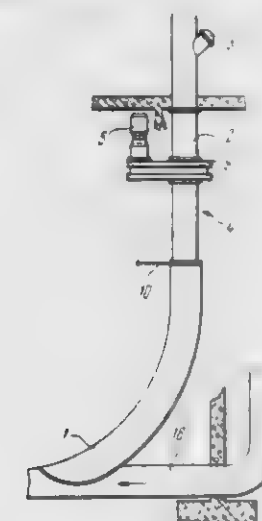
Valentin N. Slavinsky, prospekt Shvernika, 10, kv. 101, Leningrad; Genrikh V. Bairo, ulitsa Proletarskaya, 131, kv. 77, Leningrad, Kolpino; Adolf M. Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8, Moscow; Gennady M. Alexeev, ulitsa Kurlyanskaya, 38, kv. 15, Leningrad; Vladimir M. Matveev, Staro-Orlovskaya ulitsa, 35, kv. 1, Leningrad; Fedor E. Elin, V.O., 5 linia, 4, kv. 45, Leningrad; Gennady B. Provalsky, ulitsa Gastello, 10, kv. 31, Leningrad; Boris P. Shulbakh, ulitsa Dekskaya, 62, korpus 3, kv. 18, Leningrad, and Jury A. Tsimbler, Sojuzny prospekt, 10, kv. 26, Moscow, all of U.S.S.R.

Filed Nov. 6, 1978, Ser. No. 958,171

Int. Cl.³ B30B 11/00

U.S. Cl. 100—295

7 Claims



1. A device for the delivery of bulk material into a suction pipe of a pneumatic transport installation comprising:

a charging pipe into which said bulk material is introduced;
a closing element positioned between said charging pipe and said suction pipe and comprising a cylindrical shell, an inside diameter of said shell being approximately equal to an inside diameter of said charging pipe;
a gate valve positioned between said shell and said suction pipe;
a sleeve rotatably and coaxially built in said shell, an inside diameter of said sleeve being approximately equal to said inside diameter of said shell;
a reversible drive kinematically linked with said sleeve for rotation of said sleeve; and
a helical band having a first end rigidly connected to said sleeve and being positioned in an upper portion of said shell, said band being mounted for joint rotation with said sleeve, a forming portion of said shell being defined in a portion of said shell under said band;
wherein during forward rotation of said band, said bulk material is compacted in said forming portion of said shell and, during backward rotation of said band, the compacted bulk material is formed into a briquette extending across the entire inside diameter of said shell; and
said gate valve is opened after a first briquette is formed, so that the formation of a second briquette will force said first briquette into said suction pipe.

4,227,452

PRINTING MACHINE

Masayoshi Tamai, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

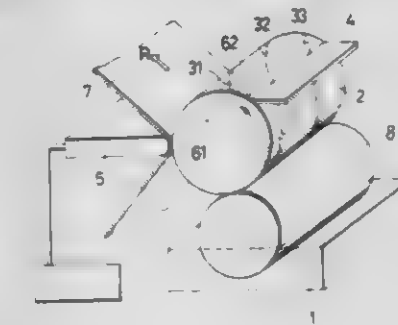
Filed Oct. 13, 1978, Ser. No. 951,205

Claims priority, application Japan, Oct. 14, 1977, 52-122317; Oct. 14, 1977, 52-122319; Oct. 14, 1977, 52-122320

Int. Cl.³ B41F 9/00; G02B 5/30

U.S. Cl. 101—1

20 Claims



1. A printing machine comprising; a supply of ink, a cylindrical applicator, a spiral groove formed on the peripheral surface of said applicator in a manner to define a helix around its axis; a doctor blade for maintaining a predetermined amount of ink in the groove of said applicator and for removing excess ink from the applicator; electrode means including a plurality of electrodes disposed opposite to the groove of said applicator; means for feeding recording paper at a speed related to the rotating peripheral speed of said applicator between said applicator and the electrode means; and, wherein the voltage responsive to the character signal is sequentially applied to the electrode means to thereby contact the ink in the groove with the recording paper to print the character.

4,227,453

IMPRINTING OF TIME CLOCK DATA

Andrew M. McInnis, Covina, Calif., assignor to DBS, Inc., Randolph, Mass.

Filed Jun. 19, 1978, Ser. No. 916,599

Int. Cl.² B41F 3/02

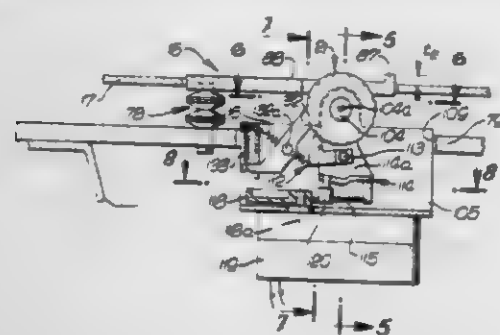
U.S. Cl. 101—45

14 Claims

1. Apparatus for imprinting time clock data on sheet means, comprising

(a) first means providing time data in indicia form for presentation toward the sheet means, said first means including

- wheels carrying the indicia, and shaft structure supporting the wheels,
- (b) control means operatively connected with said first means to automatically and periodically change the indicia presented toward the sheet means,
- (c) and imprinting structure including a roller mounted for progressive advancement at selected times over the sheet means to urge the sheet means toward the time data indicia which are presented toward the sheet at the selected times,
- (d) there being a base plate defining a first through opening, a platen to receive the sheet means, said platen having



- means for presenting further imprint indicia toward the sheet means, the platen overlying the base plate, the platen defining a second through opening, the platen yieldably connected to the base plate, for movement relative to the base plate in response to roller pressure exertion on said further imprint indicia via the sheet means,
- (e) there being means yieldably connecting the shaft structure and wheels to the platen to move with the platen and further to move relative to the platen in response to roller pressure exertion onto the wheels via the sheet means, said wheels projecting in said second through opening to present the indicia to the sheet means, said connecting means positioned in said first through opening.

4,227,454

HYDRAULICALLY OPERATED DRUM SERIES PRINTER

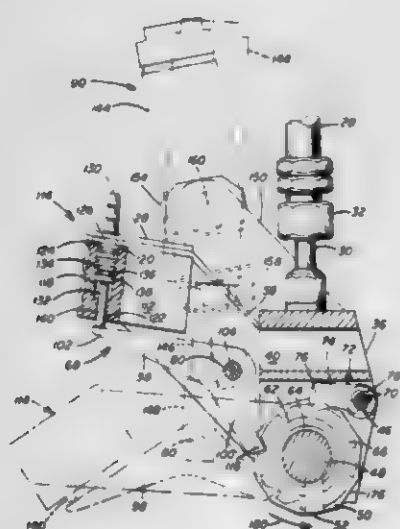
Edwin W. Speicher, Pittsburgh, Pa., assignor to M. E. Cunningham, Company, Ingomar, Pa.

Filed Aug. 22, 1978, Ser. No. 935,773

Int. Cl.³ B41J 7/78

U.S. Cl. 101-93.01

13 Claims



1. Marking apparatus comprising, a marking head, a wheel rotatably supported by said marking head, said wheel having a periphery with a plurality of marking characters positioned thereon, a ratchet portion on said wheel, a first shaft positioned adjacent said wheel,

engaging means rotatably positioned on said first shaft for engaging said ratchet portion, said engaging means having a first end portion and a second end portion, said first end portion being movable upon rotation of said engaging means on said first shaft into and out of engagement with said ratchet portion, pressure means for moving said engaging means into engagement with said ratchet portion, said second end portion being positioned in abutting relation with said pressure means, resilient means positioned on said first shaft for exerting a force upon said engaging means to normally maintain said engaging means first end portion disengaged from said ratchet portion and said engaging means second end portion abutting said pressure means, said pressure means being operable upon actuation to apply a force to said engaging means second end portion and overcome the force of said resilient means to pivot said engaging means on said first shaft and move said engaging means first end portion into engagement with said ratchet portion, and actuator means for moving said first shaft in an arcuate path through a preselected angle so that said engaging means moves through a corresponding angle to rotate said wheel in a preselected direction through an angle corresponding to the angle of movement of said engaging means and thereby advance said marking characters on said wheel.

4,227,455

SUSPENSION ARRANGEMENT FOR AN OSCILLATING BODY

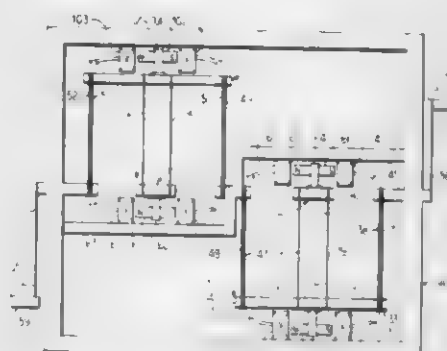
William B. Pennebaker, Carmel, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,593

Int. Cl.³ B41J 7/70

U.S. Cl. 101-93.05

11 Claims



1. A suspension arrangement including: an oscillating body movable along an axis at a selected resonant frequency; intermediate frame means spaced from said oscillating body in at least one direction substantially perpendicular to the axis of motion of said oscillating body; a main frame, said main frame having a mass greater than the total mass of said oscillating body and said intermediate frame means; first leaf spring means connecting said oscillating body to said intermediate frame means; second leaf spring means connecting said intermediate frame means to said main frame; each of said first leaf spring means and said second leaf spring means being disposed substantially perpendicular to the axis of motion of said oscillating body when said oscillating body is at rest; said first leaf spring means having a larger spring constant than said second leaf spring means; said first leaf spring means and said second leaf spring means having substantially the same degree of flex to cancel any displacements other than said oscillating body along its

axis of motion so that said oscillating body has spatially linear motion along its axis of motion; means to compensate for lost energy during movement of said oscillating body along its axis of motion; support means to support said main frame, said main frame having vibrations relative to said support means; and means to substantially prevent transmission of vibrations from said main frame to said support means.

4,227,456

PRINTING PRESSURE BUFFER MECHANISM OR CONSTANT PRESSURE PRINTING MECHANISM FOR HAND-OPERATED LABEL PRINTING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

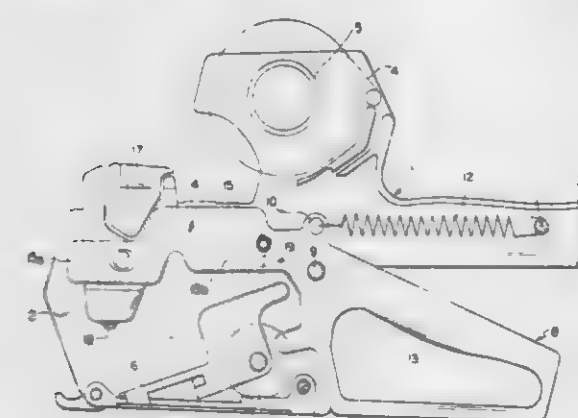
Filed May 11, 1978, Ser. No. 904,758

Claims priority, application Japan, May 16, 1977, 52-055287; May 16, 1977, 52-055288

Int. Cl.³ B41K 5/00; B41J 9/42

U.S. Cl. 101-291

19 Claims



1. A label printing machine, comprising: a machine frame; a printing platen supported on said machine frame; a printing lever movably supported to said frame; a printing head on said printing lever and movable with said printing lever; said printing head having types opposable to said platen; said printing lever, with said printing head, being movable from a released position, with said printing head away from said platen, to a printing position with said printing head in engagement with said platen; engaging means on one of said printing lever and said frame; said engaging means comprising a recess located in the one of said printing lever and said frame that carries said engaging means; said engaging means also comprising a rotatable ball which is movable into and out of said recess along a pathway across the direction of motion of said printing head toward said platen; biasing means normally biasing said rotatable ball out of said recess; a shoulder projecting out from the surface of the other of said printing lever and said frame and projecting toward the one of said printing lever and said frame on which said engaging means is positioned; said shoulder being placed such that upon said printing head moving toward said printing position, said rotatable ball, then biased out of said recess by said biasing means, abuts said shoulder, and said biasing means inhibits said rotatable ball from shifting to permit said ball to bypass said shoulder; said rotatable ball being moved into said recess to permit said rotatable ball to move past said shoulder, whereby shifting of said rotatable ball in said recess is under the influence of both of said shoulder and said biasing means; said rotatable ball being rotatable as said rotatable ball engages the other of said printing lever and said frame from which said shoulder projects as said printing lever and said frame move past one another; upon sufficient force being applied to move said printing lever to said printing position, said rotatable ball and said shoulder passing one another, and said printing lever and

said printing head thereafter being free to move said printing head to said printing position.

4,227,457

INKING MECHANISM

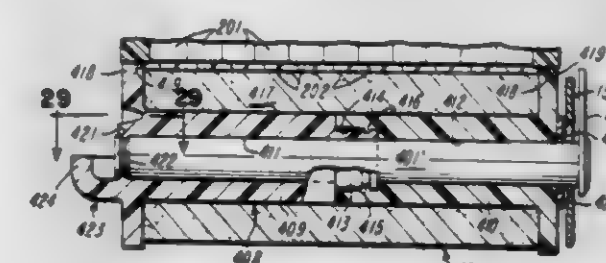
Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Division of Ser. No. 476,744, Jun. 5, 1974, Pat. No. 3,957,562, which is a continuation-in-part of Ser. No. 380,445, Jul. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 312,454, Dec. 6, 1972, Pat. No. 3,968,745, which is a continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. This application

Feb. 17, 1976, Ser. No. 638,191
The portion of the term of this patent subsequent to Aug. 17, 1990, has been disclaimed.

Int. Cl.³ B41F 1/46

U.S. Cl. 101-348

12 Claims



1. An ink roll, comprising: a hub consisting of two and only two pieces, a porous ink-receptive roll received on the hub, the hub having an axial through-hole adapted to receive a shaft with an annular groove, the hub having a flexible resilient finger extending into the through-hole and adapted to extend into the groove in the shaft, and an extension disposed at the exterior of the hub adjacent and spaced from the flexible resilient finger, secured to one end of the hub, and extending beyond the open end of the through-hole.

4,227,458

INK FOUNTAIN DRIVE MECHANISM

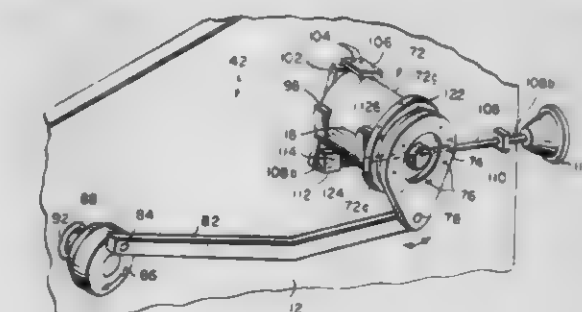
Vinod Kapoor, Bayside, N.Y., assignor to Butler Greenwich Inc., Greenwich, Conn.

Filed May 30, 1978, Ser. No. 910,815

Int. Cl.³ B41F 31/04, 31/06

U.S. Cl. 101-350

12 Claims



1. In an ink fountain of the type having a rotatively mounted fountain roller, a roller drive mechanism comprising:
A. a wrap spring overrunning clutch having an input drum, an output drum, a concentric sleeve encircling both drums, and a coil spring grippingly encircling the drums within the sleeve, said spring having its end adjacent the input drum secured to the sleeve;
B. means for connecting the roller for rotation with the output drum;
C. means for oscillating the clutch input drum through a selected angle, the oscillating input drum movement in one direction causing tightening of said spring about the input and output drums right at the start of each oscilla-

tion whereby the clutch output drum and sleeve, as well as the fountain roller are rotated in said direction commencing right at the start of each oscillation,

D. means for positively stopping the rotation of the clutch sleeve after the sleeve has rotated through a desired stroke angle so as to loosen the spring windup and thereby decouple the input and output drums and thereby terminate the angular advance of the output drum and the fountain roller in said direction while said input drum completes its rotation through said selected angle, and

E. coacting means on the clutch input drum and sleeve for positively rotating the sleeve in the opposite direction back to its initial position at the start of each said oscillation.

4,227,459

TRANSFER DRUM FOR SHEET-FED ROTARY PRINTING PRESSES

Willi Jeschke, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

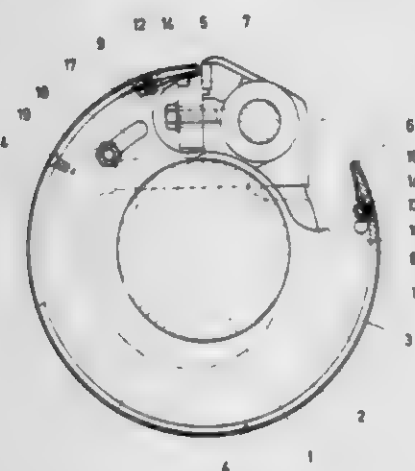
Continuation of Ser. No. 704,638, Jul. 12, 1976, abandoned. This application Mar. 23, 1978, Ser. No. 889,370

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1975, 2530951

The portion of the term of this patent subsequent to Jan. 25, 1994, has been disclaimed.

Int. Cl.³ B41F 21/04, 27/12, 29/04, 7/22

U.S. Cl. 101—415.1



1. Transfer drum for a sheet-fed rotary printing press comprising a pair of spaced support discs mountable on a shaft of the printing press, a drum shell peripherally secured to said support discs and having an outer surface, a blanket reinforced with fabric plies and tautly covering said outer surface, said fabric plies being subjected to tensile force acting in a given direction, said blanket having two ends, means for securing the ends of said blanket to said drum shell, said fabric plies being elastic in said given direction of action of said tension force, said support discs being formed with slots extending in peripheral direction thereof, and including threaded fastening means extending through said slots for adjustably clamping said support discs to the shaft of the printing press.

4,227,460

PRACTICE WAR HEAD DEVICE

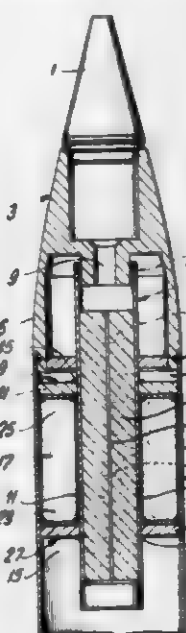
Hartmut Krone, Auggen; Rüdiger van Acken, Mühlheim; Wolfgang Trede, Weil am Rhein, and Robert Schmidlin, Neuenburg, all of Fed. Rep. of Germany, assignors to Buck Chemisch-Technische Werke GmbH & Co., Bad Reichenhall, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,297

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733700

Int. Cl.³ F42B 13/14, 13/44

U.S. Cl. 102—66



1. In a practice war head device for an artillery rocket composed of a frusto-conical head element having a hollow nose section and a hollow skirt section having a base, an impact detonator mounted in said nose section, a tubular jacket connected to the skirt section, a tubular dividing element concentric with the tubular jacket together defining an annular volume, a fog producing substance based on a carbon halogen or halogen carbohydrate substance and reactive metal or metal oxide powders in said annular volume, and an ignition core of a quick-reacting ignition substance capable of high gas formation in the tubular dividing element, the improvement which comprises said fog producing substance being loosely packed in the annular volume, and wherein closure elements closing off said annular volume are provided at the nose side and base side of the annular packing, at least the nose side closure element is displaceable towards the fog producing substance packing, and the connection between the skirt section of the head element and the tubular jacket, the connection between the central portion of the head element and the tubular dividing element, and the base of the skirt section, are constructed so that upon impact of the war head device, the base of the skirt section and nose side closure element will be displaced into the annular volume to thereby compress the fog producing substance against the base side closure element.

4,227,461

DUAL OUTPUT SIMULTANEOUS FIRING CIRCUIT

Dale L. Beezley, Sunnyvale, and Wolf Goodman, Mountain View, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 8, 1978, Ser. No. 941,092

Int. Cl.³ F42C 11/00

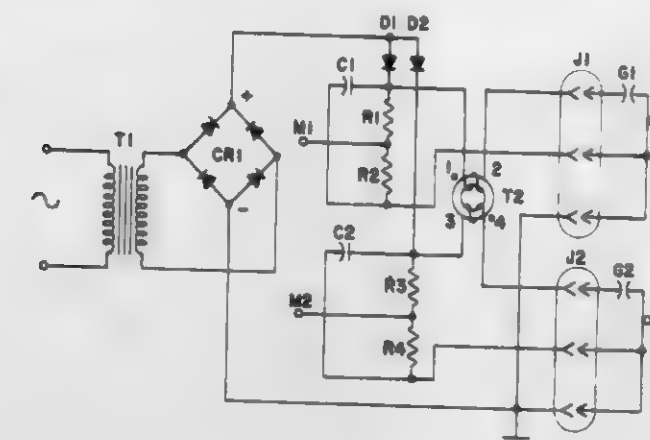
U.S. Cl. 102—218

1. A dual output simultaneous firing circuit comprising:

(a) a first capacitor connected in parallel to a first fuse having a first gap such that when the charge on said first capacitor exceeds the breakdown voltage of said first gap, said first fuse explodes as said first capacitor discharges;

(b) a second capacitor connected in parallel to a second fuse

having a second gap such that when the voltage on said second capacitor exceeds the breakdown voltage of said second gap, said second fuse explodes as said second capacitor discharges;



(c) means connected to said first and second capacitors for inducing an additive voltage to one of said capacitors when the other discharges; and

(d) means for charging said first and second capacitors simultaneously to a high DC voltage when said fuses are connected.

4,227,462

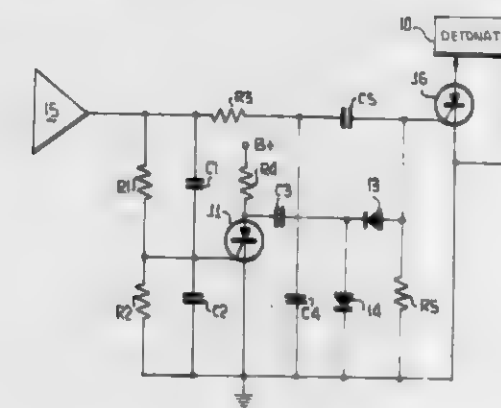
LOCK OUT PROXIMITY FUZE AMPLIFIER

Robert W. Tucker, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1975, Ser. No. 553,359

Int. Cl.³ F42C 11/00; H03K 5/22, 17/00

U.S. Cl. 102—220



1. A rise time discriminator circuit for detecting an applied input signal having an amplitude envelope which increases to a predetermined level at a rate which is slower than a first specified rate, said discriminator circuit comprising:

an actuable normal electronic switch;

an actuable lock out electronic switch;

a first trigger circuit for said normal electronic switch, said first trigger circuit including first resistive means and first capacitive means connected such that said first capacitive means is charged through said first resistive means by said input signal, said first resistive means and first capacitive means having a time constant which is sufficiently long to cause the charge on said first capacitive means to substantially lag the amplitude envelope of said input signal for signal envelope increase rates faster than said first specified rate;

a second trigger circuit for said lock out electronic switch, said second trigger circuit including second resistive means and second capacitive means connected such that said second capacitive means is charged through said second resistive means by said input signal, said second resistive means and second capacitive means having a time constant which is sufficiently short to permit the charge

on said second capacitive means to rapidly follow the amplitude envelope for signal envelope increase rates faster than said first specified rate;

first voltage-dividing bias means responsive to the charge on said first capacitive means reaching said predetermined level for actuating said normal electronic switch;

second voltage-dividing bias means responsive to the charge on said second capacitive means exceeding said predetermined level for actuating said lock out electronic switch; and

inhibiting means responsive to actuation of said lock out electronic switch for inhibiting actuation of said normal electronic switch.

4,227,463

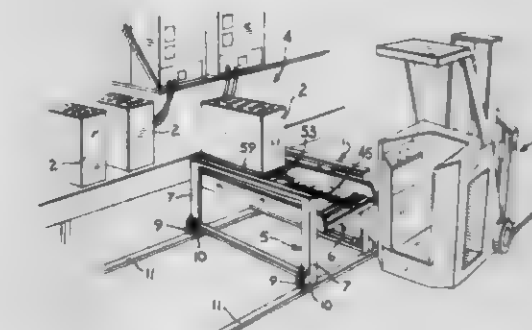
APPARATUS FOR REMOVING AND INSTALLING BATTERIES

Robert H. Pfeiffer, Milwaukee, Wis., assignor to Pflow Industries, Inc., Milwaukee, Wis.

Filed Mar. 27, 1978, Ser. No. 890,362

Int. Cl.² B60D 1/14

U.S. Cl. 104—34



1. An apparatus for removing an article from a compartment, comprising a supporting frame, a bed mounted on the frame and having a surface to support the article in longitudinal movement, elevating means for moving the bed vertically relative to the frame to position the bed substantially flush with the bottom of the compartment, chain drive means mounted for movement in a longitudinal direction on the bed, and coupling means including a rigid arm removably connected to the chain drive means and extending longitudinally of the bed, means for mounting the arm for vertical removal from said chain drive means, whereby said arm can be connected at any location on the drive chain means, said coupling means including a downwardly extending coupling member connected to the outer end of the arm, said arm being movable to a position longitudinally beyond the bed to enable the coupling member to engage an abutment on an article located within the compartment, operation of said drive means in one direction acting to pull the article from the compartment and operation of the drive means in the opposite direction acting to push the article into the compartment.

4,227,464

GANTRIES

Bernard E. Wallace, R.D. 1, Box 67A, Valley Hill Rd., Malvern, Pa. 19355

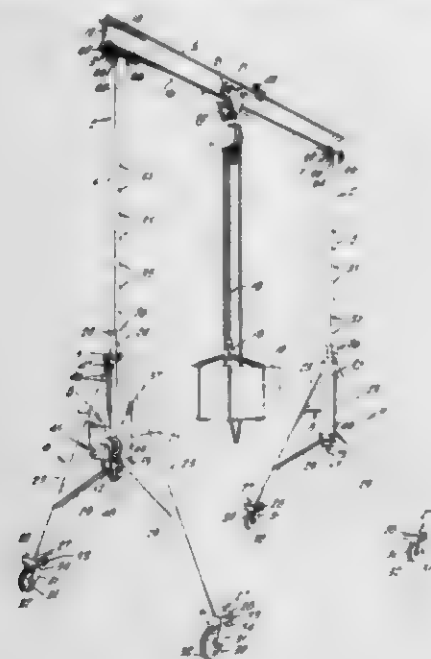
Filed Sep. 22, 1978, Ser. No. 944,733

Int. Cl.³ B66C 5/02

U.S. Cl. 104—126

1. In a portable gantry having a load carrying beam from which a hoisting mechanism is adapted to be suspended, said gantry being adapted to straddle elongated objects; supporting leg structure for said gantry comprising an upright hollow post member of rectangular cross section, the longer axis of the rectangle extending in the direction of the long axis of the beam, fastening means interconnecting the post to the beam

comprising a rigid insert member secured to the post at the upper end thereof and projecting into the end of the post, said insert member having fastening means for connection to the beam, said insert member being dimensioned to brace the interior of the post against bending with respect to the beam, a support means for the post comprising a pair of inclined bracing members extending downwardly and outwardly from the post at points on the post equally displaced upwardly from the bottom of the post, said bracing members lying in a plane



which is at right angles with respect to the longitudinal axis of the beam, and having ground engaging roller means at the bottom thereof, and a pair of inclined reinforcing struts connected to each bracing member, each reinforcing strut extending downwardly and outwardly from the post from points adjacent the bottom of the post to points intermediate the ends of the bracing members, said inclined bracing members and struts providing ground clearance for elongated objects in vertical planes beneath said beam.

4,227,465

UPPER BERTH SUPPORT ARRANGEMENT

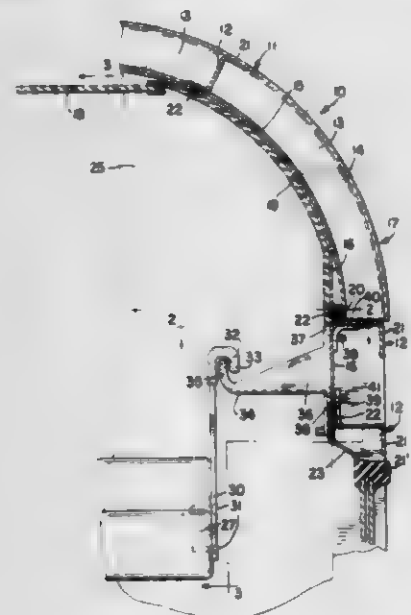
Jack E. Gutridge, Dyer, and Walter J. Marulic, Gary, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Apr. 28, 1978, Ser. No. 900,830

Int. Cl.³ B61D 31/00

U.S. Cl. 105—321

6 Claims



1. In a railway sleeping car compartment having a side wall, a ceiling wall and a transversely extending partition wall, the improvement comprising:
an upper berth,
hinge means hingedly connecting said berth to said partition

wall for hinging movement between a horizontal use position and an upper diagonal non-use position adjacent said ceiling wall,
said hinge means being fixedly attached to said partition wall and fixed against vertical movement, said hinge means being attached to said berth along a rear longitudinal edge portion thereof adjacent said partition wall for allowing pivoting of the berth about an immovable pivot point substantially at the rear longitudinal edge portion of said berth adjacent said partition wall,
supporting means for a free end of said berth including a bracket connected to said sidewall and projecting laterally outwardly with respect thereto,
an outer vertically extending flange on said bracket,
a rigid hook fixedly connected at the free end of said berth, said hook being non-pivotal and immobile relative to said berth,
said hook in the use position of said berth parallel to said partition wall being substantially engaging said flange to support said berth and to provide lateral stability therefor; and
a supporting shelf disposed between said berth and said sidewall when said berth is in said horizontal use position, said shelf having one end supported on said bracket and another end supported on said partition wall.

4,227,466

IN-DEPTH STORAGE DEVICE

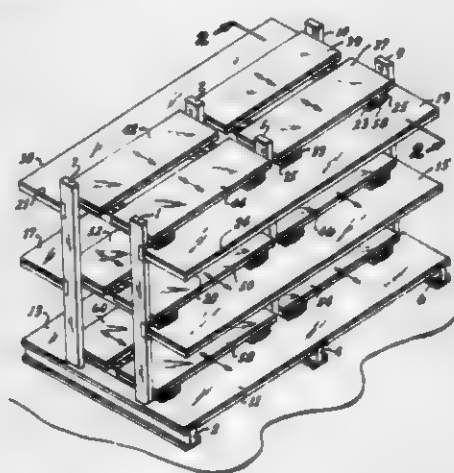
Jack Rooklyn, Northridge, Calif., assignor to Industrial Management Co., Beverly Hills, Calif.

Continuation of Ser. No. 815,946, Jul. 15, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,283

Int. Cl.³ A47B 57/00

U.S. Cl. 108—93

5 Claims



1. An improved warehouse storage device for merchandise having a base, a plurality of vertical support members extending upwardly from said base and being horizontally spaced from one another, a plurality of fixed cantilever mounted horizontal storage shelves affixed to said vertical support members and extending outwardly from said vertical support members such that certain of said fixed horizontal storage shelves affixed to successive vertical support members are horizontally spaced from one another, a plurality of sliding shelves movable along horizontal paths in spaced relationship overlying said fixed shelves and separate guide means mounted between said horizontally spaced fixed storage shelves and spanning substantially only the space therebetween for support and horizontal guiding of said sliding shelves outwardly and inwardly relative to said fixed shelves such that said sliding shelves may be moved to overlie said fixed shelves and loaded with merchandise and thereafter horizontally displaced inwardly to a position over the space between said certain shelves to expose substantially the entire area of said fixed shelves for loading with merchandise.

4,227,467

TRAY ASSEMBLY

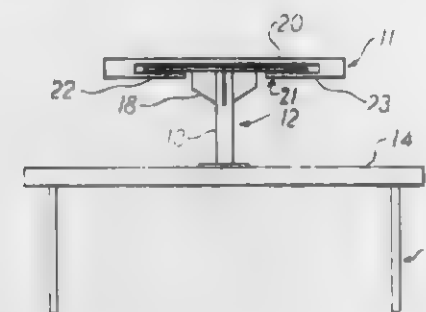
Gerald N. Kindsfater, 635 Custer Ave., Billings, Mont. 59101

Filed Mar. 26, 1979, Ser. No. 23,665

Int. Cl.³ A47B 13/14

U.S. Cl. 108—101

2 Claims



1. A tray assembly including a tray member and a support member; the support member including a spacer portion having one end affixed to a top of a table and extending upwardly therefrom, and a tray supporting portion at the free upper end of said spacer portion including a horizontally disposed generally circular plate section; the tray member including a substantially flat upper tray portion, and a support portion associated with the bottom thereof, said support portion of said tray member including a pair of horizontally disposed guide sections having their adjacent edges spaced an equal distance from the center of said tray member and spaced from the bottom surface of said tray member a distance sufficient to accept said plate between said guide sections and said bottom surface to provide a rigid connection, therebetween with the spacing between the adjacent edges substantially the same along the central portion of said guide sections and with the spacing between the adjacent edges increasing toward the opposite edges of said tray member, said guide sections providing a substantially flat support portion for said tray member.

4,227,468

IMMERSION PIECE FOR THE ASH FUNNEL OF A COMBUSTION CHAMBER

Horst Buchmüller, Hünxe, and Bernhard Michelbrink, Wesel, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,579

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830372

Int. Cl.³ F23J 1/00

U.S. Cl. 110—165 R

6 Claims



1. An immersion member for an ash funnel forming the bottom part of a steam generator combustion chamber and being formed of tubes, said immersion member protruding into the water level of a trough filled with quenching water and located underneath said ash funnel for receiving ash from the ash funnel; fastening means for connecting said immersion member to said ash funnel, said fastening means comprising: carrier means and screw means connected to said ash funnel, said carrier means being cooled and passing transversely through said immersion member; said carrier means being

suspended from the ash funnel by said screw means; and seal means located between said immersion member and said ash funnel and being deformable in vertical direction.

4,227,469

MULTIPURPOSE SLAG SYSTEM

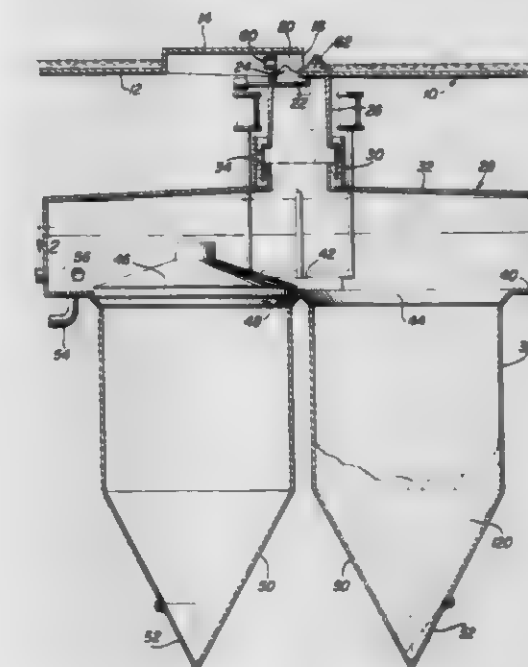
Frank Collura, 2926 W. Jean St., Tampa, Fla. 33614

Filed Aug. 23, 1978, Ser. No. 936,183

Int. Cl.³ F23J 1/00

U.S. Cl. 110—171

22 Claims



1. In combination, a wet bottom furnace including a bottom wall having an elevated section thereof defined by at least one upstanding wall portion defining an opening therethrough adjacent said bottom wall and defining a vertical tap hole in front of which granular material may be deposited for damming said vertical tap hole against the flow of molten slag therethrough from the interior of said furnace, said furnace bottom wall including wall means defining a downwardly opening compartment exteriorly of said furnace into which said tap hole opens from the interior of said furnace, said wall means including access means therein horizontally spaced from said tap hole and through which granular material may be inserted from exteriorly of said furnace and said downwardly opening compartment, through the latter and through said tap hole into said furnace for damming said floor inward of said tap hole, and also through which a tool may be inserted for raking up and withdrawing said granular material dam through said tap hole into said downwardly opening compartment.

4,227,470

PLACKET FORMING SYSTEM

William O. Mitchell, Gordon H. Ellington, and C. Ray Hamilton, all of Vidalia, Ga., assignors to Oxford Industries, Inc., Vidalia, Ga.

Filed Sep. 14, 1978, Ser. No. 942,431

Int. Cl.³ D05B 21/00

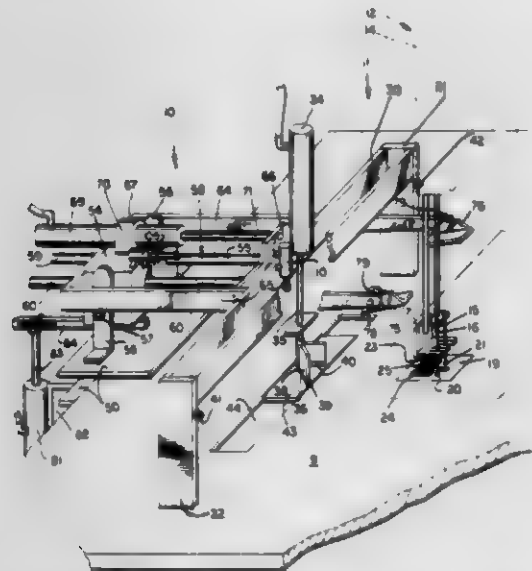
U.S. Cl. 112—121.12

6 Claims

1. In combination with a sewing machine, apparatus for cutting garment parts and the like at a position located a predetermined distance from said sewing machine, said apparatus comprising mounting means for attachment to a work surface, a support member pivotally mounted about a horizontal axis on said mounting means, a garment engagement means supported by said support member, means for distending and retracting said garment engagement means with respect to said support member, and means for pivoting said support member and said garment engagement means simultaneously about said horizontal axis, cutting means positioned at said work surface between said sewing machine and said support member whereby said

means for pivoting said support member and said garment engagement means moves said garment engagement means downwardly into engagement with a garment part located at the sewing machine, and after the garment engagement means has engaged a garment part at the sewing machine said means for distending and retracting said garment engagement means retracts the garment engagement means to pull the garment part with said garment engagement means away from said sewing machine across the work surface, and said cutting means cuts the garment part after the garment part has been moved a predetermined distance from the sewing machine.

6. In combination with a sewing machine, apparatus for positioning and cutting garment parts and the like at a predetermined distance from the sewing machine for engaging the



garment part when the garment part is at the sewing machine needle and for moving the garment part from the sewing machine needle to said garment cutting apparatus and for returning from the garment cutting apparatus to the sewing machine needle, and control means including means responsive to the movement of the positioning apparatus when the positioning apparatus has moved the garment part from the sewing machine needle to the cutting apparatus for actuating said cutting apparatus so that the cutting apparatus cuts the garment part before the positioning apparatus returns to the sewing machine needle, means responsive to the movement of the cutting apparatus after the cutting apparatus has cut the garment part for actuating said positioning apparatus so that the positioning apparatus returns to the sewing machine needle.

4,227,471

SEWING-MACHINE GUIDE FOR EDGE-PARALLEL SEAMING OF A WORKPIECE

Harald Collbrunn, Spenge; Franz Hannemann, Detmold, and Heinz Fransing, Melle, all of Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH Bielefeld, Bielefeld, Fed. Rep. of Germany

Filed Jun. 9, 1978, Ser. No. 914,143

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2728967

Int. Cl.² D05B 35/10

U.S. Cl. 112-121.26

10 Claims

1. In combination with a sewing machine adapted to stitch an edge-parallel seam in a workpiece comprising a stack of a plurality of fabric layers and having a stitching location and means for advancing the workpiece past said stitching location, the improvement which comprises:

a workpiece guide device disposed immediately ahead of said stitching location with respect to the direction of advance of the workpiece therepast, said workpiece guide device comprising:

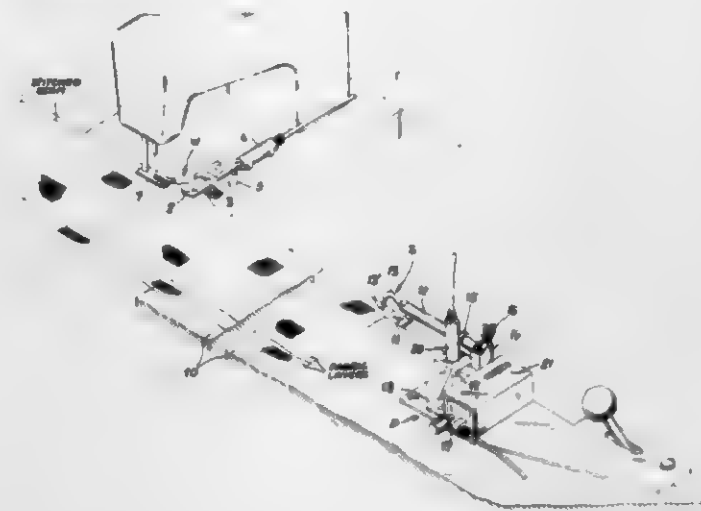
a plurality of plates interleavable with the layers of the workpiece, and

an edge guide engageable with the edges of said layers for positioning same to be fed past said location;

a drag-clamp device comprising:

a guide track extending toward said location and formed by a guide rail mounted on a worktable extending laterally from said sewing machine,

a drag-clamp displaceable on said guide track and engageable with said workpiece at a location therealong distal from the stitching location upon inception of the seam, and



means cooperating with said drag clamp for applying traction to the workpiece along the edge to be seamed; a retracting means connected to said workpiece guide means and actuatable for drawing same out of the path of said drag clamp;

control means along said track operable by the passage of the drag clamp therealong for actuating said retracting means to withdraw said guide workpiece device out of the path of said drag clamp and enable said drag clamp to approach said stitching location.

4,227,472

SEWING MACHINE WITH ELECTRONIC PATTERN DATA CIRCUITS

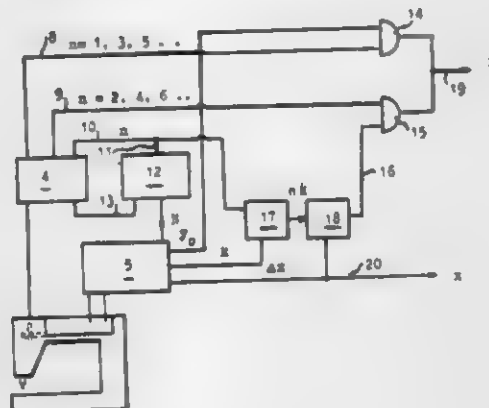
Bengt A. Bergvall, Huskvarna, Sweden, assignor to Husqvarna AB, Huskvarna, Sweden

Filed Mar. 28, 1978, Ser. No. 891,006

Claims priority, application Sweden, Mar. 29, 1977, 7703574 Int. Cl.² D05B 3/02

U.S. Cl. 112-158 E

5 Claims



1. In a sewing machine with electronic pattern data circuits for the generation of data signals, at least one motion converter means for producing, as a function of said signals, movements of the stitch forming elements of the machine, said movements generally comprising a sideways and vertically moving needle operating in conjunction with a fabric feeder and shuttle, an improvement wherein said data circuits comprise:

pattern select means for permitting a sewing machine operator to select a desired stitch pattern;

storage unit means for storing algorithm parameters and in

response to said pattern select means, providing said parameters to an output; stitch counter means for providing stitch count signals; and algorithm computer means, responsive to said output of said storage unit means and said pattern select means, for computing coordinates of a necessary point of needle penetration and providing signals to said motion converter means to orient said needle in accordance with the desired stitch in the pattern.

4,227,473

CAN EDGE RIDING CAN OPENER

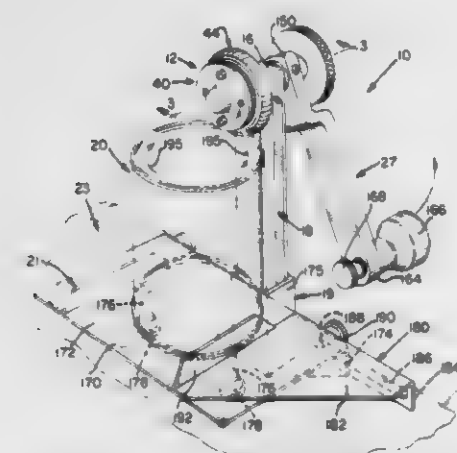
Claude A. Young, 126 N. Kensington St., LaGrange, Ill. 60525

Continuation-in-part of Ser. No. 855,552, Nov. 29, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,593

Int. Cl.³ B21D 39/03

U.S. Cl. 113-1 K

22 Claims



1. A can opener of the type adapted to open cans by unfolding the can ridge that is formed at one end of the can by folding the end rims of the can end closure and can side wall against the side of the can to define one ridge edge that projects away from the can, a second opposing ridge edge that lies about the can side wall, and a composite flange structure separating said ridge ends that lies about the can side wall in juxtaposition therewith and defines inner and outer ridge side wall sides in circumambient relation about the can ridge, said opener comprising:

a clamping disc, a traction disc, and a wedge disc in coaxial relation about a common rotational axis, said traction disc being interposed between one side of said clamping disc and one side of said wedge disc, said traction disc having its periphery knurled for riding on the can said one ridge edge in the operative position of said opener with said clamping disc one side facing the ridge inner wall surface and the wedge disc one side facing the ridge outer wall surface, said clamping disc being proportioned to define a rim portion projecting radially thereof beyond said traction disc periphery and having said rim portion thereof on said one side thereof smoothly contoured for camming engagement with the can ridge inner side,

and means for rotating said discs about said axis to roll said traction disc along the can ridge one edge in the direction to roll said wedge disc wedging rim in wedging camming relation against the can ridge second edge for swinging the can ridge flange structure about the can ridge one edge and away from the can side wall, as said discs roll along the can ridge, to separate the can end rim from the can side wall rim.

4,227,474

CATAMARAN EQUIPPED WITH RE-RIGHTING DEVICE

Gunter Ullrich, Regenwalderweg 36, 1 Berlin 27, Fed. Rep. of Germany

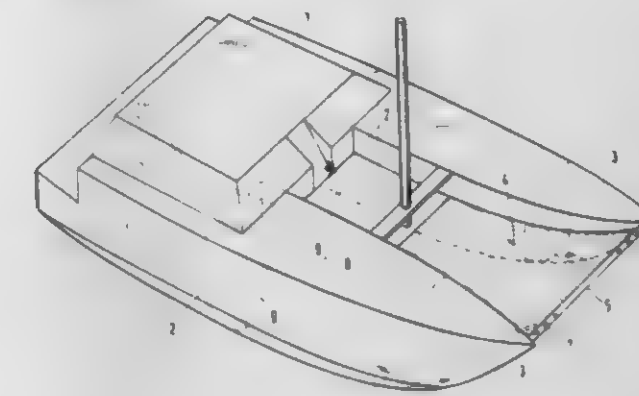
Filed Jun. 12, 1978, Ser. No. 914,650

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1977, 2727074

Int. Cl.³ B63B 1/00

U.S. Cl. 114-61

2 Claims



1. A cruiser catamaran comprising: forward hulls having floodable forecastles, and buoyancy chambers disposed forwardly of said forecastles and communicating therewith; a watertight cabin disposed in the stern of said cruiser catamaran and separated from said forecastles by bulkheads; an openable and closable inlet for introducing compressed air into said buoyancy chambers, said inlet being arranged at the anterior end of said buoyancy chambers; and simultaneously actuatable flooding means for flooding said forecastles and buoyancy chambers, whereby after capsizing, re-righting may be effected by initially activating said flooding means so that said forecastles and buoyancy chambers become flooded, as a result of which the bow of the catamaran moves downwardly about 130° around its transverse axis, then the flooding means is closed and compressed air is introduced into the anterior buoyancy chambers through said inlet so as to return the bow and, in turn, the catamaran almost to its normal position.

4,227,475

WATERBORNE SIDEWALL AIR CUSHION VEHICLE

Darryl F. Mattox, 161 Pacific Rd., Palm Beach, N.S.W., 2108, Australia

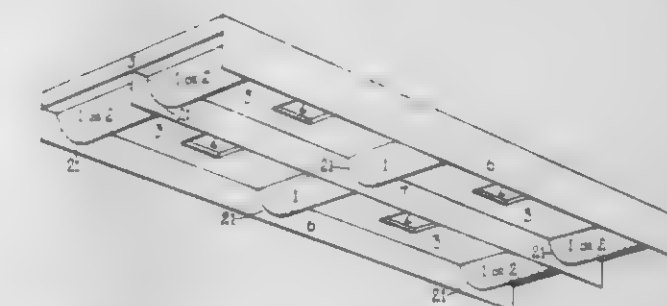
Filed Apr. 12, 1978, Ser. No. 895,592

Claims priority, application Australia, Apr. 15, 1977, 24307/77

Int. Cl.³ B63B 1/38

U.S. Cl. 114-67 A

11 Claims



1. A waterborne air cushion vehicle comprising, in combination, a flat rigid upper rectangular sheet-like platform, a plurality of flat rigid longitudinal walls including at least two outermost walls, attached substantially at right angles thereto and depending therefrom substantially parallel with the major axis of said platform, the outermost two of said walls being disposed as sidewalls along the respective edges of said platform.

a plurality of longitudinally spaced laterally aligned arrays of flexible trough-shaped skirts respectively looped with a space therein and fastened via each longitudinal edge thereof with respect to the underside of said platform flush with but independently movable with respect to adjacent pairs of said walls but extendable to a lesser depth than that of said walls, a source of pressurized air admissible via apertures of fixed size at a relatively higher pressure to said skirts and also admissible at a relatively lower pressure via variable-sized openings capable of being remotely controlled and located in said platform in communication with each of at least four open-bottomed air cushion chambers each bounded by an adjacent pair of said skirts and by an adjacent pair of said walls, and wherein the depth of said walls and of said skirts is so related to the flow rate of said air that the vehicle is buoyant upon water with said walls protruding into said water sufficiently to prevent air spillage via said walls when the vehicle is urged longitudinally through said water by propulsion means, and wherein said apertures and said openings are adapted to re-admit by reverse flow at least part of the compressed air in any one of said chambers and its associated skirts independently in response to fugitive deflection of said skirts resulting from turbulence of said water, to thereby inhibit movement of said vehicle about the pitch axis thereof.

4,227,476

DETECTION STREAMER

Robert H. Park, Pluckemin, N.J.; Harold W. Kline, Washington, D.C., and Nelson N. Estes, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

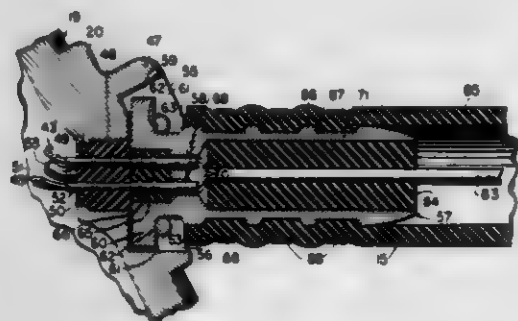
Division of Ser. No. 526,624, Mar. 15, 1944. This application

Oct. 14, 1954, Ser. No. 464,192

Int. Cl.³ B63G 9/00

U.S. Cl. 114—240 A

4 Claims



1. In a torpedo detecting device of the class disclosed, the combination of an elongated hose-like member having a towing device secured to one end thereof whereby the member is adapted to be towed through a body of water, and means in said member and remote from said towing device for disconnecting said member at a predetermined point in closely spaced adjacency from the towing device comprising a helical coil of explosive fuse cord disposed only at said point and capable of sufficient explosive damage to sever the member substantially at said point, and a pair of electroresponsive detonators for firing said fuse cord, said detonators being disposed respectively in abutting relation to the ends of said cord.

4,227,477

INFLATABLE BARGE

Paul Preus, Clean Water, Inc., Court House Sq., P.O. Box 1002, Toms River, N.J. 08753

Filed Aug. 31, 1978, Ser. No. 938,426

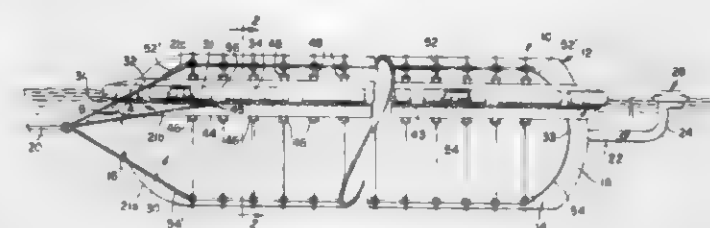
Int. Cl.³ B65D 89/10

U.S. Cl. 114—256

9 Claims

6. An air or surface deployable, inflatable, flexible wall, fluid holding towable container comprising a hollow, generally tubular, flexible wall container, at least one closeable inlet and outlet means for directing fluid into and out of the container characterized by gas inflatable barrier means extending at least along a substantial portion of the longitudinal side walls of said

container in the zone of the water line of the container when it is filled with a liquid, wherein the inflatable barrier means



comprises a plurality of longitudinally extending barriers superimposed on each other and covering at least about 240 degrees of the external surface of the flexible wall container.

4,227,478

INFLATABLE BARGE WITH COMPARTMENTED INTERIOR

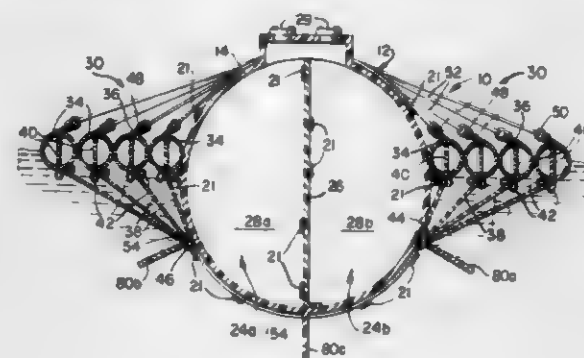
Paul Preus, 21 Smith Rd., Toms River, N.J. 08753

Filed Oct. 11, 1978, Ser. No. 950,279

Int. Cl.³ B65D 89/10

U.S. Cl. 114—256

6 Claims



1. An air or surface deployable, inflatable, flexible wall, fluid holding towable container comprising a hollow, generally tubular, flexible wall container, a vertically oriented partition extending the length of the container, a plurality of partitions positioned in spaced relation to one another extending transversely to the lengthwise extending partition, said lengthwise extending and transverse partitions dividing the container into a plurality of compartments, closeable fluid filling-emptying ports in the top wall of the container, gas inflatable barrier means extending at least along a substantial portion of the longitudinal side walls of said container in the zone of the water line of the container when it is filled with a liquid;

said gas inflatable barrier means comprising a plurality of independently gas inflatable chambers arranged in a spaced array and connected together by impervious impregnated fabric, whereby rupturing of one of the plurality of independently inflatable chambers will not impair the function of the other of the chambers.

4,227,479

SUBMARINE COMMUNICATIONS SYSTEM

Morton Gertler, Silver Spring; Lester F. Whicker, and Thomas Gibbons, both of Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1962, Ser. No. 215,468

Int. Cl.³ B63G 8/00, 8/42

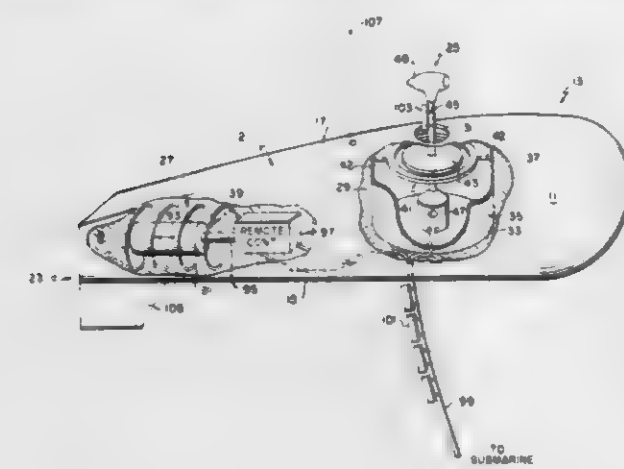
U.S. Cl. 114—312

9 Claims

4. A towable sea-going vehicle for carrying communications equipment for use in conjunctive cooperation with communications equipment of another vessel comprising:

an essentially hollow body having openings in its walls for free flooding and self-bailing of said body; said body having an essentially rounded, gently pointed nose section and a V-bottom portion, said V-bottom portion

providing a surface for the planing of said body on the surface of water and providing a face portion for contributing to the hydrodynamic lifting of said body when in an underwater position; buoyancy producing means located in said body to the extent that the weight of said body in air is substantially less



than the excess buoyancy of said body when immersed in water; and said body having an upper cambered portion for producing lift when said body is in an underwater position; whereby said communications-carrying vehicle may be towed either submerged or on the water surface at speeds up to and in excess of 35 knots.

4,227,480

MOTOR MOUNT BRACKET FOR TWIN-HULL SAIL BOATS

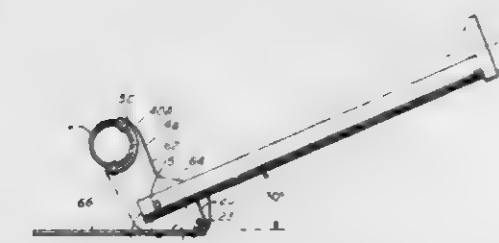
Peter A. Carras, Palm Beach Gardens, Fla., assignor to Jane C. Terry, Hobe Sound, Fla.

Filed Mar. 16, 1979, Ser. No. 21,083

Int. Cl.³ B63H 21/26

U.S. Cl. 440—63

10 Claims



1. A motor mount bracket for use in combination with a twin-hull sail boat of the kind having first and second pontoons spaced parallel to each other by at least a first forward cross-strut and a second aft-most cross-strut to which the pontoons are rigidly attached, each pontoon extending a distance aft from the second strut and having first and second rudders pivotally connected to the aft-end of each pontoon, respectively, first and second rudder control arms extending from said first and second rudders, respectively, forward toward said second strut, and an elongated tiller link extending parallel to said second strut pivotally connected at first and second separated points to the forward ends of said first and second control arms, respectively, for moving said rudders in unison around their respective pivots, said forward connecting points and said rudder pivots defining the four corners of a parallelogram in which said tiller link is movable between a first position closely adjacent said second strut when said rudders are set dead ahead, and a second position further aft from said second strut when said rudders are set for a turn; said motor mount bracket comprising a stand-off intended to be fixed to

said second cross-strut between the pontoons, said stand-off when so affixed extending below and aft of said second cross-strut and providing a mount pivot located below and aft of said second cross-strut and below said tiller link, rigid motor support means including an arm pivotally attached at a forward point to said stand-off at said mount pivot, said arm extending aft from said mount pivot and having fixed to it a mount for an outboard motor, said mount being located a prescribed distance aft from said mount pivot which prescribed distance is substantially less than the distance aft from said second cross-strut to said rudder pivots but sufficiently far aft from said second cross-strut to hold an outboard motor clear of said tiller link in said second position.

4,227,481

SAFETY STEERING SYSTEM FOR OUTBOARD MOTORS

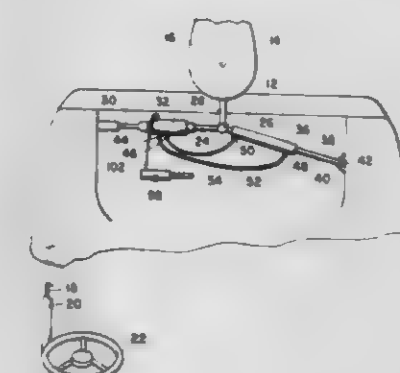
Burton B. Cox, 11750 S. 85th E. Ave., Bixby, Okla. 74008, and Peter F. Maroney, 12634 S. 123rd E. Ave., Broken Arrow, Okla. 74012

Filed Oct. 13, 1978, Ser. No. 951,195

Int. Cl.³ B63H 21/26

U.S. Cl. 440—61

2 Claims



1. A safety steering system to control torque rotation for a boat having directable propeller outboard motor means capable of pivoting about a vertical axis in relation to said boat which comprises a motor arm on said motor perpendicular to said vertical axis for pivoting said motor; steering means to control movement of said motor about said axis; flexible cable means to exert either a push or pull force on said motor arm and having two ends, a first end of said cable means connected to said steering means and a second end of said cable means connected to said arm; actuator control valve means interposed along the connection of said flexible cable means with said motor arm, said control valve means including a first external port and a second external port; a hydraulic cylinder means having pivotal connections at its opposite ends pivotally attached at one end thereof to said boat and pivotally attached at the opposite end thereof to said motor arm, said cylinder means having a first chamber of confined liquid and a second chamber of confined liquid therein; a piston reciprocal within said cylinder means and capable of moving longitudinally therein including a piston head separating said first liquid chamber from said second liquid chamber; a piston rod having one end connected with said piston head and an opposite end constituting one of said pivotal connections on said hydraulic cylinder means; means to conduct said liquid from said first chamber to said first external port; means to conduct said liquid from said second chamber to said second external port; a stem within said control valve means responsive to a push force or a pull force from said cable means to provide fluid communication within said control valve means between said external ports and thus between said first and second chambers, said stem being movable in response to the cessation of said push force or said pull force by release of said steering means to interrupt communication between said ports thereby locking said arm in a single position; and a hydraulic accumulator connected to said control valve means for storing hydraulic

fluid therein and for providing fluid to compensate for the difference in volume between said first and second chambers of confined liquid.

4,227,482

PRESSURIZED FLUID-ACTUATED SOUND-PRODUCING DEVICE, AND METHOD OF ASSEMBLING IT

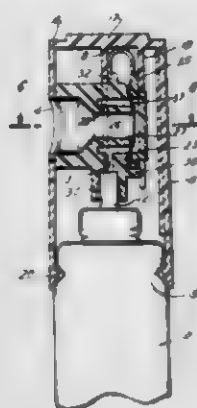
Christian T. Scheindel, Star Route, Randolph Center, Vt. 05061

Filed Jul. 13, 1979, Ser. No. 57,539

Int. Cl.³ G08B 23/00

U.S. Cl. 116—142 FP

11 Claims



1. A sound-producing device for use with a pressurized fluid container having a valve, comprising:

- (a) a body coacting with the container valve and having an orifice surrounded by an annular seat, and a chamber radially outwardly of said seat adapted to receive pressurized fluid from the container when the valve is open,
 - (b) a cap facing said seat and chamber,
 - (c) a strap permanently interconnecting said body and cap,
 - (d) a diaphragm extending over said seat and chamber, the margin of said diaphragm being sandwiched between said body and cap,
 - (e) means for locking said body and cap in tight engagement so that they tightly grip said diaphragm between them and hold said diaphragm taut over said seat, and
 - (f) means carried by at least one of said body and cap for deforming the margin of said diaphragm to aid in tightly gripping said diaphragm between said body and cap,
- whereby pressurized fluid which enters the chamber escapes therefrom by flowing between the tautly-held diaphragm and said seat and then out the orifice, thereby causing the diaphragm to vibrate and create a sound.

4,227,483

ADHESIVE APPLYING MACHINE

Michael M. Becka, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Oct. 26, 1978, Ser. No. 955,032

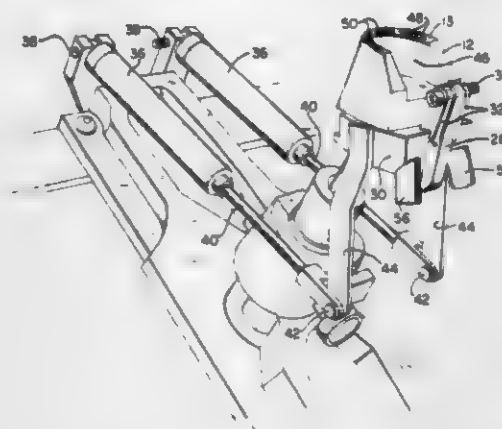
Int. Cl.³ A43D 25/18, 25/047; B05C 5/02

U.S. Cl. 118—411

2 Claims

1. An adhesive applying machine comprising: a support having a top surface lying in a prescribed plane that is inclined from the horizontal for so supporting a workpiece that the bottom of at least a portion of the workpiece substantially lies in said prescribed plane; an applicator assembly located below said workpiece portion; connecting means connecting the applicator assembly to an applicator mount; means mounting the applicator mount for heightwise movement between a lower position wherein the applicator assembly top is spaced from said workpiece portion and an upper position wherein the applicator assembly top lies in said prescribed plane and bears against said workpiece portion; adhesive feeding means actuable to expel adhesive from the applicator assembly top onto said workpiece portion; means for initially retaining the applicator mount in said lower position; means for thereafter raising the applicator mount to said upper position; means for actuating the adhesive feeding means while the applicator mount is in

said upper position; and means for thereafter lowering the applicator mount to said lower position; characterized in that said connecting means so connects the applicator assembly to the applicator mount as to enable movement of the applicator assembly relative to the applicator mount between an idle position wherein the applicator assembly top lies in a substantially horizontal plane and a working position wherein the applicator assembly top lies in a plane parallel to said prescribed plane; and characterized in that the machine comprises: actuable powered means connected to the applicator assembly



for moving the applicator assembly between said idle and working positions; means for so initially actuating the powered means as to initially retain the applicator assembly in said idle position; means effective by the completion of the rise of the applicator mount from said lower position to said upper position to so actuate the powered means as to cause the powered means to move the applicator assembly to said working position; and means effective subsequent to the actuation of the adhesive feeding means to so actuate the powered means as to cause the powered means to move the applicator assembly from said working position back to said idle position.

4,227,484

CAKE FROSTING DEVICE

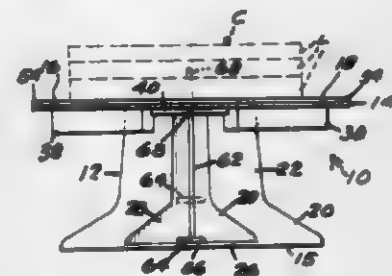
Humberto Vaca, 11874 College, Detroit, Mich. 48205

Filed Jul. 3, 1978, Ser. No. 921,852

Int. Cl.³ B25B 11/00

U.S. Cl. 118—502

16 Claims



1. In a cake frosting device having a platter with an upper face adapted to support a cake layer and having an underside, a pedestal adapted to rest on a support surface and to support said platter in a position elevated above said surface, said platter having a plurality of apertured portions each of which opens at said upper face and said underside, and a plurality of pins dimensioned to slide generally vertically through said apertured portions for impaling a cake layer on said platter, improved structure wherein, said pedestal comprises a bottom, a top and a column extending from said bottom to said top, said column having for each said apertured portion a side portion with a laterally outwardly opening recess having wall portions which extend from said bottom to said top, said wall portions being positioned for engagement by a pin moved generally horizontally beneath said platter,

said wall portions of each recess extending toward a said apertured portion and being effective responsive to engagement therewith of a pin so moving to guide a said pin to a said apertured portion.

4,227,485

FARROWING HOUSE

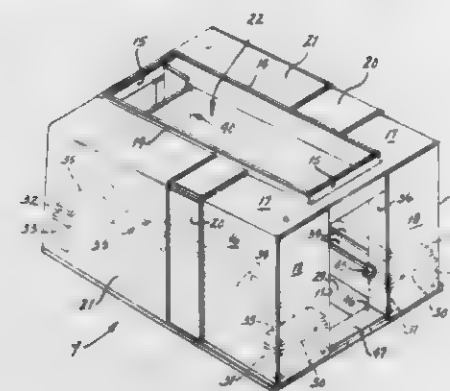
Donald L. Poore, Box 140 R.R. No. 3, Shelby, Mo. 63468

Filed Oct. 30, 1978, Ser. No. 955,610

Int. Cl.³ A01K 1/00

U.S. Cl. 119—16

4 Claims



1. A weather-tight and insulated sow farrowing house comprising: a frame structure having sides, a top and front and rear walls; a floor for supporting said frame structure; insulation enclosing said frame structure, and weather resistant sheathing covering said insulation; said top having an opening therein through said insulation and sheathing defined by outwardly projecting flanges; a cover structure removably fitted over said projecting flanges for retaining said cover in position closing said opening, said flanges being adapted to support said cover structure in partly raised position for ventilation of the interior of the house; said front wall having an opening for a door located substantially mid-way between said sides; a pig retaining guard fence operably mounted in said front wall opening adjacent said floor for presenting a barrier to egress of pigs without being a barrier for the sow; a door operably mounted at said front wall opening in position when in closed position over said opening to cover said guard fence; and pig protecting means in said frame structure in position to extend along the inside of each side wall between said front and rear walls, said protecting means being spaced apart a distance substantially the width of said front wall opening and each including load supporting means spaced above the floor to form a surface on which the sow may be supported and beneath which the pigs may be protected, and means to retain said load supporting means selectively in pig protecting position and in position shifted laterally toward said side walls.

4,227,486

FARROWING PEN

Lynn E. Kaufman, and Jay S. Kaufman, both of R.R. 1, Moundridge, Kans. 67107

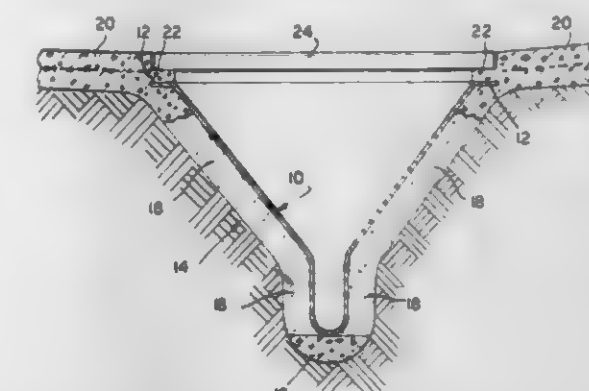
Filed Dec. 4, 1978, Ser. No. 966,090

Int. Cl.³ A01K 1/00

U.S. Cl. 119—28

3 Claims

1. A sanitary animal stall or farrowing pen comprising a slatted floor structure for supporting animals, a generally Y-shaped trough disposed below and communicating with said slatted floor, an overlay having a wing on each side thereof and generally co-extensive and mating with said Y-shaped trough and terminating in proximity to said floor, the surface of said overlay having a low co-efficient of friction such that manure and other waste generated by the animals are freely movable relative to said overlay, said Y-shaped trough comprising a footing supporting said overlay, particulate material supporting the sides of said overlay with said material resting on said footing, and concrete-like material situated in the uppermost section on both sides of said trough with said con-



holding said slatted floor, the top of said slatted floor collimating with the top of said concrete-like material.

4,227,487

ANIMAL EXERCISING APPARATUS

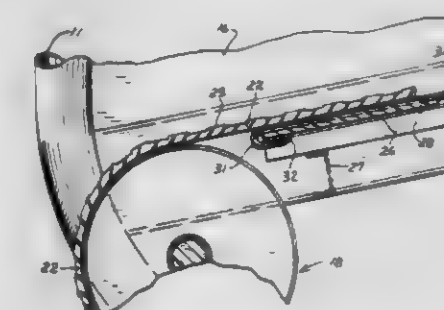
Grover M. Davis, Audubon, Iowa, assignor to Emmert Manufacturing Co., Inc., Audubon, Iowa

Filed Jun. 27, 1979, Ser. No. 52,348

Int. Cl.³ A01K 15/02

U.S. Cl. 119—29

19 Claims



1. An exercising apparatus for horses comprising:

- a frame;
- a first roller means rotatably attached to one end of said frame;
- a second roller means rotatably attached to the other end of said frame;
- support means attached to said frame between said first and second roller means for supporting an endless belt, said support means including a substantially flat piece of ultra high molecular weight polyethylene plastic material;
- an endless belt disposed over said plastic material and in direct contact therewith and around said first and second roller means;
- power means for rotating said first roller means and thereby causing said endless belt to move around said first and second roller means and over said piece of plastic material;
- a groove disposed in said piece of plastic material; and
- grounding means disposed in said groove and operatively attached to said frame for grounding static electricity caused by movement of said endless belt over said piece of plastic material to said frame.

4,227,488

FLUIDIZED BED UNIT INCLUDING A COOLING DEVICE FOR BED MATERIAL

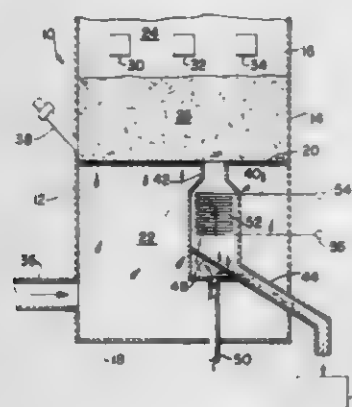
Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Oct. 3, 1978, Ser. No. 948,265

Int. Cl.³ F22B 1/02

U.S. Cl. 122-4 D

29 Claims



1. A fluidized bed unit comprising a housing, a fluid distributor plate disposed in said housing and dividing said housing into an upper chamber and a lower chamber, a bed of particulate material including fuel supported by said plate and extending in said upper chamber, said lower chamber having an inlet for receiving pressurized air for passing through said lower chamber, said plate and said bed of particulate material to fluidize said particulate material, an enclosure having an inlet communicating with said bed for receiving particulate material from said bed and an outlet for discharging said particulate material to external apparatus, an additional fluid distributor plate disposed in said enclosure over which said particulate material passes, and means for passing a cooling fluid through said additional plate and said particulate material in said enclosure to cool said material.

4,227,489

METHOD AND DEVICE FOR FEEDING A SYSTEM FOR GENERATING AND DISTRIBUTING VAPOR CONDENSABLE INTO MAKE-UP LIQUID

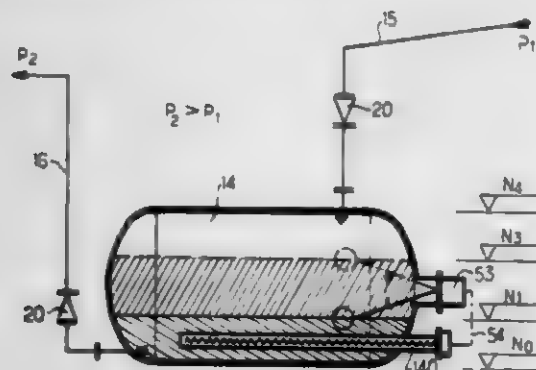
Pierre E. Regamey, 35, Le Calabert, 69130 Ecully, France
Division of Ser. No. 741,339, and a continuation-in-part of Ser. No. 741,339, Nov. 12, 1976, Pat. No. 4,177,767. This application
Jan. 22, 1979, Ser. No. 5,372

Claims priority, application France, Nov. 13, 1975, 75 34705; Sep. 13, 1976, 76 27510; Sep. 13, 1976, 76 27511; Jan. 23, 1978, 78 01773

Int. Cl.³ F22D 1/12

U.S. Cl. 122-457

39 Claims



1. In a system, having at least one vapor generating boiler, one vapor utilizing condenser for production, distribution and utilization of condensable vapor, in a closed circuit wherein the pressure and temperature are substantially constant everywhere and identically the same at all points except for the pressure losses, with recovery of at least part of the conden-

sates discharged by guided, preferably substantially dry and at least for the most part thereof generally gravitational return-flow in at least one closed container forming a main buffer-tank located at a general low point a method in particular for intermittent forced delivery of said condensates, for any selected one of the following purposes: direct reintroduction into said vapor-generating boiler, delivery into a higher-pressure system, passing of a geometrical rise such as a pitch-retaining arrangement by the discharge flow of condensates, the said method consisting in awaiting the obtention of a predetermined maximum level of filling of the said container with liquid; in isolating from the outside the upper space of the said container containing the gaseous phase by either one of the following procedures: cutting off any, at least unidirectional, fluid communication with at least the up-stream portion of the said system, stopping the up-stream inflow and preventing any return of the down-stream current of condensates into the said container; and in applying, at the free surface of the contained liquid, a sufficient additional vapor pressure to allow the total available gas pressure to be substantially equivalent to the sum of the necessary net geometrical height of delivery and the down-stream flow pressure losses to be overcome.

4,227,490

ELECTRONIC CONTROL FUEL INJECTION SYSTEM WHICH COMPENSATES FOR FUEL DRYING IN AN INTAKE PASSAGE

Nobuyuki Kobayashi; Toshio Suematsu, and Minoru Bitou, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

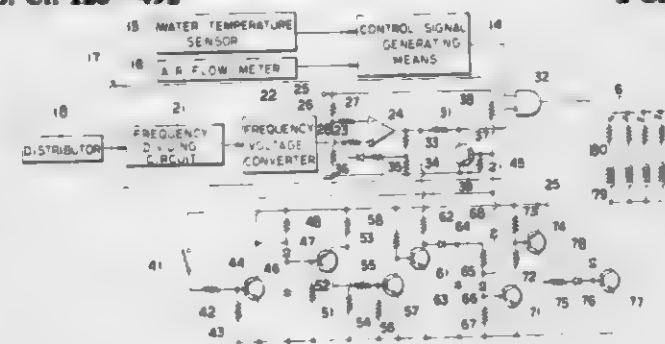
Filed Jun. 26, 1978, Ser. No. 919,296

Claims priority, application Japan, Feb. 13, 1978, 53-14056

Int. Cl.³ F02B 3/00

U.S. Cl. 123-492

2 Claims



1. An electronic control fuel injection system of the type in which the supply of fuel through an injection valve to an engine is interrupted during the time that said engine remains in its decelerating condition comprising:

an injection valve provided in an intake system for said engine which is opened or closed in response to an electric current supplied thereto so as to supply fuel to said engine; control-signal-generating means for computing an open duration of said injection valve in connection with the operational parameters of said engine and providing a fuel control output signal corresponding to said computation; gate means for precluding the passing of said output signal from said control signal generating means therethrough, when the rotational speed of said engine remains over a predetermined value but said engine is in a decelerating condition;

fuel-supply-interruption-duration-detecting means for detecting that the time duration of interrupted fuel supply to said engine exceeds a predetermined value;

fuel-amount-increasing means responsive to the output of said fuel-supply-interruption-duration detecting means for generating an output pulse of a predetermined width when said engine is shifted from its decelerating condition to its accelerating condition after said fuel-supply-interruption time duration has exceeded said predetermined value; and,

actuating means for controlling an electric current to be supplied to said injection valve for actuating the same, said actuating means being operated according to the logical-sum of output signals from said control signal generating means and said fuel-amount-increasing means.

4,227,491

WARM-UP REGULATOR FOR ENRICHING THE AIR-FUEL MIXTURE DELIVERED TO AN INTERNAL COMBUSTION ENGINE

Hans Schnürle, Walheim, and Richard Bertsch, Asperg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

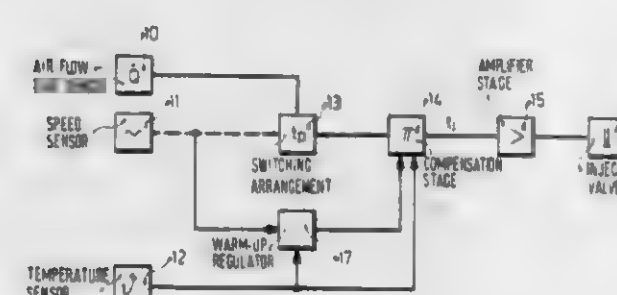
Filed Jan. 10, 1979, Ser. No. 2,480

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804391

Int. Cl.³ F02B 3/00

U.S. Cl. 123-488

6 Claims



1. A warm-up regulator device for enriching the air-fuel mixture delivered to an internal combustion engine comprising a fuel-metering system having a switching arrangement for generating metering signals responsive to a first group of operating parameters, a compensation stage which proportions said metering signals responsive to at least a second operating parameter, said compensation stage being connected and responsive to a function generator and said metering signals for producing a compensation signal which is speed-sensitive and a fuel-metering means controlling the injection of fuel into injection valves in response to said compensation stage.

4,227,492

INTAKE MANIFOLD FOR A VERTICAL SHAFT ENGINE

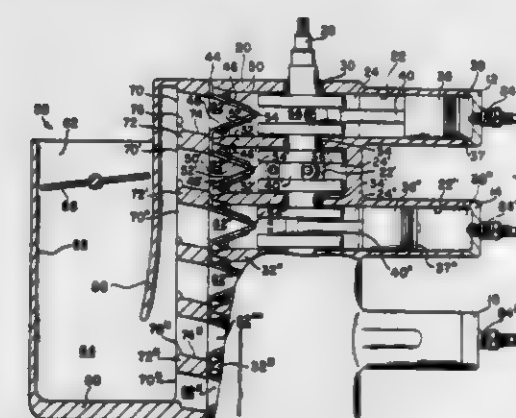
Elmer A. Haase, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 21, 1979, Ser. No. 50,911

Int. Cl.³ F24C 1/16, 15/28; F24B 13/04; F24C 15/00

U.S. Cl. 123-59 B

7 Claims



1. In a two stroke cycle vertical shaft internal combustion engine having a series of horizontal bores, each bore having an entrance port and an exhaust port, a piston located in each bore to establish a combustion chamber and a fuel-air mixture supply chamber, said entrance port being connected to said supply chamber, a manifold system establishes a mixing chamber adjacent to each supply chamber, each mixing chamber being connected to an independent fuel supply and to a common air supply, and a control valve located between each mixing and

supply chamber to allow a fuel-air mixture to enter the supply chamber on movement of the piston toward the combustion chamber and to prevent communication from the mixing chamber to the supply chamber on movement of the piston toward the supply chamber and allow the fuel-air mixture in the supply chamber to flow through the entrance port into the combustion chamber when the piston has moved a predetermined distance, the improvement comprising:

means in each mixing chamber for retaining fuel to prevent communication of fuel between adjacent mixing chambers when a control valve allows the fuel-air mixture to flow into a supply chamber and thereby maintain a substantially uniform fuel-air ratio of each supply chamber.

4,227,493

VALVE ROTATOR

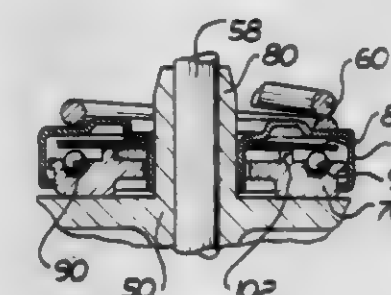
Stanley H. Updike, Painesville, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 7, 1979, Ser. No. 10,461

Int. Cl.³ F01L 1/32

U.S. Cl. 123-90.3

17 Claims



1. A rotator for a valve in an internal combustion engine which is reciprocable between open and closed positions along a longitudinal axis and is rotatable about said axis, said rotator including first and second parts movable axially relative to one another in response to forces which alternately increase and decrease, means for imparting relative rotation between said first and second parts upon relative axial movement of said parts, said means including shiftable means, means defining a pocket in one of said parts for receiving said shiftable means, a spring washer encircling said longitudinal axis and coacting between said first and second parts and in contact with said shiftable means for transmitting axial load between said parts through said shiftable means, and means coacting between said one of said parts and said spring washer to release the load on said spring washer from said shiftable means during at least a portion of the distance of relative movement of said parts.

4,227,494

VALVE DISABLER AND CONTROL

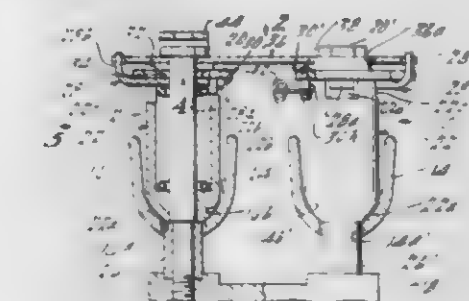
Martin W. Uitvlugt, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 30, 1975, Ser. No. 627,424

Int. Cl.³ F02D 13/06; F01L 1/18

U.S. Cl. 123-90.16

29 Claims



1. An improved means for varying the amount a valve is

opened in response to pivotal movement of a rocker arm, said improved means comprising:

- a support member;
- fulcrum means slidably supported by said support member and adapted to provide a pivot surface for the rocker arm;
- sleeve means slideable with said fulcrum means and projecting from said fulcrum means on the side opposite the pivot surface of the fulcrum means;
- means retaining said sleeve means against rotation; and
- latch means selectively moveable between a valve enabling position preventing sliding movement of said sleeve means and said fulcrum means and a valve disabling position allowing sliding movement of said sleeve means and said fulcrum.

4,227,495

HYDRAULIC LASH ADJUSTER WITH OIL RESERVOIR SEPARATOR

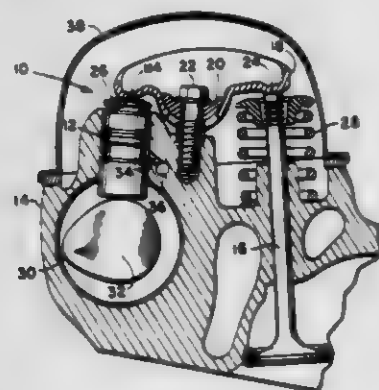
John J. Krieg, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 21, 1978, Ser. No. 944,439

Int. Cl.³ F01L 1/14, 1/24

U.S. Cl. 123—90.55

5 Claims



1. A hydraulic lash adjuster for a valve gear of an internal combustion engine, comprising:

- (a) body means having a blind bore formed therein, said body means including a contact surface adapted to contact associated engine valve gear components for receiving periodically applied forces;
- (b) plunger means slidably received in said body bore and defining, in cooperation with the blind end of said bore, a cavity, said plunger means including,
- (i) means defining a reaction surface adapted to contact associated engine valve gear components and transmit said periodically applied forces,
- (ii) a lower plunger member having an opening therein;
- (iii) an upper plunger member having an opening therein defined by a first internal surface and a first cylindrical surface adjacent the lower end of said upper plunger, said upper plunger further defining a transverse surface portion connecting said first internal surface and said first cylindrical surface,
- (iv) separator means for fluidly isolating said lower plunger opening from said upper plunger opening, said separator means including a downwardly opening cup shaped member having outer peripheral surface portions in fluid sealing engagement with said first cylindrical surface and said transverse surface portion, said cup-shaped member defining in cooperation with said lower and upper plunger members lower and upper fluid reservoirs, respectively;
- (v) one way valve means permitting fluid flow from said lower reservoir to said cavity;
- (c) said body means and said plunger means including means for receiving fluid under pressure from said engine and directing said fluid to said upper and lower fluid reservoirs;
- (d) said plunger means including means defining a passage communicating said upper reservoir with said reaction

surface for directing fluid from said upper fluid reservoir to said reaction surface; and,

(e) means biasing said plunger means outwardly of said cavity.

4,227,496

FUEL SUPPLY DEVICES FOR INTERNAL COMBUSTION ENGINES

Bernard Martel, Bagneux, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly sur Seine, France

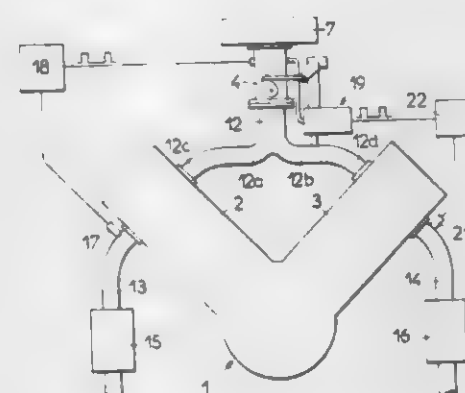
Filed Nov. 8, 1978, Ser. No. 958,813

Claims priority, application France, Nov. 10, 1977, 77 34043

Int. Cl.³ F02M 7/00

U.S. Cl. 123—440

2 Claims



1. A fuel supply device for an internal combustion engine having at least a first group and a second group of cylinders, each group having a separate exhaust pipe, comprising:

- a manifold header having two manifold branches each adapted for connection to the cylinders of a separate one of said groups;
- a carburettor connected to receive air and fuel and to deliver an air/fuel mixture to said manifold header, said carburettor, manifold header and manifold branches being so arranged that the branch associated with the first group receives an air/fuel mixture which is richer than the mixture received by the manifold branch of the second group;
- a first probe adapted to be located in the exhaust pipe of said first group for delivering a signal indicative of the composition of the exhaust gas of said first group;
- a regulation circuit associated with said probe and carburettor controlling the air/fuel ratio delivered by said carburettor in dependence of said signal;
- and a correction circuit having a second probe adapted to be located in the exhaust pipe of said second group for delivering a signal indicative of the composition of the exhaust gas of the second group;
- fuel delivery means opening into the branch associated with said second group;
- and means for metering the fuel flow delivered by said fuel delivery means in dependence of the signal delivered by said second probe;
- wherein the means for metering fuel are included in an enrichment unit comprising a chamber connected to the manifold branch of said second group by a calibrated restrictor, to a fuel feed pipe means by a solenoid valve controlled by an electronic control circuit connected to said valve and second probe and constructed to maintain the signal from the second probe at a predetermined value, to a source of air by air pipe means provided with an auxiliary throttle member operatively associated to an operator operable throttle member of the carburettor, whereby the air flow cross-sectional areas offered by the auxiliary throttle member and by the operator operable throttle member vary in opposite directions, and to the throat of a venturi provided in the air induction passage of the carburettor.

4,227,497

FUEL METERING AND TRANSFER CONTROL SYSTEM

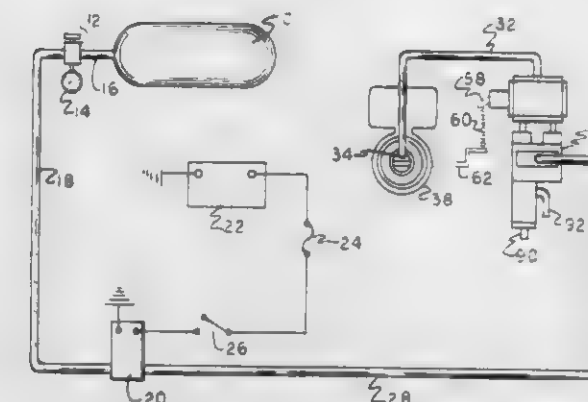
Roy W. Mathieson, 6801 11th Ave., W., Bradenton, Fla. 33505

Filed Jun. 4, 1979, Ser. No. 45,212

Int. Cl.³ F02M 13/08

U.S. Cl. 123—525

6 Claims



1. An auxiliary fuel metering and transfer control system for an internal combustion engine, comprising:

- (a) a pressure vessel, having a shut-off valve and a gas outlet, for storage of propane, methane, natural gas or a similar gaseous fuel;
- (b) a pressure regulator, fitted on said gas outlet, which maintains a constant gaseous fuel pressure during operation of the system;
- (c) a metering valve which operates in response to changes in the intake manifold vacuum of the engine and changes in the air velocity in the carburetor of the engine;
- (d) a transfer valve which operates in response to movement of the throttle linkage on the carburetor of the engine;
- (e) an auxiliary fuel nozzle positioned immediately above the outlet of the main nozzle in the center of the Venturi of the carburetor;
- (f) a fuel line for flow of gaseous fuel from said gas outlet of said pressure vessel into said metering valve;
- (g) means for flow of gaseous fuel from said metering valve into said transfer valve; and
- (h) a fuel line for flow of gaseous fuel from said transfer valve into said auxiliary fuel nozzle for injection into the Venturi of the carburetor.

4,227,498

CENTRIFUGAL GOVERNOR, PARTICULARLY APPLICABLE FOR THE ALTERATION OF IGNITION OR INJECTION TIMING IN INTERNAL COMBUSTION ENGINES

Leonhard Eberl, Unterschleissheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

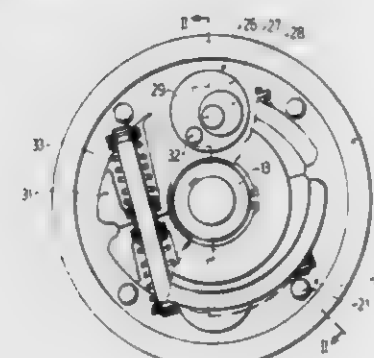
Filed Jun. 2, 1978, Ser. No. 911,736

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725414

Int. Cl.³ F02M 39/00

U.S. Cl. 123—501

10 Claims



1. A centrifugal governor comprising first and second coax-

ial rotary members between which a driving connection is established such that, in use of the governor, the relative rotational position between the two rotary members varies in accordance with their speed, said first rotary member being in the form of an annular member defining within its periphery a space into which said second rotary member projects, said second rotary member including a bearing flange, the governor further comprising:

- (a) a disc releasably attached to said first rotary member, said disc having plane parallel faces;
- (b) two eccentric pairs, each comprising an adjusting eccentric and a compensating eccentric, the adjusting eccentric being mounted for rotation in said disc and the compensating eccentric being mounted for rotation in the adjusting eccentric, the compensating eccentric being articulatedly connected to said flange by a pin mounted at an eccentric position on the compensating eccentric; and
- (c) two flyweights, each articulatedly connected to a respective adjusting eccentric by, on the side thereof facing away from said flange, a pin mounted at an eccentric position on the adjusting eccentric.

4,227,499

DEVICE FOR SUPPLYING FUEL TO A COMBUSTION ENGINE

Willem Brinkman, Velp, Netherlands, assignor to Holec N.V., Hengelo, Netherlands

Division of Ser. No. 665,533, Mar. 10, 1976, Pat. No. 4,120,617.

This application Sep. 15, 1978, Ser. No. 942,775

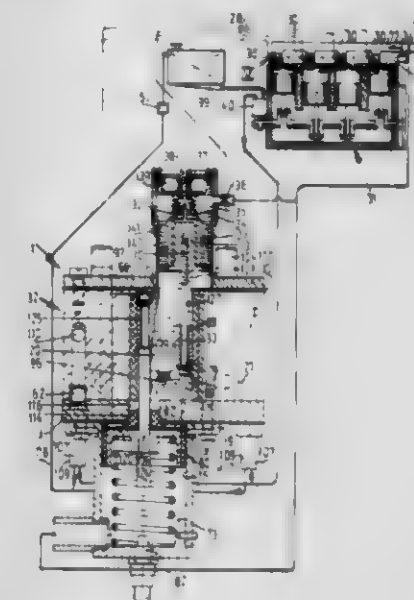
Claims priority, application Netherlands, Jan. 21, 1976, T000634

The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.

Int. Cl.³ F02M 51/00; F04B 17/04, 35/04

U.S. Cl. 123—499

9 Claims



1. A device for supplying fuel to at least one atomizer of a combustion engine, in which the pump chamber of at least one fuel pump, arranged in a pump housing has a displacer volume adjustable by control means, communicates through an inlet valve with a fuel inlet and through an outlet valve with a fuel outlet to be connected with the atomizer of the combustion engine and is limited by at least one displacer body caused to reciprocate by driving means, said control means comprising at least one wedge-shaped stop actuated by a control member, said stop being coupled through a piston rod with the piston of a control cylinder communicating with the inlet manifold of the combustion engine, characterized in that the control cylinder is centered with respect to a frame holding the pump housing by means of a centering disc extending into the control cylinder.

6. A device for supplying fuel to the atomizer of a combustion engine comprising at least one pump to be connected with

the atomizer having a pump chamber limited by a piston and driving means for causing the piston to reciprocate, said driving means comprising an armature energized by at least one electro-magnet and adapted to reciprocate between stops characterized in that at least one of the stops is adjustable in accordance with the speed of the engine.

4,227,500

FUEL INJECTION APPARATUS

Wolf Wessel, Oberriexingen; Volkhard Stein, Stuttgart; Rudolf Sauer, Benningen, and Wolfgang Klenze, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

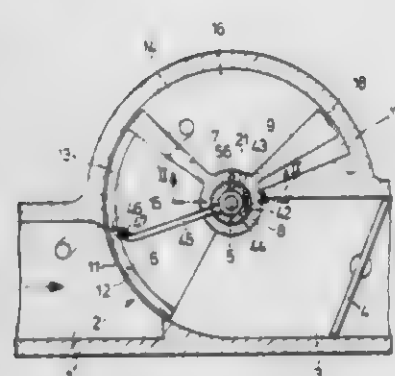
Filed Sep. 22, 1978, Ser. No. 945,046

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742796

Int. Cl.³ F02M 39/00

U.S. Cl. 123—455

18 Claims



1. In a fuel injection apparatus for mixture-compressing, externally ignited internal combustion engines having an air induction tube into which continuous injection is maintained, the apparatus including: an arbitrarily actuable throttle valve mounted in the air induction tube; a bearing shaft; an air flow rate meter mounted by the bearing shaft to the air induction tube in series with the throttle valve; means connected to the air flow rate meter for providing a return force to the air flow rate meter, the force varying in accordance with the air quantity flowing through the air induction tube; a fuel apportionment valve having a movable part which controls the fuel apportioned by the fuel apportionment valve; a fuel line connected to the fuel apportionment valve through which fuel is delivered to the fuel apportionment valve for apportionment by said movable part, the air flow rate meter being connected to the fuel apportionment valve to control the fuel apportionment valve in accordance with the air quantity flowing through the air induction tube, so that the fuel apportioned by the movable part is a function of the air quantity flowing through the air induction tube, the improvement wherein:

- (i) the air flow rate meter includes a control body having a circularly embodied outer circumferential wall rotatably mounted to the bearing shaft transversely to the direction of air flow in the air induction tube so that the circularly embodied outer circumferential wall faces opposite the direction of air flow in the air induction tube; and
- (ii) the circumferential wall controls, to a varying extent, a cross sectional opening of the air induction tube.

4,227,501

FUEL INJECTION APPARATUS

Heinrich Knapp, Leonberg, and Günther Jügge, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 17, 1978, Ser. No. 961,808

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2850614

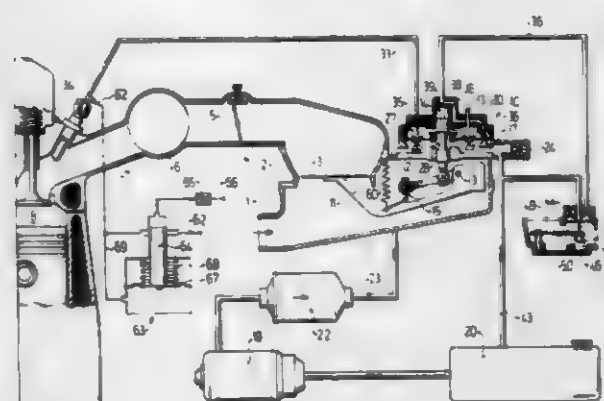
Int. Cl.³ F02M 39/00

U.S. Cl. 123—453

5 Claims

1. In a fuel injection system for mixture-compressing, externally ignited internal combustion engines having an air induc-

tion tube into which continuous injection is maintained, the system including: an air flow rate member and an arbitrarily actuable throttle valve mounted in the air induction tube in series in the direction of air flow; a fuel metering and distributing valve assembly including a control slide serving as a movable member of the fuel metering and distributing valve assembly; a fuel tank, a fuel supply line connected to the fuel tank and the fuel metering and distributing valve assembly through which fuel is delivered from the fuel tank to the fuel metering and distributing valve assembly; at least one pressure control valve connected to the fuel metering and distributing valve assembly for controlling the fluid pressure exerted against the control slide; a plurality of fuel injection nozzles; and an equal plurality of fuel injection lines connected to the fuel metering and distributing valve assembly downstream of the control slide and to a respective one of the fuel injection nozzles, said control slide being displaceable against the fluid pressure controlled by said at least one pressure control valve by the air flow rate member in accordance with the quantity of air flowing in the air induction tube, the displacement of the control slide resulting in a quantity of fuel being apportioned to the fuel injection valves by the fuel metering and distributing valve



assembly which is proportional to the air quantity flowing in the air induction tube, the improvement comprising:

- a spring connected to the air flow rate member;
- a filling valve connected to the fuel tank, said filling valve including a movable valve member and means providing a return force;
- means defining a throttle point connected between the filling valve and the fuel tank; and
- a plurality of scavenging lines connected to a respective one of the fuel injection lines and to the filling valve, wherein:
 - (i) the control slide is actuated when the engine is turned off by said spring in the direction of opening of the fuel metering and distributing valve assembly;
 - (ii) the scavenging lines are controlled by the filling valve in such a manner that the movable valve member thereof opens each scavenging line toward the fuel tank via the throttle point when the engine is turned off; and
 - (iii) the movable valve member of the filling valve is displaced, with a delay, against the return force in the closing direction of the filling valve by means of the pressure of the fuel being supplied when the engine is started, thereby interrupting the connection of the scavenging lines to the fuel tank.

4,227,502

FUEL INJECTION SYSTEM

Johannes Stelawart, Obersulm-Willsbach, and Armin Baüder, Neckarsulm, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union, Neckarsulm, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,490

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1978, 2758065

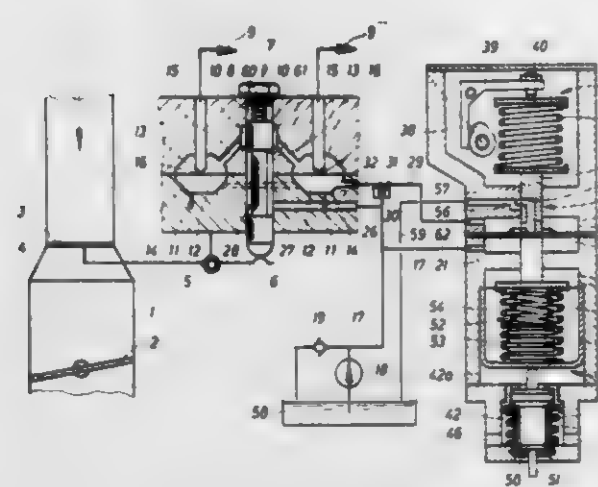
Int. Cl.³ F02D 3/02, 1/06

U.S. Cl. 123—454

8 Claims

1. A fuel injection system for a mixture compressing internal

combustion engine with spark ignition having a fuel injection nozzle for continuous fuel injection, an air intake duct, and an adjustable throttle valve in said intake duct, comprising: a flow sensing element in the intake duct arranged to move in accordance with the quantity of air flowing through said intake duct; a fuel metering valve, actuated by said flow sensing element, for dispensing a quantity of fuel which is substantially proportional or related to the quantity of air; means for maintaining a substantially constant pressure difference across the metering valve including a pressure sensitive valve having two chambers separated from each other by a movable partition element, and a differential pressure control valve which also has two chambers separated from each other by a movable partition element; the first chamber of said pressure sensitive valve being subject to the pressure downstream of said metering



valve, and comprising a valve aperture controlled by the associated partition element, said first chamber communicating with the fuel injection nozzle through the valve aperture; while the second chamber of said pressure sensitive valve communicates with the first chamber of said differential pressure control valve; a spring-loaded valve element which is controlled by the partition element of said differential pressure control valve; a return line, said first chamber of said differential pressure control valve communicating with said return line via said spring loaded valve element, while the second chamber of said differential pressure control valve is actuated by the pressure upstream of said metering valve, and the partition element of said differential pressure control valve is actuated on both sides by resilient elements, whose loading stress can be varied according to engine operating parameters.

4,227,503

FUEL SUPPLY SYSTEM

Wolf Wessel, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

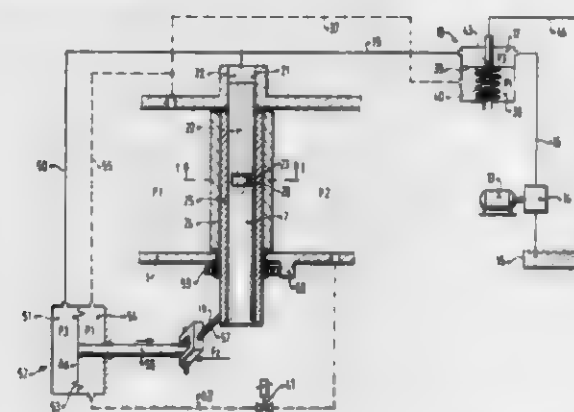
Filed Jun. 29, 1979, Ser. No. 53,564

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835710

Int. Cl.³ F02M 57/04

U.S. Cl. 123—454

6 Claims



1. A fuel supply system for mixture-compressing, externally ignited internal combustion engines having an air intake con-

duit, in which an air flow rate meter and an arbitrarily actuable throttle valve are disposed in sequence and the air flow rate meter is moved against a restoring force in accordance with the quantity of air passing therethrough to thereby adjust the movable part of a valve disposed in the fuel supply line for the apportionment of a quantity of fuel proportional to the quantity of air and in which said restoring force is generated by means of pressure fluid which being under substantially constant pressure continuously acts upon a control element operatively connected with the air flow rate meter to effect the restoring force with said pressure fluid being controllable by means of at least one pressure control valve, further wherein each said control element and said pressure control valve includes an air chamber separated from a fuel chamber by a yielding member with each said fuel chamber being subjected to the same fuel pressure upstream of said fuel apportionment valve and each said air chamber subjected to the same pressure in the air intake line upstream of the air flow rate meter.

4,227,504

LIMITATION APPARATUS FOR FULL-LOAD INJECTION QUANTITY IN A SUPERCHARGED INTERNAL COMBUSTION ENGINE WITH FUEL INJECTION

Ernst Ritter, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

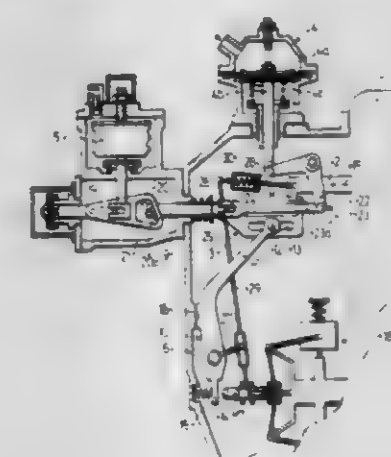
Filed Sep. 25, 1978, Ser. No. 945,277

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1977, 2747083

Int. Cl.³ F02D 1/06

U.S. Cl. 123—380

12 Claims



1. An apparatus for the limitation of the full-load injection quantity in a supercharged internal combustion engine with fuel injection including an injection pump having a supply quantity adjustment member, with two pneumatic control elements, one control element responds to the pressure differential between charge and atmospheric pressure to effect a charge-pressure-dependent limitation of the full-load injection quantity, and another control element embodied as a barometric cell is arranged to limit the full-load injection quantity in dependence on atmospheric pressure and both control elements act on said supply quantity adjustment member of said injection pump, and with a full-load stop which is disengageable for the attainment of an additional starting quantity which is greater than the full-load injection quantity, further wherein each of said control elements acts at least indirectly via deflecting elements on said full-load stop independently of one another and alternately relieving each other so that only one of said control elements determines the maximal full-load setting of said full-load stop for said supply quantity adjustment member of said injection pump and means disengaging said full-load stop when the engine rpm value.

4,227,505

VALVE SELECTOR CONTROL SYSTEM

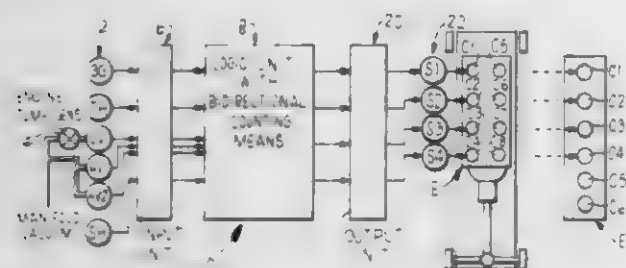
Gerald L. Larson, Battle Creek; E. James Lane, Highland, and Robert S. Mueller, Birmingham, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 27, 1977, Ser. No. 791,493

Int. Cl.³ F02D 13/06

U.S. Cl. 123—198 F

24 Claims



1. A system for optimizing the number of combustion chambers to be operating in an internal combustion engine having a number N of combustion chambers and air or air-fuel mixture valves and combustion product exhaust valves for controlling charge flow to and from each of said chambers, said system comprising:

means actuable for alternatively enabling and disabling at least one of the air or air-fuel mixture valve and combustion products exhaust valve of selected chambers of said engine while the engine is operating;

input means responsive to changes in specified engine operating load parameters for providing differing input signals;

logic means operatively connected to said valve enabling and disabling means for alternatively selecting between at least three different numbers N, N1 and N2 of chambers to be operating, where N is greater than N1 and N1 is greater than N2, said logic means being operatively responsive to certain changes in said input signals for stepwise increasing and decreasing said number of engine chambers having valves disabled, and thereby optimizing in response to changes in operating load condition the number of chambers through which charge flow is permitted.

4,227,506

INTERNAL COMBUSTION ENGINE

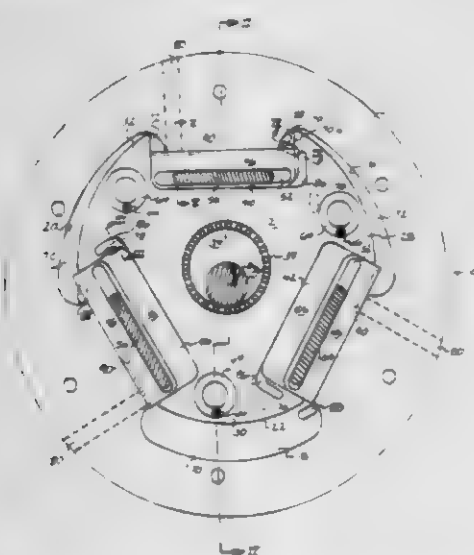
James R. Gurley, Rte. 5, Box 42, Rutherfordton, N.C. 28139

Filed Jan. 24, 1979, Ser. No. 5,964

Int. Cl.³ F02B 53/00

U.S. Cl. 123—227

6 Claims



1. An internal combustion engine comprising:
 - (a) a housing defining an internal compartment having at least one peripheral lobe;
 - (b) An inner body having at least one peripheral lobe thereon, means mounting said inner body in said compartment for non-rotational, orbital movement with said inner

body lobe disposed for movement within said housing lobe during at least a portion of orbital movement;

(c) a recess in the periphery of said inner body adjacent said inner body lobe, a movable wall member disposed in said recess, and means mounting said movable wall member for movement in said recess and for movement toward an end of said compartment lobe in response to orbital motion of said inner body;

(d) portions of said movable wall member, inner body, and housing sealingly engaging each other to define a variable-volume fluid intake and compression chamber in said compartment, and to define a variable-volume power chamber and a variable-volume fluid exhaust chamber in said compartment lobe during at least a portion of orbital movement of said inner body;

(e) intake port means and exhaust port means in said housing communicating with said compartment; and passageway means communicating

(1) said intake and compression chamber with said intake port means,

(2) said intake and compression chamber with said power chamber, and

(3) said exhaust chamber with said exhaust port means during at least some portions of orbital movement of said inner body; and

(f) a power output shaft, and means operatively connecting said inner body with said power output shaft to impart rotational movement thereto during orbital movement of said inner body.

4,227,507

AIR/FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE WITH AIRFLOW RATE SIGNAL COMPENSATION CIRCUIT

Sadao Takase, Yokohama; Masaharu Asano, and Nobuzi Manaka, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

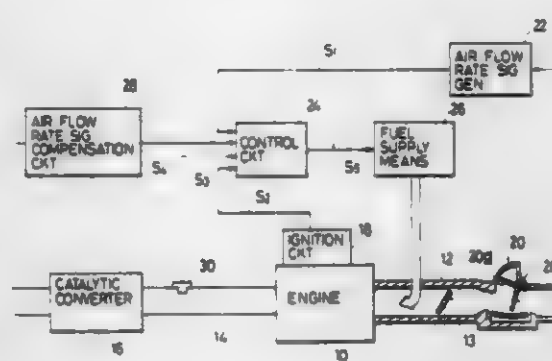
Filed Apr. 13, 1978, Ser. No. 896,136

Claims priority, application Japan, Apr. 15, 1977, 52/42500

Int. Cl.³ F02B 3/00

U.S. Cl. 123—492

10 Claims



1. An air/fuel ratio control system for an internal combustion engine including an air flow meter having a flap disposed in the intake passage of said engine, an air flow rate signal generator for producing a first signal indicative of the intake air flow rate in response to the movement of said flap, a control circuit for producing a second signal in response to the first signal and other engine parameters, and fuel supply means for supplying fuel into said intake passage of said engine, the fuel flow rate being controlled in accordance with said second signal, wherein the improvement comprises:

an air flow rate signal compensation means for producing a third signal with which one of said first and second signals is modified for electronically compensating for the overshoot characteristic of said flap in response to the variation of the intake air flow rate, said air flow rate signal compensation means including:

(a) an ON-OFF type switch for detecting whether the angu-

- lar displacement of the throttle valve of said engine is above a predetermined value or not;
- (b) a differentiation circuit for differentiating the output signal of said ON-OFF type switch; and
 - (c) means for applying a predetermined voltage to the output of said differentiation circuit for disabling said air flow rate signal compensation means.

4,227,508

TOY AUTOMATIC PISTOL FOR PING PONG BALLS

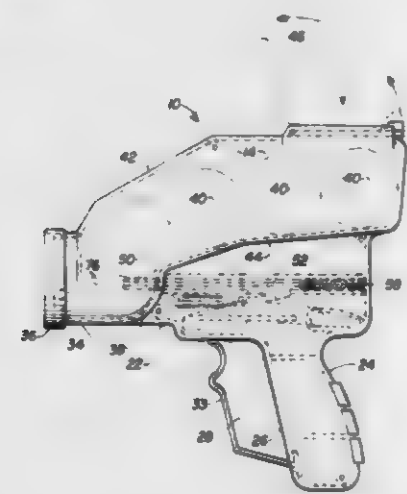
Bruce M. D'Andrade, Flemington, N.J., assignor to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Dec. 22, 1978, Ser. No. 972,247

Int. Cl.³ F41B 7/08

U.S. Cl. 124—16

3 Claims



1. A toy pistol for holding a supply of and automatically firing ping pong balls comprising in combination, an elongated frame having a simulated barrel at the forward end thereof and a hollow handle having a forward open edge and extending downward from the axis of said frame adjacent the rearward end thereof, a magazine for storage of ping pong balls in the upper portion of said frame sloping upward and rearward from said simulated barrel and discharging into said simulated barrel, guide means extending along the axis of said frame from the rearward end thereof, a firing ram slidable along said guide means for movement axially of said frame from a retracted position therein to a fired position in which the forward end of the ram forcefully strikes a ball in the simulated barrel to fire it therefrom, and a compression spring at the innermost end of said guide means in said frame adjacent said rear end thereof and engageable with said ram to fire it forwardly when said spring is released from a compressed condition; the improvement comprising a rigid T-shaped member comprising a combination trigger and sear having the head thereof extending beneath the guide means and generally parallel thereto for axial movement between fully forward and rearward positions and the stem of said T-shaped member comprising the trigger and extending along the forward edge of said handle and movable into and outward from said open forward edge of said handle, said ram having a holding detent extending downward and the opposite ends of the head of said T-shaped member having pins projecting laterally therefrom and said frame having a pair of longitudinally-spaced forward and rearward guide slots in which said pins on said head are slidably received for guiding movement of said head, said rearward slot having an upper edge sloping rearward and downward, a tension spring secured respectively at its opposite ends to said frame and the head of said T-shaped member, and a sear projecting from the upper portion of the head of said T-shaped member and engageable with said holding detent on said ram when said head is in its fully forward position, whereby when said trigger on said T-shaped member is moved manually toward and into said handle, said head moves rearward and said compression spring is compressed and the tension spring is tensioned and the rearward pin on said head is moved downward along said upper edge of said rearward slot while moving rearward therein to

compress said compression spring until near the end of said movement when the sear automatically disengages the holding detent to permit the compression spring to fire the ram against a ball in said simulated barrel and project it therefrom while said tension spring automatically restores said T-shaped member to the fully forward position thereof and in which the forward end of said ram is in its extended firing position in which it blocks movement of the next ball in the magazine from entering said barrel, said forward end of said rearward slot having vertical clearance to permit said pin in said slot to move downward incident to moving forward to restoring position and thereby allow the sear and holding projection to move past each other.

4,227,509

ARCHERY BOW HAVING CONTINUALLY DECREASING DRAW FORCE DURING DRAW

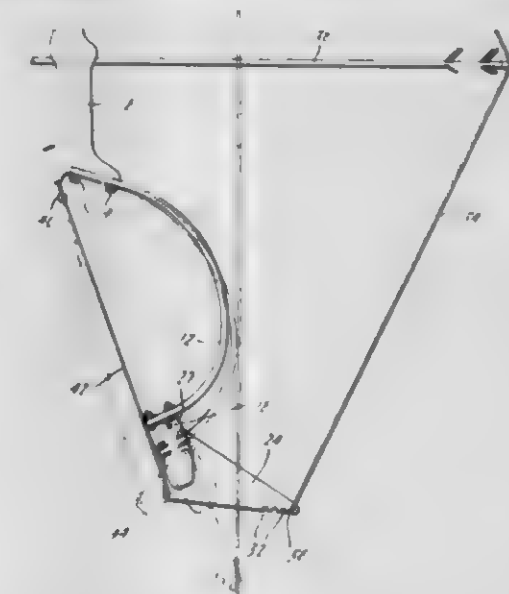
Glenn M. Jones, Roscommon County, Mich., assignor to GEC Associates, Inc., Troy, Mich.

Filed Mar. 13, 1978, Ser. No. 886,764

Int. Cl.³ F41B 5/00

U.S. Cl. 124—23 R

16 Claims



1. An archery bow comprising a handle section provided with a pair of resilient limbs extending outwardly from said handle in generally opposite directions, a bowstring having a nocking point, first means connecting said bowstring to the end portion of each of said limbs remote from said handle such that the bowstring is positioned along the length of one side of said handle and each of said limbs and said point is movable from an at rest position to a plurality of drawn, limb flexing positions upon application of drawing forces to said bowstring, each of said limbs being arcuate in shape along its length and having a convex profile along the surface of said one side that is nearest said bowstring and a concave profile along its surface that is most remote from said bowstring, said first means including pivot means coupling a portion of said first means and said limbs such that the magnitude of the drawing force necessary to hold said point in any drawn position decreases as the distance between said any drawn position and the at rest position increases.

4,227,510

CHARCOAL BRIQUET LIGHTER

Robert D. Frazier, Triple Acres Ct., Rte. 1, Wayneville, Mo. 65583, and Dale E. Duncan, Rte. 1, Box 262, Crocker, Mo. 65452

Filed May 30, 1978, Ser. No. 910,666

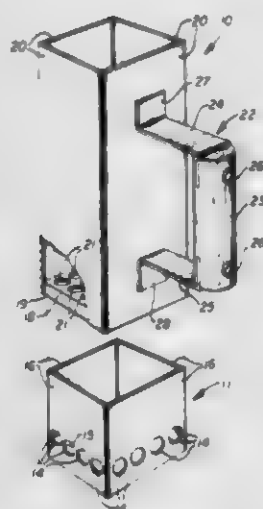
Int. Cl.³ F24B 3/00

U.S. Cl. 126—25 B

10 Claims

1. In a charcoal briquet lighter useful for quick efficient lighting of charcoal briquets in the lighter with the burning briquets then dumped in a broiler for use in broiling food: an

open topped upright container, of substantially uniform transverse plane cross-section from top to bottom, having an exterior handle and bottom retaining means with a plurality of openings generally materially smaller than charcoal briquet size; base container means of similar, but slightly smaller, cross-section in the form of a container for ignition starting material having a bottom plate, side breather opening means, and an open top; wherein said base container means is formed with an upper peripheral edge defining said open top; said upper peripheral edge is shaped to be a base support for said open topped upright container upon which said upright container is placeable and from which the upright container is removable; wherein said bottom retaining means is recessed



upward from a bottom peripheral edge of said open topped upright container; and with said bottom peripheral edge the terminating end of a relatively short skirt section of said open topped upright container below said bottom retaining means; wherein the relatively short skirt section of said open topped upright container fits over and surrounds the upper peripheral edge of the base container means with said upper peripheral edge in contact with the bottom side of said bottom retaining means when the open topped upright container is in place supported by said base container means; and wherein said bottom plate is recessed upward from a bottom peripheral edge of said base container means to give some protection to the surface supporting the base container means.

4,227,511

SOLAR COLLECTOR APPARATUS

Peter H. E. Margen, Rutger A. Rosen, and Heimo Zinko, all of Nyköping, Sweden, assignors to Aktiebolaget Atomenergi, Stockholm, Sweden

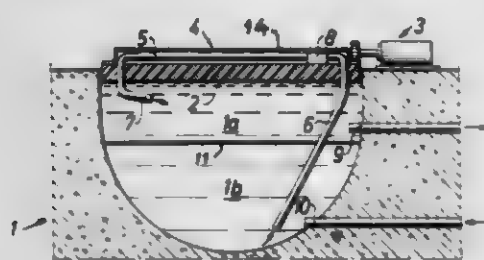
Filed Apr. 27, 1978, Ser. No. 900,799

Claims priority, application Sweden, May 6, 1977, 7705325

Int. Cl. F24J 3/02

U.S. Cl. 126-415

15 Claims



1. In a solar collector apparatus comprising a platen which is rotatable in a horizontal plane, a solar collector supported by the platen, means for rotating the platen in the horizontal plane such that the solar collector follows the sun, said solar collector comprising a plurality of a solar radiation concentrators, a heat absorber in the focus of each concentrator, and pump and

control means for circulating a liquid through the heat absorbers and a liquid magazine, the improvements wherein:

the concentrators are elongated and arranged in parallel with each other,

the heat absorbers include conduits located in the focal line areas of the concentrators, said conduits having an inlet tube connected to one end thereof, which inlet tube extends near the bottom of said magazine to draw liquid therefrom, and an outlet tube connected to the other end thereof which dispenses liquid near the top of said magazine to thereby establish a relatively warm layer of liquid which floats on a relatively cool layer of liquid in said magazine,

the liquid magazine includes a separation foil arranged between the relatively cool and relatively warm layers in said magazine to inhibit intermixing thereof and thereby create a stratification effect in said magazine,

the concentrators are located on the platen with their longitudinal axes aligned in the vertical plane of the solar direction, and the means for rotating the platen is adapted to maintain such alignment of the concentrators.

4,227,512

MEANS FOR PROTECTING SOLAR WATER HEATING EQUIPMENT AGAINST FROST DAMAGE

Harry J. Riley, Wembley, Australia, assignor to S. W. Hart & Co. Pty Ltd., Welshpool, Australia

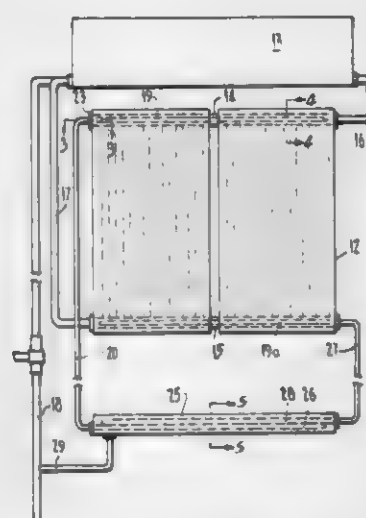
Filed Dec. 11, 1978, Ser. No. 968,145

Claims priority, application Australia, Dec. 15, 1977, PD2795

Int. Cl. F24J 3/02

U.S. Cl. 126-420

4 Claims



1. A solar water heater comprising a solar absorber header and being provided with means for protection against frost damage, wherein the means for protection against frost damage comprises

(a) a resilient collapsible tube within said solar absorber header, said resilient collapsible tube being closed at one end and open at the other end;

(b) a resilient vessel which is normally in a collapsed state, said resilient vessel being located externally of said header and being provided with an opening; and

(c) a rigid pipe connecting the open end of said resilient collapsible tube with the opening of said resilient vessel, whereby, in use, a quantity of liquid is contained in said resilient tube and said resilient vessel is normally in a collapsed state but, if water in said header drops to a temperature at which it is subject to expansion, liquid is reversibly expelled from said resilient tube and passed through said rigid tube into said resilient vessel until the temperature of the water in said header rises.

4,227,513

SOLAR SYSTEM HAVING IMPROVED HELIOSTAT AND SENSOR MOUNTINGS

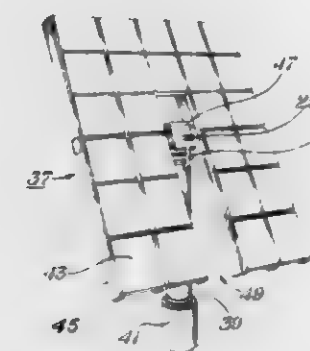
Floyd A. Blake, Littleton, Colo., and Lynn L. Northrup, Jr., Dallas, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 23, 1978, Ser. No. 953,469

Int. Cl. F24J 3/02

U.S. Cl. 126-425

5 Claims



1. In a solar system on the surface of the earth and exposed to the sun and having:

a. at least one energy receiving collector for receiving and using radiant energy from the sun; and

b. at least one reflector means for reflecting said radiant energy from the sun onto said collector;

the improvement comprising:

c. having said reflector means in the form of a heliostat that can be moved to maximize its reflected radiant energy onto said collector and configured so as to avoid interference with a co-mounted sensor;

d. means for moving said heliostat to maximize said radiant energy reflected on the said collector and through arcs that will not interfere with a co-mounted sensor;

e. dual purpose support structure carrying said heliostat and a sensor; said support structure being anchored firmly in the surface; and

f. a sensor controllably connected with said means for moving said heliostat for maintaining the maximum radiant energy reflected onto said collector; said sensor being mounted on said support structure and aligned with a straight line from said heliostat to said collector such that said sensor does not require an expensive, firmly anchored separate support structure to prevent receiving small surface movements different from those received by said heliostat;

said heliostat having a central reflector; said heliostat adapted to be pivotably rotatable about a horizontal axis and a vertical axis through said central reflector such that the central perpendicular axis of said central reflector bisects and lies in the plane of the angle between the lines to, respectively, the sun and the collector so as to correct for both time, and seasonal diurnal movements of the sun and maximize the solar energy reflected onto said collector; said sensor being cantilevered from said support structure below said central reflector and aligned between the center of said central reflector and said collector; said heliostat having a slot below said central reflector so as to be pivoted without hitting said support structure and said sensor and cantilever mounting; said means for moving said heliostat including an elevational drive means for pivoting said heliostat to a desired angle about said horizontal axis; and said means for moving said heliostat including a rotation means for rotating said heliostat through a limited arc about said vertical axis.

4,227,514

SOLAR ENERGY COLLECTORS

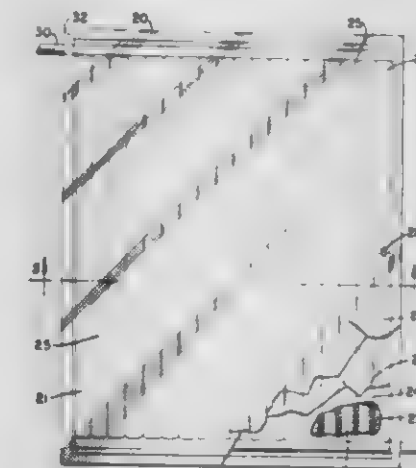
Hermann J. Spitzer, 8004 Arcade St., Lorton, Va. 22079
Division of Ser. No. 732,696, Oct. 14, 1976, Pat. No. 4,158,355.

This application Nov. 7, 1978, Ser. No. 958,475

Int. Cl. F24J 3/02

U.S. Cl. 126-426

1 Claim



1. A solar energy collector for radiant energy exposure of a selected fluid medium, having a high radiation absorption coefficient, in a low pressure, moving fluid, energy transfer system comprising:

an opaque back member of substantially planar and substantially rectangular configuration and a substantially transparent front member of substantially planar and substantially rectangular configuration in spaced relation with two parallel elongated side sections defining a hollow chamber with first and second open ends and having a substantially uniform front to back depth, said hollow chamber including a plurality of elongated divider means each extending from said first open end to said second open end and defining a plurality of channels within said hollow chamber;

first and second manifold means coupled to said first and second open ends, respectively, of said hollow chamber and defining a substantially rectangular fluid container adapted to contain said fluid medium, said manifold means including fluid input means associated with said first manifold means and disposed in the vicinity of a first corner of said substantially rectangular fluid container, and fluid output means associated with said second manifold means and disposed in the vicinity of a second corner diagonally opposite said first corner, said fluid input means and said fluid output means connected to said first and second manifold means, respectively, such that fluid entering and exiting respective manifolds thereby moves in a direction orthogonal to the direction of movement of fluid in said plurality of channels defined by said elongated dividers; said fluid input means and said fluid output means connected to said energy transfer system such that said substantially rectangular fluid container is an integral element of said system with said fluid medium of said system moving therethrough, said substantially rectangular fluid container being the radiant energy exposure element of said system and disposed with said transparent front member oriented to receive radiant energy from the solar energy source, said fluid container adapted for full fluid operation and said front to back depth thereof being inversely proportional, for any given radiant energy intensity, to the radiation absorption coefficient of said fluid medium; said fluid medium in said container being contained within a flexible transparent polymer bag structure disposed between said front member and said back member thereof.

4,227,515

DUAL PHASE SOLAR WATER HEATER

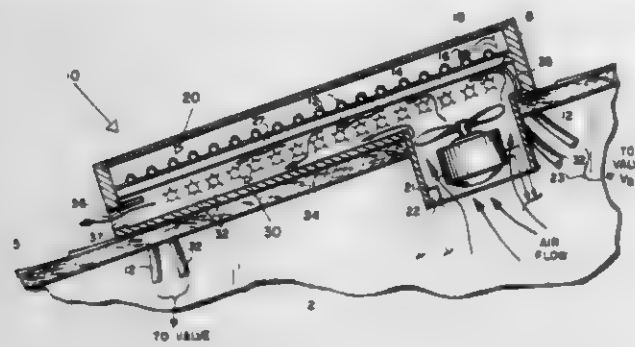
Robert I. Jacob, 614 N. Palmetto Ct., and Paul E. Jacob, Rte. 2, Box 658-D, both of DeLand, Fla. 32720

Filed Apr. 18, 1979, Ser. No. 31,059

Int. Cl.³ F24D 5/04; F24J 3/02

U.S. Cl. 126—427

20 Claims



1. A dual-phase solar energy apparatus for mounting on a roof of a building having an attic-type space or the like comprising:

solar radiation absorption means for intercepting and absorbing solar radiation, said means having a first fluid-carrying grid for transferring absorbed energy to a fluid flowing therethrough;

heat exchange means communicating with an attic-type space for receiving a flow of heated air therefrom, said latter means having a second fluid-carrying grid for transferring energy from the heated air to a fluid flowing therethrough; and

control means for controlling the flow of an input fluid through said first grid of said solar radiation absorption means and through said second grid of said heat exchange means in accordance with the temperature of the input fluid relative to the temperature of said first fluid-carrying grid and to the temperature of the heated air.

4,227,516

APPARATUS FOR ELECTROPHYSIOLOGICAL STIMULATION

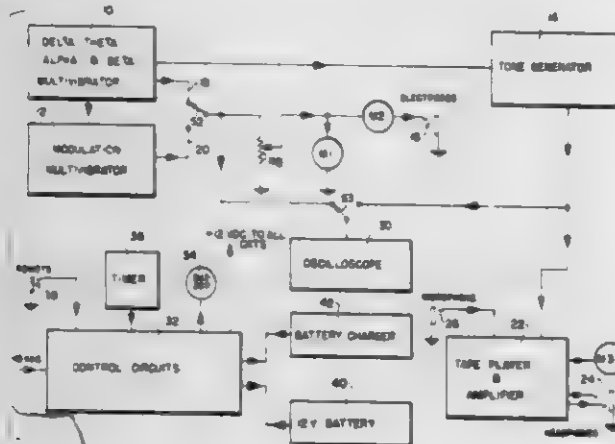
Bruce C. Meland, 4525 Matilija Ave., Sherman Oaks, Calif. 91423; Bernard C. Gindes, deceased, late of Los Angeles, Calif., and by Hanna Gindes, executrix, 616 Hanley Ave., Los Angeles, Calif. 91423

Filed Dec. 13, 1978, Ser. No. 969,104

Int. Cl.³ A61M 21/00

U.S. Cl. 128—1 C

15 Claims



1. A system for producing electrophysiological stimulations in a patient so as to stimulate the effects of brain wave activity in at least one of the delta, theta, alpha and beta frequency ranges, said system including: first means for generating a first wave in a predetermined frequency range extending above the delta, theta, alpha and beta frequency ranges; second means for generating a second wave in at least one of said delta, theta, alpha and beta frequency ranges and connected to said first means to cause the first wave to be modulated by the second

wave to cause the first means to produce bursts of the first wave occurring at the frequency of the second wave; and means connected to the first means for introducing the bursts of the first wave from the first means to electrode means mounted on the forehead of the patient for the electrophysiological stimulation of the patient.

4,227,517

CAST CUTTING SYSTEM

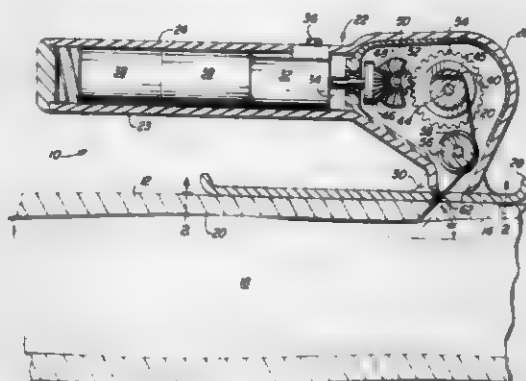
Robert H. Aguilar, 4510 Elderberry Dr., Orlando, Fla. 32809

Filed Jan. 29, 1979, Ser. No. 7,436

Int. Cl.³ A61F 5/04

U.S. Cl. 128—91 A

12 Claims



1. A system for removing a casted wall from a human appendage, comprising:

a strand including an outer, non-metallic and non-toxic material embedded laterally through said wall at an inner surface thereof which is adjacent the human appendage; means for severing said wall by drawing said strand into a cutting angle adjacent said inner surface and then through said wall, said severing means including a guide exterior of said wall and having a guide surface about which said strand is drawn, said guide surface being disposed substantially away from said cutting angle along the direction of travel of said severing means, whereby said strand is drawn through said wall at a substantially acute angle of less than 60 degrees said severing means comprising:

(a) a low-friction skid having a flat surface with a slot therein with said strand drawn through said slot, said flat surface of said skid for contacting the outer surface of said wall and maintaining said angular relationship with said strand during movement of said skid along said direction of travel, and whereby extraneous material may be removed from said strand during passage through said slot, with said skid positioned between said guide and said outer surface;

(b) a roller engaging said strand with means for rotating said roller for drawing said strand through said wall; and

(c) a motor having a drive shaft, and a gear drive coupled between said drive shaft and said roller.

4,227,518

INTRAMEDULLARY RETRACTION NAIL FOR FIXATION OF COMMINUTED FRACTURED BONES

Jacob Aginsky, 18 Rachel St., Haifa, Israel

Filed Jan. 23, 1979, Ser. No. 5,890

Claims priority, application Israel, Feb. 12, 1978, 54022

Int. Cl.³ A61B 17/18; A61F 5/04

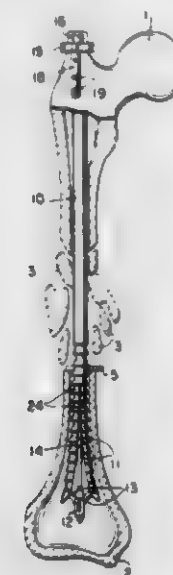
U.S. Cl. 128—92 BC

10 Claims

1. An intramedullary retraction nail comprising
An outer sheath the leading or front end of which is shaped to form an expansion element of a kind known to the art adapted to be biased against the cavity walls of a fractured tubular bone by expanding means likewise known to the art positioned and movable inside the sheath and adapted to be operated from the protruding trailing or rear end of said sheath, the front portion of said sheath, including the

expansion element, being provided with circumferential serrations in saw-shape, each serration decreasing in diameter from its front end to its rear end, the rear portion of said sheath being provided with outer screw thread interrupted by at least one flat, longitudinally extending surface,

an annular retractor body axially movable on the rear sheath portion consisting of a centrally perforated disc and an internally threaded nut attached to the rear of said disc, said disc and said nut being interconnected in a manner permitting their relative rotation about their common axis, but not their relative axial movement, the disc being pre-



vented from rotating about the threaded sheath portion by being provided with a central perforation corresponding to the shape of the flattened profile of the sheath rear portion,

at least one perforated connector strip adapted to be attached to the bone side by means of screws or nails and provided with hook means adapted to hingedly engage with corresponding recesses in the disc of said retractor body, a U-shaped flat retaining piece comprising two legs spaced at a distance smaller than the largest diameter of each serration on said sheath, but larger than the smallest diameter of each serration.

4,227,519

RESPIRATOR FOR EMERGENCY AIR SUPPLY TO A PATIENT

Detlef Warnow, Gross Grönau, and Hans-Jörg Ziebrecht, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

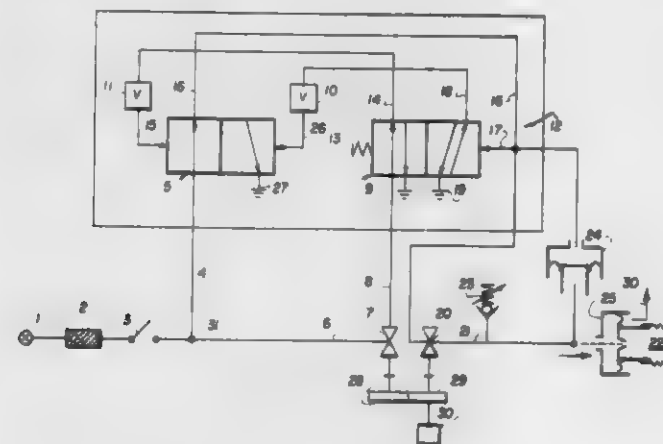
Filed Aug. 4, 1978, Ser. No. 931,125

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735555

Int. Cl.² A62B 7/00

U.S. Cl. 128—205.24

4 Claims



1. A respiratory gas supply system for a patient, comprising,

a respiratory gas supply, first and second control valves, a first pressure line connected to said second control valve for influencing the regulation of the control position of said second control valve, a second pressure line connected from said first control valve to said second control valve for influencing the regulating position of said second control valve, a respiratory gas supply line having a first portion connected to said second control valve and a second portion connected from said first portion to said first control valve, a first regulating valve in said second portion, a respiratory discharge line connected from said second control valve to the patient, a second regulating valve in said respiratory discharge line, a first gas volume container of a predetermined volume in said first pressure line, a second gas volume container of a predetermined volume in said second pressure line, adjustable coupling means coupling said first regulating valve and said second regulating valve, spring means acting on said first control valve to influence the regulating position of said first control valve, a pressure control counteracting said spring means connected from said respiratory discharge line to said first control valve for also influencing the regulation of said first control valve, whereby, during an exhalation time T_1 , said second control valve being controlled by said first pressure line to produce a continuous pressure rise from the resistance of said first regulating valve in said first volume up to a switching pressure of said second control valve to effect the subsequent movement of said second control valve to connect said respiratory air discharge line to said first portion of said respiratory gas supply line, said respiratory gas discharge line providing pressure to actuate said first control valve to connect said second portion to said second pressure line so that respiratory gas flows through said respiratory discharge line to the patient for inhalation, and when inhalation ends, thereby permitting the patient to exhale so that said first control valve is connected to said second pressure line and said second control valve is shifted to interrupt the connection of said supply line first portion to said discharge line to end inhalation, the beginning of exhalation being initiated by the resistance of said first regulating valve and the amount of said first volume, said spring means acting on said first control valve to provide a pressure to activate said second control valve.

4,227,520

SAFETY HELMET FOR MINERS

Ronald D. Lord, Toronto, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

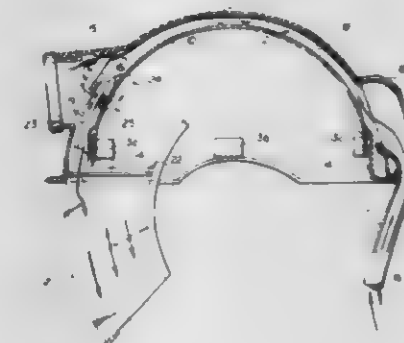
Filed Jan. 8, 1979, Ser. No. 1,423

Claims priority, application Canada, Feb. 10, 1978, 296,945

Int. Cl.³ A62B 18/04

U.S. Cl. 128—201.24

2 Claims



1. A miner's safety helmet comprising:

(a) inner and outer shells made of tough, hard impact resistant material having a generally hemispheric shape to conform to upper part of the wearer's head, the shells being spaced apart, closed around the rims thereof to form an enclosed space therebetween, and shaped around the

- rims such that when positioned on the wearer's head, the wearer's ears are left uncovered.
- (b) a slot like opening at the front part of the rim of the helmet into the enclosed space,
- (c) a visor of transparent plastic material retractably and telescopically mounted in the slot and having a doubly curved shape to conform with the shape of the enclosed space such that when the visor is in a fully retracted position it lies almost completely in the enclosed space and when in fully extended position it extends over the face of the wearer,
- (d) a source of clean filtered air,
- (e) an air supply connection at the rear of the helmet connected to said source of clean filtered air, said air supply connection connected to the enclosed space between inner and outer shells,
- (f) switch means mounted in the helmet in the enclosed space and operatively disposed in relation to the visor configuration, and
- (g) means connected between the switch means and the air source, such that when the visor is in an extended position the switch is operative to turn on the air source to provide a flow of air down over the wearer's face inside the visor and when the visor is in partially or fully retracted position the switch is operative to turn off the air supply.

4,227,521

AIR SYSTEM FOR SCUBA DIVING

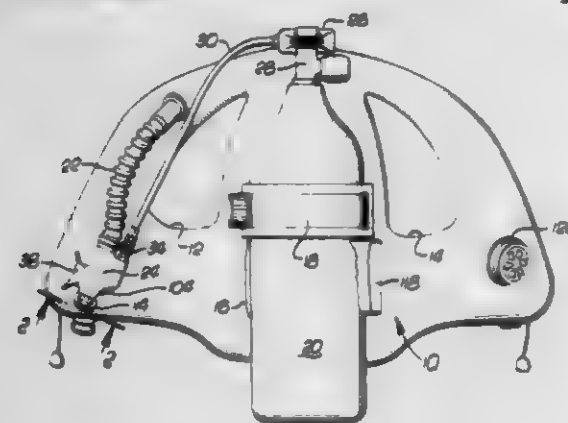
Dennis Hart, Hacienda Heights, and Masaru Shirosaki, Buena Park, both of Calif., assignors to Under Sea Industries, Inc., Compton, Calif.

Filed Dec. 13, 1978, Ser. No. 968,746

Int. Cl.³ B63C 11/22

U.S. Cl. 128—202,14

9 Claims



1. In a breathing system for scuba diving:
- (a) a buoyancy bag in the form of an inflatable jacket or the like;
- (b) a hose connected at one end to the bag for inflation and deflation thereof;
- (c) a high pressure line for conducting breathable air from a supply tank;
- (d) a regulator body providing an inlet chamber connected to said high pressure line, a breathing chamber, and a buoyancy conduit connected to the other end of said hose said breathing chamber being defined in part by a movable wall closing an opening of the body;
- (e) a mouthpiece uninterruptedly connected to said breathing chamber;
- (f) conduit means in said regulator body connecting said inlet chamber to said breathing chamber to supply air to said breathing chamber;
- (g) demand valve means including a link connected to said movable wall and a movable valve part in said conduit means connected to said link and operative to open and close said conduit means in accordance with the position of said movable wall in order to supply breathable gas in accordance with the demands of the diver;
- (h) first valve means selectively connecting said inlet chamber to said buoyancy conduit, and including a first manual

- actuator mounted on said regulator body and spring means biasing said first valve means to close;
- (i) second valve means selectively movable to an open position for providing an unrestricted bi-directional flow connection between said mouthpiece and said buoyancy conduit via said breathing chamber, and including a second manual actuator mounted on said regulator body, and spring means biasing said second valve means to close;
- (j) an exhaust valve connecting said breathing chamber to atmosphere; and
- (k) means closing said exhaust valve while said second valve means is open to provide a direct breathing path between said buoyancy conduit and said mouthpiece.

4,227,522

INHALATION DEVICE

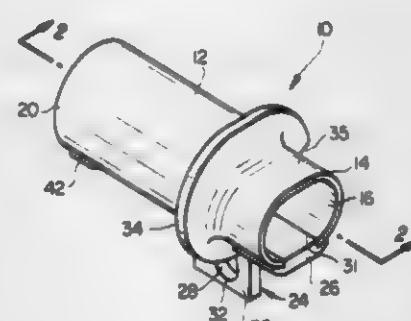
Milton C. Carris, Cupertino, Calif., assignor to Syntex Puerto Rico, Inc., Humacao, P.R.

Filed Sep. 5, 1978, Ser. No. 939,615

Int. Cl.³ A61M 15/00

U.S. Cl. 128—203,15

10 Claims



1. A two-part breath-actuated inhalation device for dispensing a powdered medicament from a powdered medicament-holding container,

the first part of said device comprising an elongate housing having a passageway for the movement of air there-through, one end of said housing being an output end adapted for insertion into the mouth or nasal passage of a user thereof, the passageway having an inlet end terminating in an emptying chamber at said output end of said housing, the cross-sectional area of the passageway being less than the cross-sectional area of the emptying chamber, and means for receiving the second part of said device, said receiving means being an elongate slot extending along the bottom portion of said housing, the slot being defined by two sides of said housing parallel to the longitudinal axis thereof;

said second part of said device comprising means to receive the medicament-holding container, said medicament-holding container receiving means adapted to be slidably received by said slot so that when a medicament-holding container having only one open end is placed into said medicament-holding container receiving means in said second part and said two parts are moved longitudinally relative to each other, the open end of the medicament-holding container will be positioned adjacent the inner end of the emptying chamber, whereby during inhalation, a component of air flowing through the passageway flows into the medicament-holding container to dispense the medicament therefrom.

4,227,523

RESPIRATOR CONSTRUCTION

Detlef Warnow, Gross Grönu, and Hans-Jörg Ziebrecht, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

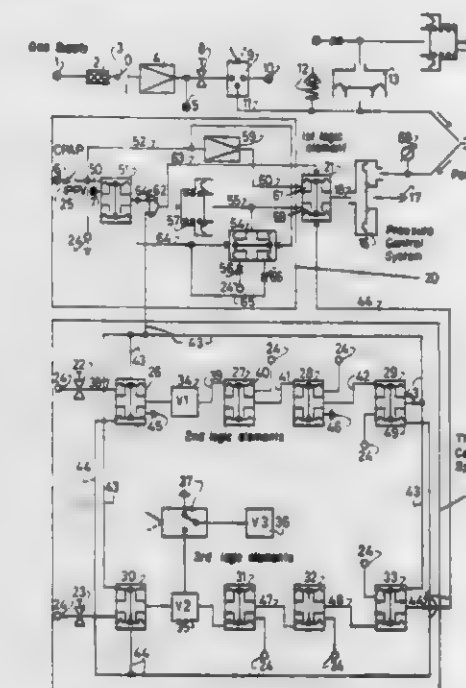
Filed Jan. 8, 1979, Ser. No. 1,409

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801546

Int. Cl.³ A61M 16/00

U.S. Cl. 128—204,24

8 Claims



1. A respirator, particularly for infants, for supplying respiratory gas to a patient selectively according to IPPV, PEEP, CPAP and IMV cycles, comprising:

- (a) a respiration gas supply line connectable to a patient for supplying a respiratory gas;
- (b) an expiration valve for switching from an inspiration phase to an expiration phase and back connected to said respiration gas supply line;
- (c) a first logic element connected to said expiration valve for switching said expiration valve from an inspiration phase to an expiration phase and back;
- (d) pressure control means connected to said first logic element for supplying gas at selected pressures to said first logic element for controlling said inspiration and expiration phases of said expiration valve for IPPV, CPAP and PEEP cycling;
- (e) time control means connected to said first logic element and said pressure control means for providing a selected time duration for said inspiration phase and a selected time duration for said expiration phase; and
- (f) a static control pressure line associated with said pressure and time control means; said time control means comprising a first regulating element connected to said static control pressure line, second logic element means connected to said first regulating element, said first regulating element and said second logic element means provided for controlling said selected time duration for said inspiration phase, a first volume in said second logic element means fillable by gas pressure from said static control pressure line to define said selected time duration for said inspiration phase, a second regulating element connected to said static control pressure line, third logic element means connected to said second regulating element, said second regulating element and third logic element means controlling said selected time duration for said expiration phase, a second volume in said third logic element means fillable by gas pressure from said static control pressure line for defining said selected time duration of said expiration phase, a third volume connected to said second volume means, and a reversing switch connected between said second and third volumes, said third volume being fillable by gas from said second volume via said reversing switch

to selectively add an additional time duration to said expiration phase whereby the respirator functions according to IMV cycles.

4,227,524

HYPERBARIC TRANSFER SYSTEM

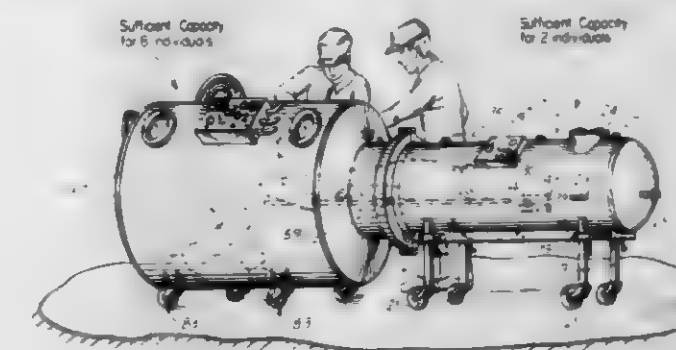
Andre Galerie, 4 Cedar Island, Larchmont, N.Y. 10538

Filed Apr. 3, 1978, Ser. No. 892,867

Int. Cl.³ B63C 11/32

U.S. Cl. 128—205,26

22 Claims



1. A hyperbaric system for transporting individuals comprising:

- a first manually transportable hyperbaric chamber having an elliptical access opening and an elliptical access hatch to cover said opening, said elliptical access hatch being provided with means for selectively opening and closing the access hatch from both within and outside of said first hyperbaric chamber, said first chamber including a life-supporting system within said first chamber for a plurality of individuals;
- a second transportable hyperbaric chamber weighing less than about 2600 pounds having an access aperture and an access door to cover said aperture, said second chamber including life-supporting means within said second chamber for at least three individuals; and
- means for coupling said access opening and said access aperture in a fluid tight relationship to permit movement of the individuals in said first chamber through said opening and said aperture into said second chamber when said access hatch and said access door are opened.

4,227,525

INTRAVENOUS ADMINISTRATION SET

Ingemar H. Lundquist, Oakland, Calif., assignor to Valleylab, Boulder, Colo.

Filed Mar. 30, 1978, Ser. No. 891,595

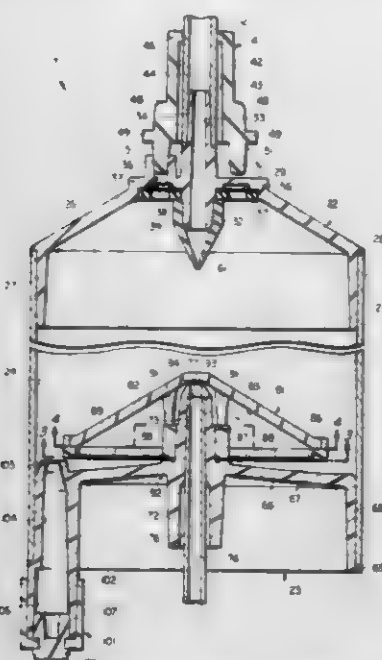
Int. Cl.³ A61M 5/00

U.S. Cl. 128—214 R

20 Claims

1. In an administration set for use with a source of liquid to be administered intravenously, a length of flexible tubing, means carried by one end of the tube adapted to be connected to the source of fluid, means forming a vertically disposed container having a drip chamber therein, means connecting the other end of the flexible tubing to the chamber so that liquid flowing through the flexible tubing will flow into the chamber, a filter assembly carried by the container and having a dome shaped member having inclined wall portions impervious to liquid and defining a dome-shaped recess having a larger open end which is oriented to face downwardly, projecting means extending into the dome-shaped recess in the filter assembly and having an outlet flow passage in communication with the dome-shaped recess in the filter assembly, the filter assembly having an inlet opening into the dome-shaped recess and including a hydrophilic filter covering the inlet and providing the only flow passage means so that any air and liquid passing into the dome-shaped recess must pass through the hydrophilic filter and means in communication with the outlet passage adapted to be coupled to the patient, the filter assembly being

formed so that as liquid is introduced into the chamber, the hydrophilic filter will be progressively wetted to cause liquid to be introduced into the dome-shaped recess in the filter



assembly and to cause substantially all of the air in the dome-shaped recess to be carried out of the dome-shaped recess by the passage of liquid from the dome-shaped recess into the outlet passage.

4,227,526

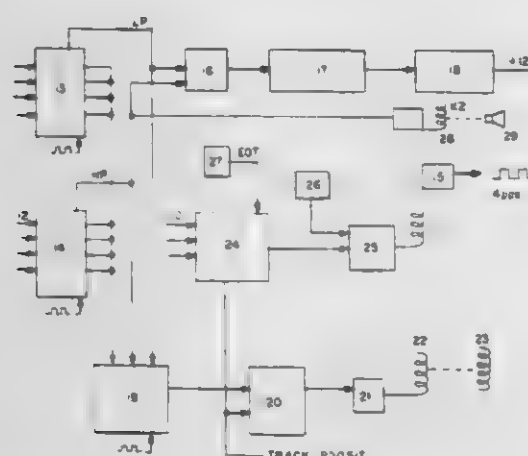
MECHANISM FOR AURALLY INSTRUCTING A PATIENT AND METHOD

Jack Goss, Pinellas Park, Fla., assignor to Extracorporeal Medical Systems, Inc., Pinellas Park, Fla.

Filed Apr. 13, 1978, Ser. No. 895,916
Int. Cl.³ A61M 5/00

U.S. Cl. 128-214 E

2 Claims



1. Mechanism for aurally instructing a patient as to a malfunction of a kidney dialysis machine connected to the patient's circulatory system, comprising: a kidney dialysis machine adapted to be connected to the patient's circulatory system, a plurality of sensor means operably associated with said machine and arranged to report malfunctions of a specific nature, said malfunctions being grouped into high priority items relating to the patient's blood and low priority items relating to the dialysate, selector means coupled to said sensor means to prioritize simultaneous reports from said sensor means and deliver an appropriate signal to audio means, and an audio means including a plurality of taped messages and speaker means selectively responsive to said signal from said selector means, said audio means also including a tape playback head capable of generating a signal reflecting tape playback head positioning, said selector means including a comparator for receiving a malfunction signal and a signal reflecting tape playback head positioning, comparing the same and delivering a signal to activate said playback head until a predetermined position is

achieved whereby an unattended patient undergoing dialysis is given instructions for correcting said malfunctions.

4,227,527

STERILE AIR VENT

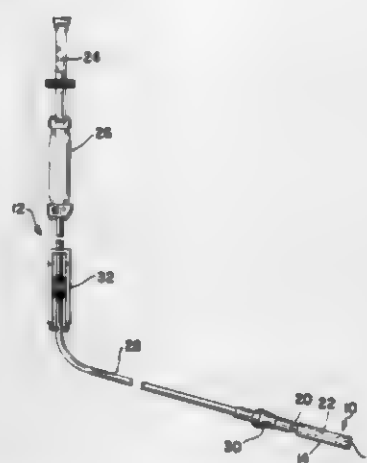
Michael P. De Frank, Woodstock, and James W. Scott, Lindenhurst, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 23, 1978, Ser. No. 953,576

Int. Cl.³ A61M 5/00; B01D 39/06

U.S. Cl. 128-214 R

4 Claims



1. A sterility preserving tip protector for overfitting one end of a medical fluid administration set and the like comprising: an elongated resilient plastic tube;

a unitary microporous sintered plastic filter element in the shape of a plug received within one end of said tube, the other end of said tube being open for fitting over one end of the administration set, said filter element having a pore size of between 10 and 20 microns inclusive, and a length of between 0.25 and 0.5 inches inclusive, to preserve sterility of the set and to readily pass gas therethrough.

4,227,528

AUTOMATIC DISPOSABLE HYPODERMIC SYRINGE

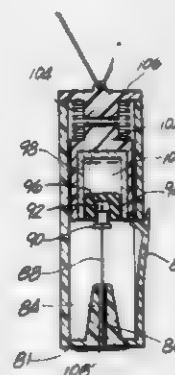
Stephen C. Wardlaw, 128 Sunset Hill Dr., Branford, Conn. 06405

Continuation-in-part of Ser. No. 955,773, Oct. 30, 1978, abandoned. This application Dec. 26, 1978, Ser. No. 972,756

Int. Cl.³ A61M 5/00

U.S. Cl. 128-218 A

4 Claims



1. An automatic disposable hypodermic syringe capable of storing a medicament for an extended period of time, said syringe comprising:

- (a) a compact housing comprising a tubular part, a cap closing one end of said tubular part, and a base closing the other end of said tubular part;
- (b) means securing said tubular part to said cap and said base to prevent ready disassembly of said housing;
- (c) an ampoule disposed in said tubular part for movement between a first position and a second position, said am-

poule having a closed basal end and an opposite open end, said ampoule containing a dose of a medicament;

- (d) an imperforate elastomeric piston disposed in and sealing said open end of said ampoule;
- (e) spring means within said housing for biasing said ampoule from said first position to said second position;
- (f) catch means within said housing for retaining said ampoule in said first position against the bias of said spring means, said catch means being formed as an integral part of said tubular member and being partially surrounded by a thin-walled web of material which can be ruptured by applying pressure to said catch means;
- (g) actuating means formed as a manually graspable portion of said tubular member integral with said catch means, said actuating means being manually operable from the exterior of said housing for neutralizing said catch means whereby said ampoule can be released and driven by said spring means to said second position;
- (h) a hypodermic needle within said housing, said needle being movable between a retracted position wherein said needle is completely contained within the confines of said housing, and an injecting position wherein said needle protrudes through an opening in said base;
- (i) a ferrule secured to said needle and telescopically connected to said piston, said ferrule being movable with respect to said piston between a first frictionally retained position wherein said needle is held out of contact with said piston and completely isolated from said medicament, and a second abutting position wherein said needle extends through said piston and into said medicament; said ferrule being in said first position when said needle is in said retracted position;
- (j) means on said base for engaging said ferrule after said needle has been driven to said injecting position, said means being operable to hold said needle in said injecting position and cause said ferrule to move to said second abutting position; and
- (k) sealing means for closing all joints and openings in said housing to retain a sterile condition within said housing.

4,227,529

TRACHEAL SUCTION CATHETER

Vagn N. F. Lomholt, Gentofte, Denmark, assignor to Molnlycke Steritex A/S, Esbjerg, Denmark

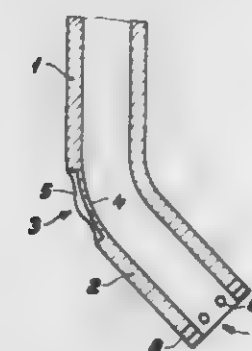
Filed Jan. 18, 1979, Ser. No. 4,354

Claims priority, application Denmark, Jan. 23, 1978, 325/78

Int. Cl.³ A61M 25/00, 1/00

U.S. Cl. 128-276

1 Claim



1. In a tracheal suction catheter of the type comprising a flexible, externally smooth tube whose outermost free end is open and is provided with a plurality of small apertures in the tube wall immediately adjacent the free, open end of the tube, the outermost portion of said tube being further formed with a side bend, there being a further aperture in said tube wall immediately adjacent the knee formed by said side bend, the provision of a depression in the outer surface of the wall portion surrounding said further aperture, the size of the further aperture and the size and number of said small apertures being

related such as to obtain a substantially equal degree of suction force at the tube end and at the knee.

4,227,530

METHOD OF EMPLOYING RECLOSABLE FASTENER TAPE SYSTEM

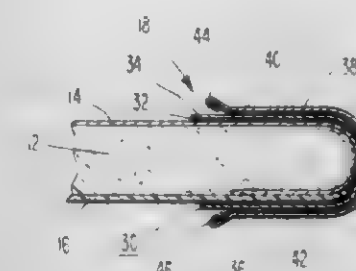
Clarence H. Schatz, West Chester, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 724,983, Sep. 20, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,755

Int. Cl.³ A61F 13/16

U.S. Cl. 128-287

4 Claims



1. A method of manipulating a disposable diaper, said diaper having front and back surfaces adapted to face toward and away from a wearer, respectively, when said diaper is placed on the wearer, said diaper including an adhesive tape fastener folded about a side edge of one segment of the diaper to provide a first tape section overlying the front surface of said one diaper segment and a second tape section overlying the back surface of said one diaper segment, said first tape section including an inwardly facing adhesive layer adhered to the front surface of said one diaper segment through an outwardly facing release surface and said second tape section being attached to the back surface of said one diaper segment through the cooperation of a release surface and an adhesive layer, said method including the steps of:

- a. placing the diaper about the torso of a wearer with the front surface facing the wearer and end regions encircling the waist region of said wearer to bring a second segment of the diaper adjacent said one segment;
- b. separating the first tape section from its release surface on the one diaper segment to expose the adhesive layer thereon and adhering the first tape section, through its exposed adhesive layer, to the back surface of the second diaper segment for initially retaining the diaper about the torso of the wearer, and, when the diaper is to be opened;
- c. separating the second tape section from the back of the one diaper segment at an interface between the release surface and the adhesive layer that cooperate to attach the second tape section to the back surface of said one diaper segment.

4,227,531

PANTY LINER CONSTRUCTION

Syble A. McLeod, Box 64, Iron City, Ga. 31759

Filed Jun. 12, 1978, Ser. No. 914,593

Int. Cl.³ A61F 13/16; A41B 9/04

U.S. Cl. 128-288

5 Claims

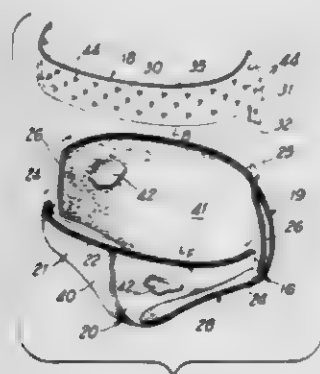
1. A panty construction having a waist opening at its top and a pair of leg openings at its bottom comprising:

a non-stretchable panel assembly including a front section, a back section and a crotch section joining the front and back sections; said panel assembly formed into a panty shape and defining a pair of leg cutouts therein forming a portion of the leg openings in the panty construction, said front section defining opposed front side edges and a front upper edge thereon, said front side edges extending upwardly from the top of the leg openings toward the waist opening and said front upper edge extending between said front side edges, said front upper edge spaced below and

generally parallel to the waist opening, said back section defining opposed rear side edges thereon extending upwardly from the top of the leg openings toward the waist opening, said rear side edges spaced from said front side edges at the top of the leg openings; said panel assembly including:

an exterior fabric layer;
an interior liquid absorbent layer; and
an intermediate liquid impermeable layer between and separating said exterior fabric layer from said interior absorbent layer to prevent liquids absorbed by said interior absorbent layer from penetrating said exterior fabric layer; and

a stretchable panel connecting the front and back sections of said non-stretchable panel assembly to complete the panty shape, said stretchable panel including a central section connected to said front upper edge of said front section and extending to said waist opening and a pair of side



sections integral with opposite ends of said central section, each of said side sections extending between said front and rear side edges on said front and rear sections of said non-stretchable panel assembly from the top of the leg opening to the waist opening, each of said side sections connected to said front and rear side edges on said front and rear sections of said non-stretchable panel assembly so that said side sections of said stretchable panel permits relative movement between said front and back side edges of said front and back sections of said non-stretchable panel assembly over the leg openings to allow the panty construction to conform to different wearer body configurations in the same size range and said central section permits relative movement of said front upper edge on said front section of said non-stretchable panel assembly with respect to the waist opening to permit the panty construction to adjust to different abdomen configurations in the same size range.

4,227,532

DEVICE FOR CRUSHING CALCULI IN THE URINARY BLADDER

Karl H. Bluhm, and Helfrid Kunath, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 893,069

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724324

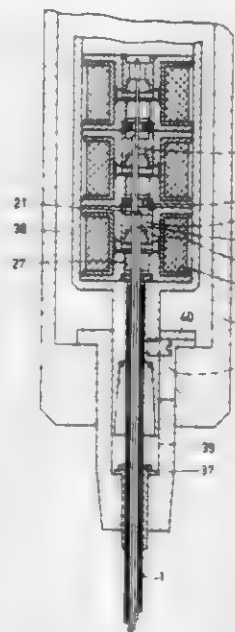
Int. Cl.³ A61B 17/22

U.S. Cl. 128—328

1 Claim

1. A device for crushing calculi in the urinary bladder,

comprising a bundle of independently reciprocable, elongate, flexible lithotriptors disposed in a ureter catheter in a configu-



ration comprising a ring of lithotriptors arranged around a central lithotripter.

4,227,533

FLUSHABLE URINARY CATHETER

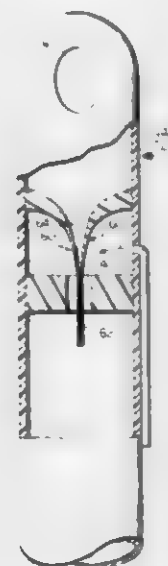
John C. Godfrey, Syracuse, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Nov. 3, 1978, Ser. No. 957,554

Int. Cl.² A61M 25/00, 27/00

U.S. Cl. 128—349 BV

10 Claims



1. A urinary catheter comprising an elongated hollow tube having a proximal end, a closed distal end, a drainage port in said distal end, a liquid drainage lumen extending from said port to said proximal end, blocking means located in said lumen near said distal end which under normal conditions will permit urine to pass from said distal end to said proximal end, but which in response to fluid pressure applied on the side of said blocking means nearest said proximal end by a cleansing solution will close off the lumen and prevent fluid flow to or from said distal end, said blocking means being a valve which comprises in combination,

(a) a funnel shaped member including a large opening in communication with a small opening, the large opening being sealably engaged with the wall of said drainage lumen and located nearest said drainage port, and a passage connecting said openings, said passage extending in the direction of the longitudinal axis of said lumen, the walls of said passage nearest said small opening being more flexible than the wall nearest said large opening wherein the wall thickness of said passageway tapers from

a thick portion at the point of engagement with said drainage lumen to a thinner portion at said small opening, and (b) a retaining means spaced apart from the large opening of said funnel shaped member in the direction of said proximal end, said retaining means comprising a solid portion which closes off a portion of said lumen and including an opening, such that the walls of said opening may be in contact with at least a portion of the flexible wall of said passage to permit urine to pass therethrough, whereby a chamber is formed between said funnel shaped member and said retaining means, and

means for introducing a cleansing solution into said lumen on the side of said blocking means nearest said proximal end in an amount sufficient to cause said blocking means to close and to flush contaminants out said proximal end, said introducing means comprising an opening in the sidewall of said lumen located between said funnel shaped means and said retaining means, said opening being in communication with a tube which extends from said opening towards said proximal end.

5. A flushable urinary catheter comprising:

a tube having a closed distal end and an open proximal end, said distal end adapted to be received in the patient's bladder;

a urine inlet port through said tube adjacent said distal end; means defining a pressure chamber in said tube between said urine inlet port and said proximal end;

fluid pressure responsive valve means located in said pressure chamber for permitting urine flow from said urine inlet port through said tube toward said proximal end when open and for blocking off fluid flow in said tube between said urine inlet port and said valve means when closed;

means, coupled to said tube, for introducing a flushing fluid under pressure into said pressure chamber and for closing said valve means,

said means for introducing and closing including
a flushing fluid conducting member extending from said proximal end to said pressure chamber, and
a flushing fluid port at the end of said flushing fluid conducting member communicating with said pressure chamber for introducing the flushing fluid into said pressure chamber,

said pressure chamber having an orifice allowing the flushing fluid therein to flow therefrom toward said proximal end,

whereby the flushing fluid introduced into said pressure chamber closes said valve means preventing backflow thereof toward said urine inlet port, exits said pressure chamber via said orifice, and flows down said tube towards said proximal end, thereby flushing the interior of said tube.

4,227,534

SELF-INFLATING URINARY CATHETER

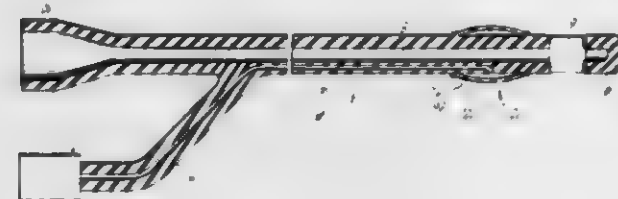
John F. La Rosa, West Kingston, R.I., assignor to International Paper Company, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,937

Int. Cl.³ A61M 25/00

U.S. Cl. 128—349 B

11 Claims



1. A self-inflating urinary catheter of the type which includes a retention balloon and an inflation lumen connected for conducting fluid to inflate the balloon wherein the improvement comprises a squeezable fluid reservoir connected to the inflation lumen, and means to squeeze the reservoir, said means

including at least two parts of which one part includes a stretchable diaphragm adjacent the reservoir, said parts being arranged to be moved together with the reservoir between them thereby stretching the diaphragm and pressurizing the fluid, the stressed diaphragm exerting force on the fluid to expel it from the reservoir and through the inflation lumen to inflate the retention balloon.

4,227,535

PROCTOLOGIC DEVICE FOR THE THERAPEUTIC TREATMENT OF HEMORRHOIDS

Gerald I. Connor, Spokane, Wash., assignor to Bio-Tronics, Inc., Spokane, Wash.

Filed Apr. 2, 1979, Ser. No. 26,036

Int. Cl.³ A61F 7/12

U.S. Cl. 128—401

13 Claims



9. A proctologic device for the therapeutic treatment of external and/or internal hemorrhoids projecting from the wall of a patient's anal canal which extends from the anus to the rectum and is surrounded by sphincter muscles; comprising:
an anal canal appliance for insertion into the anal canal through the anus;

said appliance having an elongated cylindrical metal envelope with an external heat transfer surface extending from a front end to a rear end for intimately contacting the anal canal and the projecting hemorrhoids;

said external heat transfer surface having a diameter sufficient to expand the anal canal and effectively transfer heat from the heat transfer surface to the anal canal wall and the hemorrhoids without painfully stretching the sphincter muscles;

said appliance having an electrical resistor heating element mounted internally within the cylindrical metal envelope for converting electrical energy to thermal energy;

said electrical resistor heating element comprising a cylindrical thermal insulative ceramic core mounted coaxially within the cylindrical metal envelope and an electrical resistor conductive material mounted on the insulative core;

a temperature transducer in direct engagement with the front end of the metal envelope to produce an electrical temperature signal corresponding directly to the temperature of the external heat transfer surface;

wherein the thermal insulation core is mounted within the metal envelope interposed between the electrical resistor conductive material and the transducer to form a thermal barrier to prevent direct heat transfer from the electrical resistor conductive material and the temperature transducer to minimize temperature sensing error;

a source of electrical energy;

a cable means extending between the source and the appliance for operatively connecting the source to the electrical resistor heating element;

control means operatively connected to the electrical energy source and responsive to the electrical temperature signal for automatically regulating the amount of electrical energy applied to the electrical resistor heating element to heat the external heat transfer surface and to maintain the external heat transfer surface at a preset temperature above body temperature to thereby relax the sphincter muscles and to facilitate the opening of vascular channels of the hemorrhoids to facilitate shrinkage of the hemorrhoids.

4,227,536

ARTICLE IMITATING A PART OF A WOMAN'S BREAST
Marat Shimenkov, 65-46 Parsons Blvd., Apt. 2A, Flushing, N.Y. 11365, and Abraham Froyman, 110-20 Flave Apt. 308, Forest Hills, N.Y. 11375

Filed Mar. 7, 1979, Ser. No. 18,461

Int. Cl.³ A41C 3/10; A61F 1/00

U.S. Cl. 128-479

12 Claims



1. An article imitating a woman's nipple, comprising a deformable body portion having a rear surface arranged to face toward a user's breast, a convex front surface arranged to face away from the same, and an axis; and an insert embedded in said body portion and movable between at least two stable positions while remaining embedded in said body portion in which said insert and thereby said body portion surrounding said insert assume differing positions relative to said rear surface.

4,227,537

ENDOMETRIAL BRUSH WITH SLIDABLE PROTECTIVE SLEEVE

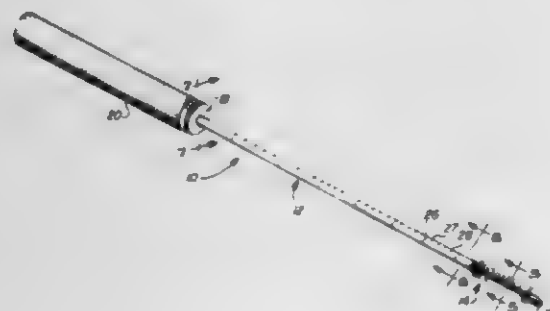
Thomas N. Suci, and Herbert J. Schmidt, both of Tucson, Ariz., assignors to Tucson Medical Instruments, Inc., Tucson, Ariz.

Filed Mar. 8, 1978, Ser. No. 884,634

Int. Cl.³ A61B 1/00, 10/00

U.S. Cl. 128-756

12 Claims



1. An endometrial brush for obtaining endometrial samples, said endometrial brush comprising in combination:

- (a) a handle for manipulating said endometrial brush;
- (b) a shaft having first and second end portions, the first end portion being attached to said handle, said shaft being rigid and bendable so that when said shaft is bent to a particular configuration, said shaft rigidly retains that configuration;
- (c) a plurality of bristles attached to the second end portion of said shaft for collecting said endometrial sample, said bristles being oriented about the second end portion of said shaft to form a bristle section;
- (d) a flexible sleeve slidably disposed on said shaft for covering said bristles during insertion of said endometrial brush into a patient's endometrium and exposing said bristles within the endometrium to permit scraping of cells and tissue from the endometrium by said bristles, said flexible sleeve having an outside diameter sufficiently small to enable insertion of said endometrial brush into the endometrium of the patient without substantial discomfort to the patient;
- (e) first means connected to said sleeve for effecting sliding said sleeve along said shaft to cover said bristles during said insertion and sliding of said sleeve along said shaft to

expose said bristles after said bristles are properly positioned in the endometrium; and

- (f) rounded means attached to the end of said shaft for minimizing discomfort to the patient during insertion of said endometrial brush, wherein said sleeve sealably engages said rounded means if said sleeve is slid along said shaft so that one end of said sleeve slides over said bristles and over said rounded means, whereby no moisture, tissue, or cells contact said bristles during insertion of said endometrial brush.

4,227,538

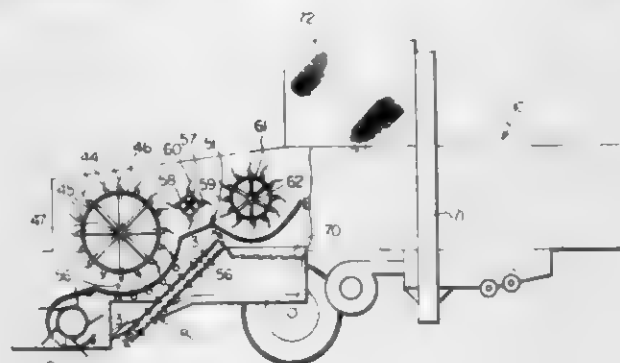
SEPARATOR CONVEYOR FOR PEANUT COMBINE
William R. Long, and James H. Long, both of Tarboro, N.C., assignors to Long Manufacturing N.C., Inc., Tarboro, N.C.

Filed Sep. 29, 1978, Ser. No. 947,125

Int. Cl.² A01D 17/04, 17/08

U.S. Cl. 130-30 C

1 Claim



1. In a peanut combine for lifting and separating peanuts, vines and extraneous material and having a pickup, at least first and second threshing cylinders arranged on an incline upwardly and rearwardly from the pickup, a breastplate positioned beneath said first and second threshing cylinders, and a substantially horizontal shaker pan positioned beneath said second threshing cylinder but not beneath said first threshing cylinder, the improvement comprising said breastplate having first and second concave portions positioned below said threshing cylinders, each of said concave portions having a plurality of openings of a size to permit peanuts to fall there-through, an inclined conveyor table having lower and upper ends and mounted beneath said first concave portion in a position to receive peanuts therefrom, said upper end of said conveyor table being mounted in a position to discharge peanuts onto said shaker pan, said conveyor table having a plurality of generally parallel longitudinally spaced slats, each of said slats having a generally flat upper surface which supports peanuts discharged from said first concave portion, the spaces between said slats being of a size to permit the passage of extraneous material but to retain the peanuts, an endless conveyor means mounted on said table, means for driving said conveyor means, said conveyor means including a plurality of spaced bars extending laterally across said table, a flexible wiper member mounted on each of said spaced bars and extending downwardly into intimate sliding engagement with the upper surfaces of said slats, whereby peanuts discharged from said first concave portion are moved upwardly along said conveyor table and are discharged into said shaker pan while extraneous material is discharged through the spaces between the slats of said table.

4,227,539

TOBACCO MOISTENING METHOD AND APPARATUS
Ian Kjaer, Hadsund; Christoffer Schlüsslen, Aalborg SV; Hans J. Møller, Harlev J, and Niels E. Mortensen, Gistrup, all of Denmark, assignors to Skandinavisk Tobakskompagni A/S, Søborg, Denmark

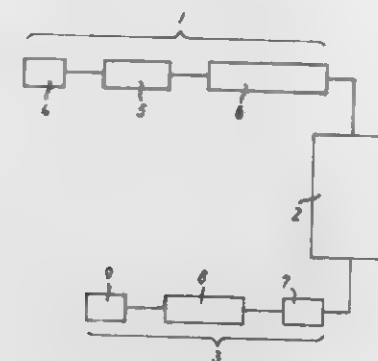
Filed Jan. 16, 1979, Ser. No. 3,864

Claims priority, application Denmark, Feb. 3, 1978, 519/78

Int. Cl.³ A24B 9/00

U.S. Cl. 131-138

17 Claims



1. A method for moisture conditioning of tobacco leaves in substantially flat bunches, while maintaining the leaves in substantially the same shape and with the same relative position as in the untreated tobacco bunch, said method comprising:

- partially immersing a bunch into a moistening liquid while holding the bunch in a substantially vertical position with its neck pointing downwardly
- turning the bunch so that the neck points upwardly and subsequently mechanically shaking the bunch while holding it by its neck portion and limiting the movement of the leaves in relation to each other; and
- shaking the bunch a second time after setting.

4,227,540

MENTHOL FILTER FOR CIGARETTES

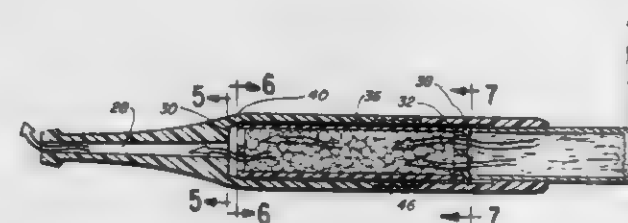
Robert G. Edison, 3032 University Ave., Highland Park, Ill. 60035

Filed Jun. 23, 1978, Ser. No. 918,365

Int. Cl.³ A24F 13/02

U.S. Cl. 131-187

1 Claim



1. An elongated cigarette holder which includes a two-piece cigarette holder having a forward cigarette-receiving member and a rearward mouthpiece member, said members constructed to form a central cavity bounded by the opposed members, said cavity adapted to receive an elongated cylindrical filter cartridge; the improvement comprising, in combination:

- said cylindrical filter cartridge having two end walls, each of said end walls having peripheral edge portions, the forward end wall being positioned adjacent said cigarette-receiving member and the rearward end wall positioned adjacent said mouthpiece member, each of said end walls having a plurality of arcuate vents, said rearward end wall having two arcuately shaped vents and said forward end wall having four arcuately shaped vents, the shaped vents in said rearward end wall providing greater flow-through capacity than the vent means in said forward end wall, and said cartridge being filled with menthol crystals;
- said cigarette-receiving member constructed to sealably

engage the peripheral edge portion of the forward end wall of said cartridge, and said mouthpiece member adapted to sealably engage said peripheral edge portion of the rearward end wall of said cartridge;

said central cavity being substantially cylindrically shaped, said mouthpiece member including a tapered wall adapted for engaging the peripheral edge portion of said rearward end wall of said cartridge;

said forward end wall of said cartridge including flange means adapted to engage the inside wall of said central cavity as formed by said cigarette-receiving member so that substantially all of the fumes drawn from a cigarette in said receiving member to said mouthpiece pass through said cartridge and contact the menthol crystals therein; and

one of the mouthpiece member and the cigarette-receiving member having a reduced diameter extension which includes a plurality of outward biased tabs, the other of the mouthpiece member and the cigarette-receiving member having an end which includes a relatively smooth interior surface, whereby the mouthpiece member and the cigarette-receiving member are secured together by friction fit of the plurality of tabs against the smooth surface.

4,227,541

HAIR CURLING APPARATUS

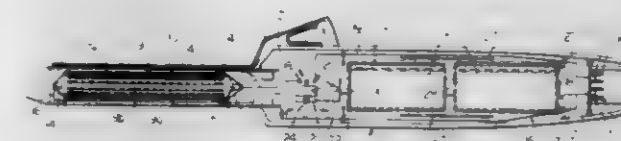
David C. Satchell, Eastbourne, England, assignor to David Satchell Products Limited, Kent, England

Filed Aug. 23, 1978, Ser. No. 936,068

Int. Cl.³ A45D 2/24

U.S. Cl. 132-37 R

6 Claims



1. Hair curling apparatus comprising

- (a) a handle,
- (b) a tong portion secured to and extending from the front of said handle,
- (c) a spring loaded clip mounted outwardly of said handle and said tong portion and biased toward the latter,
- (d) an energy source in the form of electrical storage cells mounted within said handle,
- (e) resistance element means mounted within said tong portion and comprising a plurality of individual strands the ends of which are commonly connected to electrical connector elements, each strand being encased in an insulating sleeve, with the strands and sleeves occupying substantially the entire area within the interior of said tong portion thereby reducing insulating air pockets within said tong portion,
- (f) contact means for recharging said storage cells mounted in the rear end of said handle, the latter being open at such end for mating connection with a recharging source,
- (g) a three-way switch mounted within said handle and including a switch actuator exposed exteriorly of said apparatus for operating said switch, said switch having terminal settings for alternately heating said resistance element means or recharging said storage cells, and a third position between said terminals for an off or deactuated condition, and
- (h) circuit means electrically interconnecting said switch with said resistance element means, said storage cells, and said contact means for recharging said storage cells.

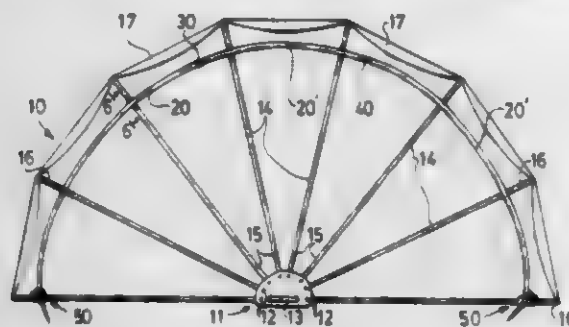
4,227,542

COLLAPSIBLE SHELTER

Paul Bonfilio, 47-25 198 St., Flushing, N.Y. 11358
Continuation-in-part of Ser. No. 783,250, Mar. 31, 1977, Pat. No. 4,098,281. This application Jun. 27, 1978, Ser. No. 919,635
Int. Cl.² A45F 1/16

U.S. Cl. 135-4 R

11 Claims



1. A collapsible shelter comprising:

a central hub;

a multiplicity of ribs radially spaced about at least a portion of said hub and extending radially outwardly therefrom, each of said ribs having an outer end and an inner end, the inner end of which is pivotably mounted on said hub to permit movement of said ribs between an open position, in which the outer end of the ribs are moved laterally away from one another, and a collapsed, closed position in which the outer ends of said ribs are disposed closely adjacent one another; a cover material secured to each of said ribs and interconnecting adjacent ones thereof; and locking means for releasably securing said ribs in said open position, said locking means comprising at least one locking assembly, including a pair of elongated rods, each having an outer and an inner end, and each of which is pivotably secured at its inner end to one of the outermost ribs to permit pivotal movement thereof, between a collapsed position, in which said rods lie generally closely adjacent, and parallel, to said outermost ribs, and a locking position, in which one of said rods transversely spans several of the inwardly-disposed ribs and the other of said rods transversely spans the remaining inwardly-disposed ribs, means for demountably securing said rods to the respective ribs which they span, and means for detachably securing the outer ends of said rods together in said locking position thereof.

4,227,543

BLOWOUT PREVENTER

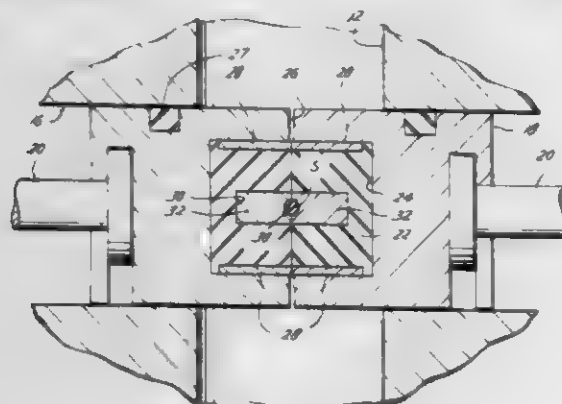
Leonard E. Williams, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 18, 1978, Ser. No. 934,832

Int. Cl.² E21B 33/06; F16J 15/14

U.S. Cl. 137-246.22

8 Claims



1. A blowout preventer, comprising
a housing having a bore extending therethrough and opposed guideways intersecting the bore,

a ram slidably mounted in each of said guideways, a packer positioned in the face of each of said rams, means for extending and retracting said rams to close the bore in their extended position with said packers providing a seal across the bore and to open the bore in their retracted position, each of said packers having a groove extending across its face transversely of said guideway, the grooves of the two packers forming a sealant passage when said rams are extended to closed position, and at least one injection fitting connecting through said housing in communication with said packer grooves when said rams are extended to a closed position, whereby a flowable sealant may be injected through said injection fitting into said sealant passage to provide a secondary seal and to assure a tight seal of said packers when said rams are extended to closed position.

4,227,544

FIRE HYDRANT WITH IMPROVED SHOE AND VALVE

Lawrence F. Luckenbill, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

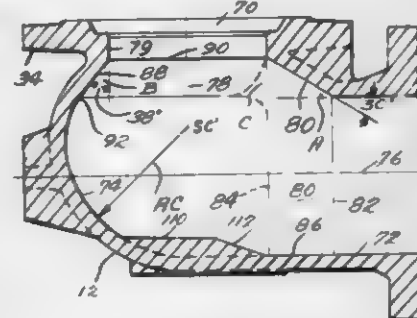
Continuation of Ser. No. 762,511, Jan. 26, 1977, Pat. No. 4,177,826. This application Jan. 23, 1979, Ser. No. 5,848

The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.

Int. Cl.² E03B 9/08; F16K 27/00

U.S. Cl. 137-307

24 Claims



13. An elbow shaped hydrant shoe having one end with an outlet opening and another end with an inlet opening lying in a plane substantially 90° to the plane of the outlet opening, said elbow shaped hydrant shoe having an improved interior configuration for minimizing flow loss, said improved configuration comprising said shoe having a cylindrical inlet passage extending from said inlet opening and a cylindrical outlet passage extending from said outlet opening, a part spherical chamber communicating with said cylindrical inlet passage and said cylindrical outlet passage, said part spherical chamber having a spherical center positioned above the axis of said cylindrical inlet passage and on the axis of said cylindrical outlet passage, a diverging transitional surface of rotation having a generally part frusto-conical shape with an axis generally parallel to the axis of said cylindrical inlet passage and said diverging transitional surface of rotation extending from a plane perpendicular to the cylindrical inlet passage and smoothly merging with said part spherical chamber at a tangential intersection with the same, and a converging transitional surface of rotation having a generally part frusto-conical shape with an axis generally parallel to the axis of said cylindrical outlet passage, said converging transitional surface of rotation extending smoothly from a tangential intersection with said part spherical chamber to a plane extending perpendicularly to an axis of said cylindrical outlet passage, said converging transitional surface merging smoothly with said diverging transitional surface.

4,227,545

VALVE FOR CONTROLLING THE FLOW OF HOT FLUIDS

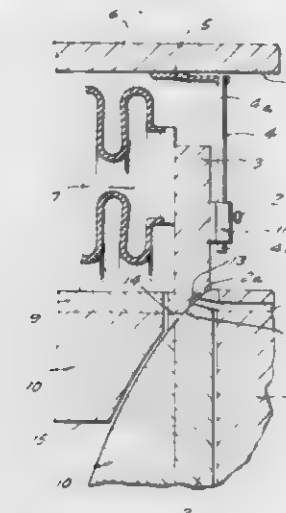
Rolf Augsburg, Horst Kuppka, and Helmut Zilling, all of Nuremberg, Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker AG, Frankenthal, Fed. Rep. of Germany
Filed Jul. 27, 1977, Ser. No. 819,296

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1976, 2633808

Int. Cl.² F16K 49/00, 25/00

U.S. Cl. 137-340

10 Claims



1. In a valve, particularly for controlling the flow of hot fluids in nuclear reactor plants or the like, the combination of a valve body; a valving element installed in said body and movable between a plurality of positions including an open and a closed position; an annular sealing member; means for mounting said sealing member in the interior of said body for movement in a predetermined path into and out of a predetermined position in which said sealing member is centered relative to said valving element and sealingly engages the same, including a plurality of metallic supporting members extending substantially radially outwardly of said sealing member and secured to and movable with said sealing member, and deformable metallic connectors and means securing said connectors to said body and to said supporting member; and means for moving said sealing member in said path into and from said predetermined position with attendant deformation of said connectors as a result of movement of said supporting members with said sealing member.

4,227,546

DISHWASHER FLUID CONTROL SYSTEM

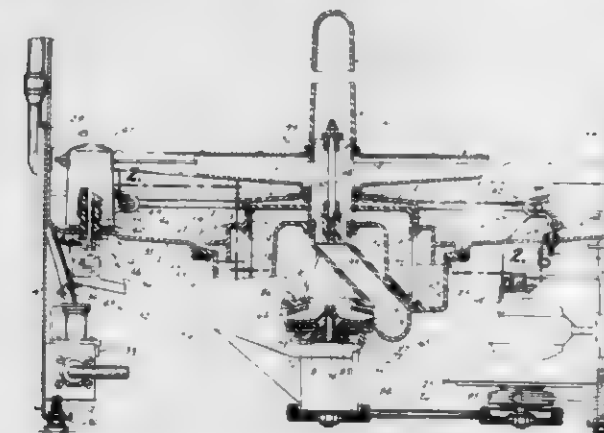
Richard P. Bergeson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Sep. 6, 1978, Ser. No. 939,994

Int. Cl.² F16K 21/18

U.S. Cl. 137-387

8 Claims



1. A dishwashing apparatus including a washing chamber, fluid inlet means for supplying fluid to said washing chamber, means for recirculating said fluid within said washing chamber,

and sequential control means for controlling said apparatus during a cycle of operations including a plurality of fluid recirculation periods, wherein the improvement comprises: fluid level detecting means for energizing and deenergizing said fluid inlet means to admit a first quantity of fluid into said washing chamber under static conditions prior to initiation of each of said fluid recirculation periods of said cycle of operations; and circuit means included in said sequential control means for reenergizing said fluid inlet means to admit an additional quantity of fluid during the initial part of at least one of said fluid recirculation periods of said same cycle of operations while said fluid is being recirculated.

4,227,547

VALVE SAFETY INDICATING MEANS

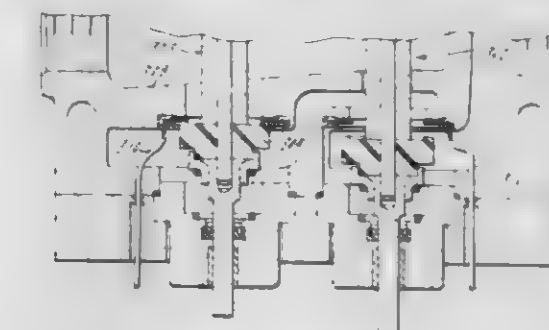
Russell J. Cameron, Rochester, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.

Division of Ser. No. 910,492, May 30, 1978, abandoned, which is a continuation of Ser. No. 729,273, Oct. 4, 1976, abandoned. This application Feb. 12, 1979, Ser. No. 11,140

Int. Cl.² F15B 20/00

U.S. Cl. 137-554

4 Claims



1. In combination with a poppet valve element movable toward and away from a seat, switch means comprising a spring-like conductive element mounted adjacent said seat and interposed between said element and seat, whereby said valve element will deflect said spring-like conductive element when it approaches said seat, and means connecting said conductive element to an electrical circuit.

4,227,548

MULTIPLE CONTROL VALVE FOR MIXING FLUIDS

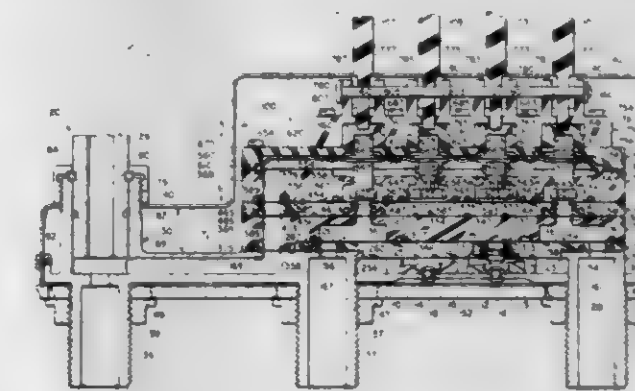
Irlin H. Botnick, 3155 Kersdale, Pepper Pike, Ohio 44114

Filed Feb. 27, 1979, Ser. No. 15,813

Int. Cl.² F16K 19/00

U.S. Cl. 137-606

32 Claims



28. A valve for delivering cold water, hot water, or water at an intermediate temperature, comprising:

- (a) base means unto which separate flows of hot water and cold water are supplied, the base means being operable to direct the cold water along a first flow path and the hot water along a second flow path;
- (b) housing means secured to the base means, the housing means defining a cold water chamber in communication

- with the first flow path, a hot water chamber in communication with the second flow path and a mixing chamber in communication with both the first and second flow paths;
- (c) the housing means additionally defining an outlet chamber in communication with the cold and hot water chambers, and a mixed flow port defining a mixed flow path communicating the mixing chamber and the outlet chamber;
- (d) flow restriction means disposed upstream of the mixing chamber in one of the first and second flow paths to proportion the relative flow rates of cold and hot water admitted to the mixing chamber;
- (e) a plurality of valve elements disposed in the first, second and mixed flow paths, the valve elements being individually movable from a closed position where no waterflow can occur to an open position where waterflow is permitted, comprising:
- (i) a cold water valve element controlling the flow of cold water along the first flow path to the cold water chamber;
- (ii) a hot water valve element controlling the flow of hot water along the second flow path to the hot water chamber;
- (iii) a mixing chamber inlet valve element controlling flows of cold and hot water along the respective first and second flow paths to the mixing chamber; and,
- (iv) a mixing chamber outlet valve element controlling flow along the mixed flow path from the mixing chamber to the outlet chamber.

4,227,549

FLUID PRESSURE CONTROL VALVES

Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hertfordshire, England

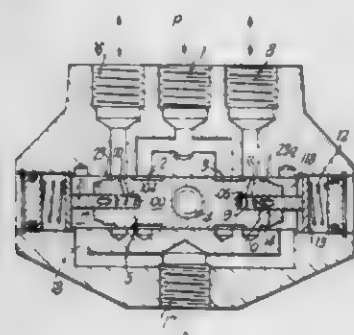
Filed Aug. 1, 1978, Ser. No. 930,065

Claims priority, application United Kingdom, Aug. 4, 1977, 32748/77

Int. Cl.³ F15B 13/04

U.S. Cl. 137—625.69

1 Claim



1. A fluid control valve comprising a housing, an inlet port in said housing adapted to be connected with a supply of pressurized fluid, a drain port in said housing adapted to be connected with a reservoir of low pressure fluid, first and second outlet ports in said housing adapted to be connected with a fluid actuated motor, a bore in said housing, a spool assembly slidable in said bore in either axial direction from a neutral position, first and second end walls closing opposite ends of said bore, said spool assembly cooperating with said bore to define first and second end chambers at opposite ends of said spool assembly and bore, passage means for establishing fluid communication between each of said end chambers and said drain port regardless of the axial position of said spool assembly in said bore whereby fluid in said first and second end chambers is always at the same pressure as said drain port, passage means for establishing fluid communication between said first and second outlet ports and said first and second end chambers when said spool assembly is in said neutral position to connect said first and second outlet ports in fluid communication with the reservoir through said first and second end chambers, said spool assembly comprising a main spool part

and first and second auxiliary spool parts, said main spool part and said first auxiliary spool part cooperating to define a first variable volume reaction chamber and said second auxiliary spool part and said main spool part cooperating to define a second variable volume reaction chamber, said first auxiliary spool part being axially movable relative to said main spool part to vary the volume of said first reaction chamber upon relative axial movement between said main spool part and first auxiliary spool part, said second auxiliary spool part being axially movable relative to said main spool part to vary the volume of said second reaction chamber upon relative axial movement between said main spool part and said second auxiliary spool part, said first auxiliary spool part extending axially outwardly from a first end surface of said main spool part into said first end chamber, said first auxiliary spool part and said first end surface of said main spool part being exposed to the reservoir pressure in said first end chamber when said spool assembly is moved axially from the neutral position, said second auxiliary spool part extending axially outwardly from a second end surface of said main spool part into said second end chamber, said second auxiliary spool part and said second end surface of said main spool part being exposed to the reservoir pressure in said second end chamber when said spool assembly is moved axially from the neutral position, first limiting means for limiting relative axial movement between said main spool part and said first auxiliary spool part and second limiting means for limiting relative axial movement between said main spool part and said second auxiliary spool part, said first and second limiting means establishing maximum and minimum volumes for said first and second variable volume reaction chambers, respectively, said spool assembly including passage means communicating fluid pressure between first outlet port and said first reaction chamber and passage means communicating fluid pressure between said second outlet port and said second reaction chamber, spring means for applying a biasing force in its entirety tending to retain said spool assembly in the neutral position, said spring means including a first spring element coacting between said main spool part and a first end portion of said first auxiliary spool part to urge said first auxiliary spool part toward a position in which said first variable volume reaction chamber has its maximum volume, a second spring element coacting between said main spool part and a first end portion of said second auxiliary spool part urging said second auxiliary spool part toward a position in which said second variable volume reaction chamber has its maximum volume, a third spring element coacting between said first end wall and a second end portion of said first auxiliary spool part to apply a portion of said biasing force to said first auxiliary spool part and a fourth spring element coacting between a second end portion of said second auxiliary spool part and said second end wall to apply a portion of said biasing force to said second auxiliary spool part, said spool assembly being urged toward the neutral position under the influence of only biasing forces applied to said first and second auxiliary spool parts and independently of the application of force to said main spool part, a first disc interposed between said second end portion of said first auxiliary spool part and said third spring element for transmitting forces therebetween, a second disc interposed between said second end portion of said second auxiliary spool part and said fourth spring element for transmitting forces therebetween, said first and second discs being axially slidable in said bore, and means for sliding said spool assembly in a first axial direction in said bore to close communication between said first outlet port and said drain port and to establish communication between said inlet port and said first outlet port, the pressure in said first outlet port being communicated to said first reaction chamber and tending to expand said first reaction chamber against the force of said third spring element coacting between said first end wall and said first auxiliary spool part and in a second axial direction in said bore to close communication between said second outlet port and said drain port and to

establish communication between said inlet port and said second outlet port, the pressure in said second outlet port being communicated to said second reaction chamber and tending to expand said second reaction chamber against the force of said fourth spring coacting between said second end wall and said second auxiliary spool part, said bore including surface means for limiting axial movement of said first disc in said second direction and surface means for limiting axial movement of said second disc in said first direction.

4,227,550

LIQUID OSCILLATOR HAVING CONTROL PASSAGES CONTINUOUSLY COMMUNICATING WITH AMBIENT AIR

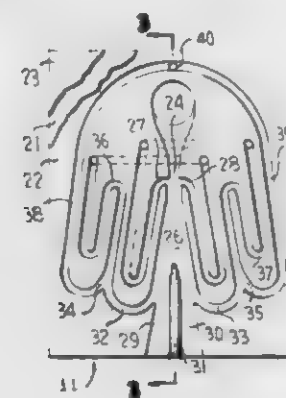
Peter Bauer, Germantown, and Julian Lazrus, Bethesda, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Division of Ser. No. 356,416, May 2, 1973, abandoned. This application May 12, 1975, Ser. No. 576,713

Int. Cl.³ F15C 1/08

U.S. Cl. 137—835

9 Claims



6. A fluidic oscillator of the type wherein a power stream of liquid is adapted to be issued alternately from first and second outlet passages at a submerged location in a liquid body in accordance with an oscillatory differential pressure applied between two control ports, said oscillator being characterized by means for continuously entraining ambient air in said power stream, said means comprising:

means responsive to power stream flow through said first outlet passage for flowing air through one of said control ports, and to the absence of power stream flow through said first outlet passage for blocking air flow to said one control port; and

means responsive to power stream flow through said second outlet passage for flowing air through the other of said control ports, and to the absence of power stream flow through said second outlet passage for blocking air flow to said other control port.

4,227,551

TUBE BANKS

Ronald J. Hawkins, Morden, and Anthony E. Ruffell, Maidenhead, both of England, assignors to Babcock & Wilcox, Limited, London, England

Filed Aug. 3, 1978, Ser. No. 930,693

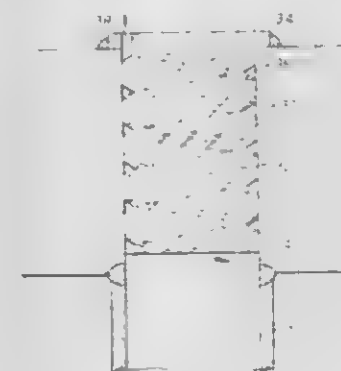
Int. Cl.³ F16D 1/02

U.S. Cl. 138—40

1 Claim

1. A tube bank having a tube plate with inner and outer faces, bores penetrating the tube plate and tubes connected to the bores adjacent the inner face of the tube plate, in which each bore is obturated with a flow restricting device comprising a cylindrical plug having a cylindrical surface arranged to be a tight fit within the tube plate bore and having an outwardly directed flanged head portion formed with an aperture and seal welded to the outer face of the tube plate, a spiral groove formed in the cylindrical surface of the cylindrical plug connecting the aperture in the flanged head portion with the interior of the respective tube, the spiral groove and the aper-

ture together forming a passage having a length in excess of the bore diameter and being dimensioned in conjunction with the



passage cross-sectional area to give rise to a required flow restriction.

4,227,552

WEAVING MACHINE HAVING AN AIR DUCT FOR CLEANING PURPOSES

Heinz Baumann, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 13, 1978, Ser. No. 959,514

Claims priority, application Switzerland, Nov. 17, 1977, 014037/77

Int. Cl.² D03D 49/00

U.S. Cl. 139—1 C

11 Claims



1. In combination with a weaving machine having a frame having a picking side and a catching side and means for moving a weft yarn through a predetermined weft path in a weaving plane from said picking side to said catching side; an air duct extending parallel to said path above said weaving plane, a shedding mechanism below said air duct between a warp beam end and a cloth beam end of said machine, at least one flap secured to said duct to cover at least a part of said weaving plane, and removable bearer members mounted on said frame below said air duct, each said member being disposed at a respective one of said picking side and said catching side to move said air duct.

4,227,553

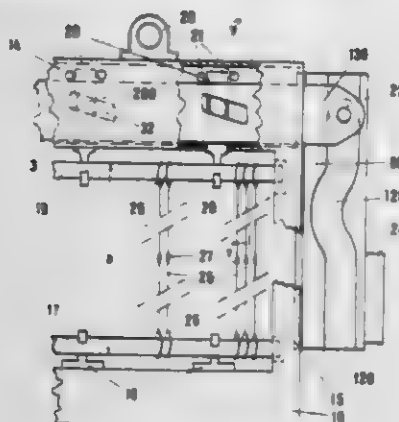
WEAVING MACHINE WITH HEDDLE FRAMESRudolf Schwarz, Horgen-Zuerich, Switzerland, assignor to Sta-
eubli, Ltd., Horgen-Zuerich, Switzerland

Filed Oct. 18, 1978, Ser. No. 952,601

Claims priority, application Switzerland, Oct. 20, 1977,
12781/77Int. Cl.² D03D 13/00

U.S. Cl. 139—82

8 Claims



1. A weaving machine having a shed forming means thereon comprising:

- frame means;
- a heddle frame movably supported on said frame means;
- first and second spaced and parallel thread rail means mounted on said heddle frame;
- at least one heddle connected to and extending between said first and second thread rail means;
- first means for effecting a change in the spacing between said first and second thread rail means in response to a movement of said heddle frame, said first means including control means, separate from said shed forming means, secured to said frame means for controlling the relative spacing between said first and second thread rail means; and
- connecting means for operatively connecting said control means to one of said first and second thread rail means for causing said one of said first and second thread rail means to move selectively at least one of toward and away from the other of said first and second thread rail means in response to said movement of said heddle frame.

4,227,554

DEVICE FOR REGULATING THE WINDING TENSION OF WOVEN FABRIC ON A LOOMMichel F. Volland, Bourgoin-Jallieu, France, assignor to Saurer-
Diederichs Societe Anonyme, Bourgoin-Jallieu, France

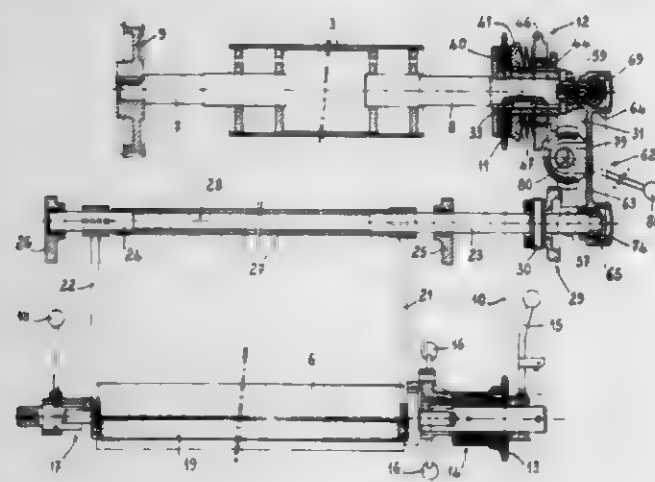
Filed Apr. 12, 1979, Ser. No. 29,480

Claims priority, application France, Jun. 7, 1978, 78 17704

Int. Cl.² D03D 49/20

U.S. Cl. 139—130

10 Claims



1. A device for regulating the winding tension of woven

fabric on a loom having a winding system comprising a driven tension roller, a storage roller spaced from and parallel with the tension roller and an endless chain connecting the rollers whereby the storage roller is driven by the tension roller, the device comprising a follower for contacting a roll of fabric wound around the storage roller, a rotary cam operatively associated with the follower so as to be movable therewith in accordance with variation in the diameter of the roll of fabric, a friction mechanism coaxial and rotatable with the tension roller, an oscillating lever bearing at opposed ends on the friction member and the profile of the cam whereby the driving torque of the storage roller is modified according to the diameter of the roll of fabric.

4,227,555

WOVEN SLIDE FASTENER STRINGERMasatsuo Ofusa, Kurobe, Japan, assignor to Yoshida Kogyo
K.K., Tokyo, Japan

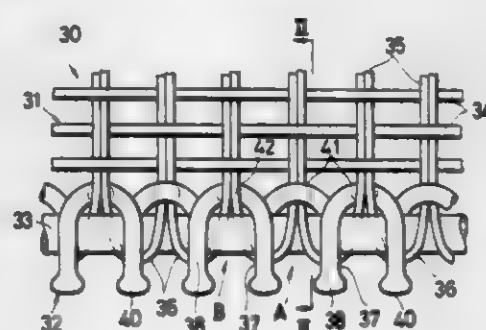
Filed Sep. 25, 1978, Ser. No. 945,566

Claims priority, application Japan, Sep. 26, 1977, 52/115362

Int. Cl.² A44B 19/10

U.S. Cl. 139—384 B

4 Claims



1. A slide fastener stringer comprising:

- (a) a woven stringer tape including a plurality of warp threads and a weft thread interlaced in double picks with said warp threads, said weft thread having a plurality of loops disposed along a longitudinal edge of said stringer tape and each extending from adjacent two of said double picks;
- (b) a core thread extending warpwise through said loops in engagement therewith; and
- (c) a filamentary coupling element having a plurality of turns spaced longitudinally of the tape, each of said turns including a pair of spaced limbs between which said core thread extends, and a coupling head disposed between said limbs, said element further having a plurality of connecting portions each extending between adjacent two of said limbs which are located on one side of said core thread, each of said double picks having a portion extending around one of said connecting portions and between said one connecting portion and said core thread, and blending into adjacent two of said loops.

4,227,556

METHOD AND APPARATUS FOR SLUSH MOLDING ARTICLES OF FOOTWEAREric J. Hurst, Trenton, and Hugh G. MacAulay, Batavia, both of
Canada, assignors to Bata Shoe Company, Inc., Belcamp, Md.
Division of Ser. No. 925,842, Jul. 18, 1978. This application Nov.

29, 1978, Ser. No. 964,750

Claims priority, application Canada, Aug. 22, 1977, 285219

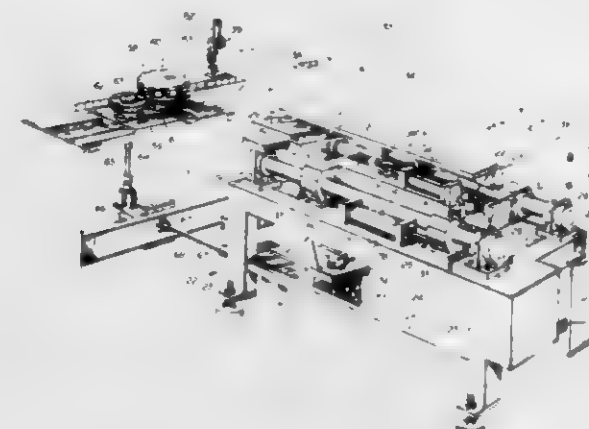
Int. Cl.³ B29F 5/00

U.S. Cl. 141—137

5 Claims

1. An apparatus for filling the heel cavities of footwear molds moving continuously along a rectilinear path of travel comprising a stationary frame adjacent to said path of travel; a carriage slidably mounted on said frame for movement towards and away from said path of travel; an injection unit

rotatably mounted on said carriage for movement with the carriage towards and away from said path of travel; nozzle means on the discharge end of said injection unit for dispensing thermoplastic material into the heel cavity of a mold; first drive means for rotating said injection unit in synchronism with a mold during a heel filling operation; a shaft for rotating the



injection unit; and cam means engageable by said injection unit for causing the carriage to move towards and away from said path of travel, wherein the first drive means includes a drive train connected at one end to a conveyor and at the other end to said shaft, whereby the nozzle means moves in a straight line path of travel over a mold during the heel filling operation.

4,227,557

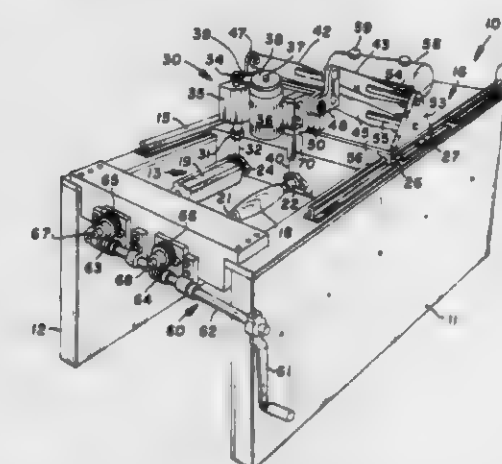
REPLICATION APPARATUSDonald L. Allen, Northfield, Minn., assignor to Don Allen, Inc.,
Northfield, Minn.

Filed Dec. 4, 1978, Ser. No. 966,093

Int. Cl.³ B27C 7/06

U.S. Cl. 142—7

4 Claims



1. Apparatus for replicating three-dimensional articles comprising:

- (a) base frame means, first and second holder means secured to said base frame means for retaining the article to be replicated and a blank workpiece respectively, and laterally spaced opposed rail means secured to said base frame means for supporting a cutter assembly carriage thereon;
- (b) said first and second holder means each including axially aligned opposed gripping means with said first and second holder means being spaced apart a predetermined distance along parallel disposed axes, said gripping means being journaled within said base frame means for axial rotation about said parallel axes, and means for rotating said opposed gripping means in unison, one with the other;
- (c) a longitudinally movable cutter assembly comprising a cutter head, motor means for driving said cutter head about a certain cutting axis, stylus means spaced from said cutter head and having a contact tip for making contact with the surface of said article to be replicated, said contact tip being spaced from the axis of said cutter head by

a distance equal to said predetermined distance, and a parallelogram working frame supporting said cutter assembly and including a pair of opposed mounting brackets slidably disposed on said opposed rail means;

- (d) first and second parallel disposed transverse shafts secured to said mounting brackets, each said transverse shaft having a pair of rocker arms journaledly mounted thereon, each said pair of rocker arms forming upper and lower members of said parallelogram working frame, said rocker arms being journaled for both pivotal and slidable motion upon said transverse shafts;
- (e) a pair of laterally disposed bell cranks journaledly coupled to laterally opposed ends of said pairs of rocker arms to form one generally vertical end of said parallelogram working frame and with said laterally disposed bell cranks supporting a cross-member having a surface upon which said cutter assembly is supported, said cutter assembly being arranged for generally vertical up-and-down reciprocal motion with said rocker arms; and
- (f) a pair of laterally opposed counterweight supporting brackets secured to said pairs of rocker arms in opposed relationship to said bell cranks and supporting a counterweight substantially balancing the weight of said cutter assembly.

4,227,558

APPARATUS FOR SIMULATING A WOODGRAIN FINISHRobert E. Bates, 161 Portland Rd., Remuera, Auckland, New
Zealand

Filed Dec. 22, 1978, Ser. No. 972,457

Claims priority, application New Zealand, Dec. 22, 1977,
186093Int. Cl.³ B27C 9/00

U.S. Cl. 144—2 R

3 Claims



1. A simulated woodgrain embellishing apparatus, comprising:

- (a) a frame;
- (b) a plurality of rollers supported by said frame and forming a horizontally disposed workpiece support bed;
- (c) a carriage substantially horizontally disposed adjacently over said workpiece support bed;
- (d) a plurality of transverse burner head supports mounted on said carriage transversely one behind the other relative to the path of said workpiece support bed, each of said burner head supports being longitudinally reciprocable within support bearings mounted on said carriage;
- (e) cam means operatively connected to each of said burner head supports to effect longitudinal reciprocal movement of said burner head supports;
- (f) means for rotating said cam means to effect said reciprocal movement of said burner head supports;
- (g) burner heads mounted, at least one to each of said burner head supports, in transverse staggered relationship to each other, each burner head having a plurality of transversely disposed and adjacently spaced apart nozzles spaced adja-

cently upward of and directed toward said workpiece support bed;

(h) means for fueling said burner heads to form, upon ignition, a naked flame issuing from each nozzle to scorch an upper surface of a workpiece passing through the apparatus on said workpiece support bed to produce a simulated woodgrain appearance.

4,227,559

DUAL ATTITUDE GOLF BAG

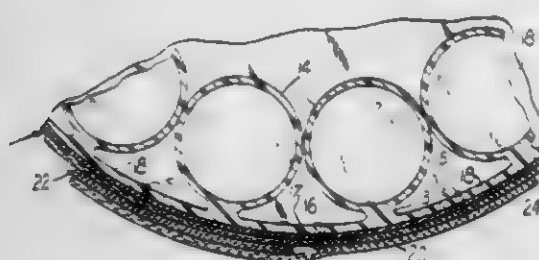
Marlin H. Stroman, 142 Phillips, Clawson, Mich. 48017

Filed Jun. 4, 1979, Ser. No. 44,984

Int. Cl.³ A63B 55/00

U.S. Cl. 150—1.5 R

2 Claims



1. Improvement in a dual attitude golf bag for carrying a set of golf clubs having an in-use attitude for golf playing and a space saving flat-lying attitude for storage and transport, said improvement comprising a flexible one-piece extruded core for said golf bag having the same two attitudes as the latter and consisting of a normally flat-lying shell and a plurality of side by side separator tubes integrally joined to said shell, the set of golf clubs, in each of the two attitudes of said core, being individually contained in said separator tubes, said core, in the in-use attitude of said golf bag, having a cylindrical form in which said separator tubes are disposed in side by side substantially rigid abutment to each other so as to impart compressive strength and rigidity to said golf bag, and said separator tubes being open ended at the bottom ends thereof so that, in the flat-lying attitude of said golf bag, the heads of the golf clubs are capable of commonly engaging the top end of said core for better weight distribution, managing and handling of the set of golf clubs.

4,227,560

LOCK NUT

Bertil Karlsson, Eskilstuna, Sweden, assignor to Ingenjorsfirman Percy Blanck AB, Lidköping, Sweden

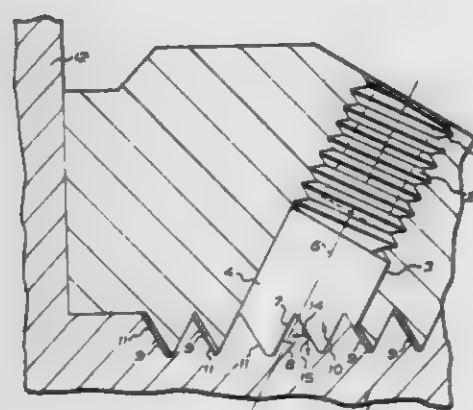
Filed Nov. 23, 1977, Ser. No. 854,498

Claims priority, application Sweden, Dec. 2, 1976, 7613515

Int. Cl.² F16B 39/04

U.S. Cl. 151—24

5 Claims



1. A lock nut for attachment to an exteriorly threaded member, said lock nut comprising:
a nut having a threaded axial opening adapted to be threaded onto an exteriorly threaded member;

said nut having therein an oblique bore extending from said axial opening;

a locking pin positioned in said oblique bore, said locking pin having an inner end which is shaped to fit within the threads of the exteriorly threaded member;

said oblique bore and said locking pin having a common longitudinal axis extending at substantially the same angle to the longitudinal axis of said axial opening as does one of the thread flanks of the threads of said axial opening of said nut;

said inner end of said locking pin having at least one thread flank extending substantially parallel to said common longitudinal axis; and

said common longitudinal axis extending at an angle to a plane which is transverse to said longitudinal axis of said axial opening, and said common longitudinal axis lying on a plane which extends along said longitudinal axis of said axial opening.

4,227,561

SEALED FASTENER

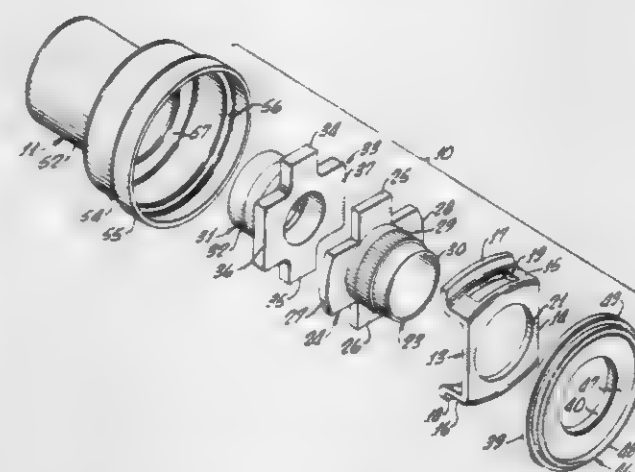
Jorge W. Molina, Torrance, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.

Filed May 5, 1978, Ser. No. 903,163

Int. Cl.² F16B 39/00, 37/14

U.S. Cl. 151—41.74

10 Claims



1. A sealed nut device comprising

a housing having

a base

and a closed receptacle extending from said base in one direction,

said base having an opening therethrough,

a sealing member extending around said opening and facing outwardly of said base in the opposite direction,

said receptacle including a shoulder overlying the marginal portion of said base on said one side thereof

and a flange overlying the marginal portion of said base on the opposite side thereof, said sealing member including a first annular portion intermediate said flange and said opposite side of said base,

whereby said base is connected to said receptacle and is sealed relative thereto,

a second annular portion adjacent and radially inwardly of said first annular portion,

said second annular portion projecting outwardly of said opposite side beyond said flange for engagement with a workpiece,

and a third annular portion adjacent said second annular portion and extending radially inwardly therefrom to an inner edge adjacent said opening,

said third annular portion being recessed beneath said second annular portion, said second annular portion being thicker than either of said first annular portion and said third annular portion,

and nut means, said nut means including

a threaded portion in said housing,

and a sleeve extending through said opening and projecting beyond said base in said opposite direction, said sleeve being adapted to be extended through an opening in a workpiece and being bendable to form a flange for cooperating with said base to retain said housing and nut means to such a workpiece and to cause said sealing member to engage said workpiece for precluding fluid flow.

4,227,562

ROAD TRACTION APPARATUS

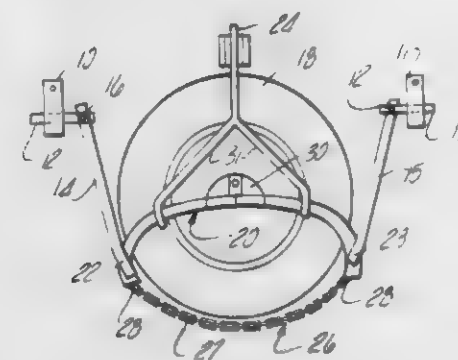
Reginald J. Adair, P.O. Box 126, Utica, Mich. 48087

Filed Mar. 13, 1979, Ser. No. 20,084

Int. Cl.³ B60C 27/00

U.S. Cl. 152—214

3 Claims



1. Vehicular road traction apparatus for feeding an anti-skid element between a tire of the vehicle and the surface of the road comprising,

an anti-skid endless chain having a traction section for lying between a tire and the road and a recirculating section leading from aft of the tire to fore of the tire;

an arcuate tubular conduit leading from aft of the tire to fore of the tire movably enclosing and conducting said recirculating section of said chain from a point aft of a tire to a point fore of a tire;

means for supporting said conduit in position;

rotation of the tire over the traction section of said chain pulling said chain traction section from the conduit at a point fore of rotation of the tire with the movement of said traction section pulling said chain recirculating section through said conduit from a point aft of the tire;

said supporting means including a first pivot pin mountable on a vehicle adjacent a tire;

an arm having an end movably swung on said first pivot pin and an end fixed to said conduit;

a second pivot pin mountable on a vehicle adjacent a tire, a second arm having an end movably swung on said second pivot pin and an end fixed to said conduit;

said first and second arms being fixed to said conduit at points spaced apart;

a cable connected to said conduit for raising said conduit from the position between a tire and the road to a position away from a tire where said chain is not fed under the tire and for lowering said conduit to the position where said chain is fed under the tire;

said conduit being separated mid-way in its length and a hinged joint interconnecting said separated portions of said conduit;

said cable being attached to said conduit on one side of said hinged joint with the hinged joint transferring raising and lowering motion from said cable to the conduit on the other side of said hinged joint.

4,227,563

BEAD CONSTRUCTION FOR A HEAVY DUTY PNEUMATIC TIRE

Karl Grosch, Roetgen; Paul Moltzheim, and Gert Schloesser, both of Aachen, all of Fed. Rep. of Germany, assignors to Uniroyal GmbH, Aachen, Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,231

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715734

Int. Cl.¹ B60C 15/00, 9/02

U.S. Cl. 152—354 R

10 Claims



1. A heavy-duty pneumatic tire for mounting on a 15" steep-shouldered rim comprising, in cross-section, a sidewall having an inside surface portion and an outside surface portion, a bead defined between said inside and said outside surface portions, said bead being formed with a heel at said outside surface portion and a toe-edge at said inside surface portion to define a seat, said bead including a bead core having an elongated hexagonal, cross-sectional configuration of unequal long sides oriented parallel to the seat and having a predetermined width when measured in a direction parallel to said seat, a carcass disposed between said inside and said outside surface portions, said carcass having at least one ply of rubberized steel cord fabric closer in proximity to the inside surface portion than the outside surface portion and having a terminal end portion turned up around said bead core a predetermined distance from said carcass and substantially parallel to said carcass and terminating radially above said bead core, a bead reinforcing strip of steel cord extending from the heel and having a terminal end radially above the terminal end of the carcass turnup, a tread forming a crown-like cover on the carcass, a reinforcement belt disposed between said tread and said carcass, said reinforcement belt being formed of rubberized steel cord, and a rubber filler assembly disposed between said inside and said outside surface portions and extending approximately from the bead core toward the tread, said filler assembly comprising an apex strip of hard rubber compound contacting said bead core and having converging side portions extending radially of and from said bead core, said apex strip having a height when measured in a direction perpendicular to said seat of no more than 1.5 times the width of said bead core and, together with the bead core, forming a rigid unit with said bead core, said bead core including rubberized steel wires extending perpendicular to axial planes of the tire and concentrically with respect to each other to form a rigid bead area providing a relatively short shear stress path, said filler assembly further including cushion elements formed of a soft rubber compound different from the rubber compound of said apex strip and being strongly adherent to steel and having high rebound elasticity, the terminal end of the carcass turn-up and the terminal end of the bead reinforcing strip being embedded in the

cushion elements whereby the bead area is endowed with elastic rebound characteristics.

4,227,564

CURTAIN TRACK WITH TRAVERSE CORD

Konrad Bratschi, Haldenweg 29, 3074 Muri, Switzerland, assignor to K. Bratschi and Silent Gliss, both of Muri, Switzerland

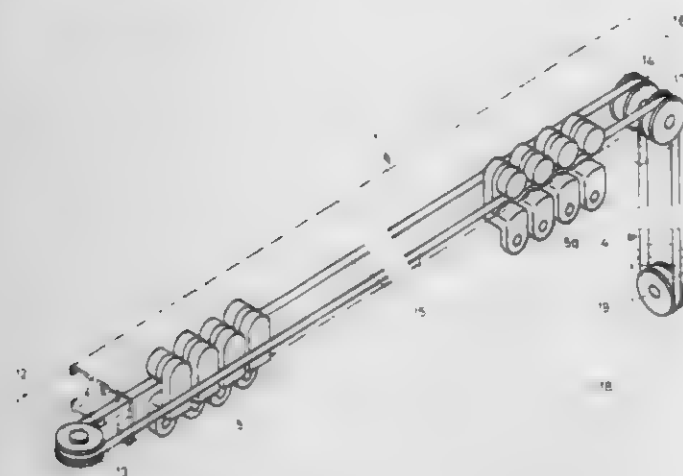
Filed Jan. 29, 1979, Ser. No. 7,520

Claims priority, application Switzerland, Jan. 27, 1978, 938/78

Int. Cl.³ A47H 5/00

U.S. Cl. 160—345

11 Claims



1. Curtain track with traverse cord and longitudinally displaceable curtain hangers, wherein the hangers are frictionally engaged with the cord which is guided lengthwise in at least one channel of the track, the hangers bearing upon the track indirectly via the cord, the relationships being such that, upon actuation of the traverse cord the frictional engagement by the cord produces entrainment of the hangers, and, upon exceeding of the frictional engagement force the cord slips relative to the curtain hangers.

4,227,565

FLOW CUT-OFF METHOD AND APPARATUS FOR FOUNDRY INSTALLATIONS

Gerard A. Lavanchy, Prilly-Lausanne; Marc-Henry Rossier, Epalingues, and Fritz Mezger, Muntelier, all of Switzerland, assignors to Maschinenfabrik & Eisengieserei Ed. Mezger AG, Berne, Switzerland

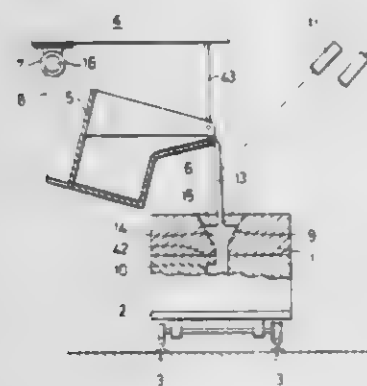
Filed Aug. 29, 1978, Ser. No. 937,753

Claims priority, application Switzerland, Sep. 5, 1977, 10808/77

Int. Cl.³ B22D 46/00

U.S. Cl. 164—155

9 Claims



1. A control system for a casting installation comprising a casting ladle containing molten metal for filling a mold; at least one mold having an inner cavity and a sprue cup thereon, said mold being filled by a stream of metal which falls from said

casting ladle into said sprue cup, thus forming in said sprue cup an accumulation of metal with a free surface while flowing from said sprue cup towards said inner cavity, a first detector means for measuring the level of said surface and for generating a first analog signal corresponding to said level, a second detector means for measuring the width of said stream and for generating a second analog signal corresponding to said width; an electronic circuit means having a first input connected to said first detector means for receiving said first analog signal, a second input connected to said second detector means for receiving said second analog signal and an output; flow cut-off control means for causing said casting ladle to cease filling said sprue cup; and a connection means disposed between said output and said flow cut-off control means, said electronic circuit means comprising differentiation means, summing means and amplification means, said electronic circuit means processing both of said analog signals and forming a filling control signal from both of said processed analog signals, said filling control signal representing the flow rate of molten metal through said sprue cup, said filling control signal having an abrupt fluctuation when the flow rate of molten metal through said sprue cup undergoes an abrupt change indicating that said molten metal ceases to flow from said sprue cup into said cavity while said stream is not cut-off, whereupon said signal exceeds a predetermined threshold and actuates said flow cut-off control means.

4,227,566

BUILDING SOLAR ENERGY HEATING SYSTEM AND COOLING SYSTEM

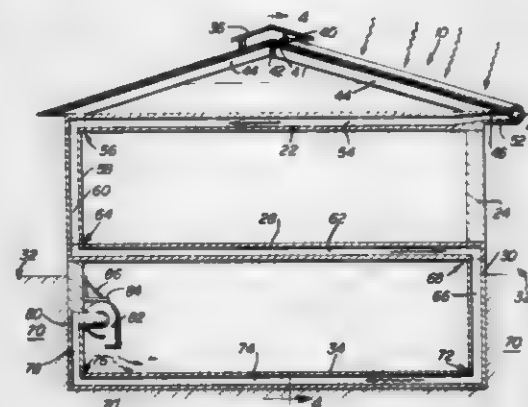
John Stilber, 7130 Captain Kidd Ave., Sarasota, Fla. 33581

Filed Jun. 14, 1978, Ser. No. 915,359

Int. Cl.³ F28D 21/00; F24J 3/02

U.S. Cl. 165—1

11 Claims



1. A built-in solar combination heating and cooling system for a building having a subfloor, walls, one or more ceilings, and a roof having a ridge and eaves, the southerly surface of said roof being exposed generally in the direction of maximum solar radiation, said system comprising a first heat exchange means and a second heat exchange means, said first heat exchange means comprising a sealed connection and a plurality of air-filled tubular roof solar panels secured to said roof, connected to said sealed connection, and extending from ridge vents along said ridge to said sealed connection, said panels have openings along said ridge for allowing air to enter or exit said panels, said second heat exchange means comprising in continuous sealed interconnected relationship cored air-filled slabs comprising said ceilings, a plurality of hollow air-filled blocks comprising said walls, a cored air-filled slab comprising said subfloor, an opening from said second heat exchange means into the interior of said building, and an air blower interposed between said opening and the interior of said building, said air blower being adapted to transfer air from said second heat exchange means into said building, said first heat exchange means being connected at said sealed connection to said second heat exchange means.

4,227,567

INTERMEDIATE TEMPERATURE, HEAT STORAGE AND RETRIEVAL SYSTEM

Norman D. Greene, Del Mar, Calif., assignor to Kohler Co., Kohler, Wis.

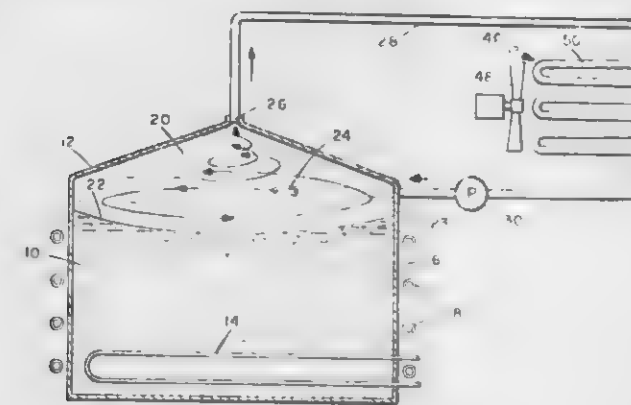
Filed Dec. 21, 1978, Ser. No. 971,869

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.³ F28D 21/00

U.S. Cl. 165—1

18 Claims



1. The method of storing energy and retrieving such stored energy as heat, that includes
(a) providing a liquid system that consists essentially of a salt melt lower region, an upper region of additive liquid which is immiscible with the salt melt, said liquid selected from the group which consists essentially of THERMINOL, CALORIA, SANTOWAX, and di-butyl phthalate, and an emulsion of said melt and additive liquid intermediate said upper and lower regions,
(b) effecting latent heat transfer from the melt to the additive liquid within the emulsion, and transferring heat from the additive liquid,
(c) maintaining active flowing movement of the emulsion to enhance said latent heat transfer, and which results in formation of salt crystals, and
(d) gravitating said crystals downwardly in the melt away from the emulsion.

4,227,568

DRIVE SYSTEM FOR A CERAMIC REGENERATOR

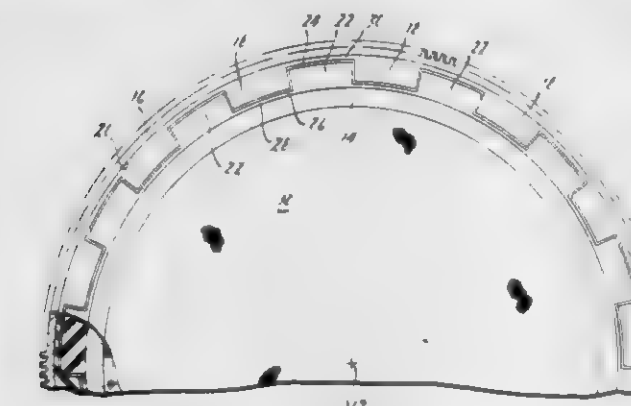
Charles A. Knapp, Grosse Pointe Woods, Mich., and Gary L. Boyd, Tempe, Ariz., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 5, 1979, Ser. No. 17,291

Int. Cl.³ F28D 19/00

U.S. Cl. 165—8

3 Claims



1. A regenerator construction comprising a ceramic cylindrical core having axial gas flow passages therein, a ring gear surrounding said core, said ring gear being radially spaced with respect to said core to define an annular space therebetween, and an elastomeric drive means situated in said space, said drive means comprising a plurality of elastomeric drive lugs bonded to the inner surface of said ring gear at tangen-

4,227,569

AIR CONDITIONING INSTALLATION

Jean-Jacques Wattin, Nogent-le-Rotrou, France, assignor to Societe Anonyme Francaise du Ferodo, France

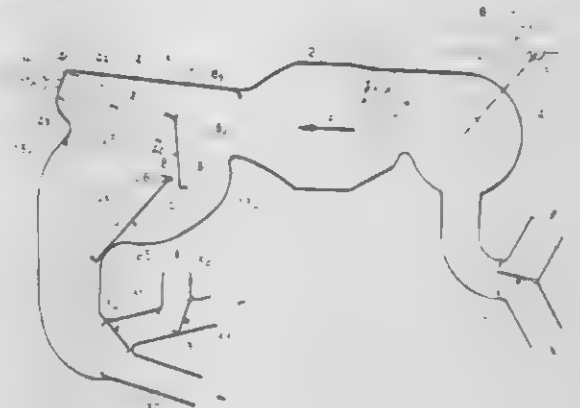
Filed Aug. 8, 1978, Ser. No. 931,878

Claims priority, application France, Aug. 11, 1977, 77 24786

Int. Cl.³ G05D 23/00

U.S. Cl. 165—35

7 Claims



1. An air conditioning installation for an enclosure, such as the passenger space of a motor vehicle, comprising heating and/or cooling apparatus having a heating and/or cooling capacity;
first control means, for said heating and/or cooling capacity of said apparatus, for providing said capacity at a preset value which is substantially continuously adjustable between first and second limit values; and
extra control means, for said heating and/or cooling capacity of said apparatus, for imparting to said capacity said first or second limit value without modifying said preset value of said first control means when active, and for imparting to said capacity said preset value of said first control means when disconnected.

4,227,570

HEAT EXCHANGE STRUCTURE

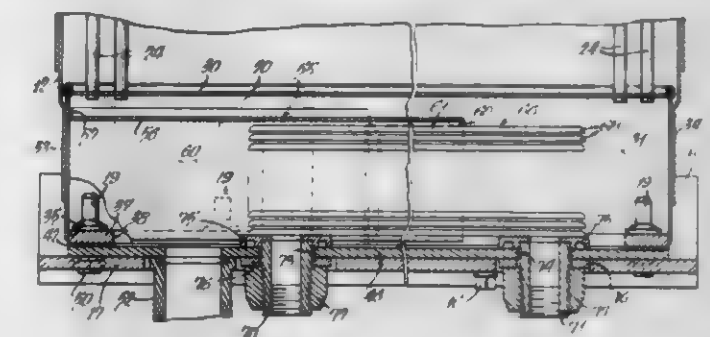
Donald R. Crews, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 1, 1979, Ser. No. 95,195

Int. Cl.³ F28F 9/26; F01P 11/08

U.S. Cl. 165—67

15 Claims



1. In a heat exchange structure comprising a radiator (10) having a downstream tank (20), means for admitting heated fluid to the radiator (10) wherein said fluid flows through the radiator (10) to the downstream tank (20), said downstream tank (20) has an opening (38) in one side thereof, baffle means

(55) mounted in said downstream tank (20) for diverting flow from the radiator through said baffle means (55), and oil cooler (66) mounted in said downstream tank (20) in close association with said baffle means (55) whereby said flow through said baffle means (55) flows over said oil cooler (66), a plate (46) sealingly attached over said opening (38) in said downstream tank (20), and an outlet (52) in said downstream tank (20) downstream from said baffle means (55) and oil cooler (66) for exiting the fluid from said downstream tank (20).

4,227,571

PLATE HEAT EXCHANGER

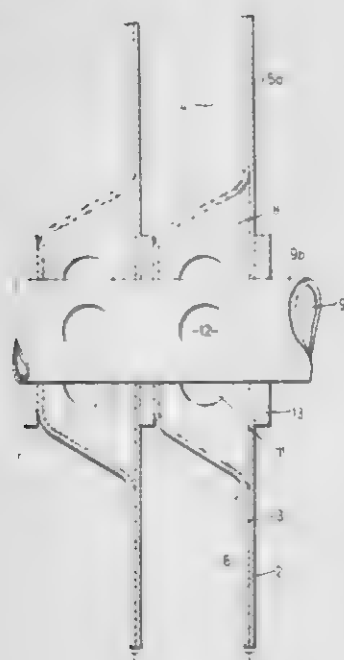
Jan Tjaden, Durach, Fed. Rep. of Germany, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Aug. 18, 1978, Ser. No. 934,895

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738670

Int. Cl.³ F28F 3/10, 3/12

U.S. Cl. 165—167



1. A plate heat exchanger, comprising heat exchange elements through which a medium flows, each heat exchange element consisting of two opposed thin metal plates, each plate coated with a sealing adhesive material on the surface thereof contacting the opposed plate and the abutting areas of the plates thereby being bonded together, at least one of said two plates being deep-drawn to form a plurality of parallel shallow passages therein and, on opposed ends of said passages, a deeper manifold being provided perpendicular to said passages for feeding and discharging the medium to and from said passages, the deeper manifolds extending along the whole length of the heat exchange element, and end closures having a cross section approximately corresponding to that of the deeper manifolds and comprising on at least the outer surfaces thereof, a material that can be sealed to the coated sides of the plates, the end closures being inserted into the ends of said deeper manifolds and sealed to the plates to thereby close said manifolds, distributing conduits running transversely to the plates of said heat exchange elements and through said end closures, said distributing conduits opening into channels which are provided in the end closures such that the medium can flow from one distributing conduit through an associated end closure into one of said manifolds connected to the ends of said passages and then through said passages to the other opposed manifold and into another distributing conduit in an associated end closure.

4,227,572

FINNED TUBING

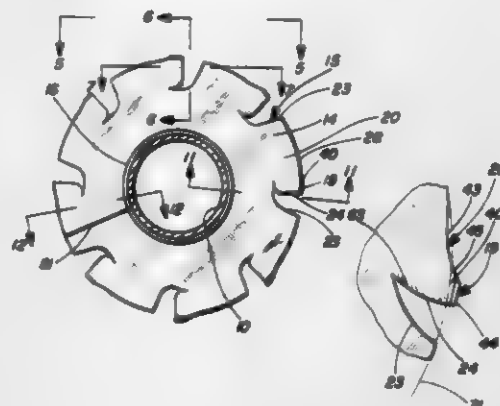
Courtney S. Harlan, Medina, Ohio, assignor to Seton-Scherr, Inc., Medina, Ohio

Filed Mar. 27, 1978, Ser. No. 890,369

Int. Cl.³ F28F 1/36

U.S. Cl. 165—184

7 Claims



1. A finned tubing for use in heat exchange comprising, a cylindrical tube, a strip of material helically disposed about said tube to form a series of helically disposed fin convolutions, a plurality of said fin convolutions having generally radially outwardly extending webs defining serrations therebetween along the outer periphery of said fin convolutions, the sides of said webs extending inwardly of said periphery and defining the opposed legs of said serrations, a laterally extending flange disposed on the periphery of each web adjacent at least one of said sides, said flange being wider than the general thickness of said fin convolution adjacent said flange, said one side having faces which taper to a terminal edge so as to provide a relatively sharp edge on at least one leg of each serration inwardly of said flange.

4,227,573

REINFORCED SEAL UNIT FOR PUMPDOWN PISTONS OR WELL SWABS

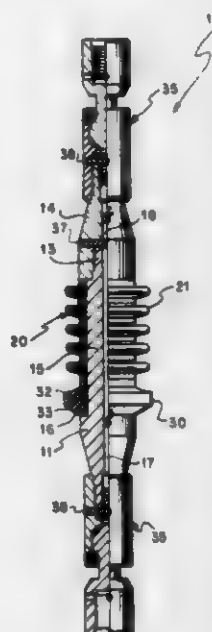
Joseph L. Pearce, Dallas; Thomas W. Ray, Plano; Donald F. Taylor, Dallas, and John H. Yonker, Carrollton, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 16, 1978, Ser. No. 961,139

Int. Cl.³ E21B 33/12

U.S. Cl. 166—153

15 Claims



1. A piston for through a flowline (TFL) servicing of wells, comprising:
a. mandrel means;
b. a seal unit supported on the exterior of the mandrel means;

- c. an annular fin extending from the seal unit for engagement with the interior wall of the flowline;
- d. the annular fin having an interior portion comprising a wire mesh molded within an elastomer;
- e. the cross section of the interior portion conforming to the cross section of the annular fin; and
- f. means for connecting the piston to other well tools.

4,227,574

LOCATING THE TOP OF AN IN SITU OIL SHALE RETORT FOR EASE OF IGNITION

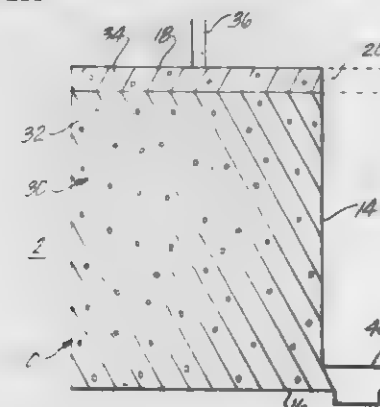
Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jan. 8, 1979, Ser. No. 1,605

Int. Cl.³ E21B 43/24, 43/26

U.S. Cl. 166—259

9 Claims



7. A method of forming a combustion zone within an in situ oil shale retort in a subterranean formation containing oil shale and having a plurality of strata of formation extending through a retort site, at least one stratum of formation having a higher average kerogen content than the average kerogen content of formation within the retort site, the method comprising the steps of:

- excavating at least one vertically extending void within the retort site and leaving a remaining portion of unfragmented formation within the retort site, said vertically extending void extending through such a stratum of formation having a higher average kerogen content;
- explosively expanding the remaining portion of unfragmented formation within the retort site, including such a stratum of formation having a higher average kerogen content toward such a vertically extending void for forming a fragmented permeable mass of formation particles having an upper layer containing fragmented formation particles substantially from said stratum of formation having a higher average kerogen content and a lower portion containing fragmented particles having a lower average kerogen content than the upper layer;
- introducing a combustible fluid and an oxygen-containing gas to the upper layer of the fragmented mass;
- igniting and burning the combustible fluid for supplying heat to the upper layer of the fragmented mass to raise the temperature of at least a portion of the upper layer to an ignition temperature of oil shale in the upper layer, thereby igniting the formation particles in the upper layer for establishing a combustion zone in the fragmented mass; and
- introducing an oxygen containing gas to the fragmented mass and withdrawing an off gas from the lower portion of the fragmented mass for maintaining the combustion zone and advancing the combustion zone downwardly through the fragmented mass.

4,227,575

RESERVOIR STABILIZATION BY TREATING WATER SENSITIVE CLAYS

Daryl W. Nooner, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,881

Int. Cl.³ E21B 43/24

U.S. Cl. 166—303

3 Claims

1. A method of altering the matrix of a hydrocarbon-bearing formation having present therein montmorillonite clays, comprising the steps of introducing into said formation via a well-bore penetrating said formation a heated aqueous solution of an amide selected from the group consisting of urea and formaldehyde, continuing injection of said solution until said matrix is heated to a minimum temperature of about 260° C. for a desired radial distance from said wellbore, whereby said matrix is stabilized by mineralogically altering said montmorillonite clays.

4,227,576

METHOD FOR CLEANING A HELICAL SPRING SAND SCREEN

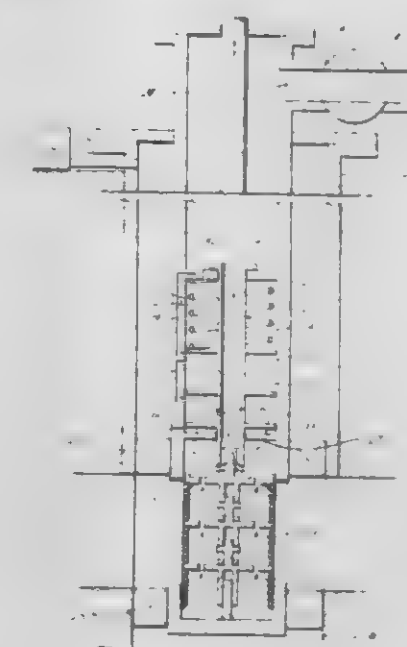
Reynaldo Calderon, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,934

Int. Cl.³ E21B 37/08, 43/08

U.S. Cl. 166—312

8 Claims



1. A method for cleaning a helical spring sand screen which has a reciprocal valve means connected to the helical spring sand screen for contracting the helical spring for filtering sand from liquid from a producing well for producing sand-free liquid through a production tube and for expanding the helical spring sand screen for backwashing liquid therethrough for cleaning thereof comprising:

- (a) ceasing flow from the production tube,
- (b) injecting high pressure liquid into the reciprocal valve means for expanding the helical spring sand screen, and
- (c) injecting more high pressure liquid into the helical spring sand screen for cleaning thereof.

4,227,577

FIRE-EXTINGUISHING SYSTEM

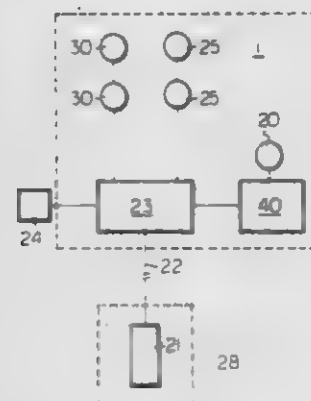
Makoto Iida, Tokyo, Japan, assignor to Security Patrols Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 726,832, Sep. 27, 1976, abandoned. This application Apr. 12, 1978, Ser. No. 895,605
Claims priority, application Japan, Jul. 26, 1976, 51-89810; Mar. 30, 1978, 53-36039

Int. Cl.³ A62C 37/04

U.S. Cl. 169—61

10 Claims



1. A fire extinguishing system coupled with a guarding system for protecting the same region, said guarding system including at least one intrusion sensor positioned in said region for providing an abnormal condition signal when a person is in said region, said fire extinguishing system comprising:

- (a) at least one fire sensor for monitoring a condition indicative of a fire and for providing a fire signal upon the sensing of the condition;
- (b) at least one fire extinguishing device;
- (c) at least one manually operable means for operation by a person to activate said fire extinguishing device; and
- (d) logic conduit means coupled to said at least one intrusion sensor, said at least one fire sensor, and said at least one manually operable means wherein said logic circuit means:
 - (i) provides an actuation signal to said at least one fire extinguishing device when at least one of said at least one fire sensor detects a fire condition in said protected region and at least one of said at least one intrusion sensor does not detect an abnormal condition;
 - (ii) does not provide an actuation signal to said at least one fire extinguishing device when said at least one fire sensor detects a fire condition in said protected region and said at least one intrusion sensor detects an abnormal condition; and
 - (iii) provides an actuation signal to said at least one fire extinguishing device when at least one of said at least one manually operable means are actuated.

4,227,578

ISOLATION FRAME

Henry W. Hurt, Lubbock, Tex., assignor to Lubbock Manufacturing Company, Lubbock, Tex.

Filed Jun. 11, 1976, Ser. No. 695,083
Int. Cl.³ A01B 13/08, 15/04, 35/32, 59/042

U.S. Cl. 172—40

4 Claims

1. In a vibrating earth working device to be drafted behind a vehicle having
- a. a plow frame having
 - (i) a forward most member and
 - (ii) a rear beam,
 - b. a plurality of ripper plows on said plow frame,
 - c. said plows adapted to be moved in a direction of draft, and
 - d. a vibrator on the plow frame,
 - e. said vibrator being means for vibrating the plow frame in a horizontal direction normal to the direction of draft;
 - f. the improved structure comprising:

- g. a planar isolation frame located in a vertical plane which is normal to the direction of draft,
- h. two draft links interconnecting the plow frame to the isolation frame,
- j. said draft links pivoted about vertical pivots to the isolation frame forward thereof, and
- k. said draft links pivoted about vertical pivots to the plow frame behind the forward most member thereof,

- m. at least one strut extending from the top of the isolation frame to the back of the plow frame,
- n. means attached to the strut for pivoting said strut to the plow frame and to the isolation frame,
- o. three links extending from the isolation frame forward toward the vehicle.

4,227,579

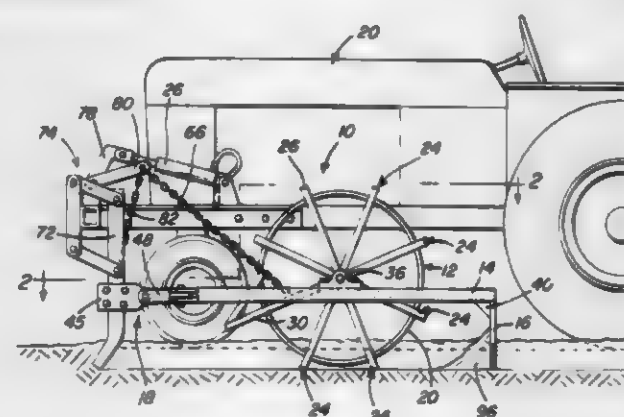
DIKE PRODUCING DEVICE

William C. Isbell, Petersburg, Tex., assignor to Ken Isom; Larry Isom and Rex Isom, all of Idalou, Tex., part interest to each
Filed Aug. 22, 1978, Ser. No. 938,304

Int. Cl.³ A01B 13/16

U.S. Cl. 172—64

4 Claims



1. In combination, a dike forming device and a lister point comprising: a longitudinally extending frame; a plate member connected at one end of said frame; a hitch means connected to the opposite end of said frame for attaching said frame to said lister point, said hitch means including a pair of vertically oriented plates disposed adjacent opposite sides of said lister point and further including a horizontal pivot axis and a vertical pivot axis; wheel means connected to said frame for supporting said frame, said wheel means including a plurality of radially extending spokes with at least one of said spokes being longer than one other of said spokes; a cylindrical band connected on one side to each of said spokes for supporting said wheel means in soft soil, each of said spokes having a free end extending radially outward of said band; a reinforcing member connected between the outer surface of said cylindrical band and the free end of said at least one longer spoke; and bearing means supporting and journaled said wheel means on said frame.

4,227,580

IMPLEMENT WITH SIDE SCREENING PLATES AND SOIL ROLLER

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburgh, both of Netherlands, assignors to C. van der Lely N. V., Maasland, Netherlands

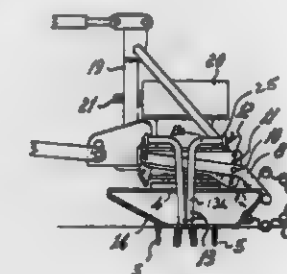
Continuation of Ser. No. 567,695, Apr. 14, 1975, Pat. No. 4,178,997, which is a continuation of Ser. No. 393,026, Aug. 30, 1973, abandoned, which is a division of Ser. No. 172,511, Aug. 17, 1971, Pat. No. 3,774,689. This application Jan. 2, 1979, Ser. No. 595

Claims priority, application Netherlands, Aug. 18, 1970, 7012157

The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.
Int. Cl.³ A01B 33/12

U.S. Cl. 172—112

5 Claims



1. A harrow comprising an elongated frame extending transverse to the normal direction of travel and a plurality of adjacent soil-working members supported in a row on said frame, drive means being provided for rotating said soil-working members about upwardly extending axis and each of said members comprising a substantially horizontal support with at least one downwardly extending tine, a substantially vertical screening plate being normally positioned adjacent each opposite lateral side of said row, said plate extending in the general direction of travel and having a lower edge, said lower edge being positioned to ride over the ground during travel, said plate being pivoted to said frame through arm means and said arm means extending from said plate upwardly and then substantially horizontally, in the longitudinal direction of said frame, said arm means being pivoted to the frame a substantial distance from the lateral side thereof and said distance corresponding substantially to the distance between the axes of rotation of two adjacent soil-working members, said plate being freely turnable upwardly and downwardly to match ground undulations during travel, a soil compressing roller being connected to the frame by pivotable supports, said roller being positioned to the rear and spaced from said row and said plate being positioned between the roller and said soil working members, when viewed from the side, to screen the space between the roller and said members.

4,227,581

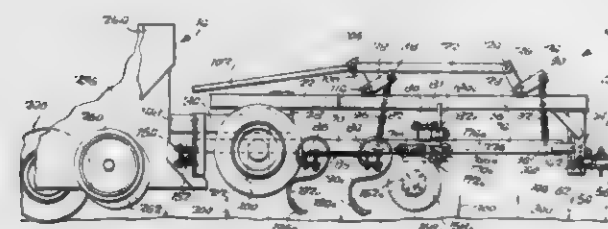
GROUND PREPARING APPARATUS FOR NO-TILL PLANTING

Harry A. Klotzbach, 7380 Macomber Rd., Oakfield, N.Y. 14125
Filed May 15, 1978, Ser. No. 905,582

Int. Cl.³ A01B 49/06

U.S. Cl. 172—142

10 Claims



1. Apparatus for preparing ground for seed planting adapted to be drawn over along a field by an agricultural vehicle along

with and forwardly of a planting machine, said apparatus comprising:

- (a) a first frame adapted to be connected at one end to said vehicle and at an opposite end to said planting machine;
- (b) a second frame having a leading end near said vehicle and a trailing end near said planting machine;
- (c) holding means connected to said first and second frames for supporting said second frame by said first frame in a manner permitting limited movement of said second frame in a direction toward and away from the ground;
- (d) a colter disc rotatably carried by said second frame, said disc penetrating the ground in a manner forming a slit in the ground in a direction substantially parallel to the direction of travel of said apparatus along the field, said colter disc serving to cut plant stalks and the like debris during formation of the slit;
- (e) first and second tooth elements carried by said second frame between said colter disc and said trailing end of said second frame, said first tooth element being located near said colter disc and laterally offset a relatively small distance to one side of the slit formed by said disc, said second tooth element being longitudinally spaced from said first tooth element and laterally offset a relatively small distance to the opposite side of the slit formed by said disc, the longitudinal spacing between first and second tooth elements being sufficient to allow any debris encountered by said first tooth element to move between said tooth elements in a manner preventing clogging of said tooth elements, said tooth elements penetrating the ground on opposite sides of the slit and cutting the ground in a manner forming a band-like region of prepared ground disposed substantially parallel to the direction of travel of said apparatus for receiving particulate matter including seed dispensed by said planting machine;
- (f) at least one ground contacting wheel element rotatably connected to said second frame, said wheel element laterally spaced from the band formed by said colter disc and said teeth, said wheel element controlling the depth of penetration of said colter disc and said tooth elements into the ground; and
- (g) means for connecting said leading end of said second frame to said first frame in a manner providing a degree of movement of said leading end of said second frame in a direction substantially perpendicular to the ground, said connecting means comprising means defining a slot in said first frame and a pin carried by said leading end of said second frame and movable along said slot in said first frame.

4,227,582

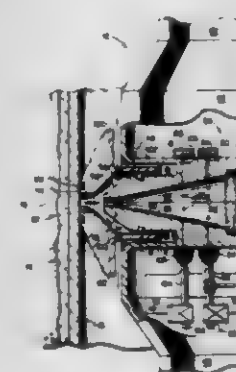
WELL PERFORATING APPARATUS AND METHOD

Ernest H. Price, 1266 Pepper Dr., El Centro, Calif. 92243
Filed Oct. 12, 1979, Ser. No. 84,355

Int. Cl.³ E21B 7/15, 29/02, 43/11

U.S. Cl. 175—16

11 Claims



8. A method for completing a well comprising the steps: drilling a well bore through a formation;

positioning a well casing in the well bore adjacent said formation;
 positioning a laser beam source in said casing adjacent said formation;
 energizing said laser beam source and emitting a laser beam onto said casing during a penetrating cycle;
 discharging a jet of pressurized gas which is exothermically reactive with the well casing material along the path of the laser beam and toward the well casing during the penetrating cycle;
 interrupting the laser beam while discharging the exothermic gas into the region of penetration during an ejection cycle following the penetrating cycle.

4,227,583

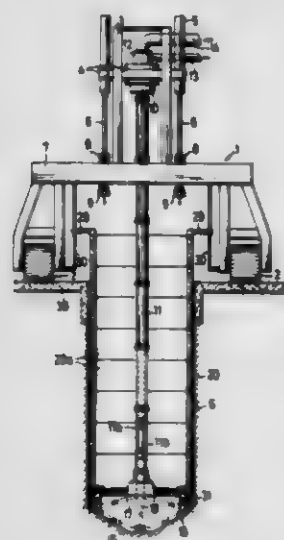
METHOD AND APPARATUS FOR SINKING SHAFTS
 Joseph R. Benjamin, London, England, assignor to Wirth Maschinen-und Bohrgeräte-Fabrik, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,738

Int. Cl.² E21B 3/02, 17/00; E21D 1/06, 1/08

U.S. Cl. 175—65

13 Claims



10. An apparatus for sinking shafts comprising a drill bit and a bearing associated with said drill bit for supporting of at least one walling section forming a shoring for the shaft and which is inserted into the shaft simultaneously with the drilling thereof including a drill-rod system, a power swivel connectable to the upper end portion of said drill-rod system, and means for vertically moving the power swivel.

4,227,584

DOWNHOLE FLEXIBLE DRIVE SYSTEM

W. B. Driver, 19 Sheridan Rd., Arnold, Md. 21012

Continuation-in-part of Ser. No. 827,689, Aug. 25, 1977, Pat. No. 4,143,722. This application Dec. 19, 1978, Ser. No. 970,919

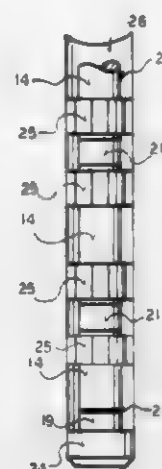
Int. Cl.² E21B 7/04, 1/06

U.S. Cl. 175—95

3 Claims

1. A downhole flexible drive system which attaches to the downhole end of a drill pipe string and operates a drill bit for the drilling of a curved hole in earth formations and drilling fluids can be pumped through the downhole flexible drive system and the downhole flexible drive system comprises: an assembly of motors comprising a plurality of double shaft downhole motors assembled in line a three hundred and sixty degree flexible connection connects the respective ends of said double shafts of said motors forming a flexible joint between said motors, a three hundred and sixty degree flexible assembly constructed to said motors and encloses said flexible connection forming a flex point in said drive system and supports the structure of said drive system and providing a means for drilling fluids to be pumped through said system, an uphole tool joint attached to the uphole end of said system so said drive system can be attached to said drill pipe string and receive drilling fluids from said drill pipe string, a downhole tool joint,

a connecting mechanism for connecting said downhole tool joint to the downhole end of said drive system so said drive system can be attached to said drill bit and said motors can



operate said drill bit, a plurality of centralizers, a centralizer attached around said system on the uphole side and downhole side of each said flexible connection near said flexible connection.

4,227,585

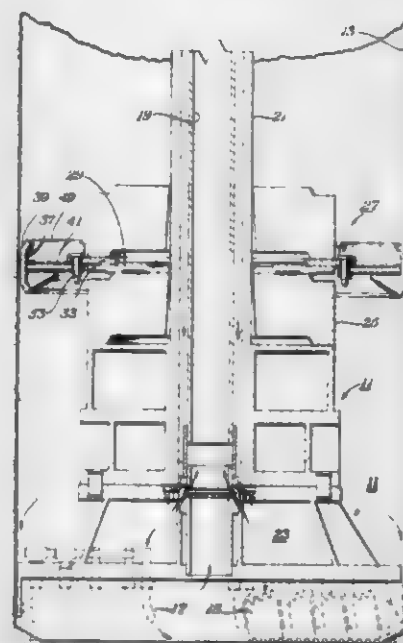
ROTATING STABILIZER FOR SHAFT DRILLING
 Joseph M. Glass, Jr., Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Dec. 28, 1978, Ser. No. 974,206

Int. Cl.² E21B 7/10

U.S. Cl. 175—325

5 Claims



1. In an apparatus for drilling large diameter shafts of the type having a drill bit secured to the end of a string of drill pipe, the drill bit having a plurality of rotatable cutters, and a plurality of weights carried on top of the drill bit, an improved means for centering the drill string in the shaft, comprising: a metal ring of diameter substantially that of the shaft; mounting means for mounting the ring to the drill string so that the ring rotates in unison with the drill string, the ring having a perimeter in sliding contact with the wall of the shaft, the mounting means including an inner member carried with the shaft for rotating therewith, the ring being rigidly and releasably coupled to the inner member so that it can be disengaged from the inner member when pulling the bit to the surface; and passage means in the mounting means for allowing fluid in the shaft to flow past the ring.

4,227,586

ROLLER REAMER APPARATUS

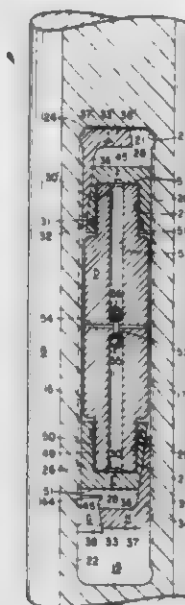
Grey Bassinger, One Allen Center, Suite, 100, Houston, Tex. 77002, assignor to Grey Bassinger, Midland, Tex.

Filed May 8, 1978, Ser. No. 903,841

Int. Cl.² E21B 9/24, 9/08

U.S. Cl. 175—346

17 Claims



1. A roller reamer assembly for mounting in a longitudinally extending undercut groove comprising:
 a roller cutter having a bearing journal on each end thereof mounted in said undercut groove;
 a bearing block mounted for longitudinal sliding movement within the undercut groove at each end of said roller cutter, each of said bearing blocks having a bearing journal therein for matingly receiving a respective one of said roller cutter bearing journals;
 each of said blocks having one side wall matingly and slidably engaging a side wall of said undercut groove, the opposite side wall on each of said blocks longitudinally tapering away from said roller cutter;
 a first locking member on one end of said assembly, said first locking member being located in said undercut groove and having a side wall matingly engaging the tapered side wall on a bearing block in sliding relationship thereto;
 a second locking member on the other end of said assembly, said second locking member being slidably mounted in said undercut groove and having one side wall slidably and matingly engaging a side wall of said undercut groove, the opposite side wall slidably and matingly engaging the tapered side wall on the other bearing block; such that relative longitudinal sliding movement between a locking member and a bearing block creates a transverse force moving the wall surfaces into tighter contact with each other to securely lock the bearing block within the undercut groove and such that longitudinal forces acting in the same direction on each bearing block and its locking member will not tend to loosen them but rather retain them in tight locking engagement; and
 a third locking member located in said undercut groove to operatively engage said second locking member and to move the wall surfaces into tighter contact with each other.

4,227,587

AUTOMOTIVE DRIVE SYSTEM

Vincent E. Carman, Portland, Oreg., assignor to Vehicle Energy Corporation, Menlo Park, Calif.

Continuation of Ser. No. 765,951, Feb. 7, 1977, abandoned. This application Oct. 5, 1978, Ser. No. 948,827

Int. Cl.² B60K 9/00

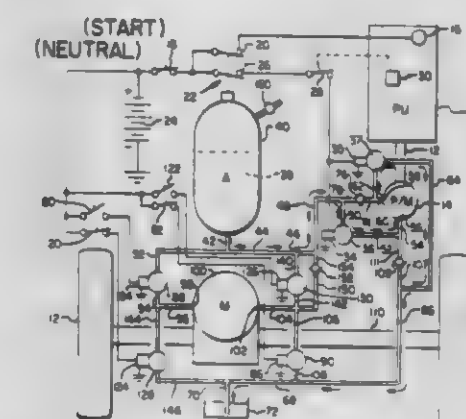
U.S. Cl. 180—165

15 Claims

1. In a wheeled vehicle having an engine for driving the

vehicle, a starting system for selectively storing energy normally lost in braking the vehicle and releasing the stored energy to start the engine, said starting system comprising:

(a) an accumulator for storing pressurized fluid;
 (b) a reservoir for storing fluid;
 (c) hydraulic pump means mechanically coupled to the wheels of said vehicle for being driven by said wheels, said pump means having an inlet and an outlet;
 (d) first control means for selectively hydraulically connecting the inlet of said pump means to said reservoir and the outlet of said pump means to said accumulator for pumping hydraulic fluid from said reservoir into said accumulator for storage therein under pressure in response to the driving of said pump means by said wheels to brake said vehicle;



(e) hydraulic motor means mechanically coupled to said engine for driving and thereby starting said engine, said motor means having an inlet and an outlet;
 (f) second control means for selectively hydraulically connecting the inlet of said motor means to said accumulator for receiving said hydraulic fluid from said accumulator and the outlet of said motor means to said reservoir to drive said engine for starting; and
 (g) speed responsive means connected to said engine for determining the speed of rotation thereof, said second control means including valve means responsive to said speed responsive means for stopping the flow of hydraulic fluid from said accumulator to said motor means when the engine has reached a predetermined speed.

4,227,588

AUTOMATIC VEHICLE STARTING APPARATUS

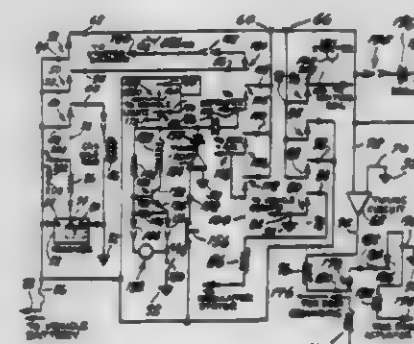
Michael J. Biancardi, 88 Weeks Rd., N. Babylon, N.Y. 11703

Filed Dec. 6, 1978, Ser. No. 966,800

Int. Cl.² F02N 11/08

U.S. Cl. 180—167

21 Claims



1. Apparatus for automatically starting and operating a vehicle comprising: receiving means for receiving a remote signal and in response thereto producing an output signal for a first duration of time; starting means receiving said output signal from said receiving means and during the duration of said output signal providing an electrical energizing signal for operating the vehicle starter and a gas flow signal for sending a supply of gas to the vehicle carburetor to thereby start the vehicle, and operating means responsive to said starting means

for providing an electrical operating signal to the vehicle ignition system for a second duration of time for running the vehicle, wherein said operating means comprises a timing circuit triggered by said starting means and operative thereafter for a preset time period forming said second duration of time, an operating relay coil coupled to the output of said timing circuit for energization thereby from the vehicle battery during said second duration of time, at least three contact switches operated by said operating relay coil, one contact of one contact switch being adapted for connection to the vehicle battery, the other contact of said one contact switch being coupled to one contact of a second contact switch, and the other contact of the second contact switch being adapted for connection to the vehicle ignition coil, whereby upon triggering of said timing circuit, the vehicle ignition coil is interconnected to the vehicle battery for energization thereby during said second duration of time during which the vehicle will continue to operate.

6. Apparatus for automatically starting and operating a vehicle, comprising:

receiving means for receiving a remote signal and in response thereto producing an output signal for a first duration of time;

starting means receiving said output signal from said receiving means and during the duration of said output signal providing an electrical energizing signal for operating the vehicle starter and a gas flow signal for sending a supply of gas to the vehicle carburetor to thereby start the vehicle;

operating means responsive to said starting means for providing an electrical operating signal to the vehicle ignition system for a second duration of time for running the vehicle, and

equipment activating means responsive to the electrical operating signal from the operating means for activating at least some of the vehicle accessory electrical equipment, wherein said electrical activating means comprises an activating relay coil adapted for coupling to the vehicle regulator stator and being energized by said operating means, a plurality of contact switches operated by said activating relay coil, one contact of each of said contact switches being adapted for connection to the vehicle battery, the other contact of each of said contact switches being adapted for connection to a respective one of the vehicle accessory electrical equipment, including the heater, air conditioner, defroster, and the like.

4,227,589

COMBINED ENGINE AND PEDAL POWERED VEHICLES

John J. Chika, 1350 Orchard Ridge Rd., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 437,482, Jan. 28, 1974, abandoned. This application Dec. 5, 1977, Ser. No. 857,567 Int. Cl.³ B62D 61/00

U.S. Cl. 180—206

57 Claims

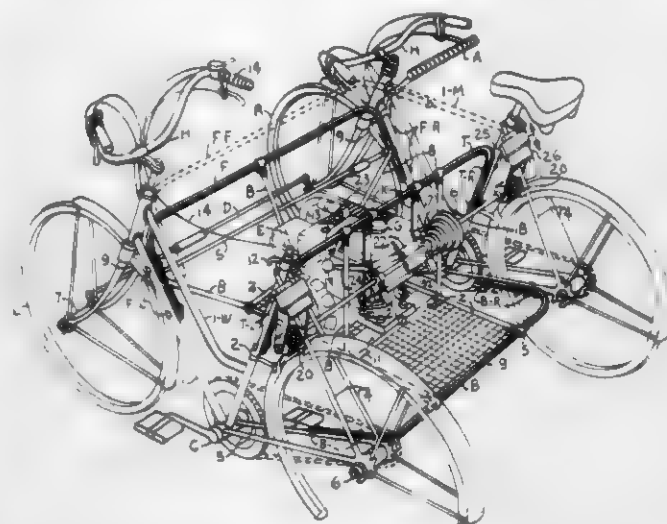
1. A combined motor and pedal-powered four-wheel vehicle comprising:

a. two compatibly configured two-wheel tandem vehicles;

b. plural, specifically configured, transversely rigid cross members operatively connecting said tandem vehicles in side-by-side parallel relation; each cross member bent to form a longer mid-portion and two shorter end-portions; said longer mid-portions positioned substantially horizontally and transversely between said tandem vehicles; said shorter end-portions aligned with and secured to corresponding frame members of said tandem type vehicles at plural spaced-apart points;

c. a modified trapezium steering linkage operatively interconnecting conventional steerable front wheels of said tandem vehicles;

d. auxiliary motor means of propulsion optionally propelling at least one wheel of said four-wheel vehicle; and



e. means combining operative controls of said vehicle and its means of auxiliary propulsion for one-person operation.

4,227,590

GRILLE FOR LOUDSPEAKER CABINET

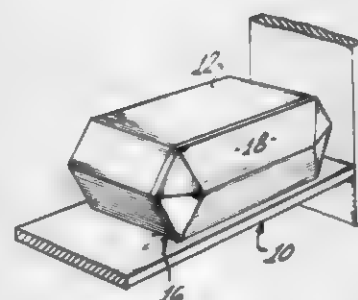
John R. Ballantyne, Pacific Palisades, Calif., and Axel M. Heden, deceased, late of Granada Hills, Calif. (by Ingrid V. Heden, executrix), assignors to Superscope, Inc., Chatsworth, Calif.

Filed Mar. 7, 1978, Ser. No. 884,372

Int. Cl.³ G10K 11/00

U.S. Cl. 181—175

18 Claims



1. The combination of a cabinet containing at least one loudspeaker and a non-planar grille mounted on said cabinet for permitting sound to emanate from said cabinet through said grille, said grille comprising:

a substantially planar polygonal frame including means for securing said frame to a substantially planar face of said cabinet, said frame having a size and shape corresponding to the size and shape of said face of said cabinet, said frame comprising an equal number of elongated frame members and corner brackets, each corner bracket joining two frame members at a predetermined angle, said frame members being substantially tubular and being joined to said corner brackets by fitting over projections on said corner brackets;

a ridge structure disposed upon said frame and comprised of a plurality of elongated ridge members which intersect at at least one point outside of the plane of said frame, said ridge structure comprising a number of corner ridge members equal to the number of frame members, each corner ridge member having one end secured to a corner bracket and the other end secured to a ridge joint member at a point outside of the plane of said frame; and

a covering material disposed over said structure and secured to said frame.

4,227,591

MUFFLER FOR AIR-POWERED NAILERS AND THE LIKE

Arthur Klaus, Frankfurt am Main, and Horst Tacke, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Signode Corporation, Glenview, Ill.

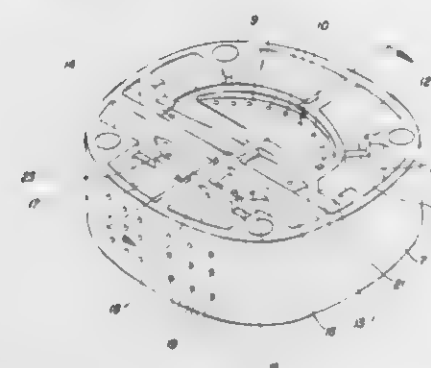
Filed May 29, 1979, Ser. No. 42,767

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827279

Int. Cl.³ F01N 1/08

U.S. Cl. 181—230

7 Claims



1. In an air outlet muffler for the compressed air exhausted from the outlet side of a main control valve of a portable air-powered driving tool comprising air outlet duct means formed by a housing endpiece and a top lid of the driving tool, and in which the outlet side of the main control valve is joined with the outside air by the air outlet duct, the improvement consisting of the muffler having chambers joined with each other through wall hollows and wherein at least two of the chambers are joined directly through holes leading from the outlet side of the main control valve.

4,227,592

DUPLEX DOOR SAFETY RECYCLING SYSTEM

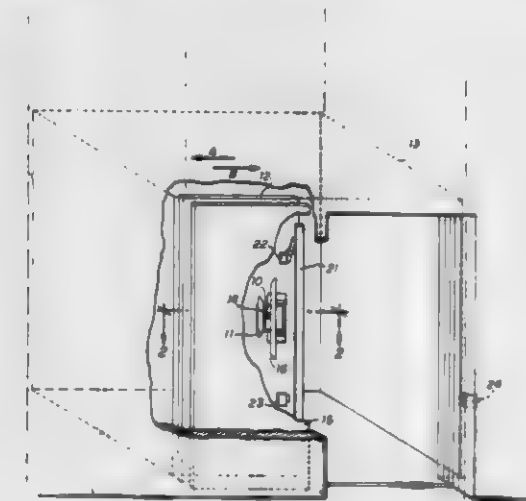
Floyd L. Foreman, 15906 Tall Shadows, Houston, Tex. 77032, and Emmet D. Fenton, 3806 Crater Lake Ct., Irving, Tex. 75062

Filed Dec. 22, 1978, Ser. No. 972,515

Int. Cl.³ B66B 13/00

U.S. Cl. 187—56

7 Claims



5. A method for recycling clutch-connected duplex doors from a doors closing cycle to a doors opening cycle comprising:

(a) affixing to a first clutch member mounted on a clutch-driven first door of a duplex doors system an electric current switch means in a position for transmission of all forces between said first clutch member and a second clutch member mounted on a clutch-driving second door of said duplex doors system during a doors closing cycle

of said duplex doors system through a body of said electric current switch means:

(b) providing in said body for actuating said electric current switch means as a result of a closing force being transmitted through said body being increased by a force applied externally on said first door resisting the closing force;

(c) activating thereby as a result of so actuating the switch means an electrical control circuit electrically connected to said switch means and to an electric motor driving the clutch-driving second door in the doors closing cycle; and

(d) reversing thereby a rotational direction of said causing the motor to drive the clutch-driving second door in a doors opening cycle.

4,227,593

KINETIC ENERGY ABSORBING PAD

Robert J. Bricmont, Allison Park, Pa.; Philip A. Hamilton, Seneca, S.C., and Raymond M. L. Ting, Pittsburgh, Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 728,949, Oct. 4, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 855,074

Int. Cl.² F16F 7/12

U.S. Cl. 188—1 C

15 Claims



1. An energy absorbing pad providing stepwise absorption of the kinetic energy of an impact load, comprising:

a face plate adapted to be positioned transversely of and in confronting relation with said impact load;

a base plate spaced-apart from and substantially parallel with said face plate; and

a crushable core positioned between said face plate and said base plate and adapted to buckle under the force of said impact load, said core including a first set and a second set of profiled sheet metal elements having corrugations normal to said face plate, said profiled sheet metal elements being assembled in pairs, each of said pairs constituting a metal cellular unit which buckles independently of each other said unit under the force of said impact load,

the elements of said first set and of said second set presenting first end faces adjacent to one said plate and residing substantially in a first common plane which extends generally parallel with said one said plate,

the elements of said first set presenting second end faces adjacent to the other said plate and residing substantially in a second common plane which extends generally parallel with said other said plate, and

the elements of said second set presenting third end faces spaced-apart from said other said plate and residing substantially in a third common plane which extends between and is generally parallel with the first and second common planes,

the distance between the second and third end faces ranging from a minimum of 0.25 inch to a maximum of 0.75 inch; said face plate being adapted to distribute the force of said impact load initially to said first set of said profiled elements through the first and second end faces thereof, and subsequently and simultaneously to said second set of said profiled elements through the first and third end faces thereof and to said first set of profiled elements, thereby to initiate axial buckling of said second set of profiled elements after initiation of the axial buckling of said first set of profiled elements thereby to significantly lower the

dynamic peak loads sustained by said pad and said base plate without significantly reducing the energy absorbing capacity of said pad.

4,227,594

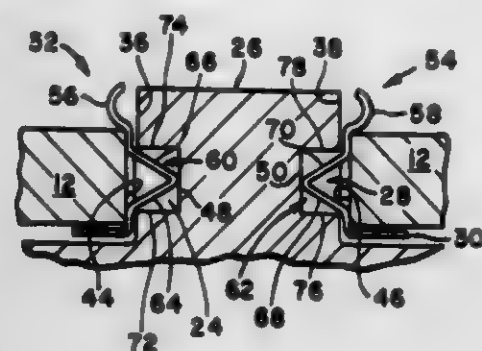
BACKING PLATE-WHEEL CYLINDER RETAINING CLIP
Michael A. Kluger, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 25, 1979, Ser. No. 33,086

Int. Cl.³ F16D 65/24

U.S. Cl. 188-361

7 Claims



1. In a drum brake assembly, a wheel cylinder including a stud projecting therefrom, the stud having a pair of recesses extending tangentially through the peripheral surface thereof and including edge portions on oppositely facing walls, a backing plate having a walled aperture therewithin and retaining means for releasably holding the wheel cylinder in a mounted position on the backing plate wherein the stud is received by the aperture, the retaining means comprising:

an annular base disposed between the wheel cylinder and the backing plate; and

a pair of flexible tabs extending axially away from the base and projecting into the aperture when the retaining means is installed on the backing plate, each tab having one end secured to the base, the opposite end of each tab defining a portion grasping the backing plate, the portion of each tab interconnecting the ends of the tab including a flexible projection comprising a pair of intersecting legs, each recess receiving a corresponding one of the projections and the edge portions of the recess engaging the legs of the corresponding projection to hold the wheel cylinder in the mounted position wherein the recesses are disposed within the backing plate aperture and are facing toward the wall of the backing plate aperture.

4,227,595

CURRENT TRANSMITTING SYSTEM FOR ELECTRICAL VEHICLE

Mitsuharu Hamada, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

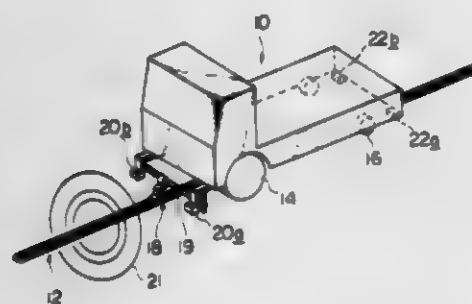
Filed Jun. 14, 1979, Ser. No. 48,377

Claims priority, application Japan, Sep. 7, 1978, 53-109102

Int. Cl.³ B60L 1/00, 9/00

U.S. Cl. 191-2

1 Claim



1. In a current transmitting system, for use with a self-propelled automatically steered electric vehicle, including a pair of parallel, circularly arranged bus bars connected to a

low-frequency A.C. power source; an induction cable extending along said bus bars and connected to a high-frequency A.C. power source; and current collecting means slidable on and along each of said bus bars for transmitting the current carried by said bus bar to an electric device mounted in said vehicle, the improvement in that each of said bus bars is divided into two sections which are isolated from each other, one of said sections being connected to said low-frequency A.C. power source through a coil.

4,227,596

CONTACT DEVICE

Willem Bartels, Daarle, Netherlands, assignor to Hazemeijer B.V., Netherlands

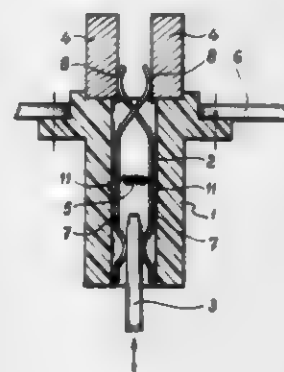
Filed Jun. 7, 1978, Ser. No. 913,470

Claims priority, application Netherlands, Jun. 8, 1977, 7706308

Int. Cl.³ B60M 1/34

U.S. Cl. 191-23 A

7 Claims



1. A contact device for electrically contacting a removable contact finger with two electrically energized spaced-apart, parallel rail walls, said contact device comprising

a housing having a hollow portion therein,

at least two contact members mounted within the hollow portion of said housing, each contact member comprising a long section, a short section and an interconnecting intermediate curved section setting off the short section with respect to the long section, two contact members being mounted within said hollow portion of said housing such that they cross each other at their intermediate curved sections to form a hinge-like connection, and such that the short section of one contact member is positioned substantially in alignment with the long section of the other contact member, and also such that the short and long sections of one contact member will run substantially parallel with the short and long sections of the other contact member, the internal opposite sides of the long sections of the contact members forming the means for contacting the removable contact finger while the external sides of the short sections of the contact members, which extend outwardly of said housing, form the means for contacting the inner sides of the respective rail walls, and

a biasing means connected between the long sections of two contact members for providing a contact pressure between the contact areas of said contact members and both the contact finger and the rail walls.

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HYDRAULIC CONTROL SYSTEM FOR A HYDRODYNAMIC/MECHANICAL TRANSMISSION

Georg Gierer, Kressbronn, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

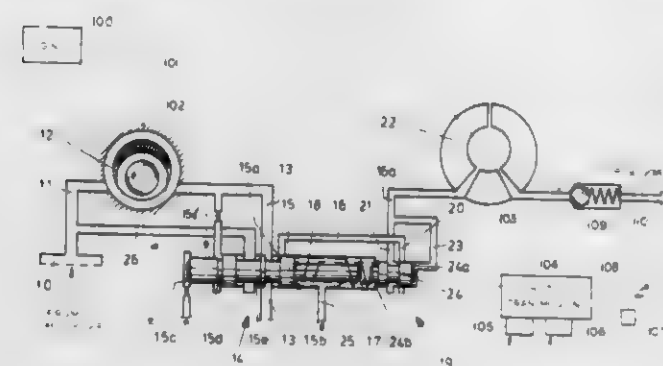
Filed Dec. 21, 1977, Ser. No. 863,067

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658195

Int. Cl.³ F16D 39/00

U.S. Cl. 192-3.33

7 Claims



1. A hydraulic control system for a hydrodynamic/mechanical transmission having fluid-operated clutches, comprising: a pump having an intake and an outlet;

a main pressure line connected to said outlet and to said clutches;

a main pressure valve connected to said main pressure line and having a valve member displaceable with increasing pressure in said main pressure line to bypass hydraulic fluid to said intake;

a pressure-control valve having only two controlled ports, one of said ports being connected to said main pressure line and the other of said ports being connected to a hydrodynamic unit of said transmission, said hydrodynamic unit having a fluid inlet, said pressure-control valve having a valve member biased by a spring into an open position and means for applying the inlet pressure of said unit to said member of said pressure-control valve in a direction opposite the effective direction of said spring, said pressure-control valve being constructed so that said spring biases said member of said pressure-control valve into an open condition and the inlet pressure applied to the member of said pressure-control valve in the direction opposite the effective direction of said spring urges the latter member toward a closed position; and

means for applying load-dependent fluid pressure to said member of said pressure-control valve in the direction in which the latter member is biased by said spring.

4,227,598

TRANSMISSION DISCONNECT WITH PARKING BRAKE APPLICATION

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 11, 1978, Ser. No. 933,259

Int. Cl.³ F16H 57/10

U.S. Cl. 192-4 A

1 Claim

1. A completely pneumatic control means for coordinated actuation of air-actuated service brake and parking brake systems with a transmission disconnect on a vehicle having a transmission and a spring-apply, pressure-release parking brake; comprising:

a source of air pressure;

a parking brake cylinder normally biased to apply said parking brake and connected to release said parking brake upon receiving air pressure;

a parking brake valve interposed between said source and said parking brake cylinder and moveable between a release position in which pressure from said source is di-

rected to said parking brake cylinder and an apply position in which said parking brake cylinder is exhausted to atmosphere;

a pneumatic transmission disconnect cylinder having a rod connected to the transmission and first bias means urging said rod toward a position in which said transmission is operative and upon receiving air pressure moves said rod to neutralize said transmission;

a transmission disconnect valve moveable between a disconnect position in which air pressure is directed from said source to said disconnect cylinder and a connect position in which said disconnect cylinder is exhausted to atmosphere;

second bias means normally urging said disconnect valve to its connect position;

first pneumatic actuator means on said transmission disconnect valve for movement of said disconnect valve to its disconnect position in response to said first actuator means receiving air pressure;

a shuttle valve having second and third pneumatic actuator means;



4,227,599

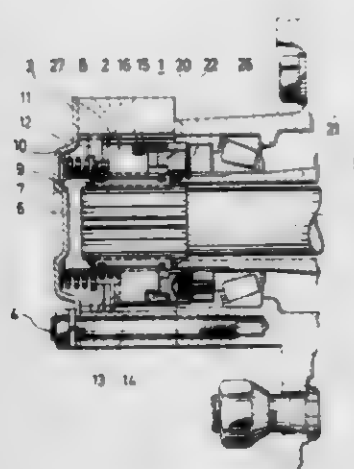
AUTOMATIC CLUTCH

Hideyuki Ishiwata, Kawasaki, and Kunihiko Ishino, Yokohama, both of Japan, assignors to Automobile Parts Manufacturing Company Limited, Japan

Filed Jun. 16, 1978, Ser. No. 916,144
Int. Cl.² F16D 11/00, 43/02

U.S. Cl. 192—54

3 Claims



1. An automatic clutch for engaging associated drive members and associated driven members comprising, on the driving side, a drive clutch movable only axially relative to the associated drive members and normally biased in the de-clutching direction, a stationary inner cam located on the side toward which said drive clutch is biased for axially camming said drive clutch, said inner cam being connected to or disconnected from said drive clutch accordingly as said clutch disengages or engages, and a holdout ring having projections to be engaged with lands of said inner cam and adapted to keep said drive clutch and said inner cam out of connection until the driving side stops, said holdout ring being fitted over said drive clutch under such frictional conditions that, only when said holdout ring has engaged said inner cam, it can circumferentially slide relative to said drive clutch, and, on the driven side, a driven clutch movable only axially relative to the associated driven members and normally biased in the clutching direction.

4,227,600

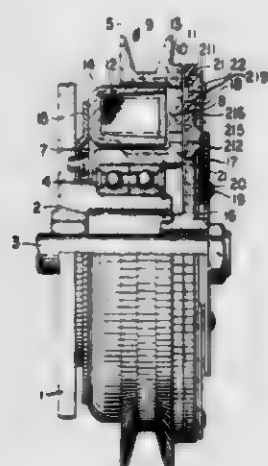
ELECTROMAGNETIC CLUTCHES

Isamu Shirai, Iseaki, Japan, assignor to Sankyo Electric Company Limited, Iseaki, Japan

Filed Oct. 18, 1978, Ser. No. 952,545
Claims priority, application Japan, Oct. 18, 1977, 52-139592;
Oct. 18, 1977, 52-139593; Oct. 18, 1977, 52-139594
Int. Cl.³ F16D 27/10

U.S. Cl. 192—84 C

6 Claims



1. In an electromagnetic clutch comprising a first rotatable member having an axial end plate of magnetic material, said end plate being provided with a plurality of concentric slits disposed on at least one circle, thereby to define a plurality of

annular or arcuate magnetic pole pieces, a second rotatable member, a cooperating annular armature plate of magnetic material joined to said second rotatable member so as to be capable of limited axial movement, said annular armature plate facing said axial end plate of said first rotatable member with an axial gap therebetween, and electromagnetic means associated with said axial end plate for attracting said armature plate, said armature plate being provided with at least one annular groove in an axial end surface thereof facing said axial end plate and corresponding to said concentric slits and with at least one annular projection on an opposite axial end surface thereof corresponding to said annular grooves.

4,227,601

CENTRIFUGAL CLUTCH

Edward J. Pilatowicz, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Dec. 5, 1977, Ser. No. 857,290
Int. Cl.³ F16D 43/18

U.S. Cl. 192—105 BA

6 Claims



1. A centrifugal clutch comprising
a driving member,
a driven member, said driven member including a clutch drum,
a plurality of centrifugally responsive clutch shoe members operatively supported by said driving member for movement of a friction surface of each said clutch member into and out of engagement with said clutch drum,
a resilient restraining means for applying a radially inwardly directed bias to the clutch shoe members, said resilient means comprising
a coiled spring member extending around a circumference of said clutch inwardly from said clutch drum and in contact with each clutch shoe member, and
a rod spring member extending substantially a complete extent of and enclosed within said coiled spring member, said rod spring having at least a circumferential portion thereof spaced apart from an inner portion of said coiled spring,
said coiled spring and said rod spring each contribute to said radially inwardly directed bias, and
whereby the idle range for said clutch is increased over the use of the coiled spring or the rod spring by itself.

4,227,602

HYDRAULIC POWER CLUTCH CONTROL SYSTEM HAVING AN INCHING VALVE

Yasufumi Ideta, and Shoel Watanabe, both of Koganei, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1977, Ser. No. 864,147
Claims priority, application Japan, Dec. 27, 1976, 51-156543
Int. Cl.² F16D 11/00

U.S. Cl. 192—109 F

8 Claims

1. A hydraulic control system in combination with at least one hydraulic power clutch, comprising:
a source feeding a hydraulic fluid pressure,

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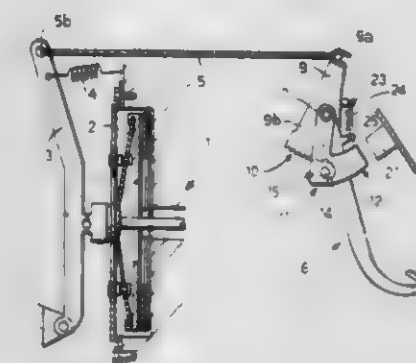
DEVICE FOR AUTOMATIC COMPENSATION OF WEAR IN FRICTION DRIVE CLUTCHES OF MOTOR VEHICLES

Oswaldo Fasano, Villarbaso, Italy, assignor to Start S.p.A. Studi Apparecchiature E Ricerche Tecniche, Turin, Italy

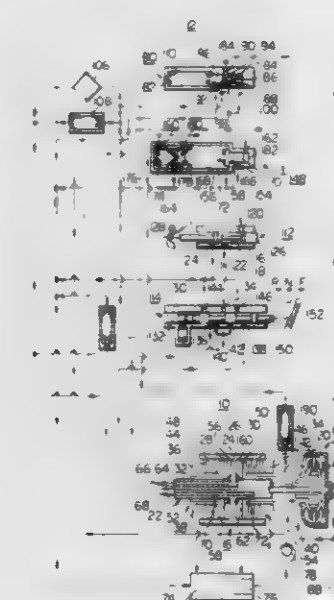
Filed Nov. 15, 1978, Ser. No. 961,072
Int. Cl.² F16D 13/75

U.S. Cl. 192—111 A

7 Claims



a pressure regulating valve for regulating said hydraulic fluid pressure to a control pressure, the clutch being communicable with said pressure regulating valve for receiving said control pressure for engagement of the clutch, and
an inching valve disposed between said pressure regulating valve and the clutch and comprising:
a valve body which having
an inlet port communicating with said pressure regulating valve for admitting hydraulic fluid into said valve body,
an outlet port communicating with the clutch for the outflow of hydraulic fluid from said valve body, and
a drain port communicating with a drain for draining hydraulic fluid from said valve body, said drain port being communicable within said valve body with said inlet port, and
a spool axially movably located in said valve body and having
a first land for opening and closing said inlet port in response to axial movement of said spool, said first land having a first portion for gradually and continuously increasing the flow resistance of said inlet port at a first rate in response



to axial movement of said spool in a first direction until said first land fully closes said inlet port and for gradually and continuously reducing the flow resistance of said inlet port at said first rate in response to axial movement of said spool in a second direction opposite to said first direction until said first land fully opens said inlet port, and
a second land for opening and closing said drain port for providing and obstructing communication between said inlet and drain ports in response to axial movement of said spool,
said second land having a second portion for abruptly reducing the flow resistance of said drain port at a second rate higher than said first rate immediately after said second land first opens said drain port in response to axial movement of said spool in said first direction, and for abruptly increasing the flow resistance of said drain port at said second rate immediately before said second land fully closes said drain port in response to axial movement of said spool in said second direction, and for subsequently gradually reducing the flow resistance of said drain port at a third rate lower than said second rate in response to axial movement of said spool.

1. Device for automatically compensating for wear in a friction clutch of a motor vehicle, comprising a driver-operable control lever for effecting clutch disengagement, said control lever having a rest position, an intermediate element articulated to the control lever, clutch release mechanism, an operating cable having one end attached to the control lever and its other end connected to the release mechanism, means for interlocking the control lever and the intermediate element to prevent their relative rotation, and disengagement means for counteracting the interlocking means to disengage the intermediate element from the control lever when the latter is in its rest position,

wherein the improvements consist in the interlocking means comprising:

a toothed circular sector formed on the intermediate element,
a support structure pivoted on the intermediate element about an axis which coincides with the axis of the toothed sector,
a pinion rotatably mounted on the support structure and having teeth adapted to mesh with the corresponding teeth of the toothed sector,
stop means carried by the control lever for engagement with the pinion to prevent rotation thereof during clutch-operating movement of said lever,
resilient engagement means urging the stop means into engagement with the pinion,
resilient biasing means acting upon the control lever in opposition to said resilient engagement means to return the control lever to its said rest position, and
means cooperating with said biasing means for limiting the return movement of the pinion support structure, to effect disengagement of said pinion from the stop means upon return of the control lever to said rest position.

4,227,604

COIN SELECTING FUNNEL

Jack S. Chalabian, Gardena, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.

Filed Mar. 26, 1979, Ser. No. 23,835
Int. Cl.³ G07F 3/04

U.S. Cl. 194—102

2 Claims

1. A coin selecting funnel for use in a coin operated vending machine for receiving coins inserted into the machine through a slot, for routing coins larger than a certain diameter into a descending coin chute and for routing coins smaller than that certain diameter into a coin return passage, the descending coin chute including a stationary wall and a pivotable wall adapted to be pivoted away from the stationary wall to selec-

tively open the descending coin chute, said coin selecting funnel comprising:

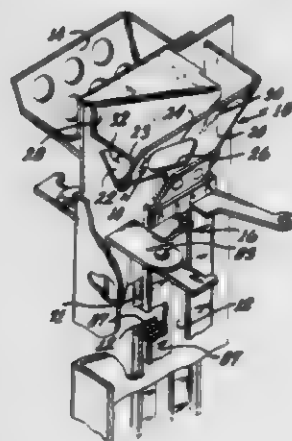
a trough including a non-vertical wall and a ledge which intersect along a vertex, the trough and vertex descending from an upper end of the trough positioned at a point below the slot to a lower end of the trough positioned at the top of the descending coin chute, said trough being affixed to the pivotable wall of the descending coin chute to pivot with it;

a deflector having a deflector surface with the deflector affixed to the stationary wall of the descending coin chute and extending into said trough with the deflector surface positioned to deflect coins passing through said trough such that one of the coin faces is moved into sliding engagement with the non-vertical wall while the coin edge contacts and is supported by said ledge;

said deflector extending from a fixed connection with the stationary wall at an angle which opens in the direction of descent of the trough toward the coin chute and also opens in the direction of said non-vertical chute wall;

said deflector having a forward end which is spaced from the non-vertical chute wall such that coins within the chute may pass through the space after being deflected into sliding contact with said non-vertical wall;

said pivotable wall being pivoted about a pivot axis which is positioned adjacent the upper end of the trough such that



pivoting of the wall pivots the lower end of the trough away from the stationary wall;

said deflector having a lower edge that is spaced from said trough;

the spacing between said lower edge and the trough being greatest near the upper end of the trough and least near the lower end of the trough;

said non-vertical wall including an aperture having an upper edge extending parallel to the vertex of said trough and spaced from the vertex by a distance exceeding that certain diameter, said aperture including a lower edge extending parallel to the vertex of said trough and spaced from the vertex by a distance less than half that certain diameter, said aperture extending along said trough beyond said deflector so that coins smaller than that certain diameter will topple over the lower edge of said aperture through said non-vertical wall into the coin return passage and coins larger than that certain diameter will be supported by the upper and the lower edges of said aperture so as to be conducted along said trough to said descending coin chute, and

the spacing between said lower edge and said trough providing free pivotal movement of said pivotable wall about said pivot axis without interference of the deflector with said trough as the coin chute and coin selecting funnel are opened.

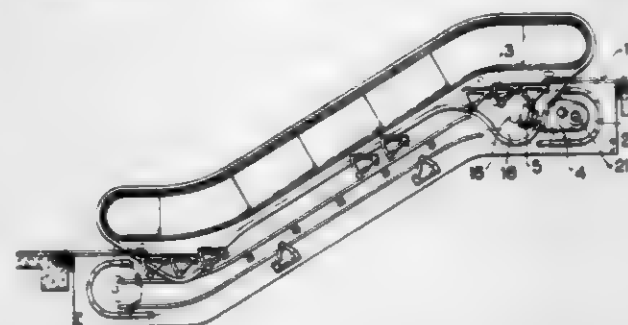
4,227,605 DRIVING UNIT FOR ESCALATORS FOR DRIVING THE STEP BAND

Peter Höfling, Dortmund, Fed. Rep. of Germany, assignor to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Sep. 16, 1976, Ser. No. 724,106
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1975, 2541397

U.S. Cl. 198—331 Int. Cl.² B66B 9/14

6 Claims



1. In combination with an endless step band for an escalator having handrails: a driving unit arranged inwardly of said endless step band and comprising an electric motor and transmission means and handrail driving means for driving said handrails, said transmission means having input shaft means drivingly connected to said electric motor and also having output shaft means drivingly connected simultaneously to said handrail driving means and to said endless step band, said electric motor having an external rotor drivingly connected to said input shaft means and forming housing means for other parts of said electric motor and being journaled in an overhung manner on a portion of said input shaft means, said driving unit including a rigid handrail driving shaft and also including torque supporting means for simultaneously conveying the forces of the torque of said transmission means particularly to said rigid handrail driving shaft, said rotor having one circumferential surface designed simultaneously as a brake drum to save space and to assure compactness of the driving unit, a housing encasing said transmission means, and said electric motor including a stator flanged to said housing for said transmission means and simultaneously forming cover means for the mount of a part of said input shaft means.

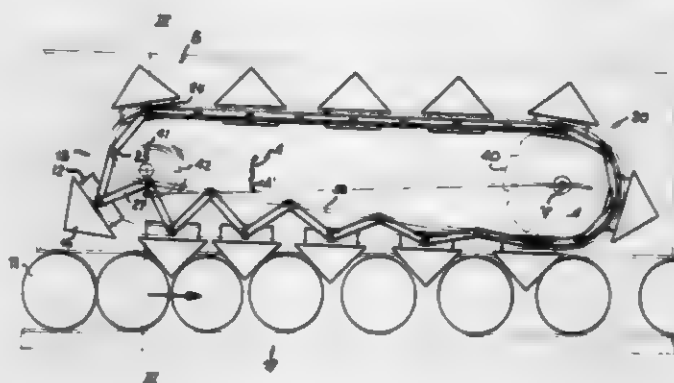
4,227,606 APPARATUS FOR SPACING ARTICLES MOVING IN A LINE

Hans U. Bogatzki, Ferdinand-Hodler-Strasse 24, Zurich, Switzerland

Continuation-in-part of Ser. No. 862,439, Dec. 20, 1977, abandoned. This application Feb. 27, 1979, Ser. No. 15,788
Int. Cl.³ B65G 47/28

U.S. Cl. 198—459

13 Claims



1. Apparatus for uniformly spacing from each other articles (11) in a moving line (1) of such articles for facilitating processing of the articles at a processing station, the apparatus comprising:

a first elongated, endless rail system (15) having a first rail system section adjacent the article line (1) and running along generally parallel to the direction of movement of the line,

a plurality of article spacing members (16) guided along the first rail system,

articulated connecting arms (21) interconnecting the article spacing members, the connecting arms pivoting at each spacing member (16) and at an intermediate pivot point (23) between the spacing members,

a second elongated, endless rail system (30, 30') having a second rail system section adjacent the first rail system section and non-parallel to the first rail system section, the first and second rail systems (15, 30) being adjustable relative to one another in their guidance plane, and including turn-around loop sections at their respective ends;

pivot guide means (25) for guiding the intermediate pivot points of the articulated connecting arms along the second rail system section;

drive means (40) for driving the article spacing members (16) along the first rail system section and engaging said article spacing members adjacent one turn-around loop of the first endless rail system;

and wherein said second rail system (30, 30') comprises a unitary structural element defining an elongated endless pivot guide means closed by end loops, each end loop having a center point (V, 41'), the diameter of the pivot guide means at the region of the end loops of the elongated endless guide means being different, the center point of one of said end loops being pivotably connected to said unitary structure, and fixed with respect to said first rail system (15), the center point of the other of said end loops being movable and shiftable with respect to said first rail system to permit selective positioning of the second rail system with respect to the first rail system.

4,227,607 HIGH VOLUME METHOD AND SYSTEM FOR DYNAMICALLY STORING ARTICLES FOR SORTING AND ROUTING

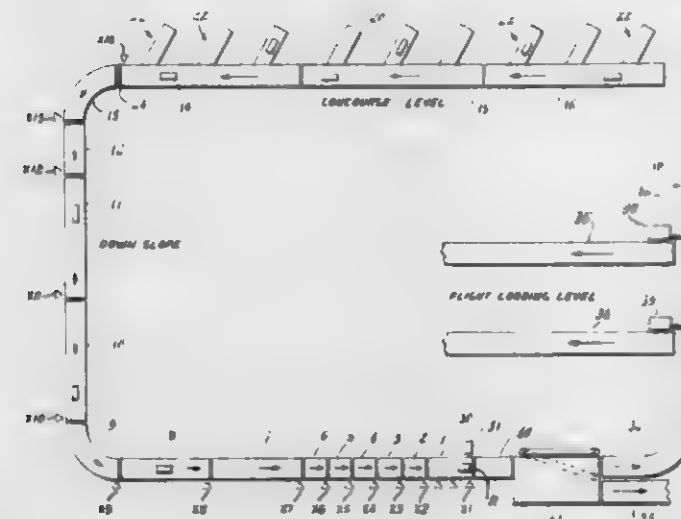
Peter P. Malavenda, 5 Colonial Ct., Armonk, N.Y. 10504

Filed Apr. 16, 1979, Ser. No. 30,081

Int. Cl.³ B65G 43/10

U.S. Cl. 198—460

22 Claims



13. Dynamic storage method for automatically storing individual articles on a conveyor system comprising a series of individually operable conveyors arranged in a continuous path for the transport of the articles between input conveyor means and a downstream station including a plurality of short buffer conveyors with a plurality of intermediate conveyors arranged end-to-end between said input conveyor means and said buffer conveyors comprising the steps of:

(a) simultaneously activating all of said intermediate convey-

ors and all of said buffer conveyors for operating said conveyor system in a conventional transport mode;

(b) placing incoming articles on said input conveyor means to be transported via said intermediate conveyors to said buffer conveyors near said downstream station;

(c) sensing for the presence of an article near the downstream end of each of said short buffer conveyors;

(d) sensing for the presence of an article near the downstream end of each intermediate conveyor;

(e) selectively stopping the downstream buffer conveyor and each preceding buffer conveyor when a stored article is sensed as being present near the downstream end of the respective buffer conveyor;

(f) deactivating said intermediate conveyors when all of said buffer conveyors have articles sensed as being present thereon and have been stopped, thereby placing the system in a dynamic storage mode of operation, while allowing said input conveyor means to continue running;

(g) sensing the presence of each incoming article near the downstream end of said input conveyor means;

(h) selectively briefly activating the first intermediate conveyor until each such sensed incoming article has been removed from the downstream end of said input conveyor means and has been transferred onto the upstream end of the first intermediate conveyor;

(i) selectively briefly activating each succeeding intermediate conveyor whenever an article is sensed as being present near the downstream end of the preceding intermediate conveyor,

thereby progressively filling available space on the respective intermediate conveyors with articles slightly spaced one from another as incoming articles are fed from the input conveyor means;

(j) returning to the conventional transport mode of operation when the upstream buffer conveyor is cleared of the article temporarily stored thereon; and

(k) deactivating the input conveyor means whenever it happens that the available space on all of the intermediate conveyors has become full of temporarily stored articles.

4,227,608 METHOD AND AN ARRANGEMENT FOR OBTAINING A TRANSLATORY MOVEMENT BETWEEN TWO MUTUALLY CONTACTING BODIES

Björn J. V. Alfthan, Högergatan 46, S-116 20 Stockholm, and Karl G. Pettersson, Katarina Bangata 43, S-116 39 Stockholm, both of Sweden

Filed Dec. 27, 1978, Ser. No. 973,597

Claims priority, application Sweden, Jan. 13, 1978, 78003910
Int. Cl.³ B65G 35/00; B62D 57/02

U.S. Cl. 198—630

13 Claims



1. A method of obtaining a translatable movement between two mutually contacting bodies, wherein at least one wave is caused to move along at least one active portion of at least one of said bodies,

said portion being in contact with the other of said bodies, and wherein the wave either causes an interruption in said contact between said bodies and separates two parts of said active portion which is in contact with the other of said bodies, or forms a contact between said bodies and separates two parts of said active portion which are not in contact with said other body,

thereby causing the distance between two arbitrarily selected points of respective pairs of said parts measured along the

surface of the active portion to be longer than the shortest distance between said points; and including the step of advancing the waves by means of at least one roll which is displaced relative to the active portion.

4,227,609

BUCKET CONVEYOR

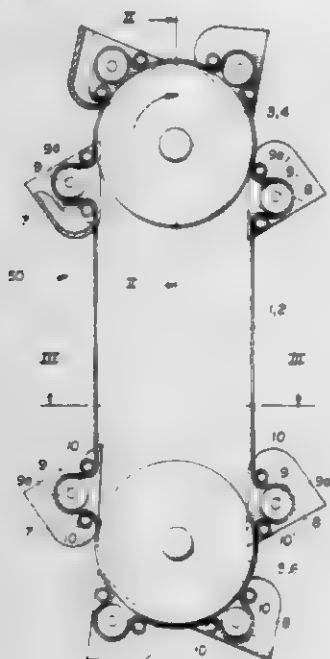
Roland Günther, Wesel, and Karl H. Koster, Essen, both of Fed. Rep. of Germany, assignors to Gutehoffnungshütte Sterkrade A.G., Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 18,861

Int. Cl.³ B65G 17/36, 25/00

U.S. Cl. 198—711

6 Claims



1. A bucket conveyor, comprising a drive pulley, at least one guide pulley, endless traction cable means engaged over said drive pulley and said guide pulley, a conveyor trough having an axle, a bucket pulley on said axle, a guide pin on said trough on each side of said axle, said endless traction cable means including a cable trained around each guide pin having a loop engaged over said bucket pulley between said pins to secure said bucket pulley to said cable, wherein said bucket pulley is rotatably mounted on said axle.

4,227,610

CURVED BELT CONVEYOR

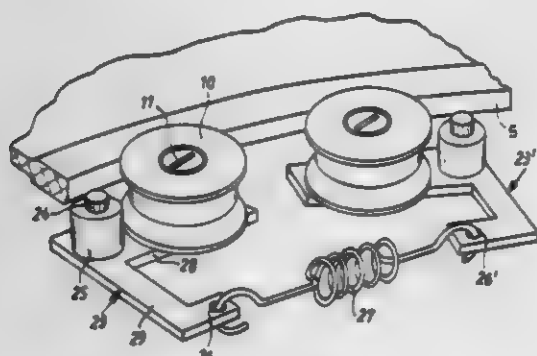
Heinz Gerdes, Hamburg, and Karl-Günther Blättermann, Hamburg-Rahlstedt, both of Fed. Rep. of Germany, assignors to Conrad Scholtz AG, Hamburg, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 908,096

Int. Cl.³ B65G 15/02, 15/60

U.S. Cl. 198—831

5 Claims



1. In a curved conveyor having a generally planar ring shaped belt, and means for supporting the belt and for guiding the belt along a closed path of travel having first and second generally parallel, spaced apart runs with an inner peripheral edge of the belt substantially defining an arc of a circle about

a predetermined center, the improvement in said supporting and guiding means comprising a plurality of guide roller means for engaging said inner peripheral edge of said belt, means mounting said roller means adjacent said arc and for individual independent movement radially of said arc, and means operatively connected with said mounting means and said roller means for resiliently biasing each of said roller means radially outwardly against said edge of said belt, said means for resiliently biasing said roller means comprising a plurality of leaf spring means, each said leaf spring means having spaced end portions for rotatably supporting an adjacent pair of said roller means, and means for stationarily supporting each of said leaf spring means at points thereof intermediate said end portions.

4,227,611
PACKAGE

Edward F. Hollander, Jr., Broomall, Pa., assignor to John P. Glass, Essington, Pa.

Division of Ser. No. 739,476, Nov. 8, 1976, Pat. No. 4,093,067.

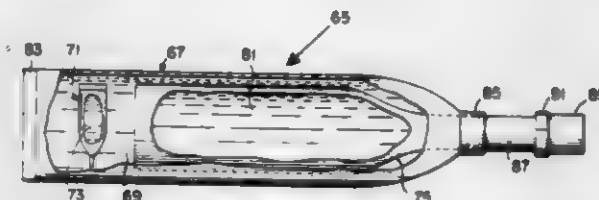
This application Jan. 27, 1978, Ser. No. 872,895

The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.³ B65D 25/08

U.S. Cl. 206—219

7 Claims



1. A composite package comprising an outer package forming a first package made of flexible material and forming a first chamber containing first contents, a first closure means sealing the first contents in the first package, an inner package forming a second package contained within said first chamber and containing second contents, a second closure means sealing said second contents of said second package, the closure means of the second package being weaker than the closure means of the first package, a third package contained within said first chamber to form an inner package containing third contents, dispensing means extending from the third package through the first package, the contents of the first and second packages forming a temperature-changing reaction when mixed together, whereby the outer package may be squeezed to rupture the closure means of the second package and mix its contents with the contents of the outer package to form a reaction which changes the temperature of the contents of the third package.

4,227,612

TWO-PLY RESIN CAPSULE FOR MINING ROOF BOLTING SYSTEMS

Robert E. Dillon, Ballston Lake, N.Y., assignor to General Electric Company, Gainesville, Fla.

Filed Jun. 19, 1979, Ser. No. 50,065

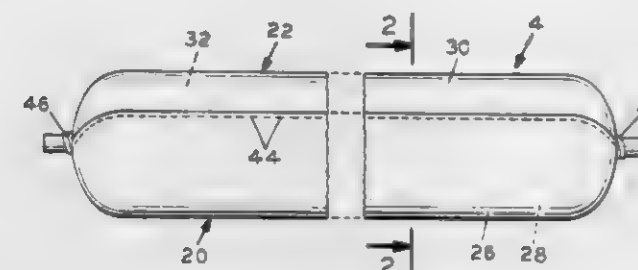
Int. Cl.³ B65D 85/68

U.S. Cl. 206—219

11 Claims

1. A multi-compartment capsule having a longitudinally extending tubular inner compartment for containing a catalyst and a longitudinally extending tubular outer compartment around said inner compartment for containing a resin composition which, when mixed and reacted with said catalyst sets and becomes a hardened mass, said compartments being formed by a two-ply film strip having at least one ply of thermoplastic

material, said two-ply film strip having a first longitudinally extending portion in which said thermoplastic material is on one side of said strip and a second longitudinally extending portion in which said thermoplastic material is on the opposite side of said strip, said thermoplastic sides of said film strip being overlapped and welded to each other along a longitudinally extending edge, said two-ply strip material being folded back upon itself along an edge spaced from said longitudinally



extending welded edge so that the thermoplastic side of said strip at said folded edge is in contact with and welded to the thermoplastic side of said strip and forms said longitudinally extending tubular inner compartment and said opposite edge of said two-ply strip being folded around said tubular inner compartment so that the thermoplastic side of said strip at said opposite edge is in contact with and welded to the thermoplastic side of said strip and forms said longitudinally extending tubular outer compartment.

4,227,613

LID FOR GOODS DISPATCH CONTAINER

Peter Seitz, Ledderhose Weg, 6550 Bad Kreuznach, Fed. Rep. of Germany

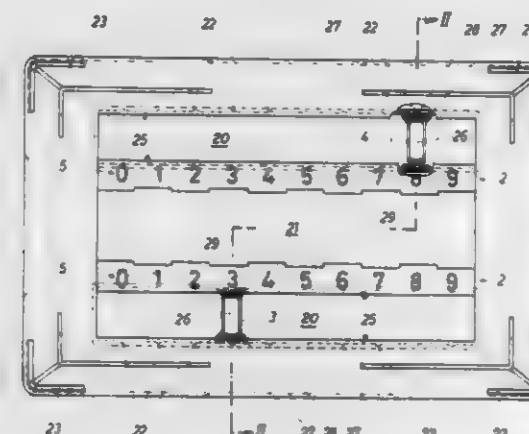
Filed Jun. 26, 1978, Ser. No. 918,980

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728734

Int. Cl.³ B65D 43/03, 73/00; G09F 3/20

U.S. Cl. 206—459

3 Claims



1. A lid used to cover a goods dispatch container comprising: a flat surface, substantially parallel opposing recessed walls extending from said flat surface, defining at least one rectangular groove, marking indicia located on the flat surface adjacent to and spaced along said groove; at least one rectangular marking piece shaped to fit within the groove and of a size such that it can be positioned adjacent only one marking indicia at a time, and of a thickness so that it fits within the groove to be flush with the flat surface; at least one pair of resilient support arms attached to an end of the marking piece adjacent a wall of a groove and urging against the wall of the groove; a lip extending about the periphery of the flat surface and protruding in a direction normal to the flat surface for

engaging the outer periphery of the open end of the goods dispatch container; and at least one raised ledge portion on one of the sides of said flat surface and conforming to the periphery of the flat surface and extending at a distance from the periphery of the flat surface greater than that of the lip such that lids may be stacked so that the flat surfaces are substantially parallel to one another and the lip of a first lid rests upon the flat surface of a second lid below it and the lip of the first lid abuts the exterior surface of the raised ledge of the second lid below it.

4,227,614
PACKAGES

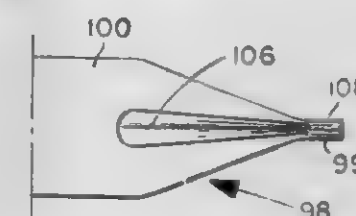
Edward F. Hollander, Jr., Broomall, Pa., assignor to John P. Glass, Essington, Pa.

Division of Ser. No. 720,084, Sep. 2, 1976, abandoned. This application Sep. 1, 1978, Ser. No. 938,774

Int. Cl.³ B65D 73/00, 27/08

U.S. Cl. 206—459

5 Claims



4. A package comprising a cylindrical tube of flexible material, a first end of said tube being closed by a first ultrasonic seal extending transversely across the tube, a second end of said tube being closed by a second ultrasonic seal extending transversely across the tube, said tube providing an internal chamber between said seals for containing a product, and one of said end seals comprising four overlapped wall portions having a length approximately one quarter of the circumference of said tube and formed by folding a closed end of the tube about a longitudinally extending fold line on the tube circumference.

4,227,615

MEDICINE CONTAINER

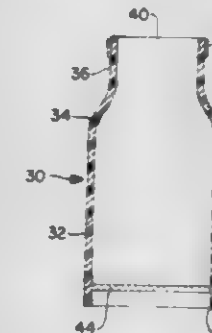
Gervase M. Flick, Apt. 3D, Lagoon Apts., Hilton Hawaiian Village Hotel, Honolulu, Hi. 96815

Filed May 2, 1979, Ser. No. 35,287

Int. Cl.³ B65D 55/02

U.S. Cl. 215—222

7 Claims



1. A container for safely receiving and storing medication, comprising: a body portion having a mouth at a top end thereof and a bottom connected to said body portion opposite said mouth, said body portion being substantially opaque and said bottom being transparent and recessed within said body portion and being completely encompassed about the periphery thereof by said body portion.

4,227,616

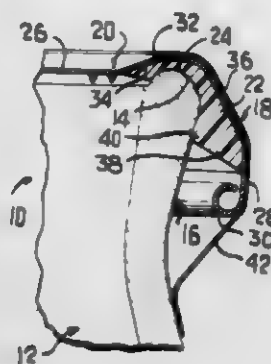
MOLDED GASKET PRESS-ON CLOSURE

Frank H. Lecinski, Jr., Harwood Heights, and John N. Banich, Sr., Chicago, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,934

Int. Cl.³ B65D 41/22

U.S. Cl. 215—246



1. A closure for tumbler-like containers, said closure comprising a cap-like body including an end panel having a depending skirt defining in conjunction with said end panel a corner, and a sealing ring seated in said corner, said closure being characterized in that said sealing ring extends axially along a portion of said skirt and includes radially inwardly directed lug means for interlocking engagement with a container external finish, said cap-like body being formed of a resilient flexible metal, said sealing ring being formed of a resilient gasket material, and said skirt extending axially beyond said sealing ring in a direction away from said end panel and in radially outwardly spaced relation relative to said lug means and forming means for facilitating distortion of said sealing ring to break a seal between said sealing ring and an intended container.

4,227,617

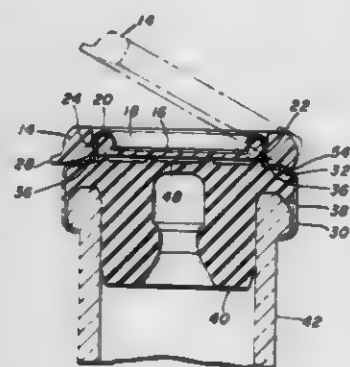
CONTAINER CLOSURE

Leman P. Albrecht, Richmond, and W. Coy Willis, Hagerstown, both of Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 30, 1979, Ser. No. 71,318

Int. Cl.³ B65D 41/40

U.S. Cl. 215—251



1. A closure assembly comprising:
a ferrule having a top annular portion and a skirt portion depending from the outer periphery of the top portion for securing said closure to a container, said top portion having at least one upwardly projecting locking portion on the periphery of a central opening defined by said top annular portion, and a weakening line radially outwardly of said locking portion and concentric with the central opening; and
a fitment overlyingly contacting and interlocking with said ferrule, said fitment including a disk portion which is secured within the central opening of said top portion of said ferrule by said locking projection, and a concentric

outer lifting ring hingedly connected to said inner disk portion.

4,227,618

EXPANSION SECTION FOR TAMPER-INDICATING RING OF SQUEEZE-OFF CLOSURE

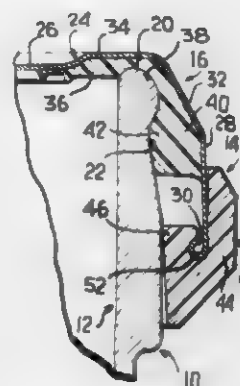
Donald H. Zipper, Western Springs, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,933

Int. Cl.³ B65D 41/46

U.S. Cl. 215—253

12 Claims



1. A closure assembly comprising a closure member including a body having an end panel and a depending skirt and a sealing ring within said body for engaging a container sealing surface, and a tamper-indicating ring carried by said skirt and having a portion disposed radially inwardly of said skirt for normally preventing radial inward deflection of said skirt, said tamper-indicating ring being characterized in that it includes expansion means for accommodating expansion of said tamper-indicating ring during heating thereof.

4,227,619

BOTTLE CAP WITH RING SHAPED TEARING ELEMENT

Sven-Ake Magnusson, Kungälv, Sweden, assignor to Wicanders GmbH, Düsseldorf, Fed. Rep. of Germany

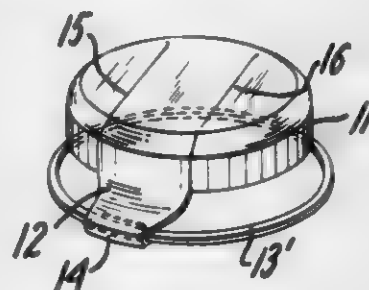
Filed Jul. 10, 1978, Ser. No. 923,088

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 7802184

Int. Cl.³ B65D 41/32

U.S. Cl. 215—255

16 Claims



1. A tear tab closure for containers such as bottles and the like comprising a cap having a top wall, a downwardly depending skirt and score lines in the skirt and top wall defining a tear strip adapted to be torn out to open the closure, in which the improvement comprises a relatively short extension on said skirt projecting generally radially away from the bottom of the skirt and defining a tear tab at one end of said tear strip, and a finger ring formed as a separate piece secured to the free end of said tear tab in nearby relation to the bottom of said skirt to facilitate pulling the tab to tear open the closure, said tab being fastened only to the skirt and being of a length to serve only as an anchorage for said finger ring and said finger ring having an inner radius large enough to accommodate a finger of a user to

capture the ring securely with his finger with minimum effort and risk of injury.

4,227,620

SPECIMEN COLLECTING TUBE

Hugh T. Conway, Cedar Grove, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Feb. 28, 1979, Ser. No. 16,156

Int. Cl.³ B01L 3/14; B65D 39/00

U.S. Cl. 215—355

4 Claims



1. A specimen collection receptacle for liquids such as blood comprising: a tubular body having a closed end and an open end and a circumferential protruding portion extending interiorly from the tubular body between said closed and open ends, said protruding portion being formed by a necked-in part of the tubular body so that the interiorly protruding portion has a surface facing the open end angled toward the closed end; and a stopper sealing the open end of the tubular body, said stopper having a tapered bottom resting upon the protruding surface such that a smooth transition is formed between the exterior surface of said stopper and the interior surface of the tubular body.

4,227,621

SEALED TUB

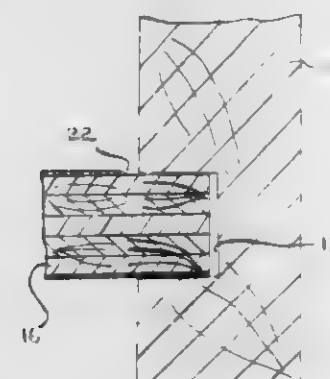
Leslie Jones, R.R. #2, Cumberland, Canada (K0A 1S0), and Roger Paradia, 1172 Grenoble Cres., Orleans, Canada (K1C 1C0)

Continuation-in-part of Ser. No. 876,487, Feb. 9, 1978, abandoned. This application May 21, 1979, Ser. No. 40,852
Claims priority, application Canada, Jan. 31, 1978, 295988

Int. Cl.³ B65D 8/04, 8/16, 25/14

U.S. Cl. 217—96

3 Claims



1. A tub comprising:
a plurality of staves disposed in edge-to-edge relation and forming a continuous wall having an inner face and an outer face;
each of said staves comprising an elongate member generally in the form of a rectangular parallelepiped having opposite elongate faces, opposite elongate edges, and opposite ends;
each of said opposite elongate edges defining along its length

a formation including a substantially part-cylindrical portion;
said part-cylindrical portion having an axis which is parallel to planes defined by said opposite faces engaging a corresponding portion of the adjacent stave to define at the area of engagement a sealing zone;
means defining a rabbet in one of said elongate faces of each of said elongate members;
the rabbets extending between said elongate edges of said elongate members transversely of the lengths and between said sealing zones thereof and having side walls generally normal to the axes of said elongate members;
said rabbets being aligned to form a continuous groove in the inner side of said wall;
a floor of said tub formed by at least one floor member engaged within said groove;
said floor member comprising a laminated plywood so oriented that immersion in water causes said plywood to swell more in a direction normal to the plane of said floor member than parallel thereto, whereby sealing of said floor member to said rabbet side walls without displacement of said elongate members outwardly of said tube is promoted;
elongate means extending around said elongate members on the outer side of said wall for retaining said staves in place, and
said floor member having a water resistant protective coating which terminates inwardly of said inner face of said continuous wall to expose the uncoated plywood and thereby to promote localized swelling of said floor member in said direction.

4,227,622

TAPE CASSETTE

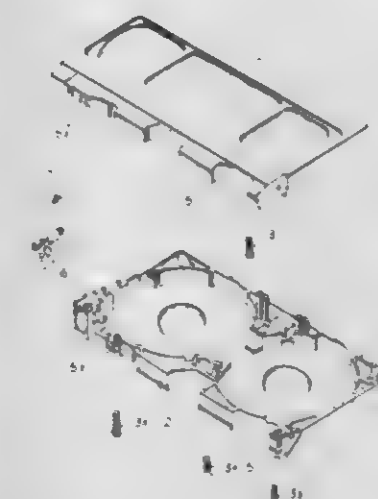
Masatoshi Okamura, Haruo Shiba, and Kimio Tanaka, all of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,880

Claims priority, application Japan, Jul. 4, 1978, 53/92194[U]
Int. Cl.³ G11B 23/06; B65H 17/48; B65D 6/32

U.S. Cl. 220—4 B

6 Claims



1. In a tape cassette comprising an upper half casing and a lower half casing which are assembled with bolts, an improvement characterized in that longitudinally slotted male hollow cylindrical projections are mounted on either of the upper half casing or the lower half casing and female hollow recesses are mounted on the other half casing at the corresponding positions and the upper and lower half casings are superposed to fit the male hollow cylindrical projections into the corresponding female hollow recesses, and self-tap bolts are screwed from the female hollow recesses into the slotted male hollow cylindrical projections to radially expand the male hollow cylindrical projections to fit the projections on the inner surfaces of the

female hollow recesses, radial expansion of the male hollow cylindrical projections being facilitated by being slotted.

4,227,623

METHOD OF CONNECTING A BAIL TO A CONTAINER

Peter A. Woinarski, 162/C Queen St., Woollahra, Sydney, Australia (2025)

Filed Jan. 31, 1979, Ser. No. 7,976

Claims priority, application Australia, Feb. 24, 1978, PD3504

Int. Cl.³ B65D 25/32, 25/28

U.S. Cl. 220-91

4 Claims



1. A container formed from a deformable plastics material and having a pair of diametrically opposed bail ears to which a bail can be fitted, each bail ear comprising:

- a bearing portion which projects outwardly from a wall of the container and which provides a pivot bearing for an eye of the bail,
- at least one flange portion which is formed integrally with the bearing portion, the flange portion being spaced from the container wall by the bearing portion and being arranged normally to prevent axial displacement of the eye of the bail relative to the bearing portion, and
- two limbs which project outwardly from the container wall,

the bearing portion and the two limbs forming a U-shaped element that projects outwardly from the container wall with the bearing portion being constituted by an arcuate part of the U-shaped element, each limb having a free end that is resiliently deformable relative to the bearing portion between an unstressed first position and a stressed second position, each limb being engageable with the eye of the bail when the bail is fitted to the bearing portion and the free end of the limb is in the first position, and axial displacement of the eye of the bail past the flange portion being accommodated when the free end of each limb is in its second position.

4,227,624

PULL TAB CLOSURE

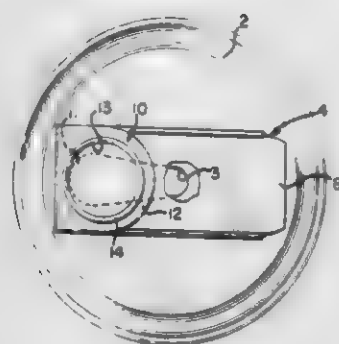
Jerry D. Hawkins, Country Club Hills, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed May 18, 1979, Ser. No. 40,331

Int. Cl.³ B65D 41/32

U.S. Cl. 220-265

7 Claims



1. A pull-tab comprising one elongated laminate member made of metal foil and thermoplastic film and having a body and a grasp section at one end of the body, said grasp section comprising a ring portion with a finger opening therein, a hem

about the finger hole having a flange portion bent against the ring portion with the plastic film on the flange portion and the ring portion facing each other, and a heat bond between said portions forming an integral structure.

4,227,625

SEALING LID AND SEALING LID-CONTAINER COMBINATION

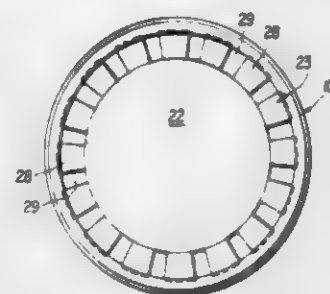
James L. Underwood, 104 Dixie Dr., Woodstock, Ga. 30188

Filed Aug. 17, 1979, Ser. No. 67,239

Int. Cl.³ B65D 43/10, 34/62, 1/16

U.S. Cl. 220-307

15 Claims



1. A lid for closing an opening in a container wherein the lid engages an inner wall of the container, the lid comprising:

- a central portion for substantially covering the opening, and
- a bifurcated securing portion integral with and extending from the central portion, said bifurcated portion comprising a sealing flange, a web connecting the sealing flange to the central portion and locking tab means diverging from the web wherein the sealing flange extends beyond the locking tab means and the locking tab means seats behind the sealing flange for holding the sealing flange in abutment with the inner wall of the container.

4,227,626

SODA STRAW DISPENSER

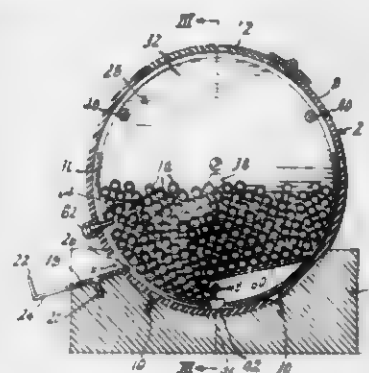
John B. Merila, 6223 East 127th St., Grandview, Mo. 64030

Filed Apr. 16, 1979, Ser. No. 30,100

Int. Cl.³ B65D 83/02

U.S. Cl. 221-188

10 Claims



1. A soda straw dispenser comprising:

- a body member,
- a bin carried by said body member for movement between first and second positions relative thereto and adapted to contain soda straws resting horizontally therein, said bin having a discharge slot through which straws may be discharged, an ejector member carried movably by said bin and obstructing said discharge slot against uncontrolled movement of straws therethrough at all positions thereof relative to said bin, said ejector member comprising an open-sided container of a size to receive and contain a single straw therein, and being movably carried by said bin between a first position in which it opens inwardly into said bin to receive a straw therein, and a second position in which it opens outwardly to discharge the straw.

which it opens outwardly through said slot to discharge said single straw,
d. means biasing said bin and said ejector member yieldably to said first positions, and
e. manually operable means for concurrently moving said bin and said ejector member from said first positions to said second positions.

4,227,627

TRIMMER ARRANGEMENT FOR FILLING UNIT OF AUTOMATIC FILLING MACHINE

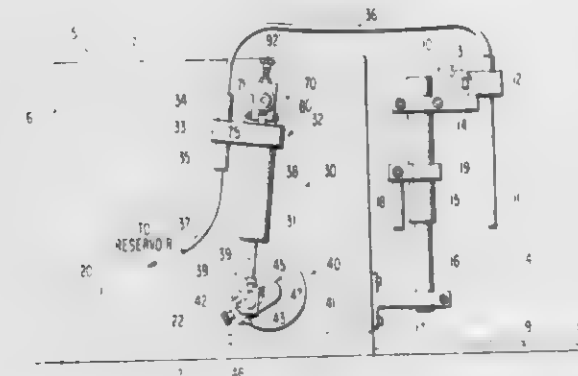
Richard N. Bennett, Arbutus, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

Filed Oct. 11, 1978, Ser. No. 950,286

Int. Cl.³ G01F 11/02

U.S. Cl. 222-282

14 Claims



2. A volume-adjusting mechanism for a filling machine operable to fill containers with a predetermined amount of a product and comprising at least one filling unit having at least two parts movable relative to one another and including pump cylinder and piston means, actuating means operatively connected with one of said parts to cause relative movement between said parts and thereby provide a suction and discharge stroke for a respective filling unit, and the other part being adapted to be connected with a relatively fixed part of the filling machine, characterized by volume-adjusting means operatively connecting said other part with said relatively fixed part to enable a change in the volume of the product to be sucked-in and discharged by a respective filling unit, the volume-adjusting means including adjustable lost-motion means to selectively vary the lost motion between said other part and said relatively fixed part during the suction and discharge stroke of the filling unit.

4,227,628

FLUID DISPENSING PUMP HAVING AXIALLY DEFORMABLE VALVE

Frederick L. Parsons, 759 Morningside Rd., Ridgewood, N.J. 07450

Filed Feb. 23, 1979, Ser. No. 14,346

Int. Cl.³ B05B 11/02

U.S. Cl. 222-380

7 Claims

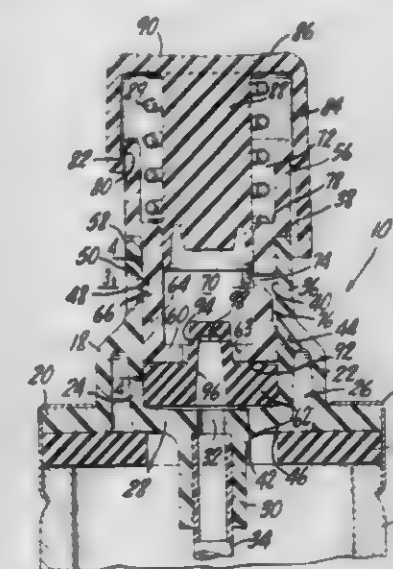
1. A fluid dispensing pump comprising: a housing adapted to be connected to a container holding a fluid to be dispensed, said housing defining interiorly thereof a generally cylindrical bore having (1) a fluid inlet port in the axial inner end wall thereof for communication with the container, (2) a fluid outlet port opening through a side wall thereof, and (3) an open axially outer end;

a generally cylindrical barrel received within the open outer end of said bore, the axially inner end wall of the barrel being spaced from the axially inner end wall of the bore to define therebetween a generally cylindrical valve chamber, said barrel defining interiorly thereof a generally cylindrical pumping chamber having (1) at least one opening through the axially inner end wall thereof for communicating with the valve chamber and (2) an open axially outer end;

a generally cylindrical piston received within the open outer

end of said pumping chamber for reciprocation therein between an axially outer position and an axially inner position;
resilient means for returning said piston to said axially outer position;

a resilient, generally cylindrical valve member located in said valve chamber and having (1) an axial passageway therethrough for establishing fluid communication between the inlet port in the housing and said pumping chamber and (2) a generally circular sealing lip on the axially outer end wall thereof for establishing, in the relaxed state of said valve member, a fluid-tight seal with the



axially inner end wall of the barrel in surrounding relation to said at least one opening therethrough, said valve member being axially deformable from said relaxed state in response to the build up of fluid pressure within said pumping chamber by reciprocation of said piston to an inwardly deflected state at which said sealing lip is at least partially out of engagement with the inner end wall of the barrel, thereby permitting fluid flow from the pumping chamber to the outlet port; and a check valve means for (1) closing the passageway through the valve member upon inward movement of the piston and (2) opening said passageway to permit fluid flow therethrough upon outward movement of the piston.

4,227,629

DETACHABLE SPOUT AND CLOSURE

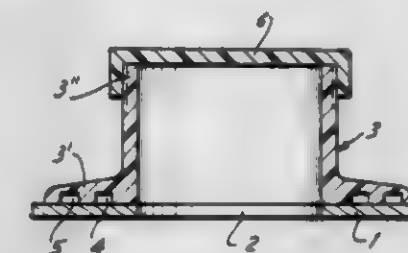
Abraham Froyman, 110-20 Flave Apt. 308, Forest Hills, N.Y. 11375

Filed Mar. 7, 1979, Ser. No. 18,464

Int. Cl.³ B65D 5/72, 25/40, 35/38

U.S. Cl. 222-566

15 Claims



1. A device for closing an opening of a container comprising a tubular member having an axis, an inner hollow and two open end portions, one of said end portions of said tubular member being connectable with a container in the region of its opening so that said tubular member firmly surrounds the opening of the container and said inner hollow of said tubular member communicates with the interior of said container through the opening, said one end portion of said tubular member being connectable to the container

directly and removably so that said tubular member can be disconnected from the container and connected with another such container;

a closing member for closing the other end portion of said tubular member and movable between a closed position in which said closing member is associated with said other end portion of said tubular member so as to close the same whereby a material accommodated in the interior of the container cannot be discharged from the latter and access to the interior of the container is prevented, and an open position in which said closing member is withdrawn from said other end portion of said tubular member whereby the material from the interior of the container can be discharged through said tubular member; and

means for removably connecting said one portion of said tubular member to the container and allowing the disconnection of said tubular member from the container and the connection of the same to another container having unprepared opening without any connecting elements, said connecting means being a one piece member removably connectable with the container.

4,227,630

SLIDING GATES FOR METALLURGICAL VESSELS

Hans R. Fehling, Geneva, Switzerland, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

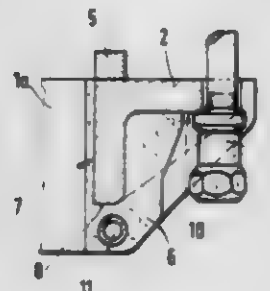
Filed Jul. 10, 1978, Ser. No. 923,241

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2732094

Int. Cl.² B22D 41/08

U.S. Cl. 222—600

14 Claims



1. A frame for a sliding gate for an outlet of a metallurgical vessel comprising a refractory concrete member reinforced with at least one metal element having at least one lateral securing lug, said metal element being a metal frame embedded in the refractory concrete member, said concrete covering the inner, outer and under sides of the frame up to the lateral securing lug.

4,227,631

VALVE FOR A SPRAY CONTAINER

Hilmar Schneider, Erlenweg 11, D-6201 Oberjosbach, Fed. Rep. of Germany

Filed Oct. 23, 1978, Ser. No. 953,921

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748736

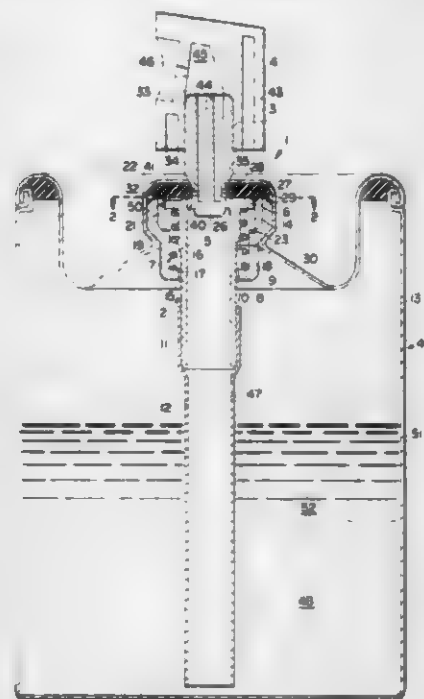
Int. Cl.³ B05B 7/32

U.S. Cl. 222—635

14 Claims

1. In a spray container valve including valve housing means (9), valve body means (2) axially movable within said valve housing means, hollow stem means (3) operatively connected to said valve body means, spray head means (4) operatively connected to said hollow stem means, spring means (17) within said valve housing means and operatively connected to said valve body means (2) for biasing the valve body means into a closed position, sealing means (27), hollow valve member means (11) operatively connected to said valve body means (2) opposite said hollow stem means (3), said hollow stem means extending through said sealing means, outer circumferential groove means (26) in said hollow stem means forming a seat for said sealing means, first passage means (34) into said hollow

stem means, said first passage means being openable and closable by said sealing means, the improvement comprising a bottom opening (10) in said valve housing means, said hollow valve member means extending through said bottom opening with clearance (15), guide means (21) in said valve housing means, chamber means (14) defined by said valve housing means (9) and by said valve body means (2) to form a throttling chamber means, said clearance (15) and chamber means (14) permitting propellant to flow through the valve housing, second passage means (41) openable and closable by said sealing means and extending from said chamber means toward said first passage means, third passage means (40) extending from within said hollow valve member means (11) for cooperation with said second passage means (41) in the manner of a jet pump whereby active ingredient is drawn through said third passage means (40) for mixing with propellant coming through



said second passage means (41) and whereby the active ingredient propellant mixture flows through said first passage means (34) into said hollow valve stem, said valve body means comprising intermediate wall means (5) including flange means (6) forming an integral structure with said hollow stem means (3) and with said hollow valve member means (11), said hollow stem means (3) comprising first and second (33, 43) longitudinal channels, said outer circumferential groove (26) in said hollow stem means being substantially adjacent said intermediate wall means, said first passage means (34) extending through said circumferential groove into one of said longitudinal channels, said valve further comprising fourth passage means (35) also extending through said circumferential groove but remote from said first passage means (34), whereby additional propellant is supplied into the other longitudinal channel of said hollow valve stem means.

4,227,632

FLEXIBLE GARMENT HANGER

John H. Collis, P.O. Box 26093, Houston, Tex. 77027

Filed Jan. 8, 1978, Ser. No. 913,623

Int. Cl.³ A47J 51/10

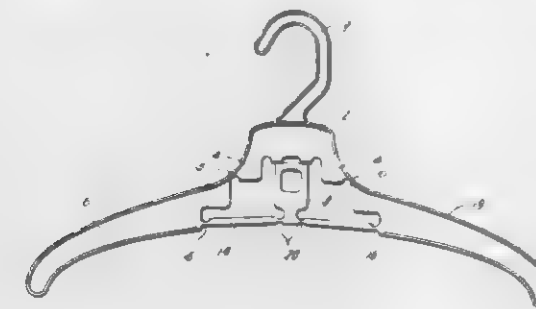
U.S. Cl. 223—94

13 Claims

1. A flexible garment hanger including a body having two sides, a hanger arm projecting from either side of body such that both hanger arms and the body are substantially within a single plane and a hook member connected to said body further comprising,

(a) means for flexibly connecting one end of each hanger arm to its corresponding body side such that both hanger arms can be extended into a deployed position and deflected downwardly into a collapsed position;

(b) an elongated locking bar having two ends, each end thereof flexibly secured to the corresponding hanger arm;



(c) overcenter stop means flexibly secured to the locking bar, and;

(d) a means to urge the stop member against the body.

4,227,633

WHEEL-LOCKING DEVICE TO SECURE VEHICLES ON THE CARGO PLATFORM OF TRANSPORT VEHICLES

Jan B. R. Sellberg, Banvågen 15, S-230 50 Bjärred, Sweden

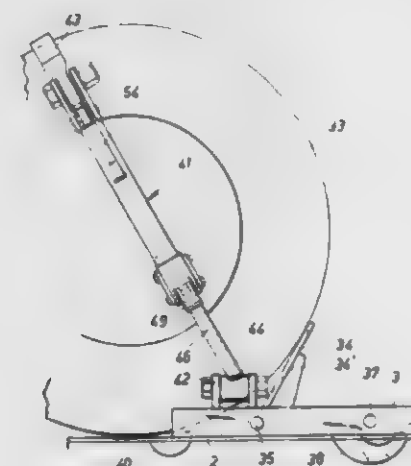
Filed Mar. 19, 1979, Ser. No. 21,813

Claims priority, application Sweden, Mar. 20, 1978, 7803163

Int. Cl.³ B60R 9/00; B65J 1/22

U.S. Cl. 224—42.28

3 Claims



1. An improved wheel-locking device for securing vehicles on the movable cargo platform of transport vehicles, comprising a stop member arranged to be raised from said movable platform for engagement with one of the wheels of said vehicle, a bow intended to be applied over said vehicle wheel, a shoulder supporting said stop member in the raised position of the latter and preventing further pivoting of said stop member, a telescopically extensible arm at the outer end of which said bow is pivotally mounted, said telescopically extensible arm comprising a controllable blocking mechanism arranged to prevent extension of said telescopic arm beyond a pre-determined, set vertical position but at the same time to allow retraction of said arm, said bow, in its applied position over the tyre of said vehicle wheel, resting on said wheel and supporting said arm in its set vertical position, as a consequence of the weight of the movable part of said arm and its own weight, the improvement comprising

said telescopic arm being pivotally mounted at its lower point of attachment and being so directed that said arm, in its raised position for the purpose of application of said bow over said vehicle wheel, forms an acute angle to a vertical plane extending at right angles to the arm pivot axis through said point of attachment of said arm and is positioned on the opposite side of said vertical plane relative to the plane formed by said raised stop member, whereby said vehicle wheel will be secured between said bow and said stop member.

4,227,634

PORTABLE CONTAINER CARRYING RACK FOR BED-TYPE DELIVERY VEHICLE

Harley L. Ramsey, and Harley M. Ramsey, both of 3011 W. 76th St., Los Angeles, Calif. 90043

Filed Jul. 16, 1979, Ser. No. 57,908

Int. Cl.³ B60R 11/00

U.S. Cl. 224—42.45 R

5 Claims



1. A portable container carrying rack, comprising:

- a free-standing frame supported on a base, having a slab with spaced openings;
- a pair of similarly shaped parallel side bars having ends that connect to the base, and then from the base extend upwardly into a generally straight central section above and straddle of the slab;
- adjustable restraining means extending between, and moveable along, the parallel side bars for engaging the sides of containers being transported;
- a block having a top and a bottom side, with two or more pegs extending vertically from the bottom of the block that have diameters equal to, or less than the space openings in the slab and are positioned to correspond to the spaced openings in the slab;
- lockable means for locking the adjustable restraining means at any location along the parallel side bars.

4,227,635

APPARATUS FOR THE MANUFACTURE OF A WINDOW BY DETACHMENT OF THE EDGES OF A SHEET OF GLASS ALONG A SCORE

Jean-Pierre Delettre, Thourotte, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

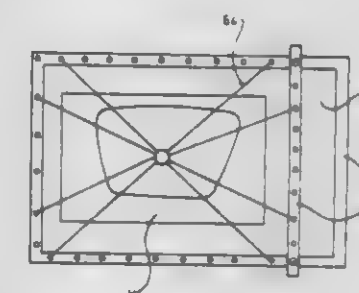
Filed Jul. 10, 1978, Ser. No. 923,168

Claims priority, application France, Jul. 21, 1977, 77 22349

Int. Cl.³ C03B 33/04

U.S. Cl. 225—96.5

17 Claims



1. Apparatus for detaching the edges of a glass sheet from a closed pattern having substantially rectilinear portions and a number of corners therebetween whose perimeter is defined by a cut-off line incised in the surface of the glass sheet comprising

- a frame including a plurality of elements circumscribing an open area,
- elastic means including a plurality of elastic straps joined together at one end and each strap supported at the other end by one of said frame elements to be disposed within said open area, said elastic straps arranged in pairs equal in number to the number of corners in said closed pattern, and said elastic straps of each pair extending across said cut-off line within a substantially rectilinear portion on opposite sides of and near each corner to bear on the edges of said glass sheet contiguous to said rectilinear portion,

- (c) means for supporting said glass sheet within the area of said closed pattern, and
 (d) means for moving at least one of said frame and supporting means toward the other whereby during movement said elastic means contacting the edges of said glass sheet exert a force to cause said edges to flex about and detach from said closed pattern at said cut-off line.

4,227,636

SUPPORTING ROLLER STAND FOR STEEL SLAB STRAND CASTING PLANTS, PARTICULARLY FOR CURVED SLAB STRAND CASTING PLANTS

Werner Rahmfeld, Mulheim, and Dieter Kothe, Moers, both of Fed. Rep. of Germany, assignors to Demag A.G., Fed. Rep. of Germany

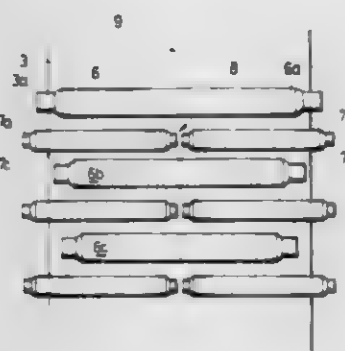
Filed Sep. 28, 1976, Ser. No. 727,573

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1975, 25445561

Int. Cl.² B65H 17/22

U.S. Cl. 226—189

5 Claims



1. Roller stand support apparatus for steel slab strand casting plants and particularly curved slab strand casting plant, comprising

- (a) a plurality of pairs of spaced apart supporting rollers positioned to define a supporting path for a cast strand on each side thereof;
 (b) power means connected to at least some of the supporting rollers for driving said rollers;
 (c) at least some of said plurality of rollers on at least one side of said path being a plurality of coaxially arranged rollers;
 (d) said roller pairs being positioned according to their diameters; the improvement characterized by
 (e) said supporting rollers being alternately of larger and smaller diameter along the said path;
 (f) said smaller diameter rollers being said plurality of coaxially arranged rollers;
 (g) the combined length of the supporting surface of each group of coaxially arranged smaller diameter rollers being greater than the length of the supporting surfaces of the said larger diameter rollers, and
 (h) the length of said supporting surfaces of said larger diameter rollers being equal to or less than the width of the strand supported.

4,227,637

PNEUMATIC FASTENING TOOL

Harry M. Haytayan, Sunnyside La., Lincoln, Mass. 01773

Filed Nov. 30, 1978, Ser. No. 964,955

Int. Cl.² B27F 7/02

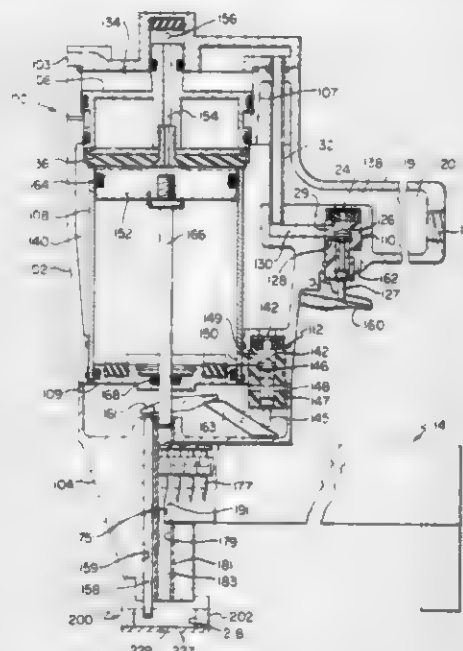
U.S. Cl. 227—8

14 Claims

1. Apparatus for holding and attaching parts to a workpiece comprising a driver and a parts holder attached to said driver; said driver comprising a nozzle having an end surface and an internal hammer travelway terminating in an opening in said end surface, means including a side opening in said nozzle for positioning a fastener in said travelway, operating means for causing said hammer to move through a drive stroke and a return stroke along said travelway so that said hammer can drive a fastener out of said travel-

way via said opening, and safety means for preventing said operating means from causing said hammer to move through said drive stroke until said safety means is operated, said safety means comprising an actuating member in said nozzle and protruding from said end surface arranged to release said safety means when said actuating member is depressed;

said parts holder comprising a part support member located adjacent to and movably spaced apart from said end surface and adapted to support in the path of movement of said hammer and in adjacent and confronting relation with a workpiece a part intended to be fastened to said workpiece, and means carried by said nozzle for movably sup-



4,227,638

RETRACTABLE CLINCHING ANVIL STAPLER

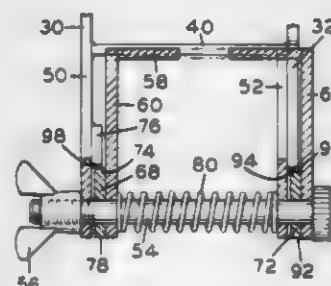
Conrad R. Medina, Skokie, and Wifredo L. Ramiro, Homewood, both of Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.

Filed Jan. 10, 1979, Ser. No. 2,363

Int. Cl.² B25C 7/00

U.S. Cl. 227—155

6 Claims



1. In a stapler having a frame, an anvil for clinching staples, an anvil support arm, and pivot means mounting said support arm on said frame for rotational movement about the axis of

said pivot means to and between a first clinching position and a second non-clinching position, the improvement comprising:

- (a) first and second positioning stops on said frame,
 (b) first and second cooperating stops on said arm for cooperation respectively with said first and second positioning stops,
 (c) said first cooperating stop engaging said first positioning stop in said first position of said anvil to maintain said arm and said anvil in said first clinching position,
 (d) said second cooperating stop engaging said second positioning stop to maintain said arm and said anvil in said second non-clinching position, and
 (e) said pivot means mounting said anvil support arm to said frame also providing for relative movement axially of said pivot means of said frame and said anvil support arm to engage and disengage said cooperating stop with said positioning stop thus permitting movement of said arm to and between said first and second positions.

4,227,639

METHOD OF MAKING A GAS-TIGHT JOINT BETWEEN A CORRUGATED HIGH QUALITY STEEL TUBE AND A HIGH QUALITY STEEL SLEEVE

Günther Blumenberg, Hanover, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

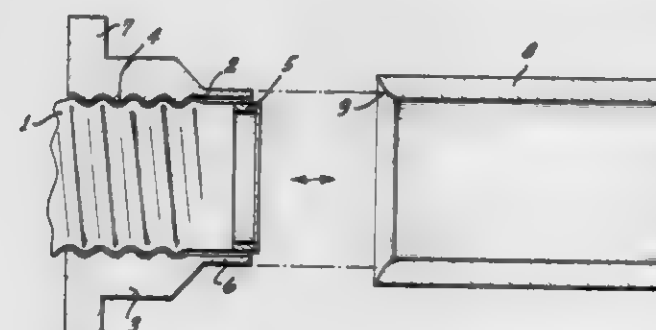
Filed May 25, 1978, Ser. No. 909,369

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724311

Int. Cl.² B23K 9/02, 5/02

U.S. Cl. 228—173 F

4 Claims



1. Method of making a gas-tight joint between a helically, internally, and externally corrugated, relatively thin-walled tube and a sleeve having a thicker wall; the tube and the sleeve being made of a high-quality steel, comprising the steps of: providing a sleeve having internal threading, corresponding to a helical corrugation of the tube, the sleeve further having an unthreaded, tubular welding extension; de-corrugating a portion of the tube adjacent to one end to obtain a smooth wall tube portion, the corrugation continues beyond the smooth wall portion; causing the welding extension to be in intimate contact with the smooth wall tube portion and for an axial length, being displaced from the axial end of the smooth wall tube portion; and fusion welding the welding sleeve to the smooth wall tube portion by melting a portion of the welding sleeve for fusing with the tube.

4,227,640

SELF LOCKING TRAY AND BLANK FOR FORMING SAME

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 7, 1979, Ser. No. 36,742

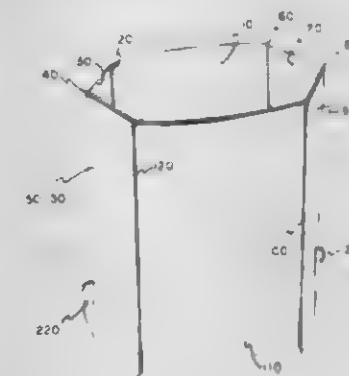
Int. Cl.² B65D 5/02, 5/36

U.S. Cl. 229—41 C

7 Claims

1. A planar unitary blank for forming a self-locking tray comprising:

- a rear central panel with a left side, a right side, a top and a bottom;
 a left rear panel with a left side, a right side, a top and a bottom, the right side of the left rear panel being hingedly secured to the left side of the rear central panel by a first fold line;
 a first left front panel with a left side, a right side, a top and a bottom, the right side of the left front panel being hingedly secured to the left side of the left rear panel by a second fold line;
 a right rear panel with a left side, a right side, a top and a bottom, the left side of the right rear panel being hingedly secured to the right side of the rear central panel by a third fold line;
 a right front panel with a left side, a right side, a top and a bottom, the left side of the right front panel being hingedly secured to the right side of the right rear panel by a fourth fold line;
 a front central panel with a left side, a right side, a top and a bottom, the left side of the front central panel being hingedly secured to the right side of the right front panel by a fifth fold line;



- a second left front panel with a left side, a right side, a top and a bottom, the left side of the second left front panel being hingedly secured to the right side of the front central panel by a sixth fold line;
 a trapezoidal bottom rear panel with a short base, a long base and two sides, the short base of the bottom rear panel being hingedly secured to the bottom of the rear central panel by a horizontally elongated seventh fold line;
 a horizontally elongated rear mid-central panel with a top edge, a bottom edge and two ends, the bottom edge being hingedly secured to the long base of the bottom rear panel by a horizontally elongated eighth fold line;
 a trapezoidal bottom front panel with a long base, a short base and two sides, the short base of the bottom front panel being hingedly secured to the bottom of the front central panel by a horizontally elongated ninth fold line; and,
 a horizontally elongated front mid-central panel with a top edge, a bottom edge and two ends, the bottom edge being hingedly secured to the long base of the bottom front panel by a horizontally elongated tenth fold line.

4,227,641

PARTITION STRUCTURE

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 11, 1980, Ser. No. 120,630

Int. Cl.² B65D 5/48

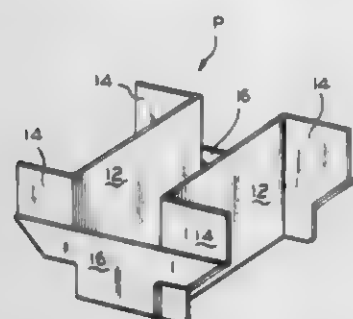
U.S. Cl. 229—42

9 Claims

1. A self-erecting structure, formed of a unitary blank of foldable paperboard or the like, for forming three cells within an outer shipping container or wrapper, comprising:

- (a) a bottom center panel;
 (b) a pair of opposed side panels foldably joined at their lower edges to opposed side edges of said center panel and upstanding therefrom;
 (c) opposed pairs of inner end panels foldably joined at their

inboard edges to end edges of related side panels and extending outboardly therefrom and normal thereto;
(d) a pair of opposed outer end panels foldably joined at their lower edges to related end edges of said center panel and extending upwardly therefrom outwardly adjacent related inner end panels;



(e) each of said outer end panels having opposed lower edges separated from related inner end panels and having opposed upper edges joined to related inner end panels along fold lines which diverge upwardly to facilitate automatic folding of said structure into erected position.

4,227,642

TRAY STACKING WIRE

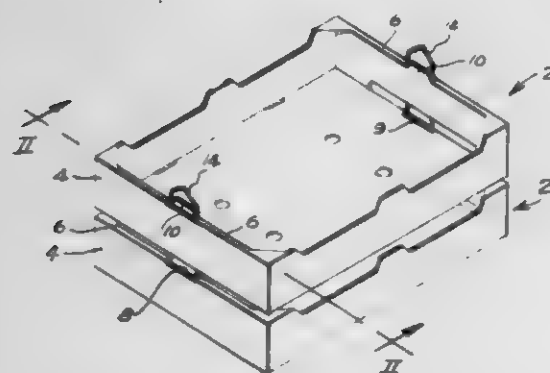
Stanley G. Ortel, Buffalo, N.Y., assignor to Better Wire Products, Inc., Buffalo, N.Y.

Filed Aug. 16, 1978, Ser. No. 934,216

Int. Cl.³ B65D 5/46

U.S. Cl. 229—52 AW

4 Claims



1. A unitary stacking wire in combination with a corrugated paperboard stacking tray and the like, said tray being of spaced, double wall construction having a top edge bridging said double wall construction, said top edge defining an elongated slot type aperture of trapezoidal shape extending therealong for reception therethrough of said wire for engagement between the walls of said double wall construction, said stacking wire including a pair of legs and a bight portion with corresponding ends of said legs being joined by said bight portion into a substantially planar U-shape configuration, each of the non-joined ends of said legs terminating in a foot and prong extending from each respective leg, each said foot being unidirectional and extending in opposite direction with respect to one another substantially within the plane of said legs and bight portion, and each of said feet terminating in a prong extending laterally from corresponding sides of said feet wherein said prongs lie in a plane disposed at a substantial angle to the plane of said legs and said bight portion, said feet and prongs being disposed between the walls of said double wall construction at a point normally below said top edge whereby said prongs engage one wall of said double wall construction to resist movement of said wire relative thereto with said feet normally projecting underneath the ends of said slot type aperture, and the plane of said legs and bight portion being disposed substantially parallel to the plane of the other wall of said double wall construction along the long side of said trapezoidal aperture with said feet and portions of said legs

respectively adjacent thereto being in engagement with said other wall of said double wall construction, said prongs and feet being dimensioned and arranged so that said feet are pressed against said other wall.

4,227,643

ELECTRONIC VOTING MACHINE

Henry D. Luther, Massillon, Ohio, assignor to R. F. Shouptronics Corp., Bryn Mawr, Pa.

Division of Ser. No. 724,120, Sep. 17, 1976, Pat. No. 4,178,501.

This application Oct. 30, 1978, Ser. No. 956,110

Int. Cl.³ G07C 13/00

U.S. Cl. 235—34 F

5 Claims



1. A voting system comprising:
at least one voting terminal having voting switches,
a scanner for scanning said switches and for generating digital signals representing the address of a voting switch which has been actuated,
a digital computer having an addressable memory for storing votes in response to receipt of said digital signals and having means for checking the validity of votes cast in response to receipt of said digital signals,
means for transmitting digital signals from said computer to said terminal representing the address of a voting switch which has been validly operated,
a plurality of light indicators, one light indicator being associated with each voting switch;
means responsive to received digital signals for energizing the indicator associated with the voting switch which has been validly operated before the vote is recorded,
a record switch operable after a plurality of said indicators have been energized to store said votes in said addressable memory.

4,227,644

DOCUMENT FEED APPARATUS

Yukio Sakano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 15, 1978, Ser. No. 915,965

Claims priority, application Japan, Jun. 16, 1977, 52-70492; Jun. 16, 1977, 52-70494

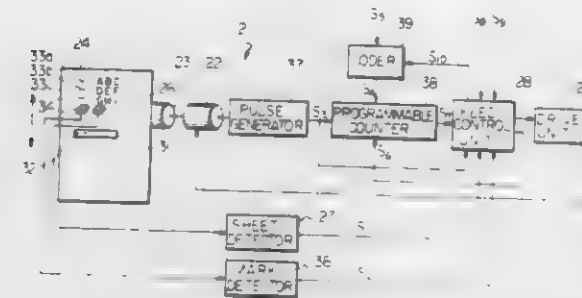
Int. Cl.³ G06C 11/10; G06K 7/10; B41J 11/48

U.S. Cl. 235—433

23 Claims

15. A document feed apparatus comprising:
mark detector means for detecting a stop mark on a document; and
feed means for feeding the document relative to the mark detector means;

the stop mark comprising two parallel lines extending perpendicular to the direction of movement of the document,



the mark detector means being constructed to detect the two lines individually.

4,227,645

ELECTRONIC AIR CONDITIONER

Bertran de La Farge, Toulouse, and Alain Vincent, Fenouillet, both of France, assignors to Institut Technique Du Porc, Paris, France

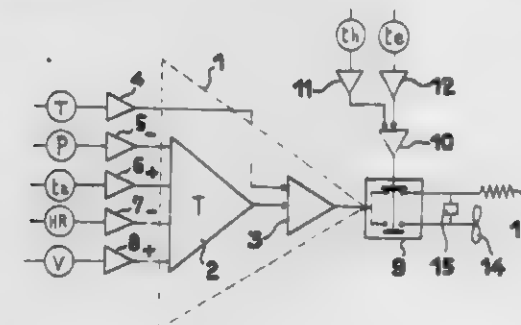
Filed Jun. 19, 1978, Ser. No. 917,043

Claims priority, application France, Jun. 17, 1977, 77 18678

Int. Cl.³ F24F 7/00

U.S. Cl. 236—49

18 Claims



1. Apparatus for conditioning the air in an interior space in such manner that the parameters which contribute to a feeling of comfort on the part of the occupants of said space and the physical parameters of said occupants simultaneously satisfy an experimental condition of optimum comfort, said apparatus comprising:

at least one computer means connected to
(i) a group of means for measuring said parameters contributing to said feeling of comfort and transmitting a signal proportional to said parameters;
(ii) a group of means for displaying said physical parameters of said occupants of said space and transmitting a signal proportional to said parameters;
(iii) a group of adjusting means capable of modifying, during operation, at least one said parameter contributing to said feeling of comfort,
said computer means comprising means for controlling at least one of said adjusting means to adjust at least one said parameter contributing to said feeling of comfort in response to said signals transmitted by said means for measuring and said means for displaying, to satisfy said condition.

4,227,646

TEMPERATURE-RESPONSIVE VALVE

William B. Hart, Ipswich, and Reginald T. Williams, Hadleigh, both of England, assignors to Delta Materials Research Limited, Ipswich, England

Filed Nov. 30, 1978, Ser. No. 964,934

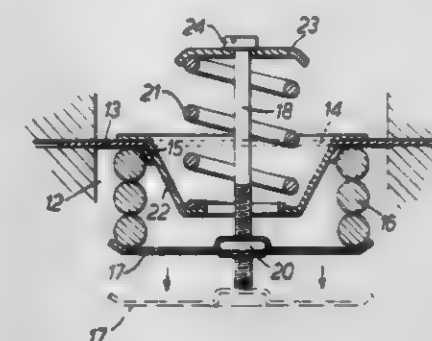
Int. Cl.³ G05D 23/02

U.S. Cl. 236—93 R

12 Claims

1. A temperature-responsive valve comprising:
(a) means for constituting a passage for the flow of fluid;

(b) a valve member mounted relative to said passage to control the flow of fluid;
(c) said valve member including a helically wound spring having a plurality of turns and being made of a shape memory effect material having an elastic modulus which varies significantly with temperature in a reversible manner over a transition temperature range;
(d) wherein the spacing of adjacent turns of said helically wound spring varies with temperature in said range whereby the flow of fluid between said turns is controlled;



(e) said turns being in engagement with one another at one temperature and being opened to allow flow of fluid therethrough as the temperature changes from said one temperature; and
(f) wherein said valve member further includes a biasing compression spring and a spindle operatively connecting said biasing compression spring and said helically wound spring via a pair of spaced discs carried by said spindle.

4,227,647

DEVICE FOR COOLING CHIMNEY GASES

Leif Eriksson, Abrahamsbergsvägen 68, S-161 45, Bromma, Sweden

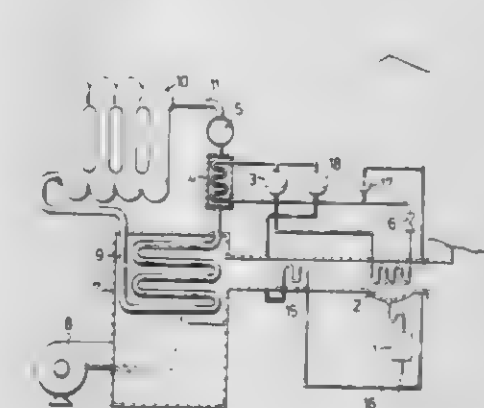
Filed May 22, 1978, Ser. No. 908,220

Claims priority, application Sweden, May 25, 1978, 7706116; Dec. 7, 1978, 7713882

Int. Cl.³ G05D 23/00

U.S. Cl. 237—2 B

5 Claims



1. An apparatus for cooling chimney gases from a fuel heated boiler and for removing sulphurous and other pollutants from the chimney gases in a chimney from the boiler, heating water from said boiler being used in a circulating water-heating system comprised of heating radiators and a water return pipe, which comprises

a cooling means in the chimney to heat up a heat-transfer medium and to cool the chimney gases; a condenser-heat exchanger means attached to the water return pipe to cool the heated heat-transfer medium and to heat the water in the water return pipe; a refrigerating compressor means located between said cooling means and said condenser-heat exchanger; and a throttle valve, said cooling means causing water to condense from said chimney gases wherein pollutants in said chimney gases are dissolved therein and said condensate water being removed by

means of a condensate water pipe which contains a deacidification filter to neutralize acid condition resulting from the dissolution of pollutants in the condensate water, and in addition comprises a vapor generator feeding an expander device whereby conversion to mechanical energy takes place and said mechanical energy is employed to drive said refrigerating compressor.

4. A method for cooling chimney gases from a fuel heated boiler and for removing sulphurous and other pollutants from the chimney gases in a chimney from the boiler, heating water from said boiler being used in a circulating water heating system comprised of heating radiators and a water return pipe, which comprises

providing a cooling means in the chimney to heat up a heat-transfer medium to cool the chimney gases, causing the heat-transfer medium to flow to a condenser-heat exchanger means attached to the water return pipe to cool the heated heat-transfer medium and to heat the water in the water return pipe, and causing the heat-transfer medium to flow through a throttle valve back to the cooling means, whereby water condenses from said chimney gases, pollutants in said chimney gases are dissolved therein and the condensate water is removed by means of a condensate water pipe which contains a deacidification filter to neutralize acid condition resulting from dissolution of pollutants in the condensate water, and in addition comprises providing a vapor generator feeding an expander device whereby conversion to mechanical energy takes place and said mechanical energy is employed to drive said refrigerating compressor.

4,227,648

CENTER PIVOT IRRIGATION SYSTEM HAVING APPARATUS FOR IRRIGATING CORNERS

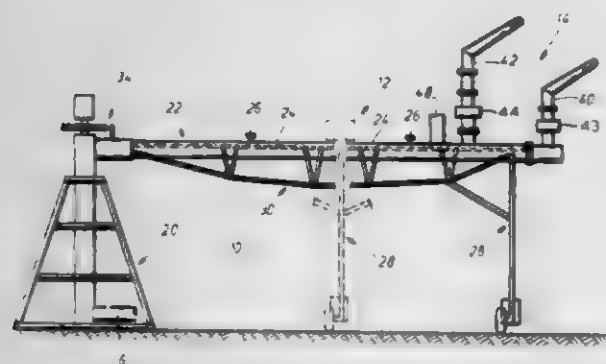
Huland L. Holloway, Melbeta, and Edward M. Norum, Jr., Gering, both of Nebr., assignors to Lockwood Corporation, Gering, Nebr.

Continuation of Ser. No. 778,470, Mar. 17, 1977, Pat. No. 4,161,292. This application Dec. 12, 1978, Ser. No. 968,835. The portion of the term of this patent subsequent to Jul. 17, 1996, has been disclaimed.

Int. Cl.³ B05B 3/12

U.S. Cl. 239-11

17 Claims



11. In a center pivot irrigation system having a main pipeline sprinkler rotatable about a center for supplying a generally circular area with irrigating fluid, and having an auxiliary nozzle rotatably carried by the main pipeline sprinkler for irrigating corner regions, the improvement comprising means responsive to irrigating fluid pressure in the main pipeline sprinkler for operating the auxiliary nozzle to discharge irrigating fluid therethrough upon the occurrence of the conditions that

- (1) the main pipeline sprinkler is substantially non-rotating;
- (2) the main pipeline sprinkler has substantially ceased discharging irrigating fluid; and
- (3) pressure in the main pipeline sprinkler has increased to a selected value, indicative that the main pipeline sprinkler has substantially ceased discharging the irrigating fluid.

14. In a center pivot irrigation system having a main pipeline sprinkler rotatable about a center for irrigating a generally

circular area with irrigating fluid, and having an auxiliary nozzle rotatably carried by the main pipeline sprinkler for irrigating corner regions, the improved method of operating the system comprising the steps of

- (a) substantially stopping rotation of the main pipeline sprinkler;
- (b) substantially stopping discharge of the irrigating fluid from the main pipeline sprinkler when its rotation has stopped;
- (c) detecting the pressure of the irrigating fluid in the main pipeline sprinkler;
- (d) enabling operation of the auxiliary nozzle when the irrigating fluid pressure in the main pipeline sprinkler has increased to a selected value indicating that said step of substantially stopping discharge has been effected; and
- (e) irrigating from the auxiliary nozzle upon the completion of steps a-d.

4,227,649

SPRAY MARKING ASSEMBLY

Alfred E. Poffenroth, General Delivery, Delacour, Alberta, Canada (TOM OTD)

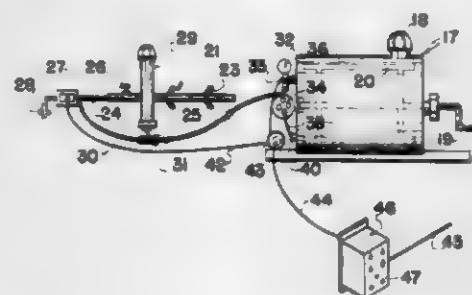
Filed Sep. 7, 1978, Ser. No. 940,395

Claims priority, application Canada, Sep. 28, 1977, 287677

Int. Cl.³ B05B 13/00

U.S. Cl. 239-124

6 Claims



1. A field spray marker for use with an agricultural or horticultural sprayer which includes a source of electrical power, an outwardly extending boom on each side carrying spray nozzles, and a tank containing spray fluid and the like; comprising in combination a tank for carrying marking fluid for spraying visual indicating marks on vegetation and/or ground surfaces, a normally closed solenoid valve situated adjacent the outer end of at least one of said extending booms, a marker discharge nozzle adjacent said solenoid valve and being operatively connected thereto, a pump and motor assembly operatively connected to said tank carrying marking fluid, conduit means operatively connecting said pump and motor to said solenoid valve and means to operate said solenoid valve from the closed to the open position and vice-versa, said pump and motor being constantly operating when said marker is in use thereby maintaining a constant fluid pressure at solenoid valve, an adjustable relief valve operatively connected between said pump and said tank, and means to mount said solenoid valve and said discharge nozzle upon said extending boom, said last mentioned means including a bracket assembly securable to said boom, said solenoid valve and said discharge nozzle being supported upon said bracket assembly, said bracket assembly including an extendable and retractable arm on said bracket, said discharge nozzle and said solenoid valve being supported upon said arm, and means to adjust said arm within limits in an inwardly and outwardly direction relative to said bracket assembly, to position said discharge nozzle relative to said outer end of said boom.

4,227,650

FLUID DISPENSER AND NOZZLE STRUCTURE

James C. McKinney, Atlanta, Ga., assignor to Ethyl Products Company, Richmond, Va.

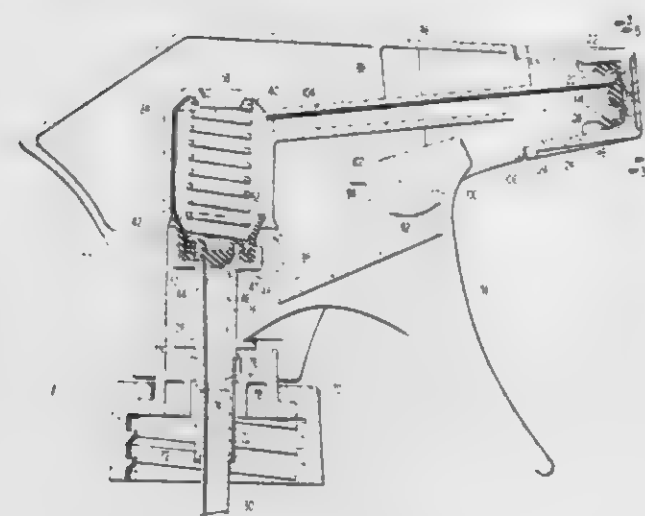
Continuation of Ser. No. 774,146, Mar. 3, 1977, abandoned, and a continuation-in-part of Ser. No. 729,798, Oct. 5, 1976, Pat. No. 4,161,288. This application Nov. 17, 1978, Ser. No. 961,512

The portion of the term of this patent subsequent to Jul. 17, 1996, has been disclaimed.

Int. Cl.³ B65D 47/34

U.S. Cl. 239-333

3 Claims



1. An apparatus for dispensing fluids from a container comprising:

- (a) a housing;
- (b) a pivotable trigger mounted on said housing;
- (c) a pump chamber in said housing in communication with the container, the volume of which chamber is varied responsive to the pivoting of said trigger;
- (d) an outlet valve on said housing in communication with said pump chamber, said valve being of a unitary construction of a non-metallic, elastic material including a peripheral O-ring portion; a thin, flexible, apertured, annular portion; and a thick, solid, central portion for normally blocking communication with said chamber and responsive to the pressure in said chamber to stretch the thin, annular portion to thereby open the solid, central portion to communicate said chamber with said apertured, annular portion; and
- (e) a nozzle cap on said housing making sealing engagement with said O-ring portion and adapted for adjustably contacting the central portion of said outlet valve member to vary the discharge pattern of the fluid dispensed.

4,227,651

NOZZLE FOR USE ON THE EXHAUST OF INTERNAL COMBUSTION ENGINES

Luis A. P. Abe, 141 Maule St., Santiago, Chile

Filed Jul. 20, 1979, Ser. No. 59,927

Int. Cl.³ B05B 7/06

U.S. Cl. 239-428

1 Claim



1. A nozzle for use on the exhaust of an internal combustion engine comprising: a first nozzle part having an inlet end, a diverging conical section axially aligned with the inlet end, a converging conical section aligned with the diverging conical section; a second nozzle part axially aligned with said first nozzle part and affixed thereto at the junction between the two

conical sections of the first nozzle part, the second nozzle part having a cylindrical air inlet end provided with a plurality of peripheral holes, said air inlet end surrounding and spaced from the converging conical section of the first nozzle part, a converging conical section axially aligned with said cylindrical air inlet, and a diverging conical outlet section axially aligned with said converging conical section; and a cylindrical tube supported axially within the first and second nozzle parts and axially extending from approximately the junction between the two conical sections of the first nozzle part to a location in the second nozzle part between the ends of the diverging conical section thereof.

4,227,652

POWDER CHARGING DEVICE

Tsutomu Itoh, Tokyo, Japan, assignor to Onoda Cement Co., Ltd., Onoda, Japan

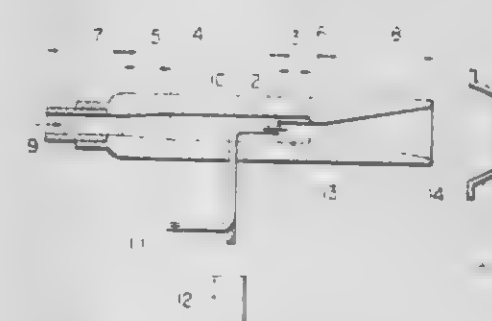
Filed May 3, 1979, Ser. No. 35,476

Claims priority, application Japan, May 9, 1978, 53/54701

Int. Cl.³ B05B 5/02

U.S. Cl. 239-706

9 Claims



1. A powder charging device characterized in that said device comprises a large-diameter cylindrical flow path, a small-diameter cylindrical flow path having a smaller inner diameter than the inner diameter of said large-diameter cylindrical flow path, an annular electrode disposed at the upstream end of said small-diameter cylindrical flow path, and a needle electrode disposed concentrically with said annular electrode and axially aligned in opposition to each other, said large-diameter cylindrical flow path being disposed contiguously to said small-diameter cylindrical flow path on the upstream side of the latter, and said two electrodes are adapted to have a voltage applied therebetween and wherein said annular electrode has a uniform inner diameter from its mid-point to its downstream end to provide a subsonic flow therethrough in the velocity range of from 7 to 35 meters per second.

4,227,653

METHOD OF PROCESSING WASTE MATERIALS

Raimund Jetzer, Nussbaumen, Switzerland, assignor to Gewerbank Baden Aktiengesellschaft, Baden, Switzerland

Continuation of Ser. No. 806,596, Jun. 14, 1977, Pat. No. 4,145,007. This application Jan. 5, 1979, Ser. No. 1,262

Claims priority, application Switzerland, Jun. 14, 1976, 7498/76

The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

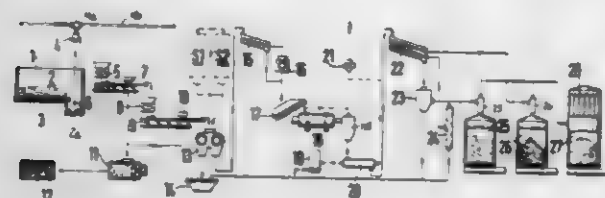
Int. Cl.³ B02C 23/14

U.S. Cl. 241-24

10 Claims

1. A method of processing waste material which contains moisture as well as heavier and lighter solid constituents and wherein said lighter constituents include fibers, comprising the steps of (A) subjecting moist waste material to a first comminuting action to thus convert said waste material into heavier particles and lighter particles including lighter fibrous particles of a first size and additional lighter particles of a larger second size; (B) segregating at least the major percentage of heavier

particles from lighter particles; (C) subjecting said additional lighter particles to a cutting action to thus reduce their size to



a size not exceeding said first size; and (D) reducing the moisture content of all lighter particles.

4,227,654

BALE PROCESSOR

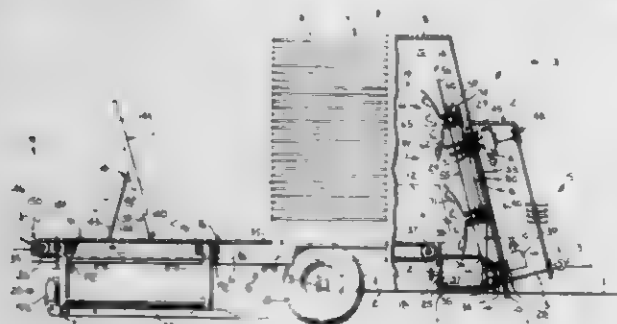
Dean E. Seefeld, and David K. Schirer, both of West Bend, Wis., assignors to Gehl Company, West Bend, Wis.

Filed Oct. 13, 1978, Ser. No. 950,975

Int. Cl.³ B02C 18/18

U.S. Cl. 241—34

15 Claims



1. An apparatus for disintegrating a bale of fibrous material, comprising a plurality of cutters each including a plurality of blades extending outward from an axis to be directed generally towards a bale, each of said cutters including a plate having a concave outer surface formed about said axis and generally facing said bale and an outer edge with a plurality of mounting projections each connected to one of said blades with said plurality of blades extending radially and axially outward from said plate to be directed toward an oncoming bale, means rotating said plurality of cutters about their said axis, and means connected to said bale and said cutters to provide relative movement between said bale and said cutters along a movement axis to selectively engage said blades against said bale to cut said fibrous material by said blades at a face of said bale.

4,227,655

ROTARY FOOD PROCESSING TOOL HAVING OFFSET HUB

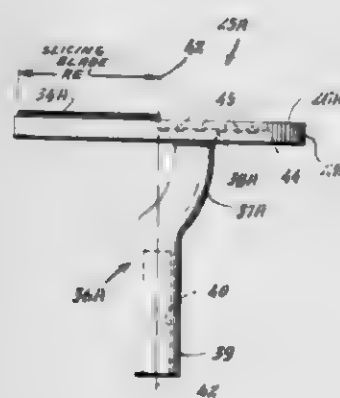
James E. Williams, Stamford, Conn., assignor to Wilson Research & Development Inc., Greenwich, Conn.

Filed May 9, 1979, Ser. No. 37,912

Int. Cl.³ B02C 18/18

U.S. Cl. 241—92

18 Claims



1. In a food processor of the type including a housing con-

taining an electric motor drive, a bowl mountable on said housing for enclosing a rotary food processing tool within said bowl, said tool being adapted to be rotated within said bowl by said electric motor drive, a removable cover adapted to be secured in position on said bowl, and a feed tube mounted on said cover forming a passageway for feeding food items through said cover into said bowl, the invention comprising:

- said rotary food processing tool having an elongated hub with a head on end thereof and a coupling means on the other end thereof adapted to be coupled to and rotated by said electric motor drive, said hub head being radially offset from the axis of rotation of said coupling means such that said hub head revolves around the axis of rotation of said coupling means,
- a horizontal disc-like cutting member mounted on said offset hub head at a location offset from the center of said horizontal disc-like cutting member,
- cutting means on said horizontal disc-like member extending from near the center of said disc-like member to the periphery thereof, and
- said feed tube on said cover being positioned above said disc-like member and having a passageway providing a working active zone extending in the radial dimension with respect to said disc-like member from near the center of said disc-like member to near the periphery thereof.

4,227,656

VEGETABLE SLICER

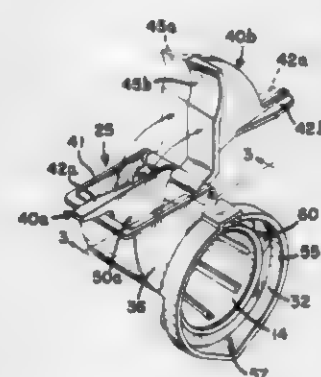
Einar O. Engebretsen, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Dec. 22, 1978, Ser. No. 972,221

Int. Cl.³ B02C 18/00

U.S. Cl. 241—93

9 Claims



1. In a vegetable slicer including a housing having a cavity therein, means for receiving a food processor within the cavity, a port connecting into the cavity for presenting foodstuffs to the food processor, and a chute attached to the port opposite the cavity for containing and guiding foodstuffs through the port to the food processor, the improvement comprising:

- a plurality of adjacent pusher plate portions, each pusher plate portion having a face thereon for engaging and pushing foodstuffs to the processor through a corresponding portion of the chute,
- mounting means mounting at least one of said pusher plate portions for independent and individual movement through the chute toward and away from the port as well as for movement in unison with said other pusher plate portions, and
- at least one of said pusher plate portions having at least one divider wall movable therewith and facing at least one of its adjacent said pusher plate portions to close and separate the corresponding portion of the chute from each said adjacent pusher plate portions when said one pusher plate portion is positioned fully in the chute, said at least one pusher plate portion and its divider wall, when fully in the chute, obstructing access to said closed portion of the chute and consequently reducing the effective capacity of the chute by an amount equal to at least the volume of the

chute swept by its respective pusher plate face, for more expeditious handling of small-sized foodstuffs, and said pusher plate portions and respective divider walls, when together fully removed from the chute, providing unobstructed access to the chute and restoration of the effective capacity of the chute to the full volume of the chute swept by the respective pusher plate faces when moved in unison, for more expeditious handling of large-sized foodstuffs.

4,227,657

DEVICE FOR FEEDING YARN TO A KNITTING MACHINE

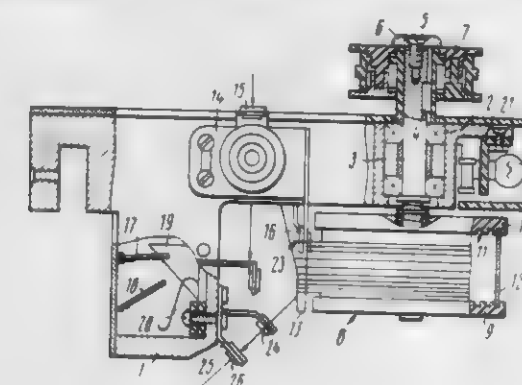
Solomon K. Simin, prospekt Nauki, 12, kv. 153; Georgy I. Kurganov, ulitsa Sofii Kovalevskoi, 4, kv. 183; Georgy N. Stark, ulitsa Dzerzhinskogo, 64, kv. 1; Jury S. Kuzovkov, Nevsky prospekt, 53, kv. 20, and Arkady I. Ludar, Svetlanovskiy prospekt, 99, korpus 1, kv. 154, all of Leningrad, U.S.S.R.

Filed Feb. 2, 1979, Ser. No. 8,872

Int. Cl.³ B65H 51/20

U.S. Cl. 242—47.01

3 Claims



1. A device for feeding yarn to a knitting machine, comprising:

- a shaft rotatably mounted in a housing;
- a drive pulley mounted on said shaft for rotating said shaft;
- two spaced apart discs mounted on said shaft;
- slots in said discs on the sides facing each other and arranged symmetrically in relation to a plane perpendicular to the axis of said shaft;
- an elastic band positioned between said discs in the respective opposing slots;
- said discs and said elastic band defining a yarn feeding roller, wherein the elastic band serves as a yarn feeding surface with a variable diameter on moving the elastic band along the slots of the discs; and a yarn guide mounted in a stationary position in relation to said yarn feeding roller and spaced therefrom;
- said yarn guide being in the form of a rod having its upper portion disposed at an angle to the rotational axis of the yarn feeding roller, and its lower portion disposed parallel to this axis, whereby a change in the speed of feeding yarn and the uniformity of its tension depends on a change in the diameter of the roller.

4,227,658

PAPER WINDER ASSEMBLY INCLUDING PRESSURE MODULATING VALVE

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 11, 1978, Ser. No. 941,315

Int. Cl.³ B65H 17/08

U.S. Cl. 242—66

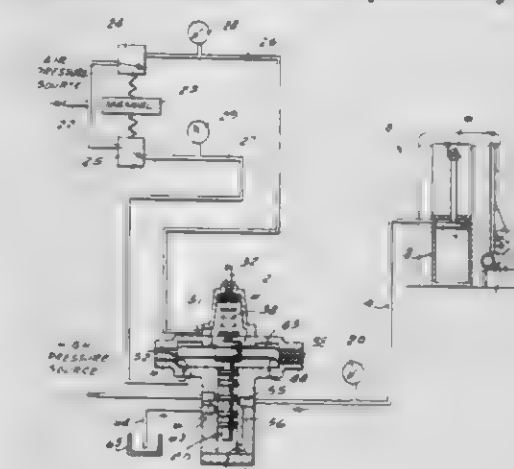
2 Claims

- In a paper winder assembly including:
 - a pair of winder drums, for receiving a roll of paper being wound,
 - a rider roll positioned to bear against said roll of paper with a variable pressure, and
 - hydraulically actuated lifting means including a piston and

cylinder associated with said rider roll to vary the pressure at which said rider roll bears against said roll of paper, said rider roll applying a maximum pressure to said roll of paper when said pressure in said cylinder is a minimum,

the improvement which comprises:

- a valve for controlling flow of hydraulic fluid to said lifting means having upper and lower flexible diaphragms therein in axially spaced relation, each of said diaphragms having a constant effective area,
- an actuator in said valve movable in response to movement of either of said diaphragms,
- means for selectively introducing pressurized air into said valve which acts on said effective areas to deflect one or the other of said diaphragms,
- inlet means for introducing pressurized liquid into said valve,
- outlet means for directing a flow of pressurized liquid from said valve into said cylinder in said hydraulically actuated



lifting means, said actuator being disposed between said inlet and outlet means to control liquid flow therebetween,

- bias means producing a selected force normally urging said actuator to a position allowing liquid communication between said inlet and outlet means,
- means within said valve operable in response to movement of said actuator for diverting some of the flow through said outlet means and into pressure applying relation with said actuator,
- said actuator being movable into a position wherein the flow of pressurized liquid through said outlet means is terminated when the pressure applied by the diverted flow equals said selected force,
- whereby liquid flow through said valve increases as pressure acting on said upper diaphragm decreases to raise said rider roll, and liquid flow through said valve decreases as pressure acting on said lower diaphragm increases to lower said rider roll.

4,227,659

FISHING LINE STORAGE REEL

Roy K. Pindell, 3158 Boone, Memphis, Tenn. 38127

Filed Jan. 22, 1979, Ser. No. 5,203

Int. Cl.³ A01K 89/015, 89/02

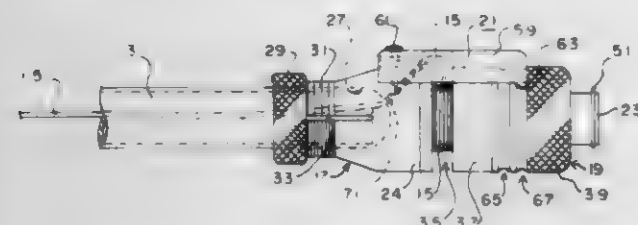
U.S. Cl. 242—84.1 R

6 Claims

1. A storage reel for attachment to a fishing pole to store a quantity of fishing line and to allow the fishing line to be selectively played out and reeled in, said storage reel comprising:

- a stator member for being fixedly attached to the butt end of the fishing pole, said stator member including a cylindrical body portion;
- a lug member attached to and protruding outwardly from said body portion of said stator member;
- rotor means for holding a quantity of fishing line and for being rotatably and slidably mounted on said body portion

of said stator member, said rotor means having a slot therein for selectively receiving said lug member, said rotor means being slidable between a first position with said lug member received within said slot to prevent rotation of said rotor means and a second position with said lug member not received in said slot to allow rotation of said rotor means, said rotor means including a pair of peripheral grooves thereabout; and
(d) retainer means for selectively holding said rotor means in



said first position, said retainer means including a body member for being attached to said stator member, said body member of said retainer means including a heel portion for engaging one of said pair of peripheral grooves of said rotor means when said rotor means is in said first position to selectively hold said rotor means in said first position and for engaging the other of said pair of peripheral grooves of said rotor means when said rotor means is in said second position to selectively hold said rotor means in said second position.

4,227,660

METHOD AND APPARATUS FOR EXTENDING CONVEYOR BELTS

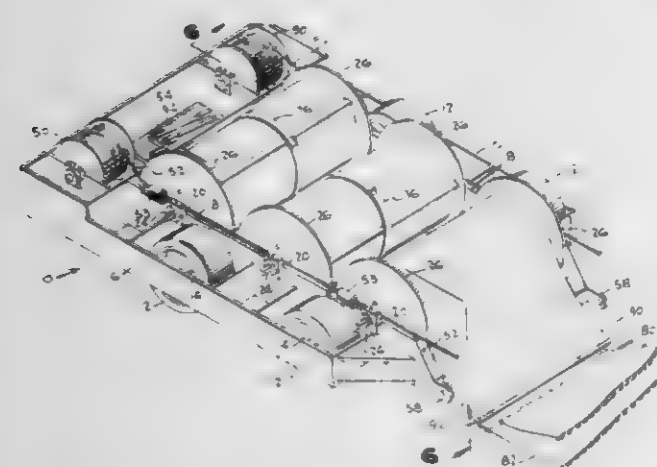
John L. Denny, Beckley, W. Va., and Robert H. Alley, Bluefield, Va., assignors to Advance Mining Products, Inc., Falls Mills, Va.

Division of Ser. No. 934,598, Aug. 17, 1978. This application May 30, 1979, Ser. No. 43,640

Int. Cl.² B65H 17/46

U.S. Cl. 242—86.52

8 Claims



1. A carrier vehicle for deploying new conveyor belting material for connection to an old conveyor belt for lengthening the old conveyor belt, said carrier vehicle comprising frame means, supporting wheels supporting said frame means for movement, at least one roll of new belting material rolled in a double thickness about the axis of a drum transverse to the carrier vehicle and having its middle point comprising a loop extending around winding rod means eccentric with respect to the axis of said reel and latch means normally holding said winding rod in position but permitting said winding rod to be removed from within said loop so as to permit said loop to clear said reel upon the unwinding of said roll of new belting material therefrom.

4,227,661

LATCHING MECHANISM AND WINDING APPARATUS INCLUDING SAME

William King, and Edward King, both of 79 Allison Rd., Elsternwick, Victoria, Australia (3122)

Continuation-in-part of Ser. No. 698,308, Jun. 21, 1976,

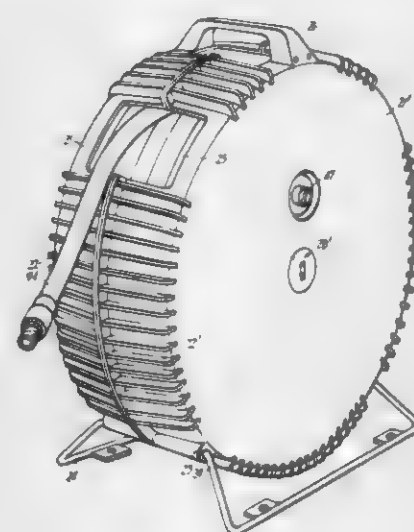
abandoned. This application Jul. 28, 1978, Ser. No. 928,066

Claims priority, application Australia, Jun. 23, 1975, PC2076

Int. Cl.³ B65H 75/48

U.S. Cl. 242—107.7

28 Claims



1. A latching mechanism comprising:
a stationary support means;
a pawl mounted on said support means for pivotally moving a tooth portion thereof in a generally vertical plane; and
a ratchet wheel rotatably mounted on said support member and lying in said generally vertical plane, said ratchet wheel having a least one recess on the periphery thereof and being mounted on said support means adjacent said pawl so that the tooth of the latter is pivotally biased solely by gravity into contact with the periphery of said wheel and into engagement with said recess to restrict rotation of said wheel in one direction, said recess being formed by a pair of peripherally spaced straight flanks terminating at the bottom of said recess, one of said flanks comprising a trailing flank in said one direction of rotation which slants angularly inward against said one direction of rotation at an angle of about $15^\circ \pm 5^\circ$ with respect to a radius passing equidistantly between said flanks at their bottom termini to provide a surface capturing said pawl in said recess when said pawl engages said recess, said ratchet wheel having an outwardly extending cam means limited to a predetermined portion of the periphery of said ratchet wheel immediately ahead of said recess in said one direction of rotation, said cam means being contactable by said pawl for providing pivotal movement to said pawl opposite to that obtained by the gravity bias, said cam means being preceded by a peripheral portion of said ratchet wheel having a generally constant radius, said tooth portion of said pawl being formed to engage said trailing flank of said recess for being captured therein, the amount of the pivotal movement of the pawl upon contacting said cam means being responsive to the angular velocity of said wheel in said one direction and being such that said gravity bias acting on said pawl will be insufficient to cause said pawl to engage said tooth when the velocity of said wheel is in excess of a predetermined latching speed.

4,227,662

AIR TURBULENCE REDUCER

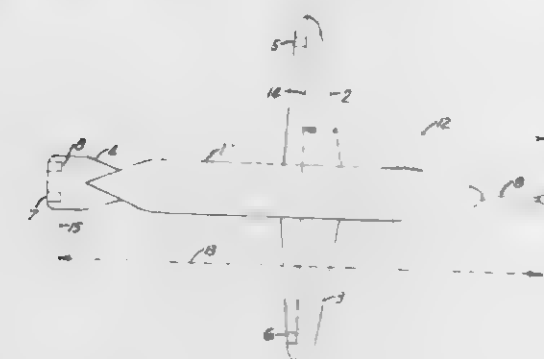
Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 53 Morrison, Montreal, Quebec, Canada (H3R 1K3)

Filed May 14, 1979, Ser. No. 38,483

Int. Cl.² B64C 13/18

U.S. Cl. 244—76 C

4 Claims



1. Air turbulence reducer for aircraft which comprises:
air turbulence indicator means located in advance of said aircraft at a point where the ambient air pressure and vertical currents are not materially affected by said aircraft, and
transducer means which converts said air turbulence indication to an electric current which is a function of said indication, and
averaging means for said current over a period longer than the time of flight of said aircraft over a distance greater than its length plus the forward extension of said indicator means, at said aircraft's lowest airborne speed, at which air turbulence reduction is desired, and
recording means which records said current from said transducer and provides two or more readouts of said recorded current each with different delays, said delays being a function of the speed of said aircraft, and
air speed indicator means which is coupled to said recording means, and
two or more comparison means, each of which compares said averaged current with the current of one of said readouts and produces an error current, and
actuator means coupled to each of said comparison means, said actuator means moving said control surface means at a time, in a direction and by an amount which compensates for the effect of turbulent air on said aircraft, said time for movement of each said actuator means being determined by a readout from said recording means, said aircraft air speed and said actuator delay at least one of said control surface means being located near the forward, and at least one near the after end, of said aircraft.

4,227,663

REFURBISHABLE AERIAL CARGO DELIVERY SYSTEM AND SOLID STATE CIRCUIT THEREFOR

Vernon B. Ramsey, Lewisburg, and Donald E. Woods, Shelbyville, both of Tenn., assignors to Teledyne Inc., Los Angeles, Calif.

Filed Feb. 6, 1978, Ser. No. 875,483

Int. Cl.³ B64D 17/56

U.S. Cl. 244—149

12 Claims

1. An altitude sensor parachute staging unit comprising,
a first housing assembly containing an electronic barometer pressure transducer and altitude selection means for producing a parachute deployment signal,
a second housing assembly containing a direct current electrical power supply and an electrically activated cable cutter for cutting a parachute deployment cable,
complementary electrical connector means on said first and said second housing assemblies for coupling electrical energy from said power supply to said electronic barometer pressure transducer and altitude selection means con-

tained in said first housing and for coupling said parachute deployment signal from said first housing assembly to said



second housing assembly to activate said electrically activated cable cutter at a selected altitude during descent of said altitude sensor parachute staging unit.

4,227,664

STALL CURRENT LIMITER FOR SERVO DRIVE SYSTEMS

Edmund R. Skutecki, Glendale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,433

Int. Cl.³ G05D 1/00

U.S. Cl. 244—194

7 Claims



1. Craft control surface positioning means including actuator means responsive to manual and electrical control inputs for establishing the position of said control surface, and further comprising:
pick off means for generating a first electrical measure of said position,
combining network means for combining said first electrical measure and a second electrical measure representative of a servo position command for forming the output of said combining network means,
stall current limiter means coupled to said combining network output,
said stall current limiter means including: amplifier means, resistance-capacitance network means in series with said amplifier means, and
feedback resistor means coupled from said resistance-capacitance network means output to said output of said combining network means, and
power amplifier means responsive to said stall current limiter means for providing said electrical input to said actuator means.

4,227,665

FIXED LEADING EDGE SLAT SPOILER FOR A HORIZONTAL STABILIZER

Floyd W. Carlson, Fort Worth; Michael L. Hester, and David A. Popelka, both of Bedford, all of Tex., assignors to Textron, Inc., Providence, R.I.

Filed May 11, 1978, Ser. No. 904,813
Int. Cl.³ B64C 21/02

U.S. Cl. 244—210

11 Claims



1. In a helicopter having a horizontal stabilizer, the combination therewith comprising:

- (a) a leading edge slat/spoiler parallel to said stabilizer, and
- (b) a plurality of brackets supporting said slat/spoiler in position such that the slat/spoiler extends down and aft at a predetermined spacing ahead and below the leading edge of said stabilizer for early stall in descending flight as well as increasing the angle for stall in climbing flight.

4,227,666

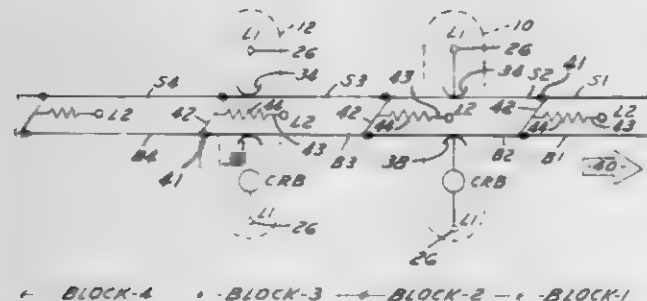
BLOCK CONTROL SYSTEM FOR SELF-PROPELLED VEHICLES

George D. MacMunn, Southfield, and Ward T. Brennan, Royal Oak, both of Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Filed May 18, 1978, Ser. No. 906,988
Int. Cl.³ B61L 21/06, 21/10

U.S. Cl. 246—187 C

15 Claims



1. A block control system for wheeled, self-propelled vehicles mounted on a supporting track, each vehicle having a driving motor and collector shoes engageable with conductor rails of a power source extending parallel to the supporting track for energizing a power circuit for the driving motor; a signalling conductor bar and a blocking conductor bar each extending parallel to said conductor rails, and insulation means dividing each conductor bar into a plurality of sections with one section of signalling conductor bar being located in a first traffic control block and one section of blocking conductor bar being located in a second traffic control block; means for electrically connecting said signalling conductor bar section to said blocking conductor bar section; a signalling contact shoe and a blocking contact shoe on each vehicle, said contact shoe being respectively engageable with said signalling and blocking conductor bars, said contact shoes being electrically connected to at least one side of said power circuit; a block control relay on each vehicle, said relay having a contact in series relation with said power circuit for the vehicle driving motor; block control relay circuit means for regulating the operational state of said relay whereby the driving motor of a vehicle in said second traffic control block is de-energized in response to a block signal applied to said blocking conductor bar section, said circuit means including a connection from the blocking contact shoe of each vehicle to the block control relay of that vehicle, an enabling connection from one side of the power source to said blocking conductor bar section, vehicle carried

means connecting the other side of the power source through the block control relay to said blocking contact shoe for energizing the block control relay; and shunt circuit means for connecting said other side of the power source to said blocking conductor bar section whereby the block control relay is de-energized in response to a block signal applied by said shunt circuit means; wherein the improvement comprises a traffic control relay, switch means operable by said traffic control relay for closing said shunt circuit means, and circuit means for energizing said traffic control relay in response to engagement of said signalling conductor bar section by said signalling contact shoe of a vehicle.

4,227,667

I.V. POLE BRACKET

Henry R. Dickerson, 741 S. Chase La., Lombard, Ill. 60148
Filed Oct. 5, 1978, Ser. No. 948,823

Int. Cl.³ A47B 96/06

U.S. Cl. 248—229

10 Claims



1. In a device for mounting an intravenous dispensing reservoir onto the frame structure of and for movement with a patient supporting device, such as a chair or table, said intravenous device having a reservoir and a rod for supporting said reservoir, the combination comprising:

- a tubular support means for receiving the rod of said intravenous equipment for support thereof; and
- clip means comprising a pair of gripping members having a common axis and means fixing said gripping members to said tubular support in spaced relation to each other and with said tubular support means extending substantially parallel to said common axis, said gripping members being of such size and shape as to be readily snappable onto a suitable portion of said frame structure, and a third gripping member mounted fixedly with respect to said pair of gripping members and tubular support means and oriented with its axis at an angle to, and intersecting, said common axis between said pair of gripping members, whereby to permit securement of said device simultaneously to two intersecting members of said frame structure and said reservoir supporting rod.

4,227,668

HANGER MEMBER

Donald J. Ernst, Milwaukee, Wis., assignor to Rheem Manufacturing Company, Apex, N.C.

Continuation of Ser. No. 739,939, Nov. 8, 1976, abandoned. This application Aug. 15, 1978, Ser. No. 933,859

Int. Cl.² B42F 13/00

U.S. Cl. 248—317

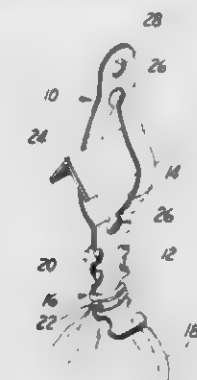
6 Claims

1. A plurality of substantially identical hanger members, each member adapted to be attached by clip means to a product filled casing or the like to permit hanging of the product, each of said members comprising, in combination:

- a length of generally flat, flexible tape material, said material including parallel sides, opposite ends, a flat surface, and a slit in the flat surface through the material, said slit extending from adjacent one end of the length of tape material toward the opposite end, said slit terminating with oppo-

site slit ends, each end connected with a circular cutout in the tape material to prevent propagation of the slit in the tape material, said slit defining means for forming a loop upon separating the sides of the slit by flexing of the tape material on opposite sides of the slit in opposite directions to permit a hanger member support to be projected through the formed loop;

a plurality of spaced ridges formed at the opposite end of the tape material generally beyond the slit formed by removal of portions of the tape material inwardly from the parallel



sides to define ridges extending, said ridges being in opposed relation on opposite sides of the tape material and extending generally transverse to the direction of the slit whereby a clip can be fitted about the tape material adjacent the ridges, said ridges being cooperative with the clip to retain the hanger member attached to a casing; and each of said members being formed integrally in a single elongate tape with the slit end of each member adjacent the ridge formed end of the next adjacent member, each member being of substantially uniform length.

4,227,669

HANGER AND METHOD FOR SOUND SPEAKERS

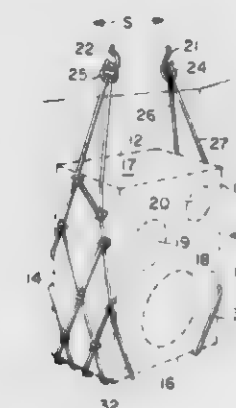
Donald E. McInnis, 444 Saratoga Ave. 15-H, Santa Clara, Calif. 95050

Filed Apr. 9, 1979, Ser. No. 27,987

Int. Cl.² F16M 13/02

U.S. Cl. 248—317

7 Claims



1. A method of supporting a sound speaker enclosure from a ceiling of a room, said enclosure having top, two side, back, front and bottom walls, said method comprising the steps of: placing first and second supports in the ceiling above the location at which it is desired to have the speaker en-

sure suspended, said supports being positioned apart less than the width of the enclosure; fixing to the supports the opposite ends of a plurality of first soft flexible cords and joining the first cords together to form a cradle for holding the enclosure; placing the enclosure in the cradle of cords with the cords extending from the first support down one side wall of the enclosure, across the bottom wall and back up the other side wall to the second support; placing second cords so they extend partially across the front and back walls of the speaker; and tying a cross cord between the downwardly extending cords at the position where they extend from the first and second supports adjacent the enclosure back wall and tightening said cross cord sufficiently to tilt the speaker enclosure at the proper angle to effectively project sound across the room.

4,227,670

PIVOTABLE SEAT SUPPORT

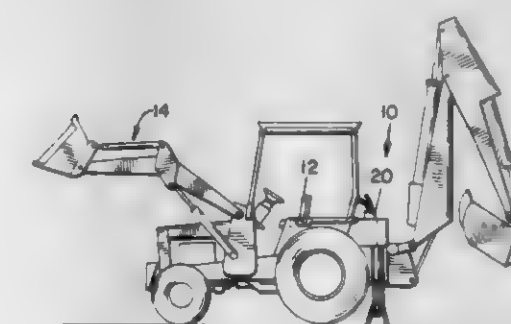
Lloyd A. Vander Burgh, Naperville; R. Dale Moore, Wheaton, and Joseph Paplaski, Chicago, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 25, 1978, Ser. No. 909,425

Int. Cl.³ F16M 13/00; A47C 1/02

U.S. Cl. 248—416

7 Claims



1. A seat track and pivot assembly for supporting a seat comprising:

- a stem housing having a vertical bore;
- a stem carried axially and restrained laterally in said stem housing;
- a seat support base including, a base plate welded to said stem, left and right roller supports welded to said base plate, and a latch arm support welded to said base plate;
- a plurality of rollers attached to said left and right roller supports of said seat support base;
- a horizontal rail frame including, a left side track and a right side track and a horizontal latching trap between said left side track and said right side track, said horizontal rail frame supported for horizontal movement on said plurality of rollers;
- a swivel latching trap axially located on said stem housing;
- a latch arm pivotally supported on said latch arm support of said seat support base, said latch arm having a first tab attached to one end thereof and a second tab attached to the other end of said latch arm; and
- a latch spring restrained between said base plate of said seat support base and said latch arm urging said latch arm to a horizontal position whereby said first tab and said second tab of said latch arm engage respective horizontal latching trap and said swivel latching trap.

4,227,671

VEHICLE REAR VIEW MIRROR MOUNTING

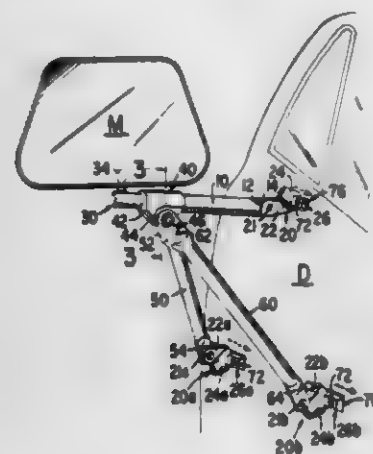
Joseph R. Bourassa, Huntington, and Manuel Lopez, Trumbull, both of Conn., assignors to Parker-Hannifin Corporation, Shelton, Conn.

Division of Ser. No. 516,759, Oct. 21, 1974, Pat. No. 4,120,476. This application Jul. 13, 1978, Ser. No. 924,341

Int. Cl.² B60R 1/06

U.S. Cl. 248—480

5 Claims



1. A vehicle door rear view mirror mounting comprising an arm adapted to protrude substantially horizontally from a vehicle door, a mirror support held by an outer end portion of said arm, two legs diverging each from the other in downward direction, means connecting the respective upper ends of said legs pivotally with and in a fixed location on the outer end of said arm, and footing brackets connected pivotably, respectively, with the inner end of said arm and the lower ends of said legs and adapted to be fastened at three spaced apart locations on the vehicle door, said legs each being pivotable independently of the other relative to said arm about a substantially horizontal axis at said connecting means so that, with said arm protruding substantially horizontally at a desired level from a vehicle door having any of various outside contours, said legs may be swung to positions suited for fastening the said brackets thereon onto the vehicle door, the axes of the respective pivotable connections of said legs with said arm and of said brackets with said arm and said legs being substantially parallel and normally being substantially horizontal, said inner end of said arm and said lower ends of said legs each comprising an ear having at least one side thereof flattened in a substantially vertical plane, each of said footing brackets comprising a rigid angled strap having a substantially flat upstanding portion fixed pivotably to a said flattened ear side and having a substantially flat foot portion protruding substantially horizontally and laterally to one side of the respective arm or leg for fastening the latter to said door, whereby a mirror on said support may be mounted readily in a desired viewing position on a vehicle door having any of various outside contours.

4,227,672

BEAM FORM AND SHORING STRUCTURE

Arthur L. Cunningham, 6055 Windemere Way, Riverside, Calif. 92506

Filed Mar. 26, 1979, Ser. No. 24,014

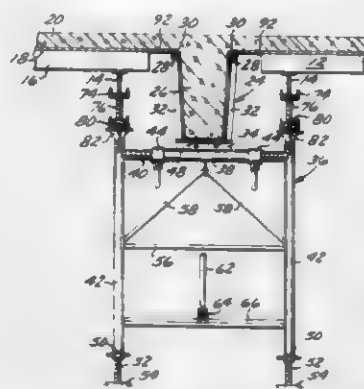
Int. Cl.³ E04G 11/40

U.S. Cl. 249—28

10 Claims

1. Beam form and shoring structure comprising: an elongated beam form having a beam form axis and adapted for use in forming a beam having a corresponding beam axis extending at a predetermined height between the centerlines of adjacent vertical columns of a building structure; a plurality of shoring frames spaced apart along the length of said beam form and each including an upper portion pivotally carried by said beam form as an integral part thereof for movement of the associated said shoring frame between a vertical supporting position and a generally horizontal moving position, each shoring frame including, relative to said supporting position, a pair of vertically disposed, laterally spaced apart side portions having vertically adjustable jacks at their lower extremities, respectively, said jacks being operative to adjust the vertical

position of said upper portion of said shoring frame to locate said beam form axis at said predetermined height, each said shoring frame further including adjusting means operative upon said upper portion for laterally moving said beam form to locate said beam form axis in alignment with said beam axis.



position of said upper portion of said shoring frame to locate said beam form axis at said predetermined height, each said shoring frame further including adjusting means operative upon said upper portion for laterally moving said beam form to locate said beam form axis in alignment with said beam axis.

4,227,673

GASKET FOR CASTING LENSES

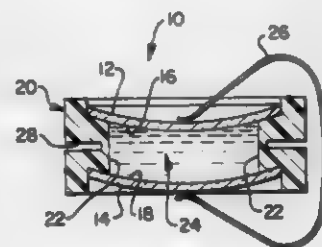
Bertram R. Goodwin, Feeding Hills, and Bradford Canterbury, Sturbridge, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Aug. 10, 1979, Ser. No. 65,661

Int. Cl.² B29C 1/00; B29D 11/00

U.S. Cl. 249—117

7 Claims



1. A lense casting cell comprising the combination of: an annular resilient gasket having a radially inwardly directed generally T-shaped cross-sectional configuration, the inner most side of which provides a wall of a casting cavity within said cell; a pair of mold halves, one positioned against each of opposite sides of said gasket in adjoining relationship with said wall of said cavity, and, said gasket having an approximately intermediately disposed external slot extending about a major position of the circumference of said gasket and extending radially inwardly toward said wall of said casting cavity for enhancing the flexibility of said gasket in the functional area thereof adjacent to said wall.

4,227,674

LIQUID METERING VALVE

Walter H. Grant, Jr., 320 Board of Trade Pl., New Orleans, La. 70130

Filed Jun. 30, 1977, Ser. No. 811,682

Int. Cl.³ F16K 21/06, 31/128

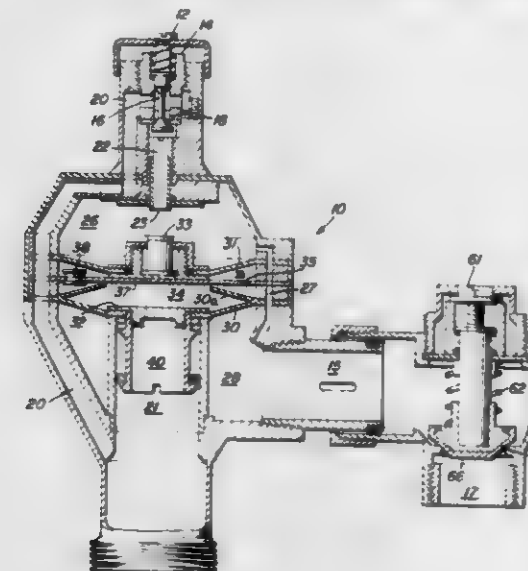
U.S. Cl. 251—15

17 Claims

11. A liquid metering flush valve for controlling and supplying liquid to a plumbing fixture comprising: a housing for connection between an inlet source of supply liquid and an outlet plumbing fixture; a poppet within said housing and

associated therewith to selectively permit said supply liquid to flow through said housing; means for actuating said poppet; and control means including two movable sealed chambers containing a captive fluid completely separate from the supply liquid,

valve operator means and valve actuating means responsive to operator means actuation for effecting operation of said control means to control the flow of the supply liquid from the third chamber to the outlet whereby fluid in the fourth chamber pushes the two movable chambers toward



the third chamber, means for mounting the valve operator means remote from the control means, first and second lengths of tubing and means to connect the first and second lengths respectively to the third chamber and to the outlet, and means on the two movable valve chambers for preventing flow from the third chamber to the outlet upon movement of the two sealed chambers in a maximum direction toward the third chamber, the last mentioned means including non-hold open means for continuing to prevent flow from the third chamber as the two sealed chambers move toward the fourth chamber.

4,227,675

BUTTERFLY VALVE STRUCTURE AND A SLEEVE THEREFOR

Jean G. Sutter, Villers-les-Nancy, and Alain A. P. Perechbois, Pont-a-Mousson, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Jan. 27, 1978, Ser. No. 873,047

Claims priority, application France, Feb. 7, 1977, 77 03370

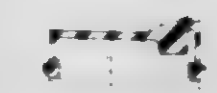
Int. Cl.³ F16K 1/226

U.S. Cl. 251—173

14 Claims

1. A butterfly valve structure comprising means defining a valve body having a longitudinal axis and defining a rigid inner wall having an annular groove, a recess in each opposite end of the body, means defining a butterfly valve member having a median plane, means mounting the valve member in the valve body to pivot about an axis extending transversely of said longitudinal axis, an elastically yieldable sealing sleeve mounted within the valve body, the sleeve being entirely of a flexible elastomer and in one piece and having a U-shaped radial cross-section, the U-shaped defining a web and two branches extending radially outwardly from the web, said branches pertaining to two thin annular end flanges of the sleeve which respectively comprise a sealing bead at an end of the flanges remote from the web, the flanges being respectively located in the recesses and the sealing beads projecting axially beyond the opposite ends of the body, the web being cylindrical and comprising an annular thick portion, the thick portion being located in the vicinity of the median plane of the valve member in a valve-closing position of the valve member substantially between two radial planes which are substantially parallel to and disposed on opposite sides of and at substantially equal distances from said median plane, the thick portion

being connected to the flanges by annular thin portions of the web and projecting radially inwardly and outwardly from said annular thin portions, the thick portion defining a seat extending between said two radial planes for the valve member and further defining an annular outer projection which extends substantially between said two radial planes and is disposed in



4,227,676

VEHICLE UNLOADING MACHINE

Christian Vaillant, and Eugène Korcz, both of Douchy les Mines, France, assignors to Fives-Cail Babcock, Paris, France

Filed Feb. 1, 1979, Ser. No. 8,744

Claims priority, application France, Feb. 6, 1978, 78 03173

Int. Cl.³ B66C 23/60; B66D 1/44

U.S. Cl. 254—277

7 Claims



1. A vehicle unloader comprising a sloping jib having an end, a lifting mechanism consisting of a motor, a pulley mounted at the end of the jib, at least one first cable passing over the pulley, a hook to which the first cable is attached, and a hook positioning system consisting of a second cable attached to the hook and to the jib, a cylinder for varying the tension of

said second cable, a three-position selector having a first position causing the cylinder to move so that the hook is brought towards the jib, a second position causing the cylinder to move so that the hook is allowed to move in the opposite direction away from the jib and a third position causing the cylinder to be isolated; a power source; and a control unit the operation of which is dependent on the amount of power absorbed by the motor of the lifting mechanism and which connects the cylinder to the power source and ensures that it is supplied with reduced power from said source when the hook is loaded and the motor of the lifting mechanism is energized.

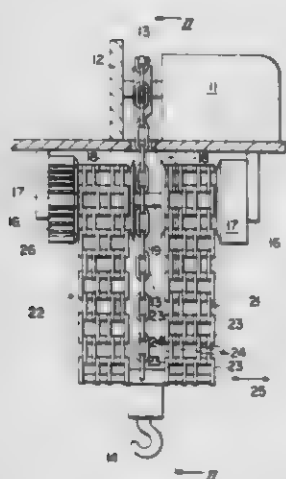
4,227,677

ANTI-SWAY DEVICE FOR HOISTS AND CRANES
Henry J. Bernaerts, R.F.D. 10, 1610 Laurel La., Annapolis, Md. 21401

Filed Mar. 26, 1979, Ser. No. 23,554
Int. Cl.³ B66D 1/00

U.S. Cl. 254-264

9 Claims



1. An anti-sway device for stabilizing the free end of a lifting line suspended from a lifting apparatus comprising:
 - at least one retractable roller chain suspended parallel and adjacent to the lifting line, the suspended end of said chain being attached to the line near its free end, whereby the chain provides to the free end of the line a stiffness and resistance to lateral movement in a direction parallel to the pivotal axes of the chain's rollers;
 - a takeup reel for storing the unsuspended portions of the roller chain; and
 - a means for exerting a biasing torque on the reel to cause the reel to takeup any slack which occurs in the roller chain.

4,227,678

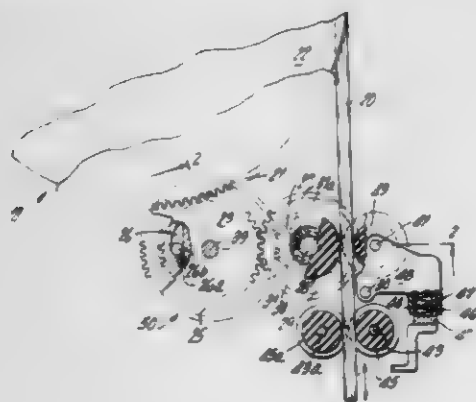
CABLE TENSIONING DEVICE

Elmer Laky, Cranford, N.J., assignor to Breeze Corporations, Inc., Union, N.J.

Filed Dec. 15, 1978, Ser. No. 969,987
Int. Cl.³ B66D 1/76

U.S. Cl. 254-391

6 Claims



1. A cable tensioning device comprising a rotatable drum, a

cable secured at one end to said drum, a driving ring gear secured to the drum and rotatable therewith, a gear train operatively coupled to the driving ring gear, said gear train comprising an input gear, an output gear, a first overrunning clutch means for cable reel out coupled between the input gear and the output gear and which permits the output gear to rotate when the input gear rotates in one direction, a reel in gear in mesh with the input gear, a driving gear in mesh with the output gear, a second overrunning clutch means for cable reel in coupled between the reel in gear and the driving gear and which permits the reel in gear to rotate in only one direction to drive an elastomeric traction roller which is driven in the direction of the cable by the reel in gear and the driving gear, the elastomeric traction roller having a peripheral speed greater than the linear speed of the cable when the cable is paid out and the peripheral speed of the elastomeric traction roller being less than the linear speed of the cable when the cable is paid in.

4,227,679

HOIST WITH TWO OR MORE HOISTING UNITS

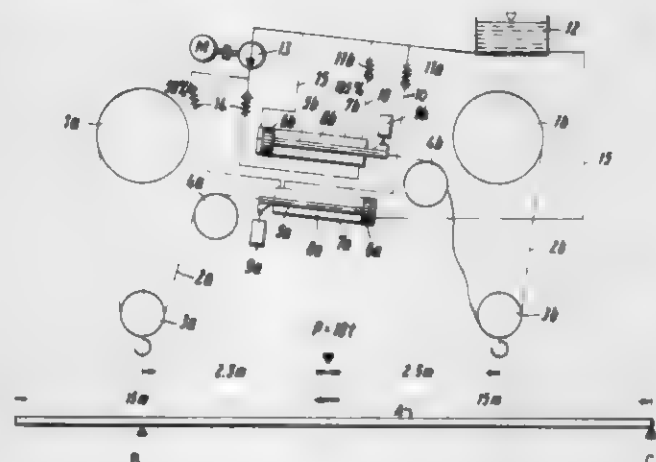
Fred Wiggershaus, Gevelsberg, and Felix Schäfer, Wetter, both of Fed. Rep. of Germany, assignors to Mannesmann Demag A.G. Wolfgang-Reuter-Platz, Duisburg, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,909
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812687

Int. Cl.³ B66D 1/26

U.S. Cl. 254-270

7 Claims



1. A multi-unit hoist apparatus comprising
 - (a) a hoist body;
 - (b) a plurality of hoist units disposed on said body;
 - (c) a cable extending from each hoist unit to a point on said body;
 - (d) a load support suspended from each cable of each unit; the improvement characterized by
 - (e) a reversible pressure medium unit disposed in each cable adjacent said hoist body;
 - (f) the end of each said cable opposite its respective hoist unit connected to the piston rod of its respective pressure medium unit;
 - (g) a supply of pressure medium;
 - (h) flow communication means between said supply and each said reversible pressure medium unit; and
 - (i) an overload check valve in said flow communication means for each said pressure medium unit;
 - (j) each said overload check valve preset to allow pressure medium flow between each individual unit to said source, if overloaded.

4,227,680

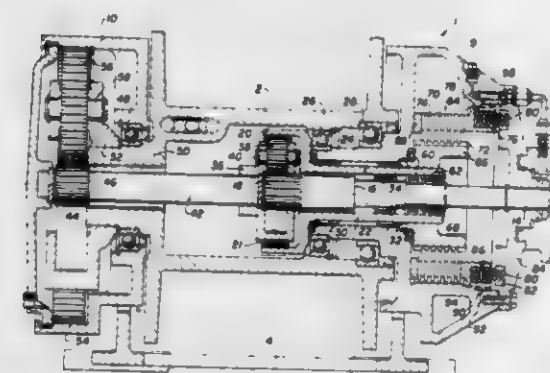
HYDRAULIC WINCH

Stan Hrescak, Burnaby, Canada, assignor to B. C. Gearworks Ltd., Delta, Canada

Filed Feb. 28, 1979, Ser. No. 16,197
Int. Cl.³ B66D 1/22, 1/24

U.S. Cl. 254-344

11 Claims



1. A rapid reverse winch comprising:
 - a hollow winding drum rotatable about a longitudinal central axis;
 - a motor to a first side of the drum having a drive shaft coaxial with the central axis and extending towards a second side of the drum;
 - a primary sun gear connected to an inner end of the drive shaft;
 - a primary internal gear extending about the primary sun gear;
 - a primary planet hub between the primary sun gear and the primary internal gear;
 - a plurality of planet gears rotatably mounted on the primary planet hub in mesh with the primary sun gear and the primary internal gear;
 - a final drive sun gear to a second side of the drum and connected to the primary planet hub;
 - a non-rotatable drive housing with a final internal gear extending about the final sun gear;
 - a final drive planet hub between the final drive sun gear and the final drive housing and connected to the drum;
 - a plurality of planet gears rotatably mounted on the final drive planet hub in mesh with the final internal gear and the final sun gear; and
 - free-wheel means between the drive shaft and the primary internal gear permitting rotation between the drive shaft and the primary internal gear when the motor rotates the drum in a winding-in direction and non-rotatably interconnecting the primary internal gear and the drive shaft when the drum is rotated in a reeling-out direction opposite to the winding-in direction.

4,227,681

SILVER RECOVERY CARTRIDGE FOR USED FIXER OF NEUTRAL OR HIGHER PH

Michael Golben, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 25, 1979, Ser. No. 51,367
Int. Cl.³ C22B 11/04

U.S. Cl. 266-170

1 Claim

1. A cartridge for the substantial prevention of the premature obstruction to the flow of the incoming spent solution in a silver recovery device having a metallic filler comprising a porous pad adapted to be positioned against a substantial portion of the surface of said metallic filler nearest the incoming silver containing solution, whereby said pad provides a three-dimensional support network for the growth of the silver dendrites such that flow pathways for incoming solutions are maintained.

4,227,682

GUIDE AND SUPPORT STRUCTURE FOR FURNACE TAPHOLE PLUGGING OR DRILLING DEVICE

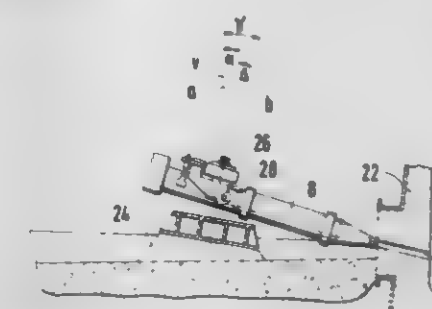
Léon Ulveling, Pierre Mailliet, both of Howald, and Jean Metz, Luxembourg, all of Luxembourg, assignors to Paul Wurth, Luxembourg, Luxembourg

Filed Sep. 18, 1978, Ser. No. 943,224
Claims priority, application Luxembourg, Dec. 22, 1977, 78756

Int. Cl.³ C21C 5/48

U.S. Cl. 266-271

12 Claims



1. In apparatus for positioning and supporting a drill relative to a taphole of a shaft furnace, the furnace having a generally vertically oriented axis, the positioning and supporting apparatus having support arm means for pivoting about a first axis inclined with respect to the furnace axis, the drill having a longitudinal axis and being pivotally mounted from the support arm means so that the drill axis is rotatable about a second axis which is not parallel to said first axis, the improvement comprising:
 - pivot means for connecting the drill to the support arm means, said pivot means defining said second axis, said second axis being inclined with respect to said first axis when the drill is in its operative position, said first and second axes lying in planes which intersect at an oblique angle.

4,227,683

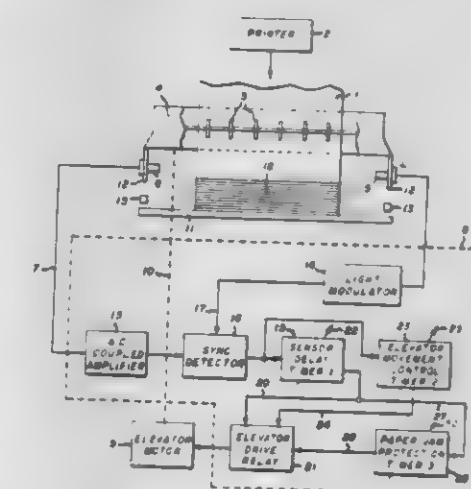
STACK HEIGHT SENSOR AND ELEVATOR CONTROL FOR A CONTINUOUS FORMS REFOUNDER

Charles W. Spangler, and Eugene S. Haymes, both of Waynesboro, Va., assignors to General Electric Company, Waynesboro, Va.

Filed Apr. 12, 1979, Ser. No. 29,389
Int. Cl.³ B65H 45/00

U.S. Cl. 270-61 F

7 Claims



1. A stack height sensor and elevator control for a continuous fan-fold paper refolder wherein an elevator receives the unfolded paper coming from a source and drives it longitudinally toward a platform on which the paper is to be stacked, a motor for driving the elevator to maintain a range of desired spacing between the height of the stack of paper refolded on the platform and the elevator, a first timer responsive to the

buildup of the stack height to a predetermined minimum distance with respect to the elevator for starting the motor after a first predetermined first time interval to start raising the elevator toward a predetermined maximum distance with respect to said stack height, a second timer responsive to said stacked height attaining a predetermined intermediate distance with respect to said elevator which is a function of said first time interval to stop the motor after a predetermined second time interval, a third timer responsive to said stacked height not attaining said intermediate level after a predetermined third time interval for stopping said motor.

4,227,684

SHEET FOLDER

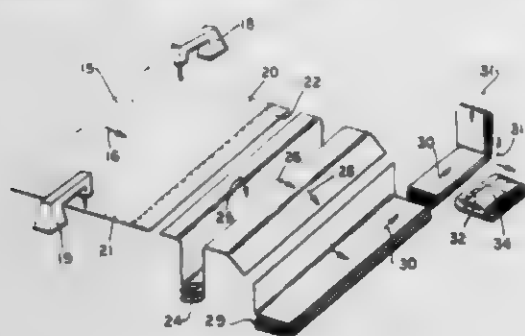
Charles E. Brocklehurst, Fountain Inn, S.C., assignor to Opelika Manufacturing Corp., Chicago, Ill.

Filed Oct. 26, 1978, Ser. No. 954,935

Int. Cl.³ B65H 45/18

U.S. Cl. 270—67

14 Claims



1. A method of folding rectangular bed sheets and the like comprising moving a sheet in a substantially unfolded configuration along its length along a horizontal path, grasping the sheet at the sides of its leading edge, pulling the sheet at its leading edge across its length to stretch the leading edge of the sheet, moving the stretched leading edge of the sheet into a nip roll means for grasping the leading edge portion of the sheet, and feeding the leading edge of the sheet with the nip roll means down an incline toward a first clamp means, and when the leading edge of the sheet arrives at the first clamp means, releasing the sheet with the nip roll means and holding the leading edge of the sheet in the first clamp means, spreading the sheet away from the first clamp means into a second clamp means, holding the sheet in the second clamp means and releasing the sheet with the first clamp means, spreading the sheet away from the second clamp means into the first clamp means, repeating the steps of holding, spreading and releasing until the sheet is formed in a flat elongated accordion fold, moving the accordion folded sheet laterally along its folded length and progressively folding the sheet across its accordion folds in an approximately flat spiral fold.

4,227,685

SHEET FEEDING APPARATUS, PARTICULARLY FOR ROTARY PRINTING MACHINES

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft (M.A.N.), Augsburg, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,422

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720599; May 7, 1977, 2720675

Int. Cl.³ B65H 3/08, 5/02, 9/10, 9/16

U.S. Cl. 271—13

7 Claims

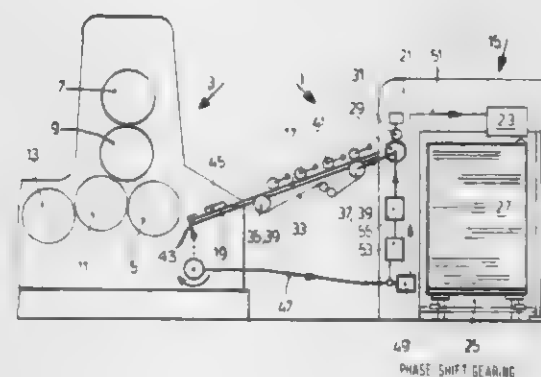
7. Sheet feeding apparatus to feed separate sheets from a stack (27) to a machine (3) particularly for combination with a sheet-fed rotary offset printing machine comprising the combination of cooperating means; sheet separating means (23) separating a single sheet from the stack (27); a set-up or alignment table (19) adjacent the machine (3); front edge alignment means (43) movably positioned on a forward location of the set-up or alignment table to provide for frontal alignment of the sheet positioned on said set-up table when the alignment means are in a sheet alignment position, and release of the sheet when the alignment means are moved to a release position;

lateral edge alignment means (45) positioned at the side or lateral location of the set-up or alignment table (19) to provide for lateral alignment and guidance of a sheet positioned on said table;

a sheet transport conveyor means (17, 33) located between said separating means (23) and the set-up or alignment table (19) and transporting separated sheets to the set-up table;

means ensuring engagement of a sheet being transported on said transport means with the lateral alignment means (45) as the sheet is being transported on said sheet transport means, and prealignment of the sheet in advance of said set-up or alignment table (19) including

means positioned in advance—in the direction of sheet transport—of the alignment table (19) imparting a drive movement on the sheet while the sheet is on said sheet transport conveyor means and having a vectorial direction transverse to the direction of movement of the sheet from the separating means to the front alignment means of the set-up or alignment table (19) by superimposing a drive



force transverse to said direction of movement on the force exerted on the sheet by the sheet transport conveyor means to obtain a resulting force acting on the sheet which has a lateral component directed towards said lateral alignment means (45);

drive means (47, 53, 55; 29, 39) including a variable speed transmission in driving connection with said sheet transport conveyor means, and coupled to the sheet separating means (23), to the movable front alignment means (43) and to the machine (3) to synchronize operation of the separating means, the sheet transport conveyor means and the movement of the front alignment means with the machine receiving the separated sheet;

a lateral sheet moving mechanism (57) located on said set-up or alignment table (19) and operable to move a sheet positioned in engagement with said front alignment means (43) and laterally into engagement with said lateral alignment means (45);

and selectively operable lock-out means (82) engageable with said lateral sheet moving mechanism (57) to selectively disable said lateral sheet moving mechanism and permit placement of a sheet being fed by said sheet transport conveyor means into engagement with said lateral alignment means (45) by said transverse drive movement imparting means.

4,227,686

APPARATUS FOR EXTRACTION OF DESIRED NUMBER OF SHEETS FOR USE IN A SHEET COUNTING MACHINE

Shinya Uchida, and Junichi Arikawa, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

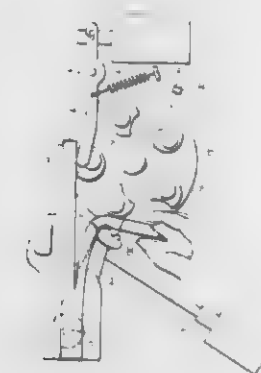
Filed Jun. 28, 1979, Ser. No. 52,751

Claims priority, application Japan, Jun. 30, 1978, 53-80292

Int. Cl.³ B65H 3/42

U.S. Cl. 271—95

2 Claims



1. In a counting machine for paper sheets and the like wherein paper sheets held in a stack between a holder and a paper-pressing bar are sucked and counted one at a time by respective suction heads provided on a rotational cylinder, a desired number of counted paper sheets on the side of the pressing bar being extracted from the machine by a separator which separates the counted sheets from the remaining sheets in a stack when the desired number of sheets have been counted; an apparatus for extracting a desired number of sheets comprising an operational mechanism incorporating a solenoid and associated members which is operated in cooperation with the action of said separator which separates the desired number of counted paper sheets from the remaining paper sheets so as to move said paper-pressing bar in a direction away from said holder and which can be reset to its original state, whereby the desired number of paper sheets can be extracted under a condition where they are distant from the remaining paper sheets.

4,227,687

APPARATUS FOR SEPARATING AND REMOVING A SHEET FROM A STACK OF SUCH SHEETS

Bertus Schoonmade, Delft, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

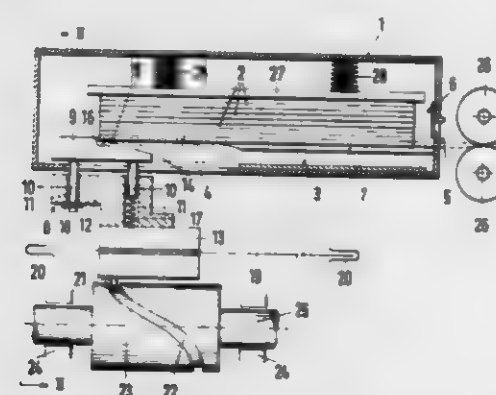
Filed Apr. 13, 1978, Ser. No. 896,008

Claims priority, application Netherlands, Apr. 20, 1977, 7704308

Int. Cl.³ B65H 3/36

U.S. Cl. 271—139

1 Claim



1. An apparatus for separating and removing a sheet from a stack of sheets which comprises: support means for supporting said stack of sheets about longitudinal edges thereof; and pushing means for engaging the lowermost sheet in said

stack reciprocating in a direction of transport between a point at which the lowermost sheet contacts a pushing surface of said pushing means at the rear of said stack for the transport of said lowermost sheet to a point of further transport of said sheet, said pushing means being comprised of a block-shaped member having an upper surface inclined downwardly to the direction of transport and having a groove formed in said upper surface transverse to said direction of transport, said groove having a difference in height between a front and rear edge thereof thereby forming said pushing surface, said pushing means being provided with at least one pin extending at right angles to said upper surface and disposed in a guide in a reciprocating drive member arranged for controlled reciprocating movement, said pin being spring-biased upwardly relative to said reciprocating drive member.

4,227,688

EXERCISE ASSEMBLY WITH FLEXIBLE BAR MOUNTING

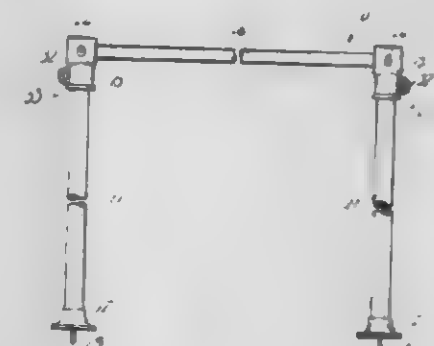
Hisao Senoh, and Fushi Senoh, both of 2-31-13, Shinmachi, Setagaya-Ku, Tokyo, Japan

Filed Oct. 6, 1978, Ser. No. 949,206

Int. Cl.³ A63B 1/00

U.S. Cl. 272—62

8 Claims



4. An exercise assembly for supporting a user comprising a pair of spaced and parallel upright posts adapted to be supported at the lower ends thereof on a support surface, flexible joints each having a lower portion received on the upper end of the associated post, a grip rod for supporting a user during exercise and spanning said posts and having the opposite end portions received in said flexible joints,

first pivotal interconnection means between an end of said grip rod and the associated post establishing limited pivotal movement therebetween about a vertical axis when a horizontal force is applied to the rod during exercise, second pivotal interconnection means between an end of said grip rod and the associated post establishing limited pivotal movement therebetween about a horizontal axis when a vertical force is applied to the rod during exercise, third pivotal interconnection means between an end of said grip rod and the associated post establishing limited pivotal movement therebetween about an axis at a substantially 45° angle on one side of the vertical when a slanting force is applied to the rod during exercise, and fourth pivotal interconnection means between an end of said grip rod and the associated post establishing limited pivotal movement therebetween about an axis at a substantially 45° angle on the other side of the vertical when a slanting force is applied to the rod during exercise.

4,227,689

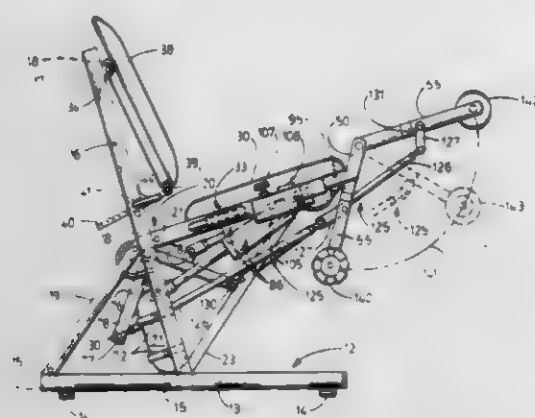
EXERCISING DEVICE INCLUDING LINKAGE FOR CONTROL OF MUSCULAR EXERTION REQUIRED THROUGH EXERCISING STROKE

Dennis L. Keiser, Sanger, Calif., assignor to Kintron, Incorporated, Calif.

Filed Jul. 24, 1978, Ser. No. 927,143
Int. Cl.³ A63B 21/00

U.S. Cl. 272-130

11 Claims



1. An exercising device comprising an exercising member, means mounting said member for movement in a substantially arcuate path, means for resisting said movement, a linkage interconnecting the resisting means and the member for operation of said resisting means upon movement of the member and composed of first and second portions interconnected for pivotal movement about a first pivot point and said second portion connected to the member for pivotal movement about a second pivot point, and a stop borne by said member and engageable by the second portion when the member reaches a predetermined position in said path to fix the second portion relative to the member to cause pivotal movement about the first pivot point during continued movement of the member in the path beyond said predetermined position.

4,227,690

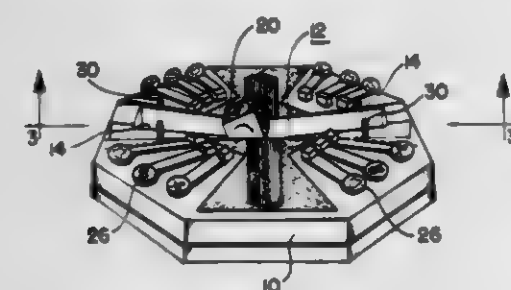
REACTION GAME APPARATUS

Alan R. Pitkanen, 3120 Ocean Dr., Manhattan Beach, Calif. 90266

Filed Nov. 13, 1978, Ser. No. 959,770
Int. Cl.³ A63F 7/02, 9/04

U.S. Cl. 273-1 R

4 Claims



2. A game apparatus including: a base having a channel therein with inclined ramp means formed at the sides of the channel; a die having a plurality of faces; and a pair of stub axles extending coaxially from the opposite sides of the die to be received on the inclined ramp means so as to permit the die to roll down the ramp means to a position in which the die comes to rest with one of its faces in an exposed position, and which includes a plurality of flippers pivotally mounted along selected sides of the base for arcuate movement perpendicular to the base of each of said flippers from an outer position to an inner position in which the distal end thereof covers the exposed face of the die.

4,227,691

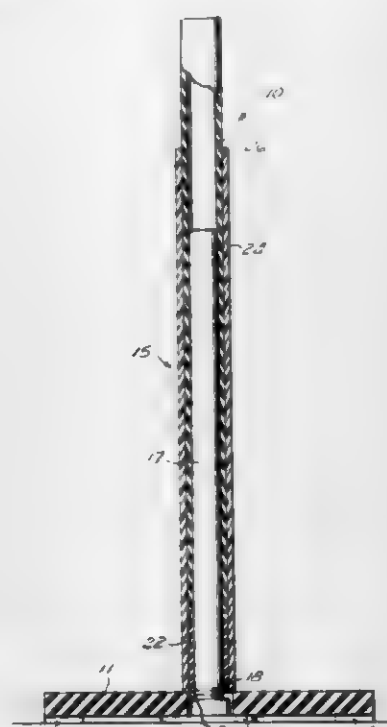
BATTING TEE

James K. Lefebvre; Benny M. Lefebvre, both of Playa Del Rey, and Gilbert H. Lefebvre, San Juan Capistrano, all of Calif., assignors to Lefebvre, Inc., San Juan Capistrano, Calif.

Filed Sep. 28, 1978, Ser. No. 947,171
Int. Cl.² A63B 69/40

U.S. Cl. 273-26 R

9 Claims



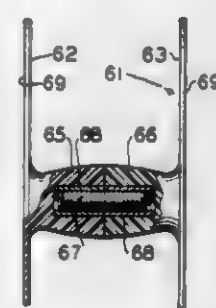
4. A batting tee, comprising:
a planar base;
length-adjustable means for supporting a ball above said base, said length-adjustable means comprising:
an outer tubular member;
an inner tubular member slidably engaging the interior of said outer tubular member and having one end extending externally of said outer tubular member for receiving said ball; and
an elongate pipe extending longitudinally into the interior of said inner tubular member so that said inner tubular member is slidable between said pipe and said outer tubular member;
means in said base for defining a plurality of positions at which said length-adjustable means may be attached to said base; and
means for removably connecting said pipe to said base at a preselected one of said plurality of positions.

4,227,692

DUAL GAME BALL PADDLEBertrand Castelli, c/o Myron Salislan, Esquire, 251 S. Lake Ave., Suite 701, Pasadena, Calif. 91101
Continuation-in-part of Ser. No. 948,658, Oct. 5, 1978. This application Nov. 6, 1978, Ser. No. 958,059
Int. Cl.³ A63B 59/00

U.S. Cl. 273-67 R

4 Claims



1. A projectile striking paddle for a game in which a projectile is struck by a player and comprising an obverse striking

panel, a reverse striking panel, each of said panels having an outer, substantially planar striking surface; a post joining said striking panels such that each panel is spaced from the other striking panel an interval sufficient to accept a player's hand turned palm toward a panel between said striking panels, said post having an obverse post and a reverse post, means engaging each of said striking panels with said post, and separable means securing said obverse and reverse posts together such that said panels are substantially parallel, said separable means defining means for selectively disconnecting one of said striking panels from the other of said striking panels.

4,227,693

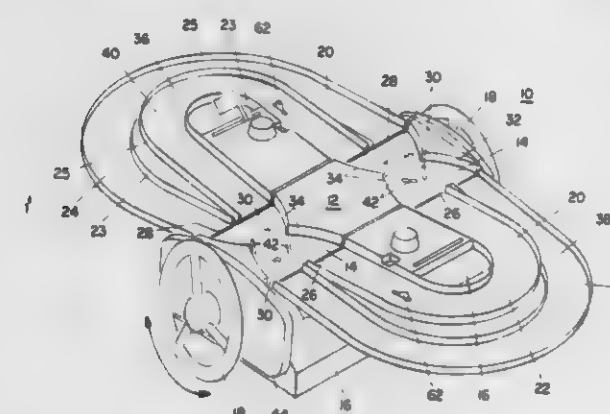
TOY RACING TRACK

Walter Moe, Los Angeles, Calif., and Charles M. Diker, New York, N.Y., assignors to Diker Moe Associates, West Los Angeles, Calif.

Filed Dec. 6, 1978, Ser. No. 966,875
Int. Cl.³ A63F 9/14

U.S. Cl. 273-86 C

2 Claims



1. A toy racing track comprising a generally oval track divided into at least two sections; means for suspending said sections adjacent one another to provide a complete track, said means including a central base portion and flexible track connecting each of said sections to the central base portion; and means for controlling at least one of said suspended sections to incline upwardly and downwardly from the other of said sections.

4,227,694

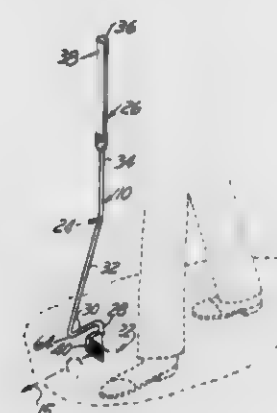
AIM-ASSISTING GOLF PUTTER

Robert C. Drake, 37971 Huron Pointe Dr., Mt. Clemens, Mich. 48045

Filed Sep. 20, 1978, Ser. No. 943,783
Int. Cl.³ A63B 53/00

U.S. Cl. 273-164

4 Claims



1. An aim-assisting golf putter, comprising an inverted T-shaped putter head having an upstanding central neck portion and also having a forward face with a substantially flat central ball-impact area thereon, an upstanding putter shaft having at its lower end a lower-

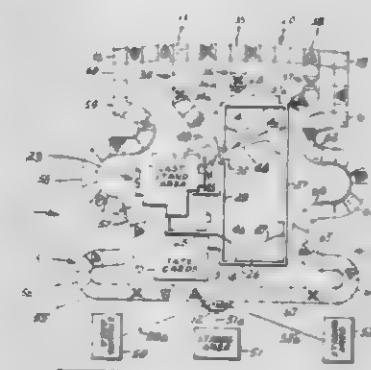
most head connection portion secured to and rising from said central neck portion of said head above said central ball impact area and having an upper end disposed in close proximity to said head, said shaft having a central substantially horizontal ball-aiming lower portion connected to said upper end of said head connection portion and projecting forward therefrom beyond said head with a forward end disposed forward of said ball impact area in forwardly-spaced relationship thereto, said shaft having an upwardly-directed rearwardly-inclined intermediate portion with a lower end connected to said forward end of said lower portion and with an upper end disposed remote therefrom, said shaft having a substantially vertical upper portion connected to and rising from said upper end of said intermediate portion, and an elongated substantially vertical handle connected to and rising from said upper portion of said shaft, said lower shaft portion and said intermediate shaft portion being disposed in a substantially vertical plane perpendicular to and intersecting said ball-impact area, whereby said plane is substantially coincident with the intended trajectory of the ball to the cup.

4,227,695

BATTLE OF THE ALAMO GAMECharles M. Neal, Jr., 1145 Buschong, Houston, Tex. 77039
Filed Jan. 22, 1979, Ser. No. 5,582
Int. Cl.³ A63F 3/00

U.S. Cl. 273-255

4 Claims



1. Game, simulating the Battle of the Alamo, comprising a game board bearing a game pattern depicting the Alamo and routes of attack against the Alamo; said pattern including a start space spaced from one side of the Alamo, a series of side by side spaces extending in a path spacedly disposed around the Alamo and two adjacent spaces thereof having a common side with said start space, past which said path extends, plural branch paths each extending from said path toward the Alamo at the other side thereof from said start space and each comprising a plurality of side by side spaces the terminal one of which is spacedly adjacent the Alamo; said path providing two opposite attack routes from said start space to said branch paths one or the other of which is selected by each attacking player leaving said start space; said pattern including a walled courtyard area adjacent the Alamo toward which said branch paths are directed, and arrow means disposed across said courtyard area from adjacent the inner end of each said branch path and merging to a common arrowhead directed toward the Alamo; a first plurality of markers each representing an individual of a defending force for use by a defending player in defense of the Alamo; at least one additional plurality of markers each representing an individual of an attacking force and each said additional plurality of members being for use by an attacking player in attack of the Alamo; a separate distinctive marker for each said attacking player for use in movements from said start space and along said path and branch paths in attack of the Alamo in response to throws of one or more dice;

and dice means for use by the defending and attacking players during play of the game.

4,227,696

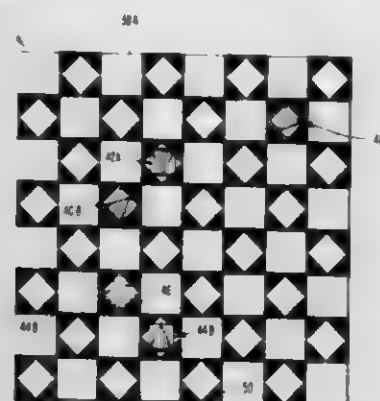
BOARD GAME

Irving Silverman, 454 Riverside Dr., New York, N.Y. 10027
Filed Nov. 6, 1978, Ser. No. 957,699

Int. Cl.³ A63F 3/02

U.S. Cl. 273-260

11 Claims



4. A board game comprising a board having playing areas and a plurality of sets of pieces positionable on said playing areas, each playing area having a smaller attack area therein oriented at an angle relative to said playing area and corresponding in shape to said pieces such that a piece can be turned within a given playing area to become aligned with said attack area, said playing areas shaped as squares and said attack areas shaped as smaller squares oriented at 45 degrees relative to said playing squares.

4,227,697

WORD GAME APPARATUS

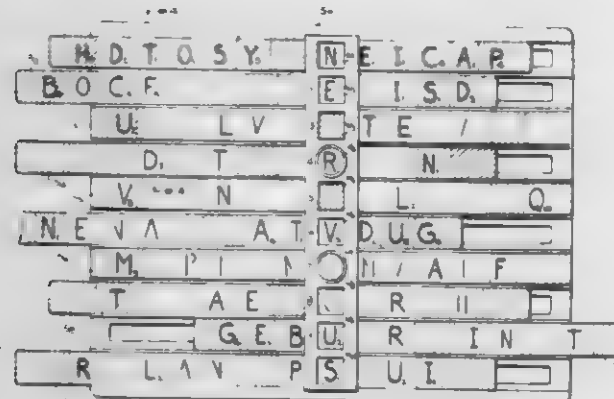
George Castania, 444 6th Ave., New York, N.Y. 10011

Filed Mar. 16, 1979, Ser. No. 21,320

Int. Cl.³ A63F 3/00

U.S. Cl. 273-272

3 Claims



1. Word game apparatus comprising:

- (A) a multi-channel slide holder of synthetic material having open channels which lie in parallel relation and are transversely bridged at the holder midpoint by a narrow cross-piece having a read-out column of windows therein, each window overlying a respective channel; and
(B) a strip formed of cardboard having a length substantially equal to the length of the slide holder slidable in each channel of the holder and provided with a series of letters which are exposed in said open channels and are in a non-alphabetical sequence, a letter being selected for display through the channel window by shifting the strip relative to the crosspiece, some of said windows having a circular formation and others a square formation for purposes of scoring bonus points, said letters on the strips together constituting a treasury containing all letters in the alphabet in a frequency depending on their usage in

everyday words, each letter being valued numerically by a subscript inversely with respect to its frequency.

4,227,698

TABLE GAME

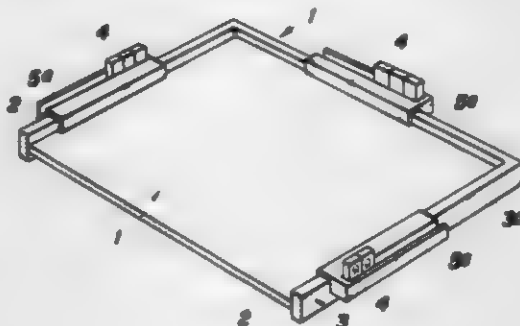
Saburo Ishizuki, Tokyo, Japan, assignor to Kabushikikaisha Anso, Tokyo, Japan

Continuation of Ser. No. 784,520, Apr. 4, 1977, abandoned. This application Mar. 14, 1979, Ser. No. 20,548

Int. Cl.³ A63F 1/00, 1/10

U.S. Cl. 273-309

2 Claims



2. A game to be played by children comprising, a plurality of playing tiles having one face having indicia and remaining outside surfaces without indicia, said indicia selected from a group comprising alphabet letters, numerical digits, designs and/or colors recognizable by said children and carried by said tiles in sets, said sets having a selected number of tiles per set, wherein each child player selects in turn from said plurality of tiles to form a hand having a fixed number of tiles such that a quantity of tiles remain unselected, each player in turn then selecting a tile from said unselected quantity of tiles, matching said selected tile with said tiles previously selected and discarding an unmatched tile until said hand contains matching sets, which includes a playing board means on which to play said game having a flat horizontal inner playing surface and a continuous frame rail surrounding a perimeter of said surface and joined thereto, said frame rail having a top edge above said surface, a plurality of tile holding racks for holding said tiles slidably and removably mounted on said rail frame, said plurality equalling the number of said children playing said game, each of said racks having an inverted U-shaped portion slidably positioned over said frame rail and carried thereby and having an elongated U-shaped portion to support said fixed number of said tiles selected by said player to form his hand, said elongated portion being integrally connected to said inverted U-shaped portion.

4,227,699

MANUAL SCANNING MECHANISM FOR VIDEO DISC PLAYER

Leslie A. Torrington, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,530

Claims priority, application United Kingdom, Feb. 13, 1978, 05730/78

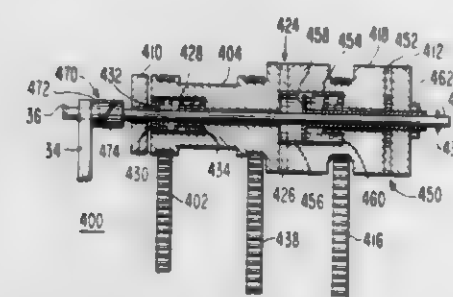
Int. Cl.³ G11B 17/06

U.S. Cl. 274-13 R

6 Claims

1. A player for use with a disc record; said player comprising:
(A) a turntable for centering and supporting a record;
(B) means for rotating said turntable;
(C) a pickup stylus for recovering prerecorded signals from a turntable-supported record during playback;
(D) A carriage for supporting said pickup stylus;
(E) means for causing motion of said pickup stylus relative to said carriage between a depressed position, permitting stylus/record engagement, and an elevated position, precluding stylus/record engagement;

- (F) common carriage translating means including a first endless drive belt disposed about a first pair of pulleys;
(G) means for securing said carriage to said first endless drive belt;
(H) first means for utilizing said common carriage translating means for translating said carriage toward the center of said turntable at a speed correlated to the speed of rotation of said turntable while said stylus motion causing means permits said stylus/record engagement; wherein said first utilizing means includes a second endless drive belt disposed about a second pair of pulleys; one of said second pair of pulleys being disposed coaxially with one of said first pair of pulleys; and



- (I) second means for utilizing said common carriage translating means for translating said carriage toward and away from said turntable center at a speed independent of the speed of rotation of said turntable while said stylus motion causing means allows said stylus/record engagement; wherein said first utilizing means includes a slip clutch means interposed between said common carriage translating means and said one of said second pair of pulleys, whereby wresting of control of said common carriage translating means from said first utilizing means by said second utilizing means is permitted by said slip clutch means upon activation of said second utilizing means.

4,227,700

MAST COLLAR SYSTEM

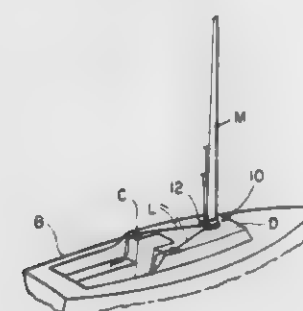
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.

Filed Jan. 2, 1979, Ser. No. 131

Int. Cl.³ F16J 15/06; B63B 21/04; B63H 9/06; E02D 27/42

U.S. Cl. 277-12

19 Claims

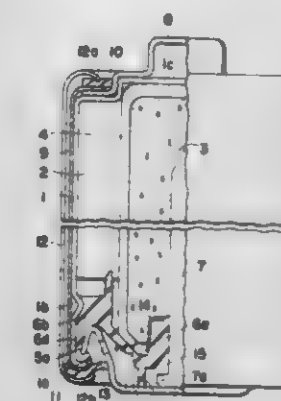


1. A mast collar system comprising
A. a rigid collar for loosely encircling a mast at the location where the mast projects through an opening in a boat deck or other surface, a portion of the collar being arranged to engage and be secured to the boat deck outboard of the opening therein,
B. a flexible resilient ring for engaging around the mast, said ring having an annular portion arranged and adapted to be positioned in the annular gap between the mast and the collar encircling the mast to provide a resilient gasket between the mast and the collar,
C. means defining an annular groove in the top of the ring, said groove extending down into the ring, and
D. a spline arranged to be pressed down into said groove so as to compress the ring portion positioned between the mast and the collar.

4,227,701
RUPTURABLE SEALING STRUCTURE OF CELL
Takashi Tsuchida, Kōsei, Kenichi Shinoda, Toyohashi, and Takao Takase, Arai, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan
Filed Jan. 2, 1979, Ser. No. 761
Int. Cl.³ H01M 2/12; F16J 15/00

U.S. Cl. 277-12

6 Claims



1. In an alkaline cell of the type including a metal casing having a free end, a terminal plate at said free end, a collector metal rod extending inwardly from said terminal plate, whereby internal gas pressure is developed within said cell, and a rupturable sealing structure for sealing said cell, the improvement wherein said rupturable sealing structure comprises:

- a sealing gasket including a circumferential marginal portion, a center collar portion, and an intermediate portion integrally molded with said marginal portion and said collar portion;
said marginal portion being constricted between said free end of said metal casing and a peripheral edge of said terminal plate;
said intermediate portion having a thin wall portion which is tearable upon a stretching force being applied thereto;
said collar portion being slidably mounted around said collector metal rod for axial sliding movement relative thereto;
said collar portion normally being inwardly spaced from said terminal plate, but said collar portion being slidable along said collector metal rod toward said terminal plate upon the development within said cell of abnormally high internal gas pressure, whereby said thin wall portion is stretched and ruptured and the gas is released from within said cell.

4,227,702

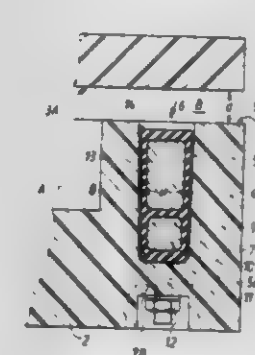
INFLATABLE SEALING DEVICE

Kurt Thate, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany
Filed Dec. 18, 1978, Ser. No. 970,193

Int. Cl.² F16J 15/46

U.S. Cl. 277-34.3

14 Claims



1. A device for sealing a clearance between a first space and

a second space wherein the pressure exceeds, at least at times, the pressure in said first space, particularly for sealingly separating the interelectrode gap of an ionography imaging chamber from the surrounding atmosphere, comprising first and second members respectively having first and second surfaces disposed at the opposite sides of and flanking said clearance, the surface of one of said members having a recess extending substantially transversely of said clearance; a seal mounted in said recess and including a deformable hollow tubular first section which is remote from said clearance and completely surrounds an enclosed internal compartment, and a second section which is nearer to said clearance and is movable in said recess toward and away from the surface of the other of said members; means for holding said tubular first section in said recess, including a solid connector fully accommodated in said enclosed internal compartment of said first section of said seal; and means for selectively admitting a pressurized fluid into said internal compartment of said first section to thereby inflate said first section with attendant movement of said second section across said clearance and into sealing engagement with the surface of said other member.

4,227,703

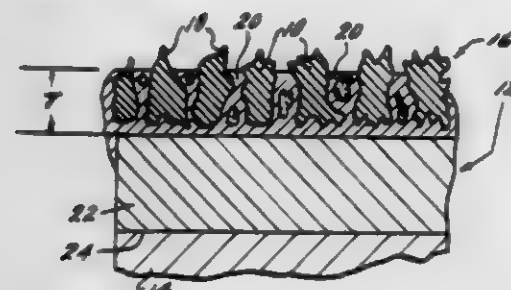
GAS SEAL WITH TIP OF ABRASIVE PARTICLES

Kenneth W. Stalker, Cincinnati; John W. Zelaby, West Chester, and Norman P. Fairbanks, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 863,017, Dec. 21, 1977. This application
Nov. 27, 1978, Ser. No. 963,865

Int. Cl.³ F01D 5/20, 11/08; F16J 15/44

U.S. Cl. 277-53

4 Claims



1. In a gas seal comprising a stationary member and a movable member, the members being in juxtaposition to provide therebetween a gas seal, one of said members including a projection, directed toward a surface of the other member, the projection having a metallic body and an abrasive outer tip which cooperates with said surface to inhibit gas flow therebetween, the improvement wherein:

the tip of said projection is a composite of an inner tip portion and an outer tip portion,
the inner tip portion comprising a shaped member discrete from the projection body, of an alloy resistant to oxidation, sulfidation and thermal fatigue at operating temperatures, and bonded with the metallic body of the projection, and

the outer tip portion comprising a matrix based on an element selected from the group consisting of Cr, Co, Ni and alloys including Cr, Co and Ni and in which there is entrapped a plurality of abrasive particles protruding from said outer tip portion toward the surface of the other member, the particles having a hardness greater than the hardness of said surface of the other member, the outer tip portion bonded with said inner tip portion,
the thickness of the matrix being less than the longest dimension of the abrasive particles in the direction of their protrusion from the outer tip portion.

4,227,704
SEAL

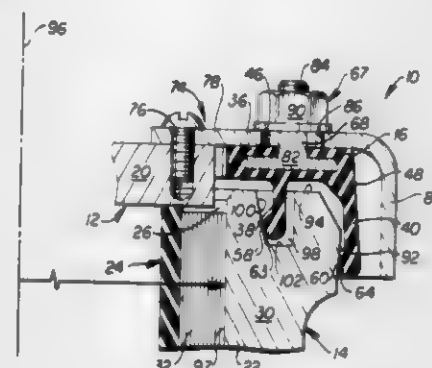
James G. Blaha, Painesville, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Continuation-in-part of Ser. No. 12,162, Jan. 18, 1979. This application Jan. 7, 1980, Ser. No. 110,282

Int. Cl.³ F16J 15/32, 15/34

U.S. Cl. 277-84

20 Claims



1. A seal (16), comprising:

- a body (36) having a first and second end portions (50, 52) and first, second and third sides (42, 44, 46), said first and third sides (42, 46) being oriented generally opposite one from the other, said second side (44) extending between said first and third sides (42, 46);
- a first leg (38) having a sealing surface (58) and being connected to said first end portion (50) of the body (36) and extending outwardly from said first side (42) of said body (36);
- a second leg (40) having a sealing surface (60) and being connected to said second end portion (52) of said body (36) and extending outwardly from said first side (42) of said body (36); and
- a fastening element (68) connected to said body (36) and being oriented opposite of said outward extension of said first and second legs (38, 40) from said body (36) and extending outwardly from said third side (46) of said body (36).

4,227,705

SEMICIRCULAR PLUG FOR PREVENTING LEAKAGE OF OIL IN A CYLINDER HEAD OF AN OVERHEAD CAM SHAFT ENGINE

Akio Kuramoto, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

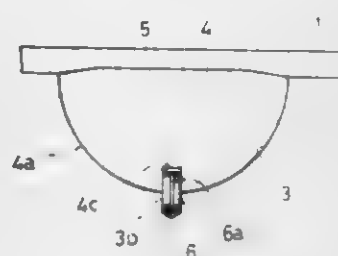
Filed Nov. 7, 1978, Ser. No. 958,396

Claims priority, application Japan, May 30, 1978, 53-65561

Int. Cl.³ F16J 15/02

U.S. Cl. 277-160

2 Claims



1. A semicircular plug assembly in a cylinder head, having a pinhole formed therein, of an overhead cam shaft engine having a plurality of bearings in the upper portion thereof comprising:

- a semicircular plug fitted in a semicircular recess formed in either end of said cylinder head in axial alignment with said bearings, said semicircular plug having a semicircular outer periphery and a pin hole provided in the center of said outer periphery; and,

a pin bedded in said pin hole formed in said cylinder head in the center of said semicircular recess and received in said pin hole of said outer periphery of said semicircular plug.

4,227,706

TRACTION DEVICES FOR TOWED VEHICLES

Lionel G. Morris, 17 Ferguson Ave., Myrtle Bank, South Australia 5064, Australia

Filed Jan. 5, 1979, Ser. No. 1,062

Claims priority, application Australia, Jan. 11, 1978, PD3008; Oct. 5, 1978, PD6242

Int. Cl.³ B60K 9/00

U.S. Cl. 280-3

5 Claims



1. A traction device for a towable vehicle of a type including an extendable portion adapted to be held to a draft frame, the extendable portion engaging a frame holding two ground engageable wheels, and a pair of drive means each for individual engagement with a wheel to rotate the same, and including a lever arm means pivotally secured relative to the frame, the arrangement being characterized according to this invention in that the said drive means comprise in each case a ratchet supported by the lever arm means so as to be movable with respect to the arm and engageable in a ratchet manner with respect to the wheel, the ratchet being adjustably supported so that in one position of the ratchet, an oscillatory movement of the lever arm means about its pivot support will result in rotation of the wheel around in one direction and with the ratchet in a second position, such oscillatory movement of the lever arm means will result in rotation of the wheel around in opposite direction to the first said direction, the lever arm means being thereby effective to both steer the ground engageable wheel and effect a driving rotation and, each of the said wheels being differentially rotatable about its central axis.

4,227,707

SKI LOCKING DEVICE

Forrest E. Baker, 1891 Foxworthy Ave., San Jose, Calif. 95124, and George N. Sasaki, P.O. Box 61121, Sunnyvale, Calif. 96088

Filed Jul. 31, 1978, Ser. No. 929,838

Int. Cl.² A63C 11/02

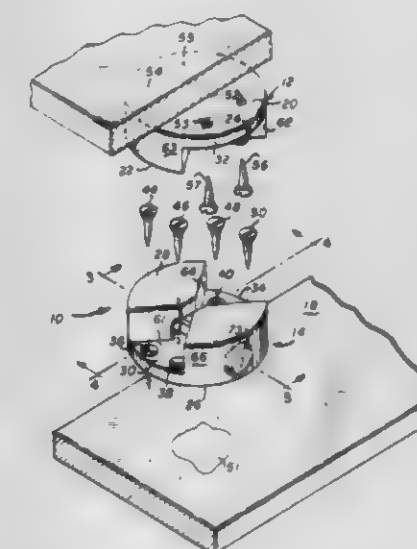
U.S. Cl. 280-814

9 Claims

1. A ski locking device comprising:

- a first interlocking member including a generally cylindrical first body having a cylindrical first base portion at one end and first and second pie-shaped interlock portions located diametrically opposite each other and extending from said first base portion along at least one half the axial length of said first body, said first body including an opening forming a communicating passageway between said first pie-shaped portion and said second pie-shaped portion;
- first means for fastening said first base portion to one of a pair of skis;
- a second interlocking member including a generally cylindrical second body having a cylindrical second base por-

tion at one end and third and fourth pie-shaped interlock portions located diametrically opposite each other and extending from said second base portion along at least one half the axial length of said second body, said third and fourth interlock portions being separated by a diametrical slot extending from the top of said second base portion to the distal ends of said third and fourth interlock portions, said third interlock portion being provided with a bore including an aperture opening on said diametrical slot; second means for fastening said second base portion to the other one of a pair of skis; and



lock means disposed within said bore and including a locking pin for extending through said aperture to matingly engage said passageway when said first and second interlocking members are mated together with said first and second portions interdigitally disposed relative to said third and fourth portions, said ski locking device thereby serving to affix the two skis together at an angle relative to each determined by the angular orientation of said first and second interlocking members relative to the respective skis.

4,227,708

SKI BRAKE

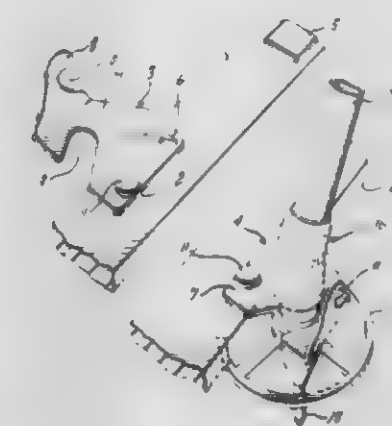
Bernard Cote, 12,270 rue St-Evariste, Montreal, Quebec, Canada (H4J 2B7)

Continuation-in-part of Ser. No. 823,332, Aug. 10, 1977, abandoned. This application Nov. 29, 1978, Ser. No. 964,808

Int. Cl.³ A63C 7/00

U.S. Cl. 280-809

9 Claims



1. A ski brake assembly comprising a plate operatively securable to a ski and including an attachment portion securable to the ski and a ski pole catching portion projecting from the attachment portion laterally from the ski on the outward side thereof and defining a rear edge with a hooking notch opening at said rear edge, extending in said ski pole catching portion, and forming in the latter a ski pole hooking portion projecting transversely inward toward the ski and rearward of an inner

portion of the ski pole hooking notch whereby a ski pole laterally engaging in said notch is operatively restrained longitudinally of the ski by said ski pole hooking portion.

4,227,709

CONVERTIBLE HAND TRUCK-WAGON

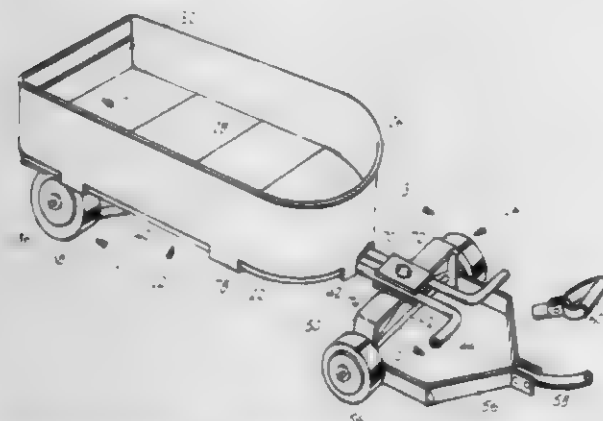
Donald R. Gradwohl, and Donald R. Gradwohl, both of 20843 SW. Willapa Way, Tualatin, Oreg. 97062

Continuation-in-part of Ser. No. 871,007, Jan. 20, 1978, abandoned. This application Dec. 4, 1978, Ser. No. 962,092

Int. Cl.³ B62B 1/04, 3/02

U.S. Cl. 280—47.11

3 Claims



2. A convertible hand truck-wagon comprising a hand truck having a frame, handles attached to the frame, said handles extending outwardly therefrom, a pair of wheels rotatably mounted on the lower end of the frame, and a lift plate attached to said lower end, extending substantially perpendicular thereto, a steerable front wheel assembly mountably fastenable to said handles to form a wagon having steerable front wheels, a lift plate extension member pivotally attached to said lower end for swinging between extended and retracted positions, wherein the extension member occupies a plane which is substantially parallel to planes occupied by the lift plate and the frame, respectively, a floor member including first, second and third sections pivotally connected edge-to-edge for selected folding between a substantially planar configuration, wherein said member may be detachably mounted on said frame to form a floor thereof, and a folded configuration wherein said first, second and third sections form the back, seat and seat support portions, respectively, of a seat which is mountable on said hand truck, with said first section being disposed adjacent said extension member, when the latter is in its extended position, and with said third section being supported by said frame, fastening means for fastening said first section on said extension member, and securing means for detachably securing said third section to said frame.

4,227,710

MOBILE BASEBALL EQUIPMENT STORAGE DEVICE

Bernard C. Laub, Tulsa, Okla., assignor to Hugh J. Finnerty, Tulsa, Okla., a part interest

Filed Feb. 22, 1979, Ser. No. 13,988

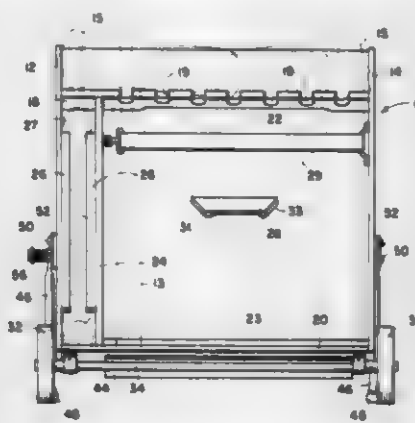
Int. Cl.³ B62B 1/26

U.S. Cl. 280—47.19

5 Claims

1. A mobile baseball equipment storage device comprising a substantially rectangular upright back panel having an upper edge, a lower edge and a pair of spaced parallel side edges; a pair of parallel vertical side members connected along the side edges of said back panel and extending outwardly on one side of said back panel substantially at right angles thereto; a bottom shelf extending horizontally along the lower edge of said back panel between said side members; a top shelf extending horizontally between said side members at a location spaced

from the upper edge of said back member; an intermediate vertical member spaced between said two side members and adjacent one of said side members extending vertically between said bottom shelf and said top shelf and forming with said adjacent side member a vertical compartment for the storage of baseballs therein; vertical strips located on said intermediate side member and said adjacent side member and extending from a position spaced below said upper shelf to a position spaced above said lower shelf to retain the baseballs in said vertical compartment; said upper shelf having a plurality of spaced slots, each of which is adapted to receive the upper handle portion of a baseball bat; said lower shelf member



having a plurality of spaced indentations located below said slots, each indentation being adapted to receive the lower end of a baseball bat; a detachable strap means extending from said intermediate vertical member to the side member opposite from said adjacent side member for holding said bats in said storage device; a pair of spaced wheels mounted on said device to permit the rolling thereof; a handle on said device, and a foldable stand mounted on said device and adapted in one position of said stand to maintain said storage device in a substantially upright position and in a second position of said stand being folded out of the way to permit the rolling movement of said device.

4,227,711

3-AXLE WALKING BEAM SUSPENSION

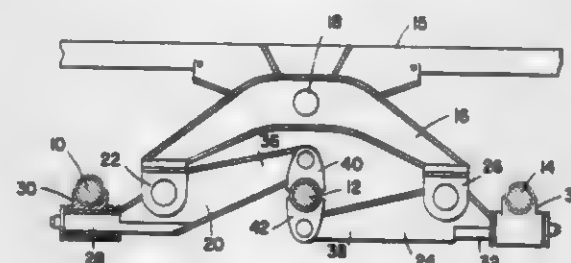
John G. Wheeler, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 25, 1978, Ser. No. 945,676

Int. Cl.³ B62D 21/00

U.S. Cl. 280—81 R

4 Claims



3. An improved three-axle walking beam suspension of the type having a primary beam pivotally mounted at an intermediate point to the frame of a vehicle and two secondary beams pivotally mounted at intermediate points to the ends of said primary beam, the secondary beam being rotatively connected at the respective outer ends to the front and rear vehicle axes, the improvement comprising: the intermediate axle extending across the front portions of said rear secondary walking beams and the rear portions of said front secondary walking beams such that said front and secondary walking beams are pivotally connected to said intermediate axle.

4,227,712

PEDAL DRIVEN VEHICLE

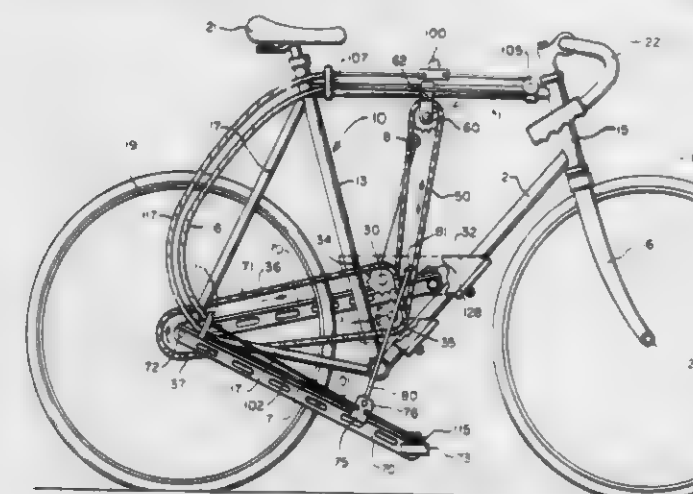
Timber Dick, P.O. Box 611, Burlingame, Calif. 94010

Filed Feb. 14, 1979, Ser. No. 11,782

Int. Cl.³ B62M 15/00, 1/04, 1/06

U.S. Cl. 280—236

4 Claims



1. A pedal driven vehicle such as a bicycle or the like comprising a frame, propelling means mounted in said frame, a pair of oscillating pedal levers, an endless chain and two pull and push rods connected respectively one to each of said oscillating pedal levers and respectively one to each run of said endless chain so as to impart oscillatory movement to said endless chain by the movement of said pedal levers, two parallel shafts, gearing associated with each of said shafts connected to oscillate with said endless chain, sprockets associated with each of said shafts and connected to drive said propelling means, and a one way clutch associated with one of said shafts and a second one way clutch associated with the other of said shafts said clutches each being constructed to alternately drive said sprockets in the same direction in response to the oscillatory movement of said gearing.

2. The vehicle defined in claim 1 further characterized in that said vehicle also has means for simultaneously moving the point of connection between each of said pull and push rods and its associated pedal lever along the length of said pedal levers respectively in the same direction at the same time so as to change the effective arms of said pedal levers and to thus change the driving ratio effective to propel said vehicle at any particular time.

4,227,713

TRAILER HITCH LATCHING ASSEMBLY

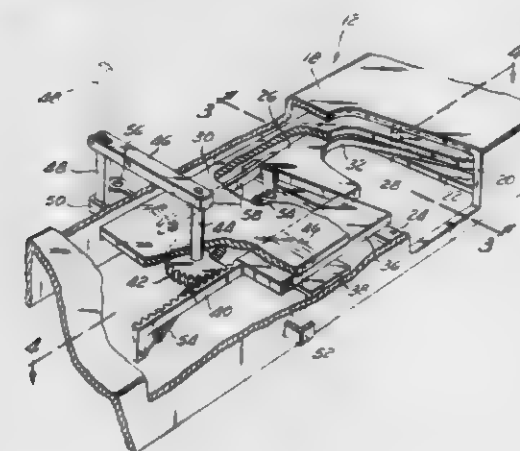
Raymond W. Blodgett, Jr., and Raymond W. Blodgett, both of 10961 Huber St., Anaheim, Calif. 92804

Filed Mar. 12, 1979, Ser. No. 19,830

Int. Cl.³ B62D 53/12

U.S. Cl. 280—434

5 Claims



1. A trailer hitch latching assembly comprising: a housing;

- an opening located within said housing, said opening to accommodate a trailer hitch;
- a locking pawl attached to said housing and located within said opening, said locking pawl being movable between a retracted position exterior of said opening to an extended position across said opening;
- a latch plate mounted on said housing and across said opening, said latch plate being movable between a first position and a second position, said first position engaging said locking pawl and preventing movement of such to said extended position, said second position disengaging said locking pawl permitting such to move to said extended position forming a totally enclosed area between said latch plate and said locking pawl, said trailer hitch to be located within said enclosed area;
- a coil spring connected between said locking pawl and said latch plate, said locking pawl being continuously biased toward said extended position by said coil spring and said latch plate is continuously biased toward said first position, whereby the biasing force of said coil spring tends to maintain said latch plate in said first position and engaging said locking pawl, and when said latch plate is in said second position the biasing force of the coil spring tends to maintain said locking pawl and said latch plate in the position defining said totally enclosed area; and means connectable to said latch plate for moving such between said first and said second positions.

4,227,714

AUTOMATIC SKI BRAKE USING STIRRUP-SHAPED SPRING WIRE

Tilo Riedel, Echting, Fed. Rep. of Germany, assignor to Etablissements François Salomon et Fils, Annecy, France

Continuation of Ser. No. 665,788, Mar. 10, 1976, Pat. No.

4,078,824, which is a continuation-in-part of Ser. No. 557,476,

Mar. 12, 1975, Pat. No. 3,989,271. This application Mar. 10,

1978, Ser. No. 885,182

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1974, 2412623; Jul. 26, 1974, 2436155; Feb. 20, 1975, 2507371

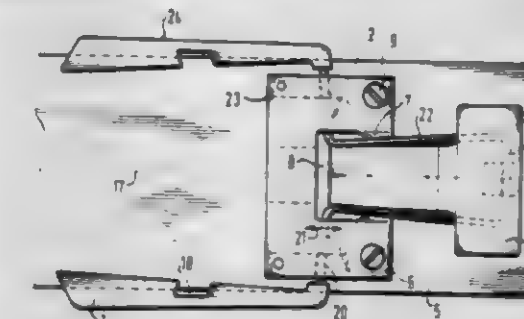
The portion of the term of this patent subsequent to Mar. 14,

1995, has been disclaimed.

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605

3 Claims



1. A ski brake comprising: a mounting plate adapted to be affixed to an upper surface of a ski;
- a bent wire swingably mounted on said mounting plate and having a bight portion positioned above said surface and a pair of shanks connected by said bight portion;
- a brake element connected to one of said shanks at a longitudinal edge of said ski and swingable with said wire into a first snow-engaging position upon release by a skiboot of said bight portion, said bight portion being displaceable by said skiboot into a second position in which said element lies along said edge;
- spring means for urging said element into one of said positions; and
- cooperating means on said wire and said plate for moving said brake element toward the longitudinal axis of the ski upon displacement of said bight portion into said second position.

4,227,715

ATTACHMENT FOR RELEASE SKI BINDINGS FOR CROSS-COUNTRY SKIING

Gustav K'rchmeyr, Innsbruck, Austria, assignor to TMC Corporation, Baar, Switzerland

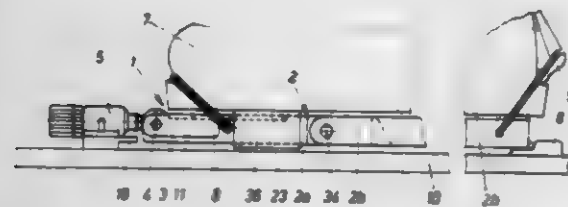
Filed Nov. 2, 1978, Ser. No. 957,081

Claims priority, application Austria, Nov. 11, 1977, 8100/77

Int. Cl.³ A63C 9/086

U.S. Cl. 280—618

6 Claims



1. In an attachment for use in cross-country skiing and adapted for operative connection to a releasable toe ski binding member having first releasable locking means thereon for normally holding a ski boot for use in downhill skiing, said toe ski binding member being fixedly secured to a ski, said attachment comprising a sole plate and first means for holding said sole plate on said ski, said sole plate including second means for securing said ski boot thereto, said first means including a connecting piece permanently and pivotally connected through a first axle to said sole plate, said first axle being located substantially directly below the toe of said ski boot and extending transversely with respect to the longitudinal axis of said ski, a spring, said spring being adapted to yield to movement of said sole plate upwardly with respect to said connecting piece and about said first axle and second releasable locking means on said connecting piece and on said toe ski binding member separate from said first releasable locking means for permitting said sole plate and the connected connecting piece to be selectively connected to said toe ski binding member, the improvement comprising wherein said sole plate is comprised of first and second sole plate parts connected to each other through a second axle extending parallel to said first axle, wherein said connecting piece has a tongue member thereon forming a portion of said second releasable locking means, another portion being a part of said releasable toe ski binding member, wherein said first sole plate part has a recess therein, said tongue member being pivotal with said connecting piece about said first axle between a first position wherein said tongue member projects forwardly from said sole plate and a second position wherein said tongue member overlays said first sole plate part and is received in said recess, and including releasable holding means for releasably holding said tongue member in said recess.

4,227,716

ARRANGEMENT FOR ATTACHING SPRING ASSEMBLIES TO VEHICLE AXLE HOUSINGS

Sigurd A. M. Nordström, Södertälje, Sweden, assignor to Saab-Scania Aktiebolag, Södertälje, Sweden

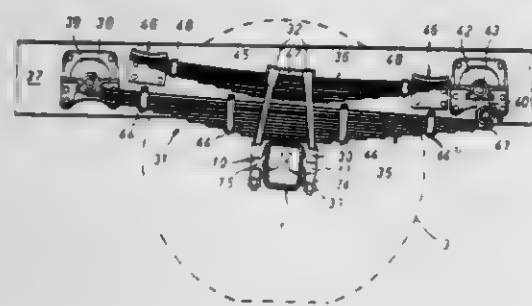
Filed Dec. 19, 1978, Ser. No. 971,062

Claims priority, application Sweden, Dec. 22, 1977, 7714636

Int. Cl.³ B60G 19/02

U.S. Cl. 280—719

12 Claims



1. Arrangement for attaching a spring assembly to an axle fender, comprising a body section having a cross sectional

housing in vehicles, preferably the rear axle housing of a lorry, said spring assembly being attached to the vehicle frame or body and via a spring retaining seating or the like being removably secured to housing brackets rigidly mounted on the front and rear side surfaces of the axle housing, said spring retaining seating and housing brackets being provided with through-holes for U-bolts which by means of conventional clamping means acting on the housing brackets clamp the spring retaining seating and the spring assembly to the axle housing via the housing brackets, characterized in that each individual housing bracket is formed with a baseplate from which projects at least one supporting portion having an upper and a lower support plane, and in that each housing bracket having its baseplate contacting the axle housing is secured to the axle housing by means of a weld extending substantially round the whole of the periphery of the baseplate.

4,227,717

MOTORCYCLE SAFETY DEVICE

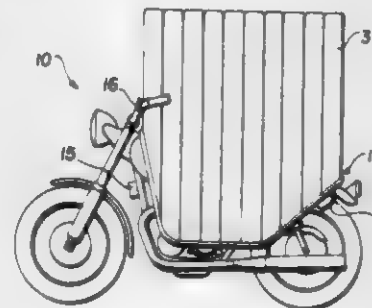
Julien J. Bouvier, 5600 S. Crain Hwy., Mitchellville, Md. 20716

Filed Apr. 4, 1979, Ser. No. 26,596

Int. Cl.³ B60R 21/02

U.S. Cl. 280—753

4 Claims



1. A safety device for a motorcycle comprising, in combination, a frame having releasably interconnected portions mounted on the motorcycle, said frame completely surrounding a rider seated on the motorcycle, an inflatable cocoon disposed within said frame, a source of pressurized air connected to said cocoon, means for activating said source of pressurized air to inflate said cocoon and release said interconnected portions of said frame whereby said cocoon in the inflated condition completely surrounds said rider for protection against injuries.

4,227,718

STONE GUARD FOR AUTOMOBILE FENDER

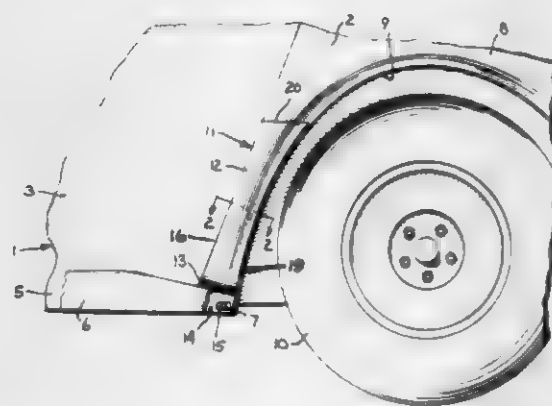
Donald M. Durben, Rte. 3, Fond du Lac, Wis. 54935

Filed May 3, 1979, Ser. No. 35,684

Int. Cl.³ B62D 27/00

U.S. Cl. 280—770

5 Claims



1. A stone guard to be attached to an automobile fender adjacent the wheel opening to prevent stone chipping of the fender, comprising a body section having a cross sectional

configuration to conform to the contour of the fender bordering the wheel opening, a flange disposed along the forward edge of the body section and disposed generally normal to the body section and adapted to engage the door jamb of the automobile, a lower flange disposed along the lower edge of the body section and adapted to be attached to the rocker panel of the automobile, the upper and rear edges of the body section terminating in relatively sharp edges, and an adhesive strip applied to the undersurface of the body section for attachment of the body section to the fender of an automobile.

4,227,719

PROTECTION SYSTEM FOR DOCUMENTS

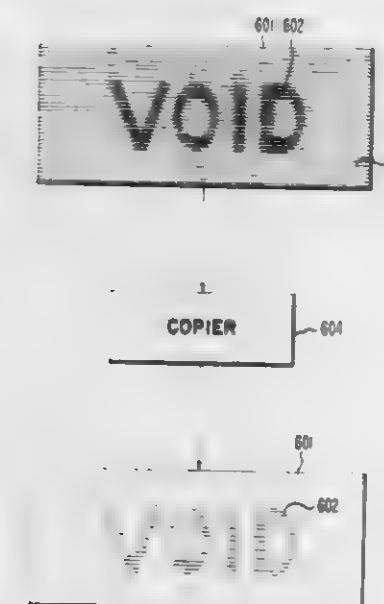
Michael J. McElligott, and Victor J. Tkaleko, Jr., both of Rochester, N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 766,590, Feb. 8, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 944,233

Int. Cl.³ B42D 15/00

U.S. Cl. 283—8 R

3 Claims



1. A document for deterring nefarious color reproduction thereof upon a color copier comprising:

- a substrate;
- a background camouflage printed on the entire area of said substrate of a first density, and
- a warning mark also printed on said substrate of a second density such that there exists in the area of said warning mark an area of a third density which is cumulative of said first and second densities, such that the third density area is reproduced by a color copying machine, the camouflage and mark being of densities which are not reproduced by a color copying machine.

4,227,720

PROTECTED DOCUMENT

William H. Mowry, Jr., Tonia; Michael J. McElligott, Rochester; Victor J. Tkaleko, Jr., Rochester, and Joseph Baran, Rochester, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 798,219, May 18, 1977. This application Nov. 8, 1978, Ser. No. 958,926

Int. Cl.³ B42D 15/00

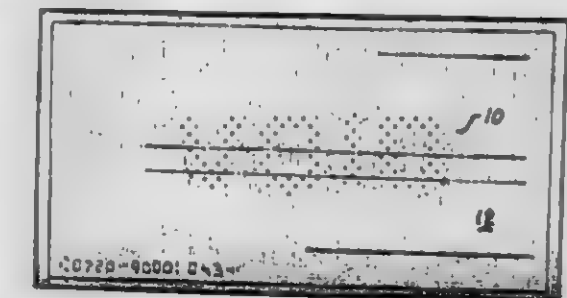
U.S. Cl. 283—8 R

7 Claims

1. A document for deterring a nefarious reproduction thereof upon a color copier comprising:

- a substrate;
- a first less than full tone image printed in a certain area on said substrate;
- a colored background printed on the remaining areas of said substrate; and
- a second less than full tone camouflage image printed in an overlay fashion over said colored background and said

first less than full tone image, wherein said first less than full tone image is substantially invisible to the human eye when viewed in conjunction with said second less than



full tone image and said background, but which said first less than full tone image is readily apparent upon a reproduction of said document by said color copier.

4,227,721

VARIABLE SIZE COUPLING

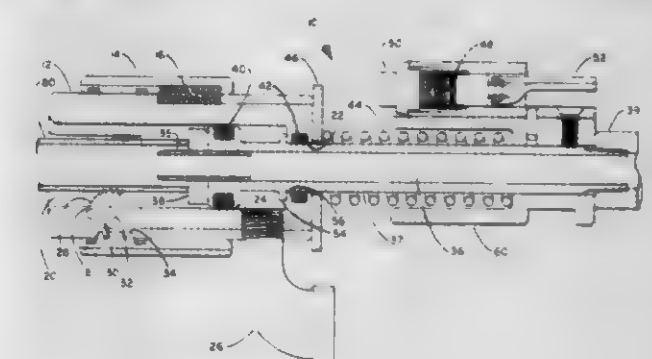
Wayne R. Reedy, Cazenovia, and Edward F. Russ, Baldwinsville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,464

Int. Cl.³ F16L 35/00

U.S. Cl. 285—18

10 Claims



1. A coupling adapted for forming a tight seal with various sized tubes which comprises:

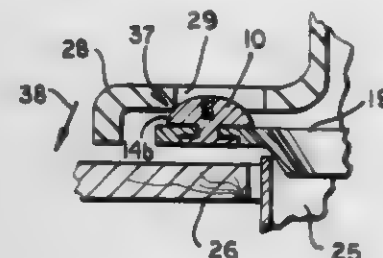
- a housing defining a cylindrical opening therein;
- a plurality of jaws having gripping teeth and gear teeth mounted for rotation about an axis;
- means for mounting the jaws to the housing such that the gripping teeth are located at varying radial distances from the axis of rotation and are within and spaced about the opening within the housing;
- having rack teeth thereon;
- means for mounting the rack means in sliding engagement with the exterior surface of the housing with the rack teeth mechanically engaging the gear teeth of the jaws such that a sliding motion of the rack means results in rotational motion of the jaws;
- means defining a fluid passage extending through the housing; and
- a seal associated with the fluid passage means and being adapted to abutably receive a tube to be secured in the coupling such that a fluid tight joint is formed between the tube and the fluid passage means, the rotatable jaws engaging the exterior surface of the tube to secure the tube to prevent removal from the coupling once the tube has been inserted therein.

4,227,722

TOILET SOIL PIPE FLANGE FASTENER

Luther J. Barber, 3174 Miller Rd., Lithonia, Ga. 30058
Continuation-in-part of Ser. No. 829,472, Aug. 31, 1977,
abandoned. This application Nov. 13, 1978, Ser. No. 959,689
Int. Cl.³ E03D 11/13; F16B 35/04; F16L 3/00, 23/02
U.S. Cl. 285—56

3 Claims



2. A nut for threadably receiving a fastening means for securing a toilet defining an oval opening therein to a soil pipe flange, said flange including a horizontally disposed annular ring defining an arcuate slot therein, said fastening means being positioned to engage said toilet and extend downwardly through said opening to bias said toilet against said flange, and said nut comprising:

a vertically extending shaft having a diameter slightly less than the width of said arcuate slot and a length slightly longer than the thickness of said annular ring;

a flat lower retaining member underlying said flange and fixed to the lower end of said shaft;

an upper retaining member defining a vertical tapped hole therein, and having a flat base fixed to the upper end of said shaft, said base having an oval perimeter overlying said flange, and said upper retaining member further defining an inclined guiding surface extending uniformly from the perimeter of said base upwardly to said vertical tapped hole;

said lower retaining member and said base of said upper retaining member being parallel to each other and perpendicular to said shaft, said flange receiving said shaft in said arcuate slot, and said oval base being shaped to be loosely matingly received by said oval opening in said toilet and extending upwardly within said opening in said toilet when said toilet is positioned on said flange.

4,227,723

MULTIPLE BOLT LATCH

Jean Rosell, Etalondes, France, assignor to Laperche, Friville Escarbotin, France

Filed Sep. 12, 1978, Ser. No. 941,679

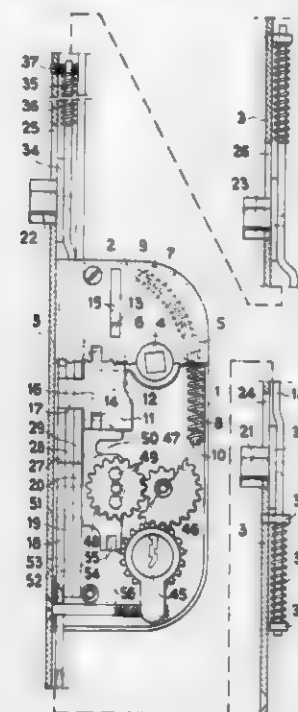
Claims priority, application France, Sep. 16, 1977, 77 27978
Int. Cl.² E05C 1/16

U.S. Cl. 292—34

7 Claims

1. A latch comprising a case, a head plate, at least one spring bolt, means for mounting the bolt relative to said plate so that the bolt is movable in a direction parallel to the plane of said plate and a mechanism within the case for actuating the spring bolt, said bolt mounting means comprising a rod which carries the bolt and is disposed behind said plate and has a first end portion remote from the bolt, which first end portion is engaged with the actuating mechanism which comprises a member which defines means for receiving a latch-operating member and includes a first arm and a second arm, elastically yieldable means for maintaining the first arm in position, a slide member slidably mounted in the case and defining a slide

member notch, the second arm being engaged in the notch of said slide member, said first end portion of said rod defining a



first rod notch and the slide member having a heel portion engaged in the first notch of the first end portion of the rod.

4,227,724

SECURITY BAR LOCK

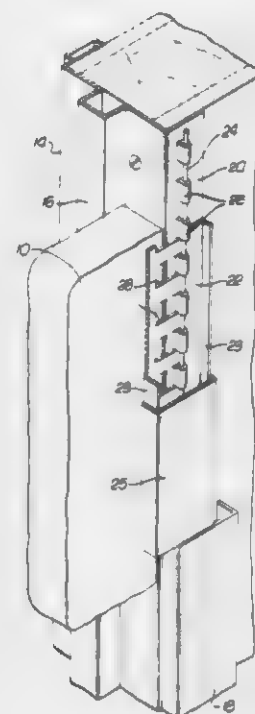
Robert L. Day, Burbank, Calif., assignor to S.D.S. Industries, Inc., Sun Valley, Calif.

Filed Dec. 26, 1978, Ser. No. 972,907

Int. Cl.² E05C 1/04

U.S. Cl. 292—145

14 Claims



1. In an apparatus for securing against entry by an unauthorized person, a building door hinged on one side of a door opening:

(a) a door frame structure providing a flange faced to the inside of the door opening and located at a place past which the edge of the door swings;

(b) an elongated bar lock;

(c) means mounting the bar lock on said flange so that the bar lock substantially parallels the adjacent edge of the door opening;

(d) said mounting means confining the bar lock for sliding movement substantially parallel to the plane of the door

opening to project throughout its length over the said edge of the door and to retract to clear it;
(e) said mounting means transmitting door opening pressure exerted on said bar lock to said frame structure; and
(f) means determining stable open and closed positions of said bar lock.

4,227,725

SLIDING CLOSURE LOCK LATCH

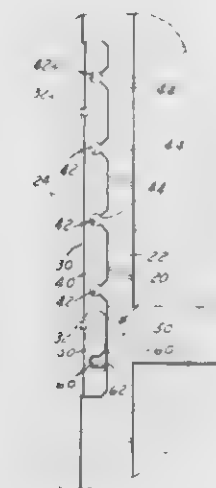
Morris W. Lindquist, 24155 Loretta, Warren, Mich. 48091, and
Henry P. Hines, 7450 Brentwood, Detroit, Mich. 48234

Filed Dec. 21, 1978, Ser. No. 971,843

Int. Cl.² E05C 3/04

U.S. Cl. 292—202

1 Claim



1. A safety lock latch for vertically sliding closures having a sash frame slidable vertically between vertical frame members,

(a) an elongate plate having a plurality of spaced, unconnected openings therethrough, each said opening extending to a common edge of said plate,

(b) a vertical frame member adjacent and forming a support for a sliding window sash frame,

(c) means fastening said elongate plate on said frame member adjacent, parallel to, and overlying but spaced from said sash for sliding clearance,

(d) a lock pin to position laterally of said plate dimensioned selectively to enter and engage any one of said spaced openings in said plate, and

(e) a swing plate pivotally mounted on said sash frame between said sash and said elongate frame and carrying said lock pin, said swing plate being movable on a horizontal axis to a release position wherein said lock pin clears said elongate plate to allow free vertical movement of said sash and being movable to a substantially vertical position to engage one of said spaced openings to limit the movement of said sash frame until said swing plate is manually shifted to the release position.

end having a main magnetic responsive piece with a piece face disposed alongside said magnet flat face at said front end, said piece being designed to carry magnetic energy to said metal material when pressed against said front end, the strength of said magnetic energy field depending on the contact area between said magnet flat face and said piece face;

(d) a coil compressing spring at the rear of said casing adapted and disposed to longitudinally move said operative member within said casing; and,

(e) a push-latch mechanism in said casing including: and elongated aperture (9a) intermediate the ends of said operative member, on an intermediate portion thereof, an engagement piece (11) pivotally mounted on said intermediate portion overlapping said elongated aperture (9a), a



torsion spring (10) interposed between said operative member and the engagement piece (11) for biasing the engagement piece (11) in one direction, an engagement pin (12) protruding from the engagement piece (11) through said elongated aperture (9a), a curved portion (11b) along an edge of said engagement piece (11) crossing over said elongated slot (9a), a zigzag slot (13) at the end of said curved portion (11b) extending to the inner side of the engagement piece (11) and a raised portion (14) defined at an end (13e) of the zigzag slot (13) thereby to latch said operative member when the operative member is first pushed inwardly and to release said operative member when the operative member is again pushed inwardly so as to decrease the magnetic coupling between the magnet and said main magnetic responsive piece by decreasing the contacting area therebetween.

4,227,727

DOORCATCH

Allan G. Westerlund, Norrbackagatan 30, S-113 41 Stockholm, Sweden

Filed Jun. 23, 1978, Ser. No. 918,417

Int. Cl.² E05C 17/16

U.S. Cl. 292—270

4 Claims

4,227,726

DOOR OPERATING EQUIPMENT

Akira Sorimachi, Yokohama, Japan, assignor to Katoh Electrical Machinery Co., Ltd., Yokohama, Japan

Filed Feb. 9, 1979, Ser. No. 10,959

Claims priority, application Japan, Mar. 20, 1978, 53/31907

Int. Cl.³ E05C 17/56

U.S. Cl. 292—251.5

4 Claims

1. A door operating mechanism having means for magnetically engaging a piece of metal material mounted on a door, said mechanism comprising in combination:

(a) an elongated hollow casing with a closed rear end and an open front end, said front end being disposed to be opposite said metal material when said door is closed;

(b) a magnet with a flat face for supplying a magnetic energy field to be used in holding said metal material magnetically;

(c) an operative member in said casing with a member front

1. A catch for use between a door and a doorframe comprising:

a catch part operatively cooperating with a guide on a latch,

said catch part and latch being rotatably attached to the doorframe and the door, respectively;

said catch part including at least a portion which cooperates with the guide to prevent the removal of said catch part from said guide on said latch except at a recess in the inner end of the guide;

said catch part and said latch being rotatably mounted on horizontal axes;

said latch being mounted on a spindle attached to said door for free up and down movement, and said spindle being arranged at a level above a spindle of said catch part and positioned at a right-angled distance between a mounting plate of said catch part and a central plane through the latch perpendicular to its horizontal axis when the door is closed, such that the portion of said catch part which cooperates with the guide of the latch automatically enters the recess when the door is closed, and cooperates with the guide to force the catch to a locked position automatically, whenever the door is closed either from inside or from outside the opening; and

said recess of said guide of the latch including both a port for the catch part on one side of the upper part of the latch and with an opening for the catch part on the opposite side of the upper part of the latch, the opening being arranged to lie nearly straight below the port, when the latch is rotated to a substantially horizontal position, through which the catch part is automatically detachable from the latch at the opening of the door from outside by pushing up on the latch on the spindle of the catch part, followed by a closing of the door.

4,227,728

AUXILIARY LOCK ASSEMBLY

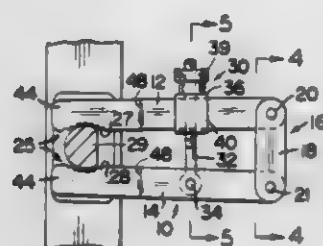
John Zaluski, 503 77th Ave. North, St. Petersburg, Fla. 33702

Filed Jul. 11, 1979, Ser. No. 56,454

Int. Cl. B65C 13/02

U.S. Cl. 292-297

10 Claims



1. An auxiliary lock assembly primarily designed to prevent longitudinal displacement of a conventional lock bolt element, said assembly comprising: frame means dimensioned and configured for placement between door edge and a door frame and including two clamp arms movably interconnected to one another, each clamp arm comprising grasping means formed on correspondingly positioned interior edge portion of each arm in spaced apart relation to one another, closing means interconnected to each clamp arm and disposed to position said clamp arms into and out of grasping engagement with oppositely disposed external surface portions of the lock bolt element, whereby movement of the lock bolt along its own longitudinal axis and into a non-locking position is prevented.

4,227,729

ROTATABLE RAM BAR APPARATUS AND CARRIER ADAPTER

John B. Schumacher, P.O. Box 657, Huron, S. Dak. 57350

Filed Sep. 28, 1978, Ser. No. 946,723

Int. Cl. B60R 19/02

U.S. Cl. 293-145

8 Claims

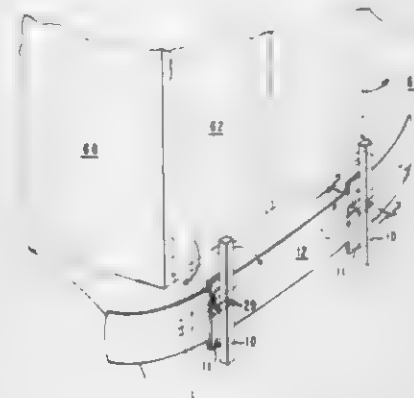
1. A rotatable ram bar apparatus having at least one (1) ram

bar assembly for mounting on a vehicle bumper, said assembly comprising:

a ram bar;

means for securing said bar to said bumper; said securing means including a bracket attachable to the outer side of said bumper; and

means for rotating said bar between a first position wherein said bar extends vertically above and below said vehicle bumper and a second position wherein said bar is substantially parallel to said bumper, said rotating means including locking means for holding said ram bar in said first position, said locking means including a camming disc fixedly mounted to the bracket, a mating disc fixedly



mounted to the ram bar, and biasing means urging said discs together, said mating disc including a key and said camming disc including a corresponding slot, the key engaging said slot when the ram bar is in said first position, and said camming disc including a pair of inclined guide surfaces on the slotted side of said camming disc for facilitating the removal of said key from said slot, and said camming disc including stop means having a pair of steps, each step provided on a respective one of the inclined surfaces on opposite sides of the slot and having oppositely facing abutment surfaces for engagement with a respective one of the opposite longitudinal sides of the key for preventing rotation of said bar beyond said second position.

4,227,730

GRIPPER MEMBER FOR RETENTION OF A PLASTIC TUBE

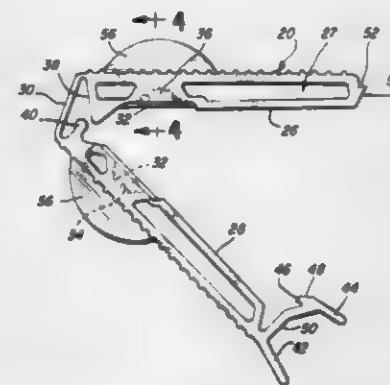
John B. Alexander, Evanston; T. Michael Dennehey, Arlington Heights; Richard J. Greff, Ingleside, and John M. Munsch, Libertyville, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 29, 1979, Ser. No. 43,061

Int. Cl. B25B 7/02

U.S. Cl. 294-16

11 Claims



1. A gripper member which comprises: an openable and closable pair of handles interconnected by a hinge member, each handle defining, an arcuate recess positioned to face the corresponding recess of the other handle and defining gripping projections therein, and a wall member positioned longitudi-

nally on each handle across each arcuate recess and at the same side thereof, whereby a flexible plastic tube may be surrounded and gripped in the arcuate recesses of said handles for rotational retention thereof as a connector member is inserted into or withdrawn from said tube, said wall members pinching said tube into closed, sealed relation when occupying said recesses with the handles in closed position.

4,227,731

TOOL FOR LIFTING AND MANEUVERING UTILITY ACCESS COVERS

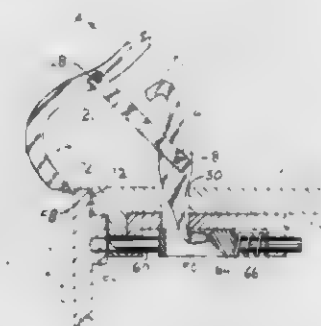
Alfred B. Castle, 4104 Maryland Ave., Bethesda, Md. 20016

Filed Oct. 1, 1979, Ser. No. 80,233

Int. Cl. B65G 7/12

U.S. Cl. 294-17

8 Claims



1. A lifting tool suitable for lifting and maneuvering a utility access cover having an attachment point at or near an outer peripheral edge of said cover, said tool comprising:

(a) a handle;

(b) receiving means connected to said handle for receiving and retaining said utility access cover during lifting and maneuvering thereof;

(c) abutment means for abuttingly engaging said cover when said cover comes into receiving engagement with said receiving means, said abutment means having first and second spaced-apart pivot points, said abutment means being pivotally connected to said handle at said first pivot point;

(d) cover engaging means pivotally connected to said abutment means at said second pivot point for engaging said tool to said attachment point of said cover; and

(e) guiding means connected to said receiving means for guiding said cover into receiving engagement with said receiving means;

said receiving means including a cover engaging surface extending between said guiding means and said abutment means, said cover being slidably engagable with said cover engaging surface, said cover engaging means and said guiding means cooperating to lift said cover and slidably urge said cover along said cover engaging surface into abutting engagement with said abutment means upon urging said handle away from said cover,

whereby said cover is brought into engagement with said receiving means and securely retained in said receiving means during lifting and maneuvering of said cover.

4,227,732

PNEUMATICALLY OPERATED GATE FOR HOPPER BOTTOMS FOR BULK HANDLING EQUIPMENT

Gerald J. Kish, 10711 Strasburg Rd., Erie, Mich. 48133

Filed Nov. 24, 1978, Ser. No. 963,222

Int. Cl. B60P 1/56

U.S. Cl. 294-71

7 Claims

1. A hopper gate mechanism comprising: a frame defining a hopper opening; a pair of doors to open and close the opening in said frame; hinge means pivotally mounting one edge of each of said doors to said frame; at least two spaced apart reciprocable latch members having inner latching ends and outer ends, said latch members movable into a first position wherein the inner ends are in

latching engagement with respective ones of said doors and into a second position whereby the inner ends are out of latching engagement with said respective ones of said doors;

a draw bar pivotally interconnecting the outer ends of said latch members; and



motor means coupled to said draw bar for effecting selected pivotal movement of said draw bar to selectively move said latch members into the second position out of engagement with said respective ones of said doors.

4,227,733

APPARATUS FOR CONNECTING A LIFTING TACKLE TO A SUBMERSIBLE PUMP

Sture Haglund, Sundbyberg, Sweden, assignor to ITT Industries, Inc., New York, N.Y.

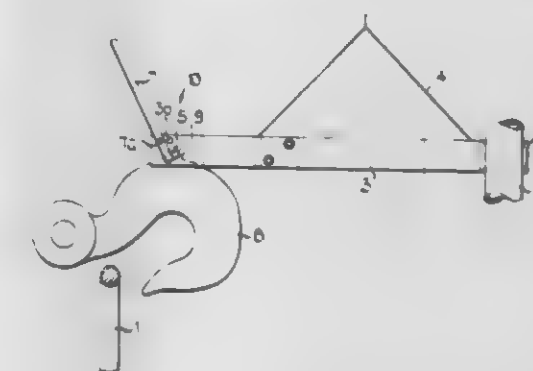
Filed Oct. 16, 1978, Ser. No. 951,932

Claims priority, application Sweden, Nov. 24, 1977, 7713282

Int. Cl. B66C 1/38

U.S. Cl. 294-83 R

4 Claims



1. An apparatus for connecting a lifting tackle to a lifting loop of a submersible pump, said apparatus being adapted to be lowered into a pumping station along essentially vertical guides, comprising:

a connection yoke;

means formed at one end of said connection yoke for slidably engaging said guides; and

means disposed at an opposite end of said connection yoke for releasably securing a lifting tackle in a substantially horizontal position and for automatically releasing said tackle upon contact of the tackle with the lifting loop, said securing means comprising a slidable pin member for engaging the lifting tackle, a spring adapted to urge the pin out of engagement with the lifting tackle, and a stop arm for holding the pin against the spring force until said stop arm is engaged by the lifting tackle and is rotated to release the pin so that the spring slides the pin out of engagement with the lifting tackle, whereby a lifting tackle may be lowered into a pumping station for engagement with the lifting loop of a submersible pump.

4,227,734

CAR HAUL TRAILER

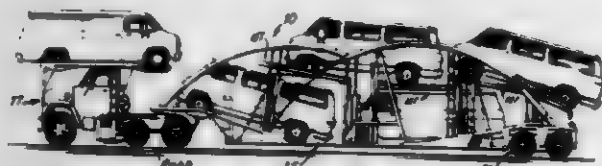
Don J. Cottrell, 2164 Hawthorne La., and Don M. Cottrell, Rte. 7, Duckett Mill Rd., both of Gainesville, Ga. 30501

Filed Jun. 29, 1978, Ser. No. 920,189

Int. Cl.² B60P 3/08

U.S. Cl. 410-12

12 Claims



1. A car haul trailer for transporting vehicles comprising: a base frame having a front end and a rear end; a pair of spaced apart side frames assemblies mounted on said base frame along opposite sides thereof; each of said frame assemblies including an upstanding, arched primary side rail having opposite ends and a first prescribed radius of curvature, one end of said primary side rail connected to said base frame adjacent the rear end thereof and the other end of said primary side rail connected to said base frame intermediately of the rear and front ends thereof so that said primary side rail projects above said base frame and lies in a generally vertical plane; an upstanding arched secondary side rail having opposite ends and a second prescribed radius of curvature, one end of said secondary side rail connected to said base frame adjacent the front end thereof; and a gusset assembly connecting the other end of said secondary side rail to said primary side rail intermediate its ends; and

a plurality of vehicle supporting track assemblies positioned between and mounted on said side frames to support the vehicles to be transported, said gusset assemblies connecting said secondary side rails to said primary side rails so that forces exerted on said secondary side rails by said track assemblies and directed along said secondary side rails generally toward the rear end of said base frame will be transferred through said gusset assemblies to said primary side rails and along said primary side rails to said base frame adjacent the rear end thereof and so that forces exerted on said primary side rails by said track assemblies rearwardly of said secondary side rails directed along said primary side rails generally toward the front end of said base frame will be directed to said base frame partly through said gusset assemblies and said secondary side rails to said base frame adjacent the front end thereof and partly through said primary side rails to said base frame intermediate the ends thereof.

4,227,735

PROTECTIVE ENCLOSURE FOR A BUS DRIVER

Joseph C. Joyner, Queens Village, N.Y., assignor to Joy-can Safety Products, Ltd., Queens Village, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,455

Int. Cl.² B60R 27/00

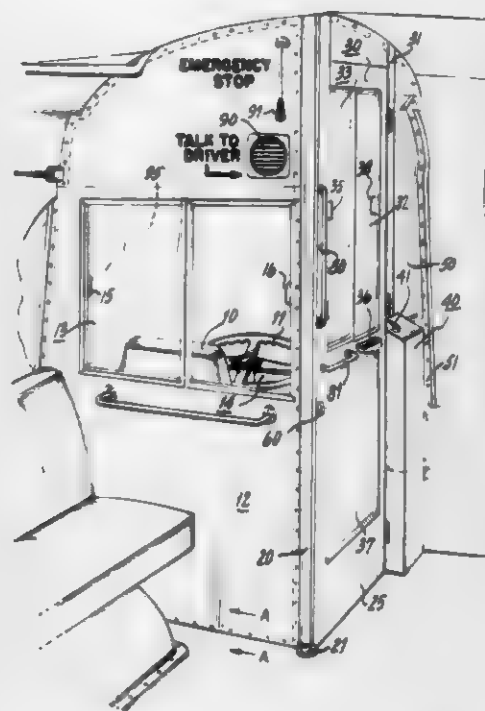
U.S. Cl. 296-24 R

10 Claims

1. A protective enclosure apparatus for a bus driver area, said enclosure mounted in a bus vehicle to surround a driver when operating said vehicle, comprising:

- (a) a vertical support extending from the floor to the ceiling of said bus,
- (b) a back panel coupled at one side to the side of said bus and coupled to said vertical support at said other side, said back panel extending from the floor to the ceiling of said bus, and having a relatively central area fabricated from a strong transparent material to allow visual access,
- (c) a side panel transverse to said back panel and coupled to said vertical support at one end and the front area of said bus at the other end, said side panel extending from the floor to the ceiling of said bus and including a door, said door having a large area fabricated from a strong transpar-

ent material to allow visual access, with said back and side panels forming an enclosure about said driver area, with access to said area afforded by said door,



(d) locking means coupled to said door to permit access to said enclosure in a first mode when a driver enters said enclosure and an actuator coupled to said locking means to actuate the same from within said enclosure by exerting a unidirectional force to allow exit from said enclosure.

4,227,736

CONVERTIBLE SEAT FOR AUTOMOBILE VEHICLES

Jean-Claude Lebault, Guirancourt, and Guy Rabouille, Courville, both of France, assignors to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France

Filed Dec. 6, 1978, Ser. No. 966,955

Claims priority, application France, Dec. 9, 1977, 77 37199

Int. Cl.³ B60N 1/02

U.S. Cl. 296-65 R

3 Claims



1. A seat structure comprising a seat proper, means for mounting a front part of the seat proper on the floor of a vehicle to pivot about a first transverse axis a backrest having a base part, lateral members mounting the base part of the backrest on the seat proper to pivot about a second transverse axis, at least one link which is connected adjacent a first end of the link to the base part of the backrest to pivot about a third transverse axis, means for connecting the link adjacent a second end of the link opposite said first end to the floor to pivot about a fourth transverse axis, the seat proper and the link forming two crossed arms of a device for deploying in the horizontal position the backrest relative to the seat proper upon a rotation of the seat proper through an angle of about 180° in a direction away from the backrest about said first axis,

said third transverse axis being embodied by pins which are engaged in slots provided in said lateral members and hook members being respectively pivoted to the corresponding lateral members and being respectively engageable with the pins to hold the pins at one end of the slots, said hook members being part of a device for selectively immobilizing and releasing the pins relative to the slots.

means for rotatably supporting the cam to the panel; means for rotating the cam from its first position to its second position; and means for rotation of the panel about the joined edge.

4,227,737

AUTOMOTIVE TRUNK DECK LID ACCESSORY

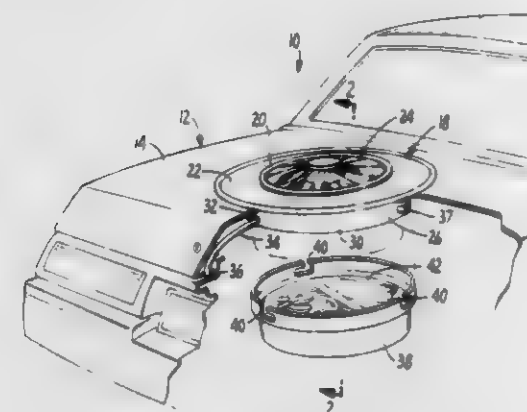
Calvin R. Vogt, P.O. Box 94, Lafayette, Calif. 94549

Filed Nov. 13, 1978, Ser. No. 960,081

Int. Cl.³ B62D 25/10

U.S. Cl. 296-76

3 Claims



1. A decorative accessory for mounting upon an opening formed in the deck of the storage trunk lid of an automobile comprising

- a central wheel hub overlying said opening and a connected tire cover mounted upon the deck;
- a reservoir sealed to said opening for catching water passing through the central wheel hub;
- conduit means draining the reservoir to the periphery of said lid; and
- a casing removably depending from the reservoir to define a storage compartment between it and the reservoir.

4,227,738

SUNROOF FORWARD EDGE LATCH

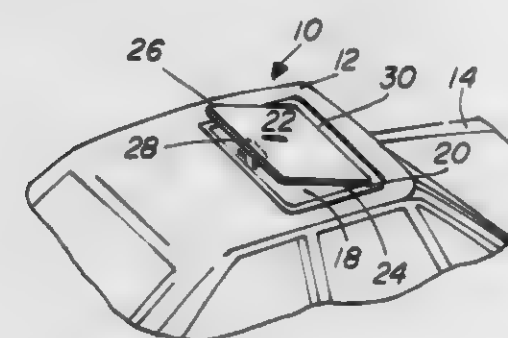
Norman L. Sorensen, Detroit, Mich., assignor to Wisco Corporation, Ferndale, Mich.

Filed Oct. 10, 1978, Ser. No. 949,820

Int. Cl.² B60J 7/18

U.S. Cl. 296-224

4 Claims



1. A releasable latch for joining one edge of a sunroof panel to a section of frame extended about an opening in a vehicle roof comprising:

- a rotatable cam member adjacent the underside of the frame having a first position wherein a cam projection abuts the frame and a second position wherein said projection is retracted;
- a recessed member attached to the frame to nestingly receive said cam projection in its first position;

4,227,739

SUNROOF OPENING AND LOCKING DEVICE

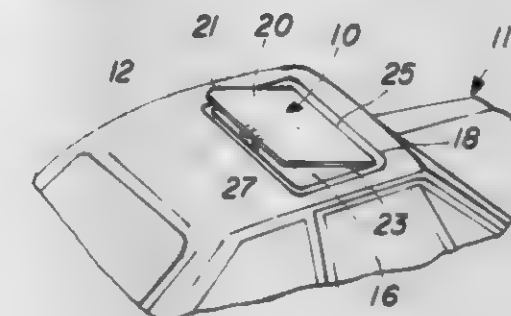
Norman L. Sorensen, Detroit, Mich., assignor to Wisco Corporation, Ferndale, Mich.

Filed Oct. 10, 1978, Ser. No. 950,030

Int. Cl.³ B60J 7/00

U.S. Cl. 296-224

5 Claims



1. A two-part separable fastener for joining one edge of a sunroof panel to a section of a frame extending about an opening in a vehicle roof comprising:

- an arm having an over-center action pivotally supported to the underside of the panel adjacent an edge thereof, and a pivoting link pivoted at one end to an intermediate portion of the arm and releasably pivoted at the other end to a transversely actuated releasable latch supported by the frame.

4,227,740

ATTACHMENT FOR A WHEELCHAIR

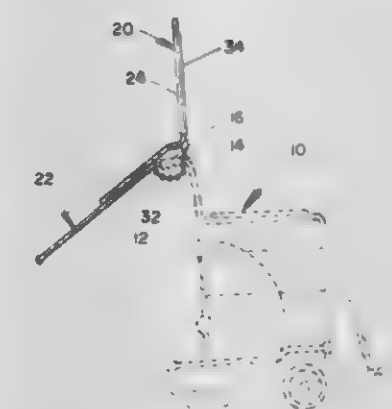
Robert C. East, 2097 S. Devinney St., Lakewood, Colo. 80228

Filed Apr. 12, 1979, Ser. No. 29,454

Int. Cl.³ A47C 7/38

U.S. Cl. 297-310

10 Claims



1. An attachment for a wheelchair having rearwardly extending spaced handles adapted to be grasped by a person pushing the chair comprising frame means, connectable to the handles of a wheelchair to secure the frame means thereto and including a chair supporting frame portion and an integrally connected head supporting frame portion extending at an obtuse angle relative to said chair supporting frame portion, head support means secured to said head support frame portion for engaging and supporting the head of an occupant of the wheelchair and floor engaging means on said chair supporting frame portion for supporting the wheelchair when the chair is tilted backwards.

4,227,741

BACKLASH FREE SEAT ADJUSTER

Josef Gross, Rockenhausen; Heinz Werner, Remscheid-Hasten; Volker Schmidt, Rockenhausen, and Heinz P. Cremer, Remscheid, all of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH & Co. KG, Remscheid-Hasten, Fed. Rep. of Germany

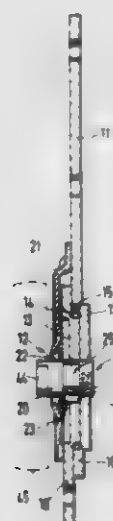
Filed Dec. 26, 1978, Ser. No. 973,540

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757907

Int. Cl.² A47C 1/025; F16H 55/18

U.S. Cl. 297—362

10 Claims



1. In an articulated mounting for seats having angularly adjustable backrest, particularly for use in motor vehicle seats, including a stationary hinge part assigned to the seat and a reclining hinge part assigned to the backrest, a pivot axle for connecting the hinge parts, and an angular position adjuster and arrester in the form of wobble gears including an inner gear connected to one hinge part and being rotatable about said pivot axle, an outer gear connected to the other hinge part and being rotatable about an eccentric member coupled for rotation with the pivot axle, a combination according to a non-circular coupling section on said pivot axle; said eccentric member being a separate piece having an eccentric recess, two opposite walls of said recess slidably engaging corresponding sides of said non-circular coupling section to permit radial displacement of the eccentric member on said coupling section; means for adjusting and arresting the eccentric position of said eccentric member relative to said coupling section of said pivot axle; and wherein said non-circular coupling section of said pivot axle is a rectangular pin, said eccentric member having a rectangular recess, the two opposite walls of which slidably engage corresponding sides of said rectangular pin and the other opposite walls of said recess being spaced apart from the facing sides of said pin to define a free space therebetween, and said adjusting means being arranged in said free space.

4,227,742

MULTI-POSITION, RETRACTABLE LEG REST FOR A WHEELCHAIR

Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.

Filed Jan. 30, 1979, Ser. No. 7,678

Int. Cl.² A47C 7/50

U.S. Cl. 297—430

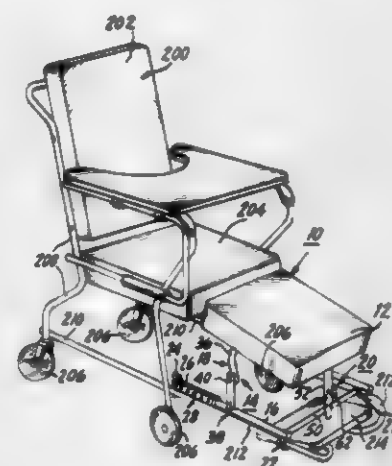
8 Claims

1. A multi-position leg rest apparatus for use on a wheelchair of the type having a footrest and a footrest frame, said apparatus comprising:

- a leg rest cushion having a front edge and a rear edge;
- a sliding means slidably attached to said footrest frame;
- a first cushion height adjustment means attached to said sliding means for selectively raising the rear edge of said cushion to an elevated position and for lowering the rear edge of said cushion to a storable position; and,
- a second cushion height adjustment means attached to said

sliding means for selectively locating the front edge of said cushion at one of three separate vertical height adjustments corresponding respectively to a lowest first position, an intermediate second position and an upper third position, said second height adjustment means further including:

- a first horizontally disposed tubular element rotatably attached to the underside of said cushion;
- a second tubular element, vertically oriented with respect



to said first tubular element and attached to said first tubular element to form a T-shaped member;

a third tubular element attached to said sliding means and telescopically received within said second tubular element; and,

a pushbutton means attached to said second tubular element for engaging said second height adjustment means in at least one of said three positions,

wherein the vertical height of the front and rear edge of the leg rest cushion can be independently and selectively adjusted.

4,227,743

METHOD OF THERMAL-MINE RECOVERY OF OIL AND FLUENT BITUMENS

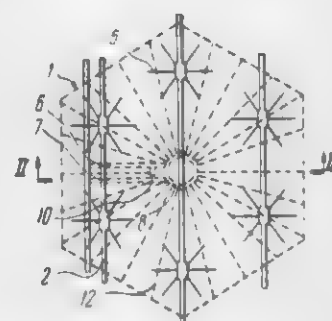
Leonid M. Ruzin, poselok Yarega, ulitsa Kosmonavtov 5, kv. 26; Jury A. Spiridonov, ulitsa Chibjusekaya, 7, kv. 81; Gennady S. Chuprov, prospekt Lenina, 37/10, kv. 72; Boris A. Tjunkin, ulitsa Opleznina, 30, kv. 33, all of Komi ASSR, Ukhta, and Vladimir P. Tabakov, ulitsa Soffii Kovalevskoi, 4-a, kv. 125, Moscow, all of U.S.S.R.

Filed Sep. 13, 1978, Ser. No. 943,558

Int. Cl.² E21C 41/10

U.S. Cl. 299—2

25 Claims



1. A method of thermal-mine recovery of oil and fluent bitumens, which comprises

providing a system of mine working overlying an oilbearing formation;

drilling from said mine working and from the ground surface a plurality of injection wells adapted for charging a pressurized fluid therethrough into the oil-bearing formation; providing a slope and a man way in the area of the oil-bearing formation, where the provision of a recovery gallery is envisaged; providing the recovery gallery in this area of the oil-bearing formation;

4,227,745

APPARATUS FOR AND METHOD OF MAKING BRUSHES

Harvard W. K. Enchelmaier, 4 E. Greenbrook Rd., North Caldwell, N.J. 07006

Division of Ser. No. 724,410, Sep. 17, 1976, Pat. No. 4,114,221.

This application Jun. 1, 1978, Ser. No. 911,305

Int. Cl.² A46D 3/04

U.S. Cl. 300—2

17 Claims



drilling from said recovery gallery a system of horizontal and inclined oil recovery wells which are separate from the injection wells;

charging a heat carrier into the recovery wells extending substantially across the dominating direction of the highly permeable zones of the oil-bearing formation, for uniform distribution thereof throughout the volume of the oil-bearing formation and for heating the latter to a temperature at which the oil acquires sufficient fluidity within the oil-bearing formation;

terminating the charging of the heat-carrier into said recovery wells upon the oil-bearing formation having attained the said temperature;

charging a pressurized fluid into the injection wells which are separate from the recovery wells and minimally associated with the highly permeable zones of the oil-bearing formation, to thereby directly supply the pressurized fluid through the injection wells into and to force oil from the oil-bearing formation into said horizontal and inclined recovery wells, toward said recovery gallery; and

withdrawing oil from said recovery gallery to the ground surface.

4,227,744

IMPACT TIP FOR IMPACT ROCK BREAKER

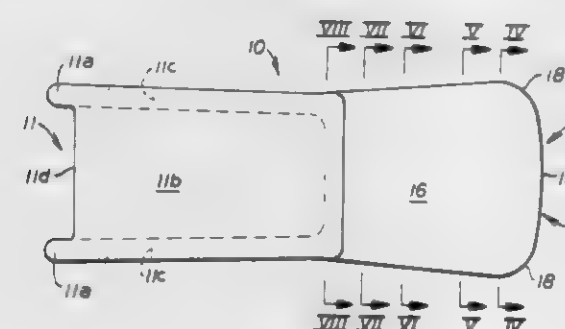
Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 29, 1979, Ser. No. 11,600

Int. Cl.² A01B 23/02; E21C 35/18

U.S. Cl. 299—94

9 Claims



1. In a detachable impact tip (10) for an impact rock breaker (B) which includes a mounting socket (11) adapted for fixed attachment to a breaker shank (B1), and a rock impacting tooth (12) integral with said socket (11), a tooth (12) comprising:

a base (13) abutting the socket (11);

and a body (14) on said base (13) which is wedged-shaped in side elevation so that it has generally triangular sides 14a, and which is generally spade-shaped in plan with top and bottom surfaces (16) and a forward extremity (15),

said body (14) has smoothly rounded top and bottom longitudinal margins 17 which have progressively smaller radii of curvature toward said forward extremity (15), said generally triangular sides (14a) of the body (14) merge progressively into said smoothly rounded top and bottom longitudinal margins (17) toward said forward extremity (15) and vanish rearwardly thereof, said forward extremity (15) forms a blunt edge smoothly rounded from top to bottom, and smoothly curved forward margins (18) between said longitudinal margins (17) and said extremity (15), and said body (14) is devoid of any abrupt transitions from one area to another except between the top and bottom surfaces (16) at and immediately adjacent the forward extremity (15).

4,227,746

BRAKING PRESSURE CONTROL UNIT FOR A DUAL CIRCUIT BRAKE SYSTEM

Bernad Schopper, Frankfurt, and Peter Tandler, Falkenstein, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

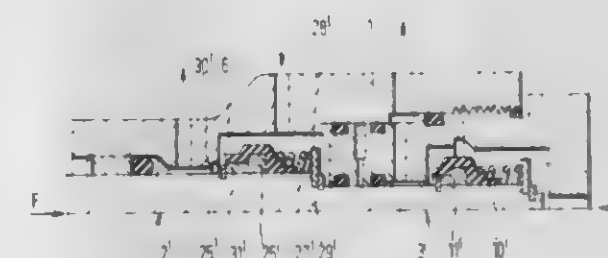
Filed Dec. 1, 1978, Ser. No. 965,661

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2753948; Dec. 3, 1977, 2753949

Int. Cl.² B60T 8/26, 11/10

U.S. Cl. 303—6 R

17 Claims



1. A braking pressure control unit for a dual-circuit brake system comprising:

a housing accommodating therein two coaxial valve chambers disposed in tandem with respect to each other; a valve seat disposed in each of said valve chambers; and a closure member disposed in each of said valve chambers in an opening and closing relationship with an associated one of said valve seats, each of said closure members, in the rest position, being held in a spaced relationship with its associated one of said seats by a control force; at least one of said closure members includes:

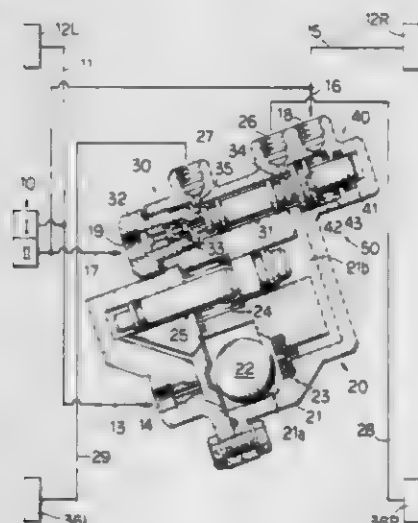
- a first shaft element having one end in an operative relationship with an adjacent end of the other of said closure members,
- a first closure element in a slidably sealed relationship with the outer surface of said first shaft element, said first closure element being displaceable between limits on said first shaft element, and
- a first closure spring biasing said first closure element toward an associated one of said valve seats.

4,227,747

PRESSURE CONTROL DEVICE FOR A VEHICLE BRAKE
Hiroshi Kawaguchi, Mishima, Japan, assignor to Toyota Kidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Dec. 4, 1978, Ser. No. 966,328
Claims priority, application Japan, Mar. 15, 1978, 53-29632
Int. Cl.² B60T 8/26

U.S. Cl. 303—24 C

10 Claims



1. A pressure control device for a dual type vehicle brake system having a pair of first and second circuits mutually independent for delivering the braking fluid pressure produced in a master cylinder, which is provided with a pair of pressure chambers, to each wheel cylinder disposed respectively on a pair of right and left rear wheels, said pressure control device for controlling the pressure rising in each of said rear wheel cylinders, when the deceleration rate of the vehicle exceeds a predetermined value, comprising:

- an inertia valve, installed in said first circuit, provided with an inertia body which is allowed to shift, resisting the biasing force, to close a passage for the braking fluid when the deceleration rate of the vehicle exceeds a predetermined value;
- a shut-off valve installed in said second circuit for closing a passage for the braking fluid in said second circuit;
- a housing accommodating said shut-off valve;
- a balance piston, slidably accommodated in said housing, provided with a pair of first and second pressure-receiving faces, on opposite ends thereof, of identical area, said first pressure-receiving face being affected by the pressure coming through said inertia valve in said first circuit, said second pressure-receiving face being affected by the pressure coming through said shut-off valve in said second circuit, said balance piston being operated by the pressure difference between the pressure acting on said first and second pressure-receiving faces, for opening said shut-off valve when the pressure in said first circuit is higher, and

for closing said shut-off valve when the pressure is said second circuit is higher.

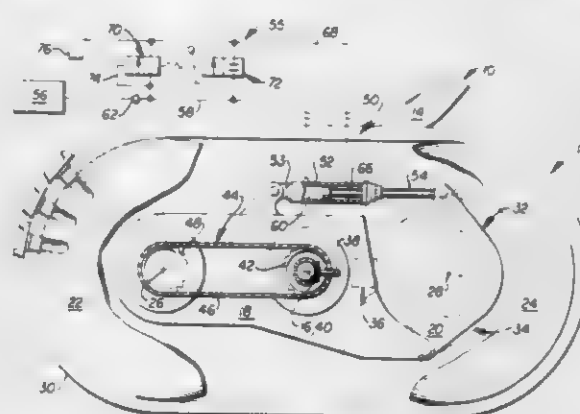
4,227,748

TRACK TENSIONING APPARATUS

Thomas C. Meisel, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Continuation-in-part of Ser. No. 909,759, May 26, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,915
Int. Cl.³ B22D 55/30

U.S. Cl. 305—10

6 Claims



1. A work vehicle (10) comprising:
a frame (14) having an axis (16);
a first element (18) having a first wheel (22) and being connected to said frame (14) and pivotally movable relative to said frame (14) about said axis (16) of said frame (14), said first wheel (22) having an axis (26) and being rotatable about said axis (26);
a second element (20) having a second wheel (24) and being pivotally connected to said first element (18), said second wheel (24) having an axis (28) and being rotatable about said axis (28), said second element (20) being pivotally movable relative to said first element (18) between a first position (32) at which said axis (26) of said first wheel (22) is spaced a first preselected distance from said axis (28) of said second wheel (24) and a second position (34) at which said axis (26) of said first wheel (22) is spaced a second preselected distance from said axis (28) of said second wheel (24);
a track (30) positioned about and in contact with said first and second wheels (22,24) and having a preselected tension relative to said first and second wheels (22,24);
power means (36) for rotating said first wheel (22) for driving said track (30); and
means (50) for controllably pivotally moving said second element (20) relative to said first wheel (24) for controllably maintaining a preselected tension in said track (30) relative to said first and second wheels (22,24).

4,227,749

TRACK TENSIONING APPARATUS AND METHOD FOR TRACK-TYPE VEHICLES

Hans G. Hesse, Munich, Fed. Rep. of Germany, assignor to CON-TECHNIK GmbH, Fed. Rep. of Germany
Filed May 17, 1978, Ser. No. 906,448
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722457

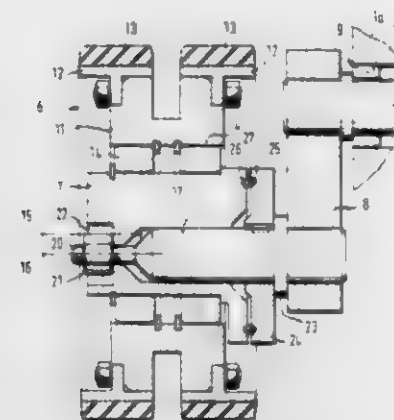
Int. Cl.³ B62D 55/30

U.S. Cl. 305—30

11 Claims

1. Track tensioning apparatus for track type vehicles having a track, a track frame, and an idler wheel engageable with said track, said track tensioning apparatus comprising:
bearing means rotatably mounting said idler wheel to rotate about an idler wheel axis, said bearing means comprising a bearing pin having an eccentric bore whose axis is spaced from and parallel to said idler wheel axis;
support means including a support journal received by said

eccentric bore of said bearing pin for supporting said bearing pin to selectively pivot about the axis of said support journal; and



adjustable lock means for adjustably locking said bearing pin with said support journal so that said idler wheel axis is in a predetermined angular position with respect to the axis of said support journal.

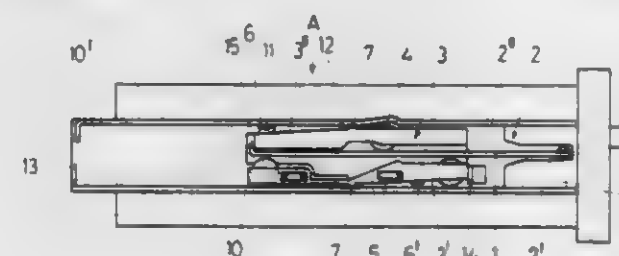
4,227,750

PULL-OUT GUIDE FOR DRAWERS

Erich Röck, Höchst, and Bernhard Mages, Dornbirn, both of Fed. Rep. of Germany, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria
Filed Oct. 31, 1978, Ser. No. 956,998
Claims priority, application Austria, Nov. 17, 1977, 8203/77
Int. Cl.³ F16C 29/04; A47B 88/04

U.S. Cl. 308—3.8

13 Claims



1. A pull-out guide assembly for use on each of opposite sides of a drawer in an article of furniture of the type wherein a drawer is slidably insertable into and removable from a furniture body, said pull-out guide assembly comprising:

- a supporting rail and a pull-out rail adapted to be mounted on adjacent sides of the body and the drawer at positions to extend substantially horizontally and to be relatively longitudinally movable when the drawer is pushed into or pulled out from the body, said supporting rail and pull-out rail having respective vertically spaced and horizontally extending flanges;
- at least two roller means, positioned for rolling contact on said horizontally extending flanges, for taking up vertical forces between said pull-out rail and said supporting rail when the drawer is positioned within the body;
- said roller means being mounted within and supported by a carriage which is longitudinally movable with respect to said supporting and pull-out rails, said carriage comprising a single rigid and inflexible member extending longitudinally of said supporting and pull-out rails, said carriage and said rails being dimensioned such that said carriage is unitarily and completely tiltable in a single direction with respect to said rails about a horizontal axis transverse to the longitudinal direction of said rails only when said supporting rail and said pull-out rail are relatively longitudinally moved to a maximum drawer pull-out position;
- plural locking means staggered in said longitudinal direction for locking said carriage in one of said rails when said rails are moved to said maximum drawer pull-out position,

each said locking means comprising a projection and aperture provided on said carriage and said one rail in relative positions such that said projection extends into said aperture when said carriage is tilted about said axis; and
said one rail having at an inner end thereof, with respect to the direction of movement of the drawer, stop means for limiting the relative longitudinal movement between said carriage and said one rail.

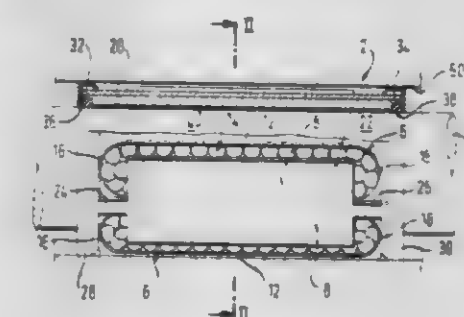
4,227,751

BALL BUSHING WITH AXIAL EXTENDING BALL GUIDES

Ernst Albert, Sand, Fed. Rep. of Germany, assignor to Deutsche Star Kugelhalter GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Jan. 16, 1979, Ser. No. 3,855
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803615; Apr. 6, 1978, 2814917
Int. Cl.³ F16C 29/06

U.S. Cl. 308—6 C

24 Claims



1. Ball bushing arrangement for an axially elongated ball guide for shafts and the like comprising a housing having an axially elongated bore therethrough, an axially elongated tubular shaped cage positioned within said housing bore and having a plurality of endless ball loops therein extending in the axial direction of the cage, said cage having a radially inner surface and a radially outer surface, said ball loops spaced circumferentially apart around said cage and each containing a plurality of balls, each said loop having a first ball duct for a row of loaded balls and a second ball duct for a row of unloaded balls, each first ball duct being open through the radially inner and radially outer surfaces of said cage, each said ball loop arranged with said first ball duct therein adjacent to said first ball duct in the adjacent said ball loop along one axially extending side and said second ball duct therein adjacent to said second ball duct in the adjacent said ball loop along the other axially extending side, a joint race insert extending in the axial direction of said race along the radially outer surface and covering two adjacent said first ball ducts, wherein the improvement comprises that each said joint race insert is formed of a thin wall material which is elastic with respect to bending forces and is unyielding in the thickness direction thereof, said joint race insert being displaceable by said balls in said first ball ducts radially outwardly against the surface of said housing bore laterally enclosing said ball bushing.

4,227,752

STAGED BEARING SURFACE COMPLIANCE FOR HYDRODYNAMIC FLUID BEARING

Donald F. Wilcock, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.
Filed Dec. 29, 1978, Ser. No. 974,258
Int. Cl.³ F16C 17/06, 32/06

U.S. Cl. 308—9

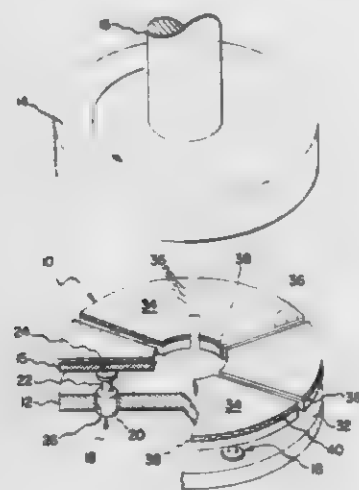
11 Claims

1. A resilient compliant hydrodynamic fluid bearing, comprising:
a stationary member and a relatively movable member, said members defining therebetween a gap;
a plurality of pads supported by said stationary member for

tilting about axes parallel to the plane of said stationary member;

each of said pads having a compliant bearing layer in opposed relationship to an opposing bearing surface on said movable member;

said compliant bearing layer including a thin, flexible bearing sheet having a bearing surface on one side thereof facing said opposing bearing surface, and a resilient, compliant supporting structure underlying said bearing sheet on the other side thereof for resiliently supporting said bearing sheet while permitting local deflections thereof;



flexure mounting means for tiltably mounting said pads on said stationary member to enable said pads to conform to large scale changes in the slope of said opposing bearing surface and to automatically maintain the correct large scale orientation of said bearing sheet while said compliant bearing layer resiliently deflects to respond to hydrodynamic fluid forces existing between said bearing surfaces to cause said bearing sheet to assume a profile that is conducive to the establishment and maintenance of supporting hydrodynamic fluid films between said bearing surface, said flexure having an angular stiffness greater than one tenth of the angular stiffness of said compliant supporting structure.

4,227,753

COMPLIANT GAS THRUST BEARING WITH PROFILED AND APERTURED THRUST RUNNER

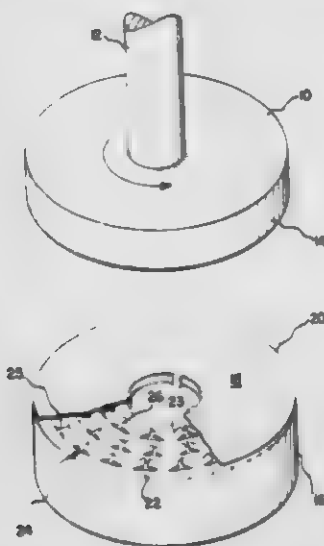
Donald F. Wilcock, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,260

Int. Cl.³ F16C 19/00

U.S. Cl. 308—09

24 Claims



1. A compliant fluid thrust bearing, comprising: a thrust plate and a relatively movable thrust runner, defin-

ing therebetween a gap for receiving a compliant bearing assembly;

a compliant bearing assembly disposed within said gap and including a flexible bearing sheet facing said thrust runner, and a resilient supporting element operatively engaged with said thrust plate for resiliently supporting said bearing sheet;

said thrust runner having an axially facing bearing surface facing said bearing assembly, and said bearing sheet having an axially facing bearing surface facing the bearing surface at said thrust runner;

said thrust runner having formed on said bearing surface thereof a profile which induces hydrodynamic supporting fluid pressure areas to support said thrust runner upon movement thereof relative to said sheet; and

means in said thrust runner defining openings in the bearing surface thereof for admitting externally pressurized fluid for cooling and hydrostatic purposes.

4,227,754

ROLLING BEARING

Magnus Kellström, Partille, Sweden, assignor to SKF Industries, Inc., King of Prussia, Pa.

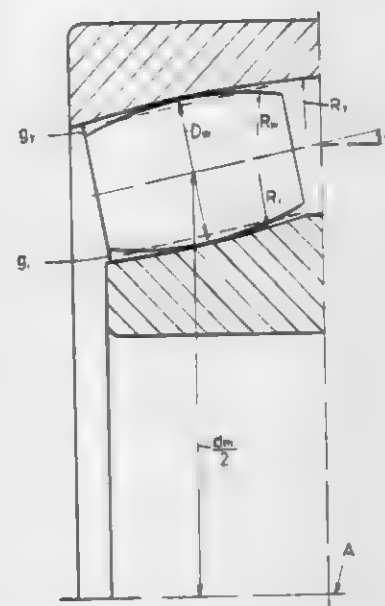
Filed Mar. 26, 1979, Ser. No. 23,625

Claims priority, application Sweden, Apr. 11, 1978, 7804017

Int. Cl.³ F16C 19/26, 33/58

U.S. Cl. 308—177

2 Claims



1. A rolling bearing incorporating outer race ring, inner race ring, race tracks arranged therein and rolling bodies rolling in said race tracks, wherein at least one of the axial section profiles of the race tracks and rolling bodies in the common contact positions between rolling body and race track is curved, so that the bearing osculation ratio g/g_y , wherein g and g_y are the spaces between the envelope surface of the rolling body and the race track of the inner race ring and the outer race ring respectively taken along a normal to the rolling body axis located at a distance from the rolling body centre of a non-loaded bearing, is greater than

$$0.5 + 0.5 \left[\frac{1 + \gamma}{1 - \gamma} \right]^{1.5}$$

in which

$\gamma = D_w \cos \alpha / d_m$ and

D_w = the rolling body diameter,

α = the bearing contact angle and

d_m = twice the distance between the rolling body centre and the bearing axis.

4,227,755

BEARING ARRANGEMENT FOR SHAFT OF ROTARY COMPRESSOR

Anders Lundberg, Norrköping, Sweden, assignor to Stal Refrigeration AB, Norrköping, Sweden

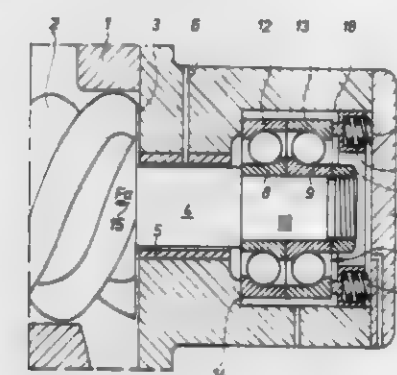
Filed Oct. 19, 1978, Ser. No. 952,795

Claims priority, application Sweden, Oct. 24, 1977, 7711928

Int. Cl.³ F16C 27/04

U.S. Cl. 308—184 R

7 Claims



1. In a rotary compressor, the combination of a housing, a rotor mounted in the housing and having a shaft, the rotor and shaft being subjected to an axial force in one direction while the compressor is loaded and tending to move axially in the opposite direction when the compressor is unloaded, a slide bearing in which the shaft is journaled in the housing with a clearance radially of the shaft, an anti-friction bearing mounted on the shaft and journaled to the shaft to hold the shaft against axial displacement in either direction with respect to said anti-friction bearing, the housing having a fixed support surface against which the anti-friction bearing abuts axially in said one direction and which allows radial movement of the anti-friction bearing, and yielding means pressing the anti-friction bearing against said support surface with a predetermined precise force, the anti-friction bearing including anti-friction means holding the shaft against axial displacement in both directions while the anti-friction bearing is pressed against said support surface.

4,227,756

HIGH TEMPERATURE LOW FRICTION SURFACE COATING

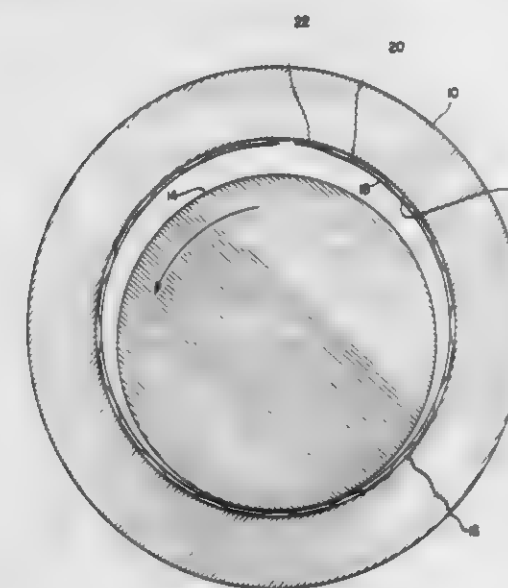
Bharat Bhushan, Watervliet, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,264

Int. Cl.³ F16C 17/00, 33/00

U.S. Cl. 308—241

4 Claims



1. In a compliant hydrodynamic gas bearing for high temperature applications, a flexible bearing sheet with one bearing

surface, and a relatively rotating rigid member with an opposing bearing surface, the improvement comprising:

a flexible coating of less than 12 microns thickness on the bearing surface of the flexible bearing sheet, including a layer of CdO and graphite in proportions of about 1:3 by weight, dispersed in a fused matrix of 28%–32% by weight sodium silicate.

4,227,757

SAFE FOR STORAGE OF PAPER MONEY AND OTHER VALUABLES

Werner Ringe, Geesthacht, and Harry David, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,218

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1978, 2805252

Int. Cl.³ E05G 1/00; B65G 19/00

U.S. Cl. 312—97

21 Claims

1. A safe for storage of paper money or other valuables, comprising a housing having a first opening and at least one additional opening; a first indexible conveyor mounted in said housing and including a plurality of receptacles for storage of valuables therein, one of said receptacles being accessible via said first opening during each interval of dwell of said conveyor between successive indexing movements thereof; means for indexing said conveyor at the will of the operator, including operator-actuated means for starting said conveyor; means for blocking the indexing movements of said conveyor; time-delay means for deactivating said blocking means with a preselected delay following the actuation of said means; an additional conveyor having a plurality of additional receptacles and being indexible to place a different additional receptacle into register with said additional opening upon termination of each indexing movement of said additional conveyor; means for indexing said additional conveyor, including operator-actuated means for starting said additional conveyor; means for blocking the indexing movements of said additional conveyor; and time-delay means for deactivating said last mentioned blocking means with a preselected delay following the activation of said last mentioned starting means.

4,227,758

CONNECTORS FOR HOLDING TOGETHER MODULAR ARTICLES

George M. Clare, 299 Hartshorn Dr., Short Hills, N.J. 07078

Filed Apr. 20, 1978, Ser. No. 897,960

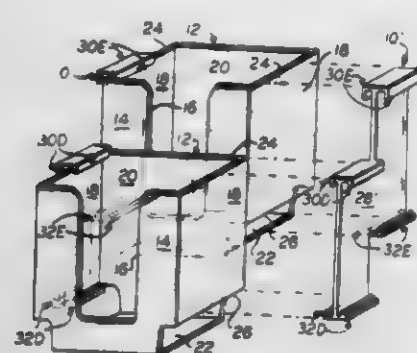
Int. Cl.³ F16B 12/00; A47F 3/14

U.S. Cl. 312—107

12 Claims

1. A connector for holding together a plurality of modular articles each of the type having a pair of spaced apart upper and lower edge portions, said connector comprising an elongated flexible web member and a plurality of retainer members connected to said web member for support thereby, each of

said retainer members including a pair of oppositely facing channels for each of the modular articles to be held together, each channel receiving and retaining a respective edge portion of said pair of upper and lower edge portions, said web mem-



ber having sufficient flexibility to permit one of the channels of said pair of channels to deflect to snap over the associated edge portion of a modular article, and said retainer members being positioned to hold the plurality of modular articles together in a predetermined configuration.

4,227,759

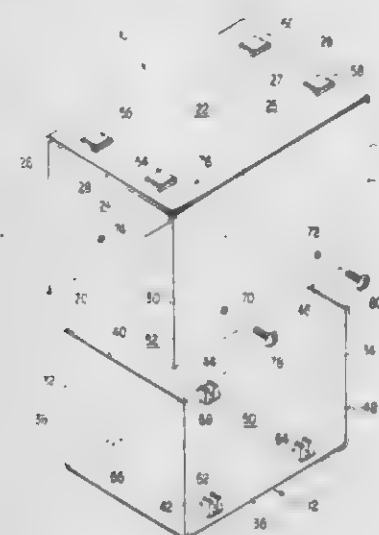
CONTAINER HAVING THREADABLE CLIP MEMBERS AND METHOD OF ASSEMBLING SAME

Walter Lee, Springfield, Va., and Kenneth C. Litt, Silver Spring, Md., assignors to Pace Incorporated, Silver Spring, Md.
Continuation-in-part of Ser. No. 773,290, Mar. 10, 1977. This application Mar. 21, 1978, Ser. No. 888,768

Int. Cl.² B65D 7/00; A47B 43/00

U.S. Cl. 312-257 R

5 Claims



1. A container comprising two channel-like members which mate with one another to form an enclosure and a plurality of threadable clip members attached to the channel-like members, each threadable clip members having a threadable slot where (a) the slots of certain ones of the clip members respectively receive predetermined edges of the channel-like members and (b) screws or the like may be threaded in the slots of the remaining ones of the threadable clip members, the screws extending through holes provided in the channel-like members to thereby secure the latter members together.

4,227,760

LAMP SOCKET STRUCTURE

Roman J. Witek, Jr., Gibraltar, Mich., assignor to International Telephone and Telegraph Corporation

Filed May 11, 1979, Ser. No. 38,063

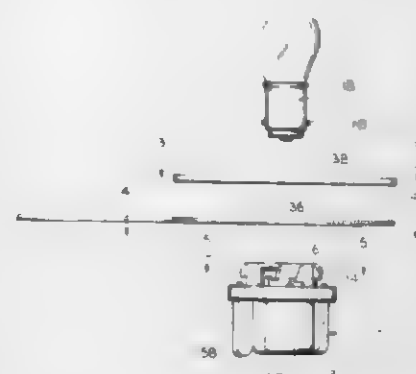
Int. Cl.³ H01R 4/66

U.S. Cl. 339-14 R

8 Claims

1. A lamp socket comprising a cup-shaped socket open at one end thereof, a tubular wall extending from said one end to form a cavity in said socket for receiving a bayonet-type bulb,

an annular platform extending outwardly from said wall, said platform terminating in an upturned rim flange, a conductive ring within said cavity adjacent the wall thereof for conductive grounding contact with a bulb ferrule, said ring including spaced terminal portions arrayed in said annular platform, spaced openings in said tubular wall in communication with said platform for receiving respective bulb contacting mem-



bers, each said last-mentioned member including an inwardly directed portion for compressively engaging a lamp contact, an intermediate contact member portion extending through the wall opening to a terminal portion in said platform, said terminal portions being spaced midway between the terminal portions of said ring, each said terminal portion including a spring contact or lanced therefrom angled above the rim flange equally spaced about said platform.

4,227,761

FUSE HOLDER WITH ENTRY CONTROL

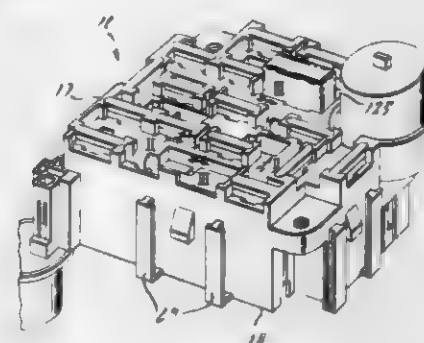
Thomas M. Cairns, Birmingham; John H. Dewar, Grosse Ile, and Emmons F. Sumner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 1, 1979, Ser. No. 16,468

Int. Cl.³ H01R 13/631

U.S. Cl. 339-66 M

3 Claims



1. A fuse terminal block assembly having a terminal block with a passage containing a fuse holder so that a blade contact of a fuse can be inserted into said passage for connection to said fuse holder;

said passage having an entry control means for guiding the blade contact of the fuse toward the fuse holder;

said fuse holder including a spring clip with two mirror image prongs folded back on themselves so that the blade contact of the fuse can be held resiliently between the two prongs;

said entry control means extending from each side of said passage over at least a portion of each of said two prongs so that the blade contact of the fuse is guided between the two prongs thereby insuring a good electrical connection and is prevented from entering the region between the passage wall and one of the prongs; and

a connector body with a central opening having therein said entry control means, said connector body being removable from said terminal block so that there is provided a cavity sufficiently large for the insertion of a circuit breaker with blade contacts reaching the same contact

points in said fuse holder as a fuse which is associated with said entry control means in said connector body.

4,227,762

ELECTRICAL CONNECTOR ASSEMBLY WITH LATCHING BAR

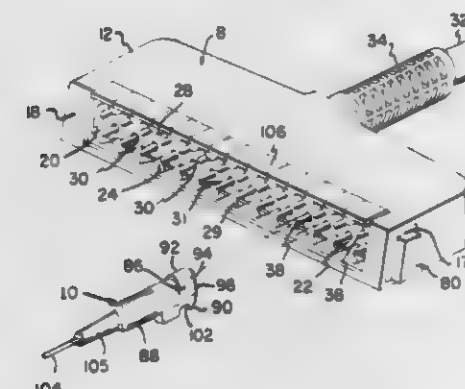
Jack F. Scheiner, Litchfield, N.H., assignor to Vaughn Corporation, Salisbury, Mass.

Filed Jul. 30, 1979, Ser. No. 61,981

Int. Cl.³ H01R 13/62

U.S. Cl. 339-91 R

16 Claims



1. An electrical connector assembly comprising, in combination:

a main terminal connector associated with a master cable comprising

(1) a housing having a receiving end, said receiving end defining an elongated opening exposing a cavity having a first plurality of grooves each of a first predetermined cross-sectional shape on one side of said cavity and a second like plurality of grooves each of a second cross-sectional shape, on the other side of said cavity, said first and second plurality of grooves opposing one another so as to form a like plurality of contiguous passageways from said opening to the back of said cavity;

(2) a plurality of terminal pins supported with respect to said housing, each of said pins being electrically connectable to said master cable, said pins being associated in pairs, the two pins of each pair being disposed in a spaced-apart relationship in a corresponding one of said passageways;

(3) a slot formed in said housing on said one side of said cavity transverse to said first plurality of grooves;

(4) an elongated locking bar having formed along its length thereof a plurality of spaced-apart notches, each notch being associated with a corresponding one of said grooves of said first plurality, said bar being mounted within said slot for movement between (a) a locking position wherein said notches are spaced from the grooves of said first plurality and said bar partially obstructs each of said passageways, and (b) an unlocking position wherein each of said notches is substantially aligned with a corresponding one of said grooves of said first plurality so that each of said passageways is substantially unobstructed; and

(5) biasing means for biasing said locking bar in said locking position; and

at least one plug associated with a single cable including an insertion end having a cross-section so as to be slidably receivable in a snug-fitting manner in any one of said passageways to a fully inserted position, said plug comprising a pair of terminal openings in said insertion end, and means disposed in each opening and electrically-connectable to said single cable, for receiving and making electrical contact with the corresponding terminal pins disposed in said one passageway when said plug is in said inserted position, said insertion end including (a) means cooperative with said bar for moving said bar from said locking position to said unlocking position against said

biasing means when said plug is slid in said passageway to said inserted position, and (b) locking means cooperating with said locking bar when said plug is in said inserted position and said locking bar is in said locking position, for locking said plug in said passageway.

4,227,763

COMMONING CONNECTOR

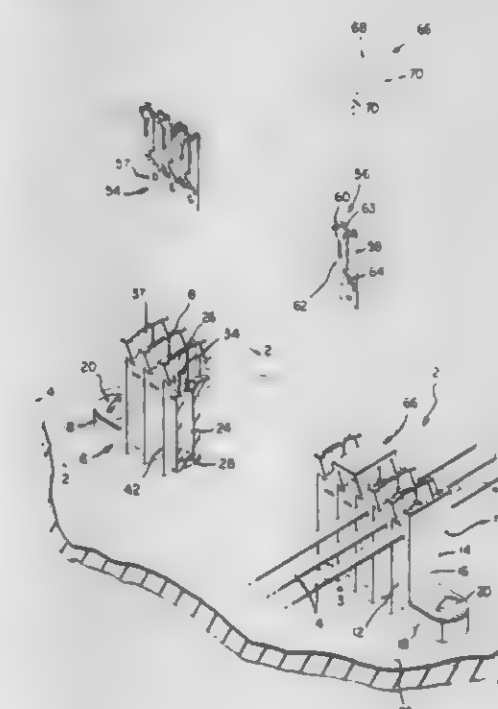
Richard L. Marks, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 895,173, Apr. 10, 1978, abandoned. This application Apr. 9, 1979, Ser. No. 28,479

Int. Cl.³ H01R 4/24, 11/20

U.S. Cl. 339-99 R

5 Claims



1. An electrical connector for commonly connecting a variable number of electrical conductors in at least two separate groupings, said connector comprising:

an insulating housing having a wire-receiving face, a base, parallel sidewalls and parallel endwalls extending between said wire-receiving face and said base,

a plurality of parallel side-by-side terminal-receiving cavities extending into said wire-receiving face, said cavities being arranged in a single row which extends between said endwalls, adjacent cavities in said row being separated by parallel spaced-apart barrier walls which extend between said sidewalls, each of said barrier walls having a carrier strip-receiving slot therein extending from said wire-receiving face to said base,

at least two strips of terminal devices in said housing, each of said strips comprising at least two independent spaced-apart terminals extending from an integral carrier strip, said terminals being disposed in at least two adjacent cavities in said housing with said carrier strip extending through said carrier strip-receiving slots in the barrier wall at a location adjacent to said base, each of said terminals comprising a first plate portion which is coplanar with, and which extends laterally from, said carrier strip, said first plate portion being reversely formed at said wire-receiving face to define a second plate portion which extends towards said carrier strip, said first and second plate portions having wire-receiving slots therein for reception of a wire, and

wire-admitting slots in each of said sidewalls, and wire-admitting slots being aligned with said wire-receiving slots in said terminals whereby,

wires can be commonly connected by locating said wires adjacent to said wire-receiving face with their axes extending normally of said sidewalls and in alignment with said wire-

admitting slots and said wire-receiving slots, and thereafter moving said wires laterally of their axes, into said wire-receiving slots of said terminals.

4,227,764

CONNECTOR AND ADAPTER SYSTEM

Earl D. Fluke, Excelsior Springs, Mo., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

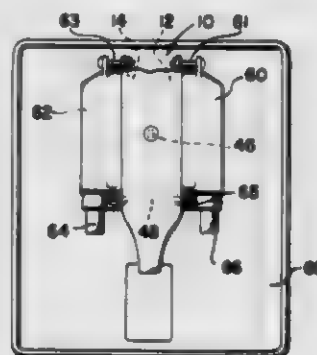
Continuation of Ser. No. 798,781, May 20, 1977, abandoned.

This application Nov. 7, 1978, Ser. No. 958,479

Int. Cl.³ H01R 13/60, 25/06

U.S. Cl. 339—121

7 Claims



1. An electrical connector assembly for connecting each wire of a plural wire input cable to preselected wires of a pair of output cables or the like, comprising:

first electrical connector means having an input side composed of a plurality of first electrical contact portions and an output side composed of a plurality of second electrical contact portions coupled to said first contact portions and adapted for interconnection to a mating connector means coupled to one of said pair of output cables;

second electrical connector means having an input side composed of a plurality of first electrical contact portions and an output side composed of a plurality of second electrical contact portions coupled to said first contact portions and adapted for interconnection to a mating connector means coupled to the other of said pair of output cables;

said input sides of first and second electrical connector means being spaced apart and oriented toward each other; support means including a molded protective enclosure between said first and second electrical connector means about said input sides thereof to secure said first and second electrical connector means relative to each other in a predetermined physical relation;

conductor means for coupling each wire of said input cable to respective first contact portions of each of said first and second electrical connector means;

said molded protective enclosure providing a strain relief coupling of said wires of said input cable to said conductor means; fastening means for enabling secureance of said connector to a mounting means, including a fastener-receiving aperture extending through said molded protective enclosure of said support means between said first and second electrical connector means;

mounting means comprising a mounting member having at least one threaded aperture for threadably receiving a fastener element disposed through said fastener-receiving aperture of said fastening means to thereby secure said connector assembly to said mounting member; and, said mounting member having a predetermined array of individual punch-outs to facilitate secureance of said mounting member to an electrical connector box having plural mounting points corresponding to at least selected ones of said array of individual punch-outs.

4,227,765

COAXIAL ELECTRICAL CONNECTOR

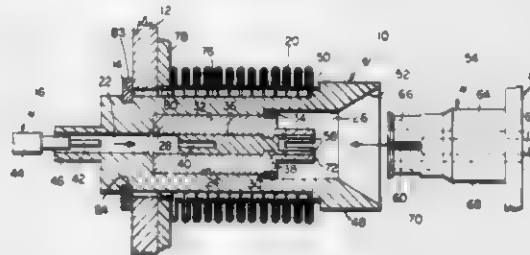
George J. Neumann, Bedford, and Barry Altschul, Framingham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 12, 1979, Ser. No. 11,618

Int. Cl.³ H01R 13/34

U.S. Cl. 339—143 R

14 Claims



1. A coaxial electrical connector comprising a substantially cylindrical body having spaced first and second end portions and an elongate central portion intermediate said end portions, said body having an axial bore therethrough, a tubular insulator fixed within said bore, a metal member within said insulator, said insulator and metal member extending coaxially within the bore and having ends shaped to interfit with electrical components to be mated therewith, a support member spaced from and encircling said first end portion of the body, a self-supporting, tubular, flexible, electrically conductive member spaced from and encircling said central portion of the body, said flexible member having one end fixed at, and electrically connected to, said support member and having its other end fixed and electrically connected to said second end portion of the body to support such body within the self-supporting tubular member, and means carried by said body for limiting travel of the body in a direction axially outward away from said support member.

4,227,766

SECURITY METHOD AND SYSTEM

Santiago I. Finale, 94 E. 18th St., Paterson, N.J. 07524

Filed Jan. 30, 1979, Ser. No. 7,754

Int. Cl.³ G08B 13/08

U.S. Cl. 339—147 R

10 Claims



1. A system for interconnecting a plurality of security surfaces into a main alarm line, comprising:

(a) a strip of electrically conductive foil placed about the periphery of each of a plurality of security surfaces;

(b) a plurality of foil bridges, each of said bridges installed between adjacent, partially overlapping security surfaces, among said plurality of security surfaces, said overlapping

security surfaces being movable with respect to each other;

(c) a plurality of single circuit loops, each of said loops themselves comprising a combination of mutually connected conductive strips of individual security surfaces, a connection of these security surfaces occurring through said foil bridges; and

(d) a main alarm line having as an input thereto each of an output of said single circuit loops.

4,227,767

ELECTRICAL CONNECTOR FOR PRINTED CIRCUIT BOARDS

Bob Mouissie, Berlicum, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 919,738, Jun. 27, 1978,

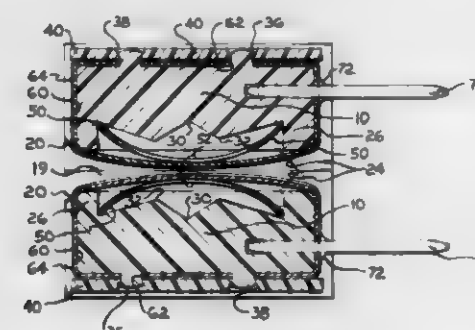
abandoned. This application Aug. 21, 1979, Ser. No. 68,350

Claims priority, application Netherlands, Jun. 30, 1977, 77268

Int. Cl.³ H01R 13/16

U.S. Cl. 339—176 MF

9 Claims



1. An electrical connector for a mating contact comprising a dielectric housing having a slot extending along the length thereof, at least one pair of opposed pairs of springs confined in said housing and flexible printed circuits covering said springs, said springs being restrained in an arcuately stressed condition and thereby being adapted to deflect and resiliently flex at their midpoints during insertion of a mating contact into said slot causing each spring to form a dual crested shape and thereby provide redundant pressure points between said flexible printed circuit and the mating contact.

4,227,768

MODULE FOR MOUNTING ELECTRICAL CONTACTS
Antony B. Clewes, Sherwood, and Thomas W. Bowley, Bramcote, both of England, assignors to TRW Inc., Los Angeles, Calif.

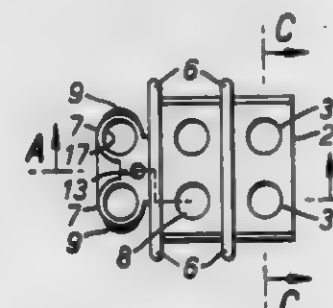
Filed Jan. 11, 1979, Ser. No. 2,802

Claims priority, application United Kingdom, Jan. 12, 1978, 1298/78

Int. Cl.³ H01R 9/10, 9/22

U.S. Cl. 339—198 H

5 Claims



1. An electrical terminal module for interlocking with other similar modules to form an extendable terminal block, comprising:

an electrically insulating, generally rectangular terminal member with a top and bottom opposite each other and

with first and second sides opposite each other, said top having a plurality of connector openings, each said opening for retaining an electrical connector device therein; first and second barrier member projecting from said top adjacent said sides;

a male coupling member disposed on said first terminal side and extending outwardly therefrom, said male coupling member having a pair of laterally spaced, projecting, ear-like members with an outwardly extending lug member disposed on each said ear-like member, said projecting, ear-like members and said lugs configured such that a second module can be joined thereto; and

a female coupling member disposed on said second side and extending outwardly therefrom, said female coupling member having a base with a plurality of connector openings formed therein, a first recess configured to interfit with the projecting, ear-like members of a second module and a second recess configured to interfit with the lug member of a second module, whereby a series of modules can be joined together by interfitting the male and female coupling members together.

4,227,769

PLANAR OPTICAL WAVEGUIDE COMPRISING THIN METAL OXIDE FILM INCORPORATING A RELIEF PHASE GRATING

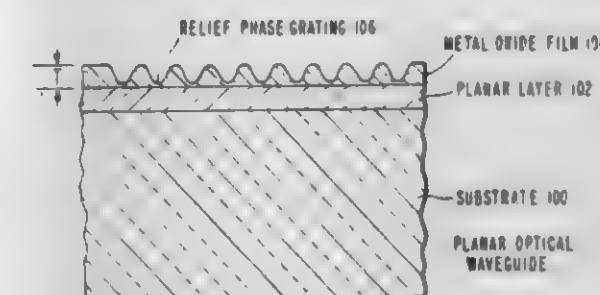
William Phillips, Princeton, N.J.; Clyde C. Nell, Levittown, Pa., and Jacob M. Hammer, Plainsboro, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,513

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.19

6 Claims



1. A planar optical waveguide comprising: a substrate composed of a first dielectric material exhibiting a first index of refraction, a planar layer composed of a second dielectric material exhibiting a second index of refraction greater than said first index of refraction said substrate supporting said planar layer, a metal oxide film coating said planar layer, said metal oxide film exhibiting a third index of refraction greater than said second index of refraction, and an optical-coupling relief phase grating incorporated on the exposed surface of said metal oxide film.

4,227,770

SUBMARINE FIBER OPTIC CABLE

Duncan A. Gunn, Great Dunmow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 22, 1978, Ser. No. 907,988

Claims priority, application United Kingdom, May 31, 1977, 22936/77

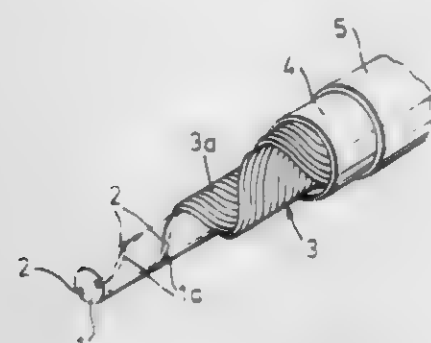
Int. Cl.³ G02B 5/16

U.S. Cl. 350—96.23

2 Claims

1. An optical fiber cable comprising: a central strength member formed by a metallic wire having formed on its outer surface a plurality of helical grooves; a single optical fiber laid in each of said grooves;

each optical fiber being enclosed in an electrically insulating material;
one or more layers of metallic wires wound helically over said fibers and said strength member, the direction of lay of all the wires of at least the layer of wires immediately



adjacent said optical fibers being opposite to that of said grooves and said fibers laid therein to avoid crushing of said fibers by said wires; and
a sheath surrounding said strength member and said optical fibers laid in said grooves thereon.

4,227,771

MONOLITHIC OPTICAL WAVEGUIDE HAVING A PLURALITY OF CORES

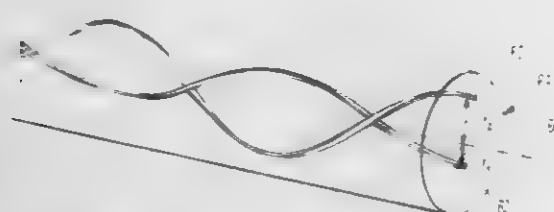
Daniel A. Nolan, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 840,242, Oct. 7, 1977, which is a continuation-in-part of Ser. No. 809,190, Jun. 23, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,282

Int. Cl.¹ G02B 5/14

U.S. Cl. 350—96.33

1 Claim



1. An elongate optical waveguide system having a longitudinal axis and adapted to support the propagation of electromagnetic signals along the length thereof, comprising:
 - a core member formed of a dielectric material having a first index of refraction and disposed in a helical locus about said axis;
 - a second core member formed of a dielectric material spaced in a helical locus about said axis substantially concentric with said first core member, said second core member being disposed radially outwardly of said first core member;
 - a cladding member formed of a dielectric material having an index of refraction less than the index of refraction of said core members and enveloping the helix defined by each core member.

4,227,772

PAVEMENT MARKER

Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 681,859, Apr. 30, 1976, abandoned. This application Apr. 20, 1977, Ser. No. 789,265

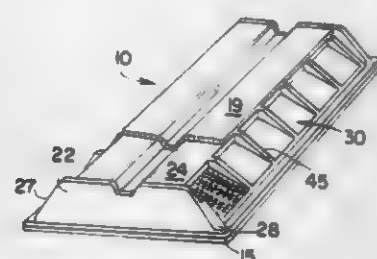
Int. Cl.¹ G02B 5/124

U.S. Cl. 350—103

17 Claims

1. A low-profile pavement marker for providing a marking signal on a roadway surface capable of reflecting daylight falling thereon and for reflecting light back toward the source thereof so as to be visible to a driver in an oncoming vehicle, said pavement marker comprising: a substantially solid base of

an opaque, light-diffusing synthetic resin having a generally horizontal bottom surface; said base having at least one support wall positioned in use in the direction of an oncoming vehicle, said wall having a plurality of inwardly extending recesses therein; a lens member of light-transmitting synthetic resin rigidly secured to said base, said lens member having a generally planar front face being so oriented as to make an acute angle of between about 15° and about 60° with said bottom surface to rise above the roadway surface upon which the pavement marker is to be installed; said lens member having a peripheral edge portion and a plurality of dividing portions intersecting said edge portion and dividing said lens member into a plurality of areas overlying and coextensive with said recesses formed in said support wall, said dividing portions and



said edge portion being sealed to said support wall, thereby to provide a plurality of independent and hermetically sealed cells; said lens member having a plurality of retrodirective cube-corner-type reflector elements formed therein and extending beyond said dividing portions and said edge portion and into said cells, said reflector elements being oriented to reflect light falling upon said front face of said lens member in the areas thereof corresponding to said cells back toward the source thereof to render said reflector structure highly visible at night; said base, and said support wall and said lens member in the areas corresponding to said dividing portions and said edge portion providing a reflector surface for reflecting daylight falling upon said marker to render said marker highly visible in daylight.

4,227,773

OBJECTIVE LENS SYSTEM FOR MICROSCOPES

Tsutomu Tojo, and Toshifumi Uetake, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

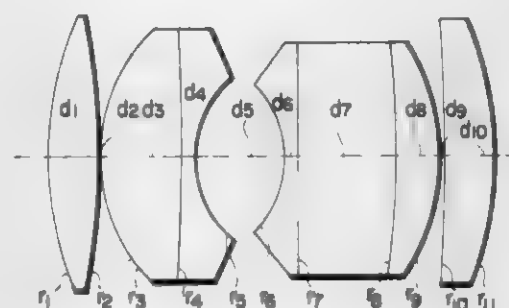
Filed Aug. 24, 1978, Ser. No. 936,394

Claims priority, application Japan, Aug. 26, 1977, 52-102358

Int. Cl.¹ G02B 9/34, 9/60

U.S. Cl. 350—175 ML

11 Claims



1. An objective lens system for microscopes comprising a front lens group and a rear lens group, said front lens group consisting of a first positive lens component and a second negative meniscus lens component having a concave surface on the image side, and said rear lens group comprising at least two lens components including a cemented three element component, said rear lens group comprising a third cemented meniscus lens component having a concave surface on the object side and a fourth positive lens component, and said objective lens system satisfying the following conditions:

OCTOBER 14, 1980

GENERAL AND MECHANICAL

609

$$0.12f < d/n < 0.2f$$

(1)

$$45 \leq |v_p - v_n| + |v_n' - v_p'| \leq 105$$

(2)

$$0.8 < |r_6/r_5| < 1.1$$

(3)

wherein the reference symbols r_5 and r_6 represent radii of curvature on the image side surface of the second lens component and the object side surface of the third lens component, the reference symbol $\Sigma d/n$ designates total sum of ratios between thicknesses and refractive indices of the respective lens elements of the third lens component, the reference symbols v_p and v_n denote Abbe's numbers of the first lens component and the negative element of the second lens component in the front lens group, the reference symbols v_p' and v_n' represent Abbe's numbers of the positive lens element and negative lens element of the third lens component in the rear lens group and the reference symbol f designates focal length of the entire lens system as a whole.

4,227,774

PANEL FOR CONTROLLING LIGHT PASSAGE

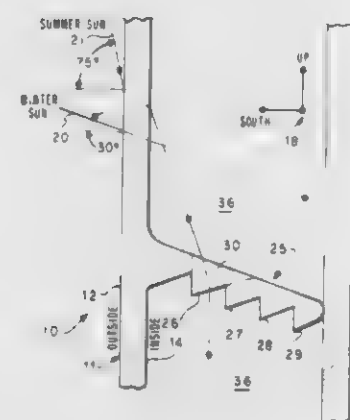
James A. Corli, #1 Westlake Dr., North East, Albuquerque, N. Mex. 87012

Filed Apr. 3, 1979, Ser. No. 26,740

Int. Cl.¹ G02B 17/00, 27/00

U.S. Cl. 350—263

24 Claims



1. A panel suitable for vertical disposition having light passing properties which vary with the angle of incidence of light upon it, comprising:

- a first transparent element adapted for arrangement to receive incident upon it from first and second angles, said first angle being larger than said second angle from normal said transparent element,
- a second transparent element, including a plurality of light refracting portions,
- said second transparent element being carried by said first transparent element,
- said plurality of light refracting portions being disposed to control the light from said first angle of incidence from passing said panel.

4,227,775

COLLOIDAL LIGHT VALVE HAVING ENHANCED IMAGE CONTRAST

George W. Goodrich, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 21, 1978, Ser. No. 972,138

Int. Cl.¹ G02F 1/17

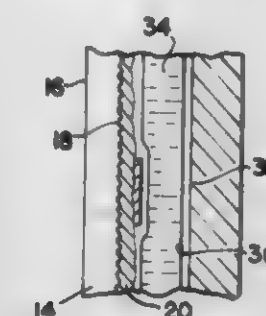
U.S. Cl. 350—267

8 Claims

1. A colloidal display having enhanced brightness comprising:

- a diffusely transmissive window having a front and rear surface, said diffusely transmissive window having a set of electrically conductive transparent electrodes disposed along said rear surface in a predetermined pattern;

- a rear substrate having a specularly reflective front surface and a rear surface;
- a thin peripheral spacer disposed between the rear surface of said window and the front surface of said rear substrate forming an enclosed chamber between said window and rear substrate;



- a colloidal suspension of dichroic dipole particles disposed in said chamber and filling the space between said window and rear substrate; and
- means for applying an electrical potential between the individual electrodes of said set of transparent electrodes and the specularly reflective surface of said rear substrate.

4,227,776

TURRET DEVICE

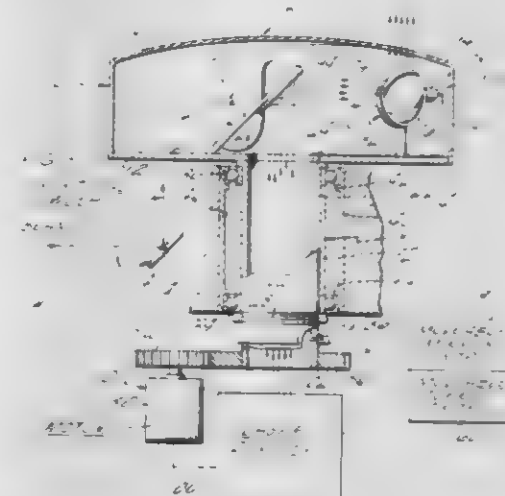
William A. Morton, North Palm Beach, and John L. Caporini, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 27, 1968, Ser. No. 733,223

Int. Cl.¹ G05D 25/00; F21K 27/00

U.S. Cl. 350—285

3 Claims



1. A turret device for directing a laser beam comprising, an enclosure having a cutout portion, support means for supporting said enclosure, an opening through said support means, said enclosure having a cylindrical member fixed thereto, said cylindrical member passing through said opening, said cylindrical member being mounted for rotation relative to said support means, a laser device for emitting a laser beam of high power and directing it into said cylindrical member and enclosure, means for rotating said enclosure, an optical system in said enclosure for directing said laser beam in said enclosure through said cutout portion, wherein said optical system includes a first reflecting surface located in line with said cylindrical member, and a second reflecting surface positioned to receive a reflective beam from said first reflecting surface, the second reflecting surface being pivotally mounted to provide for an angular range of output through said cutout.

4,227,777

LIQUID CRYSTAL DISPLAY CELL

Tomomi Murakami, Higashiyama, Japan, assignor to Citizen Watch Company, Limited, Tokyo, Japan

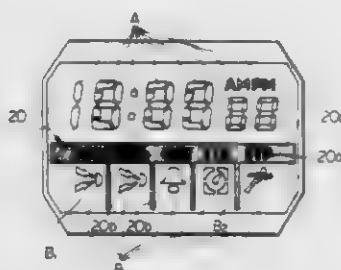
Filed Jan. 31, 1978, Ser. No. 873,961

Claims priority, application Japan, Feb. 3, 1977, 52-11944

Int. Cl.³ G02F 1/133

U.S. Cl. 350-334

3 Claims



1. A multicolor liquid crystal display cell comprising: a lower glass plate; an upper glass plate stacked above and secured to said lower glass plate in spaced relationship with respect to one another; an upper polarizing plate attached to said upper glass plate and covering a surface portion thereof; at least two lower polarizing plates each of a different color and attached to said lower glass plate and covering different surface portions thereof; and a thin layer of non-transparent material integrally formed on said upper polarizing plate at a position over and along a boundary line between said two lower polarizing plates to cover said boundary line, said thin layer comprising a printed paint layer and dividing a display surface of said display cell defined at the upper surface of said upper polarizing plate into first and second display blocks composed of a time display block and a function mode display block, respectively, and said thin layer including a plurality of characters indicating the display contents of said function mode display block.

4,227,778

LIQUID CRYSTAL MATERIAL MIXTURES AND DEVICES INCORPORATING SUCH MIXTURES

Edward P. Raynes, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 30, 1978, Ser. No. 955,751

Claims priority, application United Kingdom, Nov. 2, 1977, 45627/77

Int. Cl.³ G02F 1/13; C09K 3/34

U.S. Cl. 350-350 R

11 Claims

1. A mixture of liquid crystal materials for use in liquid crystal displays comprising at least one material of type A and at least one material of type B selected so that the resultant mixture has only one liquid crystal phase between crystal and isotropic states and has the value $\Delta V_c/V_c$ less than 0.2 over a temperature range of 40° C., wherein type A has the following phases with increasing temperature crystal working phase isotropic, type B has the following phases with increasing temperature crystal working phase smectic working phase isotropic, and the working phase is nematic or cholesteric.

4,227,779

HERMETIC SEAL FOR ELECTROCHROMIC DISPLAY

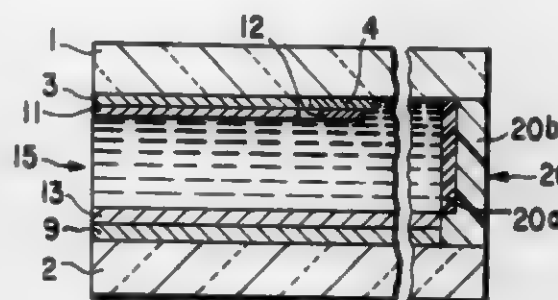
Saadi Bissar, and Douglas George, both of Waterbury, Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Apr. 9, 1979, Ser. No. 28,141

Int. Cl.³ G02F 1/17

U.S. Cl. 350-357

16 Claims



1. In an electro-optic display having spaced substrates carrying electrode means, a hermetic sealant between portions of the substrates defining a cell therebetween and an electrolyte in the cell,

an improved hermetic sealant providing an inner seal chemically formed in situ at the interface with the electrolyte by reaction therewith and an outer seal surrounding the inner seal, said sealant comprising a mixture of epoxy resin and a curing agent which reacts with the electrolyte at the interface to form a water repellant reaction product, said reaction product forming the inner seal, and which curing agent also reacts with the epoxy resin at areas of the sealant surrounding the interface to cure said resin and thereby form the outer seal.

4,227,780

EYE EXAMINING INSTRUMENT

Shinichi Ohta, Tokyo; Kazunobu Kobayashi, and Haruhisa Madate, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

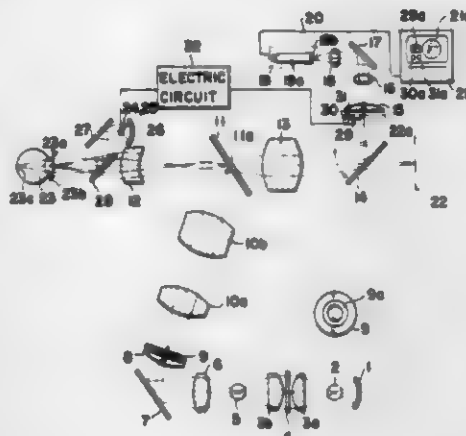
Filed Jun. 26, 1978, Ser. No. 918,923

Claims priority, application Japan, Jun. 29, 1977, 52-77449

Int. Cl.² A61B 3/14; G03B 29/00

U.S. Cl. 351-7

13 Claims



1. An eye examining instrument comprising: an eye examining system provided with an objective optical means; a signal generating source for generating elastic waves; a wave projection system for converging the elastic waves to the cornea of the eye which is spaced a predetermined distance from said eye examining system and for directing in a predetermined direction the waves generated by said signal generating source; detection means connected with said system for receiving said elastic waves and transforming them into an electric signal;

a wave receiving system for converging the elastic waves reflected upon the cornea of a human eye onto said detection means; and an electric circuit for subjecting said electric signal to a predetermined processing.

4,227,781

PROJECTION LAMP CONTROL

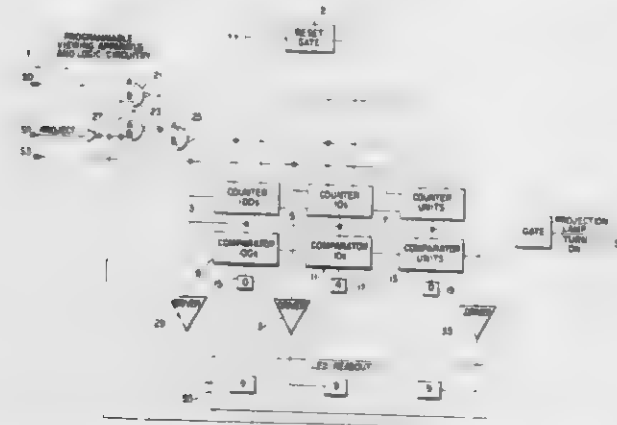
Herbert L. Hardy, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1979, Ser. No. 33,701

Int. Cl.³ G03B 21/32

U.S. Cl. 352-41

7 Claims



1. In a cinematographic method of operating a film cassette having opposite ends of an elongated film strip affixed to a supply spool and a takeup spool respectively by operating the cassette through repeated cycles comprised of alternately rotating the spools to transport the film strip for projection during a forward operation and to transport the film strip in an opposite direction during a rewind operation, the improved method comprising the steps of:

sensing the revolutions of one of said spools; responsive to each revolution of said one spool, incrementing a digital count in one direction during forward operations, in the opposite direction during rewind operations, and again in the one direction immediately at the end of rewind operations and prior to the start of an additional forward operation so that the position of the film strip is continuously measured with respect to said count; and controlling the energization of a projection lamp during forward movement of said film strip depending upon whether the count is above or below a predetermined number so as to preclude projection of the end portion and to project image frames located on said film strip adjacent the end portion.

4,227,782

CARD MOTION PICTURE PROJECTION SYSTEM

Phillip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 11, 1979, Ser. No. 47,141

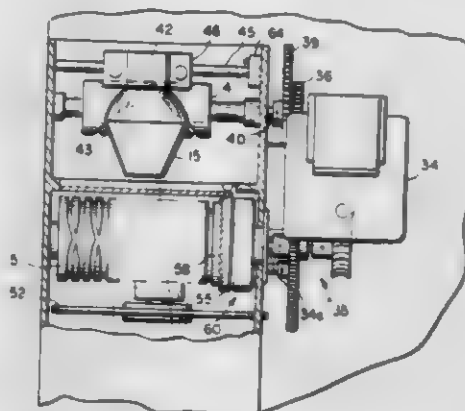
Int. Cl.³ G03B 41/00

U.S. Cl. 352-82

24 Claims

1. Projection apparatus for use with at least one sheet of photographic film having images recorded thereon in a plurality of arcuate rows, said apparatus comprising: means for supporting said film sheet for movement in a direction substantially normal to said arcuate rows and in a given film plane; optical means for illuminating one of a row of images located at a projection location in said film plane and for directing light therefrom along a given optical path from said projection location to a viewing screen so as to project the image thereon; means for mounting said optical means for movement of at least a portion thereof along an arcuate path generally

laterally of said first direction so as to thereby illuminate and direct light from any image in said row of images; and



drive means for alternately moving said film in its said given direction and said portion of said optical means along its said arcuate path to thereby project one or more images from any of said plurality of arcuate image rows.

4,227,783

DEVICE FOR STOPPING OR FIXING MOVING OR MOBILE COMPONENTS

Josef Draach; Gustav Firla, both of Vienna; Leopold Rollenitz, Totzenbach, and Robert Scheiber, Wiener Neudorf, all of Austria, assignors to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

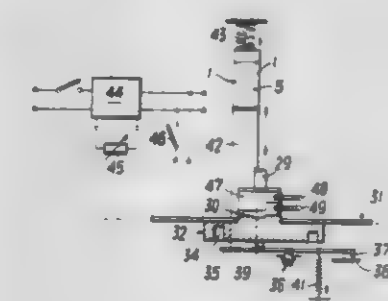
Filed Jul. 27, 1978, Ser. No. 928,448

Claims priority, application Switzerland, Jul. 29, 1977, 009413/77

Int. Cl.³ G03B 1/22

U.S. Cl. 352-194

9 Claims



1. In an intermittent drive apparatus for use in a cinematographic apparatus of the type for use with perforated film, said intermittent drive apparatus comprising: cam means for controlling transport of said film; claw means being controlled by said cam means and being adapted to transport said film, said claw means further being displaceable perpendicularly to the plane of said film to engage and disengage the perforation holes of said film in synchronism with the film-transport movement; biasing means urging said claw means in a direction for perforation engagement; electromagnetic means having an energized and a deenergized condition, wherein in said energized condition said electromagnetic means holds said claw means in a perforation disengaged position against the force of said biasing means;

the improvement wherein said intermittent drive apparatus further comprises movable element means for moving in an axial direction so as to follow the engaging and disengaging displacement of said claw means, said electromagnetic means comprising a core and a clamping member between which said movable element means is sandwiched, first additional biasing means for holding said movable element means at all times in contact with said core and said clamping member of said electromagnetic means, and second additional biasing means for holding

said movable element means at all times in contact with said claw means.

4,227,784

APPARATUS FOR PRE-EXPOSURE OF PHOTOGRAPHIC FILM

Vernon L. Kipping, 540 Melrose Ave., San Francisco, Calif. 94127

Filed Oct. 26, 1978, Ser. No. 955,015

Int. Cl.³ G03B 41/00

U.S. Cl. 352-244

4 Claims



1. A motion picture portable camera for flashing raw film immediately prior to exposure of said film to increase shadow detail, conserve illumination power and lower the initial inertia of exposure threshold of said film comprising a camera housing, an exposure aperture in said camera housing, a raw film magazine on one side of said exposure aperture for containing raw film having at least one image area, a take-up magazine on the side of said exposure aperture opposite said raw film magazine a flashing housing having a flashing aperture located between said raw film magazine and said exposure aperture dimensioned to expose substantially an entire image area of film, a lamp in said flashing housing, guide means for guiding film from said raw film magazine past said flashing aperture for exposure of said film independent of any exposure from a scene to be photographed, and film drive means for transporting film from said raw film magazine past said exposure aperture and into said take-up magazine and also at a uniform rate of linear movement past said flashing housing prior to passage past said exposure aperture, said camera housing, said raw film magazine and said flash housing comprising a single, extraneous light-free path for said raw film such that said raw film is first pre-flashed as it is continuously driven past said flashing aperture and excited and then exposed to the scene to be filmed as it is driven past said exposure aperture.

4,227,785

LIGHT IMAGE TRANSLATOR

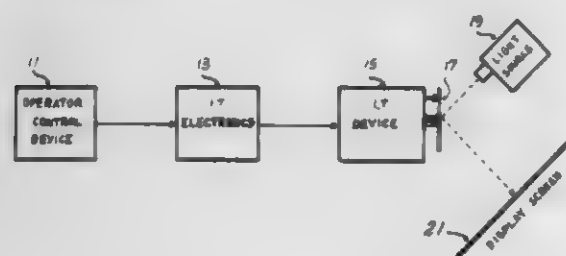
Henry J. Herbert, Santa Barbara, Calif.

Continuation of Ser. No. 837,880, Sep. 29, 1977, abandoned, which is a continuation of Ser. No. 675,636, Apr. 9, 1976, abandoned. This application Apr. 30, 1979, Ser. No. 34,437

Int. Cl.² G03B 21/28; G05D 25/00; A63J 17/00; G02F 1/00

U.S. Cl. 353-50

12 Claims



1. An image translation device adapted for use as an artistic tool for creating light images in response to the manipulations of an artist operator comprising:

an image reflector means mounted to be pivotable about first and second axes;

a control means grippable by the operator's hand and pivotable in response to operator arm movement for developing first and second control signals proportional to said arm movement and further responsive to a plurality of operator wrist movements for developing third and fourth control signals each proportional to a respective said wrist movement;

signal generating means for generating a first electrical signal having an amplitude and frequency and a second electrical signal having an amplitude and frequency, said signal generating means also controlling the amplitude and frequency of said first electrical signal to vary in response to respective first and second said control signals and controlling the amplitude and frequency of said second electrical signal to vary in response to respective third and fourth said control signals;

means for converting said first electrical signal into a force variable at a frequency and amplitude proportional to the frequency and amplitude of said first electrical signal and for converting said second electrical signal into a force variable at a frequency and amplitude proportional to the frequency and amplitude of said second electrical signal; and

means controlled by said first and second forces for oscillating said reflector means about said first and second axes respectively at said frequencies and in proportion to said amplitudes.

4,227,786

PHOTOPRINTING APPARATUS EMPLOYING BASE LINE CONTROL IMAGING FONT

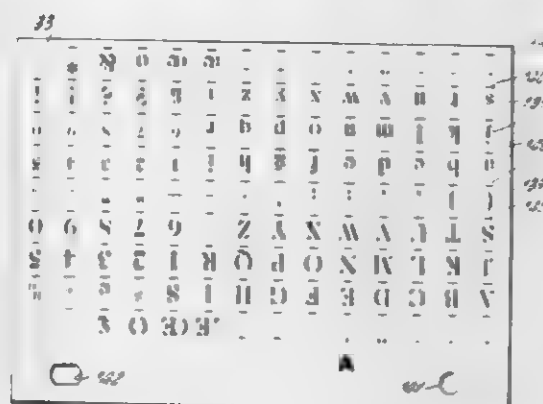
Milton J. Zorn, Scarsdale, N.Y.; Edward L. Slater, Fort Lauderdale, Fla.; Neil L. Maizner, Plantation, Fla.; Brian J. Eccles, Tamarac, Fla.; Hubert C. Minard, Margate, Fla.; Juko S. Otsuki, Coral Springs, Fla., and Daniel H. Sprengart, Miramar, Fla., assigns to Visual Graphics Corporation, Tamarac, Fla.

Filed Apr. 17, 1979, Ser. No. 30,762

Int. Cl.³ G03B 23/00, 17/26

U.S. Cl. 354-10

30 Claims



24. A photoprinter imaging font comprising a translucent planar sheet, a plurality of equally spaced symbols on said sheet, symbol orienting indicia for each symbol, each of said indicia being spaced from the optical center of its symbol an identical distance and spaced position locating and securing means adjacent at least one margin of said sheet.

4,227,787

BULB PHOTOGRAPHING CONTROL SYSTEM FOR AN ELECTRIC SHUTTER CAMERA

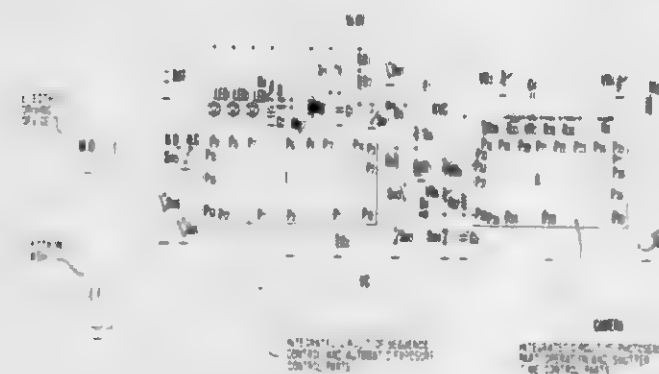
Hiroshi Aizawa, Kawasaki; Masami Shimizu, Tokyo; Masanori Uchidoi, Yokohama; Tokuichi Tsunekawa, Kanagawa; Yukio Iura, Yokosuka, and Masayoshi Yamamichi, Kawasaki, all of Japan, assigns to Canon Kabushiki Kaisha, Tokyo, Japan Continuation of Ser. No. 763,718, Jan. 28, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,530

Claims priority, application Japan, Feb. 4, 1976, 51/10996

Int. Cl.³ G03B 7/097, 9/62

U.S. Cl. 354-51

6 Claims



1. A bulb photographing control system, comprising:
(A) photo-sensing circuit means for receiving object light and for generating an electrical signal corresponding thereto for measuring object brightness;
(B) first switch means which is connected to the photo-sensing circuit means in an active state by the first step action of a shutter release;
(C) computing means which computes the exposure information on the basis of object brightness information from the photo-sensing circuit in correspondence with the closing action of the first switch means;
(D) shutter control means which is actuated by the closure of a shutter release switch and which is operated by a second step operation of the shutter release, said shutter closing control means having a time control circuit for controlling the operation time of the shutter;
(E) a power supply holding circuit provided with a shutter release switch which closes after the first switch means is closed by depression of a shutter release button and power supply holding means for maintaining power supply to each of the above stated means after the shutter release switch is closed; and
(F) bulb photographing control means having a bulb switch, positioned between said time control circuit and said first switch means, for selecting bulb photographing and normal photographing, and being designed to prevent generation of actuation signals from the time control circuit by closure of the bulb photographing switch, and to close the shutter by the actuation signal from the time control circuit after the closure of the first switch means.

4,227,788

PRINTED CIRCUIT ASSEMBLY

Masami Shimizu, Tokyo, and Hiroshi Aizawa, Machida, both of Japan, assigns to Canon Kabushiki Kaisha, Tokyo, Japan Continuation of Ser. No. 906,669, May 16, 1978, abandoned, which is a continuation of Ser. No. 737,576, Nov. 1, 1976, abandoned. This application Mar. 30, 1979, Ser. No. 25,721

Int. Cl.³ G03B 7/08

U.S. Cl. 354-60 R

28 Claims

1. A control circuit assembly in a device provided with:
a housing,
a plurality of mechanical parts compactly mounted in said housing, and
a plurality of electrical parts distributed within a plurality of

restricted spaces between said housing and said mechanical parts, said assembly comprising:

(a) a flexible electrically insulating circuit support substrate, said flexible support substrate being bent into a configuration to fit into a plurality of said restricted spaces within said housing;
(b) control circuit means for controlling at least one mechanical part of said plurality of mechanical parts, said circuit means being mounted on said substrate, and
(c) a plurality of electrical conductors for electrically connecting said plurality of electrical parts to said control means, said conductors being carried on said substrate and electrically connected to said control circuit means.

said plurality of electrical parts being electrically connected to said control circuit means through said conductors.

said flexible substrate being a single continuous substrate having a generally elongated shape in its extended state and having first and second substrate portions and a third substrate portion connecting said first and second portions



with each other, said third portion being connected with said first and said second portions at first and second connecting sections and being bent at a first place in the vicinity of said first section, and at a second place in the vicinity of said second section, and at a third place between said first and second sections; an angle between said first and said second portions being varied in accordance with the change in the bending angle of said third portion at the third place so that said first and said second portions are arranged in said restricted spaces;

the third portion, when the substrate is flat, having a first edge extending from the first portion to the second portion along a line which departs from a straight line and having a second edge which extends from the first portion to the second portion, said substrate being bent at the first and second places so that the third portion is substantially transverse to planes formed by the first and second portions in the vicinity of the first and second places, said first and second portions extending in longitudinal directions with an angle therebetween which depends upon the bending angle at the third place.

4,227,789

PHOTOGRAPHIC SYSTEM ACCESSORY FOR SMALL FORMAT FILM SHEETS

John J. Driscoll, Andover; Nicholas Gold, Arlington; Philip R. Norris, North Reading, and Richard R. Wareham, Marblehead, all of Mass., assigns to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1978, Ser. No. 902,064

Int. Cl.² G03B 17/02, 17/26, 17/52, 19/06

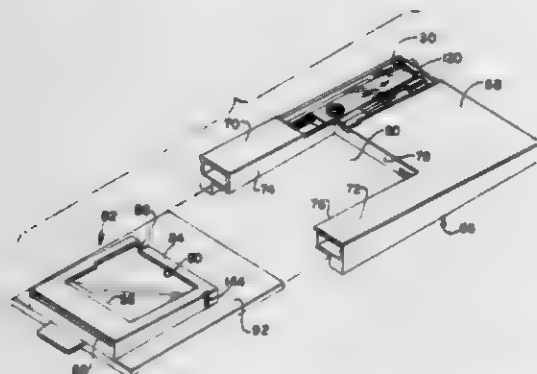
U.S. Cl. 354-86

12 Claims

1. In a self-processing photographic system including a camera normally intended to operate with a standard film pack in which film sheet assemblies are successfully presented at a window in an upper marginal wall of a film pack container, the camera having a well to receive and position a standard film pack for exposure of each film sheet assembly through the container window, a processing roller pair defining a pressure nip through which each film sheet assembly is passed for withdrawal from the film pack and ejection from the camera, and pick means for advancing each film sheet assembly from the

standard film pack to the pressure nip of the processing roller pair, the improvement comprising:

- an accessory for adapting the camera to expose small format film sheet assemblies carried in a modified film pack of a size smaller than the interior size of the well, said accessory comprising:
- a housing having exterior planar dimensions generally complementing the interior planar dimensions of the film pack well, said housing defining a recess to receive and position the modified film pack; and



means supported by said housing to transmit movement of the pick means of the camera to successive ones of the small format film sheet assembly presented upwardly from the modified film pack responsive to successive strokes of the pick means of the camera and for automatically returning to an initial position after each advancement of the pick means of the camera in readiness for movement of the next successive small film sheet.

4,227,790

AUTO/MANUAL FOCUS CONTROL MODE SELECTOR
Edwin K. Shenk, Westford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

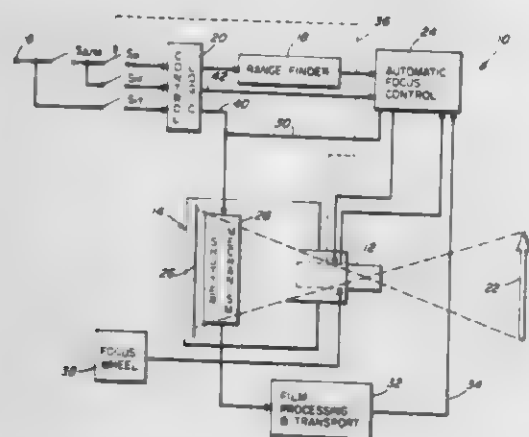
Continuation of Ser. No. 899,863, Apr. 25, 1978, abandoned.

This application Mar. 9, 1979, Ser. No. 19,257

Int. Cl.³ G03B 3/00

U.S. Cl. 354-195

9 Claims



1. A photographic camera comprising: means for defining an image plane; means for directing scene light along a given optical path to said image plane, said directing means including a lens assembly having a lens mounted for displacement over a focusing range wherein various positions thereof respectively serve to focus an image at said image plane of subjects positioned in various locations within a predetermined range of subject distances, and for further displacement from its said focusing range into a second range wherein it does not serve to focus images at said image plane of subjects positioned within said predetermined subject distance range;
- lens position sensing means actuable between an initial state and a second state for sensing that said lens has moved a predetermined minimum distance from a refer-

ence position within the said second range of said displaceable lens;

energizable first means for determining the distance between said camera and the position of a particular subject within said focusing range for producing a signal indicative of said particular subject distance;

manually actuable second means actuable between an initial state and a second state for selecting the focus control mode of said camera;

manually actuable third means actuable between an initial state and a second state for coupling said first means to a source of electrical energy when said second means is in its said second state;

drive means responsive to the second state of said lens position sensing means for driving said lens to said reference position within its said second range and for actuating said lens position sensing means to its said initial state, and responsive to said subject distance signal for positioning said lens to the correct subject-in-focus position, when said second means is in its said second state;

means responsive to said drive means for producing a signal indicating that said lens has been focused on a subject to be photographed; and

means responsive to said subject-in-focus signal for unblocking and blocking said optical path to produce an exposure interval.

4,227,791

LENS BARREL FOR FLASH PHOTOGRAPHY

Shinsuke Komoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

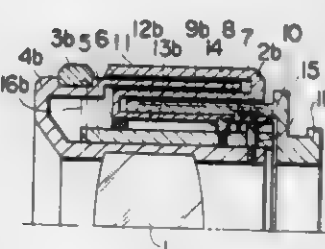
Filed Apr. 19, 1979, Ser. No. 31,691

Claims priority, application Japan, Apr. 20, 1978, 53/47073

Int. Cl.³ G03B 3/00

U.S. Cl. 354-196

2 Claims



1. In a lens barrel assembly including a fixed cylinder and in which a distance ring is coupled to an aperture ring for rotation relative to said fixed cylinder so that a correct exposure can be obtained in flash photography, the improvement comprising: rotating member means for rotation integrally with said aperture ring; and engaging means movable with respect to said fixed cylinder in the direction of an optical axis so that said aperture ring and said distance ring can rotate functionally with each other; and wherein: said fixed cylinder has a cam groove therein, and said distance ring has a pin engaging said cam groove; said engaging means has a cam groove means for rotating said rotating member means; said distance ring has a lead groove and a circumferentially extending groove; said engaging means has a pin engaging said circumferentially extending groove; and said rotating member means has a pin engaging said lead groove of said distance ring and the cam groove means of said engaging means.

4,227,792

DEVICE FOR SETTING EXPOSURE TIME AND APERTURE SIZE ON CAMERAS

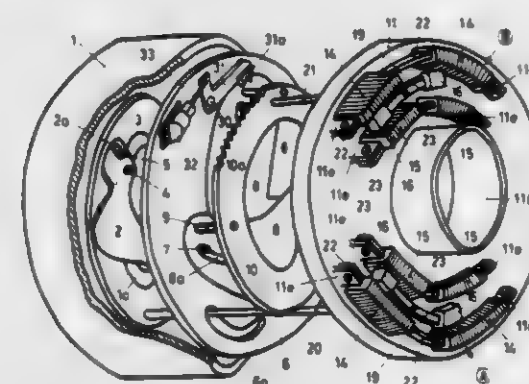
Waldemar Rentschler, Wildbad, Fed. Rep. of Germany, assignor to Prontor-Werk Alfred Gauthier GmbH, Wildbad, Fed. Rep. of Germany

Filed Jun. 26, 1979, Ser. No. 52,281

Int. Cl.³ G03B 9/24

U.S. Cl. 354-230

17 Claims



1. Controllable shutter device for a camera for achieving extremely short selective exposure times at selectively sized diaphragm apertures when taking photographs with the camera, which comprises

a lens shutter assembly having a lens passage for film exposure fitted with a reciprocating shutter sector system of sectors movable between a closed position and an open position for opening the lens passage and a reciprocating diaphragm segment system of segments movable between a closed position and a selectively sized open position for forming the diaphragm working aperture of the lens passage and for closing the lens passage, and control means for effecting initial diaphragm adjustment movement of the diaphragm segments at a low movement rate for formation of a selectively sized diaphragm working aperture before film exposure, then for effecting timed exposure shutter opening movement of the shutter sectors from the closed position to the open position for opening the lens passage for film exposure, and thereafter for effecting subsequent shutter closing movement of the diaphragm segments at a correspondingly high movement rate relative to the initial low movement rate thereof, at the end of a selectively timed interval following the timed opening movement of the shutter sectors and corresponding to the selective exposure time, for closing the lens passage, whereby to terminate film exposure.

4,227,793

BLADE TYPE FOCAL PLANE SHUTTER

Kiyoyuki Arai, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed May 16, 1978, Ser. No. 906,680

Claims priority, application Japan, May 20, 1977, 52-58405

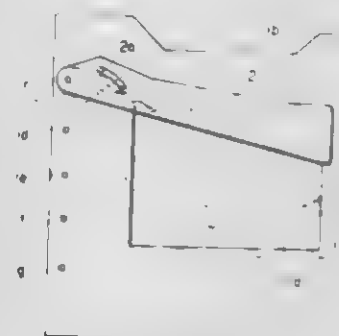
Int. Cl.³ G03B 9/40

U.S. Cl. 354-246

1 Claim

1. A focal plane shutter, comprising: a shutter base plate having an exposure aperture formed therein;
- a plurality of auxiliary shutter blades made of opaque laminae and rotatably supported on said base plate by a common shaft to open and close said exposure aperture and having cam slots therein;
- a first arm rotatably supported on said base plate and having thereon a pin fitted in said cam slots;
- a second arm rotatably supported on said base plate at a position different from said common shaft and having therein a first portion capable of covering the clearance formed by an adjacent pair of said auxiliary shutter blades when said plurality of auxiliary shutter blades are in a position of covering said exposure aperture and a second

portion extending from said first portion so as to form an L-shape in cooperation with said first portion; said second arm being so arranged that said first portion can move by describing substantially the same locus as said plurality of auxiliary shutter blades and said common shaft being placed near to an apparent center of moving locus of said first portion of said second arm; and



a main shutter blade pivotably supported on said first and second arms and having therein a tail portion including an edge intersecting the edge of said exposure aperture and capable of forming an exposure slit on said exposure aperture.

4,227,794

PHOTOGRAPHIC FILM PROCESSING APPARATUS

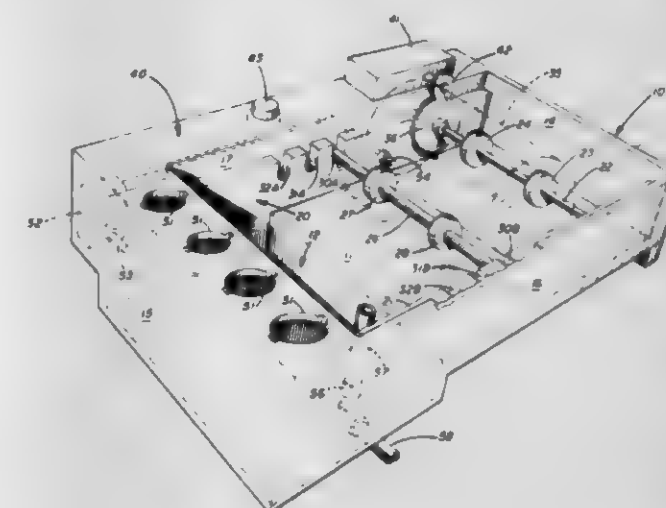
Frank Tabin, 1108 Bechtel St., Monaca, Pa. 15061

Filed Aug. 13, 1979, Ser. No. 66,067

Int. Cl.³ G03D 3/04

U.S. Cl. 354-299

10 Claims



1. Apparatus for use in the chemical development of photographic film comprising: (a) a tank for holding liquid at a selected temperature, (b) means for circulating liquid within the tank controlling the temperature of the liquid, (c) a driven axle with at least two wheels thereon of equal diameter journaled across the tank, (d) a movable idler axle with at least two wheels of equal diameter thereon, (e) a plurality of means for receiving the idler axle arranged in a plurality of journaled positions parallel to the driven axle, (f) means for driving the driven axle to turn the wheels attached thereto, and (g) said wheels movable along the axes without loss of turning engagement, whereby the apparatus may be used to rotate and maintain the temperature of a processing drum placed upon the wheels, the distance between the axes being adjusted to insure adequate immersion of the drum in the liquid.

4,227,795

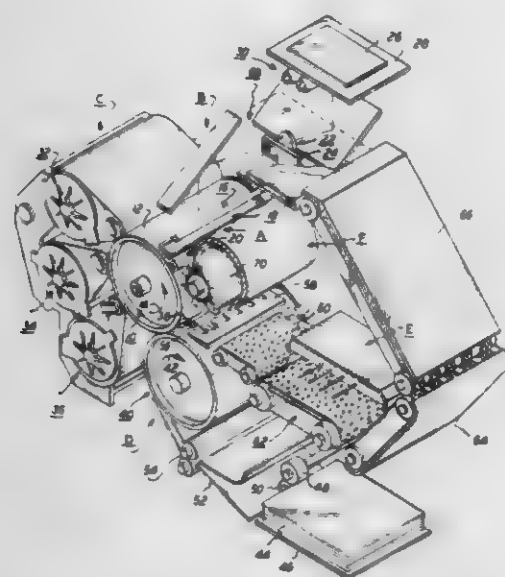
HALF-TONE IMAGING SYSTEM

Richard M. Bobbe, Rochester; John A. Durbin, Webster; Richard F. Lehman, Fairport, and Frederick A. Seedhouse, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 12, 1977, Ser. No. 758,736
Int. Cl.³ G03G 15/00

U.S. Cl. 355—3 R

9 Claims



1. An optical system for exposing a movable photosensitive member to a light image of an original document, wherein the improvement includes:

means for sensing the position of the photosensitive member and generating a signal indicative thereof;

a screen member disposed closely adjacent to the photosensitive member, said screen member comprising a member; a first row of dots disposed on said member; a second row of dots disposed on said member, said second row of dots being spaced from said first row of dots with each dot of said second row of dots being rotated 90° relative to each row of said first row of dots, and a third row of dots disposed on said member, said third row of dots being spaced from said second row of dots with each dot of said third row of dots being rotated 45° relative to each dot of said second row of dots;

a screen light source positioned to transmit light rays through said screen member onto the photosensitive member to record thereon a finely divided charge pattern; and means, responsive to the signal from said sensing means indicating that the photosensitive member moved a distance substantially equal to the distance between two adjacent rows of dots on said screen member, for actuating said screen light source.

4,227,796

ELECTROGRAPHIC APPARATUS HAVING IMPROVED DEVELOPER METERING CONSTRUCTION

Dennis R. Kamp, Spencerport, and James D. Walling, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 29, 1979, Ser. No. 43,580
Int. Cl.³ G03G 15/00, 15/09

U.S. Cl. 355—3 DD

15 Claims

1. In electrographic apparatus in which an electrographic imaging member is moved past a development zone for development of an electrical image thereon, said apparatus including (1) developer supply means spaced from said development zone and (2) applicator means for transporting successive quantities of developer from said supply means into transfer relation with successive portions of said image member passing said development zone; an improved device for controlling the flow of developer during such transport, said device comprising:

(a) an elongated coil spring having loops disposed along a

longitudinal axis that extends across the path on which developer is transported from said supply means to said development zone; and



(b) means for distending said spring along said longitudinal axis to provide passages therethrough for predetermined volumes of developer.

4,227,797

WET DEVELOPING APPARATUS FOR ELECTROSTATIC LATENT IMAGES

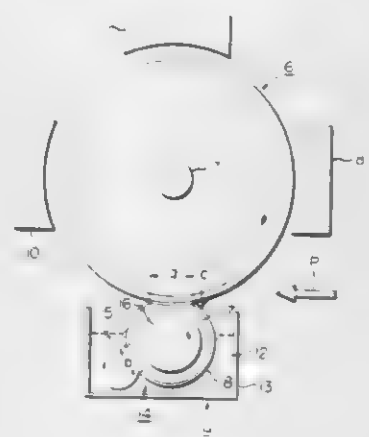
Haruo Tsunoi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,453

Claims priority, application Japan, Nov. 24, 1977, 52-141000
Int. Cl.³ G03G 15/10

U.S. Cl. 355—10

9 Claims



1. A wet developing apparatus of the type which is provided with a rotary member for developing an electrostatic latent image carried on a latent image carrier, said rotary member being elastically deformable and being disposed in pressure contact with said carrier while supplying liquid developer thereto and while recovering residual liquid developer therefrom, said apparatus being characterized in that said rotary member is an elastic roller comprising a porous elastic material

overlaid on the circumference of the roller shaft, and in that the relative position between said rotary member and said latent image carrier is determined so that the width of said rotary member, measured along the axial direction in which said rotary member comes in pressure contact with said latent image carrier, is within the range of from the maximum width of the area in which an electrostatic latent image can be carried by said carrier to the total width of said carrier.

4,227,798

PROTECTION SYSTEM FOR ELECTROSTATOGRAPHIC MACHINES

Edward Steiner, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

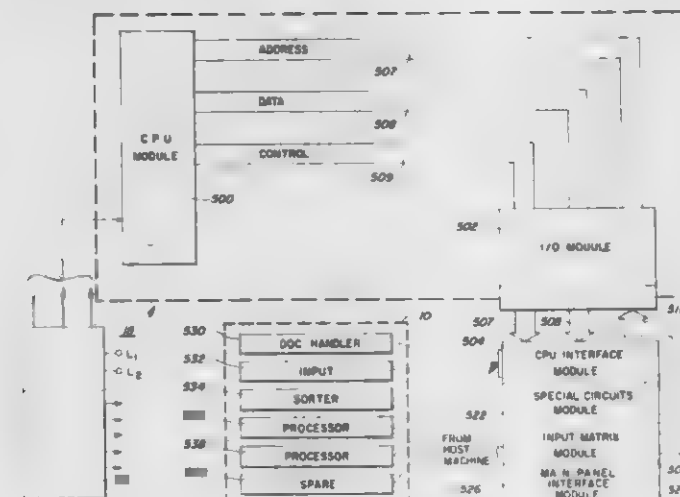
Continuation of Ser. No. 677,346, Apr. 15, 1976, abandoned.

This application Aug. 14, 1978, Ser. No. 933,325

Int. Cl.³ G03G 15/00; G11C 7/00

U.S. Cl. 355—14 C

16 Claims



1. In a reproduction machine for producing impressions of an original, the reproduction machine having a photosensitive member and plural discrete operating components cooperable with one another and the photosensitive member to electrostatically produce impressions on a support material, the combination of:

a controller for operating said machine components in accordance with a program whereby to produce the impressions desired,

said program being comprised of both background machine control routines and foreground machine control routines; interrupt means to temporarily interrupt the machine control routine in progress to refresh control data outputted to said machine components; and control means effective within a preset interval in relation to said refresh to stop said machine.

4,227,799

IMAGE FORMING APPARATUS

Kohel Nonaka, Yokohama; Masahiro Koyama, Kawasaki; Makoto Gonmori, Tokyo; Takeo Kimura, and Tetsuo Shiga, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 2, 1979, Ser. No. 63,310

Claims priority, application Japan, Aug. 8, 1978, 53-97134; Aug. 10, 1978, 53-97989

Int. Cl.³ G03B 27/32, 27/52

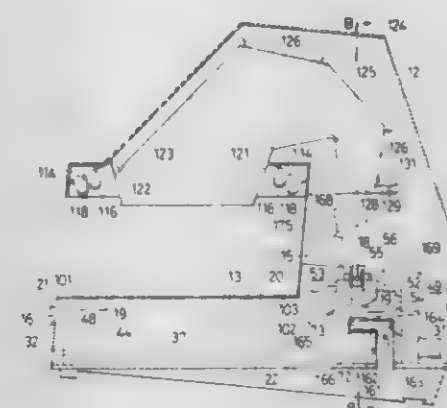
U.S. Cl. 355—27

21 Claims

1. Image forming apparatus for forming an image using a heat-developable image forming sheet that is normally non-photosensitive but can be rendered photosensitive by preheating prior to exposure and exposed to a light image to form therein a latent image and then heat-developed to produce a visible image, comprising:

first heating means for preheating one image forming area of the image forming sheet;

exposure means for projecting an optical image of a subject to the preheated image forming area; second heating means for heat-developing the exposed image forming area; and transfer means for transferring the image forming sheet to the first heating means, the exposure means and the second heating means;



wherein the first heating means, the exposure means and the second heating means are each provided with fixing means for fixing the image forming area of the image forming sheet at the processing position of each means, and wherein the first heating means, the exposure means and the second heating means are arranged so that individual image forming areas of the image forming sheet can be simultaneously processed by the respective means in parallel.

4,227,800

APPARATUS FOR LOADING CASSETTE CONTAINING RECORDING SHEETS

Takao Nezu, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 974,101

Claims priority, application Japan, Dec. 28, 1977, 52-157498; Dec. 28, 1977, 52-157499; Dec. 28, 1977, 52-157500; Dec. 28, 1977, 52-157501

Int. Cl.³ G03B 27/58; B65H 1/12; G03G 27/48

U.S. Cl. 355—72

4 Claims



1. Apparatus for loading a cassette containing therein a plurality of sheets into a device wherein the sheets are processed, said apparatus comprising:

an actuator lever pivotally mounted on said device;

a cassette locking member which is capable of projecting into an operative position within a cassette receiving space of said device;

a first connecting means for connecting said actuator lever and said locking member to each other in such manner that said locking member is displaced from its operative position within the cassette receiving space to an inoperative position exterior of the cassette receiving space when an end of said lever remote from its pivotal mounting on said device is moved to a cassette loading position thereof; sheet lifting means capable of projecting into an operative position within the cassette receiving space; and a second connecting means for connecting said sheet lifting

means and said actuator lever to each other in such manner that said sheet lifting means is displaced from its operative position within the cassette receiving space to a position exterior of the cassette receiving space when said end of the lever is moved to said cassette loading position for loading the cassette into said device.

4,227,801

DOCUMENT RECEIVER IN A DOCUMENT PROCESSING MACHINE

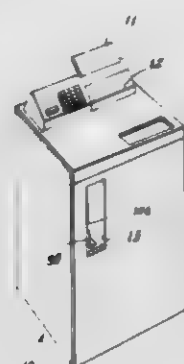
Douglas R. Arnoldi, Southbury; Antoon M. Hurkmans, Bethlehem, and Wayne D. Tolman, Bethel, all of Conn., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 19, 1979, Ser. No. 21,493

Int. Cl.³ G03B 27/62

U.S. Cl. 355-75

10 Claims



1. Document receiving and storing apparatus comprising a generally L-shaped tray including a generally vertical base having an upper end and a lower end, and a lip extending perpendicularly from the base at the lower end thereof, a first pair of first rollers freely rotatably mounted on a first horizontal shaft disposed parallel to and adjacent to said lip,
- a second pair of second rollers freely rotatably mounted on a second horizontal shaft disposed parallel to said first shaft, said second rollers being positioned so that each second roller engages the hub of one of said first rollers, the base of said tray having a top surface which has a longitudinal ridge which extends along its length, said ridge causing sheets of paper on said tray to bend and thereby experience a stiffening effect.

4,227,802

APPARATUS FOR MEASURING THE DISTANCE TO A POINT ON THE INNER WALL OF A HOT FURNACE

Ragnar Scholdstrom; Holger Marcus, and Lennart Nordstrom, all of Lidings, Sweden, assignors to AGA Aktiebolag, Sweden

Continuation-in-part of Ser. No. 635,081, Nov. 25, 1975,

abandoned. This application Apr. 18, 1977, Ser. No. 788,346

Claims priority application Sweden, Nov. 20, 1974, 7414531

Int. Cl.³ G01C 3/00; G01B 11/06; G02B 5/22

U.S. Cl. 356-5

1 Claim

1. A method for measuring the change in thickness between a first time and a second time of the lining on the inner wall of a furnace having a temperature of at least 500° C., said method comprising the steps of:

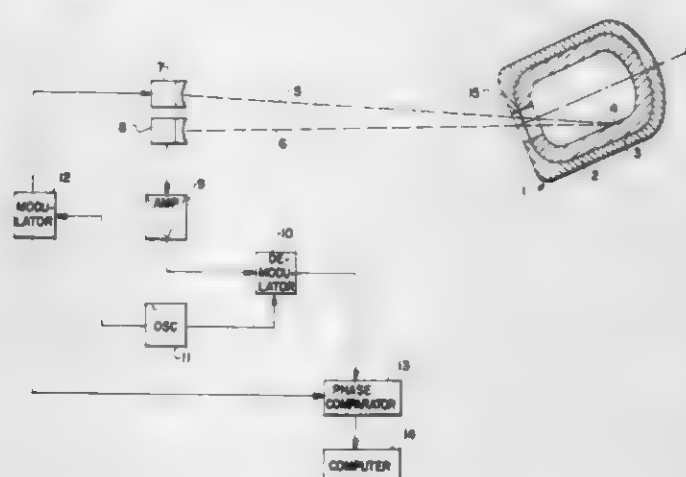
providing an electro-optical distance measuring instrument having the capability of transmitting a modulating radiation signal within a narrow frequency band, receiving the reflected transmitted signal, and determining by phase comparison methods the distance from the electro-optical measuring instrument to the point of reflection;

providing an optical filter aligned only in the receiving path of said electro-optical distance measuring instrument to

filter out all radiation other than said narrow frequency band of transmitted radiation, said optical filter comprising the combination of an interference filter and a Fabry-Perot filter wherein the central pass band of the Fabry-Perot filter lies within the pass band of the interference filter and the side bands of the Fabry-Perot filter lie outside the pass band of the interference filter;

performing at the first time a first measurement of the distance from the electro-optical distance measuring instrument to a first point on the lining on the inner wall of the furnace, said first measurement being performed by:

- (i) focusing said modulated radiation signal of said electro-optical distance measuring instrument on said first point on the inner lining of the furnace;
- (ii) receiving the reflected transmitted signal from said first point through said optical filter; and
- (iii) determining by phase comparison methods the distance from the electro-optical distance measuring instrument to said first point on the inner wall of said furnace;



determining the distance from said first point to a reference point fixed in relation to said furnace;

performing at the second time a second measurement of the distance from the electro-optical distance measuring instrument to a second point on the lining on the inner wall of the furnace, said second point being in the vicinity of said first point, and said second measurement being performed by:

- (i) focusing said modulated radiation signal on said second point on the inner wall of said furnace;
- (ii) receiving the reflected transmitted signal from said second point through the optical filter; and
- (iii) determining by phase comparison methods the distance from the electro-optical distance measurement instrument to said second point;

determining the distance from said second point to said reference point; and

comparing said distance from said first point to said reference point with said distance from said second point to said reference point, and determining therefrom the change in thickness of said lining.

4,227,803

CONTINUOUS COPYING MACHINE

Hans A. Massengill; Georg Bock, and Fritz Steinlehner, all of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Sep. 24, 1979, Ser. No. 78,595

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2843521; May 10, 1978, 2843522

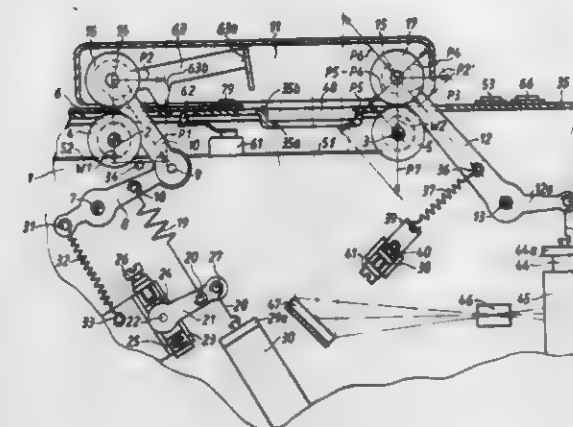
Int. Cl.³ G03B 27/48, 27/50

U.S. Cl. 355-50

23 Claims

1. In a continuous copying machine of the type in which an original is transported across an exposure window for imaging of successive portions of the transported original upon successive portions of a copy medium transported at a speed corresponding to the transport speed of the original, in combination,

a pair of infeed rollers located upstream of the exposure window, including stationary mounting means mounting one infeed roller, the other infeed roller being movable; a pair of outfeed rollers located downstream of the exposure window, mounting one outfeed roller, the other outfeed roller being movable; a multi-link linkage mechanism mounting the movable infeed roller and the movable outfeed roller for interdependent movement into and out of engagement with the stationary infeed roller and the stationary outfeed roller, respectively; and means for applying to the movable rollers through the intermediary of the multi-link linkage mechanism a roller pressing force pressing them against the stationary rollers.



23. A method of operating a continuous copying machine, the copying machine being of the type in which an original is transported across an exposure window for imaging of successive portions of the transported original onto successive portions of a copy medium transported at a speed corresponding to the transport speed of the original, the method comprising transporting a lengthy original in forwards direction across the exposure window to effect copying of a limited section of the original upon a sheet of copying medium, and then transporting the original in the opposite direction by a distance at least equal to the transport-direction length of the exposure window, and then transporting the original once again in forwards direction across the exposure window to effect copying of the next limited section of the original.

4,227,804

ILLUMINATING APPARATUS WITH A LIGHT CONTROL CHANNEL FOR PHOTOGRAPHIC ENLARGING EQUIPMENT WITH A ROTATABLE PICTURE STAGE IN THE PLANE OF THE NEGATIVE TO BE COPIED

Wilhelm Pramstraller, Brixen, Italy, assignor to Durst AG Fabrik Fototechnischer Apparate, Bozen, Italy

Filed Mar. 26, 1979, Ser. No. 23,544

Claims priority, application Italy, May 26, 1978, 4832 A/78

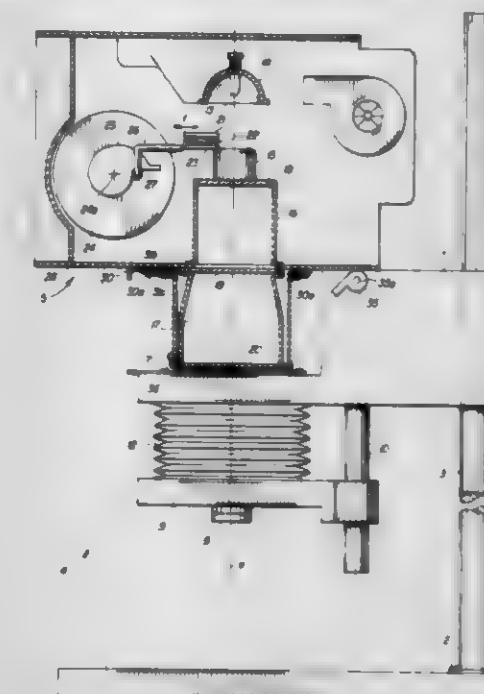
Int. Cl.³ G03B 27/54, 27/62

U.S. Cl. 355-67

15 Claims

1. In a photographic enlarging apparatus having a light source and a rotatable picture stage for receiving and supporting a negative to be projected, the improvement comprising:

means comprising a light control channel positioned on the light entrance side of said picture stage and secured to said



stage for rotation therewith about an axis normal to the plane of said negative.

4,227,805

FINGER IDENTIFICATION APPARATUS AND METHOD

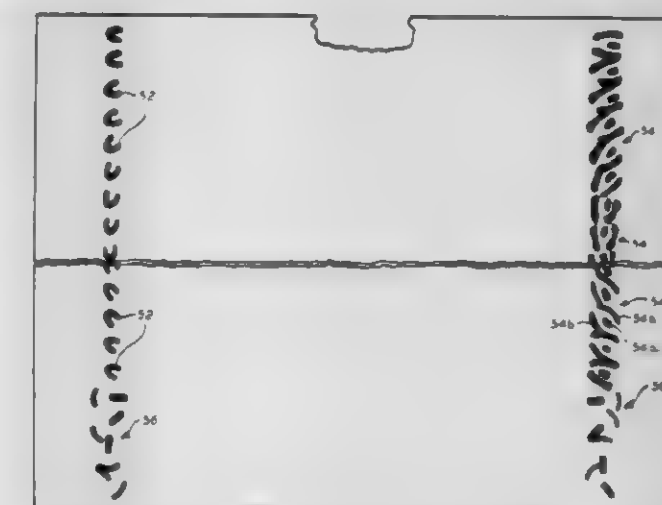
Michael Schiller, 4465 Douglas Ave., Riverdale, N.Y. 10471

Filed Jan. 25, 1978, Ser. No. 872,263

Int. Cl.³ G06K 9/00, 9/76

U.S. Cl. 356-71

16 Claims



1. Fingerpress processing apparatus comprising: scanning means to scan an interrogating beam of spatially coherent light having a predetermined cross sectional shape across a fingerpress to provide a reflected light beam modulated with minutia identification information, a holographic correlator coupled to said reflected light beam,

said correlator including a hologram of a predetermined character plate having a plurality of standardized finger identification minutia, said minutia including a first set of bifurcation minutia and a second set of line ending minutia, each of the bifurcation minutia in the first set being identical to one another in shape and having an angular orientation unique relative to all other bifurcation minutia, each of said line ending minutia being identical to one another in shape and having an angular orientation unique relative to all other line ending minutia, each of said standardized minutia having a predetermined spatial position on said character plate, and

projection means to project the Fourier transform of said reflected light beam onto said hologram to provide a

plurality of correlation light beams indicative of the minutia being scanned on said fingerpress.

4,227,806

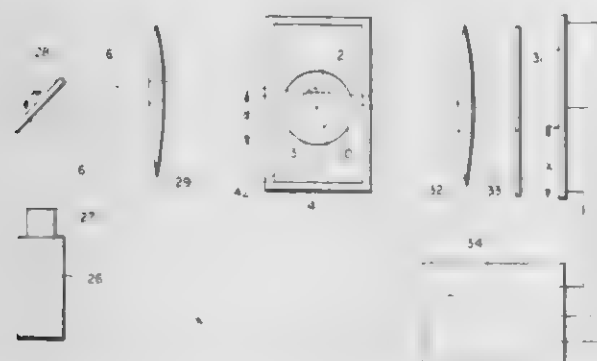
METHODS FOR NON-DESTRUCTIVELY DETERMINING PARAMETERS OF AN OPTICAL FIBER PREFORM

Laurence S. Watkins, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,807
Int. Cl.³ G01N 21/47

U.S. Cl. 356—73.1

12 Claims



1. A method of determining parameters of a cylindrical optical fiber preform having a core and a cladding, comprising the steps of:

- scanning at least a portion of the cylindrical surface of the preform with a narrow, parallel scanning beam of coherent light, the parallel scanning beam being located within a plane which is perpendicular to the longitudinal axis of the preform, said beam passing through and being refracted by said preform;
- detecting the angular deflections of the refracted scanning beam exiting the preform; and
- comparing the detected angular deflections of the scanning beam with angular deflections of beams passing through preforms having known parameters to determine the parameters of the preform.

4,227,807

HOLOGRAPHIC ANGLE SENSOR

Charles R. Pond, Federal Way, and Patrick D. Teixeira, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 28, 1978, Ser. No. 901,244
Int. Cl.³ G01B 11/26, 9/02

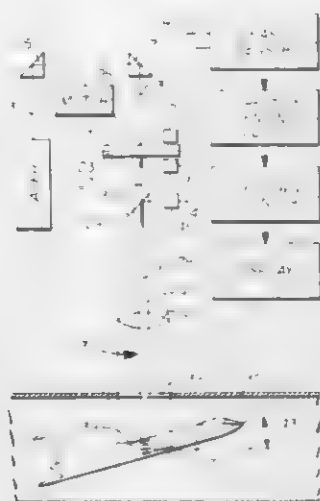
U.S. Cl. 356—152

15 Claims

1. An apparatus for determining the angular orientation of an object, comprising:

- (a) means for generating a partially coherent light beam;
- (b) reflector means positioned on said object, said reflector means including means for producing at least two derivative beams from an incident beam, said beam producing means being positioned relative to said reflector means such that a light beam passes through said beam producing means upon entry and exit from said reflector means, wherein said beam producing means produces two original derivative beams from an incident beam entering said reflector means in such a manner that said two original beams travel paths of different length within the reflector means between entry and exit thereof, the difference in path length between said two original beams being representative of the angular orientation of the object, and wherein said beam producing means produces at least two additional divergent beams from each of said two original beams upon exit of the original beams from said reflector, at least one additional beam produced from one of the original beams being parallel to one additional beam produced from the other of the original beams, said two

parallel beams being characterized by a separation sufficiently small that the wavefronts thereof are substantially equally affected by changes in the index of refraction across the medium through which said two parallel means are moving; and



(c) means for measuring the change in optical phase of said two parallel beams, which value of phase change is a function of the angular orientation of the object and hence is correlatable to a corresponding value of the angular orientation of the object.

4,227,808

DIGITAL LIGHT MEASURING DEVICE

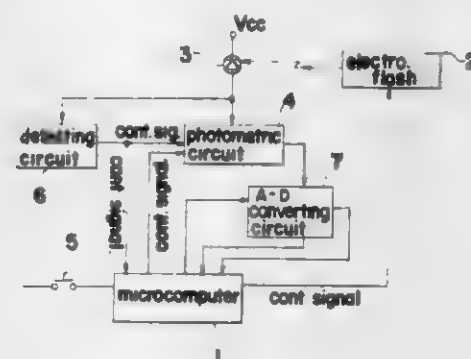
Yoshio Yuasa, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 13, 1978, Ser. No. 968,972

Claims priority, application Japan, Dec. 29, 1977, 52-157685
Int. Cl.³ G01J 1/42, 1/46; G03B 7/08, 7/00

U.S. Cl. 356—218

6 Claims



6. A digital light measuring device capable of measuring a flash of light generated by a separate light source device comprises means responsive to an incident light intensity for producing an output commensurate thereto; means for processing said output to form a digital signal indicative of a result of the light measurement; means for detecting the beginning of change in the output of the producing means caused by a flashing to generate a start signal for making said processing means begin said processing operation; and means for controlling the operations of said processing means in a programmed sequence, said control means being adapted to start said programmed sequence in response to the start signal of said detecting means.

4,227,809

METHOD OF DETECTING FLAWS ON THE SURFACE OF METAL

Masakazu Satoh, Mito; Miyuki Igarashi, and Shigeo Senoo, both of Ibaraki, all of Japan, assignors to Doryokuro Kaku-nenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 945,070

Claims priority, application Japan, Sep. 30, 1977, 52/116698
Int. Cl.³ G01N 21/00

U.S. Cl. 356—237

6 Claims



5. A method of detecting flaw on the surface of a metal material, comprising:

- directing a laser beam onto the surface of the metal material to be inspected for varying the position of impingement;
- reflecting the directly reflected component of the laser beam which is reflected from the surface of the metal material from a reflector having a rough surface; and
- measuring the change in the quantity of light in the beam reflected from said reflector and using the changes in the measuring quantities of light for detecting the presence of flaws on the surface of the metal material.

4,227,810

CUVETTE AND METHOD OF USE

Harold E. Sandrock, Rockville Centre; Morris W. Leen, Yorktown Hgts., and Edward W. Stark, Garden City, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

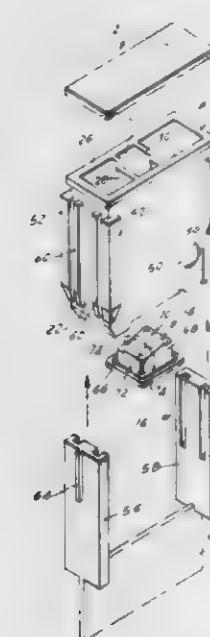
Division of Ser. No. 739,902, Nov. 8, 1976, Pat. No. 4,083,638, which is a division of Ser. No. 604,526, Aug. 14, 1975, Pat. No. 3,994,594. This application Jan. 26, 1978, Ser. No. 872,404

The portion of the term of this patent subsequent to Nov. 30, 1993, has been disclaimed.

Int. Cl.³ G01N 1/10

U.S. Cl. 356—246

13 Claims



1. A cuvette comprising a body member including means defining two distinct chambers, a pair of windows defined in at least one of said chambers for viewing the optical density of the contents thereof, each of said chambers defining at corresponding ends an opening through which reactants may be

selectively introduced into said chambers, means defining a fluid passageway interconnecting opposite ends of said chambers and normally isolating liquids when contained in each of said chambers, the opening of at least one of said chambers being adapted and arranged for being in operative communication with a pressurizing means to enable forced-fluid flow along said passageway in opposite directions and between said chambers, so as to effect mixing of the liquids contained in said chambers, and means for sealing the openings of said chambers, said sealing means comprising a probe-puncturable plural-ply structure, one ply comprising a moisture-absorbent material.

4,227,811

SPECTROPHOTOMETER

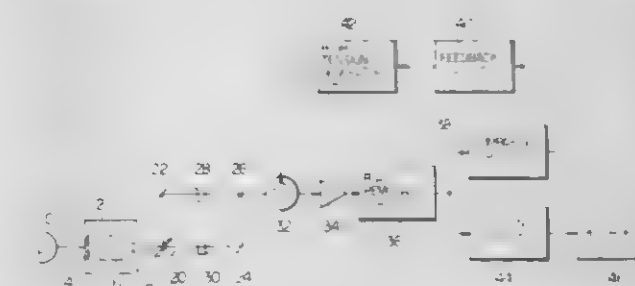
Shigeo Tohyama, and Nobuo Akitomo, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 31, 1978, Ser. No. 956,238

Claims priority, application Japan, Nov. 4, 1977, 52-132744
Int. Cl.³ G01J 3/42

U.S. Cl. 356—325

4 Claims



1. A double-beam spectrophotometer comprising: photoelectric converting means for converting optical signals into reference and sample electrical signals; judging means for judging the magnitude of said reference electrical signal relative to said sample electrical signal and producing as an output the larger signal of them; control means for controlling said larger signal to be substantially constant; means for interrupting rays of light emitted on at least one material; means for subtracting a bias signal obtained from said photoelectric converting means at the interruption from said reference and sample electrical signals to obtain subtracted reference and sample electrical signals; means for operating the ratio of the subtracted two electrical signals; and means for displaying the ratio of said reference and sample electrical signals.

4,227,812

METHOD OF DETERMINING A DIMENSION OF AN ARTICLE

Robert A. Pirlet, Embourg, Belgium, assignor to Centre de Recherches Metallurgiques Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Mar. 7, 1978, Ser. No. 884,151

Claims priority, application Belgium, Mar. 10, 1977, 852371; Mar. 10, 1977, 852372

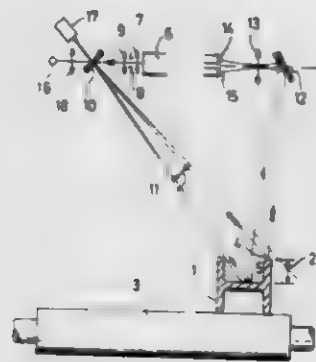
Int. Cl.³ B01B 11/00; G01C 3/20

U.S. Cl. 356—372

3 Claims

1. A method of determining a dimension of an article, comprising directing a beam at the article by means of a first mobile deflector and scanning the part of the profile of the article comprising the dimension to be measured, orientating rays reflected by the article in the direction of at least one receiver by means of a second mobile deflector, angularly moving the deflectors at different speeds, determining the positions occu-

ped by two points related with the dimension to be measured, and calculating the dimension with respect to these points; wherein during the time taken by one of said deflectors to scan one of the various parts of the profile of the article, the other one of said deflectors completely scans all of the



said various parts of the profile of the article, the optical members being arranged one with respect to the other in such a way that the rays reflected by one of the various parts of the profile of the article remain substantially at the same abscissa of the receiver during scanning of the said part of the profile.

4,227,813

PROCESS FOR DETERMINING A DIMENSION OF AN OBJECT

Robert A. Pirlet, Embourg, Belgium, assignor to Centre de Recherches Metallurgiques Centrum voor Research in de Metallurgie, Brussels, Belgium

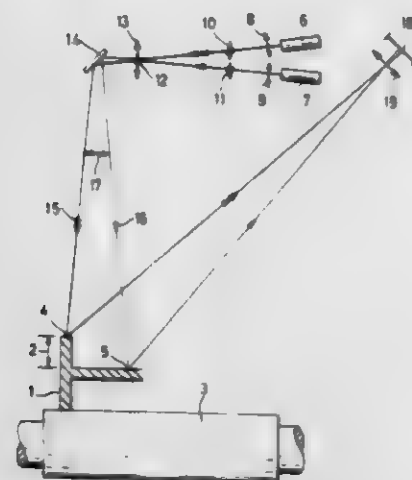
Filed Mar. 7, 1978, Ser. No. 884,169

Claims priority, application Belgium, Mar. 10, 1977, 852370; Mar. 10, 1977, 852372

Int. Cl.³ G01B 11/00; G01C 3/20

U.S. Cl. 356—372

21 Claims



1. A process for determining a dimension of an object, comprising: directing two diverging emitted beams, whose axes define a known angle, by means of a deflector onto points of the object related to the dimension to be determined so that when one of these beams falls on the first of two points defining the dimension the other beam falls on the second point; receiving light rays reflected by the two points as two received beams, by means of a receiver; measuring, with respect to a reference direction, the angle of incidence of the emitted beams and the angles made respectively by the axes of the two received beams with the axes of the emitted beams; and calculating the dimension from the angles

4,227,814 OPTICAL DENSITY DETECTOR

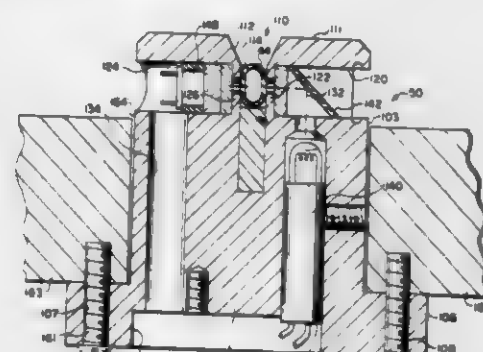
Charles Soodak, Silver Spring; Rene G. Lamadrid, Bethesda, and David Lohr, Ellicott City, all of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 1, 1979, Ser. No. 8,274

Int. Cl.³ G01N 21/85

U.S. Cl. 356—410

16 Claims



1. An optical density detector for sensing the change in optical density of a fluid flowing in a flexible, light transmitting tubing, said detector comprising a block having a slot across one face thereof, the inner portion of said slot having a width less than the outer diameter of the tubing which is received in said slot such that the tubing is squeezed from a circular cross section to an oval cross section with two respective flat portions adjacent opposite sidewalls of said slot, a first cavity in said block located behind a first sidewall of said slot and a second cavity in said block located behind a second sidewall of said slot, a first aperture in said first sidewall and a second aperture in said second sidewall, said apertures being coaxial, low power light generating means for directing light from said first cavity through said first aperture, through the flat portions of the tubing and through said second aperture into said second cavity and light sensing means in said second cavity for sensing the amount of light passed through the tubing and received in said second cavity and for generating an electrical signal which is indicative of the amount of light sensed and which can be utilized for measuring the optical density of the fluid flowing through the tubing, and said block being constructed in a manner to dissipate heat generated by said light generating means.

4,227,815

MAGNETIC STIRRER FOR SAMPLE CONTAINER OF PHOTOMETRIC ANALYZER

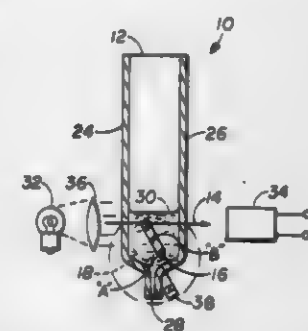
Jack L. Hoffa, Brea, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 6, 1979, Ser. No. 55,251

Int. Cl.³ G01N 21/01

U.S. Cl. 356—436

4 Claims



1. In photometric analysis apparatus comprising a container for receiving sample material, means establishing an optical path for light to intercept sample material in the container, and means for monitoring light exiting the container along the optical path to measure a characteristic of the sample material, the improvement characterized by:

a magnetic stirring element within the container for stirring sample material therein; means magnetically coupled to the stirring element for rotating the stirring element in a rotational path which intersects and hence in which the stirring element obstructs at least a portion of the optical path within the container; and means for controllably stopping rotation of the stirring element in an orientation out of the optical path thereby allowing optical measurement of the sample material unobstructed by the stirring element.

4,227,816

ROTARY PROCESSOR

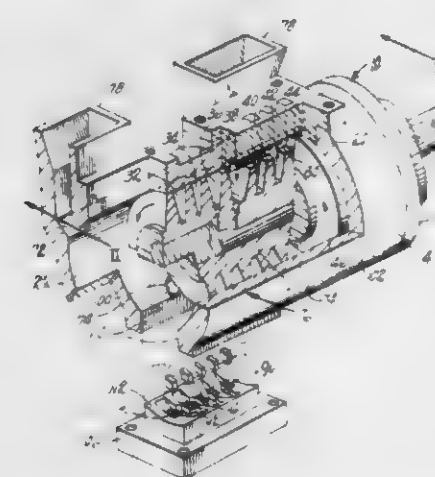
Peter Hold, Milford, Conn., and Zehev Tadmor, Teaneck, N.J., assignors to USM Corporation, Farmington, Conn.

Filed Aug. 21, 1978, Ser. No. 935,257

Int. Cl.³ B01F 7/08; B28C 1/16

U.S. Cl. 366—99

30 Claims



1. In a processor for plastic and polymeric materials which are or become in the course of processing viscous liquids comprising:

- (a) a rotor including a substantially cylindrical surface portion and a plurality of coaxial channels having opposing side walls extending inwardly from said cylindrical surface portions,
- (b) a stationary element providing a closure surface coaxial with said rotor and cooperating with said cylindrical surface portion of said rotor to form with said channels, enclosed annular passages,
- (c) inlets for polymeric or plastic material to said annular passages,
- (d) means for causing relative rotation between said rotor and said closure surface providing element about their common axis to move said side walls and said cylindrical surface portion of said rotor relative to said closure surface,
- (e) an outlet from each of said annular passages circumferentially spaced from the inlets to that passage in the direction of rotation of said rotor relative to said stationary closure surface,
- (f) a blocking member disposed in each of said annular passages between the outlet and the inlet of each passage in the direction of rotation of said rotor, the improvement which comprises a transfer channel formed in said closure surface of said stationary element so that the open side of the transfer channel faces said cylindrical surface portion of said rotor and extending from a first annular passage to a second of said annular passages, portions of the length of the open side of said transfer channel extending over and communicating with the channels of said annular passages to serve as an outlet to discharge material from said first annular passage and as an inlet for said second annular passage to receive material from said first annular passage and where portions of the length of the open side of the transfer channel between said annular passages are sealed by said cylindrical surface portion of said rotor to

form an enclosed transfer passage in which said sealing cylindrical portion of said rotor is movable relative to said transfer channel to act on material in said transfer passage.

4,227,817

FUEL AND WATER HOMOGENIZATION MEANS

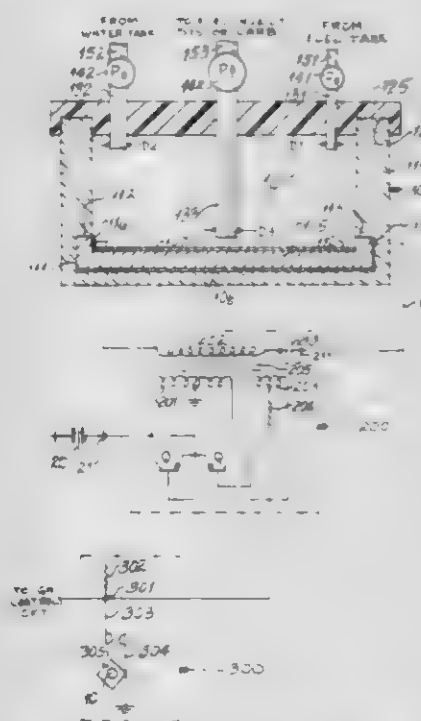
Martin E. Gerry, 13452 Winthrop St., Santa Ana, Calif. 92705

Filed Dec. 26, 1978, Ser. No. 972,953

Int. Cl.³ B01F 11/02

U.S. Cl. 366—127

9 Claims



1. A system supplied by metered sources of liquid fuel and water for homogenizing said fuel and water and feeding the homogenized fuel and water in its liquid state to vaporization means of an engine, comprising the combination of:

- an AC power source;
- homogenizing means, having a first feeder line connected to the source of liquid fuel and a second feeder line connected to the source of water, for receiving said liquid fuel and water in metered quantities, said homogenizing means including transducing means retained within and being part of said homogenizing means, said transducing means being connected directly to the AC power source for converting AC power from said AC power source to vibrations so as to produce a homogenized liquid of said liquid fuel and water; and
- means, coupling said homogenizing means to said vaporization means, for transferring said homogenized liquid only to said vaporization means.

4,227,818

WARNING SYSTEM FOR FLUID MIXING AND DISPENSING SYSTEM

Leonard W. Gacki, White Plains, and Robert E. Daly, Farmingdale, both of N.Y., assignors to Picker Corp., Cleveland, Ohio Division of Ser. No. 609,957, Sep. 3, 1975, Pat. No. 4,103,358.

This application Nov. 7, 1977, Ser. No. 849,127

Int. Cl.³ B01F 13/04, 15/02

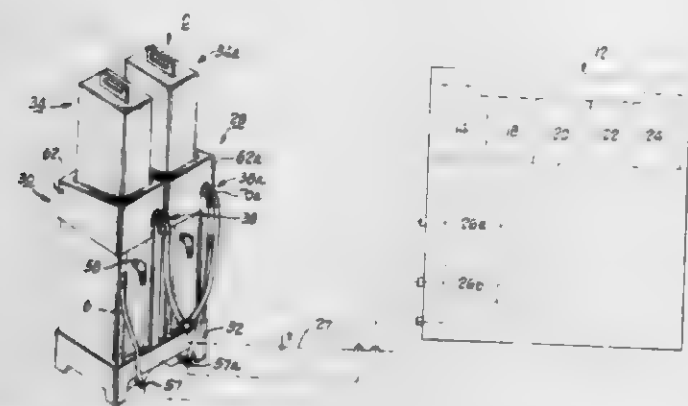
U.S. Cl. 366—142

21 Claims

1. In a fluid mixer for mixing first and second fluids in a reservoir wherein the system includes a containerized supply for the first fluid, a warning system for indicating the status of the various fluids, comprising:

- (a) a first sensing means responsive to the presence or absence of a predetermined quantity of the first fluid in the containerized fluid supply;
- (b) a second sensing means responsive to the level of mixed fluid in the reservoir;
- (c) a first indicator actuated by the first sensing means to

indicate an absence of fluid in the containerized fluid supply; and



(d) a second indicator actuated by the first and second sensing means to indicate the concurrent conditions of an absence of fluid in the containerized fluid supply and a predetermined low level of mixed fluid in the reservoir.

4,227,819

PRINTER PLATEN

Ralph F. Manriquez, San Jose, Calif., assignor to International Computers Limited, London, England

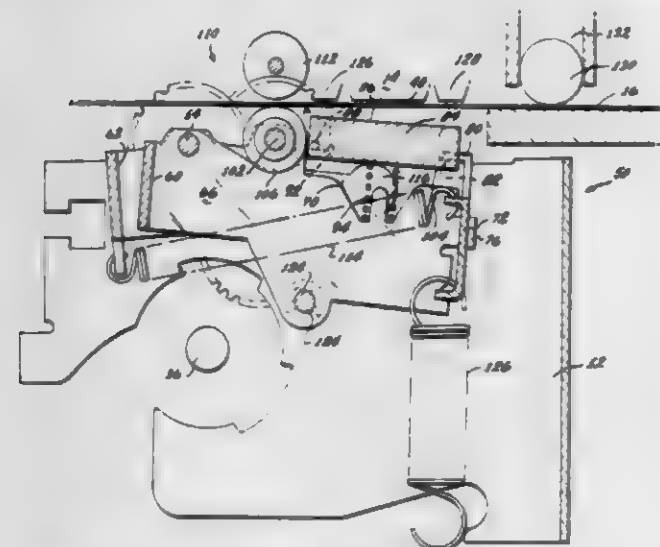
Continuation of Ser. No. 688,214, May 20, 1976, abandoned.

This application Nov. 24, 1978, Ser. No. 963,210

Int. Cl.² B41J 11/20

U.S. Cl. 400—56

3 Claims



1. A platen assembly for holding one or more layers of record media at a predetermined position relative to a print head for printing characters on the record media including:

(a) record media guide means positioned in a plane adjacent to the print head and effective to determine the position of the record media relative to the print head;

(b) a platen having a surface for co-operating with the print head;

(c) a platen bail mounting the platen for displacement to and from the printing position;

(d) means resiliently loading the platen with respect to the platen bail in the sense towards the printing positions;

(e) means resiliently biasing the platen bail away from the printing position;

(f) means for moving the platen bail against the resilient biasing thereof to advance the platen to the printing position;

(g) record media feed means for feeding the record media relative to the print head;

(h) support means for supporting the record media feed means for displacement to and from a printing position; and

(i) means acting between the platen bail and the support means for the record media feed means for subjecting the support means to a biasing force acting relative to the

platen bail and such as to urge the feed means towards its position for co-operation with the record media, and such that the platen bail and support means are movable in unison with respect to the record media and also separately of each other with respect to the record media whereby changes in the thickness of the record media are accommodated by changes in the displacements of platen bail and the support means.

4,227,820

ENDLESS INK-RIBBON CARTRIDGE

Carlo G. Falcetti, Milan, Italy, assignor to Honeywell Inc., Minneapolis, Minn.

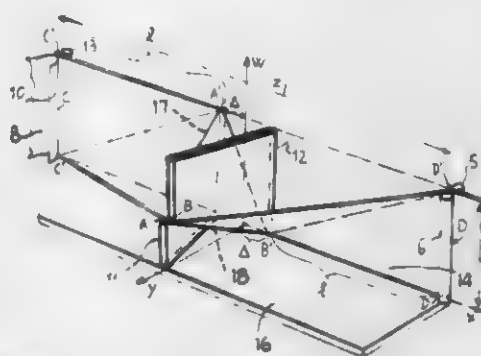
Filed Apr. 17, 1978, Ser. No. 896,642

Claims priority, application Italy, Apr. 21, 1977, 22674 A/77

Int. Cl.³ B41J 33/10

U.S. Cl. 400—195

6 Claims



1. In an endless ink-ribbon cartridge, wherein the structure of a portion of said cartridge is oriented relative to a cartesian system of orthogonal reference axes x, y, w and related reference planes, apparatus for imparting to a ribbon an angular rotation of 180° around the longitudinal axis of said ribbon with minimum friction when said ribbon is in motion, said ribbon having first and second edges and a width h, said rotation being imparted to said ribbon in an inversion zone delimited by a pair of end guide slots within which said ribbon passes; said slots being located in the x-w plane substantially equidistant from the w axis and on the same side of the x axis such that one edge of said ribbon coincides with said x axis in at least said slots, comprising:

a pair of deflecting elements, each of said elements having a substantially rectilinear guiding edge, said elements being disposed in the path of said ribbon, each of said guiding edges acting on a different face of said ribbon for imparting a bending to said ribbon,

said guiding edges intersecting substantially in the y-w plane at a distance from the x-y plane substantially equal to h/2 and defining a plane of inversion in conformity with which said ribbon is bent between said guiding edges, said plane of inversion being perpendicular to the x-w plane and having a slope with respect to the x-y plane such that the paths of said ribbon edges in the inversion zone are of equal length.

4,227,821

WEB DRIVE MECHANISM FOR LINE/SERIES PRINTERS

Mario G. Plaza, Fremont, and James E. Cushman, San Jose, both of Calif., assignors to Durango Systems, Inc., San Jose, Calif.

Filed Sep. 20, 1978, Ser. No. 943,789

Int. Cl.³ B41J 15/00

U.S. Cl. 400—616.3

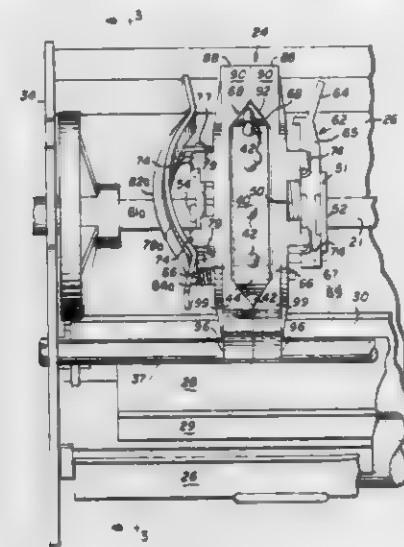
15 Claims

1. A web drive mechanism for the print medium of a printer comprising:

a first stationary guide track for guiding a web print medium along a defined path intermediate a web supply position and a printer position, the guide track having an arcuate portion;

a platen about the printing position for receiving the print medium;

at least one spur drive member positioned within the guide track along the defined path intermediate the supply position and the platen, the spur drive member having a spur wheel with a plurality of spurs about its outer peripheral rim and projecting radially from the peripheral surface of said rim, the spurs being axially positioned equally relative to one another, the wheel further having a main hub forming a spring receiving slot, and a spoke member projecting radially from the hub and interconnecting with the rim; a coil spring within said spring receiving slot; a flexible spline member within the hub for frictionally interengaging the hub and a drive shaft, the spline member having a shoulder about one end in abutment with said coil spring; a housing formed of a pair of saucers posi-



tioned in face-to-face abutment, said saucers each having a first and a second slot about its edge with said first slot of each saucer in facing alignment to said first slot of said other saucer to form a first opening about the periphery of the housing and the second slots of each saucer in facing alignment with said second slot of the other saucer to form a second opening about the periphery of the housing; and a first pivotable web gate pivotable between a first position over said first opening and a second position retracted from said first opening; and

a drive means engaging said drive shaft in turn engaging the spur drive member for driving the spur wheel about its axis of rotation; whereby the spur drive member drives the print medium from the supply position to feed the print medium to the platen position and simultaneously drives the print medium from the platen position to feed the print medium to the take-up position.

4,227,822

COMPOSITE WRITING INSTRUMENT

Teruo Kokubu, Hiyoshi, Japan, assignor to Zebra Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1978, Ser. No. 931,279

Claims priority, application Japan, Aug. 5, 1977, 52-104266[U]

Int. Cl.² B43K 27/02, 24/16

U.S. Cl. 401—17

2 Claims

1. A composite writing instrument comprising:

a power tubular casing having a front end opening and an open rear end;

a guide sleeve inserted into the open rear end of said lower tubular casing, said guide sleeve having two diametrically opposite axially extending guide grooves therein and having a head member at the top;

a mechanical pencil unit and a ball point pen unit within said lower tubular casing with the writing tips towards the front end opening of said lower tubular casing and each having a slider on the rear end portion thereof resiliently slidably guided in a corresponding one of said guide

grooves, said mechanical pencil unit having an axially movable portion connected to said slider and reciprocally movable for feeding lead out of the front end of said mechanical pencil unit;

a cylindrical casing member around said guide sleeve and rotatable around said guide sleeve through about 180°, said casing member having a cam surface thereon engaged with said sliders for moving one of said sliders downwardly for moving one unit forwardly out of the lower tubular casing when said casing member is rotated in one direction and moving the other slider downwardly for moving the other unit forwardly out of the lower tubular casing when said casing member is rotated in the other direction;



an upper tubular casing fixed on and covering said cylindrical casing member and covering the upper end portion of said lower tubular casing;

one of said members having cam means thereon and the other member having a cam follower thereon engaging with said cam means, said cam means and said cam follower being shaped for locking said casing member in a fixed axial position when said casing member is rotated in a direction for moving said ball point pen unit out of said lower tubular casing and for freeing said casing member for limited axial movement for moving the slider on said mechanical pencil unit for axially moving said portion of said mechanical pencil unit a sufficient distance to feed lead when said casing member is rotated in the direction for moving said mechanical pencil unit out of said lower tubular casing.

4,227,823

WRITING INSTRUMENT

Ernst R. Kitzerow, Wedel, Fed. Rep. of Germany, assignor to Berendssohn AG, Hamburg, Fed. Rep. of Germany

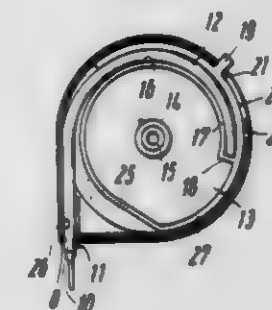
Filed Dec. 26, 1978, Ser. No. 972,764

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 7802226[U]

Int. Cl.³ B43K 7/12

U.S. Cl. 401—99

18 Claims



1. A writing instrument comprising a body, a writing point

secured to a flexible tubular ink reservoir mounted upon a rotatable bearing structure arranged within said body, said point and said ink reservoir being movable relative to said body along a path between a retracted inoperable position and a projected writing position, wherein said ink reservoir performs a nonlinear movement as said point is moved along said path.

4,227,824

NON-TARNISHING PANEL EDGE SPOT WELDING ARRANGEMENT

Kunio Ikawa, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

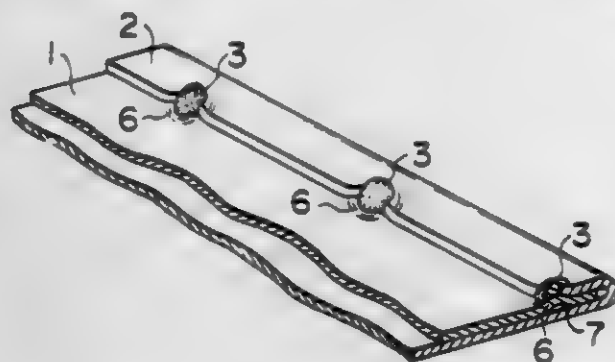
Filed Dec. 8, 1978, Ser. No. 967,911

Claims priority, application Japan, Dec. 9, 1977, 52-165838[U]

Int. Cl.² B25G 3/34

U.S. Cl. 403—271

6 Claims



1. Panel assembly for automobiles which comprises inner and outer panels, said inner panel having projection means formed along at least one peripheral portion thereof so as to project in a direction perpendicularly opposite to the outer panel, said outer panel having at least one peripheral portion bent and folded over the peripheral portion of the inner panel, said peripheral portion of the outer panel having an edge portion which is located on and welded to the projection means of the inner panel.

4,227,825

RELEASE DEVICE FOR THE AUTOMATIC RAPID BRAKING OF MOVING MACHINE PARTS, PARTICULARLY OF LOOMS

Gerhard Oesterle, Staud, Switzerland, assignor to Adolph Saurer Limited, Arbon, Switzerland

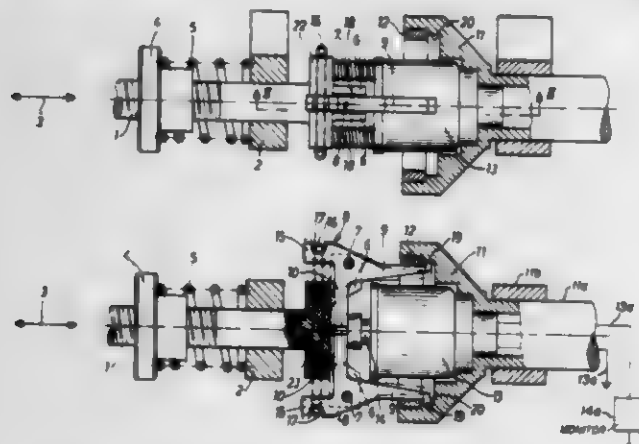
Filed Dec. 4, 1978, Ser. No. 966,487

Claims priority, application Switzerland, Dec. 6, 1977, 014940/77

Int. Cl.² F16D 1/00

U.S. Cl. 403—322

2 Claims



1. A release device for actuating the automatic rapid braking of moving machine parts, such as weaving looms of the type having a braking actuating linkage subject to the action of forces in the direction of actuation and maintained locked when the brake is released, and an electromagnet for unlocking

the braking actuating linkage, energization of which is controlled by signals from monitoring members produced in case of breakdowns, said device comprising:

- said electromagnet having a movable magnetic core carried generally coaxially with the direction of movement of the braking actuating linkage;
- a stator housing which is open in the direction of braking actuation and which includes an inwardly extending projection in the region of its opening;
- said braking actuating linkage including at least one angle lever pivotable in an axial plane;
- a locking arm carried by said angle lever extending essentially in the direction of movement of the braking actuating linkage and terminating in a hook portion in the region of the opening of the stator housing;
- said hook engaging behind said inwardly extending projection for locking; and
- an actuating arm carried by said angle lever generally perpendicular thereto which extends into the path of movement of said magnetic core.

4,227,826

HUB-LOCKING DEVICE

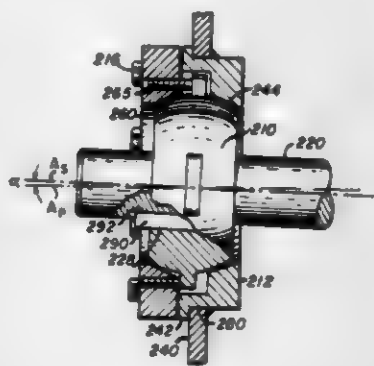
Rene A. Conrad, Woodside, Calif., assignor to Dynaloc Corporation, San Mateo, Calif.

Continuation-in-part of Ser. No. 801,164, May 27, 1977, Pat. No. 4,140,413. This application Feb. 16, 1979, Ser. No. 13,187

Int. Cl.² B25G 3/20

U.S. Cl. 403—371

6 Claims



1. A hub-locking device for use in coaxially mounting each end of a cylindrical pulley to a shaft comprising:
 - a collet having a generally spherically-shaped outer surface, a centrally located shaft receiving bore, a longitudinally extending slot passing through one side of said collet permitting compression of said collet around the shaft, and at least one radially extending lug;
 - a hub for attachment to an end of the cylindrical pulley to be mounted and having a first axially tapered bore for receiving one axial extremity of said collet, said hub having a plurality of bolt-receiving tapped bores and at least one lug-receiving recess formed therein;
 - a clamping ring having a second axially tapered bore for receiving an opposite axial extremity of said collet, said ring having a plurality of bolt-receiving bores formed therethrough; and
 - bolt means passing through said bolt-receiving bores in said clamping ring for threading into said tapped bores to draw said clamping ring towards said hub to position said lug within said recess and to compress said collet into locking engagement with the shaft passing therethrough, said lug serving to prevent rotation of said collet with respect to said hub.

4,227,827

VIBRATORY COMPACTING ROLLER

Bruno Arenz, Düsseldorf, Fed. Rep. of Germany, assignor to Losenhausen Maschinenbau AG, Düsseldorf, Fed. Rep. of Germany

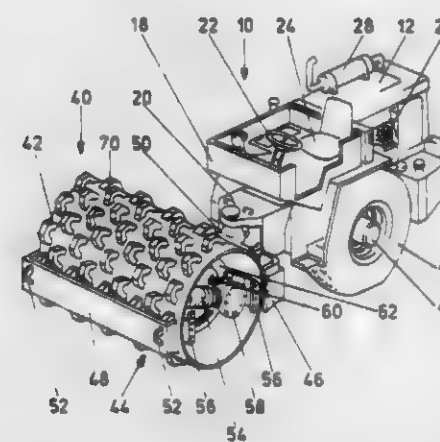
Filed Aug. 25, 1978, Ser. No. 936,873

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739338

Int. Cl.² E01C 19/26

U.S. Cl. 404—121

1 Claim



1. A roller drum, for compacting rollers, said roller drum comprising:
 - a cylindrical roller; and
 - a plurality of substantially trapezoidal shaped tamping elements disposed about an outer cylindrical surface of said roller, each of said tamping elements having disposed therein a recess open towards said outer cylindrical surface;
 wherein said trapezoidal shaped tamping elements include:
 - a ground engaging side;
 - a base including two stems having curved end faces adapted to the curvature of the outer cylindrical surface of the roller, said base being longer than said ground engaging side and spaced radially inward from said ground engaging side; and
 - two legs of substantially equal length joining said ground engaging side and base; and
 - wherein an acute edge formed at a joint line between one of said legs and one of said curved end faces is cut off to form a truncated edge face.

4,227,828

BUILDING BERTH VESSEL SUPPORT AND HANDLING SYSTEM

Jury P. Ivanov, Grazhdansky prospekt, 92/2, kv. 1, and Evgeny A. Evstafiev, ulitsa Karpinskogo, 31, korpus 1, kv. 139, both of Leningrad, U.S.S.R.

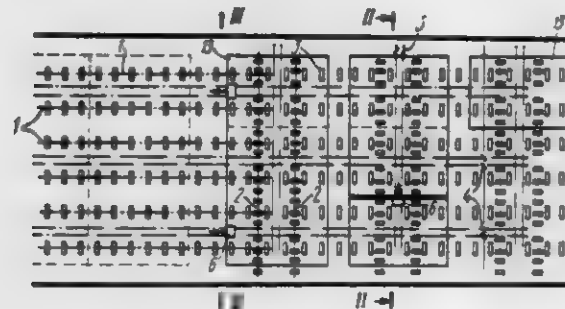
Filed Jun. 1, 1978, Ser. No. 911,537

Claims priority, application U.S.S.R., Jun. 1, 1977, 2492490[I]

Int. Cl.² B63C 5/05

U.S. Cl. 405—1

9 Claims



1. A building berth vessel support and handling system comprising:
 - a first plurality of keel blocks arranged in longitudinal rows

for supporting a vessel as the vessel is moved in a longitudinal direction, said first plurality of keel blocks having support pads for supporting the vessel, said support pads being movable between raised and lowered positions; a second plurality of keel blocks arranged in transverse rows for supporting a vessel as the vessel is moved in a transverse direction, said second plurality of keel blocks having support pads for supporting the vessel, said support pads being movable between first and second positions, the first positions being lower than the raised positions and the second positions being higher than the lowered positions of said support pads of said first plurality of keel blocks; and

each of said first and second plurality of keel blocks comprising:

- a support positionable on a floor of a building berth;
- a lifting mechanism installed in said support for raising and lowering said support pad;
- a housing resting on said lifting mechanism and accommodating said support pad, said housing being movable by said lifting mechanism to raise and lower said support pad, the support pads of said first plurality of keel blocks being positionable in said raised positions, and the support pads of said second plurality of keel blocks being positionable in said first lower positions to facilitate longitudinal movement of a vessel, and the support pads of said first plurality of keel blocks being positionable in said lowered positions, and the support pads of said second plurality of keel blocks being positionable in said second higher positions to facilitate transverse movement of a vessel.

4,227,829

SOIL EROSION PREVENTION BLOCKS

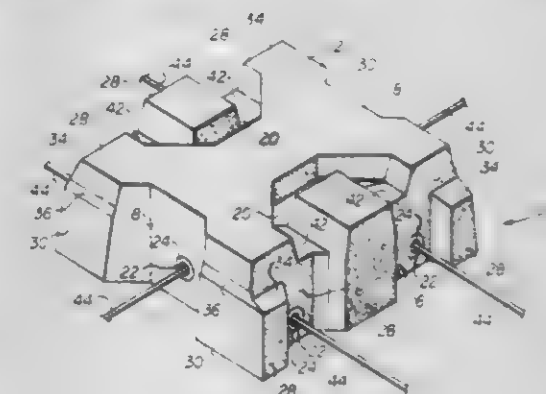
Kossuth J. Landry, Jr., P.O. Box 2581, Lafayette, La. 70502

Filed Nov. 29, 1978, Ser. No. 964,598

Int. Cl.² E02B 3/12; F02D 17/20

U.S. Cl. 405—20

15 Claims



1. A device for positioning upon a surface for controlling the erosion of soil therefrom, said device comprising a block having:

- (a) an upper surface
- (b) a lower surface
- (c) a plurality of side surfaces, said block defining:
 - (1) a plurality of first passageways connecting said upper and lower surfaces for permitting soil and foliage to pass through said block to retain said block in position and prevent erosion of the soil, and
 - (2) a plurality of second passageways connecting opposite side surfaces for permitting a cable or the like to pass through said block for retaining said block in position during transporting, installation and while said block is in position as a soil erosion controlling device each of said second passageways including a tunnel therein of reinforcing material for imparting structural reinforcement to said second passageway and to said block, and
- (d) at least one cable or the like passing through said second

passageway, said cable being anchored at at least one end thereof into the surface below said block, once said block is in position, to retain said block in position.

4,227,830

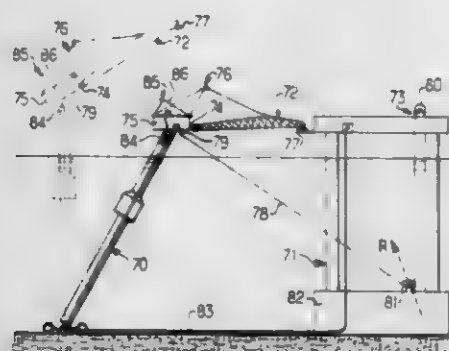
ANCILLARY OFF-SHORE COLUMN LOCATED NEAR A SEA-BED WORKING COLUMN OR PLATFORM

Samuel Tuson, Mesnil-le-Roi, France, assignor to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H., France
Filed Jun. 23, 1978, Ser. No. 918,686

Claims priority, application France, Jun. 30, 1977, 77 20164
Int. Cl.² E02D 21/00

U.S. Cl. 405—195

18 Claims



1. An auxiliary off-shore column located near a working column or platform for sea-bed exploitation, said auxiliary column being pivotally connected with its submerged lower part to a base member resting on the sea bottom whereas its emerged upper part comprises preferably at its top a landing area for instance for helicopters, said submerged lower part comprising a main float for keeping said auxiliary column in an at least approximately vertical position, wherein the improvement consists in that said auxiliary column is fitted up at least in part between its top and the main float with dwelling rooms, living quarters or like accommodation facilities for the staff on duty on said working column or platform and in that there are means for providing an at least temporary communication between both columns with a view to transferring said staff, said communication means comprising a footbridge connecting said fitted-up part to said working column or platform, said footbridge comprising at least two elements pivotally connected in series to each other, said footbridge being supported at an intermediate point thereof by means of a float device, the overall length of both elements being higher than the greatest distance separating, at its level, the dwelling column from the working column or platform.

4,227,831

SELF-CONTAINED OFFSHORE PLATFORM

Darrell L. Evans, Spring, Tex., assignor to Raymond International Builders, Inc., Houston, Tex.

Filed Apr. 4, 1978, Ser. No. 893,432

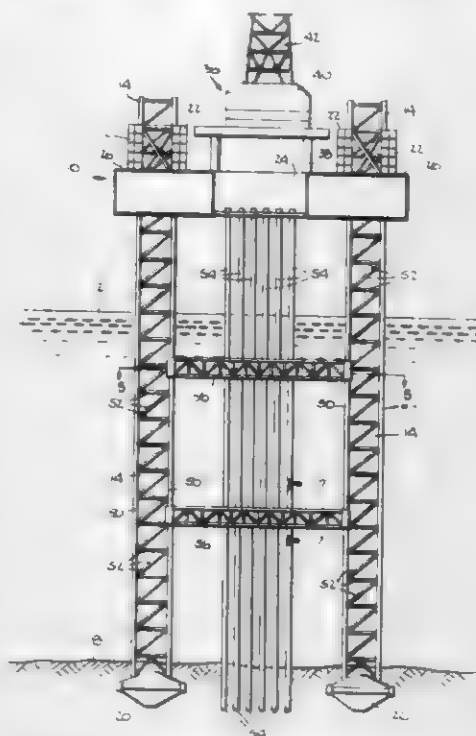
Int. Cl.² E21B 15/02

U.S. Cl. 405—196

15 Claims

1. An offshore platform structure comprising a barge-like floatable hull, a plurality of support legs mounted on said hull to move up and down with respect to said hull, jacking mechanisms interconnecting said hull and said legs to lift said legs up from the sea bottom for floating said hull to a desired offshore location, to lower said legs down to the sea bottom at said desired offshore location and to lift the hull up above the sea surface onto the thus lowered legs, said hull being formed with an opening located between two of said legs for accommodating elongated conductors extending down from a drilling tower mounted on said hull over said opening, at least one conductor support extending between said two legs under said hull, said conductor support being formed with guide sleeves in alignment with said opening to guide and give lateral support to said conductors, said conductor support including leg engaging means at each end thereof for holding said conductor

support to said two legs, said leg engaging means being formed and constructed to allow said conductor support to move up and down freely along said two legs while being guided



4,227,832

DOCKSIDE PROTECTIVE DEVICE FOR BOATS

Anthony J. Leone, 3301 Raleigh St., Hollywood, Fla. 33021; Raymond A. Leone, 4891 SW. 36 Ct., Pembroke Park, Fla. 33023, and James Long, 10120 Torchwood Ave., Plantation, Fla. 33024

Filed May 23, 1978, Ser. No. 908,642

Int. Cl.³ E02B 3/22

U.S. Cl. 405—215

12 Claims



1. For attachment relative to a vertical member such as a piling in a boat docking area, a protective device for boats comprising:

- an elongated vertically extending H-like beam having an inner portion with means for fixedly mounting the beam to a piling-like boat docking structure, and an outer T-shaped portion extending horizontally from the inner portion along the vertical length of the beam,
- an elongated vertically extending, resilient protective member having
 - a top end,
 - a bottom end,
 - an outside abutment surface,
 - a T-shaped inner wall vertically extending from the top end to the bottom end of the protective member, the T-shaped inner wall defining a seam, the seam being distended and enlarged at both ends of the protective

member defining distorted T-shaped openings, and gripper means for gripping the outer T-shaped portion of the H-beam, and means for supporting and positioning the protective member on the beam.

4,227,833

MINERAL MINING INSTALLATION

Karl-Heinz Plester, Lunen, and Friedrich Eggenstein, Bergkamen-Oberaden, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

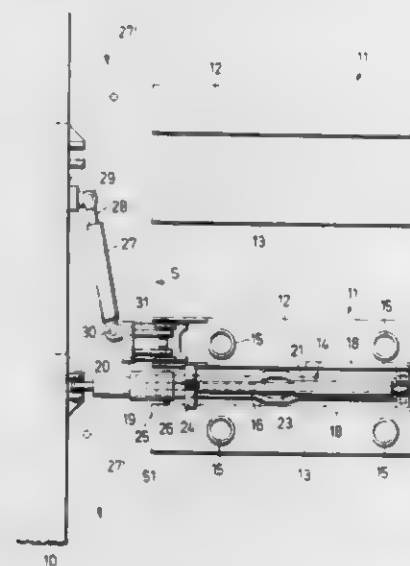
Filed Jan. 8, 1979, Ser. No. 1,652

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800619

Int. Cl.² E21D 23/00

U.S. Cl. 405—299

12 Claims



1. In a mineral mining installation including a longwall structure and a roof support unit, the roof support unit being provided with a substantially horizontal, hydraulic bracing ram disposed at an acute angle to the longwall structure and acting on said structure to brace said structure longitudinally, the bracing ram being pivotally attached to a floor sill of the roof support unit by connection means, the improvement characterized by:

the connection means comprising a bracket slidably mounted on an end of the floor sill adjacent to said longwall structure for movement towards and away from said structure, and means for securing the bracket to the floor sill in any one of a plurality of positions to enable the angular position of the bracing ram to be maintained substantially constant when the distance between the roof support unit and the longwall structure is changed.

4,227,834

BLOCK LAYING MACHINE

Robert E. Crowe, Milton, Canada, assignor to Terraflux Erosion Control Products, Inc., Rexdale, Canada

Filed Jan. 16, 1979, Ser. No. 3,876

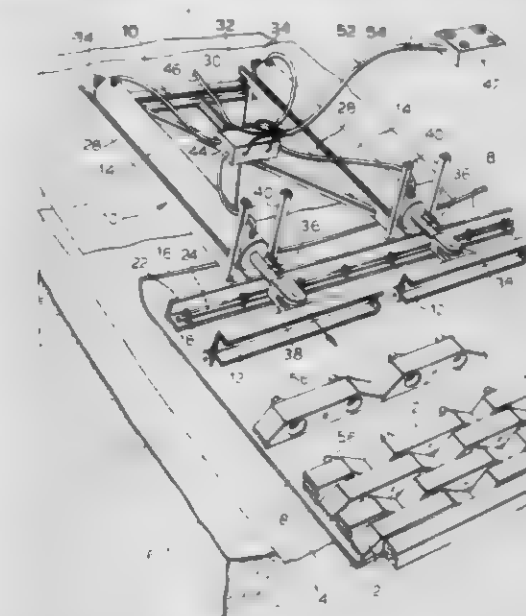
Int. Cl.³ E01C 19/52; E02B 3/12

U.S. Cl. 405—303

6 Claims

1. A machine for laying interlocking blocks on a prepared surface comprising a thin, flexible, rectangular apron upon which successive courses of blocks may be laid extending parallel to and commencing at one marginal edge, said apron presenting a low frictional resistance to movement of the blocks over its upper surface and to movement of its lower surface over the prepared surface, a frame connected to a second marginal edge of the apron opposite said one marginal edge, at least two laterally spaced pusher bars overlying the apron and extending substantially parallel to said marginal edges, each pusher bar being engageable with a different part

of the same course of blocks, a retractable actuator acting between each pusher bar and the frame and operable so as to



push its associated bar and the frame apart, and means for operating each of said actuators independently.

4,227,835

APPARATUS FOR THE METERED SUPPLY OF POWDER TO A POWDER PROCESSING UNIT

Herbert Nussbaum, Geroldswil, Switzerland, assignor to Plasmainvent AG, Zug, Switzerland

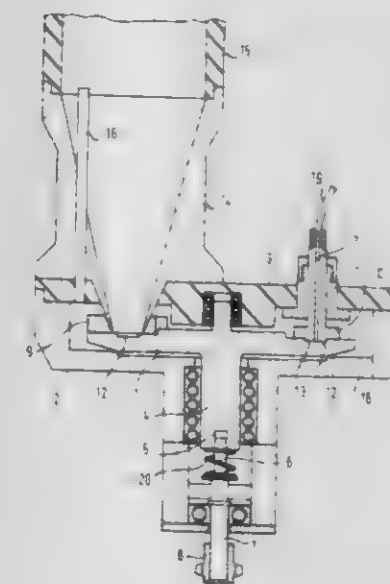
Filed Feb. 21, 1979, Ser. No. 13,274

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807866

Int. Cl.³ B65G 53/48

U.S. Cl. 406—52

13 Claims



1. Apparatus for the metered supply of powder to a powder unit, the apparatus comprising:
a rotatable metering plate,
a circularly extending powder groove in the metering plate,
a powder container located above the groove,
an outlet from the powder container to the groove, and
a suction device, for removing powder from the metering plate, provided above the powder groove and extending into the powder groove, wherein
a doctor member is positioned around the outlet of the powder container, is supported on both sides of the powder groove and its rear end, and has a chamfer in the lower surface in the region of the container outlet,
the suction device being supported on both sides of the powder groove and comprising a suction bore and a crescent-shaped projection behind the suction bore, said projection extending into the powder groove as far as the

bottom surface thereof, the concave end face of said crescent-shaped projection directed towards the suction bore, and resilient means for biasing the metering plate against the doctor member and the suction device.

4,227,836

SUSPENSION FOR SILO UNLOADERS

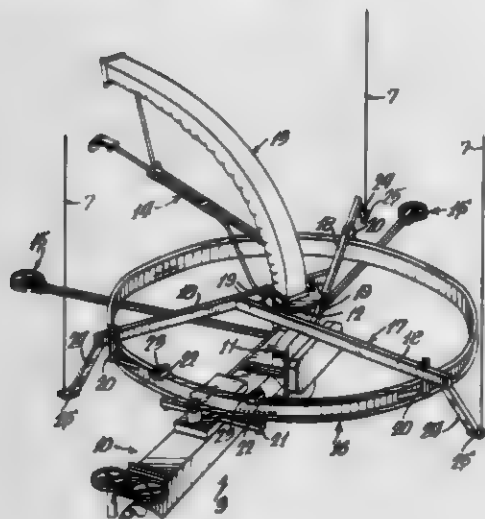
Cary L. Sizelove, and Donald G. Wells, both of Harvard, Ill., assignors to Chromalloy American Corporation, New York, N.Y.

Filed May 10, 1979, Ser. No. 37,907

Int. Cl.³ B65G 53/50

U.S. Cl. 406-114

5 Claims



1. In a silo unloader of the type which includes a cutter-conveyor pickup arm, an impeller to receive silage from the pickup arm and discharge it from the silo, a drive ring generally concentric with the impeller, one side of said drive ring overlying the pickup arm, a plurality of effectively horizontal support arms which have inner end portions secured above the impeller and outer end portions overlying the drive ring and secured thereto, a supporting framework in the top of the silo, suspension cables trained over sheaves at the top of the supporting framework and secured to the extremities of the support arms, and means for extending and retracting the suspension cables to move the silo unloader vertically, the improvement comprising:

said support arms have downwardly and outwardly extending offset portions outside the drive ring which have their free ends in a plane above the bottom of the cutter-conveyor, and the free ends of said offset portions are constructed and arranged for securement of the suspension cables, whereby the silo unloader may be raised to a position in which the effectively horizontal support arms are effectively at or above the horizontal plane of the sheaves and the pickup arm is substantially higher than the top of the silo wall.

4,227,837

ROUTER BIT

Shigeyasu Yodoshi, 6-22, Sakaemachi, Kawachinagano-shi, Osaka-fu, Japan

Filed Oct. 12, 1978, Ser. No. 950,619

Claims priority, application Japan, Mar. 9, 1978, 53-27207

Int. Cl.³ B26D 1/12

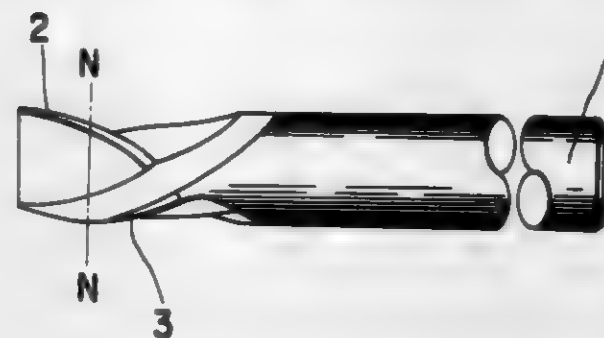
U.S. Cl. 407-53

6 Claims

1. A router tool for use in chamfering or finishing a side or edge of a board, particularly a fiber reinforced plastic board, said router tool comprising:

an elongated body having a longitudinal rotational axis, a periphery, a free end and a shank end;
an even number of paired cutting edges formed in said periphery of said body adjacent said free end thereof;
said cutting edges of each said pair of cutting edges extend-

ing helically in opposite directions but at equal helical angles with respect to said rotational axis; and
said cutting edges being positioned such that when they are developed along a direction circumferentially of said body



about said rotational axis, thus developed cutting edges of opposite helix at least partially overlap each other in said direction and are spaced at an area in said direction by a constant pitch, said area forming a cutting zone for use in chamfering or finishing a side or edge of a board.

4,227,838

GROOVING AND CUT-OFF TOOL

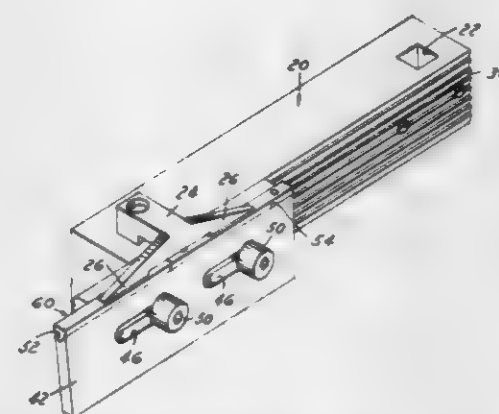
Robert W. Berry, Hazel Park, Mich., assignor to Fansteel Inc., North Chicago, Ill.

Filed Jan. 8, 1979, Ser. No. 1,683

Int. Cl.³ B26D 1/12

U.S. Cl. 407-77

2 Claims



1. A cutting tool for holding relatively small replaceable inserts which comprises:

- a tool body to be held in a machine adjacent a workpiece having a flat face formed with parallel, elongate serrations,
- a holding plate on said body having serrations on one surface complementary to those on said body and having an exposed recess to receive a cutting insert,
- means on said body to retain said plate securely against said body in one of a plurality of adjusted positions,
- clamping means on said body shaped to overlie said exposed recess to clamp an insert in said recess,
- said clamping means comprising a portion to overlie said recess and a threaded portion received in one end of a recess in said body, a threaded insert in the other end of said body recess, and a double-threaded screw received in said threaded insert and said threaded portion to move said clamp toward and away from said body, and
- said threaded insert in the other end of said body recess comprising a block having an out-of-round portion to be received in said recess and a portion to seat against said body.

4,227,839

ANGLE INDICATING ATTACHMENT FOR DRILLS

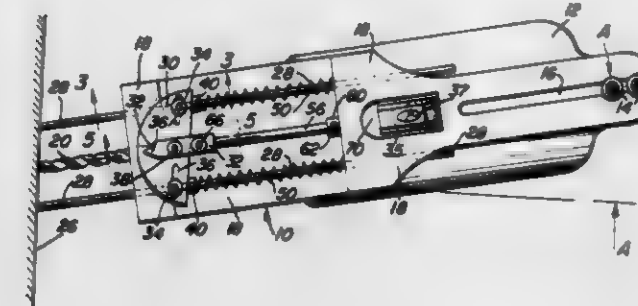
Ceil L. Conway, 2003 N. Brentwood, Essexville, Mich. 48732

Filed Nov. 29, 1978, Ser. No. 964,786

Int. Cl.³ B23B 49/00, 39/00

U.S. Cl. 408-116

10 Claims



1. A device having angle indicating means for removable attachment to a hand held drilling tool comprising, in combination, an elongated, symmetric body being rigidly and removably held above said drilling tool along its longitudinal extent by attaching means, visual vertical angle indicating means and visual horizontal angle indicating means, said horizontal indicating means including a pair of parallel forwardly extending angle gauge pivot rods held by said body in spaced relationship for contacting a surface for drilling by said drilling tool, said rods being adapted to move freely in the longitudinal direction and to orient indicating means attached to said body for indicating the horizontal angular relation of said drilling tool to said surface, said indicating means comprises an angle gauge pivotable, in response to relative moving displacement of said rods, about a pivot axis longitudinally slidable in the plane of symmetry of said body, said indicating means further including an angle indicator fixed in angular position with respect to the longitudinal extent of said body for visual observation of the angle of pivoting of said angle gauge about said pivot axis wherein said horizontal and vertical angle indicating means permit continued visual observation during use of said drilling tool in drilling into a flat surface.

4,227,840

DRILLING ATTACHMENT FOR CHAIN SAW

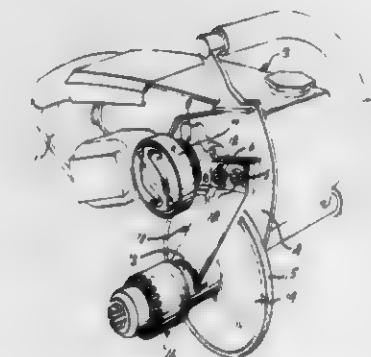
Clovis Thivierge, R.R. No. 2, Drummondville, Quebec, Canada

Filed May 18, 1979, Ser. No. 40,190

Int. Cl.³ B23B 43/00; B27G 17/00

U.S. Cl. 408-20

6 Claims



1. For a chain saw having a driving output shaft and a cutter bar connection device adjacent the driving output shaft, the invention comprising a drilling attachment including a first friction drive wheel securable on said driving output shaft for bodily rotation therewith, a mounting bracket rigidly securable to said cutter bar connection device, a second friction drive wheel rotatively carried by said mounting bracket and operatively frictionally engaging said first friction drive wheel and driven by the latter, and a drill chuck fixedly connected to the second friction drive wheel and bodily rotating with the latter

in response to rotation of the first friction drive wheel in operative engagement with the second friction drive wheel.

4,227,841

BORING BAR

Donald L. Hoover, 4428 Coachwood Ln., Gastonia, N.C. 28052

Filed Feb. 15, 1979, Ser. No. 12,304

Int. Cl.³ B23B 51/00

U.S. Cl. 408-197

11 Claims



1. A boring bar comprising an elongate body having a free end provided with an end surface thereon inclined at an acute angle transversely of the longitudinal axis of said body, an elongate cutting member positioned against said inclined end surface, said inclined end surface having a recess extending inwardly therefrom, a yoke member positioned in said recess and having a portion extending outwardly beyond said inclined end surface and perpendicular thereto and surrounding-ly engaging said cutting member, said yoke member also having an inner portion extending inwardly beyond said recess and perpendicular to said inclined end surface, and securing means cooperating with said inner portion of said yoke member for applying an inward force thereto in a direction perpendicular to said inclined end surface of said body for clampingly securing said cutting member firmly against said inclined end surface.

4,227,842

METHOD OF USING $\text{Si}_3\text{N}_4\text{-Y}_2\text{O}_3\text{-SiO}_2$ CERAMIC SYSTEM FOR MACHINING CAST IRON

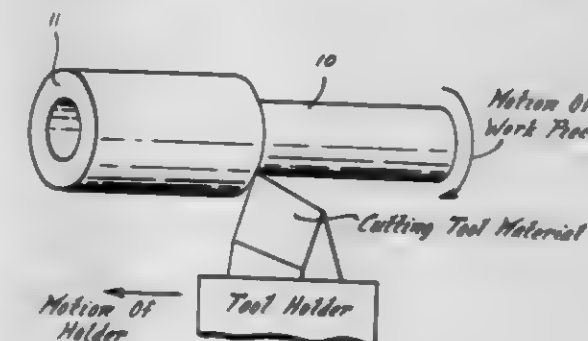
Shyam K. Samanta, Ypsilanti; Krishnamoorthy Subramanian, Inkster, and Andre Ezis, Grosse Ile, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 954,796, Oct. 25, 1978, abandoned, which is a division of Ser. No. 911,256, May 31, 1978. This application Dec. 20, 1979, Ser. No. 105,829

Int. Cl.³ B23C 1/00; C04B 35/58, 35/50

U.S. Cl. 409-131

5 Claims



1. A process for continuous or interrupted machine cutting of solid cast iron stock by milling, turning or boring with a shaped tool wherein said shaped tool is a ceramic consisting essentially of Si_3N_4 and 4-12% by weight Y_2O_3 , produced by

hot pressing at a predetermined pressure, said pressure being maintained continuously during heating at an ultimate pressing temperature of 1700°-1750° C. until a density of at least 3.25 g/cm³ is obtained and shaping the hot pressed ceramic into a cutting tool.

4,227,843

DEVICE FOR COUPLING, TRANSPORTATION AND PLACING OF GOODS CONTAINERS

Sverre Damm, Anton Schudis vei 25, Oslo 5, Norway

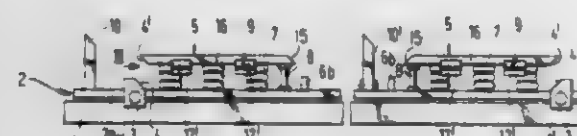
Filed Feb. 23, 1978, Ser. No. 880,565

Claims priority, application Norway, Feb. 23, 1977, 770597

Int. Cl.³ B60P 1/64

U.S. Cl. 410-54

8 Claims



1. A device for supporting a container on a chassis (1) of a vehicle and for coupling the container to the chassis, said device comprising: a pair of longitudinal, substantially parallel beams (2) defining a basic frame linkable to said chassis (1), each longitudinal beam (2) of said pair having a sloped inside face (17), the inside faces (17) of the two beams (2) facing each other; cross-beams (3) mounted near end portions of said pair of beams (2), said cross-beams having facing sloped faces (4); at least two bridges (5), each bridge having a platform (5) which covers part of the space defined between said pair of longitudinal beams (2), each platform having at one of its ends a sloped lower face (4') complementary to the sloped face (4) of the cross-beam (3) to which it is adjacent, and each platform (5) having downwardly projecting side feet (9) with lower surfaces complementary sloped to said sloped faces (17) of the two longitudinal beams (2); lifting means (7) arranged below said platforms (5) for raising said bridges into contact with the bottoms of containers to be supported; and means for coupling a supported container with said device.

4,227,844

APPARATUS FOR LIFTING AND TRANSPORTING LARGE BALES OF MATERIAL

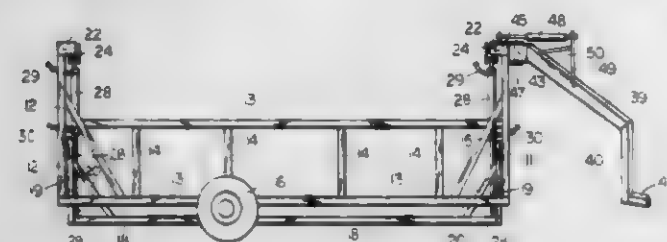
Phillip W. Love, P.O. Box 323, Smithville, Tenn. 37166

Filed Jan. 16, 1979, Ser. No. 3,984

Int. Cl.³ B60P 3/00

U.S. Cl. 414-24.5

6 Claims



1. Apparatus for picking up and transporting one or more large bales of material, such as large cylindrical bales of hay, said apparatus comprising inverted, substantially U-shaped members; elongate frame members joining the mutual legs of the respective U-shaped members to provide a load-carrying chamber defined by the frame members at the respective sides, and the U-shaped members at the front and rear ends, respectively; a pair of wheels mounted at the respective sides of the load carrying chamber; means for connecting the apparatus to a motive vehicle; a pair of elongate, load-lifting structures pivotally attached to respective sides of the load-carrying chamber, said load-lifting structures comprising respective lowermost elongate lift members extending substantially the length of and substantially parallel to the respective sides of the load-carrying chamber, said lift members being pivotally at-

tached to the respective sides of the load-carrying chamber by respective sets of arm members, so that the lift members can be moved in a swinging motion outwardly and upwardly from lowered positions adjacent to the lower sides of the load-carrying chamber to elevated positions extending outwardly from the respective sides and upwardly from the bottom of the load-carrying chamber and back to the lowered positions; at least one track means extending substantially transversely from the top of one of the sides to the top of the other side of the load-carrying chamber; a pair of carriages for each track means, said carriages being adapted to move outwardly along the track means from the respective sides of the load-carrying chamber; longitudinally expandable force members connected at mutually respective ends thereof to the respective carriages, with the mutually opposite ends of the expandable force members being connected to the respective load-lifting structures, whereby when the expandable force members are in their fully extended position, the carriages are positioned adjacent to the respective sides of the load-carrying chamber with the force members extending downwardly therefrom substantially alongside the respective sides of the load-carrying chamber, and when the expandable force members are shortened, the load-lifting structures move into their elevated position and the carriages move toward the center of the load-carrying chamber so as to maintain the expandable force members in substantially vertical position, thereby exerting maximum force on the load-lifting structure.

4,227,845

ROLLING RACK CONTROL FOR AUTOMATIC BALE WAGON

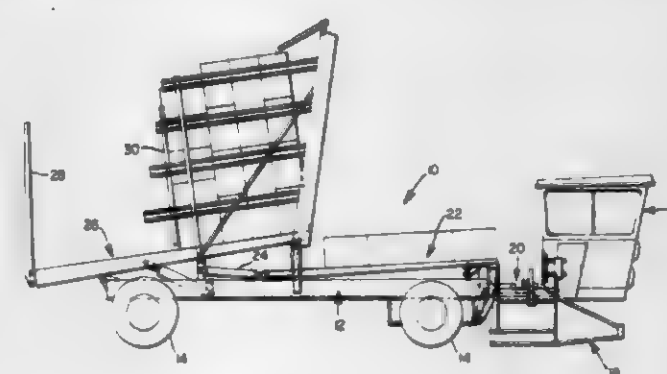
Richard A. Colby, Fresno; Leo B. Parolini, Manford, and L. Dennis Butler, Kingsburg, all of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 14, 1978, Ser. No. 933,234

Int. Cl.² A01D 87/12; B65G 57/32

U.S. Cl. 414-39

6 Claims



1. In a bale wagon having a rolling rack movable along the load bed thereof for supporting tiers of bales deposited on said load bed by the tier forming table, the improvement which comprises:

a single acting hydraulic cylinder for positively advancing said rolling rack to a first position, means for selectively connecting said hydraulic cylinder with a source of hydraulic fluid under pressure for extending said hydraulic cylinder and including a fluid flow line, oscillator means connected with said fluid flow line for selective intermittent release of fluid pressure from said fluid flow line so that when mechanical pressure is exerted against said hydraulic cylinder in such a manner as to urge retraction of said hydraulic cylinder, such retraction may be controlled by intermittent release of pressure from said fluid flow line.

4,227,846

METHOD AND APPARATUS FOR LOADING OR UNLOADING WATER VESSELS

Veikko Koskivirta, Vantaa, Finland, assignor to Valmet Oy, Finland, Finland

Filed Jun. 7, 1978, Ser. No. 913,483

Int. Cl.³ B65G 67/58

U.S. Cl. 414-139

4 Claims



1. Apparatus for transporting cargo between a water vessel and a quay comprising:

a pair of elongate substantially parallel pontoon members extending substantially perpendicularly to the edge of said quay, said pontoon members being spaced from each other so as to define an area between them for accommodating at least one water vessel and wherein each pontoon member has a first end proximate to the quay edge and a second distal end and track means extending over the substantial length thereof between said first and second ends;

mobile crane apparatus including a pair of carriage assemblies, each of said carriage assemblies being supported for movement on said track means of a respective one of said pontoon members, a beam member having end portions affixed to respective ones of said carriage assemblies, said beam member extending substantially horizontally over the vessel accommodating area, and means associated with said beam member for engaging and supporting the cargo;

ramp means extending between and interconnecting the first end of each of said pontoon members and the quay; and means for adjusting the height of said track means relative to the quay for substantially aligning said track means with the surface of said quay;

whereby said crane apparatus can be moved between said pontoon members and quay over said ramp means.

4,227,847

APPARATUS FOR LOADING OVENS FOR THE PRODUCTION OF TILES

Renato Bossetti, Novara, Italy, assignor to Società Impianti Termoelettrici Industriali (s.a.s.), Marano Ticino, Italy

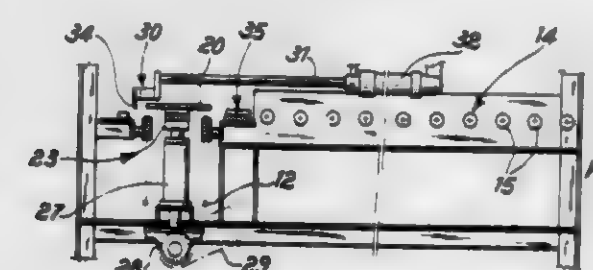
Filed Jul. 28, 1978, Ser. No. 929,293

Claims priority, application Italy, Jul. 28, 1977, 26235 A/77

Int. Cl.³ F27B 9/02; B65G 47/54

U.S. Cl. 414-152

3 Claims



1. A loading apparatus for loading tiles to be fired into each tile treatment and/or firing chamber of an oven, wherein the tiles travel parallel to the longitudinal axis of a chamber at a linear processing speed, said apparatus comprising:

spaced belt means for feeding tiles to be fired in a direction perpendicular to said longitudinal axis; stop means positioned adjacent said belt means for stopping the progress of said tiles in said direction and for forming said tiles into a file on said belt means; vertically movable support means, vertically displaceable between a lowermost position and an uppermost position, for, during movement from said lowermost to said uppermost positions thereof, engaging undersides of said tiles of said file of tiles and for lifting said file of tiles above the level of said belt means, said support means comprising a movable support member having extending upwardly from an upper portion thereof projections separated and defined by recesses forming free transverse passages extending across said movable support member and parallel to said longitudinal axis, said projections having upper surfaces adapted to engage said undersides of said tiles; conveyor means, positioned adjacent said belt means and said movable support means, for conveying said file of tiles in a direction parallel to said longitudinal axis to the chamber, said conveyor means comprising a plurality of rollers having axes extending perpendicular to said longitudinal axis; and

means for removing said file of tiles from said movable support member and for transferring the thus removed file of tiles to said conveyor means, said removing means comprising a thruster member mounted for horizontal displacement in directions parallel to said longitudinal axis, said thruster member including a plurality of fingers for engaging sides of said tiles of said file of tiles, said fingers being positioned and dimensioned such that when said movable support member is in said uppermost position thereof said fingers register with said free passages of said movable support member and contact said sides of said tiles over substantially the entire thickness of said tiles.

4,227,848

CAN CHANGING DEVICE

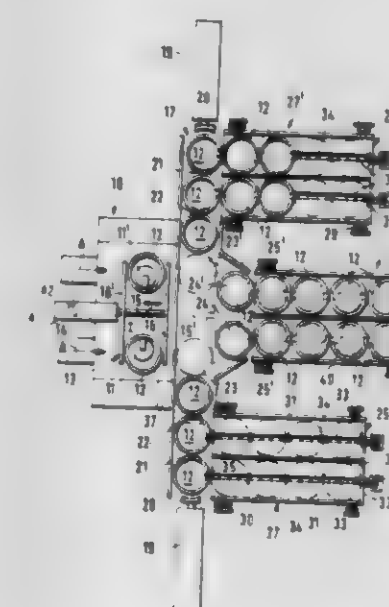
Kurt Kriebbaum, Ebersbach; Hans Kienhofer, Rechberghausen, and Rin J. Picht, Hochdorf, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 728,063, Sep. 30, 1976, abandoned. This application Jan. 12, 1979, Ser. No. 3,313 Claims priority, application Fed. Rep. of Germany, Sep. 30, 1975, 2543621

Int. Cl.³ B65G 67/00

U.S. Cl. 414-395

13 Claims



1. A can changing apparatus for a silver collecting machine wherein the operation of loading and unloading stations is exchangeable comprising:

means defining a filling station for supporting silver cans in a position to be filled;
 a straight conveyor path slightly wider than the silver can diameter extending parallel to said filling station;
 means defining an intermediate station for temporary storage of full cans on the other side of said path from said filling station as they are removed from the conveyor path;
 first conveyor means for advancing empty cans along said path and into position directly in front of said filling station;
 full-can receiving cart means positioned adjacent and on the opposite side of said intermediate station from said path;
 rotatable second conveyor means at said filling station for moving filled cans first from said filling station to said path, next through said path to said intermediate station and then onto said full-can receiving cart means, and for moving empty cans from said path to said filling station;
 third conveyor means associated with said empty-can cart means for transferring empty cans from said empty-can cart means to said straight conveyor path, all of said conveyor means operated in timed relation to each other.

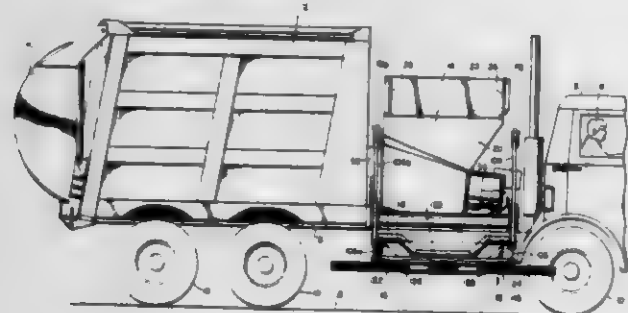
4,227,849

REFUSE COLLECTION DEVICE

Wayne H. Worthington, 720 Prospect Blvd., Waterloo, Iowa 50701, assignor to Wayne H. Worthington, Waterloo, Iowa
 Continuation-in-part of Ser. No. 873,048, Jan. 27, 1978, abandoned. This application May 24, 1978, Ser. No. 908,811
 Int. Cl.³ B65F 3/02

U.S. Cl. 414-408

14 Claims



1. A side loading refuse collection vehicle comprising:
 - a refuse receiving body;
 - a hopper disposed adjacent said body and open at the top to receive refuse;
 - an opening near the bottom of said hopper in the wall adjacent said body for transferring refuse from said hopper to said body;
 - an opening in the wall of said body adjacent said hopper for receiving refuse transferred from said hopper through the opening therein;
 - a screw-type auger in said hopper, aligned with said openings, and operable to transfer refuse from said hopper to said body, said auger having its axis generally longitudinal of the vehicle;
 - a side loading lifting device having an arm mounted on said vehicle adjacent said hopper so as to be pivotable about an axis parallel to the axis of said auger and the arm located generally transverse to the axis of said auger so that elongate articles, normally loaded vertically in a refuse container when loaded will be transverse to the auger axis; means for extending at least a portion of said arm for automatically engaging a refuse container alongside said vehicle; and
 - means for operating said lifting device to raise the container over the hopper and auger and dump the contents of said container into said hopper.

4,227,850

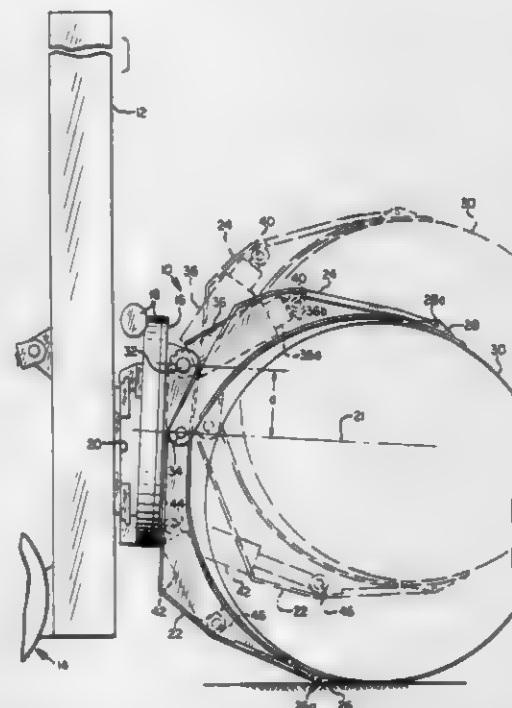
LIFT TRUCK LOAD CLAMP FOR HANDLING PAPER ROLLS

Stanley E. Farmer, Troutdale, and Harry F. Weinert, Portland, both of Oreg., assignors to Cascade Corporation, Portland, Oreg.

Continuation-in-part of Ser. No. 834,107, Sep. 19, 1977, Pat. No. 4,127,205. This application Oct. 20, 1978, Ser. No. 953,093
 Int. Cl.³ B66F 9/18

U.S. Cl. 414-620

2 Claims



1. A load-handling clamp adapted to be mounted upon the lifting apparatus at the forward end of a lift truck for engaging a cylindrical roll of paper and the like, comprising:

- (a) a frame adapted to be mounted upon said lifting apparatus so as to be selectively movable vertically by said lifting apparatus;
- (b) first and second selectively openable and closable opposing clamp arms mounted upon said frame projecting therefrom in a forward direction, each of said first and second clamp arms having a forward end and a rear end respectively;
- (c) pivotal clamp arm connection means for interconnecting the rear end of said first clamp arm with said frame for permitting said first clamp arm to pivot with respect to said frame selectively toward or away from said second clamp arm;
- (d) power means for pivoting said first clamp arm selectively toward or away from said second clamp arm, said power means including selectively extensible and retractable piston and cylinder assembly means pivotally interconnected with said first clamp arm and extending generally rearwardly therefrom toward said frame for causing said first clamp arm to pivot toward said second clamp arm upon extension of said piston and cylinder assembly means;
- (e) said piston and cylinder assembly means including at least two telescopically extending pistons within a cylinder, one of said pistons having a larger cross section than the other piston, the larger piston being slidably nested within said cylinder and extensible outwardly from within said cylinder so as to exert a first clamping force on said first clamp arm when said clamp arms are separated from each other by a first distance, and the smaller piston being slidably nested within the larger piston and extensible outwardly from within said larger piston so as to exert a second clamping force on said first clamp arm which is less than said first clamping force when said larger piston is fully extended outwardly from within said cylinder and said clamp arms are separated from each other by a second distance which is less than said first distance, said larger piston having means defining a fluid passageway therein

extensible outwardly from within said cylinder in unison with said larger piston for conducting fluid under pressure to said smaller piston for retracting said smaller piston within said larger piston;

- (f) said first clamp arm having means defining an enclosure therein and said piston and cylinder assembly means being enclosed at least partially within said enclosure.

4,227,851

DEVICE FOR PICKING UP AND PLACING ARTICLES ON MOVABLE CONVEYORS AND ASSEMBLY LINES AND TO AN ENDLESS CONVEYOR CONSTRUCTION AND TO AN ARTICLE PICKUP AND DEPOSIT DEVICE THEREFOR

Earl F. Beezer, Hillsdale, N.J., assignor to Stelron Cam Company, N.J.

Division of Ser. No. 820,833, Aug. 1, 1977, Pat. No. 4,166,527.
 This application Aug. 18, 1978, Ser. No. 934,888

Int. Cl.³ B65G 47/90

U.S. Cl. 414-626

5 Claims



1. A fluid pressure operated device for picking up and dropping articles, comprising a first tubular member having a pressure supply connection at one end to the bore thereof, a sleeve engaged over said first tubular member, said sleeve having a longitudinally elongated slot on each side of the wall thereof, a pin extending through said first tubular member and slidably engaging said slots on respective sides of said sleeve member, a pressure release opening in said first tubular member closed by said sleeve in an operative position but being operable by said slot when said slot is moved to a position overlying said opening, a piston in sliding sealing engagement within the interior of said sleeve below said first tubular member, first and second article gripping means disposed below said piston and being movably mounted on said sleeve adjacent the lower end thereof, each gripper member being displaceable by movement of said piston due to actuation of pressure in said first tubular member, the displacement of said gripper members being controlled by the pressure acting on said piston, and spring means for returning said gripper members to a non-actuated position.

4,227,852

RELEASABLE BACKHOE BOOM LOCK

Floyd A. Schmitz, and William F. Joy, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jan. 23, 1979, Ser. No. 5,769

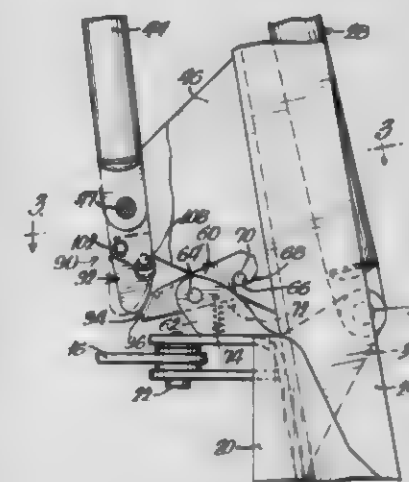
Int. Cl.³ E02F 3/32

U.S. Cl. 414-694

4 Claims

1. In an earthworking implement having one end of a boom pivoted on a swing tower between transport and working

positions and a dipper assembly including a member having an intermediate portion pivoted on said boom at a location spaced from the swing tower and boom pivot, said dipper assembly being pivoted on said boom by a fluid ram having a first element pivoted on said boom and a second element pivoted on one end of said intermediate member and movable between fully extended and retracted positions respectively defining a transport position and a maximum extended position of an opposite end of said dipper assembly with respect to said boom, and releasable lock means between said boom and said swing tower, said releasable lock means including a latch pivoted on said swing tower between first and second positions, said latch having a recess adjacent one end thereof, pin



means carried by said boom and adapted to be received in said recess and positioned so that movement of said boom to said transport position will produce engagement between said latch and said pin means to cause said latch to be pivoted from said first position to said second position until said recess is aligned with said pin means and have said pin means received into said recess, and unlatching means for pivoting said latch between said positions to release said latch, said unlatching means including an extension on said first element, said extension being aligned with said latch to engage and release said latch when said boom is in said transport position and said fluid ram is moved from said fully extended position toward said retracted position.

4,227,853

MANIPULATOR WRIST TOOL INTERFACE

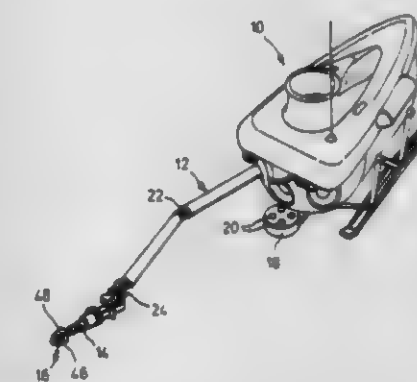
Alan T. Woodford, Owen Sound, Canada, and Michel R. Horel-lou, Bordeaux, France, assignors to Spar Aerospace Limited, Toronto, Canada

Filed Feb. 6, 1979, Ser. No. 9,847

Int. Cl.³ B66C 3/16

U.S. Cl. 414-738

3 Claims



1. A coupler for connecting a tool body and its associated tool actuator linkage to a manipulator arm of a remote manipulator device comprising:

- (a) a tool holder adapted to be secured to the manipulator arm, first latching means on the tool holder at one end

thereof for releasably securing a tool body with respect to said tool holder;

- (b) a tool actuator piston mounted in a first cylinder located within said tool holder, said tool actuator piston having second latching means at one end thereof for releasably securing a tool actuator arm thereto, said second latching means being located at said one end of said tool holder inwardly from said first latching means, said first cylinder being connectable to a source of pressurized fluid whereby said tool actuator piston may be reciprocally driven with respect to said tool holder in response to variations in fluid pressure in said first cylinder between an extended position and the retracted position to provide a drive force for driving a tool actuator of a tool held fast with respect to said tool holder by said first latching means, said one end of said tool actuator piston projecting outwardly a substantial distance from said one end of said tool holder so as to be readily visible to facilitate insertion thereof into a socket in a tool to be coupled by the coupler to said manipulator arm.

4,227,854

APPARATUS FOR REMOVING HEAT EXCHANGER TUBE BUNDLES

William A. Coffey, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

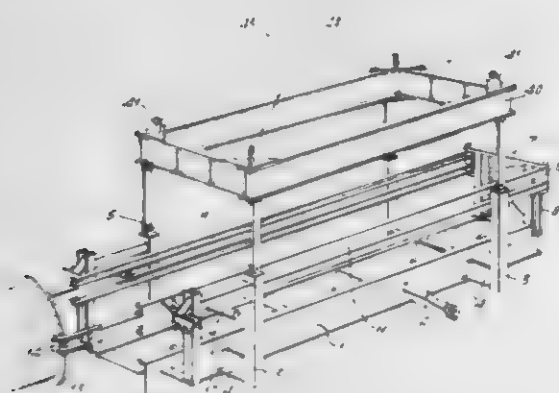
Filed Jul. 10, 1978, Ser. No. 923,443

Claims priority, application United Kingdom, Jul. 11, 1977, 28905/77

Int. Cl.³ B66F 1/00

U.S. Cl. 414-746

11 Claims



1. Apparatus for moving a tube bundle out of or into a heat exchanger shell, comprising
 - an elongated frame structure including a pair of parallel spaced beams;
 - a mobile carriage, for supporting the tube bundle, mounted on said beams for movement therealong;
 - means for connecting and locking said elongated frame structure to the shell of the heat exchanger;
 - a frame movable along the length of said elongated frame structure including a cross-bar extending across said elongated frame structure between said beams, and said frame having means for interconnection to the tube bundle;
 - means for exerting a force on said frame for moving said frame along said elongated frame structure toward and away from the heat exchanger shell, said means comprising: a single main linear force exerting structure; means for mounting said main linear force exerting structure to said frame so that by applying a linear pushing force away from the heat exchanger shell said frame, and the tube bundle connected thereto, will move away from the heat exchanger shell; a plurality of auxiliary force exerting structures; means for mounting each of said auxiliary force exerting structures directly to said means for mounting said main force exerting structure, and to said cross-bar, so that said auxiliary structures are directed opposite to said main structure; and
 - a plurality of lateral thrust surfaces spaced apart along the length of said elongated frame structure to present oppos-

ing thrust surfaces to said auxiliary force exerting structures, and having a first mode of operation in which linear movement of said frame away from the heat exchanger shell is allowed, but movement toward the heat exchanger shell is prevented, and a second mode of operation in which linear movement of said frame toward the heat exchanger shell is allowed but movement away from the heat exchanger shell is prevented.

4,227,855

TURBOMACHINE

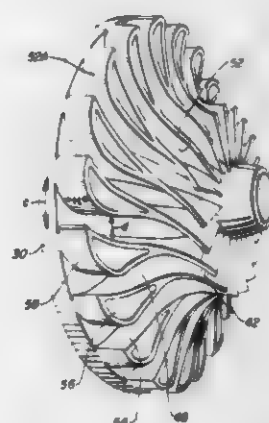
Patrick F. Flynn, Harold G. Weber, and John M. Mulloy, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 25, 1978, Ser. No. 936,695

Int. Cl.³ F04D 29/28

U.S. Cl. 415-215

15 Claims



1. A turbomachine for compressible fluids comprising a rotor mounted for rotation about a substantially central transverse axis, said rotor including a hub, and a plurality of vanes mounted on and projecting from one surface of said hub, each vane extending between the rotor axis and the rotor periphery, adjacent vanes coacting to define at least in part a fluid passageway having a generally axially oriented section adjacent the rotor axis and a generally radially oriented section extending from said axially oriented section to the rotor periphery; a predetermined number of passageways each having a reference station provided with a generally tangentially oriented constriction and disposed within the radially oriented section thereof, the passageway configuration at said reference station having a mean tangential dimension that is no more than about 60% of the mean circumference of the rotor measured at said reference station divided by the number of vanes intersecting said circumference.

4,227,856

REVERSE VELOCITY ROTOR SYSTEM FOR ROTORCRAFT

Thomas D. Verrill, Farmingdale, and John R. Ewans, Shirley, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 12, 1978, Ser. No. 924,101

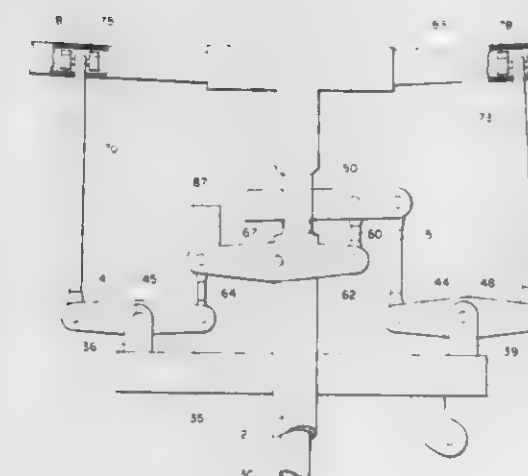
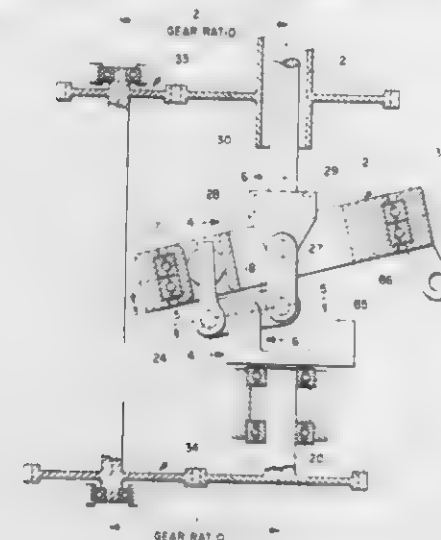
Int. Cl.³ B64C 11/30, 27/32

U.S. Cl. 416-1

6 Claims

2. A system for providing twice-per-revolution or higher harmonic blade pitch control of a helicopter rotor having a rotor hub and a plurality of blades connected thereto for pitch changing movements relative thereto comprising:
 - a hollow drive shaft attached to said rotor hub and drive means for rotating said shaft,
 - a pitch control column received in said shaft and linkage means connecting said column and said blades for imparting pitch movement to said blades;
 - rotatable support means for supporting said column and a swashplate mounted between said rotatable support means

and said column for transmitting oscillatory motion thereto upon tilting of said swashplate; means for tilting said swashplate; and means connecting said drive shaft and said rotatable support means for rotating said swashplate at at least twice the rate



of revolution of said drive shaft, p1 said linkage means including a crosshead at the upper end of said column and said drive shaft having a vertical slot for slidably receiving said crosshead whereby once-per-revolution pitch motion and said at least twice-per-revolution motion are mixed and operate to increase rotor thrust.

4,227,857

COMPOSITE FLEXURAL YOKE FOR HELICOPTERS

Peter A. Reyes, Watauga, Tex., assignor to Textron, Inc., Providence, R.I.

Filed Aug. 19, 1977, Ser. No. 826,111

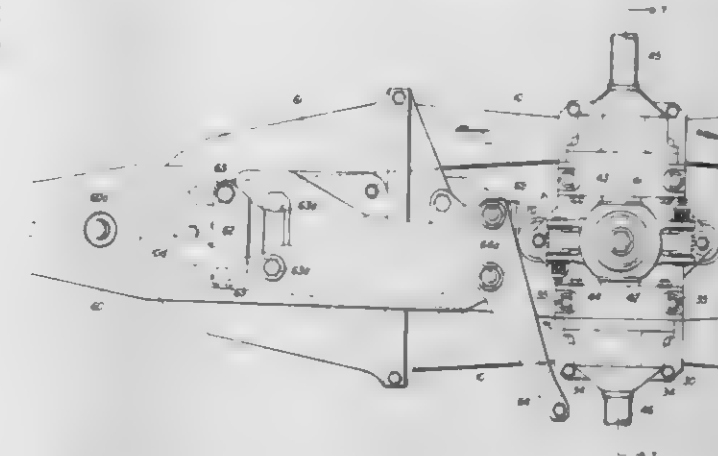
Int. Cl.³ B64C 27/36

U.S. Cl. 416-134 A

5 Claims

1. An improved composite all fiberglass yoke for coupling helicopter blades to a rotatable mast, comprising:
 - an elongate loop of glass fibers defining a longitudinal axis, with two long sides of the loop extending parallel to the longitudinal axis; and
 - a plurality of layers of bias ply glass fibers intersticed between the fibers of said loop of glass fibers and arranged in planes parallel to the longitudinal axis of said loop along said long sides of the loop, said plurality of layers of bias ply glass fibers and said elongate loop of glass fibers being embedded in a cured adhesive to form a unitary structure

and defining means for coupling said yoke to said rotatable mast substantially intermediate said two long sides



whereby torque is transmitted from the shaft to the yoke intermediate said two long sides.

4,227,858

FLEXIBLE SPHERICAL JOINT

Paul J. Donguy, Bruges, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

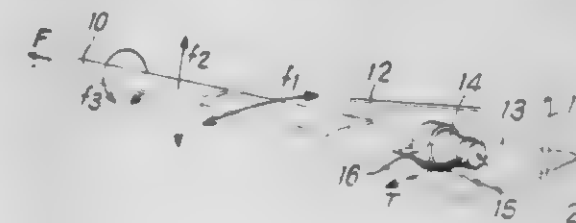
Filed Nov. 10, 1977, Ser. No. 850,301

Claims priority, application France, Nov. 10, 1976, 76 34009

Int. Cl.³ B64C 27/38

U.S. Cl. 416-134 A

7 Claims



1. A spherical bearing for connecting a helicopter rotor hub to a rotor blade comprising:
 - a first and a second end piece connected respectively to the opposite ends of a stack, said first and second end pieces each having respective first and second spherical surfaces which are concentrically arranged,
 - said stack including a plurality of interconnected first and second spherical layers, said first and second layers being arranged to alternate in said stack, said first layers being formed of resilient material, said second layers being formed of metallic material, said first and second layers having a common axis of symmetry and the opposite ends of said stack contacting said first and second spherical surfaces, and
 - at least one completely closed cavity formed centrally in said stack and extending between said end pieces and being free of said resilient material, said cavity being filled with an incompressible fluid to increase the resistance of said joint to compressive stresses, and said axis of symmetry being common to said cavity and to said stack.

4,227,859

ROTOR FOR A GYROPLANE

Michel J. Y. Gouzien, Bouc-Bel-Air, and Edwin Ortega, Marseilles, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jul. 10, 1978, Ser. No. 923,432

Claims priority, application France, Jul. 13, 1977, 77 21659

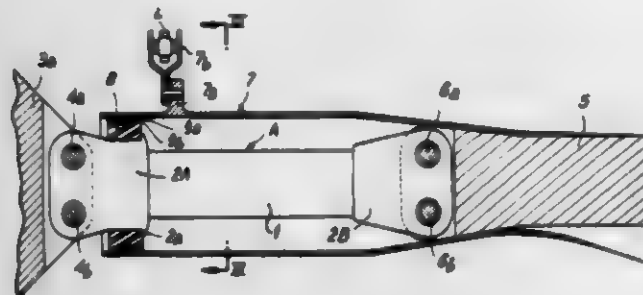
Int. Cl.³ B64C 27/38

U.S. Cl. 416-134 A

6 Claims

1. A rotor, specially for a gyroplane, comprising a hub, at least one blade and one flexible elongate connecting member, interconnecting said blade and said hub, said connecting member comprising fibres having high mechanical strength and

relative elasticity and disposed in an elongate, substantially radial bundle, each fibre being agglomerated by a resin and secured to other fibres by a vulcanized elastomer at least in the mid part of said bundle, at least one rigid tubular sleeve, extending in a spaced and surrounding relationship to said connecting member and having an outer end connected to the root part of said blade, and an inner end with a lateral lug articulated to a blade control lever, and one annular elastomer member inserted in the substantially annular space between the



inner end of said sleeve and the inner end of said connecting member, said annular elastomer member having at least one recess adapted to reduce its rigidity in the axial direction of the rotor, a plain bearing between the inner end of said rigid tubular sleeve and said elastomer member, whereby said tubular sleeve is pivotable around its longitudinal axis and slidable along the same axis, said plain bearing including an outer metal ring, secured in the inner end of said tubular sleeve and an inner ring of self-lubricating material, secured to the periphery of said annular elastomer member.

4,227,860

AIRCRAFT PROPELLER PITCH CONTROL

James R. Humphreys, P.O. Box 133 Victoria Station, Montreal, Canada (P.Q. H3Z-2V4)

Filed Apr. 24, 1978, Ser. No. 898,816

Int. Cl.³ B64C 11/44

U.S. Cl. 416-155

5 Claims



1. An apparatus for changing the pitch of a rotating aircraft propeller blade to selectively decrease the pitch of the blade to provide power for take-off or increase the pitch of the blade to increase speed, comprising:

- an aircraft propeller blade positioned to rotate about an axis of rotation,
- an aircraft propeller hub,
- bearings connecting said propeller blade to said propeller hub that allow said blade to change pitch,
- slide means connected to said aircraft propeller blade by rods for turning said blade on said bearings thereby changing the pitch of said blade, said slide means moveable axially along said axis of rotation,

motor means having a threaded drive shaft connected to said slide means for moving said slide means axially, energy source means connected to said motor means for energizing said motor means, light sensor means connected to said energy source means for generating a signal to energize said motor means, and light source means spaced from said rotating aircraft propeller blade for selectively directing a beam of light onto said light sensor means to actuate said light sensor means thereby causing said light sensor means to generate a signal and energize said motor means to change the pitch of said blade, said light sensor means consisting of a first light sensor and a second light sensor with said first light sensor and said second light sensor spaced at different distances from said axis of rotation and said energy source means consisting of a first means for generating a beam of light and directing the beam of light onto said first light sensor and a second means for generating a beam of light and directing the beam of light onto said second light sensor.

4,227,861

COOLING FAN WITH VISCOUS-MAGNETIC FAN CLUTCH

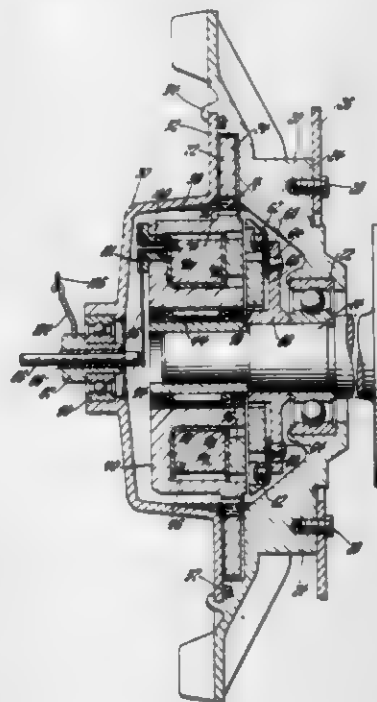
Frank E. LaFlame, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1979, Ser. No. 12,156

Int. Cl.³ F01D 7/08; F16D 29/00

U.S. Cl. 416-169 A

3 Claims



1. A fan drive comprising rotatable input shaft means, drive shoe means mounted on said shaft means for rotation therewith, drive plate means supported by said drive shoe means, a housing disposed around said input shaft means, bearing means supporting said housing for rotation on said input shaft means, selectively electrically energizable coil means disposed in said housing for attracting said drive plate means into driving engagement with said housing so that said housing will be driven by said input shaft means, fan body means rotatably mounted on said input shaft means around said housing, said fan body means having a fluid chamber therein, said housing having a rotor which extends into said chamber, said chamber having a hydraulic fluid therein effective on predetermined rotational drive of said rotor by said input shaft means to transmit drive torque for the hydraulic drive of said fan body.

4,227,862

SOLID STATE COMPRESSOR CONTROL SYSTEM

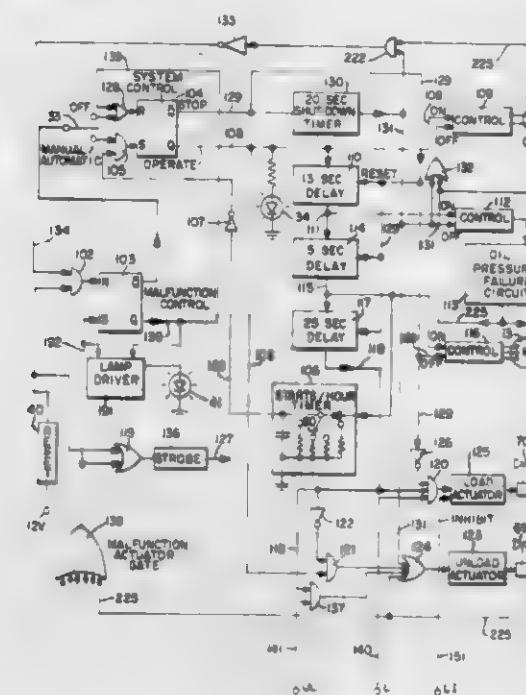
Eduardo V. Andrew, Liverpool, N.Y.; Robert A. Naumas, Jr., Fairfield, Pa., and Richard C. Armstrong, Jr., Inwood, W. Va., assignors to Frick Company, Waynesboro, Pa.

Filed Sep. 19, 1978, Ser. No. 943,887

Int. Cl.³ F04B 49/06, 49/02, 49/10

U.S. Cl. 417-12

18 Claims



1. A control and monitoring system for connection with a fluid compressor driven by a motor and lubricated by an oil pump, the compressor including loading valve means operative to adjust the capacity of the compressor by modulating fluid leakage from its discharge toward its inlet to maintain a desired suction pressure at the inlet, said system comprising:

- (a) system control means having an operate position operative to initiate a start-up and run sequence, and having an OFF position operative to stop the compressor drive motor and to initiate a shut-down and stop sequence;
- (b) an oil pressure failure responsive circuit;
- (c) a loading actuator and an unloading actuator, said actuators being connected to operate said loading valve means selectively and progressively to load or unload the compressor;
- (d) first, second, and third delay means sequentially operative after the system control means is set to said operate position respectively to enable the pressure failure responsive circuit to check the oil pressure and reset the control means to OFF position in case of oil pressure failure, and operative to start the compressor drive motor, and operative thereafter to enable the compressor loading actuator; and
- (e) a shut-down timer initiated when the system control means is reset to OFF position to energize the unloading actuator for an interval long enough to move the loading valve means to an unloaded position.

4,227,863

CENTRIFUGAL ASPIRATOR

Raymond Sommerer, 12221 N. 30th Ave., Phoenix, Ariz. 85029

Filed Sep. 18, 1978, Ser. No. 943,041

Int. Cl.³ F04F 5/22

U.S. Cl. 417-169

6 Claims

1. An aspirator for aspirating a first fluid, said first fluid being mixed with solid particles having a higher specific gravity than said first fluid, said aspirator comprising in combination:

- a. an undivided chamber having an approximately cylindrical wall, said chamber having a first cover means for sealably engaging one end of said undivided chamber and a second cover means for sealably engaging an opposite end of said undivided chamber; said undivided chamber

being bounded by interior surfaces of said approximately cylindrical wall and said first and second cover means such that any two points anywhere on said approximately cylindrical wall can be connected by a straight line which does not intersect any part of said first cover means or said second cover means;

- b. a suction inlet approximately centrally disposed in said second cover means;
- c. first conducting means for conducting said first fluid and said solid particles directly into said undivided chamber through said suction inlet, there being no portion of said first cover means said second cover means or said first conducting means obstructing passage of any of said solid particles through said first conducting means into said undivided chamber;
- d. a high pressure inlet in said approximately cylindrical wall;
- e. second conducting means for tangentially injecting a second fluid through said high pressure inlet directly into



said undivided chamber to produce a vacuum producing vortex in said undivided chamber, said first fluid and said solid particles being forced into said vortex via said suction inlet in response to said vacuum to mix said first and second fluids and said solid particles together, said solid particles being centrifugally forced to circulate about the periphery of said vortex along the inner surface of said cylindrical wall; and

- f. an outlet in said approximately cylindrical wall for exhausting a mixture of said first fluid, said second fluid, and said particles from said undivided chamber without buildup of any of said solid particles anywhere in said undivided chamber.
6. The aspirator of claim 5 further including a plurality of tangentially inclined high pressure inlets in said tapered, approximately cone-shaped portion of said housing for tangentially injecting said second fluid into said tapered, approximately cone-shaped portion of said vortex chamber to aid in gradually accelerating said particles.

4,227,864

PUMP FOR LIQUIDS

Edward N. Gaffney, West Midlands, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 1, 1979, Ser. No. 8,532

Claims priority, application United Kingdom, Feb. 17, 1978, 6327/78

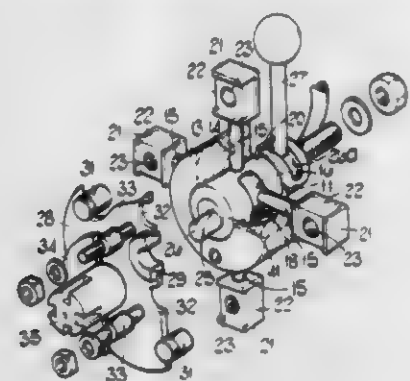
Int. Cl.³ F04B 1/12, 27/08

U.S. Cl. 417-269

3 Claims

1. A pump, for liquids, comprising a rotor having therein a plurality of radially extending bores each slidably receiving a piston, the pistons being coupled at their outer ends to means constraining the pistons, when rotating with the rotor, to rotate about an axis spaced from but parallel to the axis of rotation of the rotor whereby the pistons reciprocate in their

respective bores so that the radially innermost ends of the pistons cooperating with liquid inlet and outlet means within the rotor effect a pumping action, the rotor being mounted on a hollow shaft for rotation relative thereto about a first axis, the outer surface of said shaft being formed with recesses which, with the rotor, define inlet and outlet chambers communicating with said bores of the rotor as the rotor rotates, a spindle is rotatable in said hollow shaft about a second axis parallel to but spaced from said first axis, and said means constraining said pistons includes a member engaged with each piston for move-



ment relative thereto in a direction transverse to the length of the piston, said member being rotatably mounted on said spindle for rotation relative thereto about a third axis parallel to and spaced from said second axis and said member being constrained to rotate with the rotor but about said third axis whereby the spacing between the first and third axes effects reciprocation of the pistons as the rotor rotates, said spacing of the first and third axes determining the stroke of the pistons and thus the displacement of the pump and being variable by rotation of the spindle about said second axis relative to said shaft.

4,227,865

CONSTANT FLUID FILM THICKNESS HYDROSTATIC THRUST BEARING

John W. Erickson, Huntington Beach, and John M. Kelleher, La Palma, both of Calif., assignors to Kobe, Inc., City of Commerce, Calif.

Filed Apr. 27, 1979, Ser. No. 33,773

Int. Cl. F04B 47/08, 47/14

U.S. Cl. 417-363

9 Claims



1. An apparatus for automatically and continuously balancing the thrust forces generated by a pump driven by a fluid motor, comprising: a hydrostatic thrust bearing disposed on a shaft connecting the fluid motor and the pump, said thrust

bearing comprising: a circular flange secured to said shaft; a pair of annular chambers adjacent said flange; first conduit means connecting one annular chamber to the pressurized fluid output of said pump to oppose the thrust force of said pump; second conduit means connecting the other annular chamber to the pressurized fluid input to said fluid motor to oppose the thrust force of said fluid motor, the effective areas of said two annular chambers being respectively proportioned to the normal thrust forces respectively generated by said pump and motor, whereby the effective net force exerted by fluid pressures in said annular chamber on said circular flange continuously offsets any variation in thrust forces exerted on said shaft by said pump and said fluid motor.

4,227,866

SOLAR ENERGY DEVICE

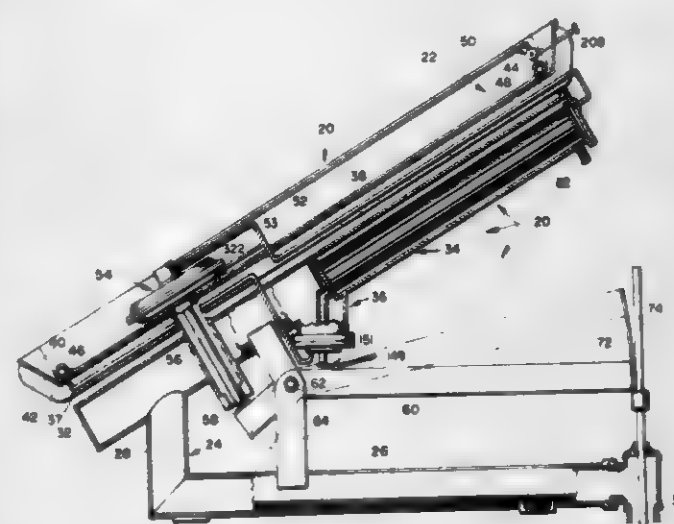
Harvard P. Stubbs, Chihuahua, Mexico, assignor to Solar Pump Corporation, Las Vegas, Nev.

Filed Dec. 16, 1976, Ser. No. 751,105

Int. Cl. F04B 17/00; F03G 7/02; F01K 11/00

U.S. Cl. 417-379

7 Claims



1. A solar energy powered pumping device, comprising: a panel-type solar collector for receiving and concentrating heat from the sun's rays including an outer enclosure; means providing an array of conduits adapted to carry a vaporizable working fluid within the enclosure of said collector and to absorb the collected heat, said conduits having a common inlet and a common outlet; a vapor pressure actuated motor means located within the enclosure of said collector, said motor means having a reciprocating drive shaft extending from said collector and connected to a vertical reciprocation, sucker rod type well pump, and including a mechanical linkage means connecting the motor drive shaft to a reciprocating shaft of the well pump; motor means having control means connected to said common outlet for receiving and exhausting vaporized fluid; frame means supporting said collector; condenser means supported by said frame means for receiving vapor exhausted from said motor means and condensing it to its liquid form for recycling to said collector; working fluid pump means attached to said condenser means for supplying condensed fluid to said common inlet for said conduits in said collector; and means for delivering water from the well pump through said condenser for condensing vaporized fluid therein, including hollow structural support members of said frame means, defining a conduit connected to the well pump and to the condenser, said condenser being inclined and including an outlet at its upper end for pumped water.

4,227,867

GLOBOID-WORM COMPRESSOR WITH SINGLE PIECE HOUSING

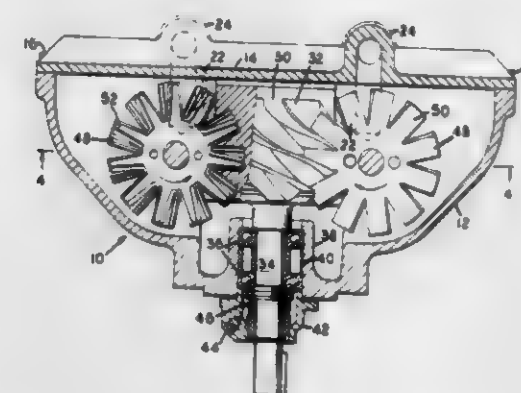
Cassius F. Whitehill, Hudson, Ohio; Robert D. Whitehill, Franklin, Pa., and Ghanshyam C. Patel, Solon, Ohio, assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Mar. 6, 1978, Ser. No. 883,518

Int. Cl. F04C 18/20, 19/02

U.S. Cl. 418-97

4 Claims



1. A gaseous medium compressor of the globoid-worm type having a cylindrical rotor formed with a plurality of threads in meshing relation with a pair of star pinions, said compressor having a single piece housing open at one end and having a large diameter bore for accommodation of the cylindrical rotor and a small diameter bore in axial alignment with the large diameter bore, said rotor having an integral shaft supported by a bearing means arranged in the small diameter bore and projecting from the housing, said star pinions being arranged on opposite sides of the cylindrical rotor and each having a shaft supported at only one end in a bore formed in the housing, said housing being arranged to completely enclose the cylindrical rotor and the star pinions, a cover means removably affixed to the housing at the open end for enclosure of the housing interior, a gaseous medium inlet formed in the housing in the region of the rotor shaft bearing means, said housing being formed with passageways for receipt of gaseous medium compressed by inter-action of the rotor and the star pinions, and gaseous medium outlets formed in the cover and connecting with said passageways.

4,227,868

SINGLE-CURVATURE FAN WHEEL OF DIAGONAL-FLOW FAN

Yoshiyasu Nishikawa, Ono; Chosel Harada, Akashi, and Masao Nakano, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

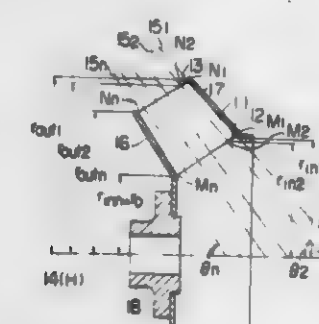
Filed Jan. 23, 1978, Ser. No. 872,459

Claims priority, application Japan, Jan. 28, 1977, 52/8947

Int. Cl. F04D 29/30

U.S. Cl. 416-186 R

2 Claims



1. A fan wheel of a diagonal-flow fan for propelling a flow of a gas, said fan wheel comprising a rotational shaft, a frustoconical main plate coaxially fixed to the shaft, a frustoconical side plate spaced apart from the main plate and forming therebetween a diagonal flow path for the gas, and a plurality of fan blades each fixed at respective opposite side edges to the inner surfaces of the main and side plates and having an inner

entrance part and an outer exit part, said entrance and exit parts extending transversely with respect to said diagonal flow path, said blades being secured between said frustoconical main and side plates, said frustoconical side plate being coaxially fixed with respect to the axis of rotation of the shaft, the cone angle of the main plate being greater than the cone angle of the side plate, each of said fan blades comprising a curved plate of a surface shape conforming to a portion of a cylindrical surface with a longitudinal axis, said portion being formed of elements constituted by mutual intersection lines between cylindrical surface and successive coaxial conical surfaces varying between said conical surfaces of said main and side plates corresponding to ideal stream surfaces, said coaxial conical surfaces progressively diminishing in cone angle from said main plate to said side plate and having a common axis coinciding with said axis of rotation of the shaft and lying in a plane which is in parallel spaced relationship to said longitudinal axis of the cylindrical surface, said common axis being inclined at an angle with respect to said longitudinal axis when viewed in a direction perpendicular to said plane.

4,227,869

INTERMESHING PUMP ROTOR GEARS WITH INVOLUTE AND LINEAR FLANK PORTIONS

Sven E. Eriksson, Örebro, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

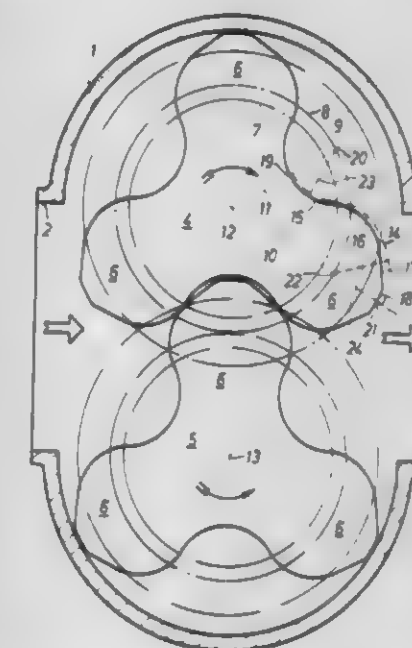
Filed Oct. 17, 1977, Ser. No. 842,559

Claims priority, application Sweden, Oct. 19, 1976, 7611579

Int. Cl. F04C 2/18

U.S. Cl. 418-206

4 Claims



1. A pair of intermeshing rotor gears for a rotary piston pump comprising at least two lands, each defining a root and a crest and intervening grooves, which lands rotate within a pump housing about a pair of spaced parallel axes defining the pitch circles (8) of the gear rotors, each of said lands having symmetrically profiled leading and trailing flanks describing a root circle (7) and a crest circle (9), said profiles comprising: a circular arc portion (15), an involute portion (16) merging with said circular arc portion and a substantially linear portion (17) extending from said involute portion and merging in a terminal portion cooperating with the wall of the pump housing, said involute portion and said linear portion being calibrated to maintain sealing cooperation between the involute portion of the leading flank of one of said rotor gears and the involute portion of the trailing flank of the other one of said rotor gears substantially where said flanks intersect the root circle until sealing cooperation is established between the involute portion of the trailing flank of said one gear rotor and the involute portion of the leading flank of said other rotor to thereby prevent leakage of working medium and overcompression thereof between rotor lands during rotation thereof.

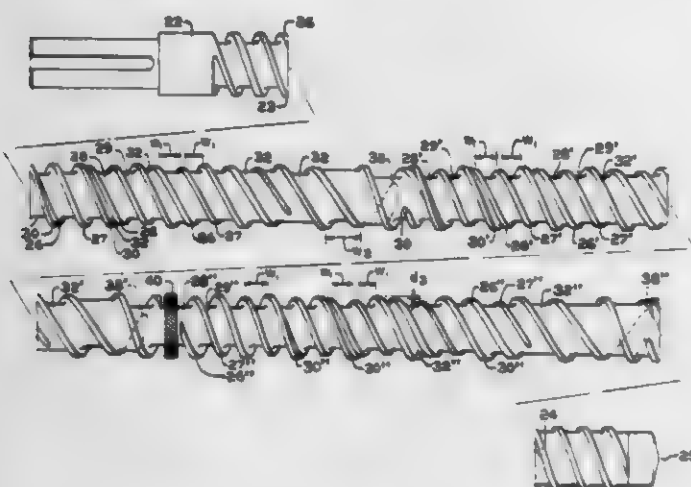
4,227,870

APPARATUS FOR WORKING RUBBER COMPOUNDS
Heung T. Kim, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 14, 1979, Ser. No. 20,289
Int. Cl.³ B29F 3/02

U.S. Cl. 425—208

6 Claims



5. In an extruder for processing rubber compounds comprising a cylinder; said cylinder having a die means at one end thereof; a feed screw rotatably mounted in said cylinder for moving rubber compounds therethrough to progressively masticate and shear said compounds for extrusion therefrom; said feed screw having a feed section at one end and a metering section at the other end; said feed screw having a transition section between said feed section and said metering section; said transition section having a plurality of successive working sections; each working section having a first and second means; said first means having at least a pair of helical flights for operatively exerting continuous pressure on said rubber compounds; said second means having at least one helical flight integral with said feed screw and cooperative with an adjacent one of said helical flights of said first means to define a groove for continuously leading off the portion of said compound subjected to a shearing action by said helical flight of said first means progressively receive worked compounds.

4,227,871

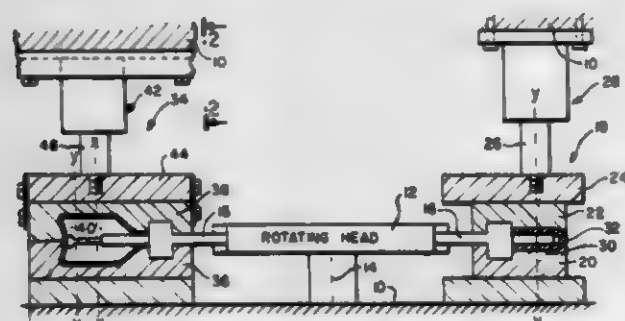
LOCATION OF EQUIPMENT ON BLOW MOLDING MACHINES

Dewey Rainville, Westfield, and Ernst D. Wunderlich, Teaneck, both of N.J., assignors to Rainville Company, Inc., Middlesex, N.J.

Filed Oct. 20, 1978, Ser. No. 953,073
Int. Cl.³ B29C 17/07

U.S. Cl. 425—533

7 Claims



1. In an injection blow molding apparatus including an indexing head from which core rods extend into molds at angularly related stations around an axis about which the indexing head turns to move the core rods successively from one operational station to another, characterized by one of the stations including a mold support, a mold in said support with upper and lower parts that have relative movement toward and from one another in a direction parallel to said axis to open and close a cavity within the mold, the mold being replaceable

with another similar mold that encloses a cavity of a different size from that of the first mold, means for supporting the molds with the center of said similar mold cavity at a different distance from said axis of the indexing head, a motor supported in position for applying pressure to either of the mold parts to hold one mold part closed against the other mold part, an upper frame above the mold parts and by which the motor is supported and with respect to which the motor is moveable in directions for changing the position of the motor toward and from the axis of rotation of the indexing head to a location at which said motor applies pressure to the mold part that is held closed, and over the center of the mold cavity so as to maintain said location in line with the center of pressure of fluid applied within the mold cavity, and characterized by the mold to which the pressure is applied by said motor being a blow mold, a fixed frame extending over the blow mold, a guide supported by the frame and extending radially from the axis about which the indexing head turns, the motor being supported by the guide and movable along the guide in a direction parallel to the direction in which the core rod extends into the cavity of the mold, and means for securing the motor in a position along the guide correlated with the center of pressure of the fluid in the cavity of the blow mold.

4,227,872

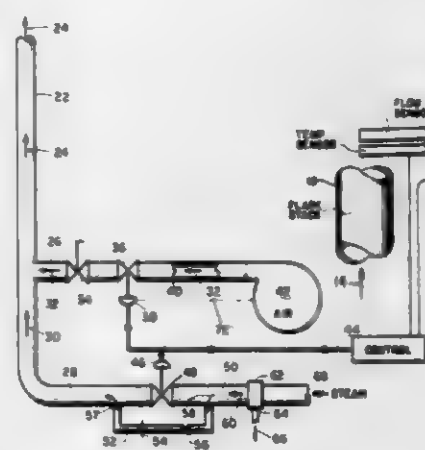
APPARATUS FOR SUPPLYING ALTERNATE GASES TO STEAM INJECTION MEANS ON A FLARE STACK

John S. Zink, and Robert D. Reed, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 739,606, Nov. 8, 1976, abandoned. This application May 30, 1978, Ser. No. 910,446
Int. Cl.³ F23H 5/24

U.S. Cl. 431—90

11 Claims



1. In a flare stack system in which waste gas is flared on demand, and in which the flow rate of waste gases may vary from low flow rates to high flow rates of up to 100% of the design value of gas flow rate; and including steam injection means at the top of said flare stack comprising manifold means connected to a steam riser pipe, and plural injection nozzles connected to said manifold; the improved apparatus comprising:
(a) low pressure air blower means, and first controllable air valve for providing controlled on-off flow of blower air to said steam riser pipe;
(b) steam line means and second controllable steam valve for providing controlled on-off flow of steam on demand to said steam riser pipe;
(c) control means for said air valve and steam valve for alternate flow of air or steam to said steam riser pipe, such that under freezing atmospheric temperature conditions, low pressure air is flowed through said steam riser pipe to said steam injection means when said gas flow rate is low; and steam under substantial pressure is flowed through said steam riser pipe to said steam injection means, when said gas flow rate is high, and

whereby when said steam valve is open said air valve is closed, and vice versa; and
(d) said control means responsive to said flow rate of waste gas, to open said steam valve whenever waste gases are being flared at said high flow rate.

4,227,873

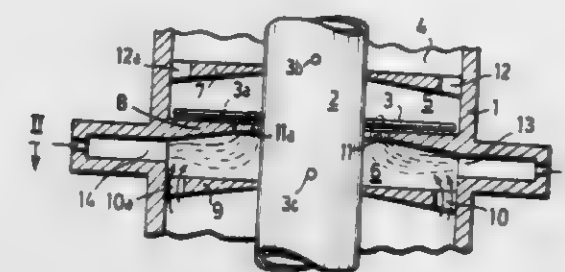
KILN WITH OVERLYING BEDS
Theodor Manshausen, Cologne, and Walter Fritsch, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany

Filed Dec. 5, 1978, Ser. No. 966,665
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2754844

Int. Cl.³ F27B 9/02

U.S. Cl. 432—131

4 Claims



3. A kiln for processing material with treatment gases and hot gases comprising a generally vertically mounted hollow cylindrical kiln structure having a wall, a center hollow shaft extending upwardly centrally of said hollow cylindrical kiln, a plurality of rabble arms mounted on said center hollow shaft, a plurality of horizontal floors mounted parallel to and above each other in said kiln, alternate ones of said plurality of floors formed with pluralities of openings about their peripheries, the other one of said plurality of floors formed with pluralities of openings about said hollow cylindrical shaft, a first means mounted in the wall of said kiln for directing hot gas into said kiln over one of said openings in the periphery of one of said alternate floors and in a direction generally tangentially to the wall of said kiln.

4,227,874

TEMPERATURE RESISTANT, STRUCTURALLY STABLE MEMBER

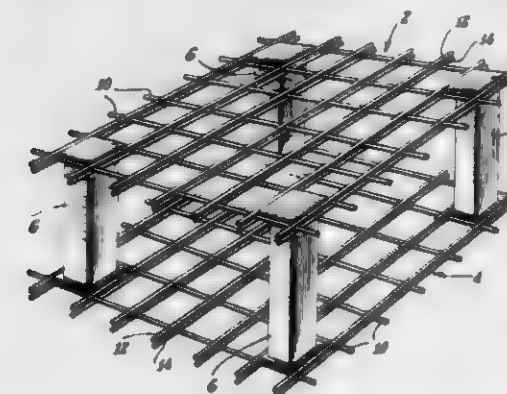
John J. Nugent, Huntington, Conn., assignor to Rolock, Inc., Fairfield, Conn.

Filed May 24, 1978, Ser. No. 909,097

Int. Cl.³ C21D 9/00

U.S. Cl. 432—261

13 Claims



1. A heat resistant, structurally stable rod for racks or baskets used in high-temperature heat treatment processes, said rod including

a strengthening core having a melting point higher than temperatures used in said heat treatment processes and capable of maintaining rigidity and not softening at said

process temperatures, said core crystallizing at temperatures less than said process temperatures, and a protective covering of weldable material encasing said strengthening core, said material having a crystallization temperature higher than said process temperature and being of sufficient thickness to be welded and to maintain said core against fragility at temperatures up to said process temperature, said protective covering being tightly secured around the outer surface of said strengthening core for constraining said strengthening core to provide that said strengthening core will be held together substantially in its initial position relative to said protective covering in the event that said strengthening core crystallizes so that the structural supporting strength of said strengthening core will be utilized even if said strengthening core crystallizes, said strengthening core having a diameter between about 0.1875" and about 0.500".

4,227,875

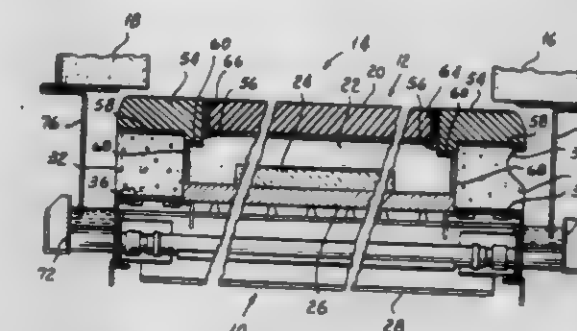
ROTARY HEARTH FOR CALCINING KILN
Hubert L. Hall, deceased, late of Nassau, The Bahamas (by Noel S. Roberts, executor), assignor to Calcimatic International Limited, Grand Cayman, Cayman Islands

Filed Sep. 12, 1978, Ser. No. 941,745

Int. Cl.³ F27D 3/00

U.S. Cl. 432—239

10 Claims



1. A rotary hearth for a kiln assembly including in combination a circular refractory layer adapted to support material to be heated, a metal undercarriage supporting said refractory layer, a refractory buttress peripherally containing said refractory layer, and means for securing said buttress to said undercarriage, said refractory buttress being unconfined peripherally to permit free expansion and contraction without contact between the peripheral surface thereof and said undercarriage.

4,227,876

ORTHODONTIC BRACKET

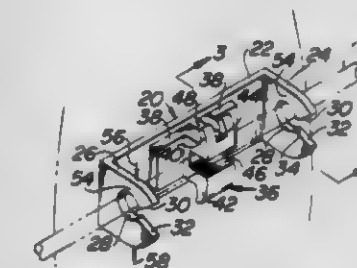
Maxwell S. Fogel, Apt. 1801, 9100 Atlantic Ave., Island House, and Jack M. Magill, Apt. 1010, 9600 Condominium, 9600 Atlantic Ave., both of Margate, N.J. 08402

Filed Feb. 16, 1979, Ser. No. 12,622

Int. Cl.³ A61C 3/00

U.S. Cl. 433—11

7 Claims



1. In combination an orthodontic bracket for securement to the anterior surface of teeth and an arch wire, said bracket including a pair of planar C-shaped spaced securement members, each of said members including a portion of reduced

thickness each of said members including an opening with a flared mouth to facilitate insertion of said arch wire, said mouth being narrowest at the junction of said mouth and said opening, the diameter of said arch wire being slightly larger than the width of the smallest opening of said mouth so that said arch wires are snapped into said opening when said arch wire is urged therein, said members each being deformed in the plane of said member with said mouth closed by squeezing said members about said opening with a plier type tool so that said bracket securely holds said arch wire at two spaced apart points.

4,227,877

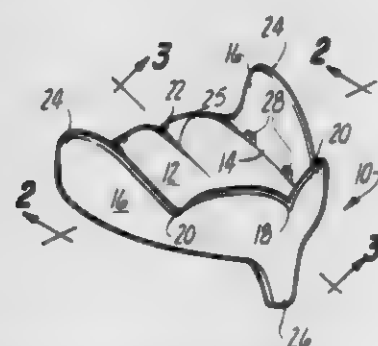
ANATOMICAL INTRA-ORALLY MOLDABLE DENTAL IMPRESSION TRAY AND METHOD

Kenneth E. Tureaud; Stephen Ginsburg, both of Ann Arbor, and Frederick Draheim, Orchard Lake, all of Mich., assignors to Black Knight Investments, Limited, Grand Cayman, Cayman Islands

Continuation-in-part of Ser. No. 754,107, Dec. 27, 1976, abandoned. This application Oct. 20, 1977, Ser. No. 843,443
Int. Cl.² A61C 9/00

U.S. Cl. 433—37

23 Claims



1. A dental impression tray consisting of a sheet of thermoplastic material having a glass transition temperature between about 100° F. and 135° F. having a contour approximating a section of a patient's oral cavity of which an impression is to be made and peripheral borders shaped to cover the adjacent tissue areas with relief for the functioning musculature and related attachments, whereby the tray may be heated above its glass transition temperature exteriorly of the oral cavity and placed into the patient's mouth at a temperature low enough to not cause discomfort where it can be manually molded to approximate intimacy with that oral section before the tray cools below its glass transition temperature in the mouth of the patient to form a rigid final impression tray which is self-supporting and accurately maintains the molded structure.

16. A dental impression tray comprising: a sheet of thermoplastic material which can be molded when heated to a temperature above the temperature encountered in the oral cavity of which an impression is to be made, said sheet having a U-shaped trough adapted to engage an alveolar ridge and a palatal vault engaging section extending from and supported within the trough, said vault section having a pleat extending away from the vault engaging side, whereby the tray may be heated exteriorly of the oral cavity, placed into position relative to the oral section for which an impression is to be made and manually molded to approximate intimacy with that oral section before the tray cools to form a rigid final impression tray which is self-supporting, said pleat allowing the lateral separation of the opposed trough sides to be adjusted to accommodate different oral cavity widths without interfering with the fit of the tray vault section against the palate and aiding in preventing the tray from reverting back to its premolded shape.

4,227,878

DENTAL HANDPIECE

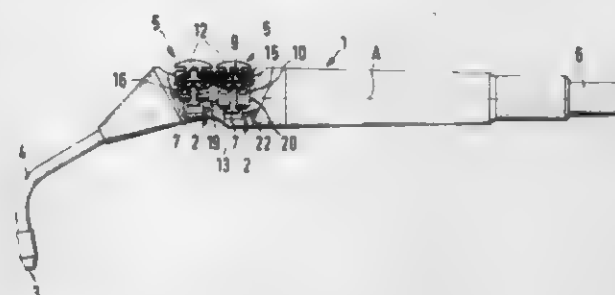
Gerd Löhn, Biberach, Fed. Rep. of Germany, assignor to Kaltbach & Voigt GmbH, Biberach, Fed. Rep. of Germany
Filed Feb. 27, 1978, Ser. No. 881,565

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 7707816[U]

Int. Cl.³ A61G 17/02

U.S. Cl. 433—80

15 Claims



1. A dental syringe for dispensing at least one fluid medium and comprising:
a supply duct extending within the syringe for supplying a fluid medium to a dispensing outlet;
a shut-off valve provided in the syringe for controlling the supply of fluid medium from the supply duct to the dispensing outlet, the valve comprising a valve seat, a closure body moveable between open and closed positions relative to said valve seat and arranged to be biased to its closed position by the action of the closure body of fluid medium when the latter is supplied by said duct to said valve, and a plunger operable from externally of the syringe to move the closure body from the closed position to the open position;
a valve actuator accessible from externally of the syringe and coupled with said plunger, said valve actuator being coupled with said valve in such a way as to avoid unintentional removal of the valve actuator from the syringe;
said actuator being supported by a resilient support element arranged resiliently to resist movement in a direction transverse to the axis of said plunger;
a transverse aperture provided in said syringe, said valve actuator extending through said aperture;
and a valve chamber communicating with said dispensing outlet and being communicable with said supply duct via said valve seat when said closure body is in its open position, the said valve chamber receiving said plunger and being sealed against loss of fluid medium to the exterior of the handpiece via said transverse aperture, and the whole of said valve chamber having a cross-section which is at least as large as that of said transverse aperture;
said actuator having a lower portion extending from the main body of the actuator into said valve chamber, and said resilient support element being inserted under stress between the main body of said actuator and said lower portion, said valve chamber having a larger cross-section than that of said transverse aperture, and said resilient support element being fixed to the wall of said valve chamber, and said lower portion of the actuator having a larger cross-section than that of said transverse aperture and bearing under pressure against said resilient support element bearing at an inner rim of said transverse aperture; in which the valve actuator extends with clearance through said aperture into said valve chamber, and is thereby moveable axially and by tilting relative to said aperture and to said valve chamber in order to move said closure body to its open position via said plunger;
and in which the cross-section of at least that part of said valve chamber in which the valve actuator is moveable is at least as large as the cross-section of said aperture.

CHEMICAL

4,227,879

CONCENTRATED DIRECT DYE SOLUTION

Allan M. Huffman, Lock Haven, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

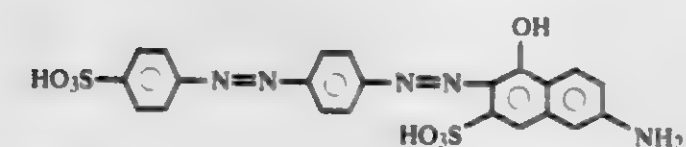
Filed Apr. 17, 1978, Ser. No. 897,130

Int. Cl.³ C09B 27/00; D06P 1/02

U.S. Cl. 8—602

5 Claims

1. A concentrated liquid dye solution comprising, by weight:
(a) from 10 up to 30% of a dye, which in its free acid form has the formula:



- (b) 5–20% of at least one base selected from the group consisting of 2,2'-iminodiethanol, choline, monoethanolamine, dimethylethanolamine, diisopropanolamine and N-hydroxyethyl-N-methylmorpholinium hydroxide;
(c) 0–5% of alkali metal cations; and
(d) the balance, to 100%, water, said liquid dye having an α_{max} value of at least 17.4 cm²/mg.

4,227,880

PROCESS FOR THE PRODUCTION OF DUSTFREE GRANULES OF DYES AND OPTICAL BRIGHTENERS

Helmut Hohenegger, Riehen; Hanspeter Baumann, Lausen, and Urs Büchel, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,417

Claims priority, application Switzerland, Apr. 18, 1977, 4758/77; Mar. 17, 1978, 2936/78

Int. Cl.³ D06P 1/64; C09B 67/00; C09K 11/02

U.S. Cl. 8—524

10 Claims

1. Process for the production of solid dustfree preparations of water-soluble dyes and optical brighteners, which comprises subjecting the pulverulent dyes or optical brighteners, together with a melt or a solution of ethylene carbonate or propylene carbonate, to a dynamic treatment.

4,227,881

NEW PROCESS OF COLOR STRIPPING DYED TEXTILE FABRIC

Andrew Fono, Montclair, N.J., assignor to Royce Chemical Company, East Rutherford, N.J.

Filed Nov. 17, 1978, Ser. No. 961,728

Int. Cl.³ D06L 3/00

U.S. Cl. 8—102

15 Claims

1. A composition for stripping dye from textile fabric which comprises an aqueous solution of about 0.5% to 3.5% sodium hydroxymethane sulfinate, about 1% to 3.5% of an ammonium salt and about 1% to 3.5% of a sulfite salt maintained at a temperature of at least about 140° F. and having a pH of from about 5 to 9.

4,227,882

METHOD OF TREATING FIBER OR FIBROUS MATERIAL

Toshio Saito, Nagahama; Masao Oguchi, Suita, and Akio Kizaki, Nagahama, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 72,861

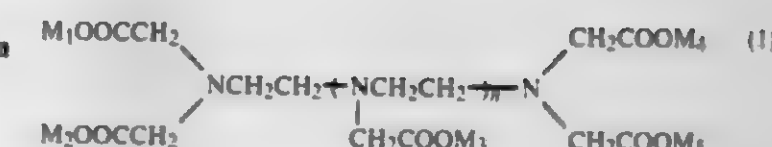
Claims priority, application Japan, May 31, 1979, 54-69223

Int. Cl.³ D06M 9/00

U.S. Cl. 8—115.5

14 Claims

1. A method of treating fiber or fibrous material, comprising treating fiber or fibrous material having active hydrogen and graft-polymerized with a water-soluble vinyl monomer, with a processing agent consisting mainly of a compound having the following general formula



wherein M₁—M₃ represent a hydrogen atom or alkali metal, and n represents 0 or 1.

4,227,883

PROCESS AND COMPOSITION FOR CLEANING OR DE-OILING TEXTILE MATERIALS

Michel Peignier, Versailles, and Claude Renault, Saint-Remy-Les Chevreuse, both of France, assignors to Rhone Poulenc Industries, Paris, France

Filed Nov. 1, 1978, Ser. No. 956,627

Claims priority, application France, Jun. 30, 1978, 78 19589

Int. Cl.³ D06L 1/00

U.S. Cl. 8—142

12 Claims

1. A process for anti-redeposition, which has the effect of reducing greying by redeposition of staining substances on textiles of natural, synthetic or artificial fibers or mixtures thereof, in the course of operation of dry cleaning, or de-oiling by means of perchloroethylene, comprising incorporating in the perchloroethylene a sufficient anti-greying amount of at least one monoketone anti-redeposition additive having a boiling point which does not exceed 160° C. to observe the desired anti-redeposition effect.

4,227,884

METHOD OF HANDLING YARN

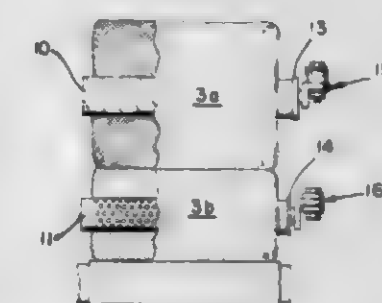
Richard W. Primm, deceased, late of Thomasville, N.C. (by Gertrude B. Primm, executrix)

Filed Apr. 27, 1979, Ser. No. 34,201

Int. Cl.³ D06B 5/18, 23/00

U.S. Cl. 8—155.1

4 Claims



1. A method for processing texturized yarn comprising: unwinding highly tensioned texturized yarn from a spool, winding the unwound yarn onto a perforated core under a lesser tension by frictionally engaging said perforated core with a roller means, contacting said yarn on said spool with said perforated core, and rotating said roller means to transfer yarn to said perforated core, and treating the yarn wound on said perforated core.

4,227,885

SOLUTION ANNEALING OF ARAMID AND STRUCTURALLY RELATED FIBERS

William L. Hofferbert, Jr., Durham, and Jack Preston, Raleigh, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 3, 1978, Ser. No. 957,625

Int. Cl.³ D06P 3/24

U.S. Cl. 8—925

9 Claims

1. A process for improving the tensile properties of aramid fibers which comprises treating said fiber with a liquid tertiary amine for at least 10 seconds, wherein said amine is maintained at a temperature of at least 80° C., but less than that temperature at which deterioration of said fiber occurs.

4,227,886

TESTING A CUVETTE FOR CLEANLINESS

David G. Bullock, Roger A. Bunce, Ian R. Clark, all of Birmingham, England; Ian D. Duff, Ossining, N.Y.; Geoffrey S. Greaves, Droitwich, England; Peter H. Lloyd, Birmingham, England; Ann M. Peters, Birmingham, England; Thomas P. Whitehead, Leamington Spa, England, and Peter Wilding, Birmingham, England, assignors to National Research Development Corporation, London, England

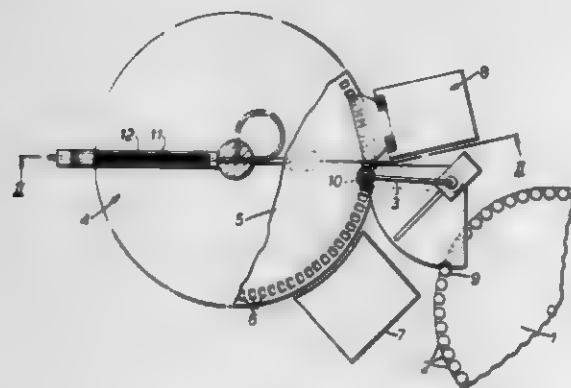
Filed May 13, 1977, Ser. No. 796,612

Claims priority, application United Kingdom, May 13, 1976, 19850/76; May 3, 1977, 19850/77

Int. Cl.² B08B 7/00, 5/04; G01N 29/02

U.S. Cl. 23—230 R

16 Claims



1. Apparatus for use in analyzing specimens, said apparatus comprising:
a carrier having mounted thereon a plurality of cuvettes for containing specimens to be analyzed;
means for advancing the carrier to cause each cuvette to pass repeatedly through, in succession, a specimen loading region, an analysis region, a cleaning region, and a cleanliness testing region;
means for introducing specimens into said cuvettes while they are located in the specimen loading region;
means for performing an analytical test on the specimens in the cuvettes in the analysis region;
means for cleaning the cuvettes when located in the cleaning region;
means for effecting a cleanliness test on the cuvettes when they are located in the cleanliness testing region; and
means operative during the continued advancement in said succession of a specified cuvette, which fails the cleanliness test but is retained on said carrier, for inhibiting the effective use of said specific cuvette until it is tested favorably by said testing means following at least one further cleaning of that specific cuvette by said cleaning means.

4,227,887

DETERMINATION OF TOTAL ORGANIC HALIDES IN WATER

Yoshihiro Takahashi, San Francisco; Robert T. Moore, Palo Alto, and Robert J. Joyce, Cupertino, all of Calif., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Aug. 28, 1978, Ser. No. 937,652

Int. Cl.³ G01N 31/12, 31/16, 33/18

U.S. Cl. 23—230 PC

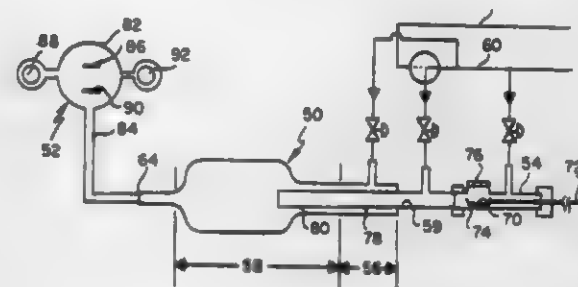
23 Claims

23. A process for converting organic halides in a water-containing sample to measurable halides, said process comprising the steps of:

(a) in a first heating zone, heating said sample in the presence of a mild oxidant but in the absence of oxygen, said heating in said first heating zone causing water to vaporize from said sample but not causing water to sputter; and thereafter

(b) in a second heating zone, heating the remaining sample and any gases generated in the first heating zone in the

presence of an oxidant, said heating in said second heating zone causing complete combustion of the sample and



generated gases, thereby converting any organic halides present to measurable halides.

4,227,888

METHOD FOR THE QUANTITATIVE DETERMINATION OF CYANIDE

Melvin L. Rueppel, Kirkwood, and Chihyuan C. Ting, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 18, 1978, Ser. No. 970,689

Int. Cl.² G01N 31/22, 33/18

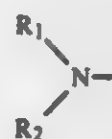
U.S. Cl. 23—230 R

9 Claims

1. A method for quantitatively determining the cyanide content of a solution containing interfering aldehydes and/or ketones which comprises sequentially the steps of
(a) treating the solution with an amount of a compound of the formula



wherein R is selected from the group consisting of hydroxyl, lower alkoxy and



wherein R₁ and R₂ are independently hydrogen or any radical which does not contain groups capable of being hydrolyzed to hydrogen cyanide; sufficient to react with the total aldehyde and ketone content;

(b) maintaining the pH of the solution at a level sufficient to convert any cyanohydrin to free cyanide,

(c) means for quantitatively determining the level of free cyanide as a measure of the cyanide content of the solution.

4,227,889

COMPRESSION IGNITION FUELS FOR USE IN DIESEL ENGINE HAVING ANTI-WEAR PROPERTIES

Warren L. Perilstein, Orchard Lake, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 26, 1978, Ser. No. 973,003

Int. Cl.² C10L 1/22

U.S. Cl. 44—56

27 Claims

1. As a new composition of matter, an anti-wear compression ignition fuel composition for use in diesel engines comprising (1) from about 70 percent by weight to about 98.45 percent by weight of a monohydroxy alkanol having from 1 to 5 carbon atoms, (2) from about 1 percent by weight to about 25 percent by weight of a fuel oil boiling above the gasoline boiling range, and (3) a wear inhibiting amount of a dimerized unsaturated fatty acid.

10. A method for inhibiting engine wear in an internal combustion reciprocating diesel engine operating on a compression

ignition fuel comprising (1) from about 70 percent by weight to about 98.45 percent by weight of a monohydroxy alkanol having from 1 to 5 carbon atoms (2) from about 1 percent by weight to about 25 percent by weight of a fuel oil boiling above the gasoline boiling range, and (3) a wear inhibiting amount of a dimerized unsaturated fatty acid, said method comprising (a) supplying to the fuel induction system of said engine said compression ignition fuel, (b) inducting air into the combustion chambers of said engine (c) compressing said air, (d) injecting said compression ignition fuel into said combustion chambers containing said compressed air, (e) igniting said compressed mixture, and (f) exhausting the resultant combustion products resulting in reduced engine wear in said engine.

4,227,890

PROCESS FOR COOLING AND DRYING CHLORINE GAS

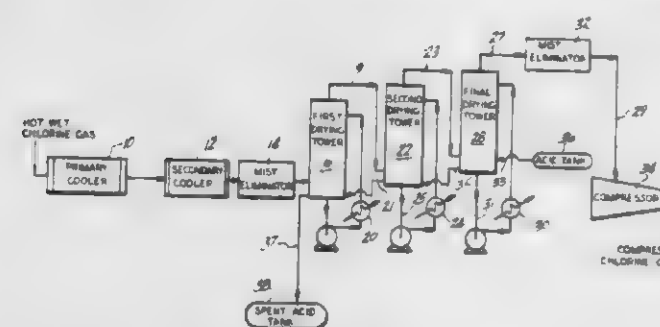
Joseph L. Wood, Westminster, Md., and Matthew F. Lipworth, Chattanooga, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed May 11, 1978, Ser. No. 904,821

Int. Cl.² B01D 53/02, 53/14

U.S. Cl. 55—30

5 Claims



1. A process for cooling and drying wet chlorine gas by contacting said wet gas with sulfuric acid in at least two drying towers in series which comprises the steps of:

(a) feeding wet chlorine gas to a first drying tower,

(b) contacting in said first drying tower said wet chlorine gas with sulfuric acid to remove water and produce a partially dry chlorine gas,

(c) feeding said partially dry chlorine gas to the final drying tower,

(d) contacting in said final drying tower said partially dry chlorine gas with concentrated sulfuric acid to produce a dry chlorine gas containing less than about 10 parts per million by weight of water, having a temperature of from about 12° to about 16° C., and

(e) feeding said cool, dry chlorine gas to a compressor without intermediate cooling between steps (d) and (e).

4,227,891

RECOVERY OF HYDROCARBON VAPORS FROM AIR

Keith D. Maguire, and Royce A. Carrio, both of Sand Springs, Okla., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Jan. 29, 1979, Ser. No. 7,351

Int. Cl.³ B01D 47/00; C07C 7/05; B01D 3/10

U.S. Cl. 55—85

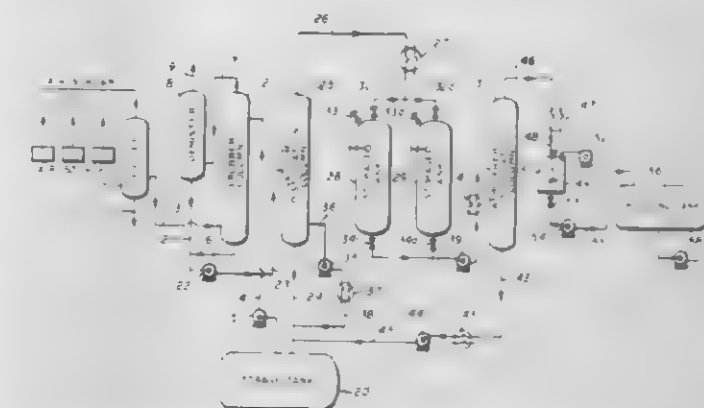
6 Claims

1. The process of recovering aliphatic or aromatic hydrocarbon vapors capable of auto-polymerization from air comprising,

scrubbing an air stream containing said hydrocarbon vapors with a liquid plasticizer absorbent having substantially zero vapor pressure during the scrubbing step and which will not contaminate the hydrocarbon to absorb the hydrocarbon in the plasticizer,

distilling the plasticizer and absorbed hydrocarbon under partial vacuum conditions to obtain a first distillate of plasticizer and the hydrocarbon,

distilling the first distillate under atmospheric pressure to obtain a second distillate of the hydrocarbon,



and separately recovering the hydrocarbon and the plasticizer.

4,227,892

METHOD AND APPARATUS FOR REMOVING MICRONIZED COAL FROM STEAM

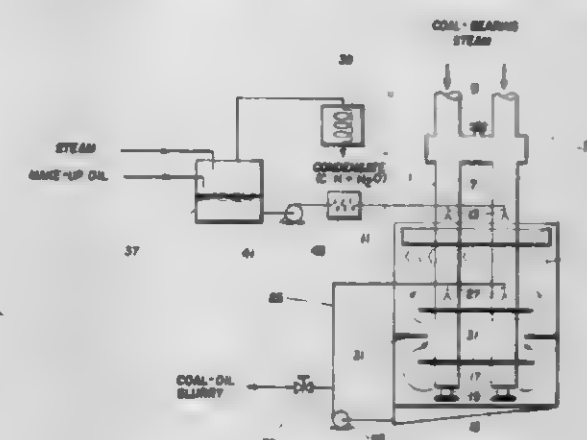
Joseph Vlnaty, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Dec. 4, 1978, Ser. No. 966,204

Int. Cl.³ B01D 47/06

U.S. Cl. 55—89

21 Claims



1. Apparatus for removing micronized coal from steam in a coal pulverizer comprising:

a housing;
a conduit extending downward into and terminating in the lower portion of said housing;

means in said conduit for spraying petroleum oil into the flow of coal-bearing steam in the conduit;
means defining an impact surface disposed in spaced relation to the lower end of said conduit against which said flow impacts at a substantial angle to the surface thereof such that a coal-oil slurry is deposited thereon;

means for collecting the coal-oil slurry deposited on said surface;

a discharge opening near the top of said housing for said steam; and

baffles in said housing for reducing the velocity of said steam, as it rises to the discharge opening, below the settling velocity of the oil droplets, whereby additional coal-oil slurry will separate from the steam.

4,227,893

MOBILE VACUUM LOADER

Roland E. Shaddock, Streator, Ill., assignor to Peabody-Myers Corporation, Streator, Ill.

Filed Sep. 1, 1978, Ser. No. 939,054

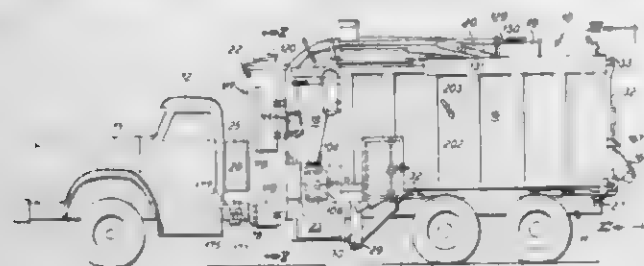
Int. Cl.³ B01D 35/12, 37/00, 50/00

U.S. Cl. 55—97

37 Claims

12. An industrial vacuum cleaner having a materials collec-

tion container with a front end and a top and having an outlet adjacent the top, a pick-up conduit discharging into the container, a plurality of particulate material removing separator units communicating in series with the outlet of the container, a blower pulling air through said separator units, said container



and said pick-up conduit, gates in the container, doors on the container adjacent said gates providing access to said gates from the outside of said container, and said gates selectively controlling air flow through all of said separator units or to by-pass a unit.

4,227,894

ION GENERATOR OR ELECTROSTATIC ENVIRONMENTAL CONDITIONER

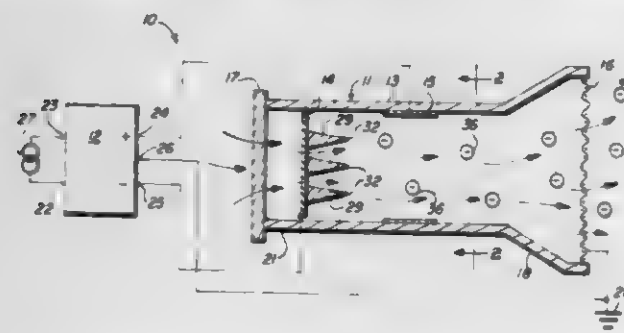
John D. Proynoff, 3315 N. 25th Pl., Phoenix, Ariz. 85016

Filed Oct. 10, 1978, Ser. No. 949,411

Int. Cl.² B03C 3/01

U.S. Cl. 55-126

5 Claims



1. An apparatus for generating negative ions for propulsion into the atmosphere of a controlled environment comprising: an ion gun, said gun comprising an open ended hollow elongated tubular shell flared outwardly at its exhaust end, a negative electrode positioned to extend across at least a part of said shell at a given distance from the opposite end of said shell, said negative electrode comprising a plurality of spaced protrusion extending from a plate mounted transversely of the hollow interior of said shell longitudinally of and toward said flared end of said shell, said protrusions comprising conically shaped configurations having rounded apexes to reduce ozone generation mounted with their bases on said plate and their apex ends extending toward the flared end of said shell, a positive ring shaped anode arranged around at least a part of the periphery of said shell at a second greater distance from said opposite end of said shell, a metallic screen mounted across said flared end of said shell, a d-c source of electrical potential connected to said shell for charging said negative electrode and said positive anode sufficiently to generate negative ions at said negative electrode and to produce sufficient kinetic energy to expell the negative ions past said positive anode and out of said flared end of said shell, and an air filter mounted transversely of the hollow interior of said shell between said opposite end of said shell and said negative electrode.

4,227,895

AIR SCRUBBER APPARATUS

Bruce T. E. Boon, Wayne, N.J., assignor to Eastern Cyclone Industries, Inc., Fairfield, N.J.

Filed May 21, 1979, Ser. No. 40,752

Int. Cl.² B01D 45/10

U.S. Cl. 55-226

12 Claims



1. An apparatus for removing particulate from an air stream comprising:

a housing, said housing having an air intake opening and an opposed air exhaust opening, said housing further including a hopper defining the bottom of said housing, said hopper being of V-shaped configuration;

means for saturating said air stream with a liquid as it enters said housing for agglomerating said airborne particles with said liquid;

a first baffle disposed adjacent said air intake opening, and an inner wall member connected to the bottom edge of said first baffle and disposed parallel to and cooperating with a wall of said housing thereby forming a passageway, wherein the saturated air stream impinges on said first baffle and a portion of said liquid-particulate agglomeration is trapped by said first baffle and is channeled directly into said hopper through said passageway;

a second baffle including a partition section and a trough section, said partition section disposed intermediate and extending generally vertically downwardly from the top of said housing to a point intermediate the height of said housing, said trough section being connected to the bottom end of said partition section and including a pair of conduits in communication with said hopper and disposed along opposed end walls of said housing, with said first baffle being spaced from and overhanging said trough section of said second baffle to create a tortuous S-shaped path for said air stream with said partition section functioning to define a rear open area of relatively large volume adjacent said air exhaust opening;

a third baffle disposed directly above the apex of said V-shaped hopper acting as a divider to inhibit the air stream from reabsorbing said liquid-particulate agglomeration collected in said hopper; and

means for drawing said air stream into said housing, through said tortuous S-shaped path, said rear open area and out said exhaust opening, whereby the saturated air stream passing said first baffle impinges on said partition section of the second baffle such that another portion of said liquid-particulate agglomeration is trapped by said second baffle and channeled directly to said hopper by said conduits, and whereby after said saturated air stream passes said partition section of said second baffle, the path of said air stream is twisted such that it passes underneath said trough section and above said third baffle and thereafter is

further twisted and drawn into said rear open area where said air stream expands such that particulates are removed by gravity from said air stream.

4,227,896

GAS DISTRIBUTION DEVICE FOR THE SUPPLY OF A PROCESSING GAS TO AN ATOMIZING CHAMBER

Finn H. Larsson, Tastrup, and Christian Schwartzbach, Malov, both of Denmark, assignors to A/S Niro Atomizer, Soborg, Denmark

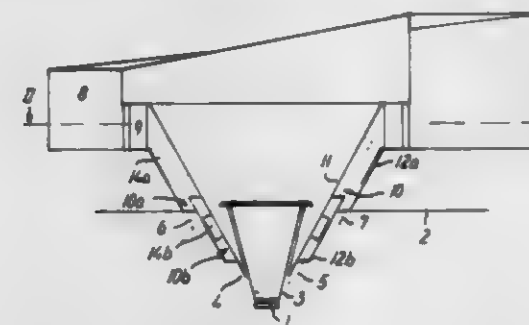
Filed Aug. 3, 1979, Ser. No. 63,884

Claims priority, application Denmark, Aug. 17, 1978, 3640/78

Int. Cl.² B01D 47/16

U.S. Cl. 55-260

2 Claims



1. A gas distribution device for supplying a processing gas to an atomizing zone around an atomizing device arranged centrally in an atomizing chamber, comprising a horizontal spiral supply duct for said processing gas, said duct having an annular mouth extending in rotational symmetry around the axis of the chamber, and two conical guide walls extending around and above the atomizing device, said guide walls limiting a space communicating with said mouth, guide vanes being provided in said mouth for imparting a change of direction to the gas stream from a mainly purely tangential flow in the spiral duct into a rotating flow with a smaller tangential velocity component in the space between the conical guide walls, wherein the improvement comprises that the guide vanes are arranged in the mouth with a small angular spacing and comprise two succeeding sets of stationary guide vanes, the guide vanes of one set being positioned at the external opening of the mouth towards the spiral duct and being shaped to deflect the gas stream to a flow direction, for which the radial velocity component considerably exceeds the tangential velocity component, the other vane set being positioned at the internal opening of the mouth towards the space between the conical guide walls, and each vane of said other vane set projecting into the space between the internal portions of neighbouring vanes of the first vane set and extending substantially parallel to tangential planes to these vanes at the internal edges thereof.

4,227,897

APPARATUS FOR RECOVERY OF FLARED CONDENSIBLE VAPORS

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company

Filed Mar. 5, 1979, Ser. No. 17,378

Int. Cl.² B01D 53/26

U.S. Cl. 55-269

6 Claims

1. Apparatus for recovery of condensible vapors in waste gases which are to be flared, comprising:

(a) a flare system including a flare gas line leading to a flare stack;

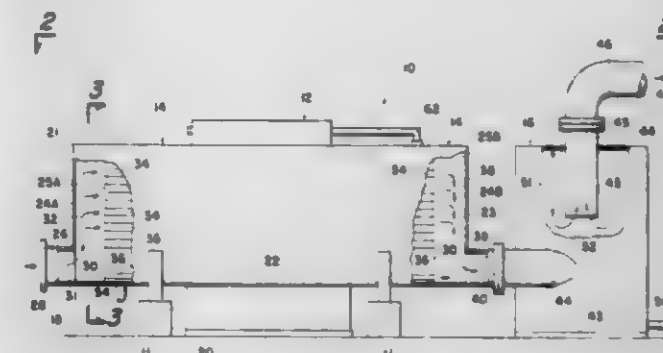
(b) a horizontal gas-to-cooling liquid heat exchanger inserted into such flare gas line to cool said flare gases prior to passage to the stack for burning, to a selected temperature, the exchanger having a gas inlet plenum at one end and an outlet plenum at the other end;

(c) means to cool and circulate the cooling liquid through said heat exchanger;

whereby flare vapors, the dew points of which are above said selected temperature, will condense; and

(d) means at the outlet end to separate the condensed vapors

from the remaining flare gases; the improvement characterized by at least one tube positioned along the bottom of



the heat exchanger to carry precondensed vapors in the waste gas directly from the inlet to the outlet plenum.

4,227,898

AIR CLEANER

Kunio Kamekawa, Hamamatsu, and Sumio Yagi, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

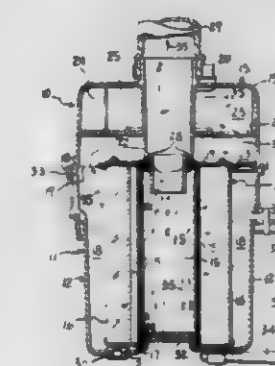
Filed Jan. 19, 1979, Ser. No. 4,930

Claims priority, application Japan, Jan. 31, 1978, 53/9991

Int. Cl.² B01D 50/00

U.S. Cl. 55-276

4 Claims



1. An air cleaner comprising: a hollow cylindrical casing body having an axis and an air inlet through its wall; a lateral partition dividing the interior of the casing body into a passage chamber and a filter unit chamber, said lateral partition having an air intake opening passage therethrough and forming a limited intercommunication between said two chambers, and said air inlet opening into said passage chamber; a cylindrical air filter element positioned in said filter unit chamber so as to provide an annular peripheral passage between it and the casing which is in communication with said air intake opening, said air filter element having a central cleaned air outlet, said chamber being axially aligned; and a passage cylinder extending from outside the casing body and connected to the cleaned air outlet of the filter element; a second lateral partition dividing said passage chamber into an upper and a lower passage, said air inlet entering said upper passage; an axial partition adjacent to one side of said air inlet and dividing said upper passage, said second lateral partition having a throughhole between said upper and lower passage and positioned adjacent to the axial partition on the other side thereof from the air inlet, and said air intake opening in the first partition lying substantially axially aligned with said air inlet, entering said upper passage.

4,227,899

ABSOLUTE FLUID FILTER

Allan H. Meny, 1 Hoover St., North Arlington, N.J. 07032, and
Dennis L. Palmer, 61 Douglas Dr., Towaco, N.J. 07082
Filed Sep. 6, 1978, Ser. No. 939,972
Int. Cl.³ B01D 39/16

U.S. Cl. 55—279

8 Claims

1. An improved absolute, fluid filter, for removing components such as particulate materials, particulate-aerosol combinations, sublimated solids, and the like, from gas streams, said filter having a matrix formed from one material taken from a group of materials consisting of treated paper, glass, and mineral fibers, polymeric fibers, and cellulosic fibers, wherein the improvement comprises:

means coating said matrix material, and hardening, strengthening, and toughening said matrix material, for enhancing components-release from said filter, whereby said filter is rendered cleanable and reusable; and said matrix material comprises a filter medium formed of fibers which latter fibers are formed of a compound of a polymer and a filler agent.

8. An improved absolute, fluid filter, for removing components such as particulate materials, particulate-aerosol combinations, sublimated solids, and the like, from gas streams, said filter having a matrix formed from a material taken from a group of materials consisting of treated paper, glass, and mineral fibers, ceramic fibers, polymeric fibers, and cellulosic fibers, wherein the improvement comprises:

means coating said matrix material, and hardening, strengthening, and toughening said matrix material, for enhancing components-release from said filter, whereby said filter is rendered cleanable and reusable; wherein said coating means comprises a filler agent; and said filler agent comprises means for getting carcinogenic and like harmful vapors and/or particulates borne by said gas streams by altering said carcinogenic and like vapors and/or particulate chemical reactivity or changing the chemical structure thereof.

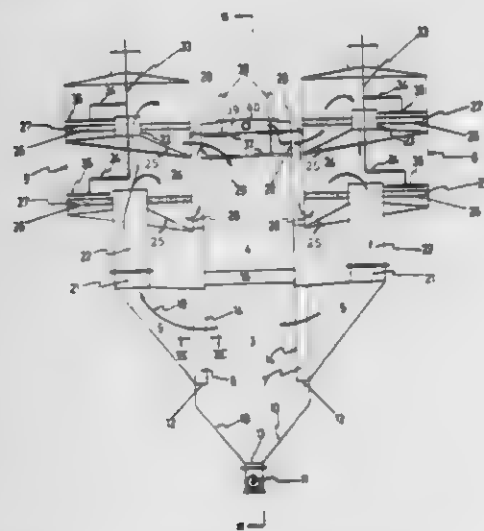
4,227,900

APPARATUS FOR FILTERING GAS STREAMS

John T. Nichols, and Horace S. White, both of 15 Metropolitan Ave., Nunawading, 3131, Victoria, Australia
Filed Dec. 9, 1977, Ser. No. 859,162
Int. Cl.³ B01D 46/30, 46/46

U.S. Cl. 55—288

10 Claims



1. Apparatus for separating particles from a gas stream, comprising:

- (a) a common manifold for carrying a gas stream containing particles to be separated, said common manifold extending along a longitudinal axis of said apparatus;
- (b) sole conveyor means operatively connected to said common manifold for conveying away particles separated from said gas stream;
- (c) baffle particle separator means in communication with

said common manifold means for separating particles from said gas stream;

- (d) further particle separator means for separating particles from said gas stream issuing from said common manifold, said further particle separator means being in communication with said baffle particle separator means via a duct means for transporting said gas stream between said baffle particle separator means and said further particle separator means, said further particle separator means including a filter bed support and a filter bed of particulate material supported on said support; and
- (e) backwashing means operatively connected to said further particle separator means for removing particles from said further particle separator means to give backwashed particles, by passing backwashing gas through said further particle separator means in a direction opposite to the direction of the flow of said gas stream through said further particle separator means for separating particles from said gas stream;

said baffle particle separator means defining sidewalls of said common manifold, said common manifold being in direct communication with said duct means, whereby re-entrainment in said duct means and said further particle separator means of particles separated from said gas stream is substantially prevented.

4,227,901

FILTER-DRIER FOR HEAT PUMP SYSTEMS

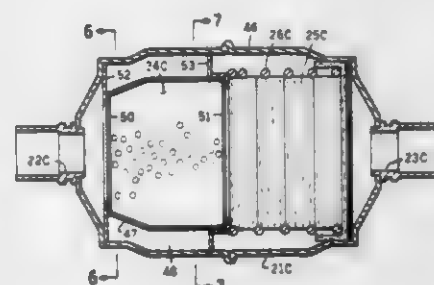
Harold T. Lange, St. Louis, Mo., assignor to Sporlan Valve Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 789,360, Apr. 21, 1977, Pat. No. 4,104,044, which is a continuation-in-part of Ser. No. 729,670, Oct. 5, 1976, Pat. No. 4,029,580. This application Jul. 26, 1978, Ser. No. 928,234

Int. Cl.³ B01D 27/02, 35/02, 53/04

U.S. Cl. 55—301

1 Claim



- 1. A filter-drier unit for heat pump systems, comprising:
 - (a) a housing provided with an inlet and outlet,
 - (b) desiccant in the housing between the inlet and outlet,
 - (c) flow-directing means including:

- 1. a fine mesh screen in the housing between the inlet and desiccant for enabling a first flow from the inlet through the screen and desiccant,
- 2. a passage bypassing the desiccant for enabling a second flow from the inlet through the passage, and
- 3. the fine mesh screen collecting desiccant fines upon any reverse flow for precluding migration of desiccant out of the inlet,

- (d) the fine mesh screen is located relative to the inlet and bypass passage so that the second flow engages and moves past the screen for washing the screen and passing any dirt from the screen into and through the bypass passage,
- (e) a filter means is located in the housing between the desiccant and outlet for receiving the first flow through the desiccant and for receiving the second flow including any dirt washed from the screen from the bypass passage prior to movement through the outlet, the bypass passage enabling reverse flow from the filter means to the inlet,
- (f) a holder containing the desiccant, the holder being spaced

peripherally from the housing to provide the bypass passage therebetween,

- (g) the fine mesh screen extends across the holder upstream of the desiccant and is spaced axially from the inlet to provide a space between the inlet and screen, and
- (h) the bypass passage communicates with the space between the inlet and screen so that the second flow engages and moves past the screen for washing the screen.

4,227,902

BENCH STRUCTURE WITH DUST COLLECTOR

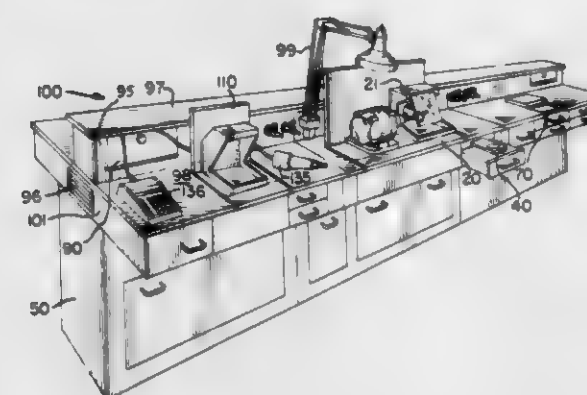
Donald F. Olson, St. Charles, Ill., assignor to St. Charles Manufacturing Co., St. Charles, Ill.

Filed Aug. 8, 1977, Ser. No. 823,049

Int. Cl.³ B01D 46/04

U.S. Cl. 55—302

7 Claims



4. A laboratory bench assembly for the collection of dust resulting from grinding or polishing operations in lathe and hand grinding operations conducted at said bench assembly, said bench assembly including a frame, an enclosed bench, a countertop, an exhaust means, a blower means for creating an air flow between said exhaust means and said blower means, filter means intermediate said blower means and said exhaust means for cleaning said air flow, said exhaust means being connected to said filter means by conduit means when exposed by said open position of said countertop portion, said air flow thereby carrying said dust particles from said grinding operation at said bench through said conduit means to be collected in said filter means, said exhaust means including a first exhaust compartment and a second exhaust compartment, said first exhaust compartment having a first vent opening, said second exhaust compartment having a second vent opening and mounted to said first exhaust compartment in telescopic fashion to allow said exhaust compartment to move from a retracted position where said first vent opening is open for the flow of air and said second vent opening is closed to the flow of air, to an extended position where said second vent opening is closed to the flow of air and said first vent opening is open to the flow of air.

4,227,903

FILTER CELL APPARATUS

Karl-Axel G. Gustavsson, and Holger A. Persson, both of Enköping, Sweden, assignors to AB Bahco Ventilation, Stockholm, Sweden

Filed Aug. 31, 1978, Ser. No. 938,720

Claims priority, application Sweden, Aug. 31, 1977, 7709819

Int. Cl.³ B01D 46/04

U.S. Cl. 55—302

5 Claims

1. A compact cell filter apparatus comprising:

- a housing;
- at least one filter cell in said housing having a gas flow direction;
- a dust chamber adjacent to, and communicating with, the upstream end of said at least one cell;
- a raw gas duct on said housing, said gas flow direction being from said raw gas duct towards said at least one filter cell, said raw gas duct being adjacent to, and communicating

with, the upstream end of said dust chamber, said raw gas duct including a boundary wall at its downstream end; filter cleaning means communicating with the downstream end of said at least one cell, said filter cleaning means including gas blast means for providing gas blast shocks in a direction opposite that of said gas flow direction; gas deflector means located between said dust chamber and said raw gas duct, said gas deflector means and said boundary wall together forming a tapering duct for sup-



plying raw gas from said raw gas duct to said dust chamber, one of said gas deflector means and said boundary wall being at least partially movable in response to said gas blast shocks, said tapering duct narrowing to a passage whose width varies in response to the movement of said one of said gas deflector means and said boundary wall, whereby said movement of said one of said gas deflector means and said boundary wall helps remove dust particles from said passage.

4,227,904

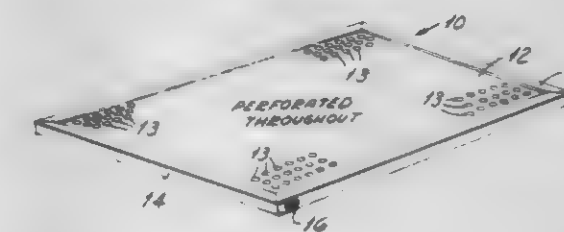
GAS PHASE PERMEABLE FILTER

James W. Kasmark, Jr., Mount Clemens; Myron L. Dooley, New Baltimore, and Arthur H. Jones, Marine City, all of Mich., assignors to D-Mark, Inc., Mt. Clemens, Mich.
Continuation of Ser. No. 709,665, Jul. 29, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,721

Int. Cl.³ B01D 50/00

U.S. Cl. 55—316

15 Claims



15. A gas phase permeable filter comprising:
a plurality of self-supporting perforated sheet substrates assembled in confronting spaced apart face-to-face relation having discrete perforations, each of said confronting faces having disposed upon it a uniform layer of odor-adsorbing media consisting essentially of discrete odor-removing particles individually bonded by adhesive to its adjacent confronting face such that the layer is held between the spaced apart substrates against settling and displacement, each odor-removing particle having only a minor portion of its surface in contact with the adhesive and a major portion upstanding from the substrate face and free of adhesive so to form a thickness of odor-remov-

ing media between the substrates of approximately two particulate diameters; and
a means for holding said substrates in the aforesaid assembled relation.

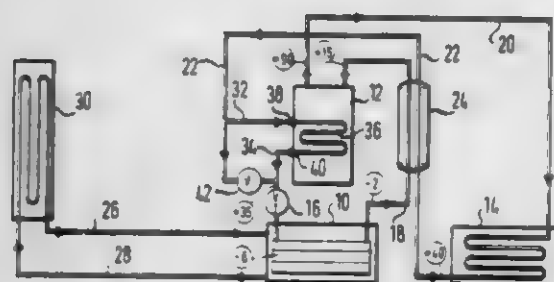
4,227,905

PROCESS AND HEAT PUMP FOR THE TRANSFER OF HEAT AND COLD

Manfred Burger, Wolftrahthauser Strasse 45, 8023 Pullach; Waldeman Dukek, Landsberger Strasse 161, 8000 München; Ernst Gagel, Karwendelstrasse 49, 8000 München 70; Alfred Pretchl, Lindenweg 6, 8082 Grafrath, and Rudolf Kalmovitz, Stadtweg 25, 8059 Altenerding, all of Fed. Rep. of Germany
Filed Apr. 24, 1978, Ser. No. 899,619

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1977, 2718265

Int. Cl.² F25B 41/00, 27/02, 47/00, 31/00
U.S. Cl. 62—113



1. Process for the transfer of heat and cold between two separate fluid streams by means of a closed circuit of cooling medium, by which a cooling medium is successively vaporized, compressed, liquified and decompressed and, by heat exchange with the fluid streams, absorbs heat of evaporation and gives off heat of condensation, wherein (a) during heating by a condenser, said cooling medium is heated, prior to its decompression, by the Joule's heat released upon compression, and (b) prior to said heating by said Joule's heat, said cooling medium is cooled by heat exchange with the fluid stream used for vaporization, said fluid stream being simultaneously heated.

4,227,906

ENVIRONMENTAL CONTROL FOR MINERAL FIBER-FORMING

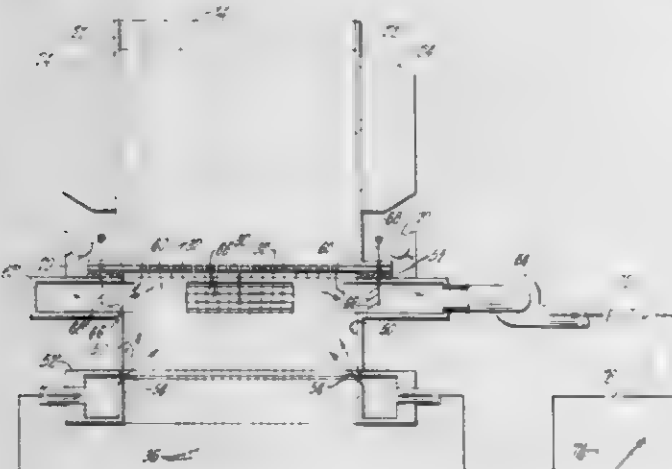
Elmer P. Rieser, Pickerington, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Jul. 9, 1976, Ser. No. 703,722

Int. Cl.¹ C03B 37/02

U.S. Cl. 65—2

19 Claims



1. A method of making fibers from molten mineral material comprising:

(a) attenuating fibers from a bushing, said bushing having a bottom wall adapted with a plurality of orifices;

(b) directing a fluid toward said bushing bottom wall from a fluid supply means;
(c) educting a portion of said fluid from a locus intermediate said bushing bottom wall and said fluid supply means; and
(d) recovering said fibers.

4,227,907

LASER PHOTOCHEMICAL SYNTHESIS COATING OF OPTICAL FIBER

James A. Merritt, Pulaski, Tenn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 22, 1979, Ser. No. 87,115

Int. Cl.³ C03C 25/02

U.S. Cl. 65—3 R

2 Claims

1. In a method of producing an optical fiber of high mechanical strength from a high purity fused silica preform rod wherein the preform rod is heated to its yield point at about 2000° C., a fiber is drawn from the heated preform, and the drawn fiber is immediately hermetically sealed with a layer of silicon nitride of about 0.02 to about 0.20 micrometer thickness, the improvement in said method of hermetically sealing the drawn fiber at room temperature by a laser photochemical reaction process which comprises:

(a) placing a drawn silicon fiber in a reaction chamber provided with a salt window transparent to laser radiation;
(b) introducing and maintaining a controlled atmosphere of SiX₄ and NX₃ gases, wherein X is selected from hydrogen and fluorine, in said reaction chamber and;
(c) irradiating said controlled atmosphere with a predetermined wavelength of a laser to produce Si₃N₄ which coats and hermetically seals said drawn silicon fiber with a layer of said Si₃N₄ of about 0.02 to about 0.20 micrometer thickness.

4,227,908

SHAPING GLASS SHEETS BY DROP FORMING WITH SAG CONTROL MEANS

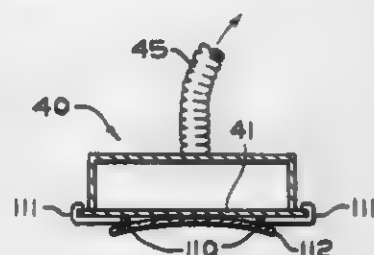
Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 960,404, Nov. 13, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,442

Int. Cl.² C03B 23/02

U.S. Cl. 65—106

18 Claims



1. A method of shaping glass sheets, comprising the steps of: heating a glass sheet to approximately its softening point; bringing a surface of the glass sheet and a flat perforated plate of a vacuum plate into close proximity to each other with a spacing member interposed between the plate and marginal portions of the glass sheet;
drawing a vacuum through the perforated plate so as to retain the glass sheet on the platen and to bring said marginal portions of the glass sheet to bear against the spacing means, whereby the vacuum draws remaining portions of the glass sheet closer to the plate than said marginal portions, thereby bowing the glass sheet;
supporting the platen and the bowed glass sheet carried thereon in an essentially horizontal orientation with the glass sheet under the platen;
bringing into vertical alignment with and beneath the glass

sheet held on the platen a shaping mold having a contour defining the desired contour for the glass sheet; and releasing the glass sheet from the platen so as to fall onto the shaping mold and conform to the contour defined by the shaping mold.

8. An apparatus for shaping glass sheets comprising: furnace means for heating glass sheets to a softened condition;
support means adjacent to the furnace means for supporting glass sheets;
conveyor means for transferring glass sheets from the furnace means to the support means;
a platen having a flat perforated plate and having an enclosed interior space in communication with a source of vacuum;
means for transferring the platen into and out of close proximity to the support means so as to lift the glass sheet from the support means by means of vacuum;
spacing means supported before said flat perforated plate so as to be interposed between the plate and marginal portions of a sheet of glass retained on the platen;
a shaping mold having upwardly facing shaping surfaces defining the desired curvature and corresponding to the shape of the glass sheets; and
shuttle means for alternately bringing the platen and the shaping mold into and out of superimposed vertically spaced relationship to each other, wherein the shaping mold in the superimposed position is supported at an elevation below the perforated plate so as to receive and shape a glass sheet dropped from the platen.

an apparatus which includes a melter for melting a glass batch, a refiner connected to receive molten glass from the furnace, one or more forehearth connected to and fed by the refiner, and a plurality of Joule effect heating electrodes located in each forehearth wherein an AC signal is provided to said heating electrodes to cause Joule effect heating of molten glass to occur, the improvement comprising the steps of:

impressing a positive and equal DC voltage upon each heating electrode; and
impressing a negative DC voltage upon an electrode which is located in said melter adjacent to the connection to said refiner so as to provide a path for the flow of electrons from the heating electrodes to said furnace electrode and thereby cause free electrons to be collected on said melter electrode and prevent the formation of blisters on the heating electrodes.

4,227,910

APPARATUS FOR SUPPORTING LENSES DURING HEAT TREATMENT

Emil W. Deeg, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

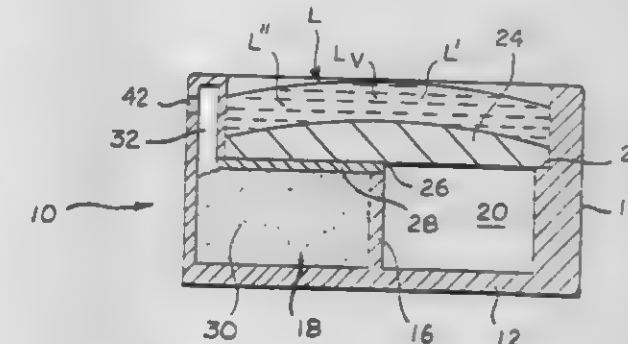
Division of Ser. No. 880,839, Feb. 24, 1978, Pat. No. 4,149,868.

This application Jan. 25, 1979, Ser. No. 6,328

Int. Cl.¹ C03B 32/00

U.S. Cl. 65—269

1 Claim



1. A fixture for heat sinking a selected portion of an ophthalmic quality lens or lens blank to produce a reversible, progressive local variation in photochromic behavior with a continuous variation in transmissivity from a lens or lens blank which is composed of a potentially phototropic glass containing all the necessary ingredients therein to develop photochromic behavior at a temperature of development of photochromic behavior during heat treatment thereof, during which heat treatment said apparatus maintains a selected portion of said lens or lens blank at a temperature to substantially inhibit the development of photochromic behavior and to produce a progressive gradient transmissivity comprising: a base portion, sidewalls fixedly secured to said base portion and extending generally upwardly therefrom and enclosing a cavity portion; divider means extending upwardly from said base portion between generally opposite sidewalls and separating said cavity portion into two portions; flange means disposed on said sidewalls intermediate said base portion and top of said sidewalls and adapted to receive said lens or lens blank; heat-sinking material disposed in one of said cavity portions, said heat-sinking material having at least one phase transition temperature below the temperature of development of photochromic behavior; and a heat-conducting cover disposed over said one of said cavity portions, one side of said cover being in contact with said heat-sinking material and the other side of said cover being in contact with the selected portion of the lens or lens blank.

4,227,909

ELECTRIC FOREHEARTH AND METHOD OF MELTING THEREIN

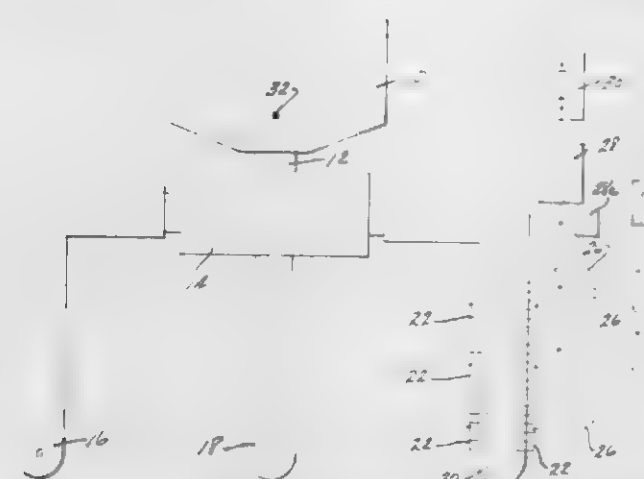
Emery J. Hornyak, Jr., Temperance, Mich.; Philip D. Perry, Toledo, Ohio, and James E. Sherman, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 12, 1979, Ser. No. 47,677

Int. Cl.² C03B 5/02

U.S. Cl. 65—135

12 Claims



1. Apparatus for manufacturing molten glass without blisters comprising, in combination:

a melter for melting a glass batch;
a refiner connected to receive molten glass from said melter; one or more forehearth connected to and fed by said refiner;
a plurality of Joule effect heating electrodes located in at least one forehearth;
AC means connected to said heating electrodes for providing an AC current to said heating electrodes;
DC means, connected to said AC means, for impressing a positive and equal DC signal upon each of said heating electrodes; and
an electrode, located in said melter adjacent the connection to the refiner and connected to the opposite pole of said DC means, for providing a path for electron flow from all of said heating electrodes to said melter electrode.

12. In a method of manufacturing molten glass by means of

4,227,911

WETTING AGENT AND USE THEREOF IN AGRICULTURE

James D. Leonard, Chaska, and Michael J. Lewis, Prior Lake, both of Minn., assignors to Conklin Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 769,314, Feb. 17, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 950,067 Int. Cl.³ A01N 25/00

U.S. Cl. 71-77

15 Claims

1. In an aqueous composition for stimulating root development of plants, which composition comprises a surface-tension lowering surfactant, a water-compatible organic liquid solvent compatible with said surfactant, a polysiloxane foam-suppressing agent, and one root-development stimulating low equivalent weight solid acrylate copolymer, comprising monomeric units derived from acrylic acid, α -lower alkyl acrylic acid or mixtures thereof, and an allyl saccharide, said monomeric units derived from said acid or acids being in the acrylate salt form; said acrylate copolymer having a molecular weight in excess of 50,000 and a carboxylic acid equivalent weight greater than 72 but less than about 90, the improvement which comprises improving the essentially non-clogging sprayability characteristics of said aqueous composition by means of an essentially non-clogging additive, said essentially non-clogging additive comprising:

a root-development stimulating, second acrylate copolymer uniformly distributed through said aqueous composition, said second acrylate copolymer being a solid, relatively higher equivalent weight acrylic acid copolymer, comprising monomeric units derived from acrylic acid or α -lower alkyl acrylic acid or mixtures thereof, and a lower alkyl acrylate or lower alkyl α -lower alkyl acrylate or mixtures thereof, said relatively higher equivalent weight acrylic acid copolymer having a carboxylic acid equivalent weight greater than 90 and a pH in 1 weight-% aqueous solution of less than about 4; the ratio, by weight, of said second acrylate copolymer to said low equivalent weight acrylate copolymer ranging from about 90:10 to about 10:90.

4,227,912

METHOD FOR CONTROLLING THE RELATIVE STEM GROWTH OF PLANTS

Thomas D. O'Neal, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

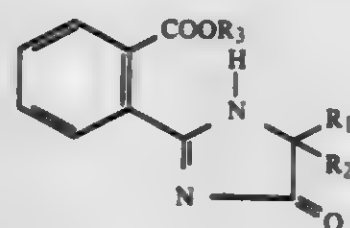
Division of Ser. No. 871,874, Jan. 23, 1978, Pat. No. 4,170,462. This application Mar. 30, 1979, Ser. No. 25,511

Int. Cl.³ A01N 43/50

U.S. Cl. 71-78

4 Claims

1. A method for eliminating and/or inhibiting bud growth on coffee or tobacco plants comprising, applying to the foliage of said plants or to soil in which they are growing, a bud growth inhibiting amount of a compound having the formula:



wherein R₁ is alkyl C₁-C₄; R₂ is alkyl C₁-C₆, cycloalkyl C₃-C₆, alkenyl C₂-C₄, or when R₁ and R₂ are taken together with the carbon to which they are attached they may represent cycloalkyl C₃-C₆ optionally substituted with methyl; R₃ is hydrogen, alkyl C₁-C₁₂, alkenyl C₃-C₅ optionally substituted with one halogen substituent or one or two methyl substituents, benzyl, cyclohexenylmethyl, pentadienyl, or a salt-forming cation selected from the group consisting of alkali metals,

ammonium and aliphatic ammonium; and the acid addition salts thereof.

4,227,913

INHIBITING PLANT BUD GROWTH WITH SUBSTITUTED 2,6-DINITROANILINES

Robert H. Kupelian, Bucks County, Pa., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 439,193, Feb. 4, 1974, Pat. No. 4,123,250, which is a continuation-in-part of Ser. No. 245,646, Apr. 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 158,538, Jun. 30, 1971, abandoned. This application Aug. 17, 1978, Ser. No. 934,442

Int. Cl.³ A01N 43/36, 33/06, 41/00

U.S. Cl. 71-78

6 Claims

1. A method for inhibiting bud growth on plants comprising contacting the plants with a bud growth inhibiting amount of the compound [N-sec-butyl-2,6-dinitro-3-methyl-4-(methylsulfonyl)aniline] N-sec-butyl-4-methylsulfonyl-2,6-dinitro-m-toluidine, 1-(2,6-dinitro-3,4-dimethylphenyl)pyrrolidine or 4-methylsulfonyl-2,6-dinitro-N-(3-pentyl)-m-toluidine.

4,227,914

HERBICIDAL PHENOXYALKYLOXAZOLINES

Werner Föry, Basel; Beat Böhner, Binningen; Dieter Dürr, Bottmingen, all of Switzerland; Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Otto Rohr, Therwil, and Henry Szczepanski, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 19, 1979, Ser. No. 4,961

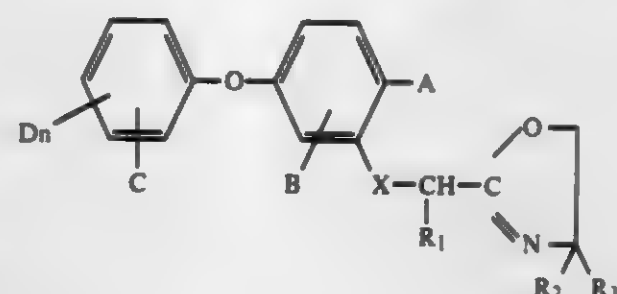
Claims priority, application Switzerland, Jan. 25, 1978, 804780/78

Int. Cl.² A01N 9/22; C07D 263/14

U.S. Cl. 71-88

11 Claims

1. Phenoxyalkyloxazolines of the formula I



wherein

A represents hydrogen, a halogen atom, the cyano or nitro group, the amido or thiamido radical -CONH₂ or -CSNH₂.

B represents hydrogen, a halogen atom or a C₁-C₄ alkyl group, C represents halogen, a cyano, nitro or trifluoromethyl group, the amido or thiamido radical,

D represents a halogen atom, the cyano or nitro group, n is 0, 1 or 2,

R₁, R₂ and R₃, each independently of the other, represents hydrogen or a C₁-C₄ alkyl group, and

X represents oxygen or sulfur.

4,227,915

N-SUBSTITUTED OXOBENZOTHAZOLINE AND OXOBENZOXAZOLINE DERIVATIVES AND THEIR USE AS PLANT GROWTH REGULANTS

John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 18, 1978, Ser. No. 907,233

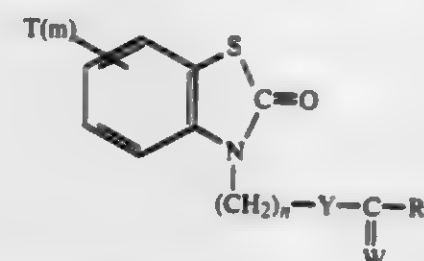
Int. Cl.² A01N 9/12

U.S. Cl. 71-90

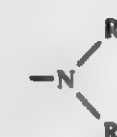
5 Claims

1. A method of regulating the natural growth and development of leguminous plants which method comprises applying

to said leguminous plants or their habitat an effective plant growth regulating amount of a compound of the formula



wherein Y and W represent independently oxygen or sulfur; T represents lower alkyl, lower alkoxy, CF₃ or NO₂; m is an integer of from 0 to 1; n is an integer of from 1 to 3; and R is selected from the group consisting of



morpholino, pyrrolidyl and pyrrolidyl substituted by from 1 to 2 lower alkyl, lower alkenyl or lower alkoxy moieties; R₁ represents lower alkyl, lower alkenyl, benzyl, phenyl or phenyl substituted by from 1 to 3 lower alkyl, lower alkoxy, lower alkenyl, CF₃ or NO₂ moieties; R₂ represents hydrogen, lower alkyl or lower alkenyl moieties.

4,227,916

CONTROL OF WEEDS WITH 1-(3-METHYL-5-ISOTHIAZOLYL)-3-ALKOXY-3-METHYLUREAS

Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 848,174, Nov. 4, 1977. This application Aug. 30, 1979, Ser. No. 71,170

Int. Cl.² A01N 9/12

U.S. Cl. 71-90

6 Claims

1. A method of controlling broadleaf and grassy weeds which comprises contacting the weed with a compound in an amount effective to control the weed, said compound being a urea selected from the group consisting of:

1-(3-methyl-5-isothiazolyl)-3-methoxy-3-methylurea, 1-(3-methyl-5-isothiazolyl)-3-ethoxy-3-methylurea, 1-(3-methyl-5-isothiazolyl)-1-methyl-3-methoxy-3-methylurea, 1-(3-methyl-5-isothiazolyl)-1-methyl-3-ethoxy-3-methylurea or mixtures thereof.

4,227,917

PHENYLGLYOXYLONITRILE-2-OXIME-CYANOMETHYL ETHER AS A CROP SAFENER

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

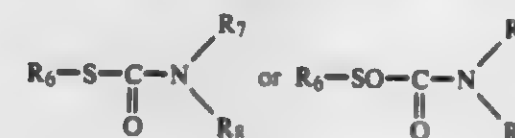
Continuation of Ser. No. 772,700, Feb. 28, 1977, Pat. No. 4,152,137, which is a continuation-in-part of Ser. No. 717,792, Aug. 25, 1976, Pat. No. 4,070,389. This application Mar. 26, 1979, Ser. No. 23,805

Int. Cl.² A01N 9/12, 9/20

U.S. Cl. 71-100

9 Claims

1. A method for protecting crops from injury caused by application of a herbicidal thiocarbamate of the formula



wherein

R₆ is lower alkyl, lower alkenyl, chloroalkyl, dichloroalkyl, trichloroalkyl or p-chlorobenzyl, R₇ is lower alkyl having at least 2 carbon atoms, and R₈ is lower alkyl having at least 2 carbon atoms or cyclohexyl or wherein R₇ and R₈ together with the nitrogen atom form the hexahydro-1H-azepin ring or the decahydroquinoline or 2-methyl-decahydroquinoline ring.

said method comprising applying to the crop seeds, a crop protecting amount of phenylglyoxylonitrile-2-oxime-cyanomethyl ether.

4,227,918

NOVEL HALOGENOETHYL SULPHONES AND THEIR USE AS PLANT GROWTH REGULATORS

Wolfgang Hofer, Wuppertal, and Klaus Lürsen, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 856,056, Nov. 30, 1978. This application Dec. 4, 1978, Ser. No. 965,966

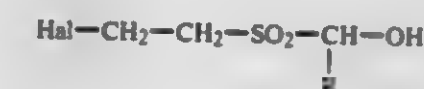
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657380

Int. Cl.² A01N 9/14

U.S. Cl. 71-103

8 Claims

1. A method of regulating the growth of plants which comprises applying to the plant or to a habitat thereof, a plant growth regulating amount of a compound having the formula



wherein

Hal represents bromine or chlorine, and R represents hydrogen or alkyl with 1 to 4 carbon atoms.

4,227,919

1-HYDROXY-2-(ALKYLKETO)-4,4,6,6-TETRAMETHYLCYCLOHEXEN-3,5-DIONE HERBICIDES

Reed A. Gray, Saratoga; Chien K. Tseng, El Cerrito, and Ronald J. Rusay, Lafayette, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

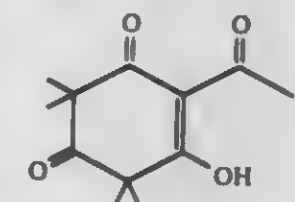
Division of Ser. No. 947,217, Sep. 29, 1978. This application Aug. 6, 1979, Ser. No. 64,243

Int. Cl.² A01N 9/24

U.S. Cl. 71-122

4 Claims

1. A method of controlling undesirable vegetation comprising applying thereto a herbicidally effective amount of a compound having the formula



wherein R is alkyl having 1 to 6 carbon atoms.

4,227,920

METHODS OF CLAY BENEFICATION

John H. Chapman, Sandersville, Ga., and David Anderson, Elizabeth, N.J., assignors to Yara Engineering Corporation, Springfield, N.J.

Filed Jul. 18, 1978, Ser. No. 925,867

Int. Cl.² C04B 33/13

U.S. Cl. 75-1 R

13 Claims

1. A method of beneficiating highly discolored clays to

stage at a temperature of between about 150° C. and about 450° C. for a period of from about 5 minutes and about 30 minutes, a third stage at a temperature of between about 450° C. and about 700° C. for a period between about 5 minutes and about 30 minutes, and a fourth stage at a temperature of between about 850° C. and about 1050° C. for a period between about 30 minutes and about 2 hours.

4,227,927

POWDER METALLURGY

Herbert L. Black, Eighty Four, Mark Somerville, Holbrook, and Jerome Schwartz, Bethel Park, all of Pa., assignors to Cyclops Corporation, Universal-Cyclops Specialty Steel Division, Pittsburgh, Pa.

Filed Apr. 5, 1978, Ser. No. 893,276

Int. Cl.³ B22F 3/14

U.S. Cl. 75—225

8 Claims

1. A process for consolidating powder metals comprising the steps for

- placing unconsolidated powder metal in a sealable glass mold which becomes plastic upon heating,
- evacuating the atmosphere from the powder filled mold,
- sealing the mold,
- placing the mold in an open top refractory container and packing with free flowing refractory powder selected to freely flow at all the temperatures encountered in the process,
- heating the mold and contents of the mold to a temperature at which sintering of the powder metal takes place and holding at this temperature for a time sufficient to cause substantially complete densification of the powder metal,
- cooling and removing the mold to recover a dense article, and whereby the glass mold is supported by the free flowing refractory powder as the mold becomes plastic and shrinks in volume as its contents densify.

4,227,928

COPPER-BORON CARBIDE COMPOSITE PARTICLE AND METHOD FOR ITS PRODUCTION

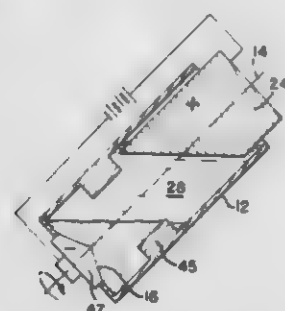
Chih-Chung Wang, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed May 1, 1978, Ser. No. 901,843

Int. Cl.² B22F 5/00, 3/00; C22C 29/00

U.S. Cl. 75—238

11 Claims



1. A process for encapsulating particulate boron carbide core materials within copper metal to produce discrete particles suitable for use in fabricating boron carbide core material-filled copper structures having a selected copper/boron carbide core material volume ratio, said process comprising the steps of:

- placing the particulate boron carbide core material in a copper containing solution suitable for electroless copper plating and electrolessly plating an electrically conductive film of copper metal on said boron carbide core material to produce copper coated boron carbide particles;
- electrolytically depositing additional copper onto said copper coated boron carbide particles; and
- terminating the electrodeposition when particles of

copper coated boron carbide having a selected copper/boron carbide core material volume ratio is achieved.

5. A process for producing a neutron absorbing, shield structure, said process comprising the steps of:

- placing a particulate boron carbide core material in a copper containing solution suitable for electroless copper plating and electrolessly plating an electrically conductive film of copper metal on said boron carbide core material to produce copper coated boron carbide particles;
- electrolytically depositing additional copper onto said copper coated boron carbide particles;
- terminating the electrodeposition when particles of copper coated boron carbide having a copper/boron carbide core material volume ratio between the range of 0.3 to 4 is achieved; and,
- consolidating said particles of copper coated boron carbide to produce a structure having a thickness sufficient to provide a boron carbide particle intercepting all lines passing therethrough.

4,227,929

SILOXANE-TIN COATINGS

Gabriel H. Law, Whittier, and Albert P. Gysegem, Monrovia, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

Division of Ser. No. 718,149, Aug. 26, 1976, Pat. No. 4,080,190.

This application Dec. 8, 1977, Ser. No. 858,708

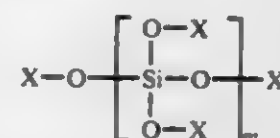
Int. Cl.² C09D 5/14, 5/38

U.S. Cl. 106—1.17

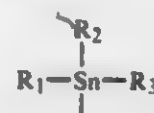
13 Claims

1. A one-package system for preparing an antifouling coating for marine surfaces comprising:

- a hydrolyzable siloxane for forming a solid binder, the siloxane having the formula:



where m is from 1 to about 10, where each X is independently selected from the group consisting of alkyl and alkoxyalkyl radicals containing less than about 6 carbon atoms and Y, where Y has the formula:



where R₁, R₂, and R₃ are independently selected from the group consisting of alkyl and cycloalkyl radicals, where R₁, R₂, and R₃ contain in combination up to about 18 carbon atoms, the siloxane in the kit being capable of hydrolysis and cross-linking polycondensation to form a solid film, and

where the X's are selected so the ratio of tin atoms to silicon atoms in the siloxane is from about 1:50 to about 2:5;

- an acid source of protons sufficient to create an acid condition; and
- a filler nondeleteriously reactive with the source of protons.

4,227,930

BALL POINT PEN, INK, AND ITS ERADICATOR SYSTEM

An-Chung R. Lin, Fairport, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 784,653, Apr. 4, 1977, Pat. No. 4,156,657.

This application Nov. 13, 1978, Ser. No. 960,360

Int. Cl.³ G09D 11/18

U.S. Cl. 106—19

3 Claims

1. A colored ink which can be eradicated after application, consisting of:

- a dye which remains colored in acid solution,
- a vehicle solution in which the dye will dissolve, and
- an acid with a PK_a value smaller than 7.

4,227,931

SELF-HARDENING MOLD SAND

Hiroshi Uchikawa, Funabashi, and Hajime Kato, Yokohama, both of Japan, assignors to Onoda Cement Co., Ltd., Onoda, Japan

Continuation of Ser. No. 535,169, Dec. 23, 1974, abandoned.

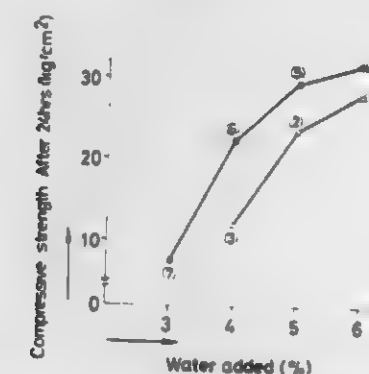
This application Dec. 27, 1978, Ser. No. 973,611

The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.

Int. Cl.² B28B 7/34

U.S. Cl. 106—38.35

10 Claims



1. In a mold sand composition comprising a mixture of sand, water, a self-hardening binder and a surface active agent, the improvement comprising: from about 3 to about 6 percent by weight of water based on the sand; from about 2 to about 20% by weight of binder based on the sand, said self-hardening binder comprising a substantially anhydrite sulphate salt and clinker powder containing at least 2% calcium halo-aluminate of 11CaO.7Al₂O₃.CaX₂, where X is a halogen atom; and the percentage of said surface active agent to sand is from about 0.02 to about 1.0% by weight, said surface active agent comprising b-naphthalene-sulphonic acid-formaldehyde condensate salt as its main component.

4,227,932

SINGLE COMPONENT POTASSIUM SILICATE CEMENT FOR DRY GUNNING

George R. Leah, Lower Burrell, and Robert R. Pierce, Philadelphia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 21, 1979, Ser. No. 13,107

Int. Cl.² C04B 19/04

U.S. Cl. 106—84

11 Claims

1. A single component potassium silicate cement composition capable of being dry gunnited by mixing with water in the nozzle of a concrete gunning machine to produce a quick setting acid-resistant cement comprising the following pulverulent ingredients expressed as percent by weight:

- Potassium silicate having an SiO₂/K₂O weight ratio within the range of about 1.8 to 2.5 of SiO₂ to 1 of K₂O, and a water content within the range of 10 to 25%—8 to 24%
- At least one acid releasing hardener—1.3 to 10%

- At least one acid resistant inorganic filler 66 to 90%
- At least one surfactant—0.05 to 2%
- At least one coating oil—0.1 to 2%,

the said acid releasing hardener having a lower limiting weight ratio with respect to the potassium silicate of 1 to 6 and an upper limiting weight ratio with respect to the said potassium silicate of 1 to 2.5.

4,227,933

IMPERMEABLE MEMBRANE CONTAINING TRINIDAD LAKE ASPHALT AND METHOD OF ACHIEVING SAME

LeRoy H. McAllister, Jr., R.R. 1, Zionsville, Ind. 46077

Continuation-in-part of Ser. No. 814,688, Jul. 11, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,710

Int. Cl.³ C08L 95/00

U.S. Cl. 106—281 R

8 Claims

1. An impermeable membrane formed from an asphaltic mixture of petroleum asphalt and aggregate and filler, in which Trinidad Lake Asphalt is also used in a proportion of 1.0% to 5.5% by weight, of the total membrane composition, thereby achieving a locking effect by the Trinidad Lake Asphalt which locks or holds the aggregate mixture in position, in the substantial absence of asbestos,

the mechanical bearing strength thereby achieved by the particulate matter of the Trinidad Lake Asphalt thereby permitting the use of a softer combination of petroleum asphalt and Trinidad Lake Asphalt to fill the interstices of the aggregate and filler, without using an asphalt hard enough to itself provide that mechanical strength, and thereby achieving a membrane which is pavalable and resistant to cracking as well as impermeable and strong.

4,227,934

USE OF ION EXCHANGE RESINS IN PREPARATION OF HIGH SOLID TIO₂ SLURRIES

Earl R. Lawhorne, Savannah, Ga., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 3, 1979, Ser. No. 35,665

Int. Cl.² C09C 1/36

U.S. Cl. 106—300

8 Claims

1. A method of reducing the viscosity of a titanium dioxide pigment slurry having more than about 50 percent by weight solids comprising contacting said slurry with an anion exchange resin.

5. A method of reducing the viscosity of a calciner discharge slurry of titanium dioxide comprising contacting said slurry with an anion exchange resin.

4,227,935

HIGH DRY HIDE TIO₂ SLURRIES

David W. Blake, Alberto W. Delgado, and Gerard M. Sheehan, all of Savannah, Ga., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 16, 1979, Ser. No. 12,677

Int. Cl.² C09C 1/36

U.S. Cl. 106—308 B

8 Claims

1. In an aqueous titanium dioxide pigment slurry having high hiding power, a solids content of about 55 to 70 percent by weight, and an effective amount of a dispersing agent, the improvement comprising using undried, unmilled hydroclassified fines as the source of the titanium dioxide wherein said fines pass through a 325 mesh screen and are coated with about 0.3 to 3 percent by weight of hydrous aluminum oxide.

4,227,936

PROCESS FOR THE PRODUCTION OF READILY DISPERSIBLE PIGMENT PREPARATIONS

Günter Osswald, Ludwigsburg, and Willy Gouders, Cologne, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 15,523

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808223

Int. Cl.¹ C09C 1/26, 3/04

U.S. Cl. 106—309

2 Claims

1. A process for the production of readily dispersible pigment preparations with a pigment content of more than 65% by weight, comprising suspending the pigment in water, to form a suspension having a solids content of 25 to 50% by weight, kneading the suspension, heating the pigment suspension while kneading to a temperature of 60° to 70° C., adding to the suspension a cationactive substance and an oleate, adding a binder dissolved in an organic solvent to the suspension while kneading, the water which is expressed from the kneaded suspension and the organic mass obtained thereby is continued to be kneaded and subsequently dried.

4,227,937

ADDITIVE COMPOSITION FOR MAKING DENTAL MATERIALS

Curtis P. Mable, Thurmont, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 539,236, Jan. 7, 1975, Pat. No. 3,973,970.

This application Jun. 23, 1976, Ser. No. 699,202

Int. Cl.² C09K 3/00; B01J 13/00

U.S. Cl. 106—313

2 Claims

1. Additive composition for use in dental porcelain products, comprising an aqueous solution including 1 to 8% of a colloidal silica and/or alumina sol and 0.5 to 1.25% of a water soluble flux for aiding in maturation and development of bond strength when used in dental porcelain products, which flux is compatible with the colloid used, said flux comprising a combination of boric acid and borax with a weight ratio of boric acid to borax of 0.1-1.5:1.

4,227,938

METHOD OF WASHING EGG INCUBATING AND/OR HATCHING TRAYS AND BUGGIES THEREFOR

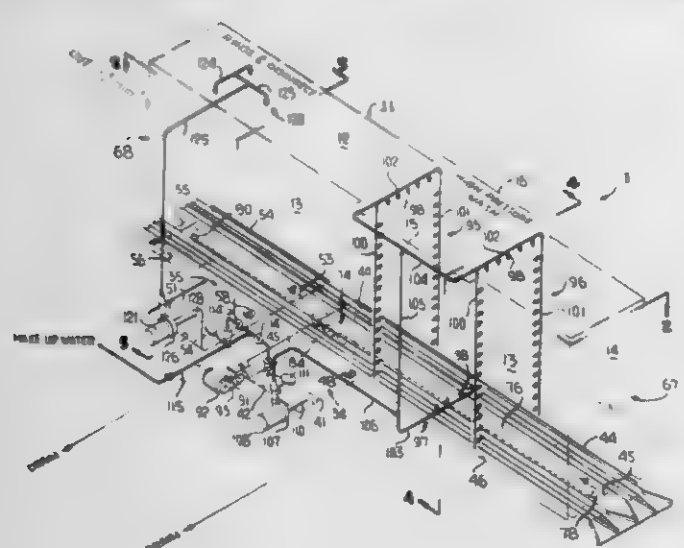
Douglas Fowler, Gainesville, Ga., assignor to Country Pride Foods Ltd., Eldorado, Ark.

Filed Jun. 13, 1978, Ser. No. 915,234

Int. Cl.¹ B08B 7/04

U.S. Cl. 134—10

4 Claims



1. A method of washing egg incubating and/or hatching trays and buggies therefor comprising the steps of:

(a) establishing a washing zone within which a plurality of

streams of water is directed into said washing zone from above, below and opposite sides;

(b) establishing an egg hatching zone within which eggs are hatched;

(c) transferring buggies and trays soiled by a previous egg hatch from the egg hatching zone of step (b) to the washing zone of step (a);

(d) conveying the buggies with the trays therein through the washing zone of step (a);

(e) collecting wash water drained from the washing zone of step (a);

(f) recycling the wash water collected in step (e) through said washing zone of step (a);

(g) establishing a rinse zone without which a plurality of streams of rinse water is directed into the rinse zone from above;

(h) collecting rinse water drained from the rinse zone of step (g);

(i) recycling the rinse water collected in step (h) through the rinse zone of step (g);

(j) conveying the buggies with the trays therein directly from the washing zone of step (a) into and through the rinse zone of step (g); and

(k) transferring the trays and buggies from the rinse zone of step (g) back to the egg hatching zone of step (b).

4,227,939

LUMINESCENT SOLAR ENERGY CONCENTRATOR DEVICES

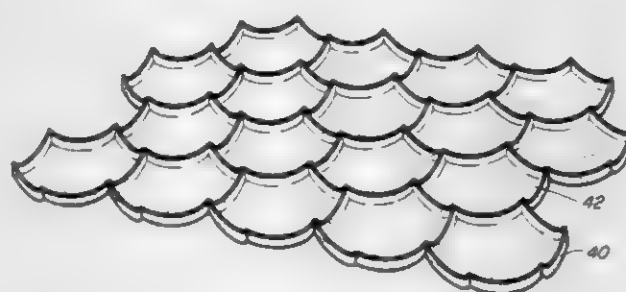
Ahmed H. Zewail, and J. Samuel Batchelder, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 8, 1979, Ser. No. 1,585

Int. Cl.¹ H01L 31/04

U.S. Cl. 136—247

14 Claims



1. In a light concentration device comprising a transparent substrate having an index of refraction greater than that of the ambient surrounding the device, and having an incident light receiving front surface, a back surface, a light emitting side edge and containing a uniform concentration of at least one efficient fluorescent dye for absorbing said light and reemitting light by fluorescence which travels through said substrate to said edge, the improvement comprising said substrate having a concave front surface and the ratio of the radius of curvature of the back surface to the radius of curvature of the front surface is greater than 1.0.

4,227,940

SOLAR CELL FOR USE IN CONCENTRATOR

Ku Sun Ling, Glendora, and Seksan Khemthong, Whittier, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Aug. 21, 1978, Ser. No. 935,526

Int. Cl.² H01L 31/06

U.S. Cl. 136—256

5 Claims

1. In a solar cell for use in a concentrator, comprising a generally circular wafer formed essentially of silicon having a base resistivity ranging from 0.5 to 1.5 ohm-centimeter and having back and front surfaces, the wafer having a diameter of approximately 2 inches, a layer of aluminum formed on the

4,227,942

PHOTOVOLTAIC SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME

Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

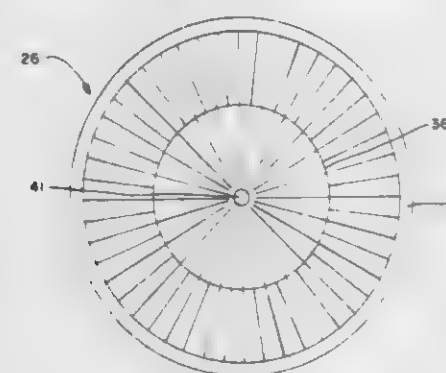
Filed Apr. 23, 1979, Ser. No. 32,117

Int. Cl.³ H01L 31/06

U.S. Cl. 136—255

19 Claims

back surface and alloyed into the silicon wafer to form a P+ layer extending through the back surface, an N+ formed in the wafer and extending through the front surface, a multi-layer metal contact structure carried by the back surface making contact to the P+ layer, a multi-layer contact structure carried by the front surface and making contact to the N+ region, said multi-layer contact structure carried by the front surface being formed with a grid line pattern, the grid line pattern being characterized by first and second spaced apart buses extending through substantially 360° and approximately 300 closely



spaced radially extending tapered grid lines, said grid lines being tapered in a direction so that they become narrower in the direction towards the center of said cell, approximately 150 of said grid lines commencing in areas beyond the first and second buses and crossing over the first bus in a direction away from the center of the solar cell toward the outer extremity of the solar cell and being in contact with the first and second buses and approximately 150 of the remaining grid lines commencing at the first bus and extending to the second bus and being in contact with the first and second buses.

4,227,941

SHALLOW-HOMOJUNCTION SOLAR CELLS

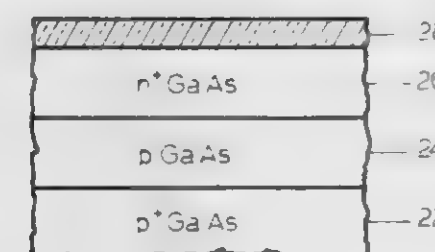
Carl O. Bozler, Sudbury; Ralph L. Chapman, Winchester; John C. C. Fan, Chestnut Hill, and Robert W. McClelland, Weymouth, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 889,078, Mar. 22, 1978, abandoned. This application Mar. 21, 1979, Ser. No. 22,405

Int. Cl.² H01L 31/06

U.S. Cl. 136—255

6 Claims



1. A shallow-homojunction photovoltaic device formed from a direct bandgap semiconductor material doped to provide an n+/p/p+ layered structure, said n+ layer having a thickness below about 1500 Angstroms thereby allowing significant carrier generation to occur in the p layer upon irradiation of said device with light on the n+ side.

1. A photovoltaic device comprising
a body of cubic symmetry monocrystalline semiconductor material of one conductivity type having a pair of opposite parallel major surfaces, each parallel to a (100) crystallographic plane of said body,
a plurality of recesses in said body, each in the form of a quadrangular pyramid with the base of the pyramid coplanar with one of said pair of major surfaces and extending a uniform distance into said body, each of the sides of the recesses being parallel to a (111) plane of said body of monocrystalline semiconductor material,
a first thin region of opposite conductivity type in said body along the other of said pair of major surfaces of said body,
a second thin region of opposite conductivity type in said body along said one major surface of said body,
a plurality of third thin regions of opposite conductivity type, each in said body along the sides of said recesses, each of said third thin regions contacting said first and second thin regions,
a first conductive layer connected to said second and third thin regions of opposite conductivity type,
a second conductive layer connected to said one type conductivity region of said body over a portion of said one major surface.
10. A method of making a photovoltaic device comprising providing a substrate of cubic symmetry monocrystalline semiconductor material of one conductivity type having a pair of parallel major surfaces, each parallel to a (100) crystallographic plane of said monocrystalline semiconductor material,
providing a first etch mask over one of said pair of major surfaces and a second etch mask over the other of said pair of major surfaces,
forming in said first etch mask a plurality of first openings to expose areas in a first portion of said one major surface, each first opening being identical in form and being bounded by two pairs of parallel opposed edges in said one major surface, each of said pairs of edges being substantially parallel to a respective <110> direction in said one major surface, each pair of parallel edges of each first opening being spaced apart by a distance slightly greater than the distance between said major surfaces multiplied by $\sqrt{2}$,
etching the exposed areas of said substrate with an anisotropic etchant to form a plurality of apertures each in the form of a quadrangular pyramid with the base of the pyramid being coplanar with said one major surface and extending from said one major surface to said other major surface to form a second opening therein substantially smaller than a respective one of said first openings, each of the sides of said apertures being parallel to a (111) plane of said monocrystalline semiconductor material,
removing said first etch mask at least from said first portion of said one major surface.

introducing a first dopant of opposite conductivity type into said other major surface to form a first thin region of opposite conductivity type in said substrate along said other major surface,
 introducing a second dopant of opposite conductivity type into said first portion of said major surface to form a second thin region of opposite conductivity type in said substrate along said first portion of said one major surface,
 introducing a third dopant of opposite conductivity type into the sides of said apertures to form third thin regions of opposite conductivity type in said substrate along the sides of said apertures,
 stripping said one major surface, and said other major surface of overlying layers of masking material,
 depositing a layer of conductive material on said one major surface and the sides of said apertures,
 patterning said conductive layer to provide a first electrode contacting said regions of opposite conductivity type adjacent said first portion of said one major surface and the sides of said apertures and a second electrode contacting said substrate of one conductivity type at another portion of said one major surface.

4,227,943

SCHOTTKY BARRIER SOLAR CELL

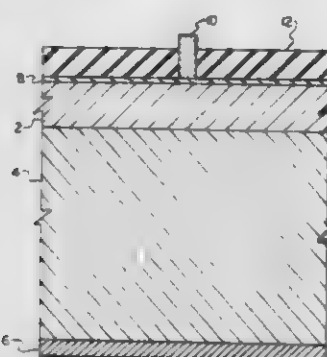
Marshall J. Cohen, and James S. Harris, Jr., both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 4, 1979, Ser. No. 45,502

Int. Cl.³ H01L 31/04

U.S. Cl. 136—255

7 Claims



1. A Schottky-barrier type solar cell comprising:
 an n-type conductivity semiconductor;
 an (SN)_x coating less than 300 Å thick on a top surface of said semiconductor, said (SN)_x coating being doped with Br; and
 contact means for electrically contacting said semiconductor and said bromine doped (SN)_x coating.

4,227,944

METHODS OF MAKING COMPOSITE CONDUCTIVE STRUCTURES IN INTEGRATED CIRCUITS

Dale M. Brown; Tat-Sing P. Chow, both of Schenectady, N.Y.; James F. Gibbons, Palo Alto, Calif., and Paul A. McConnee, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,888

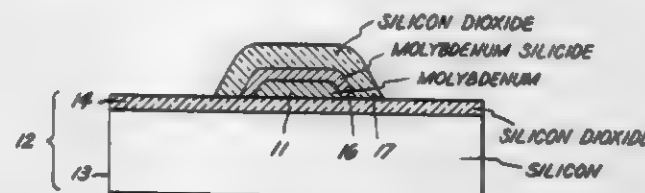
Int. Cl.² H01L 21/283

U.S. Cl. 148—6

16 Claims

1. A method of forming a composite structure comprising providing a substrate of semiconductor material having an overlying layer of insulating material,
 forming a conductor of a refractory metal which is substantially nonreactive with silicon dioxide in a desired pattern overlying said layer of insulating material,
 forming over said conductor of metallic material and said layer of insulating material a layer of polycrystalline silicon,
 heating said substrate including said conductor of metallic

material and said overlying layer of polycrystalline silicon to a temperature and for a time to cause said layer of polycrystalline silicon to react with a portion of said conductor to form a layer of a silicide of said metallic material overlying a remaining portion of said conductor unconverted to a silicide thereof,
 removing the portion of said layer of polycrystalline silicon which has not reacted with said metallic material,



heating said substrate including said conductor and said layer of said metal silicide in an oxidizing atmosphere at a temperature and for a time to cause said oxidizing atmosphere to react with said layer of said silicide to convert a portion thereof to silicon dioxide overlying another portion of said layer of said silicide unconverted to silicon dioxide.

4,227,945

METHOD FOR PREVENTING DECARBURIZATION OF STEEL MATERIALS

Minoru Kitayama, and Hisao Odashima, both of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 9,966

Claims priority, application Japan, Feb. 10, 1978, 53-14648

Int. Cl.² C23D 1/00

U.S. Cl. 148—6

3 Claims

1. A method for preventing decarburization of a steel material comprising applying a mixture consisting essentially of 10 to 500 parts by weight of metallic aluminum powder per 100 parts by weight of silicon carbide in an amount to give 10 to 1,000 g/m² silicon carbide on the steel material, further applying a solid coating type oxidation inhibitor thereon, and heating the thus coated steel material at a temperature range wherein carburization would normally occur.

4,227,946

NO-RINSE PRE-PAINT COATING COMPOSITION AND METHOD

Stanley C. Williamson, Sea Bright, N.J., assignor to Oakite Products, Inc., Berkeley Heights, N.J.

Filed Feb. 9, 1979, Ser. No. 10,975

Int. Cl.² C23F 7/08, 7/26

U.S. Cl. 148—6.16

15 Claims

1. An acid, aqueous composition containing by weight dissolved in its water:
 chromic acid and chromium phosphate as derived from phosphoric acid resulting from the oxidation of hypophosphorous acid in reacting with the chromic acid which latter is present in a stoichiometrically equivalent amount from about one percent to about one hundred percent over that needed to oxidize hypophosphorous acid to phosphoric acid,
 from none to about 0.01% of a non-foaming to low foaming wetting agent inert to iron, steel, galvanized iron or steel, zinc, aluminum, copper and brass, to the acidity of the composition and to oxidation;
 from none to about seven percent of particulate silica of from about 4 to about 60 millimicrons particle size, and which composition is selected from:
 (i) a concentrate with its aforesaid dispersed total solids content being from about two percent to an amount below that at which the composition will gel under its storage conditions; and
 (ii) a metal treating bath having as its total dispersed solids

content the amount thereof provided by from about two percent to about fifteen percent by volume of the aforesaid concentrate.

4,227,947

METHOD FOR MODIFYING THE EASY DIRECTION OF MAGNETIZATION OF AN AMORPHOUS MAGNETIC FILM

Hubert Jouve, Biviers; Robert Meyer, Gieres; Jacques Sztern, Meudon-la-Foret; Ramanathan Krishnan, Malakoff; Gabor Suran, Fontenay-aux-Roses, and Michel Tessier, Trappes, all of France, assignors to Commissariat a l'Energie Atomique, Paris and Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, both of, France

Filed Jul. 28, 1978, Ser. No. 928,836

Claims priority, application France, Aug. 4, 1977, 77 24041

Int. Cl.¹ H01F 1/00

U.S. Cl. 148—122

2 Claims



1. A method for modifying the easy direction of magnetization of an amorphous magnetic film of an alloy wherein annealing of said film is carried out in an oxygenfree atmosphere composed of a gas selected from the group consisting of argon, neon, krypton and xenon at a temperature below the temperature of crystallization of the alloy which forms said film, said alloy being in the form of a ribbon fabricated by ultra-rapid quenching from the molten alloy, the magnetic alloy being a transition metal and a metalloid of iron and boron and having the composition Fe₈₀B₂₀.

4,227,948

GROWTH TECHNIQUE FOR PREPARING GRADED GAP SEMICONDUCTORS AND DEVICES

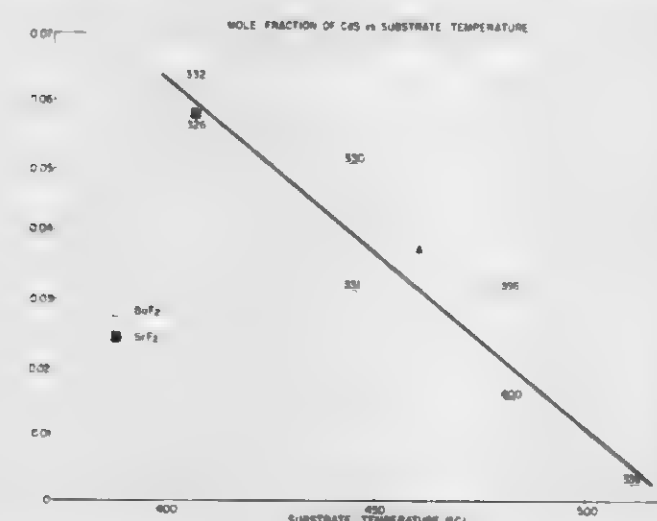
James D. Jensen, Highland, and Richard B. Schooler, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1977, Ser. No. 864,417

Int. Cl.¹ H01L 21/203

U.S. Cl. 148—175

35 Claims



1. A process for preparing from a lead-cadmium chalcogenide alloy having a first composition an epitaxial film having a second composition within a range including the first composition deposited upon an insulating substrate in a vacuum of at least 10⁻⁴ Torr, comprising:

heating the substrate to a temperature that is a function of the second composition and greater than 350° C.;
 maintaining a source of the alloy at a temperature greater than its sublimation temperature; and

exposing the substrate to the source until the epitaxial film is deposited on the substrate.

4,227,949

METHOD AND DEVICE FOR WELDING SUPERIMPOSED STRIPS OF THERMOPLASTIC

Hubert Wehr, Bornheim-Brenig, Fed. Rep. of Germany, assignor to Cyklop-Gesellschaft, Emil Hoffmann, Cologne, Fed. Rep. of Germany

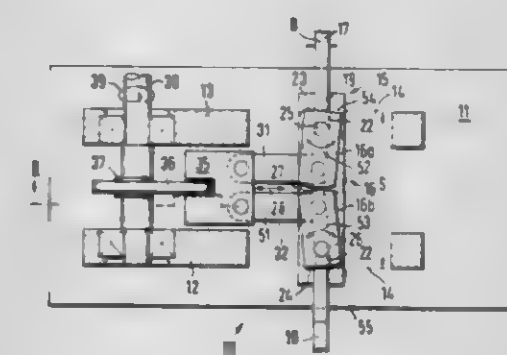
Filed Jan. 15, 1979, Ser. No. 3,735

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802034

Int. Cl.² B29C 27/08; B65H 69/06

U.S. Cl. 156—73.5

9 Claims



1. A device for welding superimposed strips of thermoplastic by means of pressure and frictional heat, comprising a stationary friction jaw and an opposed movable friction jaw which move the strips rapidly against one another in their plane under a contact pressure within a limited welding zone, characterized in that the movable friction jaw consists of two jaw sections which extend in the longitudinal direction of the strips, the remote ends of said sections being pivotally mounted on axes perpendicular to the plane of the strips and at one end of the welding zone; and means driving said jaw sections in such a way that their adjacent ends execute pivoting motions of equal magnitude in the same direction.

9. A method of welding together the superimposed portions of thermoplastic strips comprising the steps of pressing said portions into pressure engagement and simultaneously moving said portions laterally relative to each other in decreasing amounts longitudinally in both directions from a point between the ends of the desired weld area.

4,227,950

DIRECT CASTING METHOD FOR PRODUCING LOW-STRESS GLASS/PLASTIC COMPOSITE LENSES

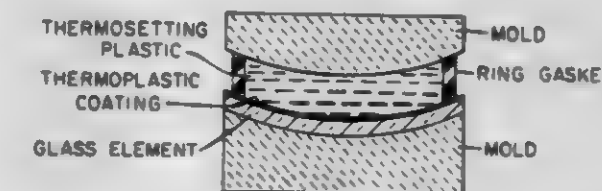
Anton A. Spycher, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 848,442, Nov. 4, 1977, abandoned. This application Apr. 5, 1979, Ser. No. 27,231

Int. Cl.² B29D 11/00; B32B 31/06

U.S. Cl. 156—85

4 Claims



1. A direct casting method for producing an optically clear, optical-distortion-free composite lens comprising a glass element bonded to a high-shrinkage thermosetting plastic element, with low residual stress between the glass and plastic elements, which comprises the steps of:

(a) providing selected surface portions of the glass element with a solid coating of a thermoplastic adhesive having a

heat sealing temperature above the minimum curing temperature of the thermosetting plastic, said coating being solid, of uniform thickness, and essentially non-adhesive with respect to said thermosetting plastic at a curing temperature for said thermosetting plastic;

- (b) casting the thermosetting plastic in liquid form against the surface portions of the glass element which have been provided with the coating of thermoplastic adhesive while maintaining the uniform thickness and solid character of said coating of thermoplastic adhesive;
- (c) curing the thermosetting plastic by heating the plastic, the glass element and the coating of thermoplastic adhesive to a temperature below the heat sealing temperature of the thermoplastic adhesive but above the minimum curing temperature of the thermosetting plastic; and
- (d) consolidating the cured thermosetting plastic, thermoplastic adhesive, and glass element to a unitary glass-plastic composite by heating them to a temperature above the heat sealing temperature of the thermoplastic adhesive.

4,227,951

METHOD OF SPlicing OPTICAL FIBRES DISPOSED IN A LAYER IN A CABLE

Georges Mignien, Meyzieu, France, assignor to Compagnie Lyonnaise de Transmissions Optiques, Clichy, France

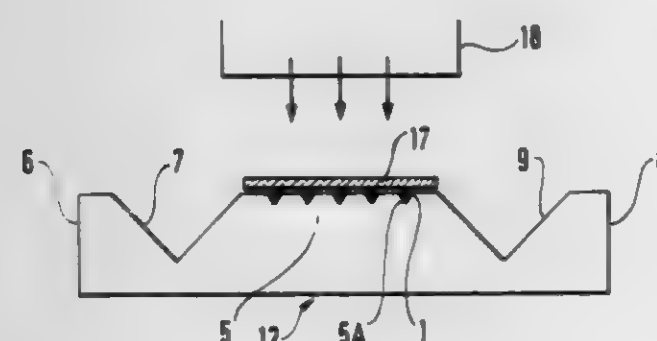
Filed May 29, 1979, Ser. No. 43,537

Claims priority, application France, May 30, 1978, 78 16155

Int. Cl.² B65H 69/02; G02B 5/16

U.S. Cl. 156—158

5 Claims



1. A method of splicing optical fibres which are previously disposed in a layer in a cable such as a layer unrolled into a flat tape configuration, said method including the following steps:

- (a) separating the upper and the lower parts of the tape between which the fibres are trapped;
 - (b) cutting said upper and lower parts and moving them apart along a length which allows a fibre connection zone to be cleared;
 - (c) laying the fibres to be spliced in positioning V-grooves in a plate;
 - (d) applying adhesive or synthetic resin to a portion of the fibres to be spliced; and
 - (e) hardening the adhesive or synthetic resin;
- the improvement wherein said method further includes the following steps:
- (f) before laying the fibres to be spliced in the positioning V-grooves of the plate, cutting their ends without taking special precautions;
 - (g) applying the adhesive or the synthetic resin to at least a portion of the length of the fibres to be spliced which are disposed on the plate, up to their ends, then laying a pressing cover on the lengths of the fibres covered in adhesive or synthetic resin;
 - (h) when the adhesive or the synthetic resin has hardened, sawing the assembly constituted by the plate, the fibres, the adhesive or synthetic resin and the pressing cover at a constant spacing in parallel planes and removing the zone which lies between the sawing planes; and
 - (i) placing the remaining portions of the plate on either side of the sawing planes again end to end, the fibres ends coinciding, interposing a polymerisable liquid or resin with a refractive index close to that of the fibre cores

between said coinciding fibre ends, and then pressing the remaining portions of the plate against each other and fixing them in position.

4,227,952

METHOD AND APPARATUS FOR MAKING DIAPERS WITH ELASTIC BANDS

Reinhardt N. Sabee, Appleton, Wis., assignor to Sabee Products, Inc., Appleton, Wis.

Filed Apr. 16, 1979, Ser. No. 30,584

Int. Cl.² B32B 31/08

U.S. Cl. 156—164

10 Claims



1. A method for continuously attaching discrete lengths of elastic ribbon to spaced portions of a moving web comprising the steps of:

- (a) continuously moving a web of substantially in elastic material through an elastic ribbon applying station;
- (b) forming transverse folds at spaced locations along said web;
- (c) feeding stretched elastic ribbon to said web;
- (d) applying adhesive to the stretched elastic ribbon;
- (e) joining the stretched elastic ribbon with adhesive to said web and over the folds;
- (f) maintaining the elastic ribbon in a stretched condition until the adhesive sets;
- (g) severing the elastic ribbon where the ribbon crosses the folds; and
- (h) removing the folds from the web to space apart the ends of the severed elastic ribbons and provide web portions without adhered elastic bands to form the waistband portions of the diapers.

4,227,953

METHOD OF FABRICATING AIR FILTERS

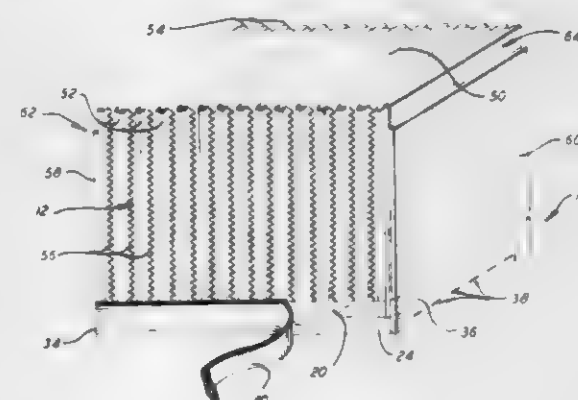
Stanley J. Wasielewski, Clay, and Stephen M. Hladik, Liverpool, both of N.Y., assignors to Cambridge Filter Corp., Syracuse, N.Y.

Filed Dec. 2, 1977, Ser. No. 856,674

Int. Cl.² B65H 45/20; B32B 31/12; B01D 46/52, 39/14

U.S. Cl. 156—227

7 Claims



1. A method of fabricating a high-efficiency air filter unit comprising:

- (a) forming a filter core by folding a continuous sheet of

filter media at evenly spaced intervals in accordian fashion, thereby providing a plurality of side-by-side pleats;

- (b) forming first and second shallow, pan-like structure from planar sheets of substantially the same rectangular dimensions as the ends of said core formed by the zig-zag pleat edges with four relatively narrow strips, one attached to and extending upwardly from each of the four side edges of said sheets;
- (c) filling said first pan-like structure to a predetermined depth with a first quantity of liquid adhesive hardenable to a solid state;
- (d) submersing one of said core ends in said first quantity of adhesive within said first pan-like structure to an extent at least sufficient to immerse all of the zig-zag pleat edges of said one end in said liquid adhesive;
- (e) allowing said first quantity of adhesive to harden;
- (f) filling said second pan-like structure to said predetermined depth with a second quantity of said liquid adhesive;
- (g) inverting said core with said first pan-like structure adhered thereto and submersing the opposite of said core ends in said second quantity of adhesive within said second pan-like structure to an extent at least sufficient to immerse all of the zig-zag pleat edges of said opposite end in said liquid adhesive;
- (h) allow said second quantity of adhesive to harden; and
- (i) assembling a pair of rectangular end plates of substantially the same dimensions as the pleat walls of said filter core in sealing engagement with the endmost pleats of said core and with said planar sheets along adjacent edges of said plates and sheets, thereby forming a four-sided structure enclosing said core in sealing engagement on four sides.

4,227,954

METHOD FOR SEALING CONTAINER CAP PARTS

Gary A. Ward, Round Lake, Ill., and David A. Winchell, Twin Lakes, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

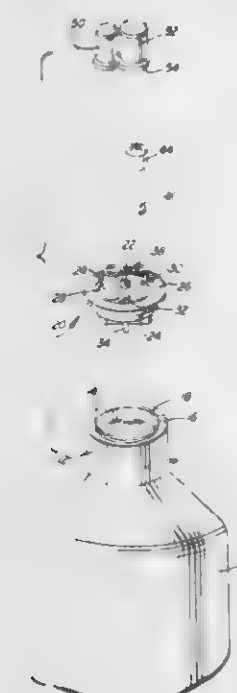
Division of Ser. No. 885,480, Mar. 13, 1978, Pat. No. 4,153,173.

This application Nov. 1, 1978, Ser. No. 956,559

Int. Cl.² B29D 9/00; B29C 17/00

U.S. Cl. 156—250

1 Claim



1. A method of producing a cap closure for a container comprising the steps of:

- molding a unitary member including a base portion and at least one port member on the base portion, said molding including forming plural ribs across said unitary member on a side opposite said port member;
- positioning membrane material over said port member;
- punching a membrane out of the membrane material with a

heated die having a larger area dimension than the port member area;

- pressing the punched out membrane on to the top of the port member, whereby the membrane and port member portion adjacent thereto become molten and are fused together and a peripheral lip is formed around the membrane, said rib preventing deformation of said unitary member during said pressing step;
- providing a raised island portion surrounding the port member;
- positioning a port member protector over the port member with an external flange of the port member protector overlying the island; and
- bringing a heated die into thermal contact with the flange and the island to fuse the port member protector to the island and thereby hermetically seal the port member.

4,227,955

ARTICLE TAPING SYSTEM

Quentin T. Woods, and William D. Gerverdinck, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 8, 1979, Ser. No. 1,506

Int. Cl.² B31B 1/72, 7/60

U.S. Cl. 156—269

12 Claims



8. An apparatus for sequentially applying segments of sealing tape to a number of containers and for forming pull-tabs on at least one of the ends of each tape segment applied to each container, said apparatus comprising: conveyor means for carrying containers along a path in uniformly spaced relationships; means for indexing the movement of said conveyor means; means for dispensing sealing tape from a roll thereof; roller means arranged to receive said sealing tape from said dispensing means for applying said sealing tape to a leading portion of a container on said conveyor means and for ironing the tape onto said container as said container is carried on said conveyor means; said indexing means being arranged to stop said conveyor means after the sealing tape has been applied to two consecutive containers on the conveyor means to thereby form a linking section of sealing tape extending between the two consecutive containers; means for cutting said sealing tape applied to said two consecutive containers by said roller means; first control means for actuating said cutting means when said conveyor means has been stopped by said indexing means; means for dispensing masking tape from a roll of masking tape; means which receives masking tape from said masking tape dispensing means for feeding the end portion of said masking tape to a position registering with the adhesive side of said sealing tape; second control means for actuating said masking tape feeding means concurrently with the actuation of said means for cutting the sealing tape; means for pressing the end portion of the masking tape against the adhesive side of the sealing tape and for severing the masking tape adjacent the edge of the sealing tape to thereby form a segment of masking tape on the sealing tape; third control means for actuating said pressing and severing means after said feeding means has been actuated; means for mounting said sealing tape cutting means, said roller means, and said masking tape pressing and severing means in fixed relationships relative to each other and to said

conveyor means so as to form masking tape segments on said sealing tape at intervals thereon corresponding to the desired length of the segments of sealing tape to be consecutively formed on said containers, whereby said means for cutting the sealing tape will sequentially cut the sealing tape at a segment of masking tape thereby forming a pull-tab at an end of the sealing tape segments applied to the containers.

11. A method of applying segments of sealing tape of selected uniform lengths to containers and for forming a pull-tab on at least one end of each segment of sealing tape applied to the containers comprising:

- dispensing sealing tape from a roll thereof;
- applying relatively short segments of masking tape onto the adhesive side of the sealing tape at intervals corresponding to the preselected length of sealing tape to be applied to a container;
- applying the sealing tape having a masking tape segment applied thereto to a first container;
- cutting the sealing tape at a masking tape segment to form a pull-tab at the end of the sealing tape applied to the first container;
- applying the preselected length of sealing tape having the following masking tape segment thereon to a second container; and
- cutting the sealing tape at said following masking tape segment, thereby sequentially providing containers with said selected lengths of sealing tapes and simultaneously providing pull-tabs at the ends of the tapes applied to the containers.

4,227,956

HOT-MELT ADHESION PROCESS FOR VULCANIZED RUBBER

Toshio Honda, Akiyawa; Yukio Fukuura, Kodaira; Itsuo Tanuma, Tokorozawa; Hikaru Ishikawa, Kokubunji; Masao Ogawa, Kawagoe; Shozo Kojima, and Kazunori Ueno, both of Higashimurayama, all of Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan

Filed May 7, 1979, Ser. No. 36,933

Claims priority, application Japan, May 10, 1978, 53-54365

Int. Cl.² C09J 3/12

U.S. Cl. 156—334

2 Claims



1. A hot-melt adhesion process for vulcanized rubber, comprising hot pressing a first member consisting of a vulcanized rubber composition, whose rubber component contains at least 30% by weight of syndiotactic-1,2-polybutadiene, to a second member comprising a rubber composition defined as the first member or a porous material, such as cloth, paper, leather or wood in the presence of a hot-melt adhesive consisting of a syndiotactic-1,2-polybutadiene thin film interposed between the members.

4,227,957

PROCESS AND APPARATUS FOR MANUFACTURING A NON-WOVEN FABRIC AND THE PRODUCT THEREOF

Herbert W. Keuchel, and George A. Farris, both of Tallmadge, Ohio, assignors to PNC Company, Akron, Ohio

Division of Ser. No. 771,643, Feb. 24, 1977, Pat. No. 4,141,773.

This application Jul. 27, 1978, Ser. No. 928,613

Int. Cl.² B31F 1/00

U.S. Cl. 156—443

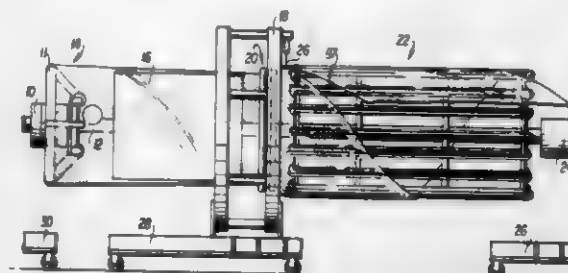
16 Claims

1. Apparatus for providing a thermoplastic web of indeterminate length comprising

- means for producing a molten thermoplastic extrudate;

means for forming a tubular web of interconnected filaments from said extrudate;

means for advancing said tubular web along its axis;



means for rotating said web about its axis while it is being advanced; and

means for slitting said web at an angle to the direction of advancement.

4,227,958

APPARATUS FOR APPLYING AN END CAP TO A CLOTH BOARD REEL

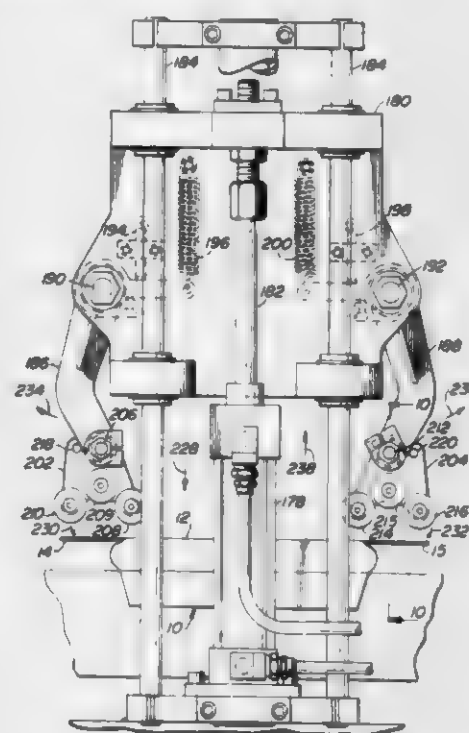
Samuel Loudon, Cinnaminson, N.J., assignor to National Tube and Reel Corporation, Delran, N.J.

Filed May 29, 1979, Ser. No. 42,829

Int. Cl.² B29C 17/00

U.S. Cl. 156—443

17 Claims



1. An apparatus for applying an end cap to a cloth board reel, said end cap being provided with a front wall and a pair of articulated sidewalls, one of said side walls having a sidewall extension at each end, wherein said sidewall extensions are to be wrapped around the longitudinal edges of said reel for bonding thereto, comprising:

- means for transporting a reel through the apparatus;
- means for applying adhesive to at least one of the surfaces to be bonded; and

means for wrapping a sidewall extension on each side of said end cap around the longitudinal edge of said reel, said wrapping means including a frame having pivotally mounted thereto a pair of spaced roller mechanisms, each of said roller mechanisms being comprised of three rollers arranged in an arcuate path, said frame being movable towards the reel with the pivotally mounted roller mechanisms being caused to rotate around the longitudinal edge of the reel when one of the rollers comes in contact with the reel thereby causing the extension of each sidewall to be wrapped around and bonded to said reel.

4,227,959

SONIC OR ULTRASONIC APPARATUS FOR SIMULTANEOUSLY CUTTING AND SEAMING SHEET MATERIAL

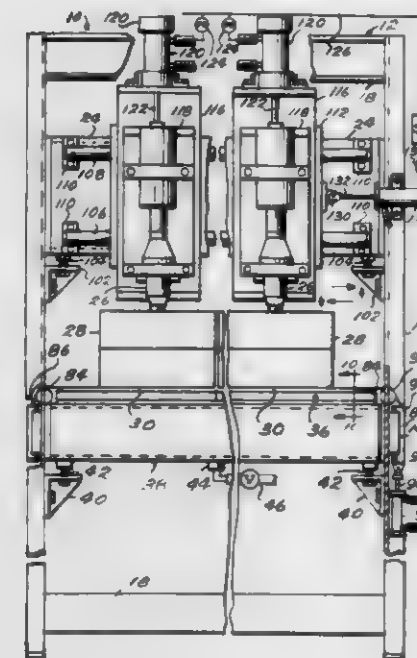
Abner D. Brown, Elkin, N.C., assignor to Chatham Manufacturing Company, Elkin, N.C.

Filed Dec. 27, 1978, Ser. No. 973,575

Int. Cl.² B23K 27/02, 27/08

U.S. Cl. 156—515

41 Claims



15. An apparatus for providing an elongated seam transversely across sheet material having a heat-fusible component disposed therein by exposing the sheet material to high frequency vibrational energy, said apparatus comprising:

- a frame structure for receiving the sheet material and having a station therein in which the seaming is accomplished;
- a plurality of electro-acoustical converter units operatively supported on said frame structure and horizontally spaced in juxtaposition to each other in line transversely above the sheet material, each of said electro-acoustical converter units being energized by high frequency electrical energy and converting the same to high frequency vibrational energy, and each having a horn resonant at the high frequency vibrational energy, said horns being closely spaced to each other in line transversely of the sheet material, and each horn having an elongated frontal surface in line with the frontal surfaces of the other horns and for imparting the high frequency vibrational energy to the sheet material when in engagement therewith;
- means to move said horns from an initial position vertically downwardly into engagement with the sheet material and then horizontally while in engagement with the sheet material and then vertically upwardly out of engagement with the sheet material and horizontally back to the initial position; and

stationary anvil means disposed beneath and extending transversely of the sheet material and opposing the frontal surfaces of said in-line horns, said anvil means including a plurality of closely spaced in-line anvil pins projecting upwardly towards and supporting said sheet material, and each of said anvil pins biased upwardly a predetermined distance.

4,227,960

APPARATUS FOR APPLYING TAPE MATERIAL IN CONTINUOUSLY ADVANCING SHEET MATERIAL

Romain E. Loeffler, Littleton, Colo.; Calvin P. Sorensen, Toledo, Ohio, and Larry J. Weinstein, Littleton, Colo., assignors to Johns-Manville Corporation, Denver, Colo.

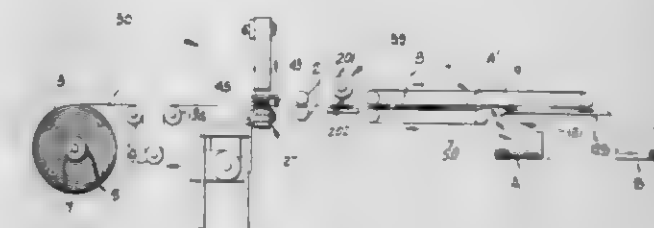
Division of Ser. No. 846,731, Oct. 31, 1977. This application

Feb. 14, 1979, Ser. No. 12,084

Int. Cl.² B32B 31/00, 31/04

U.S. Cl. 156—519

22 Claims



1. Apparatus comprising:
 - means for supplying a sheet material,
 - means for continuously advancing said sheet material at a constant speed in a predetermined direction,
 - means for supplying a double sided pressure sensitive adhesive material having one side uncovered and the other side covered by a removable strip of material,
 - means for holding said adhesive material in a stationary position with the longitudinal axis of said adhesive material extending in a direction normal to the direction of movement of said sheet material, said one side facing said sheet material,
 - a transversely extending resilient pad spaced opposite said holding means, said pad being mounted for relatively rapid movements defined by a first movement towards the stationarily held adhesive material to make pressure-transmitting slidable contact with a surface of said sheet material and a second movement away from said adhesive material to disengage from said sheet material surface, and
 - a transversely extending bar mounted to move with said resilient pad such that during said second movement said bar slidably engages a surface of said sheet material to move said sheet material away from said holding means.

4,227,961

PROCESS FOR FORMING A SINGLE-CRYSTAL FILM

Toshinori Takagi, Nagaokakyo, Japan, assignor to Futaba Den-shi Kogyo K.K., Chiba, Japan

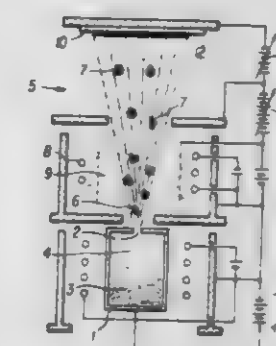
Filed Jun. 14, 1976, Ser. No. 695,646

Claims priority, application Japan, Jun. 27, 1975, 50-79413

Int. Cl.² C30B 23/08

U.S. Cl. 156—608

5 Claims



1. A process for forming a thin single-crystal film comprising the steps of:
 - heating and vaporizing a film material in a closed type crucible with at least one injection nozzle to form vapor of said material;
 - injecting said vapor through said injection nozzle into a vacuum region the pressure of which is kept at 1/100 or

less of the vapor pressure in said crucible and at about 10^{-2} Torr or less to adiabatically expand said vapor so as to attain a supercooled state and form clusters comprising atoms of said vapor;
ionizing at least one atom forming said clusters by bombarding said clusters with electrons to produce ionized clusters;
accelerating said ionized clusters by means of an electric field;
permitting said accelerated clusters to collide with a cleavage plane of a substrate material easy to cleave and easy to dissolve in a solvent thereby forming a high-quality crystal film deposited thereon and oriented according to the crystal axis of said substrate material; and
separating said crystal film by dissolving said substrate material in said solvent.

4,227,962

PREVENTION OF DECOMPOSITION OF PHOSPHOROUS CONTAINING SUBSTRATES DURING AN EPITAXIAL GROWTH SEQUENCE

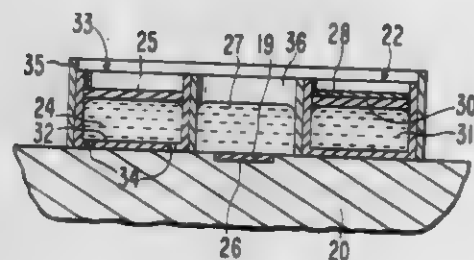
George A. Antypas, Los Altos, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 12, 1979, Ser. No. 19,375

Int. Cl.³ H01L 21/20

U.S. Cl. 156—624

5 Claims



1. A technique for preventing the decomposition of a phosphorous-containing substrate during an epitaxial growth sequence which comprises in the vicinity of said substrate providing a phosphorous-containing solution in which phosphorous is a solute in a molten metal solvent, said solvent having a higher solubility for phosphorous than the solubility of phosphorous in the material of said substrate, and said solvent having sufficient phosphorous dissolved therein to produce a phosphorous partial pressure greater than the inherent partial pressure of phosphorous above the material of said substrate.

4,227,963

CHEMICAL ETCHING OF POLYMERS FOR METALLIZING UTILIZING AN AQUEOUS SULFURIC-CARBOXYLIC ACID ETCHANT

Wayne T. Wiggins, Aurora, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

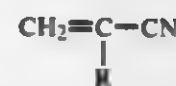
Filed Sep. 7, 1978, Ser. No. 940,406

Int. Cl.³ B29C 17/08

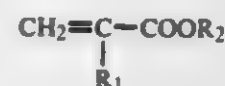
U.S. Cl. 156—668

8 Claims

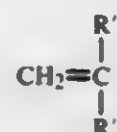
1. The method for preparing the surface of a polymer article for metallizing comprising etching said surfaces with a mixture of consisting of water, sulfuric acid and a carboxylic acid.
2. The method of claim 1 wherein the weight ratio of sulfuric acid to carboxylic acid is from 5.5/1 to 1/2.5.
3. The method of claim 2 wherein the polymer is selected from the group consisting of ABS and one prepared by the polymerization of
(A) from 60 to 90% by weight of at least one nitrile having the structure



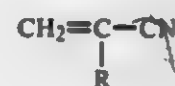
wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,
(B) from 10 to 40% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of
(1) an ester having the structure



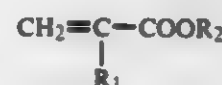
wherein R₁ is hydrogen, an alkyl group having from 1 to 4 carbon atoms or a halogen, and R₂ is an alkyl group having from 1 to 6 carbon atoms,
(2) an alpha-olefin having the structure



wherein R' and R'' are alkyl groups having from 1 to 7 carbon atoms,
(3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,
(4) vinyl acetate,
(5) styrene, and
(6) indene,
in the presence of from 0 to 40 parts by weight of
(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



wherein
R has the foregoing designation, and an ester having the structure



wherein R₁ and
R₂ have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer.

4,227,964

METHOD OF TREATING LIGNOCELLULOSIC OR CELLULOSIC PULP TO PROMOTE THE KINKING OF PULP FIBRES AND/OR TO IMPROVE PAPER TEAR STRENGTH

Allan J. Kerr, and Robert P. Kibblewhite, both of Private Bag, Rotorua, New Zealand

Continuation of Ser. No. 855,677, Nov. 29, 1977, abandoned.

This application Mar. 26, 1979, Ser. No. 23,768

Claims priority, application New Zealand, Dec. 1, 1976, 182782; Jun. 7, 1977, 184312

Int. Cl.³ D21C 9/00

U.S. Cl. 162—9

21 Claims



1. A method of kinking pulp fibers in order to increase the tear strength of papers made from such fibers, wherein the pulp is a lignocellulosic or cellulosic pulp derived from a chemical, semichemical or chemimechanical pulping process, said method comprising kinking pulp fibers having a consistency of approximately 15 up to approximately 400 weight percent of dried pulp in the total material, water plus pulp, while substantially maintaining pulp yield by treating the pulp with gaseous ammonia at a pressure of at least one atmosphere until at least 9% by weight, based on the weight of oven dried pulp, of gaseous ammonia has been taken up by the moist pulp.

4,227,965

PRODUCTION OF HARDBOARD

Myron M. Luszcak, Palatine, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jul. 2, 1979, Ser. No. 54,206

Int. Cl.³ D21B 1/04

U.S. Cl. 162—13

9 Claims

1. An improved process for manufacturing wood fiber board characterized by eliminating the conventional baking step that follows pressing of the mat to board and by imparting additional strengths and water resistance to the formed board which comprises:

- (1) reducing a supply of wood to chips;
- (2) blending a small amount of drying oil with said chips, said drying oil ranging from about 0.5% to about 10% by dry weight of the wood chips;
- (3) steaming the treated wood chips in a closed vessel for a period of time from about 1 to 10 minutes and at a pressure between about 50 and 300 lbs. per square inch, whereby the drying oil is sorbed into the wood chips;
- (4) refining the wood chips whereby the treated chips are formed into fibers;
- (5) forming the fibers into an aqueous slurry pulp;
- (6) mechanically dewatering the pulp to obtain a wet mat;
- (7) drying the wet mat by thermal evaporation;
- (8) and pressing the dried mat between heated forming surfaces to form a hardboard.

4,227,966

METHOD FOR COMBUSTING A MIXTURE OF SPENT MAGNESIUM SULPHITE DIGESTION LIQUOR AND ALKALINE OXYGEN BLEACH LIQUOR

Lennart Ivnäs, Sundsvall, and Karl-Erik Lekander, Alingsås, both of Sweden, assignors to Sunds Aktiebolag, Sweden

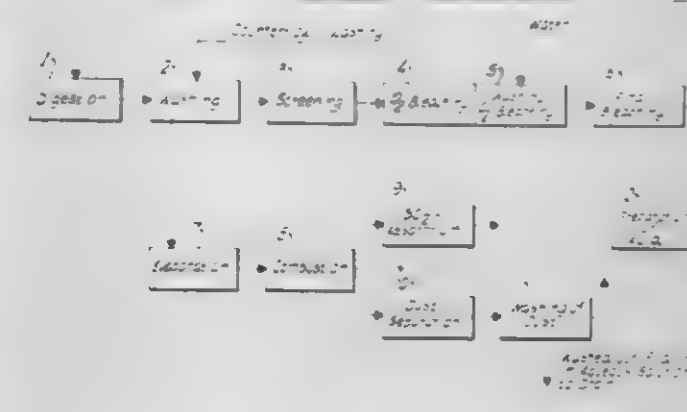
Filed Mar. 6, 1979, Ser. No. 17,967

Claims priority, application Sweden, Mar. 10, 1978, 7802789

Int. Cl.³ D21C 11/02, 11/04, 11/12

U.S. Cl. 162—36

8 Claims



1. A method for combining and recovering spent magnesium sulfite digestion liquor and alkaline oxygen bleaching liquor, without forming a smelt of sodium compounds during combustion of the combined spent liquors, comprising:

- (a) digesting pulp in a magnesium sulfite-containing cooking acid liquor;
- (b) washing the digested pulp with a washing liquid so as to remove at least 97% of spent cooking acid liquor from the digested pulp, said spent cooking acid liquor containing magnesium;
- (c) oxygen bleaching said digested pulp in the presence of oxygen and from about 5 to about 40 kilograms of sodium hydroxide per ton of dry unbleached pulp, thereby obtaining a sodium-containing spent liquor;
- (d) using said sodium-containing spent liquor as said washing liquid, thereby obtaining a mixed liquor of said magnesium-containing spent liquor and said sodium-containing liquor wherein said mixed liquor has a ratio of magnesium to sodium compounds measured as a molar ratio of magnesium oxide to sodium hydroxide of at least 1;
- (e) combusting said mixed liquor to produce a magnesium oxide-containing dust;
- (f) removing a sufficient amount of the sodium compounds from said magnesium oxide containing dust to prevent a build-up of sodium in said cooking acid liquor such that a smelt of sodium compounds is not formed during said combusting step; and
- (g) using said dust in the preparation of the magnesium sulfite-containing cooking acid liquor.

4,227,967

METHOD AND APPARATUS FOR REDUCING THE POWER LEVEL IN A NUCLEAR REACTOR DURING TEMPERATURE TRANSIENT

Edwin L. Zebroski, Los Altos, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 3, 1977, Ser. No. 803,138

Int. Cl.³ G21C 7/00

U.S. Cl. 176—36 R

5 Claims

1. Apparatus for controlling the power level in a nuclear reactor, said reactor having a core that is cooled during normal operation by a flow of primary coolant, comprising:
(a) an elongate absorber support shaft adapted for relative motion with respect to the core of a nuclear reactor;
(b) an elongate absorber member for absorbing neutrons in the nuclear reactor, said member being adapted for relative motion with respect to the core of the reactor; and
(c) a plurality of high coefficient thermal expansion members

and a corresponding plurality of low coefficient thermal expansion members disposed in alternate relationship and connected in series alternately at their top ends and at their bottom ends, said expansion members being elongate and attached at one end of the alternating series to the absorber support shaft and at the other end of the series to the absorber member so that the absorber support shaft, absorber member, and thermal expansion members all have longitudinal axes oriented in a direction generally parallel to the direction of relative motion between the



absorber member and the core and together form an elongate in-line structure, the absorber member being moved relative to the core by the motion of the absorber support shaft and by thermal elongation of the expansion members, the absorber member being movable by thermal elongation relative to the absorber support shaft into closer proximity with the core as the temperature of the core increases, said thermal expansion members being in thermal communication with the core and responsive to the temperature thereof.

4,227,968

PRESSURE VESSEL ASSEMBLY FOR HIGH-TEMPERATURE NUCLEAR REACTOR

Erik Bodmann, Mannheim, Fed. Rep. of Germany, assignor to Siempelkamp Giesserei GmbH, Krefeld, Fed. Rep. of Germany

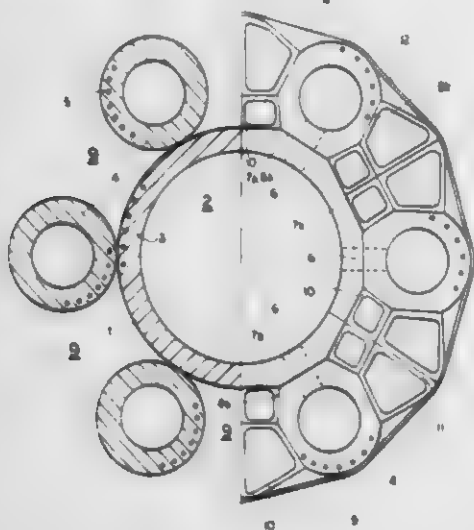
Filed Jan. 5, 1979, Ser. No. 1,391

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800644

U.S. Cl. 176—87

Int. Cl.² G21C 5/00

8 Claims



1. In a pressure-vessel assembly for a nuclear-reactor instal-

lation wherein a central pressure vessel of cast material and of generally cylindrical configuration is adapted to receive a high-temperature nuclear reactor, and a plurality of component vessels of cast material surround the central vessel and communicate by respective gas passages therewith, the component vessels receiving heat exchangers for at least a primary coolant for the nuclear reactor, the improvement wherein:

the central vessel communicates with each of the component vessels via a respective one of said passages with the passages lying in a common horizontal plane and extending radially of the central vessel;

said central vessel is provided with a multiplicity of generally vertical planar surfaces in said horizontal plane, respective ones of said surfaces lying at right angles to the respective passages;

said component vessels are provided with planar surfaces in the region of said passages with one planar surface lying flat against a corresponding surface of said central vessel perpendicular to the passage communicating between the respective component vessel and the central vessel;

respective support blocks of a height substantially equal to that of said planar surfaces are received between pairs of said component vessels and have planar surfaces lying against the planar surfaces of said central vessel between said component vessels and of said component vessels; and at least one inward prestressing member extends peripherally around the assembly and bears inwardly upon said support blocks and said component vessels, said support blocks, said central vessel and said component vessels forming a compound-disk structure in the region in which said component vessels and support blocks are engaged by said member.

4,227,969

OIL RECLAMATION DEVICE

Gary C. Engel, 123 N.W. 109th St., Miami Shores, Fla. 33168

Continuation of Ser. No. 852,976, Nov. 18, 1977, Pat. No.

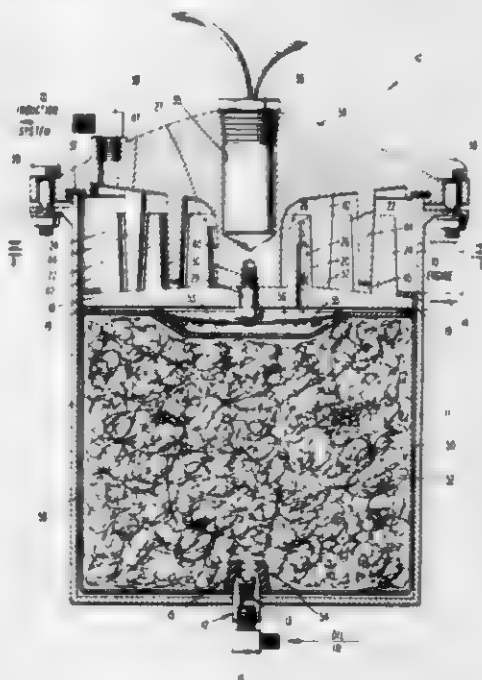
4,189,351. This application Jan. 31, 1979, Ser. No. 8,127

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.² B01D 3/28, 35/18; C10G 7/00

U.S. Cl. 196—115

22 Claims



1. An oil reclamation device having a longitudinal axis and comprising:

(a) a housing means, filter means, evaporator plate means and heating means,

(b) said evaporator plate means including upwardly projecting evaporation wall means defining a fluid traveling surface and an upwardly disposed vaporizing surface

facing inwardly toward the center of the evaporator plate means,

(c) said heating means including downwardly projecting centerpost means defining a heating surface located adjacent and facing outwardly toward the inwardly facing vaporizing surface,

(d) said evaporation wall means defining a curved path along the fluid traveling surface outwardly from said longitudinal axis along said evaporator plate means,

(e) said evaporator plate means including passageway means extending from the filter means to deliver substantially all of the oil being treated inwardly along the inwardly facing vaporizing surface toward the longitudinal axis and toward the centerpost means,

(f) said fluid traveling surface having a structural configuration effective to guide the oil from said centerpost means outwardly along said curved paths to an oil outlet means in the housing.

4,227,970

SOLAR DISTILLATION APPARATUS

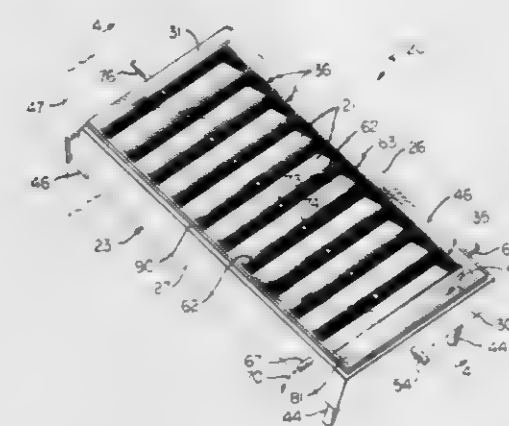
Alexander G. Howell, Jr., and Evan E. Settle, III, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Apr. 4, 1977, Ser. No. 784,586

Int. Cl.² B01D 1/00

U.S. Cl. 202—234

21 Claims



1. A solar distillation apparatus for use in ambient air comprising, a box-like structure defined by a bottom wall having a reflective surface for reflecting radiant energy and a plurality of adjoining substantially rigid peripherally walls, said peripheral walls being comprised of a pair of opposed side walls and a pair of opposed end walls, each of said side walls and said end walls having portions made of U-shaped sections of similar cross-sectional configurations and inner housing portions made of L-shaped sections of similar cross-sectional configurations, each of said L-shaped sections having a leg defining a top surface, each of said outer housing portions being disposed with respect to one of said inner housing portions so as to define a high strength housing which characterizes one of said peripheral walls, there being a thermally insulating material contained within each such high strength housing; removable pan means mounted in spaced relation above said reflective surface and defining an ambient air space between said pan means and said reflective surface; a flat transparent cover having a bottom surface disposed parallel to said reflective surface and supported by said top surfaces; said structure being adapted to be supported at an inclined angle to a horizontal plane so that said cover is disposed at a corresponding inclined angle; said pan means being adapted to contain a distilland therein which has its upper portion heated by solar radiant energy passing through said cover and simultaneously has its lower portion at least partially heated by radiant energy reflected from said reflective surface with the simultaneous heating resulting in more efficient heating of said distilland and the provision of vapors from said distilland which engage said bottom surface of said cover and condense thereon due to

cooling action produced by said ambient air to define a distillate which is adapted to move under the influence of gravity along said bottom surface; and a reservoir for collecting said distillate; said reflective surface cooperating with said air space thereabove to assure minimum conductive heat loss from said bottom wall.

4,227,971

BROMINE REMOVAL FROM ACETIC ACID

Wilford J. Zimmerschied, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,222

Int. Cl.² B01D 3/00; C07C 51/44, 53/08

U.S. Cl. 203—32

4 Claims

1. The method of removing bromine from acetic acid of 95 to 100 weight percent concentration contaminated with ionic and coordinate bromine in a total amount of from 0.0005 to 0.015 weight percent by contacting hydrogen and said contaminated acetic acid with a palladium catalyst having palladium crystallites dispersed on the surface of low extraneous metal content activated carbon having a surface to mass ratio of at least 800 m²/g, separating the acetic acid from said catalyst, contacting the separated acetic acid with an alkali metal hydroxide, carbonate or bicarbonate, and distilling the acetic acid from said alkali metal compound.

4,227,972

PROCESS FOR RECOVERING PHOSPHATE ESTER TYPE HYDRAULIC FLUIDS FROM INDUSTRIAL WASTE LIQUIDS

Pablo M. Hernandez, Waukegan, and William J. Luplow, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 1, 1978, Ser. No. 901,473

Int. Cl.² B01D 1/22, 3/28; C10M 1/44

U.S. Cl. 203—37

11 Claims

1. A process for recovering a phosphate ester type hydraulic fluid from a waste liquid containing water, organic solvents and other impurities, which process comprises the steps of distilling the waste liquid at a temperature of about 190° to about 260° C. and at a pressure of about 2 to about 30 mm Hg, removing water, low boiling organic solvents, and other low boiling impurities as an overhead from the distillation step, removing the hydraulic fluid and high boiling impurities as liquid bottoms from the distillation step, evaporating the bottoms from the distillation step at a temperature of about 260° to about 380° C. and a pressure up to about 5 mm Hg, removing high boiling impurities as bottoms from the evaporation step, removing the hydraulic fluid as an overhead from the evaporation step, and condensing the overhead from the evaporation step to recover the hydraulic fluid.

4,227,973

AUTOMATIC ANALYSIS OF ALKALI METALS HALIDES ETC. BY MEANS OF THE USE OF ION-SELECTIVE ELECTRODES

Jaromir Ruzicka, Naerum, and Elo H. Hansen, Lyngby, both of Denmark, assignors to Bifok AB, Sollentuna, Sweden

Filed Sep. 12, 1977, Ser. No. 832,742

Claims priority, application Sweden, Sep. 15, 1976, 7610221

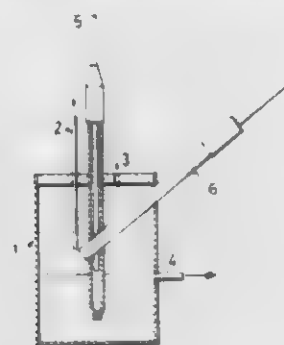
Int. Cl.² G01N 27/46

U.S. Cl. 204—1 T

4 Claims

1. A method for determining ions in a continuously flowing liquid stream consisting essentially of a liquid sample solution in a liquid carrier comprising providing a measuring cell and an ion-selective electrode, said ion-selective electrode having a sensitive surface located in the measuring cell, freely and continuously flowing the liquid stream downwardly over the

sensitive surface of the ion-selective electrode in a form of a thin, continuous sheet wherein one side of the liquid sheet is in contact with the sensitive surface of the ion-selective electrode as the sheet flows across the sensitive surface while the other side of the liquid sheet is exposed to the atmosphere of the measuring cell, the pressure of which is the same as the atmospheric pressure outside the cell, immediately thereafter per-



mitting the liquid stream to flow as the same continuous sheet without interruption into a reservoir in the measuring cell consisting essentially of the liquid carrier and in which a reference electrode is placed, said ion-selective electrode being located above the liquid level in the reservoir, so that the potential difference between the electrodes in the measuring cell can be continuously determined.

4,227,974

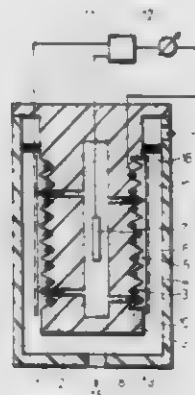
ELECTROCHEMICAL CELL HAVING A POLAROGRAPHIC DEVICE WITH ION SELECTIVE ELECTRODE AS WORKING ELECTRODE AND METHOD OF USE

Otto Petersen, and Hans-Dieter Schmidt, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 946,680, Sep. 28, 1978, abandoned, which is a continuation of Ser. No. 804,699, Jun. 8, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,343
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 3627271

Int. Cl.² G01N 27/46

U.S. Cl. 204—1 T

10 Claims



1. An electrochemical cell for the detection of a gas in a gas mixture, comprising a working electrode consisting of an ion-selective electrode, a reference electrode, an auxiliary electrode, an electrolyte, a potentiostat which is adjustable to the characteristic voltage for the component to be measured for monitoring the potential at zero current of the working electrode with respect to the reference electrode and for effecting a current flow between the auxiliary and working electrodes for polarizing the working electrode anodically or cathodically, a current measuring instrument for measuring the current between the working and auxiliary electrodes which is proportional to the concentration of the component and means for conducting the gas to the boundary between the working electrode and the electrolyte.

10. A method for the detection of a gas in a gas mixture which comprises providing an ion-selective electrode, an auxil-

iary electrode, a reference electrode and an electrolyte between the electrodes; adjusting a potentiostat to the characteristic voltage for the component to be measured and connecting same to the electrodes for monitoring the potential at zero current of the working electrode with respect to the reference electrode and for effecting a current flow between the auxiliary and working electrodes to polarize the working electrode anodically or cathodically; conducting the gas to the boundary between the working electrode and the electrolyte; and measuring the current between the working and auxiliary electrodes which is proportional to the concentration of the component.

4,227,975

SELECTIVE PLASMA ETCHING OF DIELECTRIC MASKS IN THE PRESENCE OF NATIVE OXIDES OF GROUP III-V COMPOUND SEMICONDUCTORS

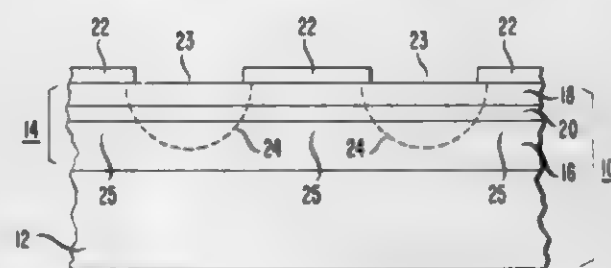
Robert L. Hartman, Warren Township, Somerset County; Louis A. Koszi, Scotch Plains; Cyril J. Mogab, Berkeley Heights, and Bertram Schwartz, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 29, 1979, Ser. No. 7,422

Int. Cl.³ H01L 21/283, 21/308, 21/326

U.S. Cl. 204—15

14 Claims



6. A method of forming a patterned native oxide layer on a surface of a Group III-V compound semiconductor body comprising the steps of: (a) forming on said surface a dielectric layer which can be selectively plasma etched relative to said body and to a native oxide layer to be subsequently formed thereon; (b) patterning said dielectric layer to form windows which expose underlying portions of said surface; (c) forming a native oxide layer on said exposed portions; and (d) subjecting said body and both of said layers simultaneously to plasma etching in an atmosphere effective to remove said dielectric layer without attacking said native oxide or said body.

7. The method of claim 6 wherein said dielectric layer is selected from the group consisting of SiO₂, Si₃N₄ and photore-

11. The method of claims 6 or 7 including between steps (b) and (c) the additional step of forming grooves in said windows in said exposed underlying portions, thereby forming mesas in said body between said grooves, and wherein step (c) includes forming said native oxide layer in said grooves.

13. The method of claim 11 including after step (d) the additional step of selectively forming metal layers on the tops of said mesas but not on said native oxide layers.

4,227,976

MAGNESIUM ANODIZE BATH CONTROL

Joseph T. Menke, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1979, Ser. No. 25,632

Int. Cl.³ G01N 27/42, 31/16; C25D 11/30

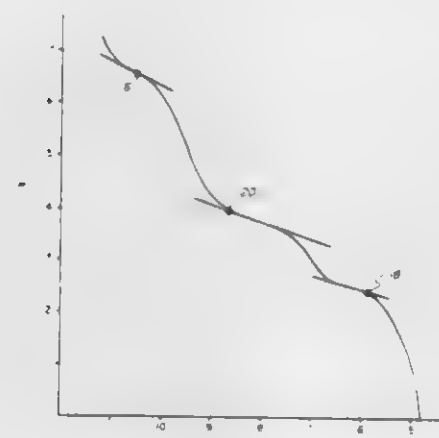
U.S. Cl. 204—56 M

1 Claim

1. A method of controlling the concentration of ingredients in a magnesium anodize bath of ammonium bifluoride, sodium dichromate and phosphoric acid including the steps of:

a. titrating dichromate, bifluoride and acid combinations to identify various end points on the titration curve and to observe the pH neutralization curve characteristics,

- b. titrating a bath sample with sodium hydroxide to determine the neutralization end point of the bath and the amount of ammonium bifluoride therein,
- c. observing from the titration curve derived from step b the combined amount of sodium dichromate and phosphoric acid in the bath sample,



- d. titrating another bath sample with thiosulfate to determine the amount of sodium dichromate in the bath and hence the amount of phosphoric acid, and
- e. thereafter adding desired additional amounts of each ingredient to make them of desired strength in said bath.

4,227,977

HYDROGEN GAS GENERATION UTILIZING A BROMIDE ELECTROLYTE, A BORON PHOSPHIDE SEMICONDUCTOR AND RADIANT ENERGY

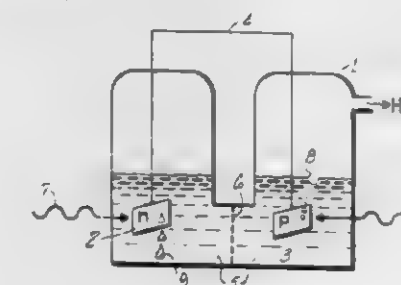
Daniel H. Grantham, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 956,760, Nov. 1, 1978. This application Aug. 13, 1979, Ser. No. 65,824

Int. Cl.³ C25B 1/02

U.S. Cl. 204—129

13 Claims



1. A process for producing hydrogen gas from an electrolyte solution in an electrolytic cell, wherein the improvement comprises utilizing a solution of a bromide compound as the electrolyte in conjunction with radiant energy, and an n-type semiconducting boron phosphide electrode to at least partially power the electrolytic cell.

4,227,978

PHOTOHARDENABLE COMPOSITION

Robert W. Barton, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 27, 1979, Ser. No. 52,418

Int. Cl.² C08F 2/50, 2/54, 4/00

U.S. Cl. 204—159.12

17 Claims

1. A photohardenable composition comprising:

- (a) about 10 to 80 weight percent of a halogenated oligomeric ester having a molecular weight of less than about 10,000 and a content of halogen attached to carbon of an sp² electronic configuration of about 19 to 55 weight percent;
- (b) about 10 to 80 weight percent of an acrylate or methacrylate monomer compatible with (a);
- (c) about 0.2 to 10 weight percent of a free radical generating

initiator activatable by actinic light or electron beam irradiation;

(d) about 2 to 20 weight percent of a compound having an average epoxide functionality of about 1 to 1.8;

(e) about 1 to 10 weight percent of a cationic initiator activatable by actinic light or electron beam irradiation.

4,227,979

RADIATION-CURABLE COATING COMPOSITIONS CONTAINING AMIDE ACRYLATE COMPOUNDS

Byron M. Humke, Glenshaw; Gerald W. Gruber, Sewickley; Rostyslaw Dowbenko, Gibsonia, and Charles B. Friedlander, Glenshaw, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

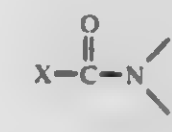
Filed Oct. 5, 1977, Ser. No. 839,686

Int. Cl.² C08F 2/50, 20/36; C08L 33/14

U.S. Cl. 204—159.16

30 Claims

1. Radiation polymerizable, highly radiation-sensitive composition curable to form a film comprising from about one to 99 percent by weight of one or more amide acrylate compounds having one nitrogen atom and being of the formula:



wherein X, Y and Z may each independently be H, alkyl, aryl, acryloxyalkyl, acryloxy aliphatic ester formed by reaction of acrylating material with hydroxyl terminated aliphatic ester-containing intermediate resulting from the reaction of inner ester of hydroxy carboxylic acid and amino alcohol, or acryloxy aliphatic ether, provided that X, Y and Z together have two, three or four acryloxy groups.

4,227,980

PHOTOREACTIVE COATING COMPOSITIONS BASED ON URETHANE MODIFIED ACRYLATES

Siegfried A. Pregitzer, Long Island; Jay K. Laufer, Huntington; John J. Marino, Kings Park, all of N.Y., and James W. Hancock, Scotch Plains, N.J., assignors to Whittaker Corporation, Los Angeles, Calif.

Continuation of Ser. No. 726,010, Sep. 22, 1976, abandoned. This application Sep. 13, 1978, Ser. No. 941,760

Int. Cl.² C08F 2/50, 4/00

U.S. Cl. 204—159.23

3 Claims

1. A radiation curable decorating ink comprising:

a substantial proportion of at least one photoreactive compound of the formula:



wherein

R is cyclohexyl or C₆₋₈ aryl.

R' is C₂₋₄ alkylene, and

R'' is H or CH₃;

2% to 20% of at least one photoinitiator based upon the weight of said photoreactive compound;

at least one free radical inhibitor; and

20% to 60% of at least one pigment based upon the total weight of said ink.

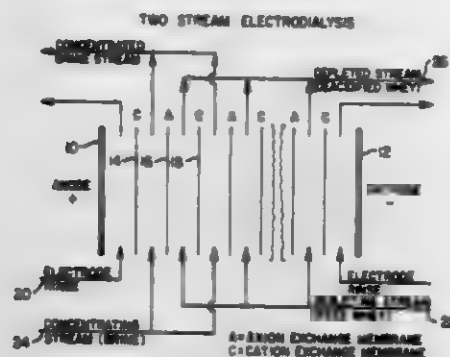
4,227,981

ELECTRODIALYSIS OF ACID WHEY

Alexander W. Williams, Syracuse, N.Y., and Harry A. Kline, Wonder Lake, Ill., assignors to Borden, Inc., Columbus, Ohio
Filed Aug. 31, 1979, Ser. No. 71,698
Int. Cl.² B01D 13/02

U.S. Cl. 204—180 P

14 Claims



1. Process for reducing ash content and titratable acidity in liquid whey, without forming a substantial precipitate, comprising treating at least a portion of the whey in a demineralization cell and treating at least a portion of the whey in a deacidification cell under the influence of electrical current, the treatment in the demineralization cell comprises passing the whey through a first chamber while passing brine solution through second and third chambers disposed on both sides of the first chamber, the chambers are in adjoining disposition and are defined by anion and cation membranes arranged in an alternating sequence; the treatment in the deacidification cell comprises passing a brine solution through a first chamber, passing the whey through a second chamber, and passing caustic solution through a third chamber, the chambers of the cell are in adjoining disposition and are defined by spaced membranes disposed in the sequence of cation-anion-cation wherein the whey chamber is defined by the pair of anion membranes.

4,227,982

ELECTRODEPOSITION OF AQUEOUS DISPERSIONS OF COPOLYMERS OF POLYETHYLENICALLY UNSATURATED EPOXY-AMINE ADDUCTS

Kazys Sekmakas, Chicago, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.
Division of Ser. No. 860,908, Dec. 15, 1977, Pat. No. 4,172,062.
This application May 31, 1979, Ser. No. 44,270
Int. Cl.² C25D 13/06

U.S. Cl. 204—181 C

7 Claims

1. A method of electrodepositing a physically tough, corrosion resistant coating on the cathode of a unidirectional electrical system from an aqueous bath having a pH of 5.0-7.5 comprising passing a unidirectional electrical current through an aqueous bath comprising a water dispersible polymer which is a copolymer of:

(A) an ethylenically unsaturated hydroxy functional amine adduct free of epoxy groups and containing from about 1.4 to about 2.0 ethylenically unsaturated amine groups per molecule, formed from a polyepoxide having a 1,2-epoxy equivalency of from about 1.4 to about 2.0 and at least a stoichiometric amount of an ethylenically unsaturated secondary amine having two ethylenically unsaturated groups; and

(B) copolymerizable monoethylenically unsaturated monomers, a portion of which is amine-functional, said copolymer being dispersed in water with the aid of a solubilizing acid, said bath including an aminoplast or phenol-formaldehyde curing agent, and said electrical current depositing a coating of said polymer and said curing agent on the cathode, removing the coated cathode from the bath, and baking the same.

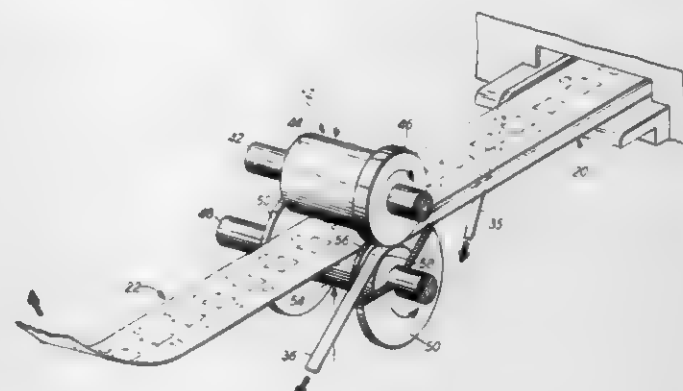
4,227,983

METHOD FOR MAKING CARRIER TAPE

Michael T. Gursky, and William W. Peihoda, both of Lehigh County, Pa., assignors to Western Electric Company, Inc., New York, N.Y.
Filed Feb. 1, 1979, Ser. No. 8,621
Int. Cl.² H05K 1/04, 3/00

U.S. Cl. 430—323

19 Claims



1. A method of making carrier tape from metal foil having no substantial resistance to bending, comprising: successively gripping along a substantially unperforated drive portion of a strip of metal foil in a continuous manner, such drive portion extending substantially along the full length of the strip, and driving the strip thereby in a lengthwise direction; forming a pattern in at least one portion of the strip in such a manner that no support materials are affixed to the strip, the pattern portion being disposed separately from the drive portion of the strip; and separating the pattern portion of the strip from the drive portion of the strip whereby said pattern portion becomes usable for carrier tape.

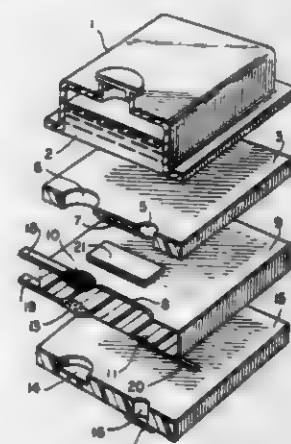
4,227,984

POTENTIOSTATED, THREE-ELECTRODE, SOLID POLYMER ELECTROLYTE (SPE) GAS SENSOR HAVING HIGHLY INVARIANT BACKGROUND CURRENT CHARACTERISTICS WITH TEMPERATURE DURING ZERO-AIR OPERATION

Russell M. Dempsey, Hamilton; Anthony B. LaConti, Lynnfield, and Mary E. Nolan, Topsfield, all of Mass., assignors to General Electric Company, Wilmington, Mass.
Continuation-in-part of Ser. No. 773,012, Feb. 28, 1977, abandoned. This application Mar. 1, 1979, Ser. No. 16,364
The portion of the term of this patent subsequent to Oct. 16, 1996, has been disclaimed.
Int. Cl.³ G01N 27/46

U.S. Cl. 204—195 S

9 Claims



1. In a temperature invariant electrochemical, gas-sensing device the combination comprising:
(a) an ion transporting membrane;

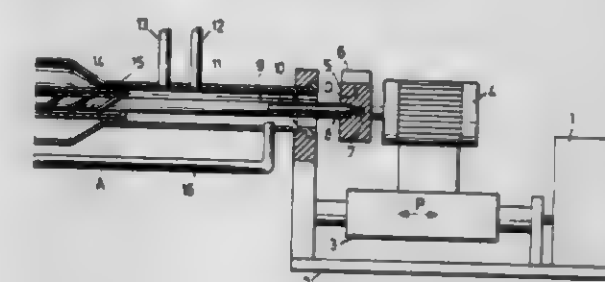
4,227,986

APPARATUS FOR PROVIDING A SURFACE COATING ON THE WALL IN A CAVITY BY MEANS OF ELECTROLYTIC PLATING

Kaj-Ragnar Loqvist, Fagersta, and Leif-Ake Bennstedt, Falun, both of Sweden, assignors to Wave Energy Development I Vastmanland Aktiebolag, Fagersta, Sweden
Division of Ser. No. 873,524, Jan. 30, 1978. This application Jun. 21, 1978, Ser. No. 917,485
Claims priority, application Sweden, Feb. 8, 1977, 7701371
Int. Cl.² C25D 17/12, 17/10

U.S. Cl. 204—209

6 Claims



1. An apparatus for providing a surface coating of a metal or metal alloy on the wall of an elongate cavity workpiece by means of electrolytic plating, the workpiece being used as a cathode, characterized by at least one anode for placement longitudinally extending in the cavity of a workpiece, and at least one conveyor, comprising a resilient and electrically insulating material for transporting the electrolyte and gas produced during said plating, said material comprising at least one flexible, homogeneous, perforated, net-like or fibrous strip helically wound around the anode in its longitudinal direction, said helically wound strip having outstanding resilient fingers in contact with the wall of said cavity while the strip lies against the anode and being enabled to come into contact with every part of said surface while adjusting to the surface to be coated.

4,227,985

ANODE ASSEMBLY

John H. Morgan, Winchester, England, assignor to Morgan Berkeley & Company Ltd., Winchester, England
Filed Feb. 22, 1979, Ser. No. 14,328
Int. Cl.² C23F 13/00

U.S. Cl. 204—196

7 Claims



1. An anode assembly for use in a system for the cathodic protection of a submerged, or partly submerged elongate metallic member, the assembly comprising two or more parts adapted to be fixed together to encircle a length of the elongate member, each part having a plurality of interconnected, generally flat, elongate electrically insulating panels of which at least one accommodates a metallic element, means for providing electrical connection to said metallic elements, the arrangement being such that, in use of the assembly, with said parts fixed together as aforesaid, the panels are circumferentially disposed around the elongate member with a part of the surface of each metallic element exposed outwardly of the elongate member, and with a space formed between the assembly and said elongate member, the assembly being apertured to permit electrical current to flow through said space to the elongate member from said metallic elements operating as anodes in the said system.

4,227,987

MEANS FOR CONNECTING AND DISCONNECTING CELLS FROM CIRCUIT

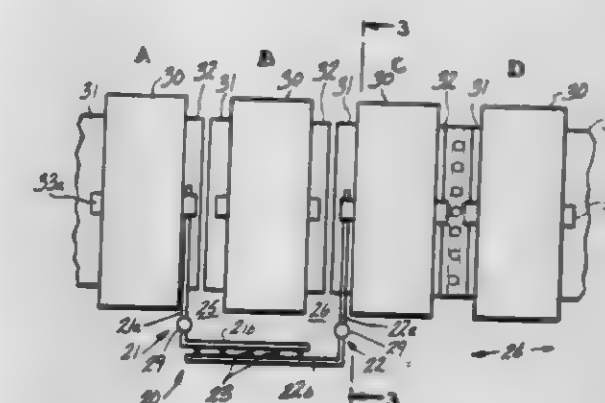
Morton S. Kircher, Clearwater, Fla., and Steven J. Specht, Mentor, Ohio, assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 26, 1979, Ser. No. 97,115

Int. Cl.³ C25B 15/00, 9/04

U.S. Cl. 204—228

20 Claims



1. A jumper system for electrically bypassing one cell of a plurality of chloralkali diaphragm cells connected in an electrical series circuit without interrupting the electrical flow through the other cells in said circuit, where each of said cells has vertical anodes and cathodes oriented parallel to the overall direction of current flow in said circuit, cathode and anode terminals lying transversely between said cells and oriented parallel widthwise to said overall direction, and anode current

distributor connecting said anodes to said anode terminal and a cathode current collector connecting said cathodes to said cathode terminal, said jumper system comprising:

first transverse conductor means, for assuming a position extending parallel to said cathode terminal and contacting in such position the lengthwise center of the cathode terminal of the cell preceding said one cell in said circuit at a location between said one cell and said preceding cell and for conducting current from said terminal in a direction transverse to said overall direction;

second transverse conductor means for assuming a position extending parallel to said anode terminal and contacting in such a position an anode terminal of the cell following said one cell in said circuit at a location between said one cell and said preceding cell and for conducting current from said terminal in a direction transverse to said overall direction;

controlled means for remotely moving said first and second conductors into pressurized contact in said parallel position with said cathode terminal of said preceding cell and said anode terminal of said following cell respectively; and

switch means, adapted to be positioned adjacent said one cell, for selectively allowing and preventing electrical current flow from said first transverse conductor means to said second transverse conductor means whereby current bypasses said one cell.

4,227,988

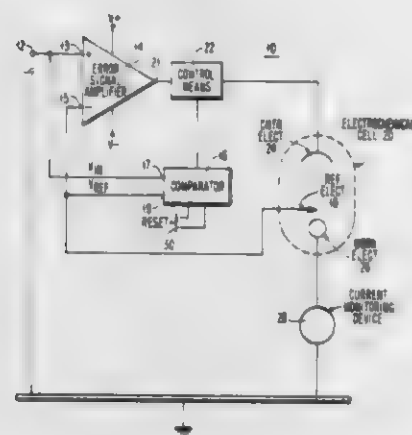
POTENTIOSTAT FOR USE WITH ELECTROCHEMICAL CELLS

Ronald K. Galwey, Los Gatos, and Kay K. Kanazawa, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,415

Int. Cl.³ C25B 15/02; G01N 27/30; G05F 1/10; H02H 9/00
U.S. Cl. 204—231

9 Claims



7. An electrochemical potentiostat-cell system comprising an electrochemical cell having a reference electrode with a potential V_R , a potentiostat associated with said cell and having an input voltage V_{IN} , control means electrically connected to said cell, and a comparator for comparing the difference between V_R and V_{IN} associated with said control means wherein when the magnitude of the difference between the values of V_{IN} and V_R exceeds a preselected value, said control means causes the current in said cell to go to zero.

4,227,989

LIQUEFACTION OF CALCIUM-CONTAINING SUBBITUMINOUS COALS AND COALS OF LOWER RANK

Martin L. Gorbaty, Sanwood, N.J., and John W. Taunton, Seabrook, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 19, 1977, Ser. No. 798,663

Int. Cl.³ C10G 1/00, 1/06; C10L 0/00

U.S. Cl. 208—8 LE

15 Claims

1. A process for the treatment of calcium-containing subbituminous coals and coals of lower rank to form an insoluble, thermally stable calcium salt which does not form a scale during coal liquefaction consisting essentially of dispersing and forming a solution of an alkali metal compound or salt characterized by the formula MX, wherein M is a Group IA metal of the Periodic Table of the Elements, and X is an anion which is capable of forming a water insoluble, thermally stable calcium compound, contacting said coal and said solution, maintaining contact between said coal and said solution of said alkali metal compound or salt for a period sufficient for impregnation of said compound or salt into the pores of the coal such that alkali metal cations replace at least a portion of the Ca^{2+} ion and the anion, X, combines with the Ca^{2+} ion thus replaced to form a molecular species which precipitates within the pore as insoluble CaX , separating said impregnated particulate coal from said solution, and then liquefying said impregnated coal at liquefaction conditions to produce petroleum-like liquid products.

4,227,990

THERMAL CRACKING OF RETORT OIL

James D. Dearth, Dallas, and Robert H. Smith, Plano, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 20, 1978, Ser. No. 962,510

Int. Cl.³ C01G 1/00

U.S. Cl. 208—8 R

5 Claims

1. A process for thermal cracking retort oil in an elongated reactor comprising:
 - (a) operating a retort for normally solid hydrocarbonaceous materials at a temperature above 700° F., thereby producing carbonaceous gases and oil vapors;
 - (b) passing a mixture of said gases and at least a portion of said oil vapors to said elongated reactor before said mixture has cooled to a temperature below 680° F.; and
 - (c) concurrently flowing said mixture, a gaseous diluent and heat carriers through said elongated reactor at a velocity sufficient to entrain said heat carrier solids, said heat carrier solids being at a reactor inlet temperature of between 1200° F. and 2500° F.

4,227,991

COAL LIQUEFACTION PROCESS WITH A PLURALITY OF FEED COALS

Norman L. Carr, Allison Park, Pa., and Bruce K. Schmid, Denver, Colo., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1978, Ser. No. 969,823

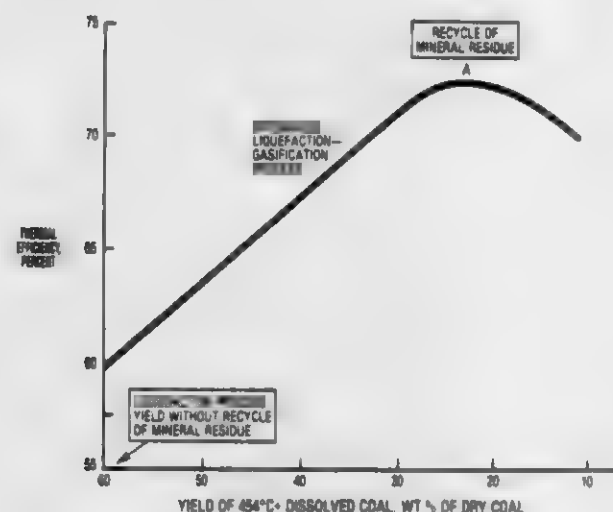
Int. Cl.³ C10G 1/00, 1/08

U.S. Cl. 208—8 LE

7 Claims

1. A coal liquefaction process comprising admixing in a feed coal mixing vessel a total coal feed comprising at least two feed coals, recycle normally solid dissolved coal containing liquid solvent, and recycle mineral residue derived from said feed coals; one of said feed coals comprising at least 5 weight percent of the total coal feed and generating upon dissolution particles of mineral residue having a smaller median diameter than the particles of mineral residue generated by the remaining feed coal; passing said feed coals, hydrogen, recycle normally solid dissolved coal, recycle liquid solvent and recycle

mineral residue to a coal liquefaction zone which does not contain a fixed bed of added catalyst to dissolve hydrocarbonaceous material from mineral residue and to hydrocrack said hydrocarbonaceous material to produce a mixture comprising hydrocarbon gases, dissolved liquid, normally solid dissolved coal and suspended mineral residue; passing a liquefaction zone effluent stream through vapor-liquid separator means to remove overhead hydrogen, hydrocarbon gases and naphtha from a residue slurry comprising liquid coal and normally solid dissolved coal with suspended mineral residue; recycling a first portion of said residue slurry to said feed coal mixing vessel; passing a second portion of said residue slurry to a product



separation means; passing a third portion of said residue slurry through hydroclone means; recovering from said hydroclone means an overflow slurry comprising liquid coal and normally solid dissolved coal with relatively small particles of suspended mineral residue; recycling said overflow slurry to said liquefaction zone to selectively increase the proportion in the liquefaction zone of the mineral residue particles generated from said one feed coal; recovering from said hydroclone means an underflow slurry comprising liquid coal and normally solid dissolved coal with relatively large particles of suspended mineral residue; and passing said underflow slurry to said product separation means.

4,227,992

PROCESS FOR SEPARATING ETHYLENE FROM LIGHT OLEFIN MIXTURES WHILE PRODUCING BOTH GASOLINE AND FUEL OIL

William E. Garwood, Haddonfield, and Wooyoung Lee, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 24, 1979, Ser. No. 41,843

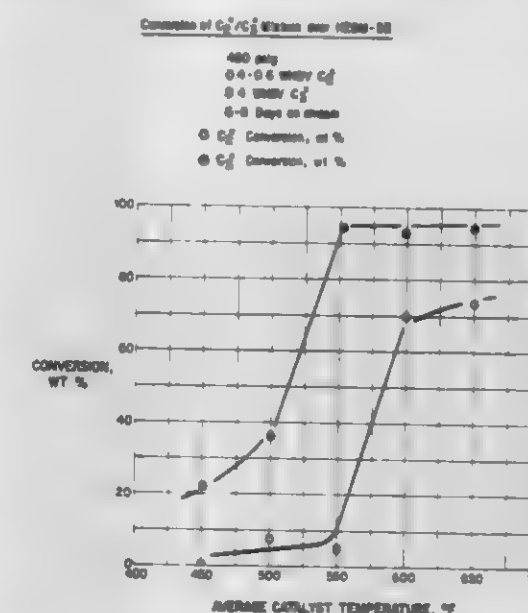
Int. Cl.³ C10G 35/06

U.S. Cl. 208—46

8 Claims

1. In the process of contacting mixtures of C_2 - C_3 olefins with an acidic crystalline aluminosilicate zeolite having a pore diameter greater than about 5 Angstroms, a silica-to-alumina ratio of at least 12, and a constraint index within the range of 1-12 at elevated temperatures, the improvement which comprises (a) carrying out said contact at a temperature of from about 300°-600° F., a pressure of from about 100-1,000 psig and at a space velocity with regard to C_3 and higher olefins ranging from about 0.1 to 10 WHSV; (b) said temperature, space velocity and pressure being chosen so as to convert at

least 80% of the C_3 and higher olefins and no more than about 20 weight percent of said ethylene; (c) obtaining a product



comprising both fuel oil and gasoline; and (d) recovering ethylene by flashing it off the higher boiling product.

4,227,993

CATALYSTS FOR THE HYDROTREATMENT OF HYDROCARBONS AND THEIR UTILIZATION

Philippe Engelhard; Georges Szabo, and Joseph E. Weisang, all of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Division of Ser. No. 758,670, Jan. 12, 1977, abandoned, which is a division of Ser. No. 597,987, Jul. 22, 1975, Pat. No. 4,039,477. This application Mar. 6, 1979, Ser. No. 18,070

Claims priority, application France, Jul. 30, 1974, 74 26490

Int. Cl.³ C10G 35/08

U.S. Cl. 208—139

12 Claims

1. A method comprising use of a catalyst in the reforming, in the presence of hydrogen, of hydrocarbon fractions whose sulfur content is under 10 ppm and whose boiling temperature at atmospheric pressure is between 35° and 250° C., said catalyst comprising a refractory mineral oxide carrier, a halogen element present in combined form, and containing metals in a free or combined state on said carrier as follows:

- a. From 0.02 to 2% of at least one metal from the platinum group;
- b. From 0.02 to 2% of tin; and
- c. From 0.01 to 5% of at least one metal selected from the group consisting of scandium, yttrium, thorium, and uranium; said percentages, determined relative to the respective elemental form, being based upon the total catalyst weight.
12. A method comprising use of a catalyst in the isomerization of hydrocarbons in the presence of hydrogen, said catalyst comprising a refractory mineral oxide carrier, a halogen element present in combined form, and containing metals in a free or combined state on said carrier as follows:
- a. From 0.02 to 2% of at least one metal from the platinum group;
- b. From 0.02 to 2% of tin; and
- c. From 0.01 to 5% of at least one metal selected from the group consisting of scandium, yttrium, thorium, and uranium; said percentages, determined relative to the respective elemental form, being based upon the total catalyst weight.

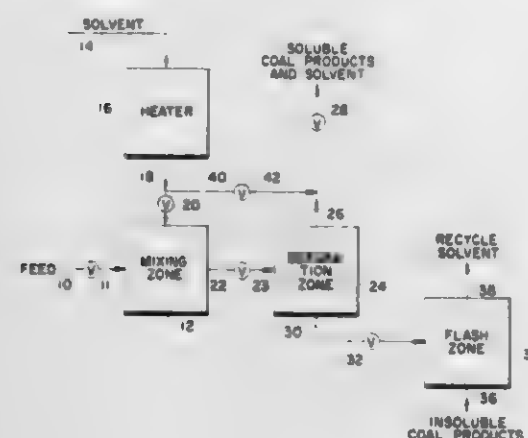
4,227,994

OPERATION OF A COAL DEASHING PROCESS
Alfred H. Knebel, and Donald E. Rhodes, both of Oklahoma City, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Mar. 20, 1978, Ser. No. 887,870

Int. Cl.² C10G 21/20, 21/16, 21/14

U.S. Cl. 208—177



1. In a coal deashing process for separating a feed mixture into a light phase and a heavy phase having fluid-like properties within a separation zone, said separation zone being maintained at an elevated temperature and at a pressure greater than 550 psig. to effect said separation, said feed mixture being formed by contacting, in a mixing zone, a feed comprising soluble coal products and insoluble coal products with a solvent maintained at an elevated temperature and pressure, said feed mixture being in a ratio by weight of solvent to feed greater than one, said solvent consisting essentially of at least one substance having a critical temperature below 800 degrees F. selected from the group consisting of aromatic hydrocarbons having a single benzene nucleus and normal boiling points below about 310 degrees F., cycloparaffin hydrocarbons having normal boiling points below about 310 degrees F., open chain mono-olefin hydrocarbons having normal boiling points below about 310 degrees F., open chain saturated hydrocarbons having normal boiling points below about 310 degrees F., mono-, di, and tri-open chain amines containing from about 2-8 carbon atoms, carbocyclic amines having a monocyclic structure containing from about 6-9 carbon atoms, heterocyclic amines containing from about 5-9 carbon atoms, and phenols containing from about 6-9 carbon atoms and their homologs, said feed mixture being separated in said separation zone into said light phase and said heavy phase after which said light phase and said heavy phase are individually withdrawn from said separation zone, the improvements which comprise, during periods in which flow of said feed to said mixing zone is interrupted:

- providing an alternate solvent flow path by which the flow of said solvent maintained at elevated temperature and pressure is diverted from said mixing zone during said periods in which flow of said feed to said mixing zone is interrupted and is introduced into a conduit through which said light phase is withdrawn from said separation zone to maintain the elevated pressure within said separation zone; and
- maintaining the temperature level of said separation zone from which the flow of said solvent has been diverted at said elevated temperature while also maintaining said elevated pressure level to maintain the fluid-like properties of said heavy phase.

4,227,995

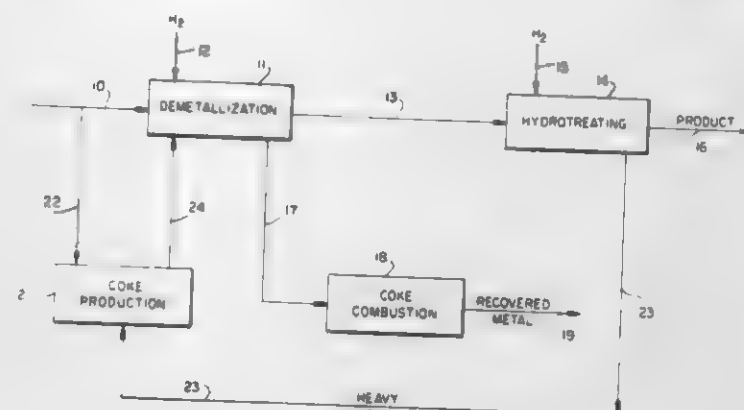
DEMETALLIZATION OF HYDROCARBON FEEDSTOCK
Morgan C. Sze, Upper Montclair, and Harvey D. Schindler, Fairlawn, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Dec. 6, 1978, Ser. No. 966,901

Int. Cl.² C10G 23/00

8 Claims U.S. Cl. 208—251 H

21 Claims



1. A process for demetallizing a metal-containing hydrocarbon feedstock, comprising:

contacting said metal-containing hydrocarbon feedstock with hydrogen and a material having a porosity of less than 0.3 cc/gram, a surface area of less than 5 m²/gram, an average pore diameter in excess of 1,000 Å, and a pore distribution in which at least 40% of the pores have a size of greater than 10,000 Å, at least 60% of the pores have a size in excess of 1,000 Å, and less than 20% of the pores have a size of less than 100 Å, said contacting being effected at demetallization conditions to deposit metals present in said feedstock on said material.

4,227,996

FLOTATION PROCESS FOR IMPROVING RECOVERY OF PHOSPHATES FROM ORES

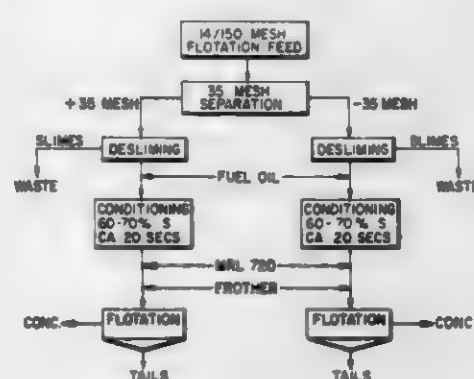
Nathan M. Levine, and Walter Von Drathen, both of Louisville, Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,656

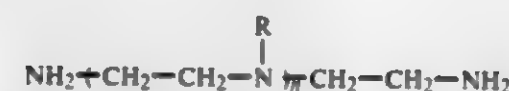
Int. Cl.² B03B 7/00

U.S. Cl. 209—12

20 Claims



1. A process for recovering phosphate values from deslimed phosphate ore, containing bone phosphate of lime and passing a 14 mesh screen, that comprises the following steps for treating said ore: conditioning with a fuel oil, treating with a polyamine cationic collector and a frother, and frothing with air to remove silica particles from said ore in at least two floats having no pH adjustment step, no scrubbing step, and no oil removal step therebetween, said ore being recovered as at least two concentrate products containing at least 80% of said bone phosphate of lime and having insol values no greater than about 6% wherein said cationic collector is a composition which corresponds to the formula:



where R is an aliphatic substituent containing between about 8-24 carbon atoms and between about 1-3 oxygen atoms and is derived from a monoepoxide, n is the integer 1 or 2, and one of the R substituents can be hydrogen when n is 2.

4,227,997

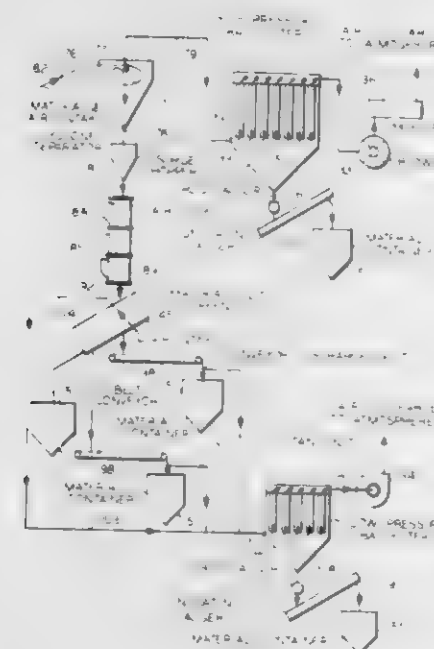
MOBILE NON-POLLUTING CLEANING AND PROCESSING APPARATUS AND METHOD
Roland E. Shaddock, Streator, Ill., assignor to Peabody-Myers Corporation, Streator, Ill.

Filed Dec. 14, 1978, Ser. No. 969,325

Int. Cl.² B07B 9/00

U.S. Cl. 209—250

20 Claims



20. The method of cleaning and classifying granular material which comprises pulling granular material from a source into a high pressure airstream, centrifugally separating the granular material from dust in said airstream, filtering the dust in said airstream, classifying the separated granules into a plurality of batches of different sizes, pulling dust from the granules being classified into a second and lower pressure airstream, filtering the dust from the second airstream, and aspirating air from the separated batches of the granules to avoid pollution as the granules are discharged.

4,227,998

WASTE DISPOSAL TREATMENT OF CALCIUM-CONTAINING ORGANICALLY LOADED WASTEWATERS

Hans Reimann, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 933,838

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738309

Int. Cl.² C02C 1/06

U.S. Cl. 210—609

9 Claims

1. In a process for the treatment of calcium ion containing, organically loaded wastewater, wherein the wastewater has a pH of 10-12, contains 300-5,000 mg Ca⁺⁺ per liter, and is from settling tanks containing the wastewater from the flushing and wash water cycle of a sugar manufacturing plant, which comprises subjecting said wastewater to an activated sludge process under aeration with an O₂-containing gas in an aeration tank, the improvement which comprises introducing a CO₂-containing gas having a concentration of at least 5% by volume of CO₂ to lower and maintain the liquid present in the aeration tank at a pH of 6-8 and to precipitate therein said

calcium ion as calcium carbonate, the components in the wastewater and the CO₂-introduction being such that the concentration of dry activated sludge matter is increased to above 8 kg/m³ and the proportion of organic substance therein, defined as the incineration loss, is maintained at 30-70% by weight, said improvement facilitating the separation of the activated sludge solids and the bacterial action of the activated sludge process.

4,227,999

ULTRAFILTRATION PROCESS AND APPARATUS
Heinrich Ebner, Bonn-Ippendorf, Fed. Rep. of Germany, assignor to Heinrich Frings GmbH & Co. KG, Bonn, Fed. Rep. of Germany

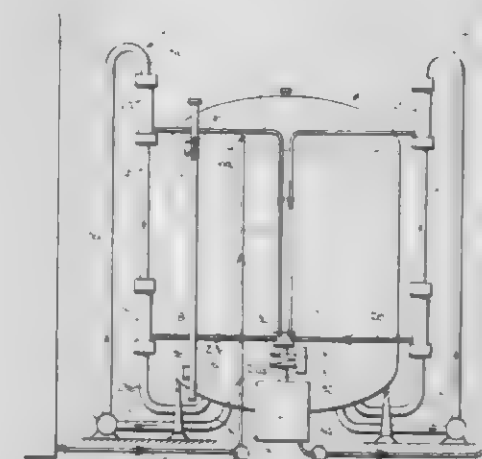
Filed Feb. 5, 1979, Ser. No. 9,261

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808022

Int. Cl.² B01D 13/00, 31/00

U.S. Cl. 210—650

11 Claims



1. In a process for the continuous ultrafiltration of liquids, wherein (a) the liquid to be filtered is circulated from and back to a circulating tank through at least one filtration circuit, (b) each filtration circuit is provided with a respective plurality of serially connected filter modules each having an inlet and an outlet for the liquid being filtered, (c) each of said filter modules gives rise, under the conditions of the process, to a substantial drop of the hydrostatic pressure prevailing at its inlet, (d) filtered liquid is extracted from each filter module intermediate the inlet and outlet of the same, and (e) the liquid level in the circulating tank is maintained substantially constant by replenishment of the liquid to be filtered as required;

the improvement comprising that:

- in each filtration circuit (i) each of the serially connected filter modules defines a non-horizontal path of flow for the liquid to be filtered, each of said filter modules has its inlet at the top and its outlet at the bottom, and each outlet is located above the level of the inlet of the respective next lower filter module, and (ii) the liquid to be filtered flows in sequence through all of the associated filter modules downwardly from the top to the bottom of each of the same,
- a hydrostatic pressure of between 200 and 700 mbar is established and maintained at the inlet of the uppermost first filter module in each filtration circuit,
- the liquid exiting from the outlet of the upper one of each two successive filter modules of each filtration circuit is permitted to flow downwardly in a non-horizontal path to the inlet of the respective next lower filter module substantially without pressure loss through a respective fall interval zone arranged between each two successive filter modules, the height of each such fall interval zone being such (i) that the pressure drop occurring in the upper one of each two successive filter modules is equalized, to the extent of from 0.5 to 1.5 times, by the weight of the liquid column in the associated fall interval zone immediately

therebelow and (ii) that as a consequence about the same hydrostatic pressure is established and maintained at the inlet of the lower one of each two successive filter modules as at the inlet of the upper one, and (D) the hydrostatic pressure at the outlet of the lowermost last filter module in each filtration circuit is established and maintained at between 100 and 400 mbar as a function of the weight of the liquid column in said circulating tank above the level of said outlet of said last filter module.

4,228,000

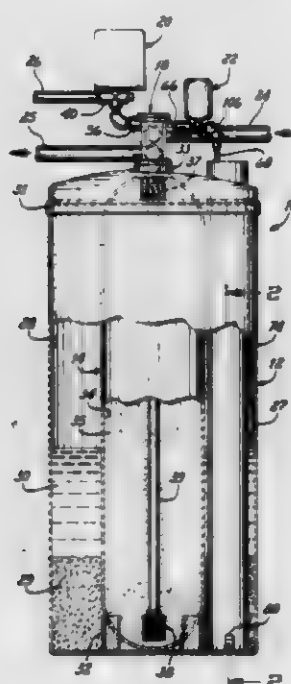
WATER TREATMENT APPARATUS WITH MEANS FOR AUTOMATIC DISINFECTION THEREOF

Frank A. Hoeschler, 5840 N. Scottsdale Rd., Scottsdale, Ariz. 85253

Continuation-in-part of Ser. No. 603,280, Aug. 11, 1975, abandoned. This application Jan. 8, 1979, Ser. No. 2,071
Int. Cl.³ B01J 20/34, 49/00

U.S. Cl. 210-673

13 Claims



11. A method for disinfecting a water treatment apparatus of the type fixedly mounted between the supply segment and the delivery segment of a pressurized water line, said method comprising the steps of:

- directing water from the supply segment of said water line through said water treatment apparatus to the delivery segment of said water line during a water treating operational mode of said water treatment apparatus and directing a predetermined amount of water into a disinfectant dispenser vessel at the beginning of the water treating operational mode to dissolve a portion of water soluble disinfectant agent in solid form contained therein to form a saturated disinfectant agent solution in said dispenser vessel;
- terminating the water treating operational mode of said water treatment apparatus after step a to provide a regenerating operational mode in which said water treatment apparatus is hydraulically isolated from the delivery segment of said water line and water from the supply segment of said water line is directed through said water treatment apparatus for regenerating purposes;
- extracting the disinfectant agent solution from said dispenser vessel at the beginning of the regenerating operational mode of said water treatment apparatus; and
- mixing the extracted disinfectant agent solution with the water that is being directed through said water treatment apparatus for regenerating purposes to complete the disinfection of said water treatment apparatus.

4,228,001

FOLDED MOVING BED ION EXCHANGE APPARATUS AND METHOD

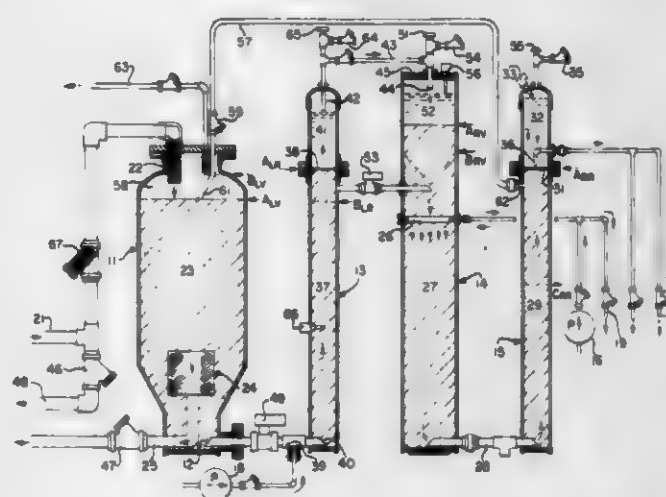
Lee G. Carlson, Willow Springs, Ill., assignor to American Petro Mart, Inc., Bartow, Fla.

Filed Apr. 12, 1978, Ser. No. 895,817

Int. Cl.² B01D 15/02

U.S. Cl. 210-676

28 Claims



1. A packed moving-bed ion exchange apparatus, comprising:

- a loading vessel having a feed conduit and a collecting means for passing a feed liquid through a packed ion exchange resin bed therewithin, said loading vessel having a resin inlet and a resin outlet;
- a loading reservoir in resin-passing communication with said resin inlet of the loading vessel through a transfer conduit and through a resin valve between said resin inlet of the loading vessel and said transfer conduit, said loading reservoir containing a movable packed resin bed;
- a regeneration vessel in resin-passing communication with said loading reservoir, said regeneration vessel having a movable packed resin bed and a liquid distribution head therewithin, said distribution head being below said communication of the regeneration vessel to the loading reservoir;
- a regeneration reservoir in resin-passing communication with said regeneration vessel at a location below said distribution head, said regeneration reservoir having a movable packed resin bed therewithin;
- pumping means for passing regenerating solution into said regeneration vessel through said distribution head;
- pumping means for moving rinse liquor through said resin bed of said loading reservoir, said pumping means having an outlet opening into said transfer conduit, said pumping means outlet being closed to said loading vessel by said resin valve for pumping said rinse liquor together with a plug of resin upwardly into said loading reservoir;
- pneumatic means in association with said regeneration vessel for laminarily moving a portion of the resin bed within said regeneration vessel into said loading reservoir to pass resin from said loading reservoir into said loading vessel; and
- a resin slurry transfer conduit communicating said resin outlet of the loading vessel with said regeneration reservoir.

4,228,002

ENHANCED ANTI-SOLVENT SEDIMENTATION OF SOLIDS FROM LIQUIDS USING PRESSURIZED CARBON DIOXIDE GAS

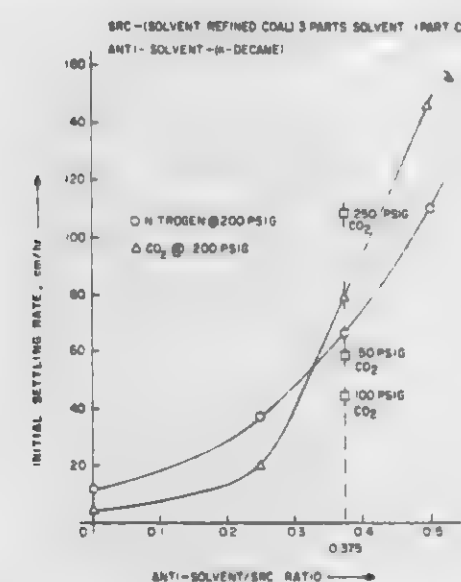
Kumbakonam R. Vaidyanathan; Joseph D. Henry, Jr., and Francis H. Verhoff, all of Morgantown, W. Va., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 15, 1978, Ser. No. 942,742

Int. Cl.² B01D 21/01

U.S. Cl. 210-729

7 Claims



1. A method for increasing the sedimentation of asphaltic material and solid mineral matter from coal-derived liquid containing the same, comprising the steps of:

- mixing said coal-derived liquid with an anti-solvent capable of promoting precipitation of asphaltic material and enhancing the initial settling rate of said solid mineral matter, said anti-solvent selected from the group consisting of saturated noncyclic hydrocarbons, cyclic hydrocarbons, aromatic hydrocarbons, and mixtures thereof, and
- holding said mixture under a pressurized atmosphere having carbon dioxide as its major component by volume to precipitate and settle said asphaltic material and said solid mineral matter from said coal-derived liquid.

4,228,003

METHOD OF REMOVING PHOSPHATES FROM WASTE WATER

Yutaka Makino, Takasago, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

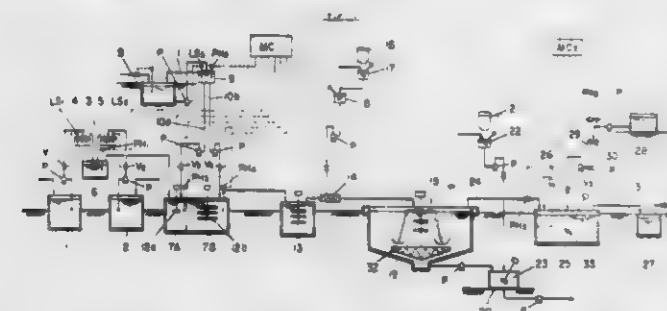
Filed Apr. 17, 1979, Ser. No. 30,873

Claims priority, application Japan, Apr. 21, 1978, 53/48159; Jun. 30, 1978, 53/79894

Int. Cl.² C02C 5/02

U.S. Cl. 210-725

6 Claims



1. A method of removing phosphates from waste water which comprises admixing the waste water with seawater in a volume ratio of 95:5 to 50:50 and adjusting the mixture to pH 9-11 with an alkaline agent to separate the sedimental phosphates by way of coagulation.

4,228,004

METHOD AND APPARATUS FOR REMOVAL OF BY-PRODUCTS OF CHEMICAL VAPOR DEPOSITION FROM OIL FOR VACUUM PUMP

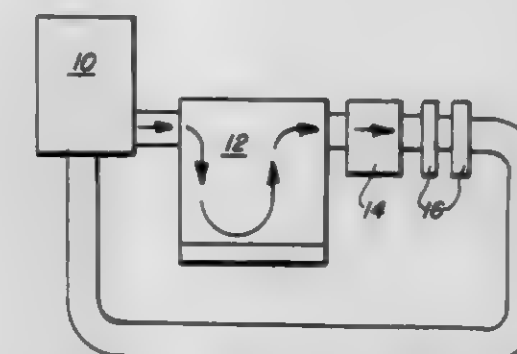
Robert B. Foster, Riverside, Calif., assignor to Thermco Products Corporation, Orange, Calif.

Filed Apr. 12, 1979, Ser. No. 29,525

Int. Cl.² B01D 23/24

U.S. Cl. 210-739

32 Claims



16. A method for removal of particulates from oil for a vacuum pump, as used to maintain a partial vacuum for chemical vapor deposition in intermittent runs wherein oil for the vacuum pump becomes contaminated by particulates, comprising steps of withdrawing oil from the vacuum pump to a settling tank, pumping oil from the settling tank, filtering particulates from oil pumped from the settling tank, and returning oil to the vacuum pump after the filtering step, wherein said steps are performed for timed intervals coordinated with the runs so that each interval is initiated approximately when a run is terminated.

30. The method of claim 16, 17, 18, or 19 wherein oil in the vacuum pump is contaminated by particulates of ammonium chloride.

31. The method of claim 16, 17, 18, or 19 comprising a step of displacing sediment from the settling tank between such intervals, while the vacuum pump may continue to operate.

4,228,005

MECHANICAL DEWATERING APPARATUS FOR ELASTOMER SLURRIES

Robert A. Covington, Jr., and Okan M. Ekiner, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

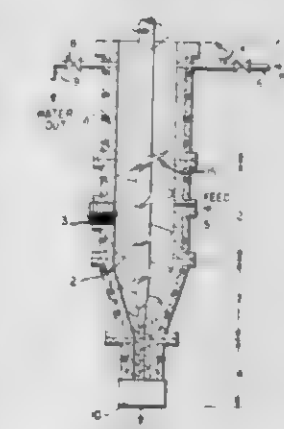
Division of Ser. No. 801,370, May 27, 1977, Pat. No. 4,132,845.

This application Jun. 19, 1978, Ser. No. 916,913

Int. Cl.² B01D 21/14; C08F 6/22

U.S. Cl. 210-207

6 Claims



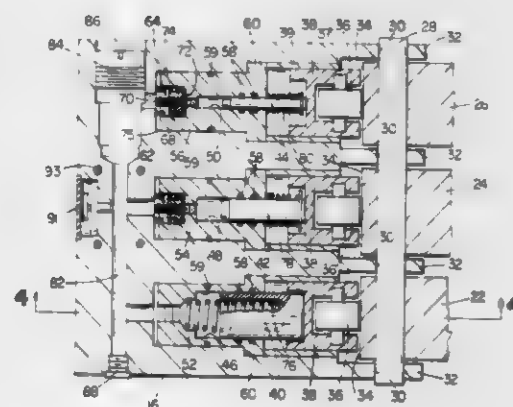
1. Apparatus for the isolation of a heavier-than-water polymer from a mixture of said polymer in water, comprising:

- a vertically disposed separator having:
 - an upper settling section;
 - a cylindrical feed section located below said settling

- section and having a feed port through which the said polymer-water mixture may be introduced;
- (3) means for feeding said mixture through the said feed port;
- (4) a conical compression section located below said feed section; tapering into
- (5) a bottom cylindrical metering section having a discharge port located at its bottom end;
- (6) a rotating screw located inside said separator having helical flights extending from the bottom end of the metering section upwards through the compression section and through the feed section;
- (7) an inlet port located near the upper end of said settling section for introducing excess water; and
- (8) a valved discharge port also located near the upper end of said settling section for controlling the water pressure in the settling section, said settling section having sufficient length above said screw flights to permit gravitational separation of said polymer and water in the settling and feed sections.

4,228,007
CHROMATOGRAPHIC CARTRIDGE AND HOLDER
 Carl W. Rausch, Auburndale; Yury Tuvin, Newton, and Uwe D. Neue, Framingham, all of Mass., assignors to Waters Associates, Inc., Milford, Mass.

Filed Jan. 8, 1979, Ser. No. 1,540
 Int. Cl.² B01D 15/08
 U.S. Cl. 210—198 C 10 Claims



1. Apparatus for radially compressing the wall of a chromatography cartridge containing chromatographic packing material, said apparatus comprising:

- means for introducing the chromatographic fluid to the inlet of said cartridge,
- means for removing the chromatographic fluid from the outlet of said cartridge,
- chamber means surrounding said wall of said cartridge,
- pressure generating means communicating with said chamber means, said pressure generating means including a plurality of pistons of different working areas,
- said working areas being selected to make the forces required to move said pistons substantially equal when the pistons are moved in order of descending working area,
- a plurality of cylinders in which said pistons move,
- means for sequentially moving said plurality of pistons, and
- conduits connecting the high pressure sides of said pistons to said chamber,
- whereby when said apparatus is filled with working fluid, said means for moving said pistons may be operated to raise in stages the pressure in said chamber and thereby reach the desired pressure for radially compressing said cartridge with lower forces applied to said pistons than would otherwise be required.

4,228,006
DOMESTIC WATER SYSTEM
 Daniel C. Hanna, P.O. Box 3736, Portland, Oreg. 97208
 Continuation of Ser. No. 817,735, Jul. 21, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,329
 Int. Cl.² B01D 17/08, 21/00
 U.S. Cl. 210—167 5 Claims



1. In a domestic water and waste disposal system including a tap water supply, a sewer, a kitchen sink having a hot water tap, a cold water tap and a drain, a lavatory having a hot water tap, a cold water tap and a drain, a bath having a hot water tap, a cold water tap and a drain, a hot water heater having an inlet and an outlet and a toilet having a cold water inlet and a drain connected to the sewer, the improvement comprising a clarifier tank having an inlet, and outlet and an overflow, filter tank means having an inlet and an outlet, means connecting the overflow to the sewer, pump means, means connecting the inlet of the filter tank means to the pump means, means connecting the pump means to the outlet of the clarifier tank, selectively operable means connected by means to the drain

of the bath and the lavatory for connecting the drains of the bath and the lavatory to the sewer or to the inlet of the clarifier tank,

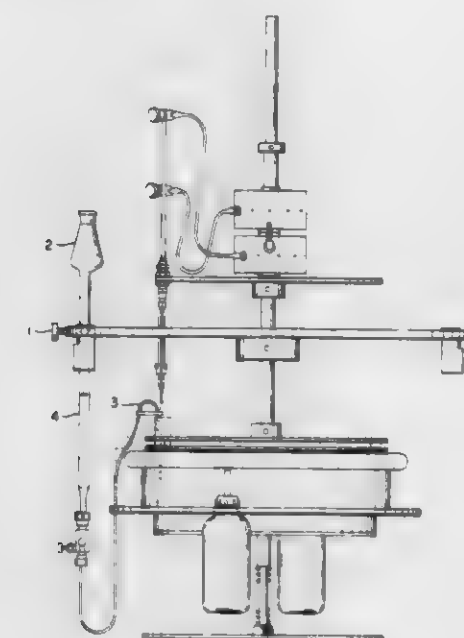
means for selectively connecting the inlet of the hot water heater to the tap water supply or the outlet of the filter tank means,

means connecting the outlet of the heater to the hot water taps of the bath and the lavatory,

means connecting the tap water supply directly to the cold water tap of the kitchen sink, and means for selectively connecting the cold water tap of the bath, the cold water tap of the lavatory and the cold water inlet of the toilet to the outlet of the filter tank means or the tap water supply.

4,228,008
CHROMATOGRAPHIC DEVICE FOR SIMULTANEOUS COLLECTION AND EVAPORATION OF SEQUENTIAL VOLATILE NON-AQUEOUS ELUATES
 Robert J. Karol, Andover, and Raymond E. Grew, Cedar Grove, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 5, 1979, Ser. No. 27,345
 Int. Cl.² B01D 15/08
 U.S. Cl. 210—198 C 5 Claims



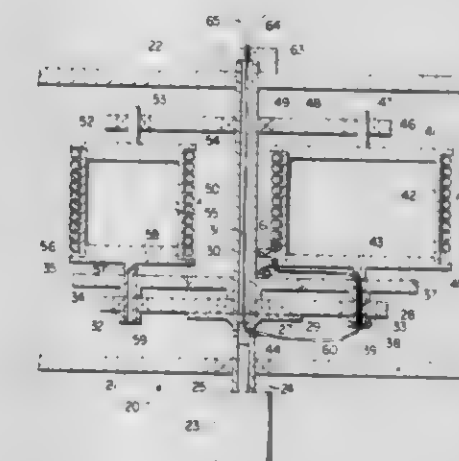
1. A chromatographic device for the simultaneous collection and evaporation of sequential volatile organic eluates which comprises:

- a. a column for receiving sample to be separated,
- b. a means for retaining said column,
- c. a separating matrix disposed within said column,
- d. a column delivery tube at the lower end of said column,
- e. a receptacle for receiving eluate, said vessel affixed in such a position to allow for communication of said vessel with the terminal end of said column delivery tube,
- f. a container for receiving eluate, said container having inlet means at several points and being positioned to allow for communication of said inlet means with the terminal end of said column delivery tube,
- g. an evaporating gas source, said source positioned to allow communication within said receptacle for receiving eluate,
- h. a means for maintaining a constant temperature in which is placed said receptacle for receiving eluate,
- i. a means for controlling the rate of flow of said eluate,
- j. a means for housing said device.

rotary frame means provided with upper and lower plate portions and mounted between said stationary members for rotation about a first vertical axis;

at least one coil means mounted between said upper and lower plate members around a second vertical axis, said second vertical axis being spaced from said first vertical axis by distance R, and said coil holder means having a substantially cylindrical separation column supporting surface spaced from said second axis by distance r, the ratio of r to R being greater than 0.25;

separation column means mounted on said coil holder supporting surface, said separation column means in-



- cluding a flexible core member and at least one tube having ends at least one tube wound in a helix about said flexible core member;
- inlet and outlet tubes connected to respective said ends of said at least one tube;
- tube holding means located within said rotary frame means for holding said inlet and outlet tubes so that the orientation thereof remains constant;
- drive means for rotating said frame means and said coil holder means; and
- counterbalancing means mounted on said frame means opposite said coil holder means.

4,228,010
 Patent Not Issued For This Number

4,228,009
TOROIDAL COIL PLANET CENTRIFUGE
 Yoichiro Ito, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jun. 4, 1979, Ser. No. 45,052
 Int. Cl.² B01D 15/08
 U.S. Cl. 210—198 C 12 Claims

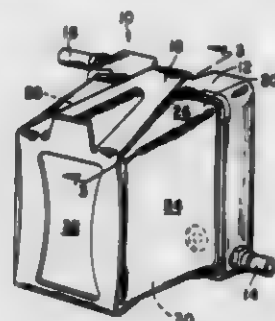
1. A toroidal coil planet centrifuge, comprising:
- a support means provided with upper and lower stationary members;

4,228,011
FUEL OIL FILTER CARTRIDGE
 Edmond H. Cote, Jr., Warren, R.I., assignor to Fram Corporation, East Providence, R.I.

Filed Apr. 23, 1979, Ser. No. 32,081
 Int. Cl.² B01D 27/06
 U.S. Cl. 210—232 9 Claims

1. In a liquid filter having a base carrying inlet and outlet ports, a cup-shaped housing cooperating with said base to define a liquid receiving chamber communication with said inlet and outlet ports, and retaining means for removably securing the housing to a cover, a filter cartridge including said cover clamped between said cup-shaped housing and said base,

said cover having an inlet and an outlet communicating with the inlet port and outlet port respectively, and a semi-rigid bladder having an open end sealed to said cover to define a fluid pressure receiving compartment, said bladder being shaped complementary to the shape of the inside of said housing so that when the filter cartridge is installed in said chamber the bladder is supported and is restrained by the wall of said



cup-shaped housing so that pressure within said compartment defined by the bladder and the cover is restrained by the support of the cup-shaped housing, a pleated filter element in said compartment, said pleated filter element being sealed to the bladder and to said cover in order to divide said compartment into inlet and outlet portions communicating with the inlet and outlet respectively.

4,228,012

END CAP COUPLER SYSTEM FOR LINKING ONE FILTER CARTRIDGE TO ANOTHER FILTER CARTRIDGE OR FUNCTIONAL MEMBER

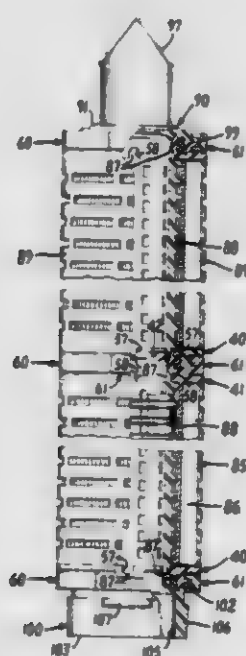
David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Oct. 26, 1978, Ser. No. 954,813

Int. Cl.² B01D 27/00, 29/24

U.S. Cl. 210-238

54 Claims



1. A slide-on end cap coupler for linking an end-capped filter cartridge to another end-capped filter cartridge or to another functional member at the end cap thereof, comprising, in combination:

- (1) first and second attaching members, each having first and second opposed faces,
- (a) a first face of each attaching member facing one end of a filter cartridge or other functional member; and
- (b) a second face of each attaching member being adapted for closely-abutting contact with the second face of the other attaching member;
- (2) an outer periphery of the second face terminating in an outwardly extending flange, the flange of each member being adapted for closely-abutting contact when the second faces of each member are in closely-abutting contact;
- (3) at least two intermeshing clamping channel members

having channel sides shaped to slidably move into and away from a clamping position in which the sides circumferentially embrace the abutting flanges of the attaching members and spaced apart sufficiently to engage the flanges and clamp the attaching members together; each channel member having intermeshing locking means engaging mating locking means of the other member and releasably locking the channel members together in such clamping and embracing position; and in such position embracing substantially the entire periphery of the flanges; whereby each of the first and second attaching members when a part of or attached to one end cap of an end-capped filter cartridge releasably and slidably links the filter cartridge to an end cap of another end-capped filter cartridge or to another functional member.

4,228,013

METHOD AND APPARATUS FOR RECOVERY OF HEAVY METAL IONS FROM DILUTE AQUEOUS SOLUTION

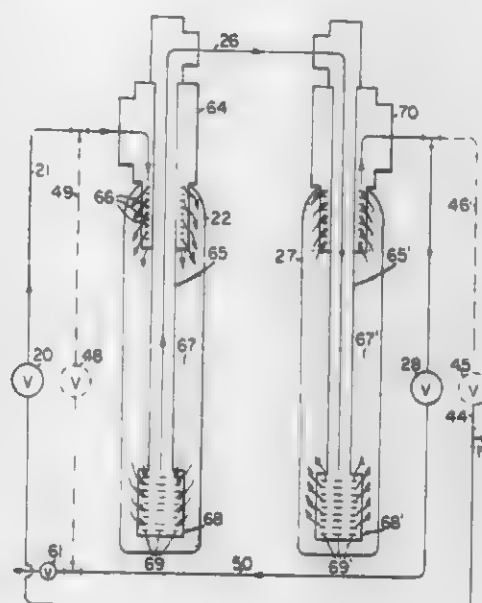
David J. Degenkolb, Mission Hills, and Fred J. Scobey, Hollywood, both of Calif., assignors to De luxe General, Incorporated, Los Angeles, Calif.

Continuation of Ser. No. 801,493, May 13, 1977, abandoned, which is a division of Ser. No. 764,669, Feb. 1, 1977, Pat. No. 4,137,290. This application Sep. 25, 1978, Ser. No. 945,652

Int. Cl.² B01D 15/04, 15/06; B01J 1/02

U.S. Cl. 210-264

9 Claims



3. Apparatus for recovering a heavy metal ion and a coagulant from a dilute aqueous solution, comprising:

- (a) a pair of interconnected closed ion-exchange vessels (22,27),
- (b) exclusively ion-absorbing material (67,67') in each of said vessels,
- (c) centrally disposed means to pass (21,26,47) said dilute aqueous solution serially through said vessels;
- (1) a first part of said means to pass extending through the tops of said vessels and having a large plurality of separate groups of contiguously disposed circumferentially aligned circularly symmetrical slit orifices (68) at the bottoms of said vessels to cause upward physical agitation of said ion-absorbing material to expand said ion-absorbing material to the top of said ion-exchange vessel when the flow is outward from said orifices (68) at the bottom of a said vessels,
- (2) a second part of said means to pass surrounding said first part at the tops of said vessels and having a large plurality of separate groups of contiguously disposed circumferentially aligned circularly symmetrical slit orifices (66) at the tops of said vessels,
- (3) said orifices in said means to pass at the bottom and the

top of said vessels being uniformly disposed at one radius approximately half-way between the walls of said vessels and said first and second means to pass, to directly disperse a distributed flow of said aqueous solution from said means to pass radially into said ion-absorbing material,

- (d) a plurality of valve means (20,28,45,48) separately disposed in said means to pass only said solution,
- (e) half of said plurality of valve means to automatically actuate (52,53) all of said plurality of valve means after the passage of an interval of time of approximately an hour, so as to reverse the direction of flow of further said solution through said vessels to prevent clogging of said ion-absorbing material by said coagulant, and
- (f) means to time (51) to successively actuate the half plurality of said valve means to actuate said valve means after the passage of each successive said interval of time.

4,228,014

APPARATUS FOR DESALINATION AND PURIFICATION OF WATER BY REVERSE OSMOSIS AND ULTRAFILTRATION

Hans Timm; Sören Fries, both of Geestbacht, and Axel Wenzlaff, Escheburg, all of Fed. Rep. of Germany, assignors to Gesellschaft für Kernenergieverwertung in Schiffbau und Schifffahrt mbH, Geestbacht, Fed. Rep. of Germany

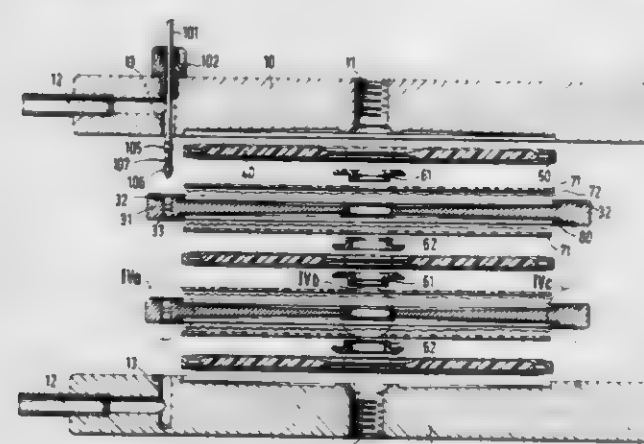
Filed Jan. 22, 1979, Ser. No. 5,221

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802780

Int. Cl.² B01D 13/00

U.S. Cl. 210-321 R

13 Claims



1. An apparatus for the desalination and purification of water by reverse osmosis and ultrafiltration in a closed system which is stationary and continuously operable to hold back salt as well as suitable for high pressure required for economically gaining useful water, which comprises in combination:

- two end plates respectively provided with a peripheral axially directed bore, at least one of which passes entirely through the pertaining end plate;
- dish-like carrier plates and water guide plates which are alternately stacked one above the other and are held together between said end plates to form a stack held together at the peripheral region of all of said plates, said stack having a continuous central axially oriented aperture for the introduction of untreated water through an inlet at one end of said stack, said carrier plates sealingly engaging one another by means of thickened marginal portions thereof located radially outwardly of the peripheral edges of said guide plates, said marginal portions being respectively provided with a continuous axially directed bore, the respective bores of said marginal portions being aligned with one another and with the bores of said end plates to provide an outlet for permeate;
- annular diaphragms respectively arranged between respective carrier plates and guide plates; said diaphragms being water permeable and being acted upon exclusively by pressure of untreated water which is introduced; and
- filter layers respectively located between respective dia-

phragms and carrier plates to allow untreated water to flow over said diaphragms in a radial direction on that side of said diaphragms opposite said filter layers, and to allow permeate to be drawn off on that side of said diaphragms adjacent said filter layers, said marginal portions of said carrier plates being provided with gaps respectively provided on their axially directed surfaces radially inwardly of said marginal portion bores so that said last mentioned bores communicate with the pertaining filter layers.

4,228,015

PLASMA TREATMENT APPARATUS

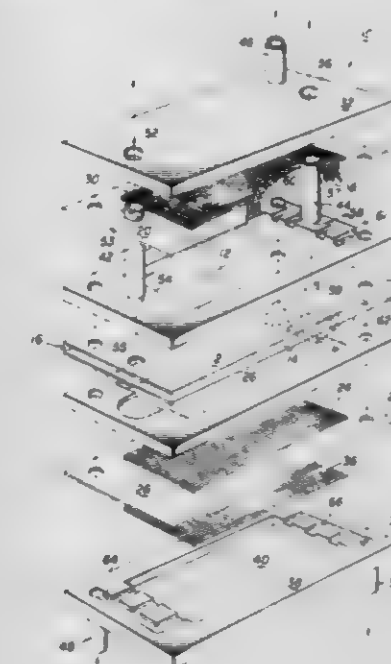
James H. De Vries, McHenry, and Gaylord L. Berry, Mundell, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 29, 1979, Ser. No. 7,487

Int. Cl.² B01D 13/00

U.S. Cl. 210-321 R

13 Claims



1. Plasma treatment apparatus in which whole blood is filtered through a microporous membrane having a pore size between 0.1 micron and 2 microns thereby providing a plasma filtrate, the improvement comprising, in combination:

- a filter cell assembly including said microporous membrane;
- said filter cell assembly having a membrane support member and a treatment membrane supported by said membrane support member;
- a plasma treatment agent sandwiched between said membrane support member and said treatment membrane;
- said treatment membrane being spaced from said microporous membrane to form a plasma chamber therebetween;
- said treatment membrane being operable to permit transfer between said treatment agent and the plasma in said plasma chamber;
- means for introducing whole blood to one side of said microporous membrane; and
- means for withdrawing treated plasma from said plasma chamber.

4,228,016

SECONDARY RECOVERY PROCESS

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,983

Int. Cl.² E21B 43/22

U.S. Cl. 252-8.55 D

8 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

- (A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a water-soluble copolymer of acrylamide-vinyl sulfonic acid or the sodium, potassium or ammonium salt thereof alkoxylated with about 2 to about 100 weight percent of 2,3-epoxy-1-propanol, wherein in the said water-soluble copolymer the weight percent of the acrylamide units is about 65 to about 95 with the balance being units of vinyl sulfonic acid or the sodium, potassium or ammonium salt thereof and wherein the number average molecular weight of the said water-soluble copolymer is from about 10,000 to about 2,000,000,
- (B) forcing the said fluid through the formation, and
- (C) recovering hydrocarbons through the production well.

4,228,017

SECONDARY RECOVERY PROCESS

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,984

Int. Cl.² E21B 43/22

U.S. Cl. 252—8.55 D

10 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:
- (A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a water-soluble copolymer comprising repeating units of (a) vinyl sulfonic acid alkoxylated with about 2 to about 100 weight percent of 2,3-epoxy-1-propanol and (b) acrylamide, wherein in the said water-soluble copolymer the weight percent of the alkoxylated vinyl sulfonic acid units is about 5 to about 35 with the balance being units of acrylamide and wherein the number average molecular weight of the said water-soluble copolymer is from about 10,000 to about 2,000,000,
- (B) forcing the said fluid through the formation, and
- (C) recovering hydrocarbons through the production well.

4,228,018

SECONDARY RECOVERY PROCESS

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,986

Int. Cl.² E21B 43/22

U.S. Cl. 252—8.55 D

10 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:
- (A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a water-soluble copolymer of acrylamide-vinyl sulfonic acid or the sodium, potassium or ammonium salt thereof alkoxylated with a material selected from the group consisting of (a) ethylene oxide and (b) a mixture of ethylene oxide and propylene oxide, wherein in the said mixture the weight percent of ethylene oxide is about 60 to about 95, wherein in the said water-soluble copolymer the weight percent of the acrylamide units is about 65 to about 95 with the balance being units of vinyl sulfonic acid or the sodium, potassium or ammonium salt thereof and wherein the number average molecular weight of the said water-soluble copolymer is from about 10,000 to about 2,000,000,
- (B) forcing the said fluid through the formation, and
- (C) recovering hydrocarbons through the production well.

4,228,019

SECONDARY RECOVERY PROCESS

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Jun. 19, 1978, Ser. No. 917,051

Int. Cl.² E21B 43/22

U.S. Cl. 252—8.55 D

10 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:
- (a) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a water-soluble copolymer comprising repeating units of (a) vinyl sulfonic acid alkoxylated with about 2 to about 100 weight percent of a material selected from the group consisting of (I) ethylene oxide and (II) a mixture of ethylene oxide and propylene oxide wherein in the said mixture the weight percent of ethylene oxide is about 60 to about 95 and (b) acrylamide, wherein in the said water-soluble copolymer the weight percent of the alkoxylated vinyl sulfonic acid units is about 5 to about 35 with the balance being units of acrylamide and wherein the number average molecular weight of the said water-soluble copolymer is from about 10,000 to about 2,000,000.

4,228,020

LUBRICATING OIL COMPOSITION

Andrew G. Papay, Manchester, Mo., assignor to Edwin Cooper, Inc., St. Louis, Mo.

Filed May 4, 1979, Ser. No. 36,074

Int. Cl.² C10M 1/46, 1/10, 3/40, 3/02

U.S. Cl. 252—29

4 Claims

1. A lubricating composition suitable for use in the crankcase of an internal combustion engine, said composition comprising a major amount of a lubricating oil and a minor friction-reducing amount of the combination of graphite and a di-lower alkyl C₆₋₁₆ hydrocarbyl phosphonate.

4,228,021

CHLORO-SULPHUR ADDITIVE

Alain L. P. Lenack, Mont-Saint-Aignan, France, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 801,027, May 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 639,865, Dec. 11, 1975, abandoned. This application Jan. 8, 1979, Ser. No. 1,411 Claims priority, application United Kingdom, Dec. 17, 1974, 54398/74

Int. Cl.² C10M 1/46, 1/38

U.S. Cl. 252—32.7 R

17 Claims

1. An extreme pressure lubricating composition comprising a major proportion of lubricating oil, about 0.1 to 10 wt. % of an extreme pressure compound of the formula:



wherein R is an alkyl radical containing 4 to 30 carbon atoms, said extreme pressure compound tending to liberate HCl; and about 0.5 to 5% by weight, based on the weight of said extreme pressure compound, of an oil soluble basic stabilizer which acts as an acid trap by reacting with said HCl and inhibits liberation of chlorine and sulphur from said extreme pressure compound at temperatures below 200° C.

6. A composition according to claim 1, containing in addition, about 0.5 to 10% by weight, based on the weight of said extreme pressure compound, of an anti-rust agent which is soluble in the oil and which differs from said stabilizer.

4,228,022

SULFURIZED ALKYLPHENOL-OLEFIN REACTION PRODUCT LUBRICATING OIL ADDITIVE

Warren Lowe, El Cerrito, and Thomas V. Liston, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 53,114

Int. Cl.² C10M 1/54

U.S. Cl. 252—42.7

7 Claims

1. An additive composition for use in crankcase lubricating oils comprising the reaction product of: (a) an alkylphenol; (b) sulfur; (c) an alkali or alkaline earth metal salt and (d) an olefin; said reaction product being formed under reaction conditions suitable to form a reaction product containing less than 1.0 weight percent free-sulfur.
6. A lubricating oil additive concentrate which comprises from 90-10 percent weight of an oil of lubricating viscosity and 10-90 percent weight of the composition of claim 1.
7. A lubricating oil composition of claim 1, comprising an oil of lubricating viscosity and an antioxidant amount of the composition of claim 1.

4,228,023

PARAFFINIC INSULATING OILS CONTAINING A DIARYLALKANE

Johann G. D. Schulz, Pittsburgh; Anatoli Onopchenko, Monroeville, and William A. Kofke, Irwin, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 25, 1978, Ser. No. 954,592

Int. Cl.² H01B 3/22

U.S. Cl. 252—63

4 Claims

1. A novel insulating oil composition comprising a hydrocarbon insulating oil, wherein said hydrocarbon insulating oil is a paraffinic oil obtained from the oligomerization of 1-olefins having from six to 14 carbon atoms, and from about five to about 20 weight percent of a diarylalkane selected from the group consisting of 1,1-di(4-methylphenyl) ethane and 1,1-di(3,4-dimethylphenyl) ethane.

4,228,024

INSULATING OIL COMPOSITIONS CONTAINING A FRACTION DERIVED FROM THE ALKYLATION PRODUCT OF BENZENE WITH ETHYLENE

Johann G. D. Schulz, Pittsburgh; Anatoli Onopchenko, Monroeville, and William A. Kofke, Irwin, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 25, 1978, Ser. No. 954,593

Int. Cl.² H01B 3/22

U.S. Cl. 252—63

7 Claims

1. A novel insulating oil composition comprising a major amount of a naphthenic hydrocarbon insulating oil and a minor amount of a product obtained as a result of a process which comprises reacting benzene with ethylene in the presence of an alkylation catalyst to obtain a reaction mixture containing largely unreacted benzene, ethylbenzene, polyethylbenzenes, 1,1-diphenylethane and heavier material, separating at least benzene, ethylbenzene and polyethylbenzenes from said reaction mixture and thereafter recovering from said heavier material a fraction whose boiling points fall within a temperature range of about 255° to about 420° C. as said product.

4,228,025

AGGLOMERATION PROCESS FOR MAKING GRANULAR DETERGENTS

Ronald L. Jacobsen, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 29, 1979, Ser. No. 53,574

Int. Cl.² C11D 3/075, 3/08, 3/395, 11/00

U.S. Cl. 252—99

7 Claims

1. A process for preparing an agglomerated granular detergent composition comprising at least about 15% sodium tripolyphosphate by weight, from about 50% to about 99.5% by weight of inorganic materials selected from the group con-

sisting of alkali metal polyphosphates, orthophosphates, chlorinated orthophosphates, silicates, carbonates, sulfates and mixtures thereof and from 0% to about 20% of a surfactant, in which the agglomerating agent comprises an alkali metal silicate solution having a water content of from about 50% to about 75%, an average SiO₂:M₂O weight ratio of from about 1.6 to about 3.3, M being an alkali metal, said process comprising:

(a) the addition of the agglomerating agent to a first portion of the sodium tripolyphosphate consisting of from about 50% to about 95% of the total sodium tripolyphosphate in the detergent composition, said first portion having a particle size distribution such that at least 30% by weight is retained on a 100 Tyler mesh screen, and

(b) the addition of a second portion of sodium tripolyphosphate to a mixture of the first portion of sodium tripolyphosphate and the agglomerating agent after at least about 30% of the agglomerating agent has been added to the first portion of sodium tripolyphosphate.

4,228,026

3-HYDROXY-1-(2,6,6-TRIMETHYL-1,3-CYCLOHEXADIEN-1-YL)-1-BUTANONE IN DETERGENTS

Braja D. Mookherjee, Holmdel; Richard A. Wilson, Westfield; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

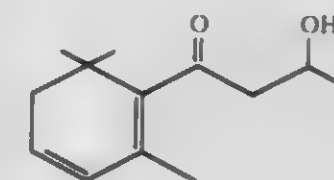
Continuation-in-part of Ser. No. 942,573, May 17, 1978, abandoned, which is a division of Ser. No. 872,975, Jan. 27, 1978. This application May 15, 1979, Ser. No. 39,116

Int. Cl.² C11D 3/50, 9/44

U.S. Cl. 252—174.11

2 Claims

1. A process for augmenting or enhancing the aroma of a solid or liquid detergent which consists essentially of adding thereto from 0.005% up to 3.0% by weight of said detergent of 3-hydroxy-1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-1-butanone having the structure:



4,228,027

DETERGENT COMPOSITIONS

Vincent Lamberti, Upper Saddle River, and Mark D. Konort, Haworth, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

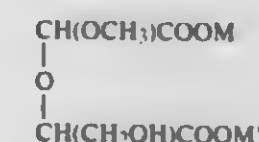
Division of Ser. No. 770,334, Feb. 22, 1977, which is a division of Ser. No. 226,213, Feb. 14, 1972, Pat. No. 4,025,450, which is a continuation-in-part of Ser. No. 187,113, Oct. 6, 1971, abandoned. This application Oct. 23, 1978, Ser. No. 954,023

Int. Cl.² C11D 3/20

U.S. Cl. 252—174.19

4 Claims

1. A detergent composition consisting essentially of a water-soluble organic detergent compound selected from the group consisting of anionic, nonionic, and ampholytic detergent compounds and a detergent builder compound of the general formula:



wherein M and M' are selected from the group consisting of

alkali metal, ammonium, methyl ammonium (tetramethyl) ammonium, normal monoethanolamine, diethanolamine, triethanolamine salts, normal monoisopropanol amine salts, normal diisopropanolamine salts and normal morpholine salts, the weight ratio of detergent builder to detergent compound varying from about 1:20 to about 50:1.

4,228,028

BALL POINT PEN, INK, AND ITS ERADICATOR SYSTEM

An-Chung R. Lin, Fairport, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 784,653, Apr. 4, 1977, Pat. No. 4,156,657.

This application Nov. 13, 1978, Ser. No. 960,359

Int. Cl.¹ B43K 27/12, 7/00; C09D 11/18

U.S. Cl. 252-188.3 R

1 Claim

1. An eradicator for dye based ink which remains colored in acid solution consisting of:

an amount of a hydroxide base effective to neutralize the acid of said ink,

an amount of an amine which amine is selected from the group comprising butyl amine, 3-methoxy propylamine, triethylene tetramine, ethanol amine, morpholine, benzyl amine or other aliphatic-like primary amines, effective to act as a decolorizing agent for the dye to form a colorless product, and a hydroxy solvent.

4,228,029

LIQUID CRYSTALLINE COMPOSITIONS

Maged A. Osman, Zurich, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 24, 1979, Ser. No. 6,101

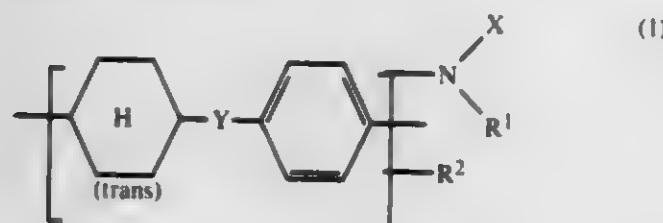
Claims priority, application Switzerland, Jan. 30, 1978, 983/78

Int. Cl.¹ G02F 1/13; C09K 3/34; C07C 69/74, 69/76, 121/46, 121/60

U.S. Cl. 252-299

11 Claims

1. A liquid crystalline composition, especially for liquid crystal displays with a twisted nematic phase, comprising one liquid crystalline or potentially liquid crystalline compound and at least one compound of the formula (I)



wherein X is a hydrogen atom, a formyl group or a methyl group; R¹ is a C₁-C₁₀ alkyl group, R² is selected from the group consisting of C₁-C₁₀ alkyl radicals, C₁-C₁₀ alkoxy radicals, C₂-C₁₀ acyloxy radicals, nitrile, nitro, methylsulfonyl and trifluoromethyl; and Y is a single bond between the cyclohexyl and aryl radicals or Y is a carbonyloxy group or a p-phenylene residue.

4,228,030

LIQUID CRYSTAL COMPOSITIONS

Herbert S. Cole, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 28, 1979, Ser. No. 15,771

Int. Cl.¹ C09K 3/34; G02F 1/13

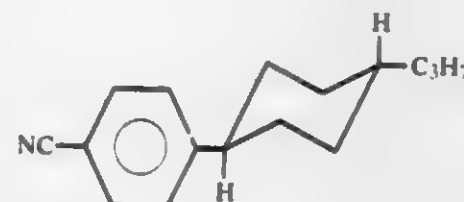
U.S. Cl. 252-299

4 Claims

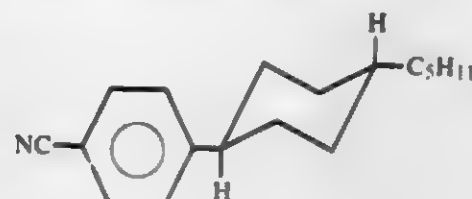
1. A liquid crystal composition with a solid-to-nematic transition temperature of at most 0° C. and a nematic-to-isotropic transition temperature of at least 85° C. consisting of:

about 85% to about 100%, by weight, of a liquid crystal host composition consisting of about 83% to about 90%, by weight, of a 4-part liquid crystal mixture consisting of about 21% to about 24% by weight of trans-4-n-Propyl-

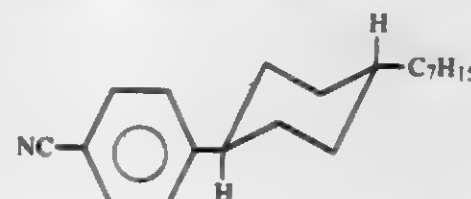
(4-cyanophenyl)-cyclohexane, having a chemical formula



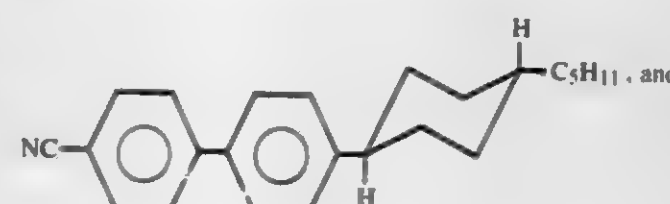
about 32% to about 36%, by weight, of trans-4-n-Pentyl-(4-cyanophenyl)-cyclohexane, having a chemical formula



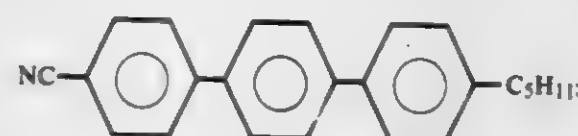
about 22% to about 25%, by weight, of trans-4-n-Heptyl-(4-cyanophenyl)-cyclohexane, having a chemical formula



and about 15% to about 25%, by weight, of trans-4-n-Pentyl-(4'-cyanobiphenyl-4)-cyclohexane, having a chemical formula



about 10% to about 17%, by weight, of 4-n-Pentyl-4'-cyano-p-terphenyl, having the chemical formula



about 0% to about 5%, by weight, of an optically-active material dissolved in said host composition; and
about 0% to about 10%, by weight, of a dichroic dye dissolved in said host composition.

4,228,031

METHOD OF MAKING IMPERMEABLE MICROCAPSULES

Hiroshi Iwasaki, Kawanishi; Shigeo Okamoto, Amagasaki, and Mitsuru Kondo, Kawanishi, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed May 4, 1978, Ser. No. 902,882

Claims priority, application Japan, May 4, 1977, 52-51488

Int. Cl.¹ B01J 13/02

U.S. Cl. 252-316

5 Claims

1. A method for making impermeable microcapsules comprising the steps of preparing coacervates by complex coacervation between a cationic polyamine-epoxy resin and an an-

ionic colloid material, curing by heating to form microcapsules each having a capsule wall of irreversibly hardened and water



insoluble polyamine-epoxy resin, preparing an aqueous dispersion of said microcapsules and adding to said aqueous dispersion an electrolyte to dehydrate said microcapsules.

4,228,032

METHOD OF STORING BLOOD AND A BLOOD STORAGE BAG THEREFORE

Thomas D. Talcott, Santa Barbara, Calif., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 821,668, Aug. 4, 1977, Pat. No. 4,162,676.

This application Nov. 6, 1978, Ser. No. 958,306

Int. Cl.¹ A61M 5/00; A61J 1/00

U.S. Cl. 252-400 R

5 Claims

1. A composition useful for prolonging the storage of blood which consists of a cured silicone rubber which has been compounded in its uncured state with Ca(OH)₂.

4,228,033

METHOD FOR REACTIVATION OF PLATINUM GROUP METAL CATALYST WITH AQUEOUS ALKALINE AND/OR REDUCING SOLUTIONS

Kiaki Yamauchi; Yukihiko Morimoto; Toshikazu Sasaki, and Katsumi Nakai, all of Osaka, Japan, assignors to Osaka Gas Company, Limited, Osaka, Japan

Division of Ser. No. 972,868, Dec. 26, 1978, which is a continuation-in-part of Ser. No. 861,521, Dec. 16, 1977, Pat. No. 4,147,660. This application Jul. 18, 1979, Ser. No. 58,436

Claims priority, application Japan, Dec. 22, 1976, 51-155512; Feb. 15, 1977, 52-15635; Apr. 25, 1977, 52-48285; Apr. 25, 1977, 52-48286; Apr. 27, 1977, 52-49507

Int. Cl.¹ B01J 23/96, 21/20

U.S. Cl. 252-412

11 Claims

1. A method for reactivation of a platinum group metal catalyst which comprises contacting a platinum group metal catalyst lowered in the catalytic activity as the result of having been used for partial combustion of hydrocarbons or alkanols with an aqueous solution of an inorganic alkaline compound of alkali metal or alkaline earth metal or mixtures thereof in a concentration of 0.001 to 10 N at a temperature of 5° to 250° C. until the catalytic activity of the catalyst is substantially recovered.

6. A method for reactivation of a platinum group metal catalyst which comprises contacting a platinum group metal catalyst lowered in the catalytic activity as the result of having been used for partial combustion of hydrocarbons or alkanols with an aqueous solution of a reducing substance in a concentration of 0.01 to 10% by weight at a temperature of 5° to 250° C. until the catalytic activity of the catalyst is substantially recovered.

11. A method for reactivation of a platinum group metal catalyst which comprises contacting a platinum group metal catalyst lowered in the catalytic activity as the result of having been used for partial combustion of hydrocarbons or alkanols with an aqueous solution of a reducing substance in a concentration of 0.01 to 10% by weight at a temperature of 5° to 250° C. for a period of 3 minutes to 80 hours and then treating the catalyst with an aqueous solution of an inorganic alkaline compound of alkali metal or alkaline earth metal or mixtures thereof in a concentration of 0.001 to 10 N at a temperature of

4,228,034 CATALYTICALLY ACTIVE MASS FOR THE EXCHANGE OF HYDROGEN ISOTOPES BETWEEN STREAMS OF GASEOUS HYDROGEN AND LIQUID WATER

John P. Butler; John H. Rolston; James den Hartog, all of Deep River; Fred W. R. Molson, Petawawa, and John W. Goodale, Deep River, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

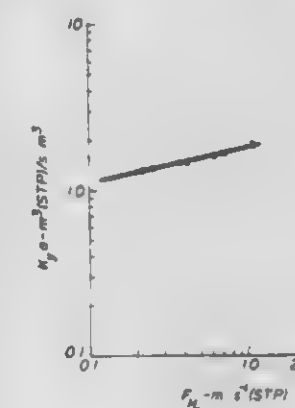
Continuation-in-part of Ser. No. 877,466, Feb. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 733,422, Oct. 18, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 959,712

Claims priority, application Canada, Jun. 25, 1976, 255751

Int. Cl.¹ B01J 31/02

U.S. Cl. 252-430

6 Claims



1. A catalytically active mass for the exchange of hydrogen isotopes between streams of gaseous hydrogen and liquid water, comprising:

- a porous matrix of polytetrafluoroethylene, and
- exposed, partially platinized high surface area carbon particles dispersed in the porous matrix of polytetrafluoroethylene, and wherein the improvement comprises:
- the exposed, partially platinized high surface area carbon particles are dispersed throughout the whole of the porous matrix of polytetrafluoroethylene in the weight ratio 1:1 to 3:1 of polytetrafluoroethylene to partially platinized high surface area carbon particles.

4,228,035

IRRADIATED POLYMER SUPPORTED METAL CATALYST

Harry B. Gray, Pasadena, Calif., and Claude C. Frazier, Memphis, Tenn., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 3, 1976, Ser. No. 682,520

Int. Cl.¹ C08F 31/22

U.S. Cl. 252-431 R

5 Claims

1. A method of preparing an olefin addition catalyst comprising the steps of:

- forming a solution of a low valent transition metal coordination compound in organic solvent;
- irradiating the solution with ultraviolet radiation to form photochemically generated transition metal species;
- combining an insoluble organic polymeric support having ligands for said metal with said species; and
- attaching said photochemically generated species to said ligands in an amount of at least 0.1% by weight of metal on said polymeric support.

4,228,036

ALUMINA-ALUMINUM PHOSPHATE-SILICA-ZEOLITE CATALYST

Harold E. Swift, Gibsonia; John J. Stanulonis, Pittsburgh, and Elizabeth H. Reynolds, Verona, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 926,886, Jul. 21, 1978, Pat. No. 4,158,621. This application Jun. 18, 1979, Ser. No. 49,358

Int. Cl.² B01J 27/14

U.S. Cl. 252-437

8 Claims

1. A catalyst for increasing the gasoline yield and quality in a petroleum cracking reaction under catalytic cracking conditions comprising an alumina-aluminum phosphate-silica matrix characterized after calcination at 500° C. for 16 hours as amorphous, and having an average pore radius of from about 10 Å to about 200 Å; a surface area ranging from about 50 m²/g to about 300 m²/g; a pore volume of from about 0.1 cc/g to about 1.2 cc/g; and wherein the alumina-aluminum phosphate-silica matrix has a mole percent ratio of from about 15:80:5 to about 60:10:30 and wherein said matrix retains at least 70% of its surface area when the matrix is additionally calcined at a temperature up to about 900° C. for about 16 hours; said matrix being composited with from about 5 to about 50 weight percent of a zeolite having cracking activity.

4,228,037

SPHERICAL ACTIVATED CARBON HAVING LOW DUSTING PROPERTY AND HIGH PHYSICAL STRENGTH AND PROCESS FOR PRODUCING THE SAME

Kuniaki Hino, Tokyo; Yasuo Uehara, Iruma; Yasushi Nishimura, Ichigayadai; Kazuhiro Watanabe, Ichihara, and Yoshio Okada, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1979, Ser. No. 6,495

Claims priority, application Japan, Feb. 6, 1978, 53/12139

Int. Cl.² C01B 31/08, 31/10; B01J 21/18

U.S. Cl. 252-444

11 Claims

1. A process for producing spherical particles of activated carbon having a low susceptibility to dusting, comprising the steps of:

heating while continuously stirring a mixture of a pitch having a softening point of 50° to 350° C., a carbon content of 80 to 97%, an atomic ratio of hydrogen to carbon of 0.3 to 2.0, and a content of nitrobenzene insoluble matter of below 60%, at least one aromatic compound miscible with said pitch and 0.1 to 10% by weight based on the amount of said pitch of at least one polymer or one copolymer having the chain hydrocarbon moiety as a major component thereof, thereby liquefying homogeneously said mixture;

dispersing said liquefied mixture into an aqueous solution containing a suspending agent, thereby obtaining microspheres of said mixture dispersed in said solution; and subjecting the thus obtained microspheres to a series of treatments of removal of said aromatic compound, infusibilization, carbonization and activation.

9. The spherical particles of activated carbon produced by the process of claim 1, having the following properties:

0.1 to 1.5 mm in diameter;
0.5 to 1.5 g/ml of density of individual particles;
800 to 1600 m²/g of specific surface area;
about 0.3 ml/g, as measured in the range of micropore radius of below 100 Å, of micropore volume and also 0.5 ml/g, as measured in the range of micropore radius between 100 and 100,000 Å; and
below 0.5% by weight of ash content.

4,228,038

METHOD FOR THE PREPARATION OF CATALYST OF VANADIUM PENTOXIDE ON SUBSTRATE OF TITANIUM DIOXIDE

Peter König, Budapest, Hungary, assignor to Tioxide Group Limited, Billingham, England

Filed Sep. 14, 1979, Ser. No. 75,410

Claims priority, application United Kingdom, Jul. 24, 1979, 25801/79

Int. Cl.² B01J 21/06, 23/22

U.S. Cl. 252-461

10 Claims

1. A method for the manufacture of a selective oxidation catalyst which comprises the following process stages:

- (1) heating a particulate catalyst substrate comprising titanium dioxide in an atmosphere containing water vapour
- (2) treating the substrate with vanadium oxytrichloride in vapour form
- (3) heating the treated substrate until the evolution of hydrogen chloride has ceased and to complete the conversion of the deposited vanadium compound to vanadium pentoxide
- (4) repeating the process stages 1, 2, and 3 at least a further three times, and
- (5) finally allowing the treated substrate comprising the selective oxidation catalyst to cool.

4,228,039

CATALYTIC COMPOSITION USED IN PURIFYING GASEOUS EFFLUENTS POLLUTED BY NITROGEN OXIDES AND PROCESS FOR PREPARING THE COMPOSITION

Michel Senes, La Baule; Yannick Le Goff; Jean F. Gourdier, both of Saint Nazaire, and Jacques Quibel, Maisons Laffitte, all of France, assignors to Societe Chimique de la Grand e Paroisse, Paris, France

Filed Dec. 27, 1978, Ser. No. 973,626

Claims priority, application France, Dec. 28, 1977, 77 39422

Int. Cl.² B01J 21/04, 23/10, 23/84, 23/86

U.S. Cl. 252-462

15 Claims

1. A catalytic composition obtained by coprecipitation, used in purification of gaseous effluents polluted by nitrogen oxides, comprising as active elements, iron and chromium in oxide form associated with alumina and, optionally, a promoter selected from the rare earth oxides, taken separately or in combination, and crude platinum metals, in which the content of rare earth oxides, when present, is between 0.1 and 1% by weight in relation to the active material; wherein the specific surface of said composition is between 50 and 300 m²/g and the dimensions of the pores between 40 and 50,000 Å.

4,228,040

LITHIUM- OR MAGNESIUM-PROMOTED ZINC TITANATE CATALYST FOR DEHYDROGENATION OF HYDROCARBONS

Brent J. Bertus, and Darrell W. Walker, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 844,931, Oct. 27, 1977, Pat. No. 4,176,140, which is a continuation-in-part of Ser. No. 743,193, Nov. 19, 1976, abandoned. This application Jun. 13, 1979, Ser. No. 48,103

Int. Cl.² B01J 21/06, 21/10, 23/04, 23/06

U.S. Cl. 252-475

7 Claims

1. A catalyst composition consisting essentially of zinc, titanium, a metal selected from the group consisting of lithium

and magnesium, and sufficient oxygen to satisfy the valence requirements of said zinc, said titanium and said lithium or magnesium prepared by intimately mixing zinc oxide, titanium dioxide, and a compound of said metal and thereafter calcining the resulting mixture in air at a temperature in the range of 650° to 1050° C.

4,228,041

Patent Not Issued For This Number

4,228,042

BIODEGRADABLE CATIONIC SURFACE-ACTIVE AGENTS CONTAINING ESTER OR AMIDE AND POLYALKOXY GROUP

James C. Letton, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

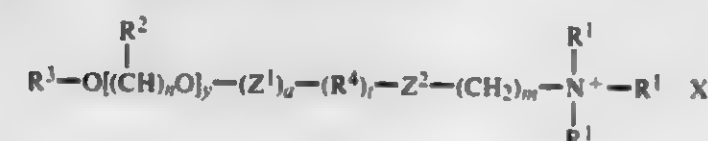
Continuation-in-part of Ser. No. 811,219, Jun. 29, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,343

Int. Cl.² C11D 1/62, 1/835; C07C 101/18

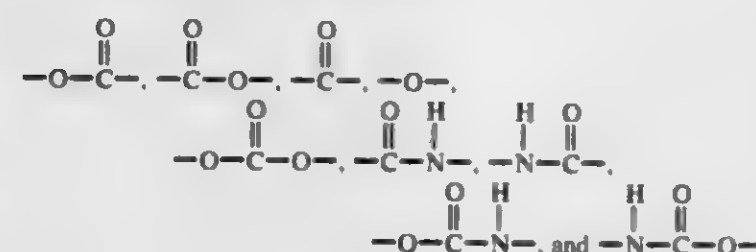
U.S. Cl. 252-528

50 Claims

1. A compound having the formula



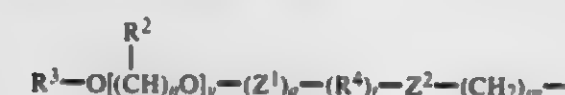
wherein each R¹ is C₁ to C₄ alkyl or hydroxyalkyl; each R² is either hydrogen or C₁ to C₃ alkyl; R³ is C₄ to C₃₀ straight or branched chain alkyl or alkenyl; R⁴ is C₁ to C₁₀ alkylene or alkenylene; n is from 2 to 4; y is from 1 to 20; a is 0 or 1, and t is 0 to 1, but t must be 1 when a is 1; m is from 1 to 5; Z² is selected from the group consisting of



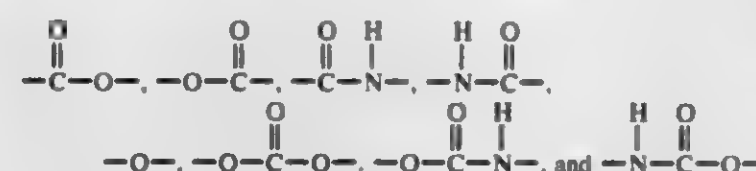
Z¹ is selected from the group consisting of



said selections being made so that



is an alkyl or alkenyl group which can be interrupted by only structures selected from the group consisting of:



and wherein at least one of said Z¹ or Z² groups is selected from the group consisting of ester, reverse ester, amide, and reverse amide; and X is an anion which makes the surfactant at least water-dispersible.

26. A detergent composition containing from 0 to about 20% of phosphate materials, and having a pH in the laundry solution of not greater than about 11, comprising from about 5 to about 100% of a surfactant mixture consisting essentially of

(a) a biodegradable nonionic surfactant having the formula R(OC₂H₄)_nOH wherein R is a primary or secondary alkyl chain of from about 8 to about 22 carbon atoms and n is an average of from about 2 to about 12, having an HLB of from about 5 to about 17; and

(b) the cationic surfactant of claim 1; said composition having a pH of at least about 6.5 in the aqueous laundry solution, and wherein the ratio of said nonionic to said cationic component is in the range of from about 1:1 to about 100:1.

4,228,043

LIQUID DETERGENT COMPOSITION

Guido C. van den Brom, Nieuw-Beljeerland, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 934,739

Claims priority, application United Kingdom, Aug. 22, 1977, 35089/77

Int. Cl.² C11D 3/06, 3/30, 11/04, 17/08

U.S. Cl. 252-529

2 Claims

1. In a process for the preparation of an aqueous built liquid detergent composition containing 2 to 20% by weight of an active detergent, at least about 12% by weight of sodium tripolyphosphate, at least 2% by weight of an alkalimetal orthophosphate in which the alkali metal orthophosphate is produced in situ by neutralizing orthophosphoric acid by a suitable base, the sum of the two phosphate builders being about 14% to about 35% by weight, and a hydrotrope or stabilizing system, the improvement which comprises the step of adding from 0.5% to 5% by weight of a mono-, di- or trialkanolamine, wherein the alkanol constituent is ethanol, propanol or isopropanol.

4,228,044

LAUNDRY DETERGENT COMPOSITIONS HAVING ENHANCED PARTICULATE SOIL REMOVAL AND ANTIREDEPOSITION PERFORMANCE

Cushman M. Cambre, Blue Ash, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 811,419, Jun. 29, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,340

Int. Cl.² C11D 1/38, 5/26, 7/32

U.S. Cl. 252-547

32 Claims

1. A detergent composition, which contains from 0 to about 20% phosphate materials, consisting essentially of from about 5% to about 100% of a surfactant mixture consisting essentially of

(a) a biodegradable nonionic surfactant having the formula R(OC₂H₄)_nOH wherein R is a primary or secondary alkyl chain of from about 8 to about 22 carbon atoms and n is an average of from about 2 to about 12, having an HLB of from about 5 to about 17;

(b) a cationic surfactant having the formula R_m¹R_x²Y_LZ wherein each R¹ is an organic group containing a straight or branched alkyl or alkenyl group optionally substituted with up to three phenyl or hydroxy groups and optionally

amount of said at least one addition agent and thereby securing said at least one addition agent to said surfaces as a surface coating.

(1) said amount being smaller than the weight of said particles;

(c) cooling the coated particles below said temperature; and
(d) thereafter, substantially uniformly dispersing the coated particles in said basic component; wherein said at least one addition agent includes an elastomer dispersed as a latex in an aqueous medium, a portion of the water in said latex being retained in the coated particles, and the remainder of said water being evaporated from the coated particles prior to said dispersing.

4,228,053

CONCRETE PREPARATION WITH AQUEOUS SOLUTION OF PRODUCT FROM POLYETHER WITH POLYMETHYLENE POLYPHENYL POLYISOCYANATE
Alexander McLaughlin, Meriden; Reinhard H. Richter, North Haven, both of Conn., and Harold E. Reymore, Jr., Richmond, Va., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 849,859, Nov. 9, 1977, Pat. No. 4,143,014. This application Jan. 29, 1979, Ser. No. 7,588

Int. Cl.² C08L 75/08

U.S. Cl. 260—29.2 TN

10 Claims

1. An improved process for the preparation of concrete wherein the improvement comprises incorporating into the concrete-forming mixture from about 0.1 parts to about 10 parts by weight, based on the solids content thereof, per 100 parts by weight of concrete-forming mixture, of an aqueous solution which comprises the product obtained by admixing at a temperature in the range of 25° C. to 100° C. (i) a polyether glycol selected from the group consisting of polyethylene glycols having a molecular weight from 600 to 3000 and polypropylene glycols capped with from 15 to 85 percent by weight of ethylene oxide and having a molecular weight from 1000 to 3500, with (ii) a mixture of polymethylene polyphenyl polyisocyanates containing from 25 to 90 percent by weight of methylenebis(phenyl isocyanates) the remainder of said mixture being polymethylene polyphenyl polyisocyanates of functionality higher than 2.0, the proportions of (i) and (ii) being such that there are from 0.1 to 0.99 equivalents of polyol per equivalent of polyisocyanate, and, during the time when the product so obtained is completely soluble in water, admixing said product with water in a proportion of from 1 to 20 parts by weight of said product per 100 parts by weight of water to form a clear aqueous solution.

4,228,054

ORGANOPOLYSILOXANE LATEX COMPOSITIONS
Isao Ona, Sodegauramachi; Masaru Ozaki, and Katsutoshi Usui, both of Ichihara, all of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 12,995

Claims priority, application Japan, Apr. 5, 1978, 53/39119

Int. Cl.² C08L 83/06

U.S. Cl. 260—29.2 M

8 Claims

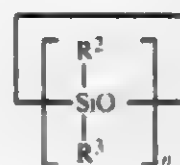
1. A composition of matter which is a mixture of an organopolysiloxane obtained by polymerizing a cyclic organopolysiloxane in the presence of

(A) an organofunctionaltrialkoxysilane;

(B) a surfactant and,

(C) water,

wherein the cyclic organopolysiloxane before polymerization has the general formula



wherein R² and R³ are independently selected from substituted or unsubstituted monovalent hydrocarbon radicals containing 1-10 carbon atoms and n has an average value of 3-6;

the organofunctionaltrialkoxysilane has the general formula



wherein R' is a monovalent hydrocarbon radical containing less than 7 carbon atoms or is selected from the group consisting of —CH₂OC₂H₅ or —CH₂CH₂OCH₃, R is a divalent hydrocarbon radical containing no more than 12 carbon atoms, X is an organofunctional radical selected from the group consisting of —NH₂, —CH₂CH₂NH₂, —(CH₂)₄NH₂, N-cyclohexylamino, N-phenylamino, N-aminoethylamine, N,N-dimethylamino, glycidyl, 3,4-epoxycyclohexyl, mercapto or methacrylo.

4,228,055

AQUEOUS COATING COMPOSITIONS CONTAINING FLATTING AGENTS AND LOW MOLECULAR WEIGHT POLYETHERS

David R. Wallace, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 6, 1978, Ser. No. 940,045

Int. Cl.² C08L 61/10, 61/28

U.S. Cl. 260—29.3

13 Claims

1. An aqueous coating composition useful for imparting to metal coil a low gloss pigmented protective finish having good metal marking resistance, said composition consisting essentially of:

(a) from about 10 percent to about 50 percent of a water-insoluble film-forming acrylic resin, vinyl resin or mixture thereof;

(b) from about 0.5 percent to about 7 percent of flattening agent, said agent being water-insoluble agglomerated particulate beads having a gross particle diameter of from about 1 micron to about 60 microns, wherein said beads consist essentially of the reaction product of urea, melamine or phenol and formaldehyde having a molar ratio of the urea to the formaldehyde of from about 1:1 to about 6:1, a molar ratio of the melamine to the formaldehyde of from about 1:1 to about 1:4, and a molar ratio of the phenol to the formaldehyde of from about 1:1 to about 1:3;

(c) from about 0.5 percent to about 7 percent of polyether having the formula H(OC_xH_{2x})_nOH, wherein x is from 2 to 4 and n is a number such that the polyether has a weight average molecular weight of from about 300 to about 700;

(d) from about 5 percent to about 40 percent of pigment; and
(e) the balance water.

4,228,056

SHAPED ARTICLES FROM INSOLUBLE HYDROGELS AND METHOD OF MANUFACTURING SAME
Artur Stoy, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 526,718, Nov. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 319,309, Dec. 29, 1972, abandoned, which is a continuation of Ser. No. 43,926, Jun. 5, 1970, abandoned. This application May 30, 1978, Ser. No. 910,449

Claims priority, application Czechoslovakia, Jun. 13, 1969, 4250-69

Int. Cl.² B29C 3/00; C08L 35/04

U.S. Cl. 260—29.6 AN

8 Claims

1. A method of manufacturing shaped articles from insoluble crosslinked hydrogels by polymerization-casting is a closed or open mold an initiated solution of about 20 to about 40% by weight of monomeric material consisting predominantly of acrylonitrile in absence of added crosslinking agent in an aqueous solution containing zinc chloride as the main component thereof, partially hydrolyzing the thus obtained insoluble crosslinked gel consisting of polyacrylonitrile or of acrylonitrile copolymer with up to 15% (mol) or other monomers copolymerizable with acrylonitrile in the presence of an acidic medium, said insoluble crosslinked gel being plasticized with said salt solution, and removing salts from the thus obtained partially hydrolyzed castings by treating them with a dilute aqueous solution of an electrolyte the anion of which forms a precipitate of the corresponding water-insoluble zinc compound in the solution surrounding said gel, until substantially all of the zinc ions have been removed from said gel, thereby forming a water-swelled crosslinked hydrogel shaped article.

8. A chemically and physically stable, insoluble but water-swelling crosslinked hydrogel shaped article produced by the process of claim 1.

4,228,057

GROUTING COMPOSITION CONTAINING ACRYLATE SALTS OF IRON

Kenneth G. Phillips, River Forest, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 12, 1979, Ser. No. 19,998

Int. Cl.² C08F 230/04, 4/30, 30/04, 222/02

U.S. Cl. 260—29.6 TA

1 Claim

1. An aqueous solution of
(a) acrylic acid;
(b) an iron acrylate from the group consisting of ferrous or ferric acrylates;
(c) methylene bis acrylamide; and
(d) a water-soluble polymerization catalyst which also is a reducing agent when the iron acrylate is ferric acrylate and an oxidizing agent when the iron acrylate is ferrous acrylate;
with the ratio of (a) to (b) being between 10:0.1 to 10:1.5, which solution forms a water-resistant gel.

4,228,058

FLAME RETARDANT LATEXES

Ramchandra K. Hulyalkar, Oakland, N.J., and Rodrigue V. Lauzon, Seabrook, Tex., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 840,945, Oct. 11, 1977, abandoned. This application Jul. 3, 1978, Ser. No. 921,377

Int. Cl.² C09D 3/74, 3/76, 5/02, 5/18

U.S. Cl. 260—29.7 UA

20 Claims

1. A flame retardant latex base consisting essentially of a blend of two separately polymerized aqueous latexes each of which has a polymer content of at least about 35% by weight which in the first latex is a copolymer of which about 70 to 92% by weight is derived from vinylidene chloride with the balance being polar monomers which are predominantly lower alkyl esters of acrylic acids and in the second latex is a copolymer derived primarily from butadiene and styrene in weight

proportions of between about 1 part butadiene to 9 parts styrene and about 2 parts butadiene to 1 part styrene, the proportion of said first latex comprising at least about 20% but not over about 90% by weight of said blend and sufficient to provide a vinylidene chloride content equivalent to between about 20 and 80% by weight of the total polymer content in said blend.

4,228,059

WIRE ENAMEL

Klaus Ohm, Nettetal, Fed. Rep. of Germany, assignor to Chemische Fabrik Dr. Wiedeking, Kempen, Fed. Rep. of Germany
Continuation of Ser. No. 851,831, Nov. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 686,909, May 17, 1976, abandoned. This application Jun. 27, 1979, Ser. No. 52,583

Claims priority, application Fed. Rep. of Germany, May 21, 1975, 2522386; Sep. 19, 1975, 2541819

Int. Cl.² C08K 5/06, 5/07, 5/10, 5/17

U.S. Cl. 260—30.2

9 Claims

1. In a wire enamel consisting essentially of a polyesterpolyimide resin and a solvent system containing said resin as a solute, the resin having a hydroxyl value of 150 to 600, and at least 20% by weight of the alcohol component of said resin consisting of tris-(2-hydroxyethyl) isocyanurate, the improvement in the solvent system which comprises:

(a) 30% to 100% of the weight of said solvent system consisting of at least one member of the group consisting of diacetone alcohol, monoalkyl ethers of the formula C_nH_{2n+1}—(O—CH₂—CH₂)_m—OH, and alkanolic acid esters of said ethers.

(1) in said formula, n and m being integers, n being 1 to 4, and m being 1 or 2, and

(2) said alkanolic acid having a carbon chain of not more than four members; and

(b) the remainder of said solvent system essentially consisting of compounds free from phenolic hydroxyl groups when said at least one member is less than 100%.

4,228,060

POLYMERIZATION OF ACETYLENE

Guido Pez, Boonton, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 3, 1978, Ser. No. 957,276

Int. Cl.² C08F 4/76, 38/02; C08K 5/01, 5/15

U.S. Cl. 260—30.4 R

7 Claims

1. A process for producing polyacetylene gel compositions comprising contacting acetylene with a mixture comprised of μ-(η¹:η⁵-cyclopentadienyl) tris(η-cyclopentadienyl)-ditanium (Ti-Ti) catalyst, or nitrogen adduct complexes thereof, in an inert organic solvent therefor, at a temperature of about -120° to +200° C., under a pressure of about 0.0001 to 50 atmospheres, substantially in the absence of elemental oxygen and water, said contacting being conducted in a quiescent state thereby resulting in the polyacetylene gel composition.

2. A composition comprising a polymeric gel consisting essentially of a polyacetylene and a gel-forming liquid therefor, being an inert organic solvent, and selected from C₆-C₁₄ aromatic hydrocarbons, C₅-C₁₈ linear or branched acyclic or cyclic saturated aliphatic hydrocarbons, C₄-C₆ saturated aliphatic cyclic mono- or diethers, C₇-C₁₀ aromatic mono- or diethers, C₂-C₆ linear or branched saturated aliphatic acyclic mono- or diethers, C₃-C₈ linear or branched saturated aliphatic tertiary amines, C₅-C₈ cyclic mono- olefins, C₄-C₁₂ linear or branched alpha olefins, and mixtures thereof; said composition containing up to a maximum of about 10 weight percent of catalyst per weight of polyacetylene, said catalyst being μ-(η¹:η⁵-cyclopentadienyl)-tris(η-cyclopentadienyl)-ditanium (Ti-Ti); said gel being stable to phase separation at about 25° C., in a closed system.

4,228,061

METHOD OF PRODUCING IMPROVED VINYL CHLORIDE PLASTISOL COATING COMPOSITIONS
Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 2, 1978, Ser. No. 947,324
Int. Cl.¹ C08K 5/05, 5/09, 5/10, 5/16

U.S. Cl. 260—31.2 R

6 Claims

1. A method of producing a resinous vinyl chloride polymer based coating composition having improved adhesion to substrates, comprising combining

(A) a dispersion of resinous vinyl chloride polymer, containing at least 75 mole percent vinyl chloride monomer units, in plasticizer and

(B) a product of hydrolysis of an aminofunctional organotrialkoxysilane with at least 0.5 moles of water per mole of the silane which product is devolatilized of essentially all substances boiling below 150° C. at atmospheric pressure, to form a mixture consisting essentially of (A) and (B), the mixture containing 0.1 to 2 percent by weight of (B) based on the combined weights of (A) and (B), the aminofunctional organotrialkoxysilane having the general formula



wherein

R is a monovalent alkyl radical of from 1 to 3 inclusive carbon atoms, and
x is zero or 1.

4,228,062

RAPID SETTING HIGH BOND STRENGTH ADHESIVE
Henry L. Lee, Jr., Pasadena, and Jan A. Orlowski, Altadena, both of Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

Continuation of Ser. No. 714,841, Aug. 16, 1976, abandoned, which is a continuation of Ser. No. 386,416, Aug. 7, 1973, abandoned. This application May 2, 1978, Ser. No. 902,091
Int. Cl.² C08K 3/36

U.S. Cl. 260—42.28

8 Claims

1. A rapid setting adhesive exhibiting high bond strength toward at least stainless steel, polycarbonate type plastics, and tooth enamel containing about 50 parts by weight glycidyl methacrylate, about 50 parts by weight of a finely divided cured polymethylmethacrylate, about 50 parts by weight of a finely divided copolymer of approximately equal amounts by weight of methylmethacrylate and ethylmethacrylate, about 50 parts by weight of diethylene glycol dimethacrylate crosslinking agent, less than about 5 percent of a conventional peroxide polymerization catalyst based on the combined weight of the glycidyl methacrylate and the finely divided fillers, and a minor amount of a conventional accelerator.

4,228,063

FLAME-RETARDANT, POLYPHENYLENE-ETHER RESIN COMPOSITIONS CONTAINING A 2,5,5-TRISUBSTITUTED 1,3,2-DIOXAPHOSPHORINANE-2-OXIDE

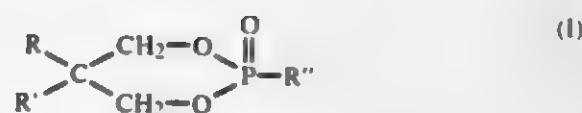
Albrecht H. Granzow, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 25, 1979, Ser. No. 42,490
Int. Cl.² C08K 5/52; C08L 71/04

U.S. Cl. 260—45.7 P

10 Claims

1. A flame-retardant, polyphenylene-ether resin/rubber-modified, high-impact polystyrene thermoplastic composition comprising an effective flame-retarding amount of a 2,5,5-trisubstituted-1,3,2-dioxaphosphorinane-2-oxide compound represented by the formula:



wherein R and R' are methyl or ethyl, and R'' is selected from alkyl of 1-4 carbon atoms, phenyl, phenyl having 1-3 methyl groups, benzyl, and benzyl having 1-3 methyl groups.

4,228,064

FLAME-RETARDANT POLYPHENYLENE ETHER RESIN COMPOSITION

Shinichi Izawa, Tokyo; Jun Sugiyama, Yokohama, and Atsuo Nakanishi, Kanagawa, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 837,629, Sep. 27, 1977, Pat. No. 4,198,492.

This application Oct. 18, 1979, Ser. No. 86,145

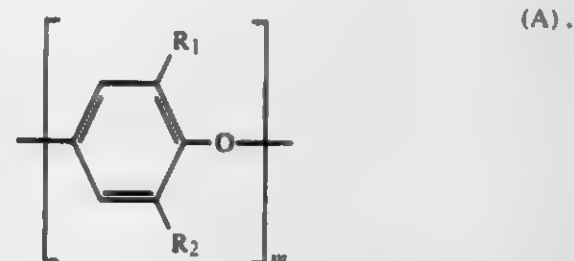
Claims priority, application Japan, Oct. 4, 1976, 51-118482

Int. Cl.³ C08K 5/52, 5/53

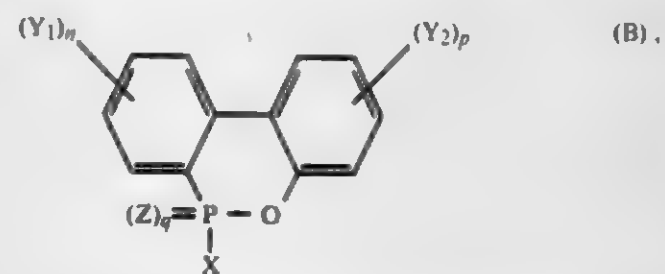
U.S. Cl. 260—45.7 P

17 Claims

1. A flame-retardant polyphenylene ether resin composition comprising (A) 85 to 97% by weight of a resin consisting of (1) 20 to 90% by weight of a polyphenylene ether of the generic formula (A):



where R₁ and R₂ are each an alkyl of 1 to 4 carbon atoms and m is the degree of polymerization, and (2) 10 to 80% by weight of a styrene type polymer, and (B) 3 to 15% by weight of at least one member selected from the group consisting of phosphorus-containing compounds of the generic formula (B):



where X is a hydrogen atom, a hydroxyl, an amino, a halogen, an alkyl of 1 to 10 carbon atoms, an alkoxy of 1 to 10 carbon atoms, an alkylthio of 1 to 10 carbon atoms, an aryloxy of 6 to 10 carbon atoms or a hydroxyl-substituted aryloxy of 6 to 10 carbon atoms, Y₁ and Y₂ are each an alkyl of 1 to 8 carbon atoms, an alkoxy of 1 to 8 carbon atoms or an aryl group, Z is an oxygen or sulfur atom, n and p are each an integer of 0 to 4 and q is an integer of 0 or 1.

4,228,065

MICROBICIDAL ORGANOPOLYSILOXANE MOLDING COMPOSITIONS

Hermann Genth; Wilfried Paulus; Paul Schiller, all of Krefeld; Hans Sattlegger, Odenthal, and Karl Schnurrbusch, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 931,045

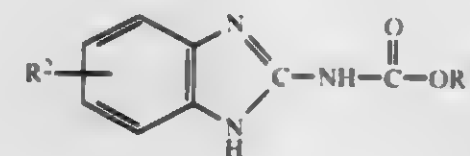
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737405

Int. Cl.² C08K 5/34

U.S. Cl. 260—45.8 N

9 Claims

1. An organopolysiloxane composition having a microbicidal action comprising an α,ω -dihydroxypolydiorganosiloxane-N-(fluorodichloromethylthio)-phthalimide and a benzimidazolyl-alkyl-carbamate of the formula



wherein

R¹ is an alkyl radical with 1 to 4 carbon atoms, optionally substituted by the radical —OR³.

R³ is an alkyl radical with 1 to 4 carbon atoms or the phenyl radical, and

R² is hydrogen, an alkyl radical with 1 to 4 carbon atoms, halogen or nitro.

4,228,066

STABILIZED POLYMER COMPOSITIONS

Burnett H. Johnson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 12, 1979, Ser. No. 29,597

Int. Cl.³ C08K 5/42, 5/13; C07F 15/00

U.S. Cl. 260—45.75 C

16 Claims

1. Copper chelates of 2-hydroxy-4-methoxy-5-sulfobenzophenone and 2-hydroxy-4-methoxy-2'-carboxybenzophenone.

2. A stabilized polymer composition comprising polymers selected from the group consisting of polyparabanic acid, poly(iminoimidazolidinediones), polyurethanes, polyureas, polyesters, polyamides, polyimides, polycarbonates, polyhydantoins and polymers containing one or more moieties characteristic of these polymers and a stabilizing amount of a copper chelate of 2-hydroxy-4-methoxy-5-sulfobenzophenone or 2-hydroxy-4-methoxy-2'-carboxybenzophenone.

4,228,067

UV LIGHT STABILIZED POLYCARBONATE COMPOSITION

Burkhard Lachmann, Krefeld; Hans Rudolph, Krefeld-Bockum, and Wolfgang Cohnen, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 934,311, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 455,170, Feb. 25, 1974, abandoned. This application Jan. 12, 1979, Ser. No. 2,882
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1973, 2310135

Int. Cl.² C08K 5/12

U.S. Cl. 260—45.85 V

4 Claims

1. A composition comprising an aromatic mixture of a polycarbonate subject to degradation by UV light and a light stabilizing amount of a UV absorbent compound of the formula



wherein R is hydrogen, alkyl having 1 to 12 carbon atoms or cyclohexyl.

4,228,068

PEPTIDE COMPLEXES OF DNA-CONTAINING ORGANISMS

Günter R. Wilhelm, Dreieich, Fed. Rep. of Germany, assignor to R & Z Vermögensverwaltungsgesellschaft mbH, Krefeld, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,549

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717475; Apr. 20, 1977, 2717476; Nov. 5, 1977, 2749554

Int. Cl.² C07G 7/00; A61K 39/00

U.S. Cl. 260—112 R

3 Claims

1. The peptide complex, obtained from desoxyribonucleic acid-containing organisms, wherein

(a) said organisms and parts or constituents thereof are homogenized in a native or denatured state in 0.2 M phosphate buffer (pH 7.2);

(b) said homogenate is centrifuged;

(c) the supernatant is stirred with phosphate buffer-loaded DEAE cellulose and charged into a column;

(d) the loaded DEAE cellulose is eluted with 0.2 molar phosphate buffer until the absorption of the eluate at 280 nm is below 0.1, and thereafter further eluted with 0.1 M acetic acid-acetate solution (pH 3.2) until the absorption of the eluate at 280 nm is again below 0.1, thereupon eluted with a 3% NaCl containing 0.1 M acetic acid (pH 3.2) and the ribonucleic acid fraction (RNP) appearing in the eluate with the NaCl front is collected, dialyzed against water, concentrated and lyophilized, characterized in that I. the lyophilized RNP dissolved in water is mixed with phenol, heated to about 95° to 100° C. and, upon cooling, centrifuged until the phases are separated, the phenol phase is mixed with water and then repeatedly shaken out with ether, and the aqueous residue is lyophilized; or

II. the RNP dissolved in water is subjected to high-voltage electrophoresis, and the peptide complex is isolated; or

III. the peptide complex is isolated from the RNP dissolved in water, by thin film chromatography.

4,228,069

AZOXY COMPOUND HAVING USE IN A PROCESS FOR PREPARING FOAMED STRUCTURES

Ronald E. MacLeay, Amherst, N.Y., assignor to Penawalt Corporation, Philadelphia, Pa.

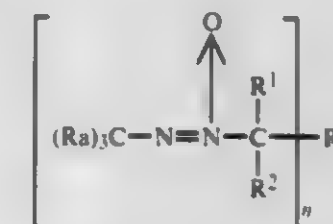
Filed Mar. 22, 1979, Ser. No. 22,743

Int. Cl.¹ C07C 107/02; C08J 9/00

U.S. Cl. 260—143

4 Claims

1. A compound having the formula



wherein

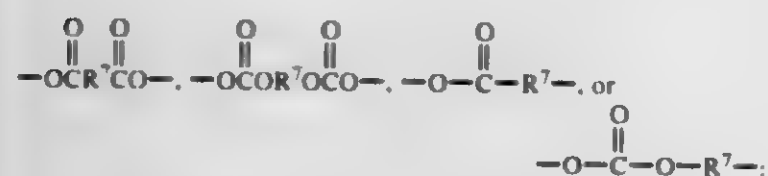
(a) n is 1 or 2

- (b) R¹ is selected from alkyl of 1 to 6 carbons or cycloalkyl of 3 to 12 carbons;
 (c) R² is selected from R¹ and aryl of 6 to 10 carbons;
 (d) R¹ and R² when joined together to form an alkylene of 3 to 11 carbons;
 (e) (R³)₃C— is selected from tertiary-alkyl of 4 to 8 carbons, tertiary cycloalkyl of 6 to 11 carbons or tertiary aralkyl of 9 to 12 carbons;
 (f) when n is 1, R⁸ is selected from



—CN, —OAc, or —OR⁴ where R⁴ is methyl, ethyl, propyl, isopropyl, or phenyl;

(g) when n is 2, R⁸ is selected from —O—,



(h) R⁷ is a divalent radical selected from alkylene of 1 to 10 carbons, cycloalkylene of 3 to 6 carbons or phenylene.

4,228,070

PURIFICATION OF PHOTOGRAPHIC IMAGE-FORMING SULFONAMIDO COMPOUNDS EMPLOYING IMMISCIBLE SOLVENTS

Nigel E. Milner, Leighton Buzzard, and Christine C. Payne,
 London, both of England, assignors to Eastman Kodak Com-
 pany, Rochester, N.Y.

Filed Feb. 28, 1979, Ser. No. 15,972

Int. Cl.² C09B 46/00

U.S. Cl. 260—152

18 Claims

1. A process for purifying a photographic image-forming sulfonamido compound, said process comprising the steps of:
 a. preparing a first solution by dissolving an unpurified image-forming sulfonamido compound in an aprotic solvent;
 b. removing impurities from said first solution by, at least once:
 i. mixing said first solution with an immiscible nonpolar, low-boiling organic solvent to form a mixture of said first solution and a second solution comprising said immiscible nonpolar, low-boiling organic solvent and at least a portion of said impurities; and
 ii. separating said first solution from said second solution; and
 c. recovering purified image-forming sulfonamido compound from said first solution.
 3. The process of claim 1 wherein recovery of said purified image-forming sulfonamido compound is effected by:
 a. preparing a third solution by adding to (b)(i) a water-immiscible low-boiling solvent of intermediate polarity to said first solution;
 b. removing said aprotic solvent from said third solution by at least once:
 i. mixing said third solution with water to form a mixture of said third solution and a fourth solution comprising water and at least a portion of said aprotic solvent; and
 ii. separating said third solution from said fourth solution; and
 c. evaporating at least a portion of said water-immiscible low-boiling solvent of intermediate polarity from said third solution to effect crystallization of said purified image-forming sulfonamido compound.

4,228,071 TRIAZINE CONTAINING FIBER-REACTIVE DISAZO DYESTUFFS

Henri Riat, Arlesheim, and Karl Seitz, Oberwil, both of Switzer-
 land, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
 Continuation of Ser. No. 644,772, Dec. 29, 1975, abandoned.

This application Feb. 27, 1978, Ser. No. 881,447

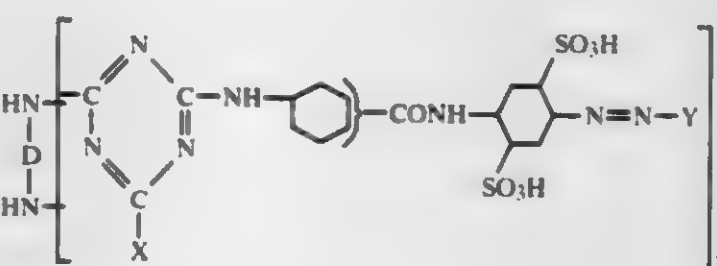
Claims priority, application Switzerland, Jan. 8, 1975, 166/75;
 Dec. 12, 1975, 16148/75

Int. Cl.² C09B 62/08; D06P 1/382, 3/10, 3/66

U.S. Cl. 260—153

3 Claims

1. A fiber-reactive disazo dyestuff of the formula



wherein

X is fluoro, chloro or bromo;

Y is the radical of a coupling component which contains an enolised or enolisable keto group is bound to the azo group in a position adjacent to the enolised or enolisable keto group, said coupling component selected from the group consisting of dihydroxyquinolines, hydroxyquinoline-sulphonic acids, barbituric acid, 3-methyl-5-pyrazolone,

1-phenyl-3-methyl-5-aminopyrazole-4'-sulphonic acid, 1-(2'-chlorophenyl)-3-methyl-5-pyrazolone-5'-sulphonic acid, α- and β-naphthyl-5-pyrazolone-sulphonic acids, 1-phenyl-3-methyl-5-pyrazolone, 1-phenyl-3-methyl-5-pyrazolone-2', -3' or -4'-sulphonic acid, 1-phenyl-5-pyrazolone-3-carboxylic acid, 1-phenyl-5-pyrazolone-3-carboxylic acid-4'-sulphonic acid, 5-pyrazolone-3-carboxylic acid amide, 1-(2',5'-dichlorophenyl)-3-methyl-5-pyrazolone-4'-sulphonic acid, 1-(2'-methyl-6'-chlorophenyl)-3-methyl-5-pyrazolone-4'-sulphonic acid, 1-phenyl-3-methyl-5-aminopyrazole, 1-phenyl-3-carboxy-5-aminopyrazole, 2,6-dihydroxy-3-cyano-4-methylpyridine, 1-ethyl-3-cyano-4-methyl-6-hydroxy-pyridone-(2), 1-ethyl-3-aminocarbonyl-4-methyl-6-hydroxy-pyridone-(2), 1-ethyl-3-sulphomethyl-4-methyl-6-hydroxy-pyridone-(2), acetoacetic acid isopropylamide, acetoacetic acid cyclohexylamide, acetoacetic acid monoethanolamide, acetoacetic acid diethanolamide, acetoacetylaminobenzene, acetoacetylaminonaphthalene, and acetoacetylaminobenzene-2-, -3- or -4-sulphonic acid; and D is straight or branched chain alkylene of 1 to 6 carbon atoms, N,N'-diphenyleneurea, cyclohexylene, or is naphthylene, diphenylene, stilbenylene or phenylene which are unsubstituted or substituted by halo, lower alkyl, lower alkoxy, amino, ureido, nitro, hydroxy, carboxy or sulfo.

4,228,072 1-(N-ALKYL-N-BENZYL OR SUBSTITUTED BENZYL-N-METHYLAMMONIUM)ALKYL-3-CYANO- 4-ALKYL-5-(ALKYL-HALO-PHENYL)AZO-6-HYDROX- YPYRIDONE-2 COMPOUNDS

Manfred Greve, Dornach, Switzerland, assignor to Sandoz Ltd.,
 Basel, Switzerland

Filed Sep. 19, 1977, Ser. No. 834,127

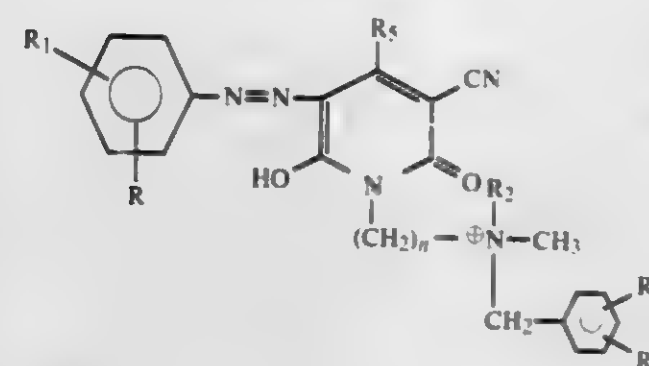
Claims priority, application Switzerland, Sep. 23, 1976,
 12070/76

Int. Cl.² C09B 29/36

U.S. Cl. 260—156

20 Claims

1. A compound of the formula



wherein

R is chloro or bromo.

R₁ is C₁₋₄alkyl,

R₂ is methyl, ethyl, n-propyl or n-butyl, each of R₃ and R₄ is independently hydrogen, chloro, bromo or methyl.

R₅ is methyl or ethyl,

n is 2 or 3, and

A[⊖] is an anion.

4,228,073

NONDIFFUSIBLE AZO DYE-RELEASING COMPOUNDS Derek D. Chapman, Rochester, and E-Ming Wu, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

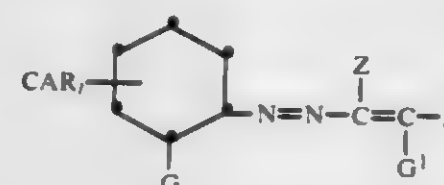
Division of Ser. No. 950,193, Oct. 10, 1978, Pat. No. 4,183,755,
 which is a division of Ser. No. 892,561, Apr. 3, 1978, Pat. No.
 4,148,643. This application Mar. 29, 1979, Ser. No. 25,146

Int. Cl.² C09B 29/32, 33/12, 33/14

U.S. Cl. 260—176

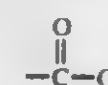
16 Claims

1. A nondiffusible compound having at least one diffusible
 azo dye moiety, said compound having the formula:

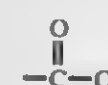


wherein:

G is a metal chelating group, a salt thereof or a hydrolyzable precursor thereof; or a group which together with a



group is CAR, said CAR being bonded to the benzene ring through the oxygen of said



group;

G¹ is hydroxy, a salt thereof, or a hydrolyzable precursor thereof;

Z is an electron withdrawing group having the formula —CON(R)₂, —SO₂N(R)₂, —COOR, —CN, SO₂R' or —COR', wherein R' is alkyl of 1 to 8 carbon atoms or aryl of 6 to 10 carbon atoms, and each R is H or R¹;

Z' is alkyl of 1 to 8 carbon atoms, aryl of 6 to 10 carbon atoms or N(R)₂;

CAR represents a ballasted carrier moiety which will release said diffusible azo dye as a function of development of a silver halide emulsion layer under alkaline conditions; and t is an integer of 0 to 1, with the proviso that the compound contains at least one but not more than two CAR groups.

4,228,074

AZETIDINONE DERIVATIVES

Peter C. Cherry, South Harrow; Christopher E. Newall, Ealing,
 and Nigel S. Watson, Greenford, all of England, assignors to
 Glaxo Laboratories Limited, Greenford, England

Filed Sep. 8, 1977, Ser. No. 831,549

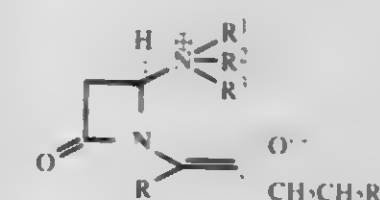
Claims priority, application United Kingdom, Sep. 9, 1976,
 37444/76; Sep. 9, 1976, 37481/76

Int. Cl.² C07D 205/08, 405/12, 413/04, 417/04

U.S. Cl. 260—239 A

7 Claims

1. A compound of the formula (I)



or a salt thereof with a carboxylic, sulphonic or mineral acid, wherein R is a group of formula —COOR¹⁰ and R¹⁰ is selected from the group consisting of C₁₋₈ alkyl and C₂₋₈ alkenyl, optionally substituted by methoxy, cyano, alkanoyloxy, p-bromobenzoyl or alkoxy; benzyl; diphenylmethyl; triphenylmethyl; benzyl substituted on the ring by nitro, sulphonyl, cyano, alkyl or alkoxy, said substituted benzyl having up to 20 carbon atoms; a phenyl group optionally substituted by nitro, alkyl or alkoxy, said substituted phenyl group containing up to 12 carbon atoms; a cycloalkyl group containing up to 12 carbon atoms; a tetrahydropyranyl group; a phthalidyl group; and a stannyl group having up to 24 carbon atoms carrying three substituents selected from the group consisting of alkyl, alkenyl, phenyl, benzyl, cycloalkyl and alkoxy; R¹, R² and R³, which may be the same or different, represent an alkyl group having up to 8 carbon atoms, a benzyl group or a C₃₋₇ cycloalkyl group, or two of R¹, R² and R³ form, together with the nitrogen atom to which they are attached, a piperidino, morpholino or thiamorpholino group or R¹, R² and R³ together may form part of a pyridinium, collidinium or quinuclidinium group; and R⁴ represents (i) a hydrogen atom; (ii) a hydroxyl group; (iii) a group —OR⁵, wherein R⁵ is an unsubstituted alkyl, alkenyl or alkynyl group containing up to 6 carbon atoms; a C₁₋₁₆ alkyl group carrying a group R⁶CO₂— or R⁶O— where R⁶ is a C₁₋₄ alkyl group, or carrying a C₂₋₆ alkanoyl, carboxyl, C₂₋₆ alkoxy, cyano or amino group; a hydroxyalkyl group having 2-6 carbon atoms; a 4-nitrobenzyl, benzyl, phenethyl, phenyl or tetrahydropyranyl group; or a cycloalkyl group having 3-7 carbon atoms optionally carrying a C₁₋₄ alkoxy group; (iv) a group —OR⁷ wherein R⁷ represents a group R⁸CO— wherein R⁸ is a C₁₋₈ alkyl, C₂₋₈ alkenyl, or C₃₋₁₂ cycloalkyl group, which R⁸ group may be substituted by a hydroxyl, C₁₋₄ alkoxy, phenoxy, cyano or amino group or R⁸ is a benzyl, thienylmethyl, phenyl, thienyl, α-benzoyloxycarbonylbenzyl, α-phenoxybenzyl or α-aminobenzyl group; (v) a group OCONR⁹R¹⁰ wherein R⁹ and R¹⁰, which may be the same or different, represent hydrogen; C₁₋₅ alkyl; C₂₋₆ alkanoyl, or a benzyl or phenyl group; (vi) a group OCSNHR⁹ wherein R⁹ is as hereinbefore defined other than

hydrogen; (vii) the residue of a sulphur nucleophile represented by $-\text{SH}$, $-\text{SR}^{11}$, $-\text{SOR}^{11}$ or $-\text{SC}=\text{YR}^{12}$ wherein R^{11} represents an alkyl, alkenyl or alkynyl group of up to 6 carbon atoms or a benzyl, phenyl or pyridyl group, all such groups R^{11} being unsubstituted or carrying a substituent selected from the group consisting of hydroxy, a group $-\text{OR}^6$ or R^6CO_2- , where R^6 is as hereinbefore defined, carboxyl, amino, cyano, a group of formula $-\text{COOR}^{15}$ where R^{15} is C_{1-4} alkyl, and a group of formula $-\text{NR}^{13}\text{R}^{14}$ where R^{13} and R^{14} , which may be the same or different, represent hydrogen or C_{1-4} alkyl; and R^{12} is a group as defined for R^{11} , or is a group $-\text{OR}^{11}$, $-\text{SR}^{11}$ or $-\text{NR}^{13}\text{R}^{14}$ where R^{13} and R^{14} are as hereinbefore defined; and Y represents oxygen or sulphur; or (viii) a group OR^5 wherein R^5 represents a silyl group carrying three substituents which may be the same or different C_{1-4} alkyl groups, wherein all substitution is monosubstitution.

4,228,075

NOVEL SULFAM(N)PHTHALEINS

Stanley M. Bloom, Waban; Alan L. Borror, Lexington, and James W. Foley, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

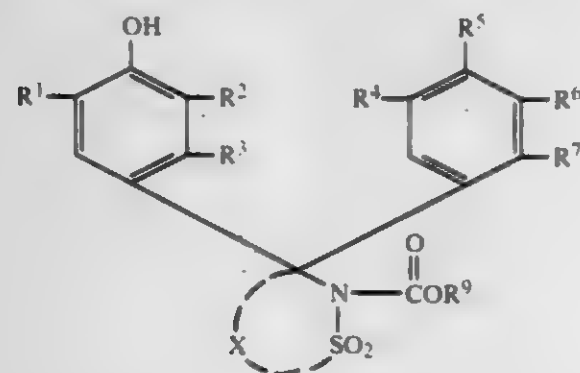
Filed Sep. 23, 1977, Ser. No. 836,009

Int. Cl.² C07D 275/06, 417/10, 279/02; C09B 17/04

U.S. Cl. 260—243.3

30 Claims

1. A compound of the formula



wherein R^1 and R^2 each are selected from hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, chloro and fluoro; R^3 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or hydroxy; R^2 and R^3 taken together represent the carbon atoms necessary to complete a fused benzene ring; R^4 and R^5 each are selected from hydrogen, alkyl having 1 to 4 carbon atoms, chloro and fluoro; R^6 is hydrogen, hydroxy, alkyl having 1 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms; R^6 and R^7 taken together represent the carbon atoms necessary to complete a fused benzene ring provided R^2 and R^3 are taken separately when R^6 and R^7 are taken together; R^5 is selected from hydrogen, hydroxy, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, $-\text{N},\text{N}(\text{dialkyl})\text{amino}$ wherein each alkyl contains 1 to 4 carbon atoms, $-\text{N},\text{N}(\text{w-R}^8\text{alkyl})\text{amino}$ wherein R^8 is hydroxy or halo and said alkyl contains 1 to 4 carbon atoms, $-\text{NH}-\text{COCH}_3$, piperidino, pyrrolidino, N-methylpiperazino, morpholino, thiomorpholino or tetrahydro-2H,4H-1,3,6-dioxazocino; R^4 , R^5 and R^6 taken together represent the atoms necessary to complete a fused quinolizidine ring; X represents the atoms necessary to complete 2,3-dihydrobenzothiazole-1,1-dioxide or 2,3-dihydronaphtho-1,2-thiazine-1,1-dioxide; and R^9 is selected from lower alkyl having 1 to 4 carbon atoms and phenyl, unsubstituted or substituted with at least one electron-withdrawing group having a positive sigma value as defined by Hammett's Equation selected from the group consisting of fluoro, chloro, bromo, cyano, $-\text{SO}_2\text{CH}_3$,

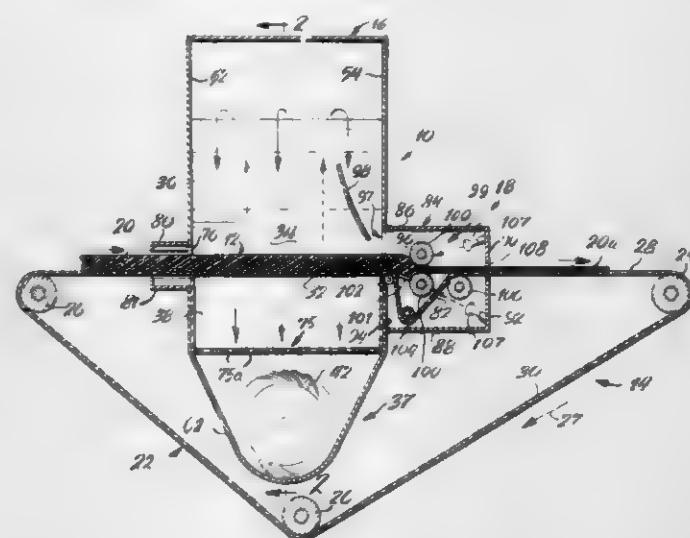
and $-\text{COCH}_3$.4,228,076
METHOD OF DENSIFYING OPEN-CELLED
POLYURETHANE MATERIAL

Winslow L. Pettingell, Wooddale, Ill., assignor to Foam Cutting Engineers, Inc., Addison, Ill.

Continuation-in-part of Ser. No. 876,736, Feb. 10, 1978, abandoned. This application May 31, 1979, Ser. No. 44,042
Int. Cl.² B29D 27/00

U.S. Cl. 264—321

10 Claims



1. A method of densifying a mass of fully cured open-celled polyurethane foam, said method comprising the consecutive steps of:

passing heated gaseous material entirely through the mass, the temperature of said gaseous material being in the range of about 425° F. to 460° F. and the velocity of said gaseous material being insufficient to destroy the integrity of the cell walls of the mass, said gaseous material being inert with respect to the polyurethane, and the period of exposure of the mass to the gaseous material being insufficient to allow charring of the mass, yet sufficient to raise the entire mass substantially uniformly to a temperature between about 365° F. and 435° F.;

compressing the mass while its temperature is between about 365° F. and 435° F. to reduce its thickness and thus increase its density to a desired degree; and permitting the mass to cool.

4,228,077

N-[2-(MERCAPTOALKYL)-3-MERCAPTOALKANOYL]-L-TRYPTOPHANS

Miguel A. Ondetti, Princeton, and Frank L. Weisenborn, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 747,280, Dec. 3, 1976, Pat. No. 4,116,962.

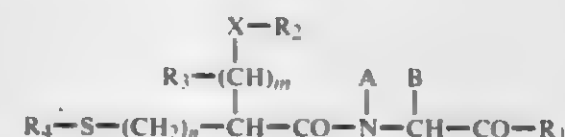
This application Mar. 24, 1978, Ser. No. 889,767

Int. Cl.¹ C07D 209/20; A61K 31/405

U.S. Cl. 260—326.14 T

6 Claims

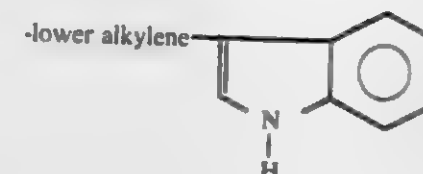
1. A compound of the formula



and physiologically acceptable basic salts thereof, wherein

 R_1 is hydroxy or lower alkoxy; R_2 is hydrogen, lower alkyl or lower alkanoyl; R_3 is hydrogen or lower alkyl; R_4 is hydrogen, lower alkanoyl, or benzoyl A is hydrogen, lower alkyl or hydroxy-lower alkylene;

B is



X is oxygen or sulfur;
 m is zero, 1, 2, 3 or 4; and
 n is zero or 1.

4,228,078

POLYCYCLIC CHLORINATED HYDROCARBONS
CONTAINING BRIDGEHEAD OR IMINO NITROGEN

John L. Wong, Louisville, Ky., assignor to Research Corporation, New York, N.Y.

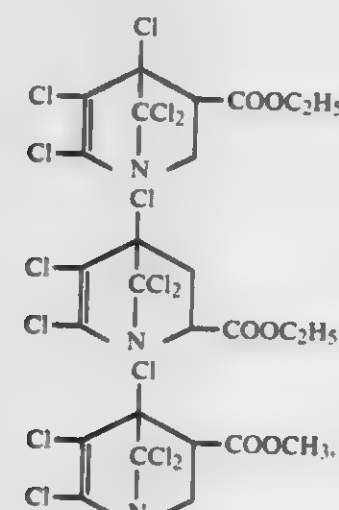
Division of Ser. No. 878,794, Feb. 17, 1978, which is a division of Ser. No. 725,578, Sep. 22, 1976, Pat. No. 4,087,434. This application Jan. 31, 1979, Ser. No. 7,979

Int. Cl.² C07D 487/08

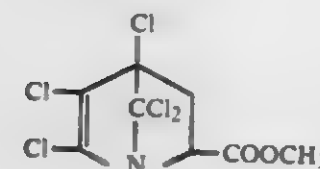
U.S. Cl. 260—326.32

1 Claim

1. A compound of the formula selected from the group consisting of



and



4,228,079

DIALKOXY MONORDEN DERIVATIVES

Gary J. Calton, Elkridge, Md., assignor to W. R. Grace & Co., New York, N.Y.

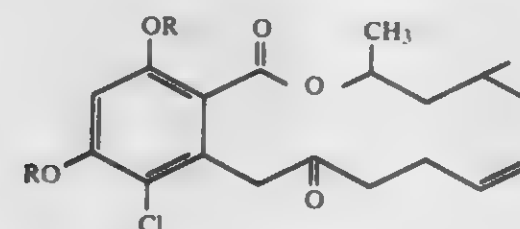
Continuation-in-part of Ser. No. 874,348, Feb. 1, 1978, abandoned. This application Oct. 30, 1978, Ser. No. 955,705

Int. Cl.² C07D 493/04

U.S. Cl. 260—343.41

3 Claims

1. Dialkoxymonorden corresponding to the structural formula:

wherein R is an alkyl group having 3 carbon atoms, said R

groups being the same and selected from the group consisting of propyl or isopropyl.

4,228,080

PROCESS FOR THE PREPARATION OF METHYL
3,4-ANHYDRO-2,6-DIDEOXY-L-RIBO-HEXOPYRANO-
SIDE

Guenter Grethe, North Caldwell; Milan R. Uskokovic, Upper Montclair, and John Sereno, Pine Brook, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

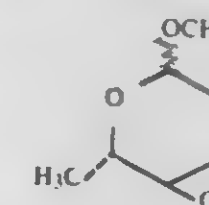
Division of Ser. No. 850,982, Nov. 14, 1977, Pat. No. 4,174,344. This application Jun. 13, 1979, Ser. No. 48,310

Int. Cl.¹ C07D 311/00

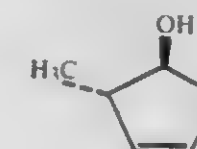
U.S. Cl. 260—345.9 R

1 Claim

1. A process to produce a compound of the formula



its enantiomer and racemate thereof which comprises
(a) oxidizing a compound of the formula



its enantiomer and racemate thereof with an aromatic or aliphatic peracid in an inert organic solvent,

(b) oxidizing the product of (a) with an oxidizing agent selected from the group consisting of sodium or potassium dichromate, chromium trioxide or an aliphatic or aromatic peracid,

(c) oxidizing the product of (b) with an aromatic or aliphatic peracid in an inert organic solvent,

(d) reducing the product of (c) with a reducing agent selected from the group consisting of diisobutylaluminum hydride, diborane, sodium or lithium triethoxyaluminumhydride, sodium-bis (2-methoxyethoxy)aluminumhydride and tri-*t*-butoxyaluminum-hydride and (e) reacting the product of (d) with methanol in the presence of an acid catalyst.

4,228,081

SEPARATION OF ISOMERS

Ronald F. Mason, Westwell, and Derek A. Wood, Sittingbourne, both of England, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 4, 1979, Ser. No. 71,980

Claims priority, application United Kingdom, Sep. 27, 1978, 38331/78

Int. Cl.² C07D 209/52

U.S. Cl. 260—326.62

4 Claims

1. A method for separating the *cis*- and *trans*- isomeric forms of 3-azabicyclo(3.1.0)hexane-2-carbonitrile from mixtures thereof which comprises extracting a mixture of the benzenesulfonic acid or toluenesulfonic acid salts of the isomers with a solvent selected from one or more of water, methanol and ethanol, recovering separately the salts in the extract and the extracted solid phase.

3. A salt selected from the benzenesulfonic acid and toluenesulfonic acid salts of 3-azabicyclo(3.1.0)hexane-2-carbonitrile.

4,228,082

N-SUBSTITUTED α -KETOCARBOXYLIC ACID AMIDES
Axel Kleemann; Herbert Klenk; Heribert Offermanns, all of Hanau; Paul Scherberich, Dietzenbach, and Werner Schwarze, Frankfurt, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany
Division of Ser. No. 926,322, Jul. 20, 1978. This application Jul. 9, 1979, Ser. No. 56,084

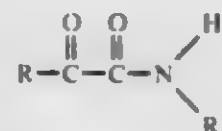
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733181

Int. Cl.¹ C07D 307/54; C07C 103/737, 103/76

U.S. Cl. 260—347.3

12 Claims

1. A compound having the formula



where R' is a t-alkyl group having 4 to 18 carbon atoms and R is halophenyl, nitrophenyl, alkoxyphenyl, furyl, cycloalkyl having 3 to 8 carbon atoms or substituted cycloalkyl having 3 to 8 carbon atoms and wherein the substituents are 1 to 3 carbon atom alkyl or halogen.

4,228,083

PROCESS FOR THE PRODUCTION OF β -(5-NITRO-2-FURYL)-ACROLEIN

Emmerich Pastorek, Hemsbach; Winfried Orth, Hassloch, and Werner Fickert, Mannheim, all of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,324

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855245

Int. Cl.¹ C07D 307/71

U.S. Cl. 260—347.8

9 Claims

1. An improved process for the production of β -(5-nitro-2-furyl)-acrolein by reacting 5-nitro-furfural and acetaldehyde in the presence of a secondary amine, the improvement comprises effecting the reaction in an aliphatic carboxylic acid of 2 to 4 carbon atoms.

4,228,084

PROCESS FOR THE PRODUCTION OF GLYCIDYL METHACRYLATE

Rolf Ackermann; Heinz Kolb; Gerhard Morlock, and Gerd Schreyer, all of Hanau, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Jun. 3, 1976, Ser. No. 692,371

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1975, 2525026

Int. Cl.¹ C07D 301/00

U.S. Cl. 260—348.12

9 Claims

1. A process for producing glycidyl methacrylate by transesterifying methyl methacrylate with glycidol in the presence of a polymerization inhibitor and a transesterification catalyst, the improvement comprising employing as the catalyst a salt of the formula MeX where Me is an alkali metal ion and X is a cyanide, cyanate or thiocyanate.

4,228,085

PHENYL-ALPHA,BETA-EPOXY-BETA-(3-TRIFLUOROMETHYLPHENYL)ETHYL KETONE AND PROCESS FOR ITS PRODUCTION

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 14, 1979, Ser. No. 38,765

Int. Cl.² C07D 303/32

U.S. Cl. 260—348.49

1 Claim

1. Phenyl alpha,beta-epoxy-beta-(3-trifluoromethylphenyl)ethyl ketone.

4,228,086

N-SUBSTITUTED ALKYL-N-NITROSOCARBAMOYL AZIDES

Gerhard Eisenbrand, Banngartenstrasse 19, 6902 Sandhausen, Fed. Rep. of Germany

Division of Ser. No. 800,452, May 25, 1977, Pat. No. 4,150,146.

This application Mar. 21, 1979, Ser. No. 22,714

Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623420

Int. Cl.² C07C 117/00

U.S. Cl. 260—349

8 Claims

1. N-haloalkyl-N-nitrosocarbamoyl azide.

6. Process for the preparation of the compound claimed in claim 1, which comprises reacting a haloalkyl carbamoyl azide with nitrogen tetroxide in an inert solvent in the cold.

4,228,087

MESOGENIC PRODUCTS FOR LIQUID CRYSTAL CELLS

Jean C. Dubois, and Francoise Barre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 647,745, Jan. 7, 1976, Pat. No. 4,112,239.

This application Dec. 5, 1977, Ser. No. 857,611

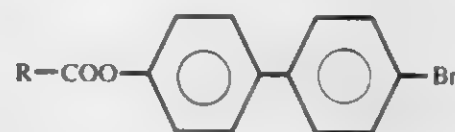
Claims priority, application France, Jan. 10, 1975, 75 00719

Int. Cl.² C09F 7/00; C11C 3/00

U.S. Cl. 260—408

3 Claims

1. A mesogenic compound of the formula:



wherein R is $\text{C}_n\text{H}_{2n+1}-$; and n is a whole number from 1 to 20.

4,228,088

SELECTIVE HYDROGENATION

Jan Kuiper, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 970,836, Dec. 18, 1978, abandoned. This application Apr. 6, 1979, Ser. No. 27,621

Claims priority, application United Kingdom, Dec. 19, 1977, 52750/77

Int. Cl.¹ C11C 3/12

U.S. Cl. 260—409

12 Claims

1. Process for the selective hydrogenation of triglyceride oils containing fatty acid residues having more than one double bond between carbon atoms comprising hydrogenating said oils in the presence of a catalytically active metal of group VIII of the periodic system of the elements, said catalytically active metal being optionally promoted by a metal from another group of said system, and in the presence of a basic compound with the formula AX, in which A is selected from the group consisting of $\text{R}_1\text{R}_2\text{R}_3\text{R}_4\text{N}^+$; $\text{R}_1, \text{R}_2, \text{R}_3$ and R_4 each being an alkyl, cycloalkyl, aryl or aralkyl group with 1 to 20 carbon atoms which may be substituted; the elements of group I or II of the periodic system, and ammonium, and X is selected

from the group consisting of hydroxyl, an anion of a weak acid and RO—, in which R is an alkyl group.

4,228,089

METHOD AND APPARATUS FOR FRACTIONAL CRYSTALLIZATION SEPARATION

Rudolf Bischof, Sevelen; Heinz Rhyner, and Kurt Saxer, both of Buchs, all of Switzerland, assignors to Metallwerk AG Buchs, Buchs, Switzerland

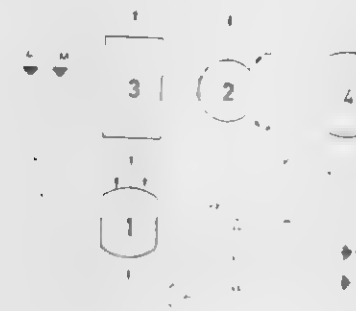
Filed May 24, 1978, Ser. No. 908,986

Claims priority, application Switzerland, May 31, 1977, 6639/77; Apr. 24, 1978, 4367/78

Int. Cl.¹ C09F 5/10; C11B 3/00; B01D 35/18

U.S. Cl. 260—428.5

33 Claims



1. A method for fractionation of a mixture of fatty acid esters materials dissolved in a solvent, said method comprising circulating and cooling the solution in a circuit,

said circuit comprising a circulating pump, a cooler, a heater, a storage tank and a fractionation column,

said fractionation column further comprising at least one filter surface,

stage (1) lowering the temperature gradually, causing formation of crystals suspended within said solution, said crystals forming while totally suspended within the solution, and continuously separating the crystals from the circulating solution by passing the crystal-containing solution in contact with said at least one filter surface whereby crystals are collected on said at least one crystal surface and then recovering the material forming said crystals, and

stage (2) further lowering the temperature of said solution and repeating the procedure of stage (1) whereby crystals having a lower crystallization temperature than those formed in stage (1) are formed and collected on said at least one filter surface.

4,228,090

COMPOSITIONS CONTAINING PLATINUM

Paul C. Hydes, and David M. Watkins, both of Reading, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Apr. 18, 1979, Ser. No. 31,875

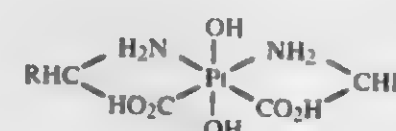
Claims priority, application United Kingdom, Apr. 20, 1978, 15658/78; May 26, 1978, 22966/78

Int. Cl.² C07F 15/00

U.S. Cl. 260—429 R

1 Claim

1. A coordination compound of platinum having the structure:



in which R is H or Me.

4,228,091

REMOVAL OF NICKEL FROM COBALT AND MANGANESE

Walter Partenheimer, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 8, 1979, Ser. No. 1,953

Int. Cl.² C07F 15/04, 15/06, 11/00

U.S. Cl. 260—439 R

4 Claims

1. The method of recovery of cobalt or manganese or cobalt and manganese dissolved in water also containing ions of copper, iron and nickel in amounts of copper above 80 to 100 weight parts, of nickel above 6700 weight parts and of iron above 500 to 5000 weight parts each per million weight parts of cobalt by precipitating cobalt, manganese or cobalt and manganese as their carbonates, the improvement of adding to the aqueous solution before the carbonate precipitation at least 2.5 moles of nitrilotriacetate per 1.0 gram mole of total of said metals.

4. The method of claim 3 wherein following the carbonate precipitation of cobalt and manganese the metal carbonate precipitate is recovered from the aqueous solution, heated with aqueous acetic acid containing 50 to 60 weight percent acetic acid and 50 to 40 percent water by weight in an amount to provide 1.05 to 1.2 times the theoretical amount of acetic acid to convert the metal carbonates to acetates until a solution of metal acetates is formed, further heating the solution of acetates to evaporate acetic acid to a solution pH of 4.5 to 5.8, and separating the solution from the precipitate which forms at such pH.

4,228,092

PROCESS FOR THE PREPARATION OF ORGANOALKOXYSILANES

Hans-Joachim Köttsch; Claus-Dietrich Seiler, both of Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 605

Claims priority, application Fed. Rep. of Germany, Jan. 2, 1978, 2800017

Int. Cl.² C07F 7/04, 7/18

U.S. Cl. 556—422

8 Claims

1. An improvement in a process for the esterification of an organochlorosilane by feeding alcohol into a chlorosilane maintained within a reaction zone without said alcohol contacting said chlorosilane in the gas phase wherein the esterification is performed stepwise with extraction of hydrogen chloride which has developed, the improvement which comprises employing in at least a final esterification step an organochlorosilane of the formula



wherein

R represents an optionally halogen-substituted alkyl radical which can also contain an oxygen or sulfur atom in the chain or a halogen or a NO₂ group or a protected phenolic group containing aryl radical

a equals 0, 1, or 2,

b equals 1 or 2, and

a + b amounts to a maximum of 3,

said final esterification step being performed with the addition of heat, said final esterification step being carried out at the boiling temperature of the reaction mixture.

4,228,093

(11Z,13Z)-11,13-HEXADECADIYN-1-OL AND (11Z,13Z)-11,13-HEXADECADIEN-1-OL AND TRIMETHYLSILYL ETHERS THEREOFRobert L. Carney, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.
Filed Oct. 18, 1979, Ser. No. 86,233
Int. Cl.¹ C07F 7/18; C07C 33/04

U.S. Cl. 556-482

3 Claims

1. The compound, (11Z,13Z)-11,13-hexadecadiyn-1-ol, and the trimethylsilyl ether thereof.

4,228,094

ETHYLENE GLYCOL EXTRACTION PROCESS

David R. Bryant, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 19, 1976, Ser. No. 715,853

Int. Cl.² C07C 29/24

U.S. Cl. 260-450

6 Claims

1. The process of separating ethylene glycol from admixture with tetraglyme containing rhodium therein which ethylene glycol and rhodium are provided by the homogeneous liquid phase reaction in the presence of rhodium as a carbonyl complex of oxides of carbon and hydrogen wherein the tetraglyme is a solvent therefor, which comprises contacting said admixture with an amount of glycerine greater than that amount which is soluble in said admixture thereby forming two liquid phases, one which is richer in glycerine and the other containing the greater concentration of tetraglyme and causing at least a portion of said ethylene glycol to enter the phase richer in glycerine, maintaining the greater portion of the rhodium with the phase containing the greater concentration of tetraglyme, and recovering ethylene glycol from said glycerine.

4,228,095

PROCESS FOR THE PREPARATION OF LIQUID CARBODIIMIDE-MODIFIED ORGANIC POLYISOCYANATES EMPLOYING ORGANOTIN CATALYSTS

Thirumurti Narayan, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 20, 1979, Ser. No. 67,793

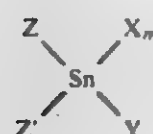
Int. Cl.² C07C 119/055

U.S. Cl. 260-453 AM

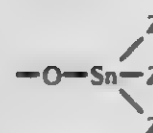
10 Claims

1. A process for the preparation of a liquid carbodiimide-modified organic polyisocyanate comprising:

a. heating an organic polyisocyanate to a temperature greater than 200° C. for a period ranging from 0.5 hour to 5 hours in the presence of a catalytically sufficient amount of an organotin compound selected from the group consisting of a quadrivalent organotin compound described by the following formula:



wherein Z and Z' are individually alkyl, aryl, alicyclic, heterocyclic, oxyalkyl or acyloxy group having from 1 to 18 carbon atoms and may be the same or different, X is an alkyl, aryl, alicyclic, heterocyclic, oxyalkyl, acyloxy, thioalkyl or thioalkylene acyloxy group having 1 to 18 carbon atoms, Y is equal to X or oxy groups or a group represented by the following formula:



provided that when Y is this group, X is an alkyl or aryl

group, m is equal to 1 except when Y is an oxy group then m is equal to 0, and

a divalent organotin compound described by the following formula:



wherein Z' is alkyl, aryl, alicyclic, heterocyclic having from 1 to 18 carbon atoms,

b. stopping the reaction by cooling the product resulting from step (a) to a temperature of less than 30° C.

4,228,096

METHOD OF PREPARING QUATERNARY AMMONIUM SALTS FROM VARIOUS MORPHOLINONES

John W. Bozzelli, and Nancy J. Morris, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

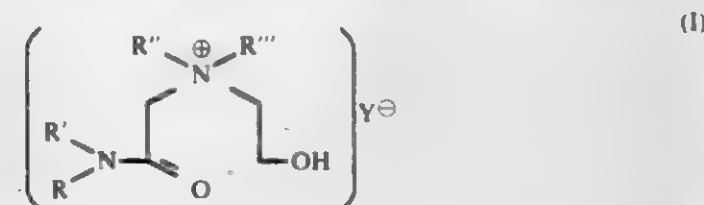
Division of Ser. No. 908,191, May 22, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,583

Int. Cl.² C07C 141/04, 103/183, 103/28

U.S. Cl. 260-459 A

9 Claims

1. A method for preparing a compound of the formula



where

R, R' and R'' are individually hydrogen, an aliphatic, alicyclic, aryl or an inertly-substituted aliphatic, alicyclic or aryl radical;

R'' is a C₁-C₅ alkyl radical; and

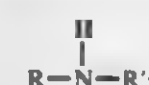
Y⁻ is a neutralizing anion,

the method comprising:

(a) contacting at a temperature of about 50° C. to about 250° C. a morpholinone of the formula



with an amidating agent of the formula



and

(b) contacting at a temperature of about 25° C. to about 150° C. the reaction product of (a) with a quaternizing agent of the formula R''Y where R, R', R'', R''' and Y are as previously defined.

4,228,097

METHOD OF PREPARING α-HYDROXYMETHYLENE NITRILES

Moustafa El-Chahawi, Troisdorf, and Uwe Prange, Niederkasel-Ranze, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,713

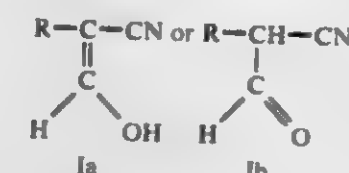
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753322

Int. Cl.² C07C 121/34, 121/75, 121/76

U.S. Cl. 260-465 F

16 Claims

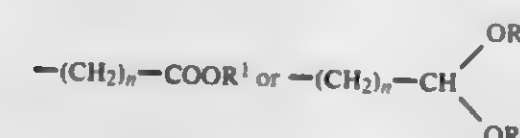
1. A method for the preparation of a compound of the formula



or salt thereof bearing one or more α-hydroxymethylene groups, wherein the univalent moiety R is hydrogen, a straight chain or branched alkyl group of 1 to 20 carbon atoms, a straight chain or branched moiety of the formula



wherein n is from 0 to 5, a straight chain or branched moiety of the formula



wherein each R¹ independently represents an alkyl radical of 1 to 12 carbon atoms, or a univalent phenol moiety and n has the meaning above, a substituted or unsubstituted moiety of the formula



with m = 1 to 3,

wherein R² is hydrogen, an alkyl group of 1 to 6 carbon atoms, a $-(\text{CH}_2)_n-\text{COOR}^1$, chlorine, bromine, or $-\text{OR}^1$, CF_3 , $-(\text{CH}_2)_n-\text{CN}$, where n and R¹ have the meanings given above, which comprises contacting a nitrile of the formula



wherein R has the meaning given above with carbon monoxide in the presence of an alcoholate and a solvent.

4,228,098

PROCESS FOR THE PREPARATION OF ACRYLONITRILE

Kunitoshi Aoki; Makoto Honda, both of Tokyo; Tetsuro Dozono, Yokosuka, and Tsutomu Katsumata, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 20, 1978, Ser. No. 971,293

Claims priority, application Japan, Dec. 31, 1977, 52-159797
Int. Cl.² C07C 120/14

U.S. Cl. 260-465.3

8 Claims

1. A process for the preparation of acrylonitrile by the gaseous phase reaction of propylene with ammonia and molecular

oxygen in the presence of a catalyst, characterized in that the sole catalyst is:

a catalyst composition represented by the following general formula



wherein

A is at least one element selected from potassium, rubidium and cesium;

a, b, f, n, p and q are numbers respectively representing atomic ratios of A, bismuth, iron, sodium, phosphorus and oxygen relative to one atom of molybdenum, provided that:

a is a number of 0.002 to 0.2;

p is a number of 0 to 0.2;

q is the number of oxygens required to satisfy the valence requirements of the other elements present; and

b, f and n are numbers respectively defined by the following formulae

$$b = \frac{(1-X)(1-Y)(1-Z)}{Y} + \frac{1}{2}Z - p$$

$$f = \frac{X(1-Y)(1-Z)}{Y} \text{ and } n = \frac{1}{2}Z$$

wherein

X and Y are respectively numbers falling within the area defined by a quadrilateral formed by lines connecting points (0.45, 0.35), (0.45, 0.65), (0.85, 0.50) and (0.85, 0.65) on an XY diagrammatic system of coordinates; and

Z is a number of 0 to 0.6; said catalyst composition being supported on 30 to 70% by weight, based on said catalyst, of silica.

4,228,099

ORNITHINE AND ARGININE SALTS OF BRANCHED CHAIN KETO ACIDS AND USES IN TREATMENT OF HEPATIC AND RENAL DISORDERS

Mackenzie Walser, Ruxton, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 17, 1978, Ser. No. 887,570

Int. Cl.² C07C 101/00, 101/02

U.S. Cl. 260-501.11

8 Claims

1. Compounds of the formula:



wherein A is selected from the group consisting of arginine and ornithine, K is an alpha keto analog of a branched chain essential amino acid, and x varies from zero to about one.

4,228,100

QUATERNARY UREIDOMETHYL PHOSPHONIUM SALTS

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 6, 1979, Ser. No. 27,696

Int. Cl.² C07F 9/22; C07C 127/15; C09K 3/28

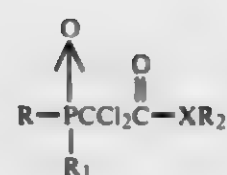
U.S. Cl. 260-551 P

25 Claims

1. A quaternary ureidomethyl phosphonium salt having the formula

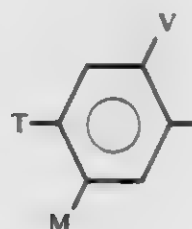


where R, R' and R'' are radicals selected from the group con-



wherein

R is alkoxy of 1-6 carbons, alkoxy of 2-3 carbons substituted with alkoxy of 1-3 carbons, or $-\text{NR}_3\text{R}_4$ wherein R_3 is hydrogen, alkyl of 1-4 carbons, cycloalkyl of 5-6 carbons, or



where

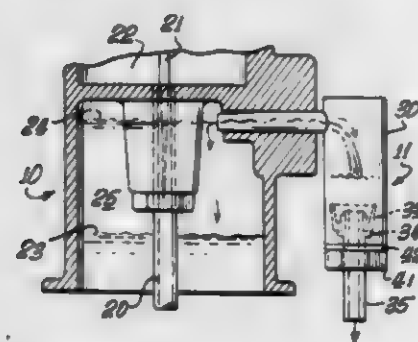
V is H, F, Cl, NO₂
T is H, F, Cl, Br, C₁-C₃ alkyl, CF₃
M is H, Cl, C₁-C₃ alkoxy, CF₃ provided M and T are not simultaneously CF₃;
R₄ is hydrogen, or alkyl of 1-4 carbons or methoxy provided that when R₄ is methoxy then R₃ is hydrogen or methyl;
R₁ is alkoxy of 1-6 carbons, C₂-C₃ alkoxy substituted with an alkoxy of 1-3 carbons or NR₃R₄;
X is oxygen; and
R₂ is 1-methylethyl or 1-methylpropyl;
provided that
(1) When R and R₁ are both 1-methylethoxy and X is oxygen, R₂ must not be 1-methylethyl;
(2) When R and R₁ are both methoxy or ethoxy and X is oxygen, R₂ must not be 1-methylethyl;
(3) When R and R₁ are both 1-methylpropoxy and X is oxygen, R₂ must not be 1-methylpropyl; and
(4) When R₂ is 1-methylethyl and one of R or R₁ is n-propyloxy then the other of R or R₁ cannot be n-butyloxy.

4,228,110

GASOLINE PRIMING PUMP FOR CARBURETORS
Melvin Magnet, P.O. Box 521, Pico Rivera, Calif. 90660
Filed Jun. 4, 1979, Ser. No. 45,101
Int. Cl.³ F02M 1/16

U.S. Cl. 261-37

10 Claims



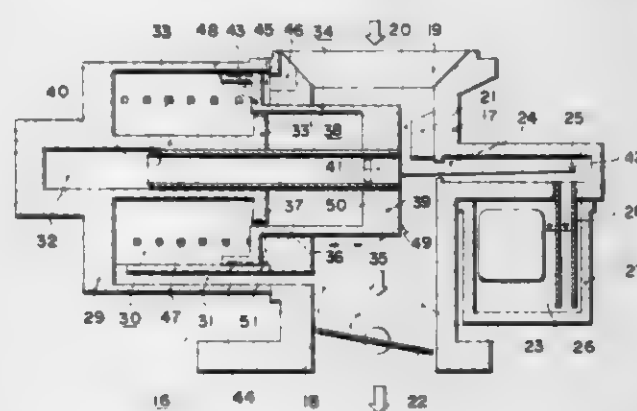
1. A carburetor having a combination gasoline priming pump and gasoline overflow drain, said carburetor comprising:
a carburetor body having a gasoline reservoir chamber;
a gasoline priming pump air exit and gasoline reservoir entry line affixed to and extending through said gasoline reservoir chamber at a level above the normal gasoline level but below the level of gasoline when the chamber is overfilled with gasoline;
a cylindrical body affixed to said line, said body having an axial cylindrical bore, said bore being closed at its upper

end, said line passing through the wall of said cylindrical body near the upper end of the body;
an axial, cylindrical passageway in the lower end of said body;
a hollow rod held by said passageway and extending at its lower extremity below the bottom of said cylindrical body and extending into said cylindrical bore; and
piston means affixed to the hollow rod near the upper end thereof whereby when a finger is placed over the lower end of said hollow rod and said hollow rod is moved upwardly, air is forced out of said air exit and gasoline entry line.

4,228,111

VARIABLE VENTURI TYPE CARBURETOR
Norihiro Nakamura, Shizuoka, Japan, assignor to Toyoto Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed May 21, 1979, Ser. No. 41,188
Claims priority, application Japan, Aug. 4, 1978, 53-94534; Nov. 29, 1978, 53-163177[U]
Int. Cl.² F02M 9/06
U.S. Cl. 261-44 C

10 Claims



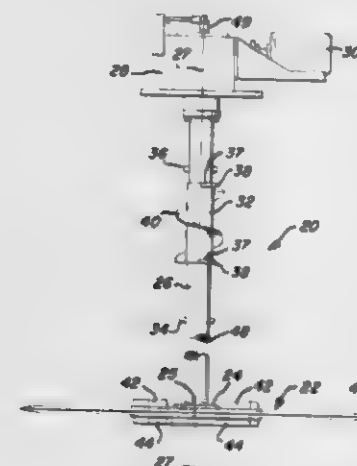
1. A variable venturi carburetor having predictable and stable response characteristics in response to acceleration demands, said carburetor comprising
a casing,
a venturi portion in said casing,
a fuel reservoir means in said casing,
fuel metering jet means in said casing adjacent said venturi portion and adapted to meter fuel to said venturi portion in response to the venturi effect therein, said metering jet means being in communication with said fuel reservoir means,
an air horn portion in said casing adjacent to and in communication with said venturi portion and adapted to provide air thereto,
a mixing chamber portion in said casing adjacent to and in communication with said venturi portion and adapted to receive and mix air and fuel therefrom,
a throttle valve positioned in said mixing chamber and adapted for movement between open and closed positions,
a suction chamber in said casing in communication with said mixing chamber,
guide means in said suction chamber,
suction piston means in said suction chamber and airtight contact with said suction chamber means and connected to said fuel metering jet means so as to control the amount of fuel admitted to said venturi portion,
spring means normally biasing said suction piston means to decrease the amount of fuel provided by said fuel metering jet means,
piston rod means on said suction piston means and positioned relative to said guide means so as to create a first airtight chamber,
a gas damper chamber means between said suction piston means and said guide means, and
a pressure transmission delaying means between said suction chamber and said gas damper chamber means, whereby

movement of said suction piston means is predictably and accurately controlled by the dampening caused by the gradual equalization of pressure between said gas damper chamber means and said suction chamber and the dampening caused by the resistance of the air in said first chamber means to movement of said piston rod means.

4,228,112

ULTRA-THIN ROTATING DISK GAS DIFFUSER (AND BUBBLE SHEARING METHOD EMPLOYING THE SAME)
Ralph E. Hise, Littleton, Colo., assignor to FMC Corporation, Chicago, Ill.
Continuation of Ser. No. 801,569, May 31, 1977, abandoned, which is a continuation of Ser. No. 618,257, Sep. 30, 1975, abandoned. This application May 25, 1978, Ser. No. 909,566
Int. Cl.² C02C 5/04
U.S. Cl. 261-87

16 Claims



1. A rotating gas diffuser for shearing fine gas bubbles from the surface thereof when the diffuser is immersed in a body of liquid and rotated therein, which comprises:
a hollow rotatable shaft, said shaft defining a main feed line for the gas to be introduced into said body of liquid,
a disk like member mounted on said shaft perpendicular to the axis of rotation thereof, said member defining at least one gas plenum in operative connection with said main feed line, at least one wall of said plenum being porous to permit the passage of gas through said wall to the outer surface of said disk like member so that the introduction of gas into said main feed line when the gas diffuser is rotating about its axis of rotation while immersed in said body of liquid will cause gas to flow into said gas plenum and out through said porous wall thereof to produce nascent gas bubbles on the surface of said disk like member, which nascent bubbles are sheared off to form fine gas bubbles by the viscous shear forces exerted by said liquid as the disk member rotates in said body of liquid, and
means for minimizing the coalescence of said fine sheared bubbles, resulting from turbulence in the wake and jet surrounding the rotary disk like member that is caused by vortices shed from the edge of the disk like member and spiraling outward from said edge, said means including said disk like member, wherein the ratio of the overall diameter of said disk like member to the maximum thickness thereof in the gas diffusing area occupied by said gas plenums is at least about 32:1.

999 O.G.—26

4,228,113

PROCESS FOR MAKING OBJECTS FROM MINERAL FILLERS BONDED WITH A THERMOSETTING RESIN
Rene L. E. van Gasse, Opglabbeek, Belgium, assignor to Stamicarbon, B.V., Geleen, Netherlands
Filed Oct. 31, 1978, Ser. No. 956,042
Claims priority, application Netherlands, Nov. 3, 1977, 7712108; Dec. 28, 1977, 7714465
Int. Cl.² B29D 3/02, 9/00

U.S. Cl. 264-24

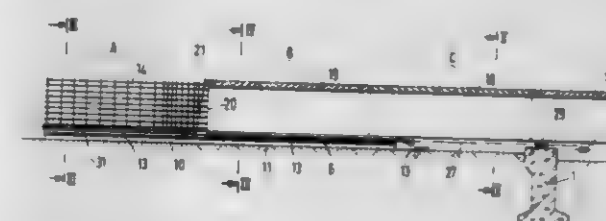
13 Claims

1. In a process for moulding three-dimensionally shaped article from a molding material including the steps of
(1) forming a pliable sheet of molding material composed of a thermosetting resin, a hardener of said thermosetting resin and mineral fillers;
(2) transferring the thus formed sheet in a pliable condition to a mold; and
(3) subjecting the sheet to pressure at an elevated temperature to form a three-dimensionally shaped article, the improvement wherein prior to step (2)
(a) at least a portion of the wall of the mold, under conditions of elevated temperature, is provided with at least one layer of a mixture of a powdery thermosetting resin and a catalyst for said resin,
(b) the applied resin of step (a) is allowed to melt and is polymerized at said elevated temperature, and
(c) the pliable sheet is inserted into the thus coated mold and subjected to pressure according to steps (2) and (3).

4,228,114

METHOD FOR THE CONSTRUCTION OF ELONGATED CONCRETE STRUCTURES SUCH AS BRIDGES AND THE LIKE
Klaus Alsen; Hans Neidhardt, both of Wiesbaden; Jürgen Maletzke, Mainz, and Johann Wimmer, Hochheim, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Sep. 26, 1978, Ser. No. 945,843
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743273
Int. Cl.² E01D 21/04
U.S. Cl. 264-33

4 Claims



1. A method for erecting elongated structures, particularly multiple-span bridge superstructures of concrete, across an erection site comprising the steps of: establishing a construction zone at one end of the erection site; providing at said construction zone formwork means within which said structure may be formed in discrete sections; constructing said formwork means to include a formwork bottom and a stationary formwork remainder, with said formwork bottom being separable from said stationary remainder; forming said structure in said formwork means in discrete successive sections; joining each of said successively formed sections to a previously formed section and launching said sections in series from said construction zone to the opposite end of said erection site; providing means for moving said formwork bottom from said erection site in said launching direction together with each of said formed sections of said structure; performing said launching of said sections in series from said construction zone by moving said formwork bottom together with each section formed at said construction zone through one section length in the launching direction across said erection site while maintaining said formwork remainder stationary at said construction site; and subsequently separating said formwork bottom

from said formed sections at a location spaced forwardly of said construction site after launching said sections therefrom.

4,228,115

METHOD OF MAKING A HORN PAD

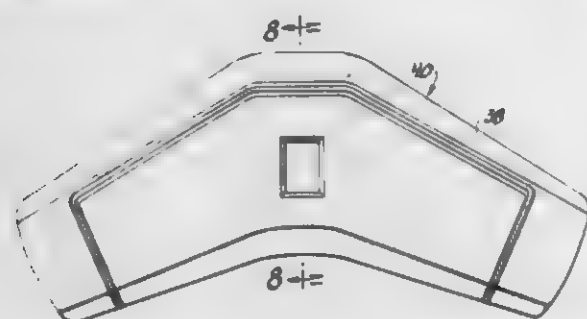
Lawrence B. Gardner, Vandalia, and Phillip W. Hopf, Center-ville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1979, Ser. No. 23,026

Int. Cl.³ B79D 27/04

U.S. Cl. 264—46.4

4 Claims



1. A method of manufacturing a horn pad assembly which includes a horn switch subassembly having an electrically conductive support plate adapted for mounting on a steering wheel and an electrically conductive switch plate which is spaced and insulated from the support plate by an insulation gasket and which has a pattern of slots rendering the switch plate sufficiently flexible to engage the support plate responsive to finger pressure, comprising the steps of:

- enclosing the horn switch subassembly in a sealed bag of heat shrinkable plastic film to mask the pattern of slots in the switch plate,
- heat shrinking the heat shrinkable plastic film to provide a relatively smooth and taut enclosure, and
- molding a decorative pad of resilient polymeric material onto the portions of the heat shrunk plastic film covering the switch plate and the sides and underside edges of the support plate.

4,228,116

PROCESS FOR PRODUCING REMOLDABLE PANELS

Giancarlo Colombo, San Giorgio su Legnano, and Alberto Ardisone, Turin, both of Italy, assignors to G.O.R. Applicazioni Speciali S.p.A., Turin, Italy

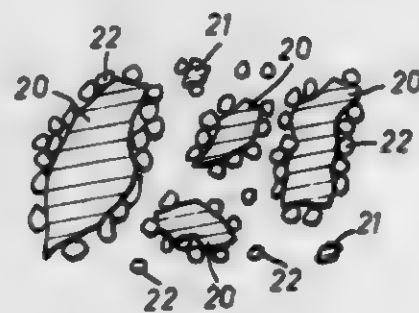
Continuation of Ser. No. 902,968, May 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 453,957, Mar. 22, 1974, abandoned. This application Jul. 19, 1979, Ser. No. 59,107

Claims priority, application Switzerland, Mar. 23, 1973, 4248/73

Int. Cl.³ B29D 23/00

U.S. Cl. 264—119

6 Claims



1. A process for producing remoldable panels from a thermoplastic polymer and an organic filler, said process including the steps of:

- (1) providing a mixture comprising from about 40 to about 60% by weight of said thermoplastic polymer in particulate form, having a particle size in the range of from about 200 microns to about 400 microns and a softening point of

at least about 150° C., and from about 60 to 40% by weight of substantially dry sawdust having a particle size range of from about 0.1 to 4 mm as an organic filler, aggregatingly combining at least a part of said particulate thermoplastic polymer and said sawdust to form a mass of discrete composite particles each including one sawdust particle as a core and a plurality of thermoplastic particles adhering to the surface of said core particle,

- (2) continuously plastifying and extruding said mixture by heating same to a temperature above the softening point of said thermoplastic polymer and below the temperature of substantial decomposition of said sawdust, and then extruding said mixture to form a web, and
- (3) calendering said web prior to its solidification.

4,228,117

MELT SPINNING PROCESS FOR PRODUCING NYLON 66 YARNS

Gerald J. Reyenga, and Arnold E. Wilkie, both of Pensacola Beach, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 864,990, Dec. 27, 1977, abandoned.

This application Feb. 14, 1979, Ser. No. 11,980

Int. Cl.³ B28B 3/20

U.S. Cl. 264—176 F

2 Claims

1. A melt spinning process for producing a package of undrawn polyhexamethylene adipamide yarn composed of 140 filaments each having a nominal denier of 30 without conditioning the yarn with steam prior to forming said package, comprising:

- (a) extruding molten fiber-forming polyhexamethylene adipamide at a given rate through a spinneret having at least one set of 140 circular holes to form molten streams,
- (b) cooling said molten streams in a quenching chamber to provide filaments,
- (c) withdrawing said filaments from said quenching chamber,
- (d) passing said filaments with at least a partial wrap around a roll maintained at a temperature ranging from 40° C. to about 150° C. and driven at a given peripheral speed,
- (e) forwarding said filament from said roll to a take-up bobbin onto which the filaments are wound to form said package

wherein the extrusion rate and said peripheral speed are correlated to provide a yarn having a nominal denier per filament of 30 and an elongation-to-break of not less than 13.0% when the yarn is drawn to a nominal denier per filament of 6.

4,228,118

PROCESS FOR PRODUCING HIGH TENACITY POLYETHYLENE FIBERS

Wen-Li Wu, and William B. Black, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 3, 1977, Ser. No. 848,168

Int. Cl.³ D01D 5/12

U.S. Cl. 264—210.8

15 Claims

1. A process for preparing a polyethylene fiber having a tenacity of at least 12 grams per denier, comprising:

- a. extruding a high density polyethylene having a \bar{M}_n of at least 20,000 and a \bar{M}_w of less than 125,000 through a heated spinneret having at least one orifice to provide at least one molten stream, wherein said heated spinneret is maintained at a temperature between 220° and about 335° C.;
- b. solidifying each said molten stream in a quenching zone to form a fiber;
- c. withdrawing said fiber from said quenching zone at a velocity of at least 30 meters per minute, and then
- d. hot-drawing said fiber at a draw ratio of at least 20:1 while said fiber is in contact with a heated environment, wherein said heated environment is maintained at a temperature between 115° and 132° C.,

said temperatures, said velocity, and said draw ratio being correlated to provide fiber having a tenacity of at least 12

grams per denier, when measured at 72% relative humidity and 25° C. on a bundle of at least 8 filaments using a gauge length of at least 25 centimeters.

4,228,119

CHEMICALLY REDUCING RESIDUAL ACRYLONITRILE MONOMER IN NITRILE POLYMERS AND SHAPED PACKAGING MATERIALS FORMED THEREFROM

I. Luis Gomez, Longmeadow, and Edward F. Tokas, West Hatfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 2, 1978, Ser. No. 957,295

Int. Cl.³ C08L 33/20, 91/00; D01F 1/10

U.S. Cl. 264—211

41 Claims

1. In the process of melting an acrylonitrile copolymer by physical working in the presence of free acrylonitrile monomer, the improvement which comprises having a scavenging amount of a C₁₈ unsaturated fatty acid compound, which is an acid or a glyceride thereof in admixture with the copolymer during said melting to minimize free acrylonitrile monomer in the copolymer.

22. In the process for preparing shaped packaging materials from acrylonitrile copolymers, which process involves at least one forming operation comprising heating the polymer to form a melt containing free acrylonitrile monomer and shaping the polymer, the improvement which comprises having linseed oil or safflower oil in intimate contact with the acrylonitrile copolymer during at least one forming operation, said oil being employed in an amount sufficient to reduce the extractable free acrylonitrile monomer contents of the resulting packaging material.

4,228,120

PROCESS FOR NYLON 66 YARN HAVING A SOFT HAND

James E. Bromley, Pensacola, Fla.; Michael M. McNamara, Gaffney, S.C., and Wayne T. Mowe, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

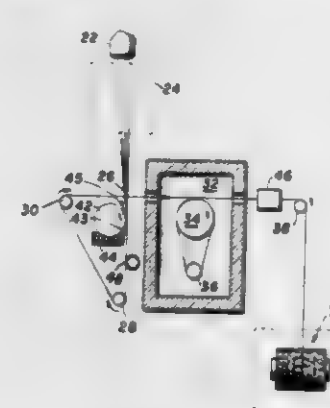
Division of Ser. No. 628,721, Nov. 4, 1975, Pat. No. 4,093,147, which is a continuation-in-part of Ser. No. 482,962, Jun. 25, 1974, abandoned. This application Apr. 21, 1978, Ser. No.

898,746

Int. Cl.³ B29C 25/00

U.S. Cl. 264—235.6

6 Claims



1. A process of melt spinning nylon 66, comprising:

- a. extruding nylon 66 polymer of fiber-forming molecular weight as a plurality of molten streams,
- b. solidifying said streams into solid filaments while withdrawing said filaments from said streams at a sufficiently high speed to provide a tension within the range between 0.2 and 1.5 grams per final denier;
- c. maintaining said filaments under tension within said range while forwarding said filaments at least 0.016 and less than 0.11 seconds after solidification to a treatment zone wherein said filaments are heated to between 50° C. and 250° C. for a period sufficient to reduce the yarn retraction to less than 1%; and

d. withdrawing said filaments from said treatment zone.

4,228,121

METHOD AND APPARATUS FOR FORMING MULTIPLE THICKNESS BEAD

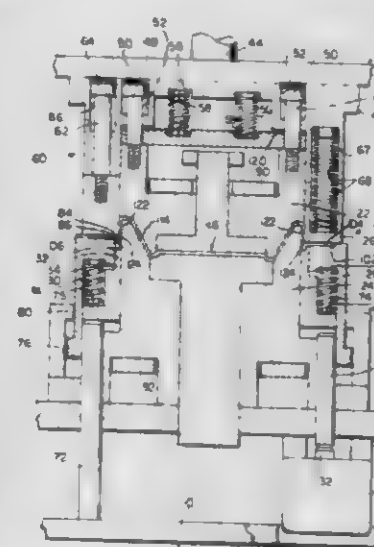
William R. Meadors, Long Grove, Ill., assignor to Peerless Machine & Tool Corporation, Marion, Ind.

Filed Nov. 6, 1978, Ser. No. 957,693

Int. Cl.³ B29C 1/00, 3/00, 17/03

U.S. Cl. 264—291

26 Claims



1. A method for forming a bead in an article formed from a blank of flexible material comprising holding a central region of the blank between two cooperating dies, while holding said central region, forming an axially extending flange in the region of the blank between said central region and the peripheral edge of the blank, capturing the peripheral edge against radial movement in a first groove provided in a ring movable with respect to said dies, moving the ring relative to the dies to form the region of the blank between the central region and the peripheral edge into a bead, and moving with respect to said dies and said ring cooperating draw pads provided adjacent said ring, the cooperating draw pads cooperating with the ring and dies to create a void into which the bead is formed, the configuration of the void controlling the formation of the bead.

4,228,122

METHOD OF MANUFACTURING ROLLER CHIMES FOR CLOSED HEAD DRUMS

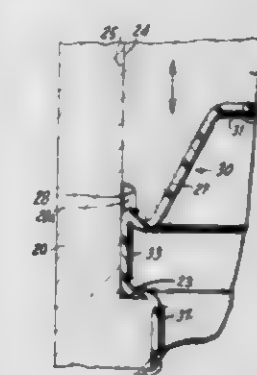
Theo Hammen, Cologne, Fed. Rep. of Germany, assignor to Mauser Kommandit-Gesellschaft, Bruhl, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 884,397

Int. Cl.³ B29C 17/07

U.S. Cl. 264—534

13 Claims



1. The method of manufacturing a closed hollow member such as a closed head drum, from a thermoplastic material having spaced end walls and a side wall extending between the end walls, comprising the steps of:

- (a) forming a tubular section of thermoplastic material;

- (b) closing the ends of the tubular section;
- (c) applying a gaseous medium to the interior of the closed tubular section within a mold to blow mold the thermoplastic material outwardly into a hollow shaped member with end walls and a side wall having a projecting annular channel-shaped part with the opening thereto directed toward the interior of the hollow member and the radially outer wall thereof projecting outwardly from the remainder of the side wall of the hollow member; and
- (d) pressing the channel-shaped part together and simultaneously squeezing a portion of the thermoplastic material defining the channel-shaped part through a restricted opening having a dimension less than the thickness of the portion of the channel-shaped part to be squeezed there-through to cause the plastic material to flow through said opening into an annular mold recess and form a molded annular chime disposed at least partially radially outwardly from and integrally molded to the side wall of the hollow member.

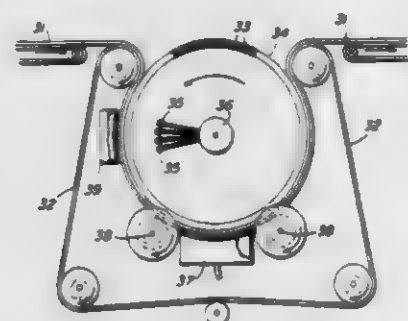
4,228,123

METHOD OF MAKING BIAXIALLY ORIENTED NONWOVEN FABRICS

Preston F. Marshall, Walpole, Mass., assignor to The Kendall Company, Boston, Mass.
Division of Ser. No. 704,582, Jul. 12, 1976, Pat. No. 4,095,007, which is a continuation-in-part of Ser. No. 506,843, Sep. 17, 1974, Pat. No. 3,969,561. This application Feb. 13, 1978, Ser. No. 877,282

Int. Cl.² D04H 1/64; D01G 15/84; 264 89; 119; 128; 286; 289
U.S. Cl. 264—557

4 Claims



1. A method of making a biaxially oriented nonwoven fabric having a machine direction to cross direction tensile strength ratio of less than 2 to 1 comprising:
- preparing a carded web of textile fibers;
 - sandwiching said web between a tensioned screen and a set of spaced-apart impervious striping bars in a manner as to have said striping bars exposed to a means for applying fluid force thereon, said striping bars' axis being disposed at approximately 90° to said web's general fiber orientation;
 - passing a fluid force from said means through said web, said force pushing the ends of said fibers located between said striping bars so as to straighten said fiber portions into resulting low fiber density areas, said fibers being drawn therein at approximately 90° to the axis of said striping bars;
 - simultaneously hydraulically moving the remaining portion of said fibers under said striping bars into accordion folds by means of said fluid force, while leaving substantially all of the fibers originally under said striping bars to remain in a substantially parallelized manner along the length of said striping bars;
 - removing said thusly treated web from said screen and striping bars;
 - binding said web so as to fix the fiber orientation of said web; and
 - collecting said thusly finished web.

4,228,124

FUMIGATING METHOD AND APPARATUS

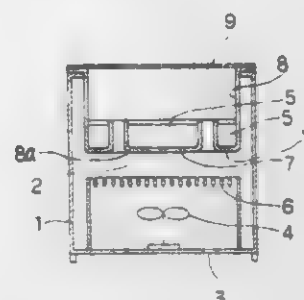
Takanobu Kashiwara; Fukuyasu Okuda; Masanaga Yamaguchi, and Akira Nishimura, all of Ako, Japan, assignors to Earth Chemical Company, Ako, Japan

Continuation-in-part of Ser. No. 882,816, Mar. 2, 1978, Pat. No. 4,171,340. This application May 25, 1979, Ser. No. 42,424
Claims priority, application Japan, Feb. 27, 1979, 54-23237
The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.

Int. Cl.² A61L 2/20; A01M 13/00

U.S. Cl. 422—36

25 Claims



1. A fumigating method comprising heating a mixture of an active ingredient and a blowing agent with a hot air current to thermally decompose the blowing agent without entailing combustion and cause the hot air current and the gas resulting from the thermal decomposition to vaporize and diffuse the active ingredient, the blowing agent being decomposable at a temperature of about 70° C. to about 300° C. to mainly evolve nitrogen gas and contacting an object, material or an area to be treated with the so-generated fumigant.

10. A fumigating apparatus comprising a container having a passage for forcing a hot air current therethrough, the passage being provided therein with a fan for forcing the hot air current and with a mixture of an active ingredient vaporizable and diffusible when heated with the hot air current and a blowing agent thermally decomposable when heated with the hot air current to promote the vaporization and diffusion of the active ingredient, said blowing agent being decomposable at a temperature of about 70° C. to about 300° C. to give off mainly nitrogen gas.

4,228,125

GAS EXCHANGE APPARATUS

Donn D. Loddell, Golden, and Stephen J. Herman, Evergreen, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Jun. 20, 1978, Ser. No. 917,350

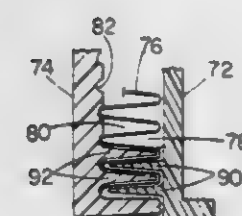
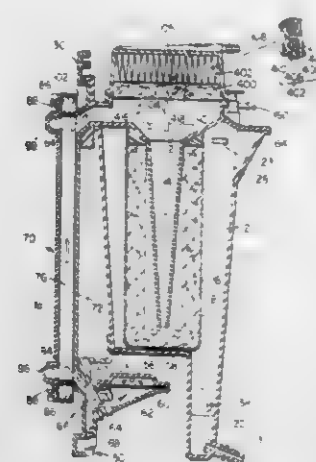
Int. Cl.² A61M 1/03

U.S. Cl. 422—46

10 Claims

1. A blood oxygenator comprising foaming means for bubbling gas into blood to form a foam composed of bubbles, each bubble having a wall formed of said blood, heat and gas exchanging means located downstream of said foaming means, said heat and gas exchanging means comprising a heat-conductive corrugated sheet having first and second opposing surfaces, a housing adjacent said first opposing surface and defining therebetween a chamber for passing heat-transfer fluid along said first surface, said housing having an inlet for connection to a heat-transfer fluid source and an outlet for removing said heat-transfer fluid from said chamber, the flow through said chamber being isolated from said second opposing surface, and a wall surface adjacent said second opposing surface, said wall surface and said second surface defining a plurality of passages corresponding to the corrugations in said sheet, said passages distributing said foam into a corresponding

plurality of streams and providing locations for simultaneous heat transfer between said fluid and said foam and



gas transfer between said gas and said blood at the walls of said bubbles, and defoaming means located downstream of said heat and gas exchanging means for breaking up said bubbles.

4,228,126

DIACETYLENE TIME-TEMPERATURE INDICATORS

Gordhanbhai N. Patel, Morris Plains, and Kwok C. Yee, Randolph, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 25, 1977, Ser. No. 854,933

Int. Cl.² G01N 21/06

U.S. Cl. 422—56

8 Claims

1. In a recording device including a substrate having deposited thereon at least one indicator, said indicator comprised of at least one acetylenic compound, containing two conjugated C=C groups, capable of undergoing a 1,4-addition polymerization upon thermal annealing or exposure to actinic radiation, thereby undergoing an irreversible, progressive color change, wherein the color produced at any time during the color change represents an integrated time-temperature history of thermal annealing or integrated radiation-dosage history of exposure to actinic radiation, the improvement which comprises said acetylenic compound in an inactive form, positioned for exposure to the conditions to be recorded and capable of in situ conversion, by melt or solvent recrystallization, to an active form capable of undergoing 1,4-addition polymerization; wherein said active and inactive forms exhibit different X-ray crystallographic diffraction patterns, and said inactive form being incapable of undergoing 1,4-addition polymerization upon exposure to gamma radiation at room temperature or thermal annealing below its melting point.

4,228,127

KIT FOR DETECTING HUMAN CHORIONIC GONADOTROPIN

Hernan F. Acevedo, Allison Park; Malcolm Slifkin, Pittsburgh, and Milton H. Dalbow, Springdale, all of Pa., assignors to International Radioimmune Systems, Inc., Howell, Mich.
Division of Ser. No. 677,992, Apr. 19, 1976, Pat. No. 4,144,031.

This application Oct. 6, 1978, Ser. No. 949,330

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.² G01N 33/16, 31/14

U.S. Cl. 422—61

1 Claim

1. A diagnostic test kit for detecting the absence or the presence of suspected malignant neoplastic cells in a cell specimen by testing for human chorionic gonadotropin, said diagnostic cell test kit comprising:

- (a) antiserum specific to the beta-subunit of human chorionic gonadotropin, said beta-subunit having been raised in a host animal, for treating cell samples to be tested, followed by rinsing to remove any excess antiserum;
 - (b) antiserum specific to gamma globulin of said host animal conjugated to fluorescein for adding to a portion of said sample to be tested which has been treated with said beta-subunit of human chorionic gonadotropin followed by examination of said portion with an ultraviolet microscope which passes the ultraviolet light through said cells; if fluorescein is found, the indirect fluorescein-labelled antibody test is considered positive; if no staining is found, this indirect test is considered negative; and
 - (c) antiserum specific to said gamma globulin of said host animal conjugated to peroxidase for adding to a second portion of said cell specimen treated with said antiserum specific to the beta-subunit of human chorionic gonadotropin and peroxidase activator, added to said second cell sample followed by an examination of said second portion with a microscope to determine whether peroxidase staining has occurred, the indirect peroxidase-labelled antibody test is considered positive if staining is found; if no staining is found, the test is negative;
- the cell test for human chorionic gonadotropin is then considered positive only if both indirect labelled antibody tests are positive; if both indirect antibody tests are negative or if one indirect labelled antibody test is positive and the other is negative, the diagnostic cell test is negative for human chorionic gonadotropin, establishing that neoplastic cells are not present in the cells tested.

4,228,128

EXHAUST GAS SENSOR HAVING POROUS, METAL-IMPREGNATED CERAMIC ELEMENT

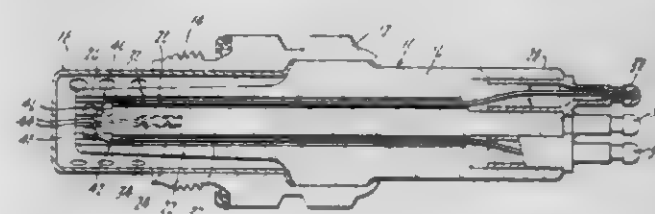
Michael J. Esper, Redford Township, Wayne County; Wells L. Green, and Stanley R. Merchant, both of Garden City, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 839,701, Oct. 5, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,374

Int. Cl.² G01N 27/12

U.S. Cl. 422—98

5 Claims



1. An improved sensor of the type having a metal oxide ceramic element that undergoes changes in resistivity in response to variations in the partial pressure of oxygen in the gaseous medium to which the metal oxide ceramic element is exposed, the metal oxide ceramic element having electrodes in spaced apart relationship, the electrodes extending from the

metal oxide ceramic element to permit the resistance between them to be sensed, and the metal oxide ceramic element being adapted to be immersed in the gaseous medium, wherein the improvement comprises:

the metal oxide ceramic element is titania (TiO_2) and is porous to enlarge, as compared to a less porous material, the amount of titania element surface area exposed to the gaseous medium, and the titania element surface area has on it, and substantially throughout the volume of the titania ceramic element, a discontinuous charge transfer material comprising a metal having free electrons, whereby, the response time of the titania ceramic element is substantially reduced due to the presence of the charge transfer material, in the lower portion of the temperature range over which the titania ceramic element responds to variations in the partial pressure of oxygen in the gaseous medium;

the sensor includes a second ceramic element less responsive to variations in the partial pressure of oxygen in the gaseous medium that is the first-mentioned ceramic element, and includes means for electrically connecting the first-mentioned ceramic element and second ceramic element in circuit such that output voltage changes from 33% to 66%, and vice versa, of applied voltage occur in less than about 300 milliseconds when the ceramic elements are at a temperature of about 350° C.

4,228,129

CLEANING ATTACHMENT TO CLEAN FLASK-SHAPED RECEIVERS OF CHEMICAL ANALYSIS APPARATUS

Rolf Brüning, Bruchköbel, and Jürgen Roth, Maintal, both of Fed. Rep. of Germany, assignors to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

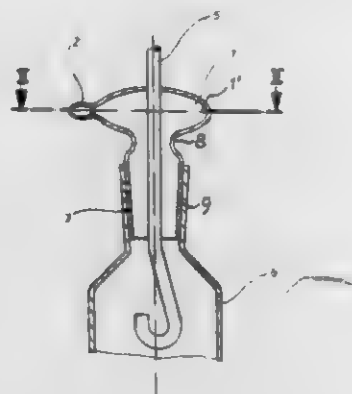
Filed Jun. 20, 1979, Ser. No. 50,317

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832348

Int. Cl.¹ B01L 3/00; B08B 3/08, 9/08

U.S. Cl. 422-102

10 Claims



1. In combination with chemical analysis apparatus including a flask-shaped receiver (6) having a conically divergent upper mouth (3),

a cleaning attachment for removable association with said receiver to clean the receiver without disassociating said receiver from the apparatus, said attachment comprising,

a header (1) which is essentially circular in cross section and formed with an interior trough (1'); and

a supply duct (2) extending into the header and terminating in fluid communication with the trough and tangentially with respect thereto;

and a conically converging neck portion (3) positioned downwardly of the trough and having an outer surface matching the conically divergent upper mouth of the flask-shaped receiver for accurate and tight fit thereto.

4,228,130 COATING POLYMERIZATION REACTORS WITH OLIGOMERS DERIVED FROM POLYHYDRIC PHENOLS PLUS A BLEACH

Louis Cohen, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

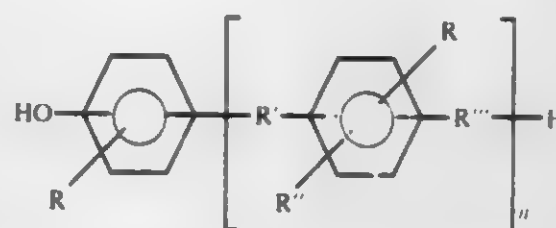
Filed Oct. 23, 1978, Ser. No. 953,989

Int. Cl.¹ B01J 1/20; B05D 7/22; C08F 2/00

U.S. Cl. 422-131

12 Claims

1. A process for substantially eliminating the buildup of polymers on the internal surfaces of a polymerization reaction vessel which comprises applying to said surfaces an aqueous alkaline coating solution containing one or more oligomers having the general structure



wherein R is H or OH, R' is O or a C—C linkage, R'' is Cl, R''' is selected from the group consisting of O, a C—C linkage, and a C—H linkage, and n is an integer from 1 to 10, said coating solution having a pH in the range of about 8 to about 13, and conducting the polymerization of monomer(s) at a temperature in the range of about 0° C. to about 100° C. while in contact with the coated internal surfaces of said vessel.

4,228,131

APPARATUS FOR THE PRODUCTION OF CARBON BLACK

Lothar Rothbühr, Hermulheim, and Manfred Voll, Hanau, both of Fed. Rep. of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormal Roessler, Frankfurt, Fed. Rep. of Germany

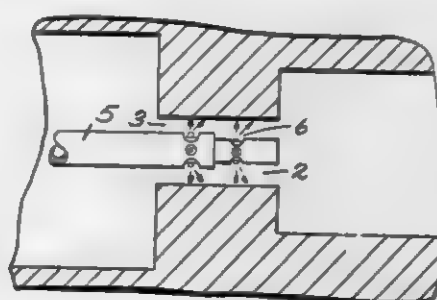
Continuation of Ser. No. 824,842, Aug. 15, 1977, abandoned, which is a division of Ser. No. 699,973, Jun. 25, 1976, Pat. No. 4,179,494. This application Mar. 6, 1977, Ser. No. 17,976

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1975, 2530371

Int. Cl.¹ C09C 1/50

U.S. Cl. 422-156

5 Claims



1. An apparatus for the production of carbon black comprising, in combination, means defining a combustion chamber for the combustion of a fuel gas with an oxygen containing gas, said combustion chamber having a central axis, first conduit means for introducing fuel gas radially from a hollow shell into said combustion chamber with said conduit means extending along said central axis, second conduit for introducing an oxygen containing gas tangentially into said combustion chamber, means defining a mixing chamber connected to said combustion chamber and greatly constricted compared to said combustion chamber, means defining a reaction chamber connected to said mixing chamber, said reaction chamber being enlarged compared to said mixing chamber, each of said chambers being aligned along a common middle axis, a carbon black forming material atomizing apparatus including a cylindrical

conduit having outlet means for directing the carbon black forming material radially from within outwardly of said conduit, said cylindrical conduit having a first portion having a selected cross-sectional area and a second portion downstream of said first portion having a cross-sectional area that is less than said cross-sectional area of said first portion, said atomizing apparatus being positioned within the mixing chambers so as to define an annular channel between the exterior of said conduit along said first portion and the wall of said mixing chamber, said mixing chamber having said second portion of said conduit disposed therein along the remaining length of said mixing chamber with said remaining length of said mixing chamber having a greater cross-sectional area than said annular channel, said outlet means of said atomizing apparatus including a set of nozzles on one of said portions of said conduit with the nozzles of said set spaced around the exterior of said conduit, the dimensions of said annular channel being such that the velocity of the combustion gases will reach approximately 400 meters per second, the transition from said combustion chamber to said mixing chamber being stepwise in cross-section.

4,228,133

APPARATUS FOR SULFATIZING ROASTING OF A FINELY-DIVIDED SELENIUM-BEARING RAW MATERIAL

Leo E. Lindroos; Ahti E. Turpeinen, both of Pori, and Aarne A. Kapanen, Espoo, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

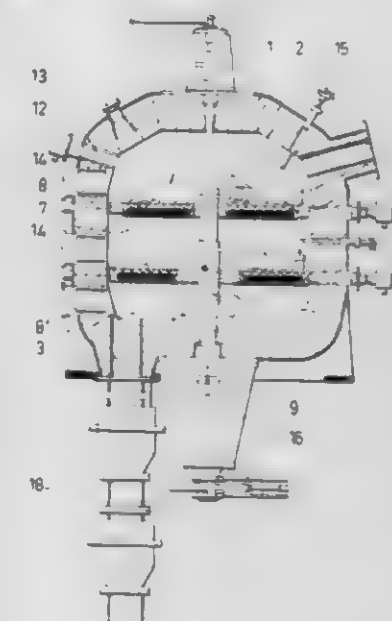
Filed Feb. 23, 1979, Ser. No. 14,433

Claims priority, application Finland, Feb. 24, 1978, 780628

Int. Cl.¹ B01J 3/04; F27B 9/16

U.S. Cl. 422-195

5 Claims



1. An apparatus for the sulfatizing roasting of selenium-containing raw material, especially anode slime from copper electrolysis, with sulfuric acid at a raised temperature, the apparatus comprising: a furnace chamber having an inlet for a slurry of finely-divided, selenium-containing raw material and sulfuric acid, an outlet for withdrawing roasted solid from the furnace chamber, an outlet for discharging selenium-bearing gases produced during the sulfatizing roasting, means for heating the slurry in the furnace chamber, and at least one combination of a tray supporting the slurry and a scraper scraping the tray for transferring, as a layer, the slurry fed into the furnace chamber from the slurry inlet towards the outlet for solid, at least some of the slurry-heating means being mounted in one tray in order to heat it, wherein the slurry inlet is a pipe bent to the side at its lower end and fitted through the top of the furnace chamber and concentrically rotatable with the trays or scrapers in order to distribute the slurry onto a top-most tray.

4,228,134

AUTOClave FOR THERMALLY TREATING VERY LONG RUBBERY HOSE PRODUCTS, AND THE LIKE

Deregibus Alfio, Padova, Italy, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 13, 1977, Ser. No. 841,788

Claims priority, application Italy, Apr. 5, 1977, 23161 A/77

Int. Cl.¹ B01J 3/04; A61L 3/00

U.S. Cl. 422-208

6 Claims

1. An autoclave, for the curing by heat and pressure treatment of rubber hose mounted on a core comprising:

- a very elongated body of U-shaped transverse cross-section and defining a linear trough-shaped chamber which is horizontal and which opens at an upper face of the body and which is closed at each end of the body, said chamber being of such elongation as to receive the hose and core in linear condition without folding or doubling,
- a separate closure for sealing of the upper face opening of the chamber along the whole extent of said opening,
- a plurality of movable means disposed at intervals along-side said body for movement in a direction transverse to its length and vertically downward toward said open end,

4,228,132 HYDROGEN-OXYGEN RECOMBINER

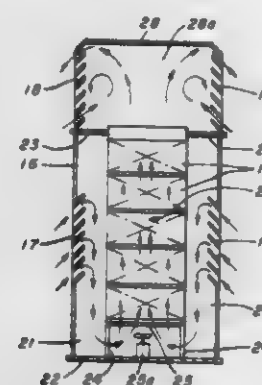
Sterling J. Weems, Chevy Chase, Md., and Harold W. McCurdy, Jr., Vienna, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 686,437, May 14, 1976, Pat. No. 4,139,603, which is a continuation of Ser. No. 387,418, Aug. 10, 1973, abandoned. This application Feb. 17, 1978, Ser. No. 878,850

Int. Cl.¹ G21C 9/00; C01B 5/00

U.S. Cl. 422-174

4 Claims

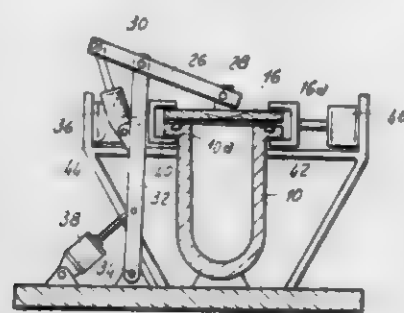


1. A hydrogen-oxygen recombiner for use in a nuclear reactor system to combine hydrogen gas and oxygen gas thereby forming water vapor without the use of a catalyst or a spark device comprising:

a frame defining an inlet zone and a recombination zone for directing a fluid including hydrogen gas and oxygen gas into said inlet zone where said fluid is preheated to about 250° F. thereby drying said fluid as said fluid passes through and thus preventing corrosive damage to said apparatus; and

a plurality of electric heating elements disposed in said recombination zone with the power density of each succeeding electrical heating element being less than the preceding one for heating said fluid to a temperature of about 1150° to 1400° F. to thereby combine the hydrogen gas and oxygen gas into water vapor.

- (iv) means suspending said closure from said movable means to lie in a horizontal plane;
 (v) first means for operating said movable means to selectively move the closure from a first location offset laterally from the body in a transverse direction toward said

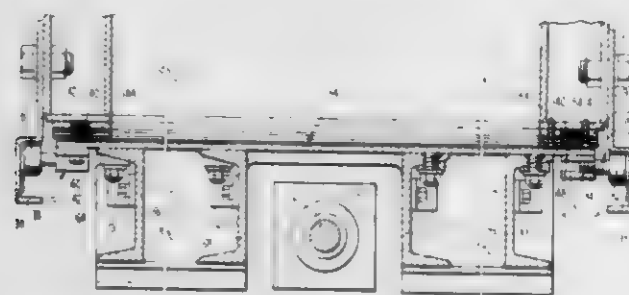


4,228,135 DOOR AND SEAL CONSTRUCTION FOR STERILIZERS

Robert Wolff, Mantoloking, N.J., assignor to Better Built Machinery Corporation, Saddle Brook, N.J.

Filed Sep. 9, 1977, Ser. No. 831,768
 Int. Cl.² A61L 3/00; E06B 7/22
 U.S. Cl. 422-296

5 Claims



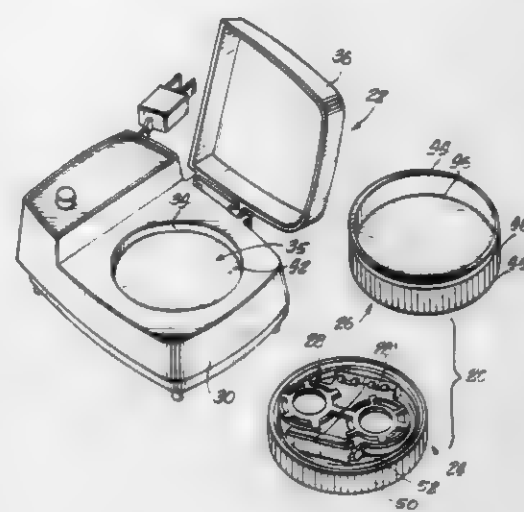
1. A sterilizer construction comprising:
 (a) an enclosure defining an access opening;
 (b) a rigid door having dimensions slightly greater than said access opening;
 (c) roller members mounted on opposite sides of said door;
 (d) elongated guide track means mounted opposite the sides of said access opening;
 (e) said rollers being movably mounted in said guide track means;
 (f) means to restrain said door from displacement under pressure of fluid in said enclosure, said means consisting of restraining means extending substantially along two parallel edges of said door and enclosure;
 (g) a plurality of stacked cover plates forming a channel surrounding said access opening;
 (h) a sealing means comprising two discrete components in said channel, the first of said components being hollow and expandable when provided with fluid under pressure from a suitable source of supply, the second of said components overlying said first-named component and comprising a pair of flanges and an engaging seal portion which engages the inner surface of said door when said first-named component is expanded, said flanges being sandwiched between said plates.

4,228,136 LENS HOLDER AND STERILIZER

Michael D. Thomas, Arab, Ala., assignor to Ryder International Corporation, Hanover Park, Ill.

Filed Feb. 14, 1978, Ser. No. 877,671
 Int. Cl.² A61L 3/00; B05D 81/24
 U.S. Cl. 422-307

14 Claims



1. A generally flat, horizontally elongate lens case for housing a pair of contact lenses in side-by-side relation and adapted for use with a sterilizer unit including a heating well for receiving the case and a heater support surface upon which the lens case will rest, said lens case comprising a base section and a cover section, means on said base and cover sections for affixing one to the other to define the assembled condition for said case and provide an enclosed space for a sterilizing solution, said base section including separate, side-by-side lens support arrangements, each for receiving one of a pair of lenses, each said lens support arrangement including a convex support surface facing outwardly of said base section and adapted to have a lens supported thereon with the concave surface of the lens engaging said convex support surface, and a concave cover member adapted to overlie said convex support surface in spaced relation thereto to retain a lens therebetween, said cover members including aperture means for permitting the flow of sterilizing solution to the lenses, such that both said lenses will be oriented in the same manner with respect to said base section, and means on said lens case permitting only said cover section to be received in said sterilizing unit heating well and engaged with said heater support surface, thus insuring that when said lens case is disposed in said heating well, the contact lens support means will be disposed in an inverted position, with said inverted position permitting said lenses to be supported on the concave cover members, so that the concave surfaces of the lenses will be exposed directly to the sterilizing solution, and the length of the heat transfer path through the case material is maximized thereby to prevent against the possibility of overheating of the lenses.

4,228,137 METHOD OF PRODUCING FAUJASITE ZEOLITES EMPLOYING SEEDING TECHNIQUES

Dennis R. Taylor, Covina, and Mark Jones, Anaheim, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Oct. 18, 1979, Ser. No. 85,851
 Int. Cl.³ C01B 33/28

U.S. Cl. 423-118

12 Claims

1. The process of producing a faujasite zeolite having a $\text{SiO}_2/\text{Al}_2\text{O}_3$ molar ratio in excess of three (3) which comprises digesting, at a relatively low temperature, a water mixture of natural crystalline halloysite as a source of aluminum and silicon and a source of sodium and forming seed in a mother liquor; forming a hot soak composed of a mixture in water of a source of aluminum, silicon and sodium including said seeds and digesting said hot soak at a higher temperature than said

relatively low temperature, and forming said zeolite, in a mother liquor, separating said zeolite from said last named mother liquor, the $\text{Na}_2\text{O}/\text{SiO}_2$ molar ratio in said cold soak being substantially in excess of the $\text{Na}_2\text{O}/\text{SiO}_2$ ratio in the hot soak and the $\text{H}_2\text{O}/\text{Na}_2\text{O}$ ratio in the cold soak being substantially less than in the said hot soak.

4,228,138 CATALYSIS

Paul A. Sermon, Cowley, England, assignor to Johnson, Matthey & Co., Limited, London, England

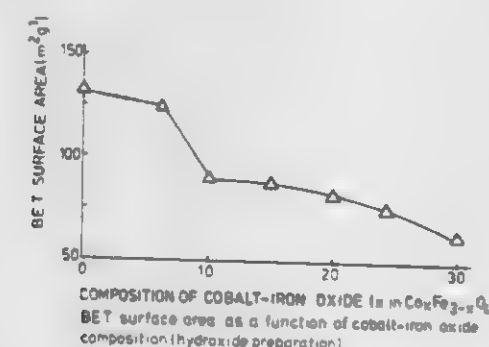
Continuation-in-part of Ser. No. 740,172, Nov. 9, 1976, Pat. No. 4,088,604, which is a continuation of Ser. No. 553,308, Feb. 26, 1975, abandoned. This application Jan. 25, 1978, Ser. No. 872,589

Claims priority, application United Kingdom, Mar. 6, 1974, 10063/74

Int. Cl.² B01D 53/34

U.S. Cl. 423-239

10 Claims



1. A process for decomposing NO in air or other gaseous media containing the oxide which includes the step of contacting said air or other gaseous media with a supported catalyst comprising a mixed oxide selected from the group consisting of:

- (a) $\text{Co}_x\text{Fe}_{1-x}\text{Fe}_2\text{O}_4$ where x normally has values greater than 0 and up to 1 and;
 (b) $\text{Co}^{II}\text{Co}^{III}_x\text{Fe}^{III}_{3-x}\text{O}_4$ where x normally has values $1 \leq x \leq 3$,

the catalyst support being a corrugated or extended metallic substrate or nichrome wire having deposited thereon a first layer, 0.0004 to 0.001 inch thick, comprising an adherent alumina coating.

4,228,139 FLUE GAS SCRUBBING PROCESS USING FLY ASH ALKALI

Carlton A. Johnson, Old Tappan, N.J., assignor to Peabody Process System, Inc., Stamford, Conn.

Filed Mar. 6, 1979, Ser. No. 18,291

Int. Cl.² C01B 17/00

U.S. Cl. 423-242

9 Claims

1. The process of utilizing fly ash for the removal of sulfur dioxide from flue gas comprising the steps of
 A. acid leaching fly ash to provide a high ionic strength scrubber slurry;
 B. contacting the flue gas with said scrubber slurry at a pH of less than about 4; and
 C. maintaining the ionic concentration of the scrubber slurry at a concentration at over about 5,000 ppm by recycling the scrubber slurry supernatant in a closed loop, water balanced system comprising a waste reservoir with an inlet conduit for scrubber slurry and solids and a return conduit for scrubber slurry supernatant, said waste reservoir having a relatively small volume to retain high ionic concentration of the scrubber slurry supernatant which is returned to recontact the flue gas.

4,228,140 PRODUCTION OF PHOSPHATES

Stephen J. King, Clearwater, Fla., assignor to The Nash Engineering Company, Norwalk, Conn.

Filed Jun. 13, 1977, Ser. No. 806,391

Int. Cl.² C01B 25/16

U.S. Cl. 423-320

14 Claims

1. In a method of producing phosphoric acid which includes subjecting a phosphate bearing rock to attack by sulfuric acid to produce a slurry of phosphoric acid and by-products, cooling the slurry by evaporation, filtering the resultant cooled slurry, and concentrating the resultant filtrate by evaporation to obtain relatively pure phosphoric acid, the improvement comprising delivering filtrate from a vacuum filter to a filtrate receiving chamber, connecting said filtrate receiving chamber to the inlet of a liquid ring pump and delivering sulfuric acid to the pump to constitute the ring liquid therefor in concentrations such that corrosion of the pump is minimized and operating said pump to cause said filtrate receiving chamber to be subject to a low pressure.

4,228,141 PROCESS FOR A GASIFICATION OF GRAPHITE

Susumu Sugikawa, Tohoku; Mitsuru Maeda, Mito, and Takeshi Tsujino, Tohoku, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,801

Claims priority, application Japan, Mar. 7, 1977, 52-24601

Int. Cl.² C01B 31/18

U.S. Cl. 423-415 A

8 Claims

1. A process for gasification of graphite blocks comprising soaking the graphite block in a solution comprising a nitrate of a gasification catalyst selected from the group consisting of iron, cobalt or nickel and nitric acid at temperatures of from 20°-90° C. to impregnate the graphite block with the gasification catalyst and then contacting the catalyst-containing graphite block with carbon dioxide at a temperature above 1000° C. and gasifying said graphite.

4,228,142 PROCESS FOR PRODUCING DIAMOND-LIKE CARBON

Cressie E. Holcombe, Jr., 1613 Blackwood Dr., Knoxville, Tenn. 37919; James B. Condon, 511 Robertsville Rd., and D. H. Johnson, 113 Morgan Rd., both of Oak Ridge, Tenn. 37830

Filed Aug. 31, 1979, Ser. No. 71,778

Int. Cl.² C01B 31/02

U.S. Cl. 423-449

24 Claims

1. A process for producing metastable carbon phases which comprises reacting a fluorocarbon with silicon carbide or a precursor of silicon carbide at a temperature of above about 800° C.

7. A process for producing metastable carbon phases which comprises reacting silicon carbide and carbon tetrafluoride at a temperature between about 800° and 1200° C.

4,228,143 METHOD OF PRODUCING PELLETTED CARBON BLACK

Paul J. Cheng, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 22, 1978, Ser. No. 880,243

Int. Cl.² C01B 31/00, 31/02; C09C 1/56

U.S. Cl. 423-445

2 Claims

1. A method of producing pelleted carbon black to reduce modulus loss comprising:

providing flocculent carbon black having a toluene photometer of between about 45 and 65 or a chloroform photometer of between about 78 and about 90, an $\text{N}_2\text{SA-CTAB}$ value of less than about 10 m^2/gm , an $\text{N}_2\text{SA-I}_2$ adsorption number of between about 6 and about 20, and a nitrogen surface area of between about 75 m^2/gm and about 140 m^2/gm ;
 pelleting said flocculent carbon black using an aqueous

assuming an unrolled configuration favoring retention thereof in the rumen.

4,228,150

METHOD OF INHIBITING DEXTRANSUCRASE AND ORAL COMPOSITIONS FOR USE THEREIN

John F. Robyt, and John N. Zikopoulos, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Apr. 23, 1979, Ser. No. 32,398

Int. Cl.² A61K 9/68, 7/18, 31/70

U.S. Cl. 424—48

26 Claims

1. The method of inhibiting dextranase synthesis of dextran from sucrose, comprising introducing into an aqueous substrate containing sucrose and dextranase an inhibitory amount of at least one fluorosucrose which has been substituted at least at the 6-position with a fluorine atom for the hydroxyl group.

4,228,151

COSMETIC COMPOSITION FOR IMPARTING TO HUMAN SKIN A COLORATION RESEMBLING A NATURAL TAN

Gerard Lang, Epinay-sur-Seine, and Serge Forestier, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

Filed May 3, 1977, Ser. No. 793,317

Claims priority, application France, May 3, 1976, 76 13165

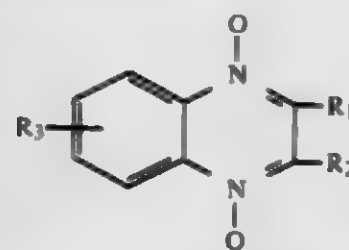
Int. Cl.³ A61K 7/42, 7/44, 7/021, 31/495

U.S. Cl. 424—60

19 Claims

1. A process for coloring human skin comprising applying to the skin in an amount sufficient to impart to said skin after exposure to ultraviolet rays a coloration resembling a natural tan a composition comprising a cosmetic vehicle suitable for topical application to the skin selected from the group consisting of

- (1) a hydroalcoholic solution containing 10-90 weight percent alcohol,
 - (2) a glycerin-alcoholic solution containing 10-90 weight percent alcohol,
 - (3) a glycerin-hydroalcoholic solution containing 10-90 weight percent alcohol,
 - (4) an oleo-alcohol composition containing a vegetable oil, a lower alkyl ester and a lower alcohol having 1-4 carbon atoms,
 - (5) an aqueous gel including a surfactant and a gel forming agent, and
 - (6) an oil-in-water emulsion including a surfactant, an oil, a thickening agent and a humectant,
- and at least one compound selected from the group consisting of
- (a) a compound of the formula



wherein R₁ and R₂ each independently represent hydrogen, a linear or branched alkyl having 1-18 carbon atoms, carbalkoxy having 2-5 carbon atoms, acyl having 2-5 carbon atoms, phenyl and phenyl substituted by a member selected from the group consisting of alkyl having 1-4 carbon atoms and hydroxy, and

R₃ represents hydrogen, lower alkyl containing 1-6 carbon atoms, lower alkoxy containing 1-4 carbon atoms or halogen, with the proviso that R₁, R₂ and R₃ are not hydrogen simultaneously; and

(b) an acid addition salt of the compound in (a), said compound being present in an amount of 0.5-10 percent by weight of said composition, and said composition having a pH between 3 and 8.5, and exposing the skin to ultraviolet rays for a time effective to develop said color on said skin.

4,228,152

POLYMERS CONTAINING PROSTAGLANDIN RADICALS, PROCESS FOR THEIR PREPARATION AND USE THEREOF

Paolo Ferruti, V.le Cassiodora, 24, and Rodolfo Paoletti, V.le Regina Margherita, 43, both of Milan, Italy

Continuation-in-part of Ser. No. 620,401, Oct. 7, 1975,

abandoned. This application Nov. 14, 1978, Ser. No. 960,665

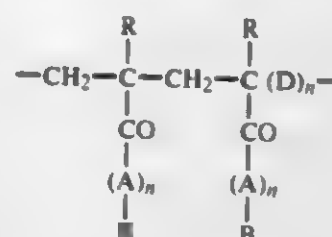
Claims priority, application Italy, Oct. 7, 1975, 28419 A/75

Int. Cl.² A61K 31/78

U.S. Cl. 424—81

13 Claims

1. A non-toxic polymer having a molecular weight between 1,000 and 1,500,000 containing prostaglandin radicals bound to a polyacrylic or polymethacrylic backbone either directly or through oxyalkylenic, aminoalkylenic or oxyaminoalkylenic chains, said polymer containing units of the formula



wherein R represents H or CH₃, A represents an alkylene radical terminated at both ends with an —NH— or —O— group, n represents 0 or 1 in both occurrences, B represents —OPg or —CO—Pg wherein Pg represents a prostaglandin residue, and D represents a divalent radical supplied by a comonomer selected from the group consisting of 1-acryloyl-4-methyl piperazine, N-acryloyl morpholine, N-vinyl pyrrolidone, divinylbenzene, methylene bisacrylamide, N,N'-bisacryloyl piperazine, N,N'-bisacryloyl N,N'-dimethylethylene diamine.

4,228,153

COSMETIC COMPOSITION

Pencho V. Burov, Dryanovo, and Nadejda A. Kyuleva, Sofia, both of Bulgaria, assignors to DSO "Pharmachim", Sofia, Bulgaria

Filed Jun. 12, 1978, Ser. No. 914,506

Claims priority, application Bulgaria, Jun. 10, 1977, 36563

Int. Cl.² A61K 35/12, 35/56, 31/675

U.S. Cl. 424—95

2 Claims

1. A cosmetic composition including an active component comprising a mixture of a 0.6-0.8% solution of a collagen and from 0.6-1% pyridoxal-5-phosphate.

4,228,154

PURIFICATION OF PLASMA ALBUMIN BY ION EXCHANGE CHROMATOGRAPHY

Joseph D. Fisher, Chicago Heights; Willie M. Curry, and Michael E. Hrinda, both of Park Forest, all of Ill., assignors to Armour Pharmaceutical Company, Scottsdale, Ariz.

Filed Feb. 26, 1979, Ser. No. 14,837

Int. Cl.² A61K 37/02; C07G 7/00

U.S. Cl. 424—101

11 Claims

1. In the process for isolation of purified plasma albumin wherein plasma is processed by cold alcohol fractionation to develop an albumin-containing Cohn II + III supernatant fluid, an improvement in the procedure for further isolation of albumin from proteinaceous material in the fluid, said improvement comprising the steps of:

(a) intimately contacting said fluid with lipoprotein extractant means;

(b) adjusting the pH of the fluid to from about 4.5 to 4.9 and intimately contacting the pH-adjusted fluid with an anionic ion exchanger means for removing from said pH-adjusted fluid proteinaceous materials having an isoelectric point below that of albumin; and

(c) adjusting the pH of said fluid from about 5.1 to 5.5 and intimately contacting the pH-adjusted fluid with a cationic ion exchanger means for removing from said pH-adjusted fluid proteinaceous materials having an isoelectric point above that of albumin,

whereby an albumin-containing fluid product is obtained substantially free of contaminating proteinaceous materials having an isoelectric point below or above that of albumin.

4,228,155

SYNTHETIC PEPTIDES HAVING PITUITARY GROWTH HORMONE RELEASING ACTIVITY

Frank A. Momany, Memphis, Tenn., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 30, 1979, Ser. No. 25,534

Int. Cl.² A61K 37/00; C07C 103/52; C08L 37/00

U.S. Cl. 424—177

11 Claims

1. A peptide having a formula

X-Y-D-Phe-D-Phe-Lys-Met-L

and the pharmaceutically acceptable non-toxic acid addition salts, thereof wherein

X is selected from a group consisting of —NH₂, —NHCH₃, and —N(CH₃)₂;

Y is selected from a group consisting of Trp and D-Trp; and L is selected from a group consisting of —CONH₂, —CONHR, —CONR₁R₂, —CH₂OR, —CH₂OH, —COOH, and —COOR, wherein each R, R₁, and R₂ is independently selected from a group consisting of straight and branch alkyl groups containing 1-6 carbon atoms.

4,228,156

SYNTHETIC PEPTIDES HAVING PITUITARY GROWTH HORMONE RELEASING ACTIVITY

Frank A. Momany, Memphis, Tenn., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 30, 1979, Ser. No. 25,532

Int. Cl.² A61K 37/00; C07C 103/52; C08L 37/00

U.S. Cl. 424—177

11 Claims

1. A peptide having a formula

X-D-Trp-Z-E-G

and the pharmaceutically acceptable non-toxic acid addition salts thereof wherein

X is selected from a group consisting of —NH₂, —NHCH₃, and —N(CH₃)₂;

Z is selected from a group consisting of D-Trp and D-Phe; E is selected from a group consisting of Trp and Phe; and G is selected from a group consisting of —CONH₂, —CONHR, —CONR₁R₂, —CH₂OR, —CH₂OH, —COOH, and —COOR, wherein each R, R₁, and R₂ is independently selected from a group consisting of straight and branch alkyl groups containing 1-6 carbon atoms.

4,228,157

SYNTHETIC PEPTIDES HAVING PITUITARY GROWTH HORMONE RELEASING ACTIVITY

Frank A. Momany, Memphis, Tenn., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 30, 1979, Ser. No. 25,533

Int. Cl.² H61K 37/00; C08L 37/00; C07C 103/52

U.S. Cl. 424—177

11 Claims

1. A peptide having a formula

X-Trp-D-Phe-Ala-Tyr-J-L

and the pharmaceutically acceptable non-toxic acid addition salts, thereof wherein

X is selected from a group consisting of —NH₂, —NHCH₃, and —N(CH₃)₂;

J is selected from a group consisting of D-Leu and Met; and

L is selected from a group consisting of —CONH₂, —CONHR, —CONR₁R₂, —CH₂OR, —CH₂OH, —COOH, and —COOR, wherein each R, R₁, and R₂ is independently selected from a group consisting of straight and branch alkyl groups containing 1-6 carbon atoms.

4,228,158

SYNTHETIC PEPTIDES HAVING PITUITARY GROWTH HORMONE RELEASING ACTIVITY

Frank A. Momany, Memphis, Tenn., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 30, 1979, Ser. No. 25,535

Int. Cl.² A61K 37/00; C07C 103/52; C08L 37/00

U.S. Cl. 424—177

16 Claims

1. A peptide having a formula

X-Y-Z-E-G-J-L

and the pharmaceutically acceptable non-toxic acid addition salts thereof wherein

X is selected from a group consisting of —NH₂, —NHCH₃, and —N(CH₃)₂;

Y and G are independently selected from a group consisting of Tyr, Trp, and Phe;

Z and E are independently selected from a group consisting of D-Tyr, D-Trp, and D-Phe;

J is selected from a group consisting of Leu, Ile, and Met; and

L is selected from a group consisting of —CONH₂, —CONHR, —CONR₁R₂, —CH₂OR, —CH₂OH, —COOH, and —COOR, wherein each R, R₁, and R₂ is independently selected from a group consisting of straight and branched alkyl groups containing 1-6 carbon atoms.

4,228,159

STABILIZATION OF VITAMIN A IN PRESENCE OF TRACE MINERALS

Melvin J. MacMillan, Cranford, N.J., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 18, 1979, Ser. No. 49,097

Int. Cl.³ A61K 31/00, 47/00, 31/07, 33/24

U.S. Cl. 424—175

16 Claims

1. An admixture of vitamin A and a trace mineral supplement containing at least one trace mineral wherein said supplement is composed of small, solid granular particles, the majority of said particles being of a size such that they pass through a 16 mesh screen, but essentially all are retained on an 80 mesh screen, each particle being an intimate mixture of:

- (a) at least one trace mineral coated with
- (b) an effective amount of lignin sulfonates to reduce degradation of vitamin A when in contact with said trace mineral.

4,228,160

**INCLUSION COMPLEX OF CYCLODEXTRIN AND
INDOMETHACIN AND A PROCESS FOR THE
PREPARATION THEREOF, METHOD OF USE AND
PHARMACEUTICAL COMPOSITION**

József Szejtli; Lajos Szenté; Agoston Dávid; Sándor Virág; Gyula Sebestyén, and Attila Mándi, all of Budapest, Hungary, assignors to Chinoin Gyógyszer és Vegészeti Termékek Gyára Rt., Budapest, Hungary

Filed Jan. 24, 1979, Ser. No. 6,185

Claims priority, application Hungary, Jan. 27, 1978, CI 1803

Int. Cl.² A61K 31/70; C08B 37/16

U.S. Cl. 424—180

13 Claims

1. An inclusion complex of cyclodextrin and indomethacin in a molar ratio of about 2:1.

11. A pharmaceutical composition of antiinflammatory activity containing an effective amount of an inclusion complex of cyclodextrin and indomethacin in a molar ratio of about 2:1 and a pharmaceutically acceptable inert solid or liquid carrier.

4,228,161

**ANTI-INFLAMMATORY COMBINATION HAVING
REDUCED ULCEROGENICITY**

Tsung-Ying Shen, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 28, 1979, Ser. No. 24,639

Int. Cl.² A61K 31/405, 31/62

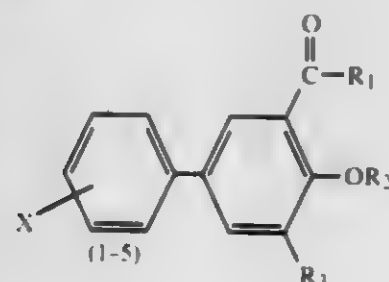
U.S. Cl. 424—232

8 Claims

1. In combination:

(a) 1-(p-chlorobenzoyl)-5-methoxy-2-methylindole-3-acetic acid; and

(b) a member selected from phenyl benzoic acid compounds of the formula:



wherein

X₁₋₅ is halo; X being on one or more of the phenyl carbon atoms;

R₁ is selected from the group consisting of hydroxy, phenoxy, diloweralkylamino, and diloweralkylamino loweralkoxy;

R₂ is selected from the group consisting of hydrogen; lower alkanoyl; and lower alkoxy; and

R₃ is selected from the group consisting of hydrogen and methyl; and pharmaceutically acceptable, non-toxic salt thereof; wherein the molar ration of (b) to (a) is from 0.5 to 1.0 to 15.0 to 1:0.

4,228,162

**DIMETHYL ISOSORBIDE IN LIQUID FORMULATION
OF ASPIRIN**

Louis A. Luzzi, and Joseph K. H. Ma, both of Morgantown, W. Va., assignors to Research Corporation, New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,703

Int. Cl.² A61K 31/60, 31/605, 31/62

U.S. Cl. 424—232

5 Claims

1. A stable liquid aspirin composition which comprises the admixture of a pharmaceutically effective concentration of acetylsalicylic acid in dimethyl isosorbide.

**METHOD FOR TREATING PSEUDOFOLLICULITIS
BARBAE**

William E. Bliss, Fort Washington, Pa., assignor to Dermik Laboratories, Fort Washington, Pa.

Filed Mar. 30, 1979, Ser. No. 25,390

Int. Cl.¹ A61K 31/56, 31/47

U.S. Cl. 424—240

8 Claims

1. A method for treating pseudofolliculitis barbae in humans and the prophylactic treatment thereof, which comprises: topically applying to involved areas of the human body an effective amount of a composition of benzoyl peroxide and 5-chloro-8-hydroxyquinoline in a concentration of about 0.05 to about 20% by weight of the total composition, in a suitable pharmaceutically acceptable carrier.

4,228,164

**CONDENSED PURINE DERIVATIVES USEFUL FOR
IMPROVING PERIPHERAL CIRCULATION**

Rudolf Szebeni; Dezső Korbonits; Kálmán Harsányi, all of Budapest; Molinár Leventéné, Sződliget; László Szekeres; Gyula Papp, both of Szeged, and Gyula Sebestyén, Budapest, all of Hungary, assignors to Chinoin Gyógyszer és Vegészeti Termékek Gyára Rt., Budapest, Hungary

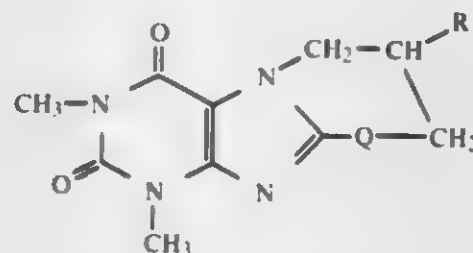
Filed Nov. 7, 1978, Ser. No. 958,526

Int. Cl.² A61K 31/54, 31/52; C07D 473/08, 513/14

U.S. Cl. 424—246

10 Claims

1. A compound of the formula



wherein

R is hydroxy, or acetyloxy Q is sulfur or a —N—R¹ group, wherein R¹ is hydrogen, C₁₋₅ alkyl benzyl or C₂₋₄ acyl, or a pharmaceutically acceptable acid addition salt thereof.

9. A pharmaceutical composition for improving the peripheral circulation, comprising as active ingredient at least one compound of the formula I as defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof admixed with the usual pharmaceutically acceptable carriers and/or solvents.

4,228,165

**PHENYL ISOTHIOCYANATE DERIVATIVES AND
THEIR PRODUCTION**

Masaru Ogata, Kobe; Yoshihachi Watanabe, Shiga; Hiroshi Matsumoto, Takatsuki, and Katsuya Tawara, Ibaraki, all of Japan, assignors to Shionogi & Co., Ltd., Japan

Division of Ser. No. 946,422, Sep. 25, 1978. This application Jun. 11, 1979, Ser. No. 47,803

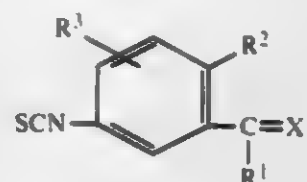
Claims priority, application Japan, Oct. 4, 1977, 52/119789

Int. Cl.³ A01N 43/84; C07C 161/04; C07D 307/64, 295/12

U.S. Cl. 424—248.5

12 Claims

1. An agricultural fungicidal composition comprising a fungicidally effective amount of a compound of the formula:



wherein

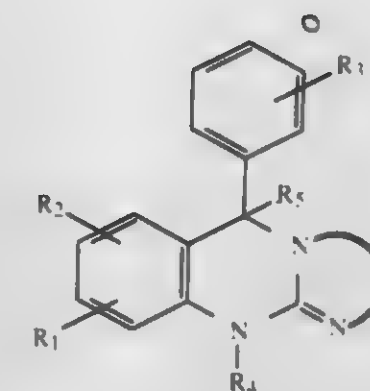
X is oxygen or sulfur;

R¹ is hydroxy, phenoxy, amino, methylamino, ethylamino, propylamino, isopropylamino, butylamino, dimethylamino, methylethylamino, diethylamino, ethylbutylamino, dibutylamino, phenylamino, tolylamino, xylylamino, mesitylamino, cumenylamino, tetrahydrofurfurylamino, morpholino or methylpiperazino; but when X is sulfur R¹ must be amino, methylamino, ethylamino, propylamino, isopropylamino, butylamino, dimethylamino, methylethylamino, diethylamino, ethylbutylamino, dibutylamino, or morpholino;

R² is methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy, or t-butoxy; and

R³ is hydrogen, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy, t-butoxy, dimethylamino, methylethylamino, diethylamino, ethylbutylamino, dibutylamino, fluorine, chlorine, bromine or iodine,

or its salts and one or more agriculturally suitable carriers and/or adjuvants.



wherein R₁, R₂ and R₃ are independently hydrogen, halogen, C₁₋₃ alkyl or C₁₋₃ alkoxy; R₄ is C₁₋₅ alkyl, C₁₋₅ alkenyl, aralkyl or cyclo C₃₋₈ alkyl-C₁₋₃ alkyl; R₅ is hydrogen or hydroxy; and A is C₂₋₃ alkylene which may optionally be substituted by one or two C₁₋₃ alkyl, or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition comprising as an active ingredient a diuretically or vasodilatingly effective amount of a compound of claim 1, or its pharmaceutically acceptable acid addition salts and a pharmaceutically acceptable carrier.

4,228,166

**2-KETO-4,5-DIHYDRO-3 (2H)-PYRIDAZINONES, AND
THEIR USE IN TREATING MUSCLE TENSION**

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

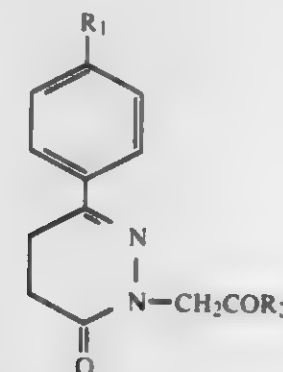
Filed Mar. 5, 1979, Ser. No. 17,353

Int. Cl.² C07D 237/04; A61K 31/50

U.S. Cl. 424—250

5 Claims

1. A method of treating muscle tension in animals which comprises administering to an animal in need of such treatment a therapeutically effective amount of a compound of the formula:



where

R₁ is fluoro or chloro and

R₂ is branch chain lower alkyl having 3 to 4 carbon atoms.

4,228,168

**AZEPINO [1,2,3-LM]-β-CARBOLINE COMPOUNDS AND
PHARMACEUTICAL COMPOSITION THEREOF**

Yasuhiko Sato, Urawa; Tomishige Mizoguchi, Wako; Yukitsuka Kudo, Osaka, and Ryuichi Ishida, Suita, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Nov. 2, 1979, Ser. No. 90,528

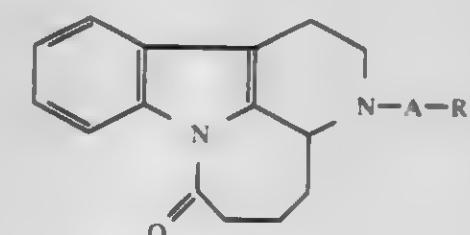
Claims priority, application United Kingdom, Nov. 22, 1978, 45665/78

Int. Cl.¹ C07D 471/14; A61K 31/55

U.S. Cl. 424—256

7 Claims

1. An azepino[1,2,3-lm]-β-carboline compound of the formula:



wherein R¹ is hydrogen, cycloalkyl of 3 to 7 carbon atoms, phenyl, hydroxy, alkoxy, carbonyl of 2 or 3 carbon atoms or alkanoyl of 2 or 3 carbon atoms, and A is single bond or straight or branched alkylene of one to 5 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

7. An anti-anoxic composition consisting essentially of a compound of claim 1 and a pharmaceutically acceptable carrier, in an amount sufficient to provide a therapeutically effective amount of said compound when administered to warm blooded animals.

4,228,169

**1,9-DIHYDROXYOCTAHYDROBENZO[c]QUINOLINES
AND**

**1-HYDROXYHEXAHYDROBENZO[c]QUINOLINE-
9(8H)-ONES AS ANTIEMETIC AGENTS**

Michael R. Johnson, Gales Ferry, and George M. Milne, Niantic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 26, 1979, Ser. No. 52,324

Int. Cl.² A61K 27/00, 31/47

U.S. Cl. 424—258

27 Claims

1. A process for the prevention and treatment of nausea in a mammal subject to said nausea which comprises administering to said mammal a compound in an amount effective to prevent

4,228,167

**DIURETIC AND VASODILATING TRICYCLIC
QUINAZOLINES**

Michihiro Yamamoto; Masao Koshiba, both of Nishinomiya, and Shunji Aono, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 5, 1978, Ser. No. 939,869

Claims priority, application Japan, Sep. 6, 1977, 52/107643

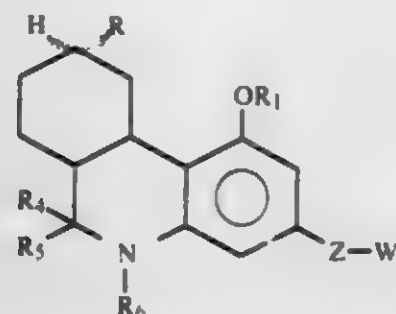
Int. Cl.² A61K 31/505; C07D 487/14

U.S. Cl. 424—251

6 Claims

1. A compound of the formula,

nausea, said compound being selected from the group consisting of



and the pharmaceutically acceptable acid addition salts thereof.

wherein R is selected from the group consisting of hydroxy and alkanoyloxy having from one to five carbon atoms; R₁ is selected from the group consisting of hydrogen, benzyl, benzoyl, alkanoyl having from one to five carbon atoms and —CO—(CH₂)_p—NR₂R₃ wherein p is 0 or an integer from 1 to 4; each of R₂ and R₃ when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R₂ and R₃ when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

R₄ is selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms and —(CH₂)_x—C₆H₅ wherein x is an integer from 1 to 4;

R₅ is selected from the group consisting of hydrogen, methyl and ethyl;

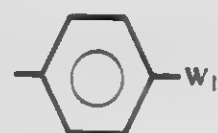
R₆ is selected from the group consisting of hydrogen, —(CH₂)_y—carbalkoxy having from one to four carbon atoms in the alkoxy group and wherein y is 0 or an integer from 1 to 4, carbobenzyloxy, formyl, alkanoyl having from two to five carbon atoms, alkyl having from one to six carbon atoms and —(CH₂)_x—C₆H₅ wherein x is an integer from 1 to 4; and CO(CH₂)_{x-1}—C₆H₅;

Z is selected from the group consisting of

(a) alkylene having from one to nine carbon atoms;

(b) —(alk₁)_m—X—(alk₂)_n— wherein each of (alk₁) and (alk₂) is alkylene having from one to nine carbon atoms, with the proviso that the summation of carbon atoms in (alk₁) plus (alk₂) is not greater than nine; each of m and n is 0 or 1; X is selected from the group consisting of O, S, SO and SO₂; and

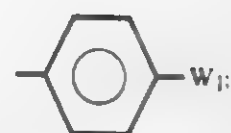
W is selected from the group consisting of hydrogen, methyl, pyridyl, piperidyl,



wherein W₁ is selected from the group consisting of hydrogen, fluoro and chloro; and



wherein W₂ is selected from the group consisting of hydrogen and



a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5.

4,228,170

7- AND/OR 8-SULFUR SUBSTITUTED

1,2,3,4-TETRAHYDROISOQUINOLINE COMPOUNDS

William E. Bondinell, Cherry Hill, N.J., and Robert G. Pendleton, Philadelphia, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

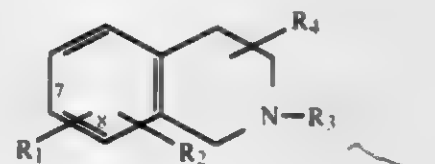
Filed Aug. 30, 1979, Ser. No. 71,203

Int. Cl.² A61K 31/47; C07D 217/02

U.S. Cl. 424—258

1. A compound of the formula:

13 Claims



in which:

R₁ is mercapto, methylthio, methylsulfinyl, methylsulfonyl, trichloromethylthio, trichloromethylsulfinyl, trichloromethylsulfonyl, trifluoromethylthio, trifluoromethylsulfinyl, trifluoromethylsulfonyl or fluorosulfonyl;

R₂ is hydrogen, halo or trifluoromethyl and provided that when R₁ is methylthio R₂ is also methylthio, with R₁ and R₂ being limited to the 7 and 8 positions;

R₃ and R₄ are each hydrogen or lower alkyl; or a pharmaceutically acceptable acid addition salt thereof.

9. A pharmaceutical composition in dosage unit form for inhibiting phenylethanolamine N-methyltransferase comprising a pharmaceutical carrier and an effective amount of the compound as described in claim 1.

4,228,171

ANTICHLORINERGIC BRONCHODILATORS

Jurg R. Pfister, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

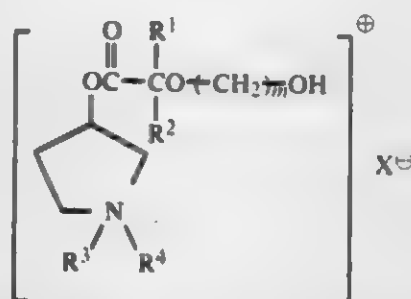
Filed Mar. 5, 1979, Ser. No. 17,302

Int. Cl.² C07D 207/12; A61K 31/40, 31/44

U.S. Cl. 424—263

1. Compounds of the formula

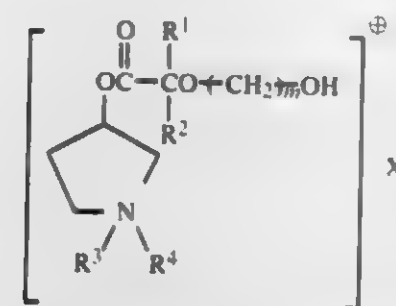
5 Claims



wherein R¹ and R² are the same or different and are phenyl optionally substituted with a substituent selected from the group C₁ to C₆ alkyl, C₁ to C₆ alkoxy and halo; or monovalent heterocyclic radical of aromatic character containing, in addition to a heteroatom which is oxygen, nitrogen or sulfur, 4 or 5 carbon atoms in the ring; R³ and R⁴ are the same or different and are C₁ to C₆ alkyl; m is the integer 2 through 5; and X is an anion which effectively forms a pharmaceutically acceptable, non-toxic salt.

4. An anticholinergic composition which comprises a suit-

able pharmaceutical solvent or dispersant and at least one compound of the formula



wherein R¹ and R² are the same or different and are phenyl optionally substituted with a substituent selected from the group C₁ to C₆ alkyl, C₁ to C₆ alkoxy and halo; or monovalent heterocyclic radical of aromatic character containing, in addition to a heteroatom which is oxygen, nitrogen or sulfur, 4 or 5 carbon atoms in the ring; R³ and R⁴ are the same or different and are C₁ to C₆ alkyl; m is the integer 2 through 5; and X is an anion which effectively forms a pharmaceutically acceptable, non-toxic salt.

4,228,172

SUBSTITUTED PYRIDINE METHYL ESTERS OF 2-ISOPROPYL-2-(4-CHLOROPHENYL)ACETIC ACID AND THEIR USE AS INSECTICIDES

Sudarshan K. Malhotra, Walnut Creek, and John C. Van Heertum, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

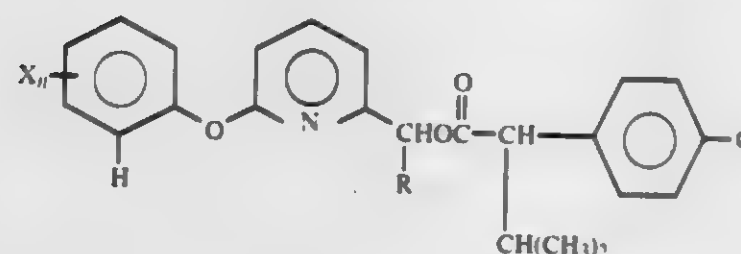
Filed Jul. 30, 1979, Ser. No. 62,453

Int. Cl.² A01N 9/22; C07D 213/64

U.S. Cl. 424—263

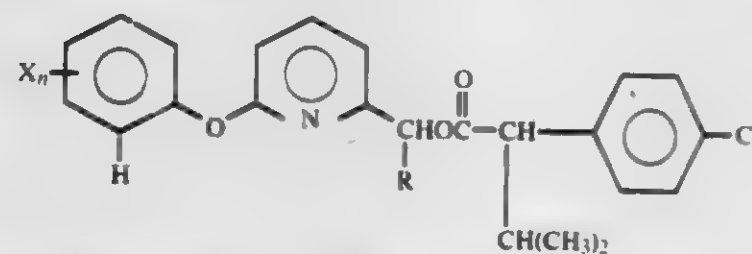
1. A compound corresponding to the formula

33 Claims



wherein n represents an integer of 0 to 2; X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, trifluoromethyl, chloro, fluoro, bromo; and R represents hydrogen, cyano or ethynyl.

23. The method for the kill and control of insects which comprises contacting said insects or their habitat with a composition containing an inert carrier and as the active ingredient, an insecticidally effective amount of a compound corresponding to the formula



wherein n represents an integer of 0 to 2; X independently represents alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, trifluoromethyl, chloro, fluoro, bromo and R represents hydrogen, cyano or ethynyl.

4,228,173

THIOPYRANO-BENZOPYRANS, COMPOSITIONS AND METHOD OF USE THEREOF

(1) Hugh Cairns, and Anthony H. Ingall, both of Loughborough, England, assignors to Fisons Limited, London, England

Filed Jul. 18, 1979, Ser. No. 58,609

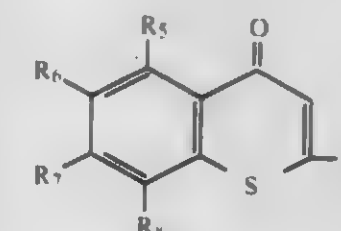
Claims priority, application United Kingdom, Aug. 15, 1978, 33433/78

Int. Cl.² A61K 31/28; C07D 497/04

U.S. Cl. 424—269

1. A compound of formula I.

9 Claims



in which an adjacent pair of R₅, R₆, R₇ and R₈ form a chain —COCH=CE—O—, and the remainder of R₅, R₆, R₇ and R₈, which may be the same or different, each represent hydrogen, hydroxy, alkyl, halogen, alkenyl, alkoxy, or —NR₁R₂ in which R₁ and R₂, which are the same or different, are each hydrogen or alkyl, each of R₁, R₂, R₅, R₆, R₇ and R₈, when they contain carbon, containing up to 8 carbon atoms, and E is —COOH, a 5-tetrazolyl group or an (N-tetrazol-5-yl) carboxamido group, and pharmaceutically acceptable salts, esters and amides thereof.

9. A method for the treatment of reversible airway obstruction or for the prevention of the excretion of excess mucous which comprises administration of an effective amount of a compound according to claim 1 to a patient suffering from such a condition.

4,228,174

CLAVULANIC ACID ETHERS

Roger J. Ponsford, Horsham, and Thomas T. Howarth, Cranleigh, both of England, assignors to Beecham Group Limited, Great Britain

Division of Ser. No. 786,345, Apr. 11, 1977, which is a continuation-in-part of Ser. No. 730,475, Oct. 7, 1976, abandoned. This application Feb. 1, 1979, Ser. No. 8,421

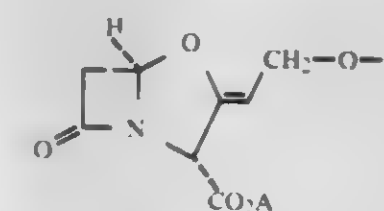
Claims priority, application United Kingdom, Oct. 13, 1975, 41897/75; Jan. 23, 1976, 02629/76; May 8, 1976, 19000/76

Int. Cl.² C07D 498/04; A61K 31/42

U.S. Cl. 424—272

1. An ether of the formula (II):

4 Claims



wherein R is cyanomethyl and A is a group such that CO₂A is carboxylic acid, a pharmaceutically acceptable salt thereof or an alkyl ester thereof of 1 to 8 carbon atoms.

4,228,175

**BIS-(PHENOXYALKYL-2-IMIDAZOLIN)-1,1-SULFIDES,
PROCESS FOR THEIR MANUFACTURE,
COMPOSITIONS WHICH CONTAIN THESE SULFIDES
AS ACTIVE COMPONENT AND USE THEREOF IN PEST
CONTROL**

Manfred Böger, Rhein, Fed. Rep. of Germany; Josef Drabek, Oberwil, Switzerland; Günter Mattern, Liestal, Switzerland, and Water Traber, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

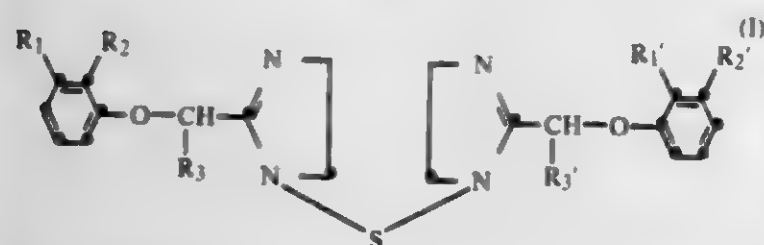
Filed Aug. 23, 1979, Ser. No. 69,033

Claims priority, application Switzerland, Aug. 28, 1978, 9079/78; Aug. 10, 1979, 7370/79

Int. Cl.² A61K 31/415; C07D 233/22

U.S. Cl. 424-273 R

1. A compound of the formula I



wherein R₁, R₁', R₂ and R₂' are, each independently of the other, chlorine or methyl and R₃ and R₃' are, each independently of the other, hydrogen or C₁-C₄-alkyl and the acid addition salts thereof.

7. A method of controlling acarids at a locus which method comprises applying to said locus an acaricidally effective amount of a compound as claimed in claim 1.

4,228,176

THROMBOXANE INHIBITION WITH BURIMAMIDE
Kenneth E. Eakins, Sparkill, and Geoffrey Allan, New York, both of N.Y., assignors to Nelson Research & Development Company, Irvine, Calif.

Division of Ser. No. 903,584, May 8, 1978, Pat. No. 4,172,139. This application Apr. 9, 1979, Ser. No. 28,544

Int. Cl.² A61K 31/415

U.S. Cl. 424-273 R

7 Claims

1. A method for treatment of an inflammatory disease condition comprising the administration to a human or animal suffering from an inflammatory disease condition of an effective, anti-inflammatory amount of Burimamide or a pharmaceutically acceptable salt thereof.

4,228,177

2,3-DIHYDRO-3-(1H-IMIDAZOL-1-YLMETHYLENE)-4H-1-BENZOTHIOPYRAN-4-ONES

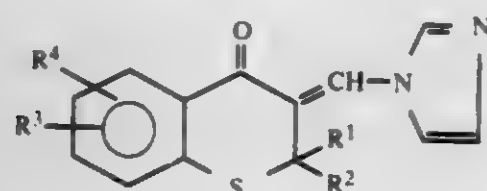
Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 8, 1979, Ser. No. 64,653

Int. Cl.¹ C07D 409/06

U.S. Cl. 424-273 R

1. A compound of the formula



wherein:

R¹ and R² each is hydrogen, lower alkyl, halogen, lower alkoxy, lower alkylthio, phenyl-lower alkyl, phenyl or substituted phenyl, wherein the phenyl bears one halogen.

hydroxy, lower alkoxy, lower alkyl, lower alkylthio, cyano or nitro group;

R³ and R⁴ each is hydrogen, lower alkyl, lower alkylthio, lower alkoxy, halogen, phenyl, hydroxy, or phenyl-lower alkyl;

and non-toxic physiologically acceptable acid addition salts thereof.

4,228,178

**COMBATING FUNGI WITH NOVEL
N-SULPHENYLATED CARBAMOYL COMPOUNDS**

Engelbert Kühle, Berg, Gladbach; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,396

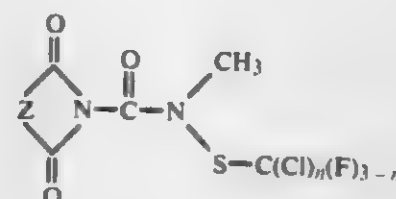
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754492

Int. Cl.² A01N 9/22; C07D 209/48

U.S. Cl. 424-274

7 Claims

1. An N-sulphenylated carbamoyl compound of the formula



in which

Z represents phenyl, cyclohexyl or cyclohexenyl attached to the balance of the molecule through two adjacent C atoms, and

n denotes the number 0, 1, 2 or 3.

6. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,228,179

3-OXO-2-AZASPIRO-2-(N-METHYL)-ACETAMIDES

Johannes Hartenstein, Stegen-Wittental; Gerhard Satzinger, Denzlingen; Manfred Herrmann, St. Peter, and Wolfgang Heldt, Emmendingen, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 746,776, Dec. 2, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,277

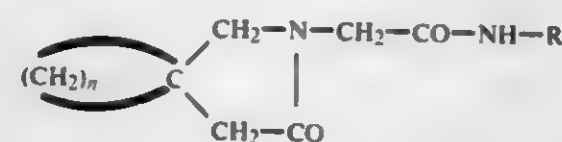
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557220

Int. Cl.² A61K 31/40; C07D 209/54

U.S. Cl. 424-274

24 Claims

1. A compound of the formula:



wherein R is hydrogen, alkyl of from 1 to 5 carbon atoms, or unsaturated alkyl of from 2 to 5 carbon atoms and n is 4, 5, or 6.

24. A pharmaceutical composition useful for the treatment of convulsions which comprises an anti-convulsive effective amount of at least one compound of the formula:

4,228,182

**IMMUNOSUPPRESSIVE
M-FLUORODITHIOCARBANILATES**

Hewitt G. Wight; Tracey G. Call, both of San Luis Obispo, Calif., and Marvin L. Mortensen, Mesa, Ariz., assignors to The California Polytechnic State University Foundation, San Luis Obispo, Calif.

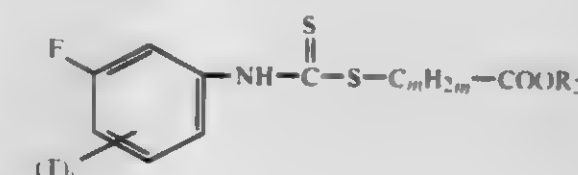
Continuation-in-part of Ser. No. 911,600, Jun. 1, 1978, which is a continuation of Ser. No. 848,433, Nov. 4, 1977, Pat. No. 4,130,578, which is a continuation-in-part of Ser. No. 773,064, Feb. 28, 1977, Pat. No. 4,110,444, which is a continuation-in-part of Ser. No. 579,449, May 21, 1975, abandoned. This application Jun. 27, 1979, Ser. No. 52,614

Int. Cl.¹ C07C 153/11; A61K 31/215

U.S. Cl. 424-300

5 Claims

1. A compound of the formula



wherein T is nitro, fluoro, chloro, bromo, trifluoromethyl, lower alkylsulphonyl, phenylsulphonyl, or (lower alkyl)-phenylsulphonyl;
wherein s is the integer zero or one;
wherein CmH2m is alkylene of one to 5 carbon atoms, inclusive; and
wherein R₂ is alkyl of one to 12 carbon atoms, inclusive;

4,228,183

**NOVEL PHENETHYLAMINE DERIVATIVES AND
PROCESSES FOR PREPARING SAME**

Tasaburo Kiguchi, Osaka; Kimiaki Hayashi, Nara, and Isao Yamaguchi, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jun. 6, 1979, Ser. No. 45,955

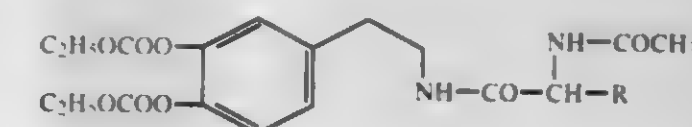
Claims priority, application Japan, Jun. 30, 1978, 53/79938

Int. Cl.¹ A61K 31/265; C07C 69/96

U.S. Cl. 424-301

5 Claims

5. A pharmaceutical composition for increasing renal blood flow activity which comprises a compound of the formula:



wherein R is methyl or 2-methylthioethyl, in an amount sufficient to provide a therapeutic effect when administered, and a pharmaceutically acceptable carrier therefor.

4,228,184

CARBOXYALKYLACYLAMINO ACIDS

Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

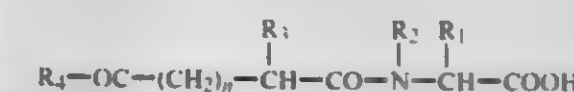
Division of Ser. No. 684,605, May 10, 1976, Pat. No. 4,105,789. This application May 4, 1978, Ser. No. 903,288

Int. Cl.¹ C07C 101/20, 101/72

U.S. Cl. 424-309

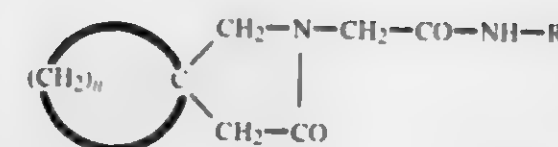
15 Claims

1. A compound of the formula



and salts thereof, wherein

R₁ is hydrogen, lower alkyl, phenyl-lower alkylene, hy-



wherein R is hydrogen, alkyl of from 1 to 5 carbon atoms or unsaturated alkyl of from 2 to 5 carbon atoms and n is 4, 5 or 6 in admixture with a solid or liquid pharmaceutical diluent or carrier.

4,228,180

**7-OXABICYCLOHEPTANE AND
7-OXABICYCLOHEPTENE PROSTAGLANDIN
ANALOGS**

Peter W. Sprague, Pennington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

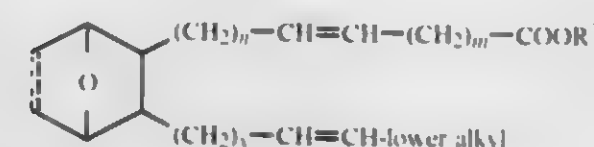
Filed Nov. 1, 1979, Ser. No. 90,226

Int. Cl.¹ A61K 31/34, 31/557; C07D 307/28

U.S. Cl. 424-285

11 Claims

1. A compound of the formula



wherein

R¹ is hydrogen or lower alkyl; n is 0 to 4, m is 0 to 4 and x is 0 to 8.

10. A method of inhibiting platelet aggregation which comprises administering to a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,228,181

**COMBATING PESTS WITH 3,3-DIMETHYLINDAN-5-YL
N-ALKYL-CARBAMIC ACID ESTERS**

Detlef Grotkopp, Duesseldorf; Karlfried Wedemeyer, Cologne; Wilhelm Brandes, Leichlingen; Hans Scheinpfug, Leverkusen, and Peter Roessler, Berg, Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 8, 1978, Ser. No. 932,055

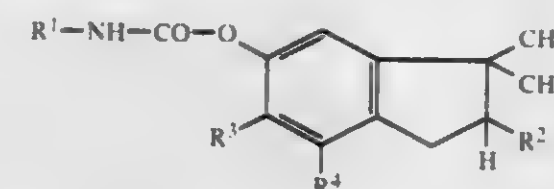
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739193

Int. Cl.² A01N 9/20

U.S. Cl. 424-300

9 Claims

1. A 3,3-dimethylindan-5-yl N-alkyl-carbamic acid ester of the formula



R¹ is alkyl with 1 to 4 carbon atoms,

R² is hydrogen or alkyl with 1 to 4 carbon atoms,

R³ is alkyl with 1 to 4 carbon atoms, and R⁴ is chlorine or alkyl with 1 to 4 carbon atoms.

7. A fungicidal composition containing as active ingredient a fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

8. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

droxy-lower alkylene, hydroxyphenyl-lower alkylene, amino-lower alkylene, guanidino-lower alkylene, mercapto-lower alkylene, lower alkylmercapto-lower alkylene or carbamoyl-lower alkylene;

R₂ is hydrogen or lower alkyl;

R₃ is lower alkyl;

R₄ is hydroxy or lower alkoxy; and n is 1 or 2.

14. A composition useful for alleviating angiotensin dependent hypertension in a mammalian specie containing about 10 to 500 mg. of a compound of claim 1 and a physiologically acceptable vehicle therefor.

4,228,185

N-4-(2,2'-DICHLOROCYCLOPROPYL)PHENYL 2'-IODOBENZAMIDE

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 2, 1979, Ser. No. 26,468

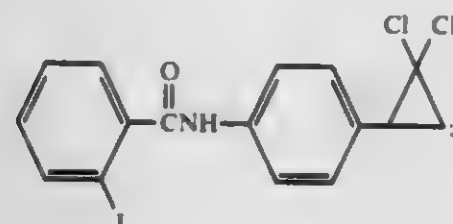
Int. Cl.² A01N 9/20; C07C 103/22

U.S. Cl. 424-324

3 Claims

3. A fungicidal composition comprising:

(a) a fungicidally effective amount of a compound having the formula



and

(b) a fungicidally suitable inert carrier or diluent.

4,228,186

METHOD FOR THE CONTROL OF MANURE-BREEDING INSECTS

Lisby L. Wade, Lake Jackson, Tex.; Donald L. Clarke, Bay City, Mich., and Jack P. Arrington, Clayton, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1978, Ser. No. 965,542

Int. Cl.² A01N 9/20; 9/24; C07C 119/00, 131/00

U.S. Cl. 424-327

3 Claims

1. 2,4-Dichloro-N-((chloro-2,4-dichlorophenyl)methylene)-benzene carbonhydrazonoyl.

2. A composition useful for controlling manure-breeding insects which comprises an insecticidally effective amount of 2,4-dichloro-N-((chloro-2,4-dichlorophenyl)methylene)-benzene carbonhydrazonoyl chloride and an inert adjuvant therefor.

4,228,187

ALKYL AND CYCLOALKYLTHIOPHENYLALKYLAMINOALK- ANOLS, THEIR SALTS AND THE PREPARATION THEREOF

Georges E. Lambelin; Claude L. Gillet, both of Brussels, and Joseph L. Roba, Wanlin, all of Belgium, assignors to Continental Pharma, Brussels, Belgium

Continuation-in-part of Ser. No. 366,508, Jun. 4, 1973, abandoned. This application Aug. 30, 1976, Ser. No. 718,534

Claims priority, application United Kingdom, Apr. 9, 1973, 17001/73

Int. Cl.² A61K 31/135; C07C 91/06

U.S. Cl. 424-330

3 Claims

1. 1-(4-isopropylthiophenyl)-2-n-octylaminopropanol and its non-toxic salts.

3. A pharmaceutical composition comprising from 5-900 mg of at least one compound selected from the group consisting of

1-(4-isopropylthiophenyl)-2-n-octylaminopropanol and its non-toxic salt together with at least one suitable excipient.

4,228,188

METHOD OF MASHING AND LAUTERING

Donald H. Westermann, Brookfield; John E. Sawicki, Mequon, and Nicolaas J. Huige, Glendale, all of Wis., assignors to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Mar. 6, 1978, Ser. No. 883,907

Int. Cl.² C12C 11/00

U.S. Cl. 426-11

4 Claims

1. A method of mashing and lautering, comprising the steps of preparing a mash of malt and water with the malt-to-water weight ratio being in the range of 0.35 to 0.45 to 1, heating the mash to a temperature sufficiently high to liquify the starches in the malt and convert the starches to fermentable sugars, diluting the mash after conversion with sufficient water to provide an equivalent malt-to-water ratio of less than 0.25 to 1, and thereafter lautering the diluted mash in a lautering vessel to separate the spent grains from the liquid phase.

4,228,189

PREPARATION OF YOGURT AND QUARK

Alec F. Henson, Twickenham, England, and Gerard M. M. Bret, The Hague, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 644,698, Dec. 29, 1975, abandoned, which is a division of Ser. No. 538,426, Jan. 3, 1975, Pat. No. 3,963,836, which is a continuation of Ser. No. 358,441, May 8, 1973, abandoned. This application Jul. 3, 1978, Ser. No. 921,531

Claims priority, application United Kingdom, May 10, 1972, 21793/72

The portion of the term of this patent subsequent to Jun. 15, 1993, has been disclaimed.

Int. Cl.² A23C 19/02, 19/14

U.S. Cl. 426-40

1 Claim

1. Quark having a coagulated protein content of 4% to 15% and at least a 100% over-run in the absence of added whipping agents prepared by the process of

(a) pasteurizing skim milk at a temperature from 55°-80° C., (b) rapidly cooling the milk to a temperature not exceeding 50° C., at which the growth of micro-organisms is suppressed, and filtering the pasteurized liquid by contact with a semi-permeable membrane at a pressure between 1 and 50 kgms/cm² across the membrane to filter off a mineral salt-rich filtrate from a protein-rich filtration residue until the protein content of said residue is from 4-15 weight percent.

(c) inoculating said residue with a lactic acid quark culture in an amount from 0.1-5 weight percent,

(d) adjusting the temperature of the inoculated residue within the range from 20°-35° C.,

(e) incubating the inoculated residue until total acidity expressed as lactic acid is about 0.8-0.9%,

(f) decreasing the temperature until further growth is suppressed,

(g) shearing the coagulant by stirring to a creamy consistency, and

(h) whipping the product resulting from step (g) to at least 100% overrun to provide said quark.

4,228,190

METHOD OF MANUFACTURE OF LOW CALORIE MARGARINE HAVING A PROTEIN CONCENTRATE FROM SKIMMED MILK

Kurt Wallgren, and Tage Nilsson, both of Göteborg, Sweden, assignors to Mjolkcentralen Arian, Ekonomisk Forening, Göteborg, Sweden

Filed Nov. 20, 1978, Ser. No. 961,926

Claims priority, application Sweden, Nov. 23, 1977, 7713275

Int. Cl.² A23D 3/02

U.S. Cl. 426-421

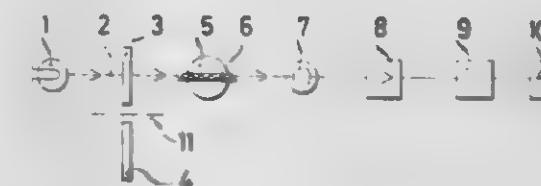
10 Claims

1. A method for the manufacture of margarine of the water-in-oil type having a low calorie value and a high content of proteins which comprises emulsifying a water phase containing 20-24% proteins into a fat phase composed of oils and/or fats to provide a water-in-oil emulsion comprised of about 35-65% fat phase and 65-35% water phase wherein

said water phase is prepared by acidifying a raw material selected from the group consisting of skimmed milk, an aqueous solution of skim milk powder and mixtures thereof to a pH of 4-5 to precipitate protein therefrom, heating the acidified raw material in a first heating stage to a temperature of about 35°-65° C., maintaining said temperature for a period of at least 15 minutes,

then quickly raising the temperature of the acidified raw material in a second heating stage to a temperature of about 60°-95° C. and

immediately after reaching the intended temperature, separating the precipitated protein and cooling the separated protein to at least the emulsification temperature to provide said water phase, and wherein said fat phase is prepared independently of the production of said water phase by admixing fats and/or oils, heating said fat phase to a temperature of 38°-55° C., emulsifying said water phase in said fat phase at a temperature of 38°-55° C. of both phases to directly obtain a water-in-oil emulsion, pasteurizing the emulsion thereby obtained and cooling and packing the pasteurized water-in-oil margarine.



1. A method for quantitatively determining the alcohol, wort, and carbon dioxide ingredients of beer comprising:

- passing said beer through a conduit;
- passing infrared light having a first wavelength between 2.9 and 3.1 microns through said beer in said conduit;
- passing infrared light having a second wavelength between 9.6 and 9.8 microns through said beer in said conduit;
- passing infrared light having a third wavelength between 4.2 and 4.4 microns through said beer in said conduit;
- measuring the absorption of said first wavelength and displaying an alcohol percentage;
- measuring the absorption of said second wavelength and displaying a wort percentage; and
- measuring the absorption of said third wavelength and displaying a carbon dioxide percentage.

2. An apparatus for quantitatively determining the alcohol, wort and carbon dioxide ingredients of beer, comprising:

- a first infrared source generating a beam having a wavelength between 2.9 and 3.1 microns along a first optical axis;
- a second infrared source generating a beam having a wavelength between 9.6 and 9.8 microns along a second optical axis;
- a third infrared source generating a beam having a wavelength between 4.2 and 4.4 microns along a third optical axis;
- a line passing said beer having a flow axis;
- a first attenuated total reflection cell located along said first optical axis and through said flow axis;
- a second attenuated total reflection cell located along said second optical axis and through said flow axis;
- a third attenuated total reflection cell located along said third optical axis and through said flow axis;
- means for measuring and displaying the absorptivity of said first infrared source to give said alcohol percentage;
- means for measuring and displaying the absorptivity of said second infrared source to give said wort percentage; and
- means for measuring and displaying the absorptivity of said third infrared source to give said carbon dioxide percentage.

4,228,191

MICROBIOLOGICAL DECAFFEINATION OF AQUEOUS LIQUIDS

Gerhard J. Haas, Woodcliff Lake, N.J., and Barry Stieglitz, Montreal, Canada, assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 570,286, Apr. 21, 1975, abandoned.

This application Oct. 2, 1978, Ser. No. 947,952

Int. Cl.² A23F 1/10

U.S. Cl. 426-45

3 Claims

1. A method for reducing the caffeine content of an aqueous caffeine-containing extract of green or roasted coffee comprising the step of:

- disrupting whole cell Pseudomonad organisms, said organisms being selected from the group consisting of Pseudomonad putida, NRRL B-8051 Pseudomonad fluorescens, NRRL B-8052 and Pseudomonad fluorescens, NRRL B-8053 and combinations thereof,
- separating a cell-free, enzyme-containing extract from the cellular material, and
- contacting, under aerobic conditions and in the presence of reduced diphosphopyridine nucleotide, a caffeine-containing solution with the enzymes contained in the extract of step b) for a period of time sufficient to obtain substantial reduction in the caffeine content of the solution.

4,228,193

METHOD FOR MAKING SCRAMBLED EGGS

James Schindler, Naperville, and Anthony R. Nugarus, Chicago, both of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Continuation of Ser. No. 835,644, Sep. 22, 1977, abandoned. This application Dec. 20, 1978, Ser. No. 971,311

Int. Cl.² A23L 1/32

U.S. Cl. 426—233

27 Claims

1. The method of cooking of scrambled eggs in a containerized batch comprising the steps of:

- charging a container with uncooked, shelled eggs with the yolks unmixed;
- without separately stirring said eggs, introducing a plurality of jets of steam at spaced, stationary locations in the interior of said eggs for a single, uninterrupted period to disperse said steam therethroughout whereby said eggs are agitated and cooked;
- simultaneously with step B, continuously venting said container to allow escape of steam from said container to maintain the interior volume of said container at substantially atmospheric pressure; and then
- terminating step B after said eggs are thoroughly and uniformly cooked to a substantially homogenous scrambled egg mass having an expanded volume and which is light and tender and delectable in appearance and flavor.

4,228,194

ELECTRICALLY CONDUCTIVE ARTICLE AND METHOD OF MAKING THE SAME

Ernest P. Meeder, 726 Fairview Ave., Glen Ellyn, Ill. 60137
Filed May 14, 1979, Ser. No. 38,730

Int. Cl.² D04H 1/00

U.S. Cl. 428—288

17 Claims

1. An electrically conductive article which is effectively incapable of holding a static electric charge, comprising:

- a flexible mass of resilient insulating material having resilient conductive filaments distributed randomly and effectively uniformly therethrough to define a plurality of continuously conductive paths entirely through said mass, and a thin coating on each said filament of a cohesive lubricating material which is adherent to said filaments and repellant to said insulating material.

4,228,195

SEMI-MOIST PET FOOD PRODUCT AND PROCESS
Ronald D. Priegnitz, Algonquin, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Aug. 4, 1978, Ser. No. 931,203

Int. Cl.² A23K 3/00

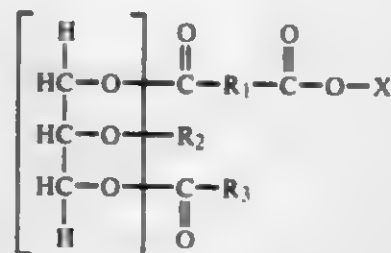
U.S. Cl. 426—321

14 Claims

1. An extruded non sticking particulate semi-moist pet food containing moisture in the range 31–50 percent, and a blend of oil seed-derived protein source ingredient in an amount between 5 and 50 percent, meat-derived protein source ingredient in an amount between 5 and 50 percent, fat in an amount from 0 to 12 percent and amylaceous ingredients in an amount between 5 and 50 percent, as well as sufficiently high concentration of other components to provide microbiological stability, the improvement comprising the addition thereto of an effective anti sticking amount of a mono ester of a polybasic acid having 3–10 carbons, inclusive, of a member selected from the group fatty acid mono glyceride and fatty acid diglyceride, the fatty acid having from 10–24 carbons, said esters being present in an amount between 0.1 percent and 0.45 percent by weight.

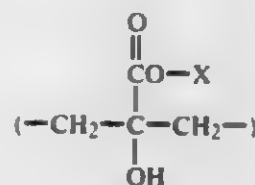
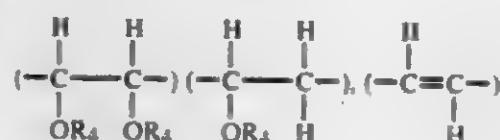
7. In a method for manufacturing a non sticking particulate pet food having moisture levels in the range 31–50 percent, fat in an amount from 0 to 12 percent, amylaceous ingredients in the range 5–50 percent, oil seed-derived protein source ingredients in the range 5–50 percent, meat-derived protein source ingredients in the range 5–50 percent, and total protein in the range 10–50 percent, said pet food having sufficiently high

concentration of other components to provide microbiological stability and in which all the ingredients are intimately admixed to form a dough-like mass, and in which the resulting dough-like mass is extruded at temperatures in the range 150° F.–260° F., and the extruded product is cut into discrete pieces, the improvement comprising: admixing with the ingredients an anti sticking agent selected from the group of polybasic acid mono esters of fatty acid mono and diglycerides of the formula:

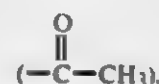


wherein X includes, H, Na⁺, K⁺, Ca⁺⁺;

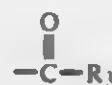
R₁ includes (—C_NH_{2N}—) wherein N is an integer from 1–10 inclusive,



wherein R₄ is H,



or (—CH₃), and X is defined above; and
R₂ is H or fatty acid substituent having 6–24 carbons;
R₃ is the substituent whereby



is the fatty acid substituent having 6–24 carbons;

and wherein the use of the brackets is intended to denote that any of the substituents at the right of the brackets may be positioned at any of the glyceride substituent positions of the glyceride substituent denoted at the right within the brackets.

4,228,196

PROCESS FOR PREPARING PRECOOKED POTATO PRODUCTS

Merle L. Weaver, Martinez, and Keng C. Ng, Berkeley, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 853,717, Nov. 21, 1977, abandoned. This application Oct. 2, 1979, Ser. No. 81,245

Int. Cl.¹ A23L 1/216

U.S. Cl. 426—407

4 Claims

1. A process for preparing precooked non-par-fried French-fry potato products, which comprises

- washing and peeling raw potatoes,
- cutting the raw potatoes into French-fry pieces,
- cooking the raw potato pieces at a temperature below the temperature at which sloughing of the potato surface would occur if the whole potato were cooked to its center

at that temperature, said sloughing occurring at a temperature of about 81°–83° C. for a period of 5 to 45 minutes,
(d) heating the so-cooked potato pieces of step c in air at a temperature of about 66°–93° C. for a period of about 5 to 30 minutes to reduce the moisture content thereof about 10 to 60%.

(e) cooking the potato pieces of step d at a temperature of about 50° to 100° C. for a period of about 5 to 45 minutes, and then

(f) preserving the so-cooked potatoes in the absence of starch suspensions.

4,228,197

ATMOSPHERE CONTROLLING METHOD AND APPARATUS FOR FOOD STORAGE

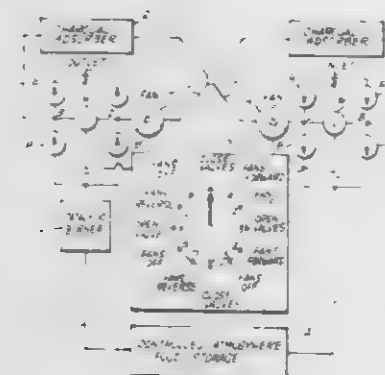
John E. Means, Kirkland, Wash., assignor to Food Storage Systems, Inc., Yakima, Wash.

Continuation-in-part of Ser. No. 811,249, Jun. 29, 1977, abandoned. This application Jan. 18, 1979, Ser. No. 4,314

Int. Cl.² A23K 3/02

U.S. Cl. 426—419

22 Claims



1. The method of controlling the atmosphere in a substantially sealed food storage chamber which comprises, in sequence:

- circulating air from the food storage chamber through an adsorber and back to the food storage chamber for scrubbing carbon dioxide from the food storage chamber air;
- circulating external atmospheric air through the adsorber for purging carbon dioxide from the adsorber;
- displacing external atmospheric air in the adsorber with air from the food storage chamber without introducing such external atmospheric air into the food storage chamber; and
- again circulating air from the food storage chamber through the adsorber and back to the food storage chamber for scrubbing carbon dioxide from the food storage chamber air.

11. In atmosphere controlling apparatus for a food storage system including:

- a substantially sealed storage chamber for storing food;
 - first adsorber means for scrubbing carbon dioxide from air passed therethrough;
 - second adsorber means for scrubbing carbon dioxide from air passed therethrough;
 - an external atmosphere inlet;
 - an external atmosphere outlet; and
 - conduit means interconnecting the storage chamber, the first and second adsorber means, the external atmosphere inlet and the external atmosphere outlet;
- the improvement comprising circulating means for automatically and sequentially effecting at least the following three circulations of air through the conduit means:
- a first circulation in which purging atmospheric air passes from the external atmosphere inlet through the first adsorber means and out the external atmosphere outlet for purging carbon dioxide from the first adsorber means and storage chamber air is circulated from the storage chamber through the second adsorber

4,228,198

SWEETENING COMPOSITIONS CONTAINING ARABINOGALACTAN

Malcolm L. E. Burge, Thatcham, and Zdenek L. A. Z. Nechutny, Reading, both of England, assignors to Tate & Lyle Limited, London, England

Continuation-in-part of Ser. No. 700,310, Jun. 28, 1976, abandoned. This application May 26, 1978, Ser. No. 909,834
Claims priority, application United Kingdom, Jul. 4, 1975, 28217/75; Jul. 4, 1975, 28232/75

Int. Cl.² A23L 1/236

U.S. Cl. 426—548

22 Claims

1. A sweetening composition comprising at least one sweetener selected from the group consisting of the protein sweetener thaumatin, the protein sweetener monellin and saccharin together with a sweetener after-taste reducing amount of arabinogalactan, the ratio of arabinogalactan to said sweetener being such that the concentration of arabinogalactan does not detract from sweetness level or impart body or mouth feel or exceed 2.5% of an ingestible product or oral composition when the composition is added to said ingestible product or oral composition in an amount effective to sweeten said ingestible product or oral composition, and in which when saccharin is present in the absence of said protein sweeteners the ratio of arabinogalactan to saccharin does not exceed 1:1.

4,228,199

COLD-WATER DISPERSIBLE, GELLING POTATO STARCH

Chung W. Chiu, Princeton, and Morton W. Rutenberg, North Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jul. 5, 1979, Ser. No. 54,860

Int. Cl.² A23L 1/187

U.S. Cl. 426—578

10 Claims

1. A cold-water dispersible, modified potato starch with gelling properties, prepared by drum-drying a potato starch which has been reacted with a crosslinking agent such that the crosslinked starch has a Brabender Viscosity Differential, measured between 80° and 95° C., of from about –35 to +180%, measured at 5% solids using a 700 cm.-g. cartridge, and has a Brabender viscosity at 80° C. of up to about 3100 B.U., measured at 5% solids, or of from about 800 to 1400 B.U., measured at 7% solids using a 700 cm.-g. cartridge, said cross-linked starch after drum-drying being capable of forming a gel having a Bloom strength of at least 60 grams.

4,228,200

CONTROLLING METAL COATINGS ON WIRE, STRIP AND THE LIKE EMERGING FROM METAL BATHS

Anthony J. Sander, Bonbeach; Jack P. Sciffer, New Lambton, and Richard W. Whitton, Cardiff, all of Australia, assignors to Australian Wire Industries Proprietary Limited, Victoria, Australia

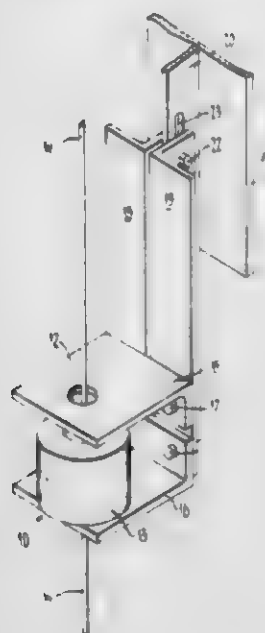
Filed Nov. 22, 1978, Ser. No. 962,939

Claims priority, application Australia, Dec. 15, 1977, PD2788; May 25, 1978, PD4509

Int. Cl.² B05D 3/14

U.S. Cl. 427-47

13 Claims



1. A method of controlling the coating of a wire, strip, mesh or the like, emerging substantially vertically from molten metal baths, comprising subjecting said wire, strip, mesh or the like to an alternating electromagnetic field generated by single phase alternating electric current supplied to an electromagnetic device which is at least partially immersed in the bath, said field being applied at or below the point of emergence of the wire, strip, mesh or the like from the molten metal bath with the point of emergence of said wire, strip, mesh or the like being within the electromagnetic field to thereby control the coating weight per unit of area.

4,228,201

METHOD FOR RENDERING A NON-PLATABLE SEMICONDUCTOR SUBSTRATE PLATABLE

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540
Continuation-in-part of Ser. No. 803,777, Jun. 6, 1977, Pat. No. 4,181,760. This application Aug. 7, 1978, Ser. No. 931,513

Int. Cl.² C23C 3/02; B05D 3/10

U.S. Cl. 427-92

11 Claims

1. A process for rendering a non-platable semiconductor substrate platable comprising the step of contacting said semiconductor substrate with a promoter composition comprising metal ions selected from the group consisting of nickel, cobalt, iron, copper, and mixtures thereof, and a reducing agent selected from the group consisting of amine boranes, borohydrides, hydrazine, and derivatives thereof, wherein said reducing agent is capable of chemically reacting with said semiconductor substrate and said metal ions, and further wherein the concentration of said reducing agent relative to said metal ions is so adjusted as to form sufficient metallic sites on the substrate for a subsequent plating step and to permit the initial chemical interaction of the reducing agent with the semiconductor substrate and then the heterogeneous reduction of some of the metal ions present in the promoter composition.

4,228,202

METHOD FOR MAKING A CELLULOSIC MATERIAL FIRE-RESISTANT

Bo O. E. Tjännberg, Box 5140, 421 05 Västra Frölunda, Sweden
Filed Jun. 4, 1979, Ser. No. 44,999

Claims priority, application Austria, Jun. 16, 1978, 4389/78
Int. Cl.² B05D 7/00, 3/02; C09D 5/16, 5/18

U.S. Cl. 427-212

15 Claims

1. A method of manufacturing fire-resistant wood-products comprising:
impregnating disintegrated wood material with an aqueous solution containing at least 2% phosphoric acid and 1-10% ammonium sulphate, which may be partly or completely replaced by a third as big quantity of ammonium phosphate, the quantity of said solution being 35-70% of the total weight of said solution plus wood material, drying the impregnated wood material to a maximum moisture content of 5% by weight, supplying glue to the impregnated, dried wood material, and forming wood-products of the combined impregnated wood material and glue.

4,228,203

METHOD OF FORMING ALUMINUM COATING LAYER ON FERROUS BASE ALLOY WORKPIECE

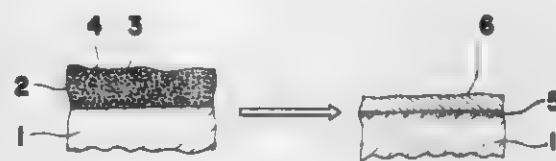
Toshiro Yagi; Junichi Yamamoto, and Hideo Kohara, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Japan
Filed Jan. 23, 1979, Ser. No. 5,914

Claims priority, application Japan, Jan. 27, 1978, 53/8491; Feb. 1, 1978, 53/11020; Sep. 13, 1978, 53/113127

Int. Cl.² C23C 9/00

U.S. Cl. 427-229

2 Claims



1. A method of forming an aluminum coating layer on the surface of a workpiece of austenite stainless steel which comprises the steps of applying onto the surface of the stainless steel workpiece a coating solution containing 50 to 90% by weight of aluminum or aluminum alloy particles of 10 to 500 μ and 10 to 50% by weight of a vinyl acetate resin having a high decomposition burning temperature with slow burning speed and being soluble in a solvent at normal temperature, with subsequent drying thereof to form a resin coating layer containing aluminum on the surface of the stainless steel workpiece, and thereafter subjecting said workpiece thus treated to heating to a temperature higher than melting point of the aluminum or aluminum alloy particles so as to form an Al plated layer on the surface of said stainless steel workpiece; then heating said stainless steel workpiece having the Al plated layer on the surface thereof at temperatures of 700° to 850° C. for more than 10 minutes to form a compound layer mainly composed of Fe-Al on the surface of said stainless steel workpiece; and heating said stainless steel workpiece having said compound layer formed on the surface thereof at temperatures of 900° to 1000° C. for more than 30 minutes to form an Al alloy layer mainly composed of Al and Fe on the surface of said stainless steel workpiece.

4,228,204

METHOD OF TREATING GLASS FIBERS

Katuji Matsumura, Mibu, Japan, assignor to Daiichikasei Co., Ltd., Tochigi, Japan

Filed Dec. 22, 1978, Ser. No. 972,513

Claims priority, application Japan, Jun. 26, 1978, 53/77166; Aug. 31, 1978, 53/106559

Int. Cl.² B05D 3/02

U.S. Cl. 427-372.2

13 Claims

1. A method of imparting chemical resistance to glass fibers which comprises the steps of treating glass fibers with a substantially aqueous solution of 2-25% by weight of a metal salt selected from the group consisting of zinc salt, lead salt, tin salt or mixtures thereof, to form a protective coating having high chemical resistance on the surface of the glass fibers, then washing the treated glass fibers with water and thereafter drying the washed glass fibers at a temperature of from 80 deg. C. to 200 deg. C.

4,228,205

METHOD FOR PRODUCING THIN-WALLED ARTICLES FROM PLASTIC OR RUBBER

Slavko Hudecek; Jaroslav Hnidek; Viktor Heidingsfeld; Jan Kolarik, and Jiri Zelinger, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

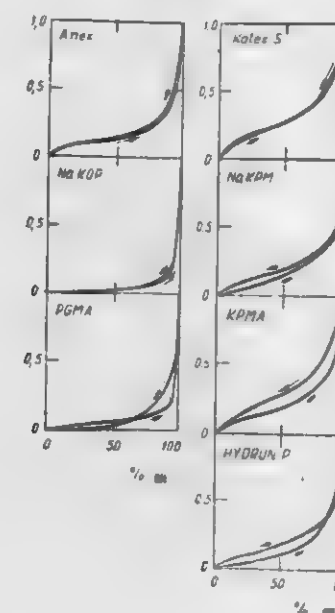
Division of Ser. No. 837,144, Sep. 28, 1977, which is a continuation-in-part of Ser. No. 496,370, Aug. 12, 1974, abandoned, which is a continuation of Ser. No. 210,401, Dec. 21, 1971, abandoned. This application Jan. 23, 1979, Ser. No. 5,842

Claims priority, application Czechoslovakia, Dec. 23, 1970, 8763-70

Int. Cl.² B32B 3/26, 5/18

U.S. Cl. 428-35

2 Claims



1. An unfoamed, thin-walled article of a maximum thickness of 3 mm. and having a density in the range from 350 to 1500 kg/m³ comprising a plastic or rubber carrier having uniformly dispersed within said carrier between 10 and 50% by weight of finely divided particles, below 50 μ in size, of a polymeric non-ionic organic hydrophilic macromolecular filler, said polymeric filler being crosslinked sufficient to render the same infusible and insoluble in said carrier, said filler being insoluble in water, said filler containing pendent polar groups selected from the group consisting of hydroxy, amine, or amide groups, said polymeric filler being able to bind water vapor reversibly and being selected from the group consisting of poly(hydroxyethyl methacrylate), poly(ethylene glycol monomethacrylate), poly(glycerol monomethacrylate), terpolymer of methacrylic acid, methacrylamide and ethylene glycol dimethacrylate and amides of poly(acrylic acid) and poly(methacrylic acid).

4,228,206

METHOD OF PROCESSING GLASS TUBING

John S. Fabisak, Greenland, N.H., assignor to GTE Products Corporation, Stamford, Conn.

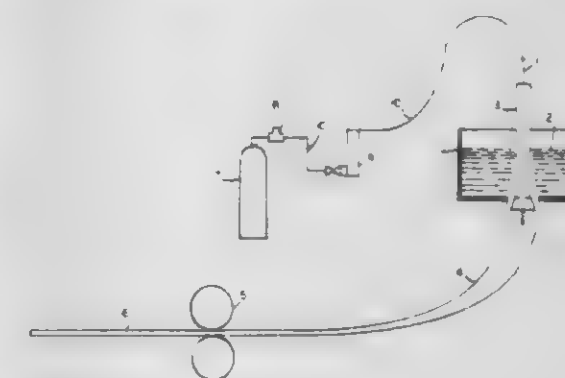
Continuation of Ser. No. 910,419, May 30, 1978, abandoned.

This application May 18, 1979, Ser. No. 40,267

Int. Cl.² C03B 15/14; C03C 15/00, 17/00

U.S. Cl. 428-35

9 Claims



1. The method of making fluorescent lamps so as to increase the brightness thereof comprising the steps of: drawing hot glass from a melt through a bag stage, where the glass is above its softening temperature, and into the shape of tubing; dispensing into the hot bag an acidic gas which reacts with alkali on the inner surface of the hot glass to form water soluble alkaline salts; cooling the tubing and cutting it into predetermined lengths; coating said predetermined lengths with phosphor; and forming said coated predetermined lengths into fluorescent lamps.

9. A fluorescent lamp made by the method of claim 1.

4,228,207

THREE-DIMENSIONAL SHAPED ARTICLES

Pierre Porte, Lyon, and Jean Tognay, Sainte-Foy-les-Lyon, both of France, assignors to Societe Civile d'Etudes et de Recherches pour L'Obtention de Fibres Minerales (S.E.R.O.F.I.M.), Paris, France

Filed Aug. 29, 1978, Ser. No. 937,791

Claims priority, application France, Sep. 8, 1977, 77 27686

Int. Cl.² D04C 1/04

U.S. Cl. 428-80

8 Claims



1. A flexible, three-dimensional, shaped article which consists essentially of a flexible, unimpregnated, two-dimensional braided structure made of non-braided yarns or tows having a variable crossing angle and based on fibers selected from the class consisting of graphite fibers and carbon fibers, said shaped article having a varying cross-section.

4,228,208

COMPOSITE MATERIAL OF FACING LAYER AND PILE KEY FABRIC

Michael D. Smith, Rugby; Eric K. L. Mason, Colchester, and Robert J. Morley, Spondon, nr. Derby, all of England, assignors to Courtaulds Limited, London, England

Filed Jun. 28, 1978, Ser. No. 919,952

Claims priority, application United Kingdom, Jul. 7, 1977, 28497/77, Nov. 3, 1977, 45727/77

Int. Cl.² B32B 33/00

U.S. Cl. 428—95

14 Claims

1. A composite facing material adapted for bonding to a reinforcement material and comprising a facing layer of a thermoplastic material difficult to bond to the reinforcement material and a key fabric comprising a base layer bonded on one face to the facing layer and a fibrous pile secured to the base layer and projecting from its reverse face for embedding in the reinforcement material.

4,228,209

WIRE REINFORCED CORRUGATED BOARD AND METHOD AND APPARATUS FOR MAKING SAME

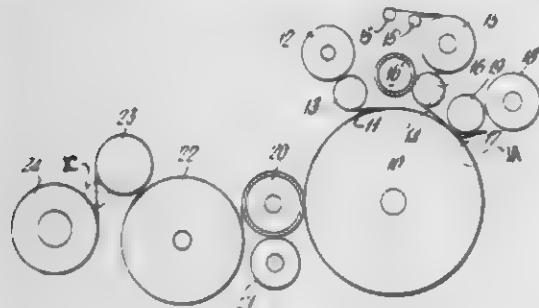
Marc A. Chavannes, 4044 Roberts Point Ave., Sarasota, Fla. 33581

Continuation of Ser. No. 771,993, Feb. 25, 1977, abandoned, which is a continuation of Ser. No. 551,978, Feb. 21, 1975, abandoned. This application Jun. 6, 1978, Ser. No. 913,242. The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.

Int. Cl.² B32B 29/02; B31F 1/24

U.S. Cl. 428—108

23 Claims



1. A wire reinforced plastic structure comprising a wire reinforced corrugated plastic layer with said corrugations corrugating both said plastic layer and said wires and extending transversely of said wires, and at least one sheet of plastic bonded to the crest portions on one side of said corrugated layer.

11. The method of manufacturing reinforced corrugated plastic board comprising the steps of adhering a plurality of spaced parallel wires to a plastic web, corrugating said web transversely of said wires, and then adhering a second plastic web to the crest portions of at least one side of said corrugated web.

20. Apparatus for manufacturing reinforced corrugated plastic board comprising a heated drum, means for feeding a plastic web about said drum, means for adhering a plurality of wires in spaced parallel relationship to and lengthwise of said web while on said drum, a pair of cooperating corrugating rollers, means for feeding said plastic and wire structure through said corrugating rollers and means for adhering a second of plastic web to the crest portions on a least one side of said corrugated plastic and wire structure.

4,228,210

PLATE OR THE LIKE WITH SERRATED OPENING

Jack B. Scribner, Dayton, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 30, 1978, Ser. No. 873,545

Int. Cl.² F16C 27/02; B32B 3/10

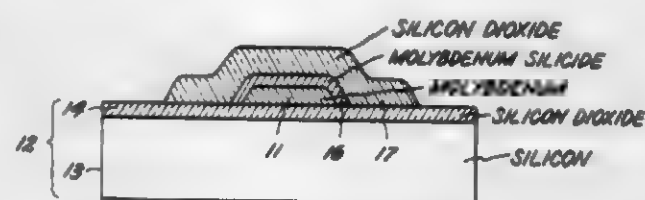
U.S. Cl. 428—131

5 Claims

1. An improved plate and press-fitted bearing member assembly, in which an annular bearing member having a cylindri-

cal outer surface is press-fitted into an opening formed in a plate in which maximum bearing pressing forces are established to prevent damage to the bearing member during assembly, comprising:

- (a) a metallic bearing support plate,
- (b) means in said plate defining a bearing-receiving opening, the inside diameter of said opening being defined by a series of arcuately spaced, inwardly-projecting metallic land portions alternating with a series of intermediate relieved portions, said inwardly-projecting land portions



defining a generally circular outline the diameter of which forms an interference fit with the outer cylindrical surface of said bearing member, and the relieved portions providing spaces for the flow of metal plate material during the press fitting of said bearing member into said plate thereby avoiding exceeding said maximum pressing force on said bearing member, and

- (c) an annular bearing member press-fitted into said bearing receiving opening in said plate.

4,228,211

DRY TRANSFER MATERIAL

Arnold Haazebroek, Etten Leur, Netherlands, assignor to Grafische Onderneming Mago B.V., Blaricum, Netherlands

Filed Sep. 22, 1978, Ser. No. 945,708

Int. Cl.² B32B 3/18; B41M 3/12; B44C 1/16

U.S. Cl. 428—203

8 Claims

1. Dry transfer material, comprising a support of a transparent polyalkylene, chosen from the group consisting of polyethylene, polypropylene, and ethylene-propylene copolymers, coated with a varnish layer, at least one printing ink layer forming the desired image, a second varnish layer and an adhesive layer, wherein said adhesive layer contains a primer for said polyalkylene and extends beyond the contours of said varnish layers.

4,228,212

COMPOSITE CONDUCTIVE STRUCTURES IN INTEGRATED CIRCUITS

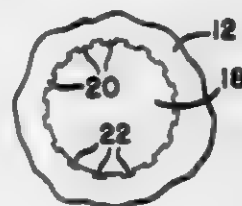
Dale M. Brown, and Marvin Garfinkel, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,889

Int. Cl.² H01L 21/283

U.S. Cl. 428—209

11 Claims



- 1. In combination,
- a substrate of semiconductor material having a major surface,
- a layer of insulating material overlying said major surface,
- a conductor of a refractory metallic material which is substantially non-reactive with silicon dioxide overlying said insulating layer,
- a layer of a silicide of said metallic material overlying the exposed surfaces of said conductor,

a layer of silicon dioxide overlying the exposed surfaces of said layer of said silicide.

4,228,213

METHOD OF DEPOSITING A STRESS-FREE ELECTROLESS COPPER DEPOSIT

William M. Beckenbaugh, East Amwell Township, Hunterdon County, and Kim L. Morton, Delaware Township, Hunterdon County, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 956,946, Nov. 2, 1978, Pat. No. 4,167,601, which is a continuation-in-part of Ser. No. 741,639, Nov. 15, 1976, abandoned. This application Aug. 13, 1979, Ser. No. 65,807

Int. Cl.² B32B 3/10; C23C 3/02

U.S. Cl. 428—209

41 Claims

1. A method of depositing a stress-free copper deposit on a surface which comprises contacting a catalyzed surface with a solution comprising:

- (a) a source of cupric ions;
- (b) a reducing agent for said cupric ions;
- (c) a complexing agent for the solution selected from the group consisting of (1) cyclohexendiaminetetraacetic acid, (2) a salt of (1), and (3) a mixture of the foregoing complexing agents;
- (d) a stabilizer for the solution comprising a mercury compound; and
- (e) an accelerator for the solution comprising a water-soluble compound containing a cyanide radical complexed with a metal selected from Group VIII of the Periodic Table of the Elements.

13. A method of rendering an electroless copper deposition solution capable of having deposited therefrom a stress-free copper deposit which comprises combining in the solution:

- (a) a complexing agent for the solution selected from the group consisting of (1) cyclohexendiaminetetraacetic acid, (2) a salt of (1), and (3) a mixture of the foregoing complexing agents;
- (b) a stabilizer for the solution comprising a mercury compound; and
- (c) an accelerator for the solution comprising a water-soluble compound containing a cyanide radical complexed with a metal selected from Group VIII of the Periodic Table of the Elements.

16. An aqueous electroless plating solution capable of depositing therefrom an essentially stress-free copper deposit comprising:

- (a) a source of cupric ions;
- (b) a reducing agent for said cupric ions;
- (c) a complexing agent for the solution selected from the group consisting of (1) cyclohexendiaminetetraacetic acid, (2) a salt of (1), and (3) a mixture of the foregoing complexing agents;
- (d) a stabilizer for the solution comprising a mercury compound; and
- (e) an accelerator for the solution comprising a water-soluble compound containing a cyanide radical complexed with a metal selected from Group VIII of the Periodic Table of Elements.

29. An article of manufacture comprising a substrate and a stress-free copper deposit on at least one surface thereof, deposited from an electroless copper plating solution comprising:

- (a) a source of cupric ions;
- (b) a reducing agent for said cupric ions;
- (c) a complexing agent for the solution selected from the group consisting of (1) cyclohexendiaminetetraacetic acid, (2) a salt of (1), and (3) a mixture of the foregoing complexing agents;
- (d) a stabilizer for the solution comprising a mercury compound; and
- (e) an accelerator for the solution comprising a water-soluble compound containing a cyanide radical complexed with a metal selected from Group VIII of the Periodic Table of Elements.

4,228,214

FLEXIBLE BILAYERED SHEET, ONE LAYER OF WHICH CONTAINS ABRASIVE PARTICLES IN A VOLATILIZABLE ORGANIC BINDER AND THE OTHER LAYER OF WHICH CONTAINS ALLOY PARTICLES IN A VOLATILIZABLE BINDER, METHOD FOR PRODUCING SAME AND COATING PRODUCED BY HEATING SAME

James Q. Steigelman, Athens; Roger B. Bargainnier, Towanda, both of Pa.; Glenn A. Shaffer, deceased, late of Towanda, Pa.; by Irene S. Charland, administrator DBN CTA, New Albany, Pa., and Geoffrey L. Harris, Monroeton, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 1, 1978, Ser. No. 882,076

Int. Cl.² B32B 5/22, 15/02, 15/08, 15/16, 27/04

U.S. Cl. 428—212

22 Claims



1. A self-supporting flexible bilayered sheet comprising a base layer and a top layer, the base layer comprising abrasive particles distributed in and supported by a volatilizable organic binder matrix, the top layer comprising metallic matrix particles distributed in and supported by a volatilizable organic binder matrix, the matrix particles having a melting point greater than the volatilization temperature of the organic binder, but less than the melting point of the abrasive particles, characterized in that said binder comprises from about 53 to 58.5 weight percent of polyvinyl butyral, 39.5 to 43.8 weight percent of a phthalate plasticizer and 2.0 to 2.7 weight percent of a deflocculant.

12. A method for forming a self-supporting flexible bilayered sheet comprising a base layer and a top layer, the method comprising:

- (a) forming a solution of an organic binder in an organic solvent, the binder comprising from 53 to 58.5 weight percent of polyvinyl butyral, 39.5 to 43.8 weight percent of a phthalate plasticizer and 2.0 to 2.7 weight percent of a deflocculant;
- (b) forming first and second slurries of abrasive particles and metallic matrix particles in said solution, respectively;
- (c) tape casting said first and second slurries;
- (d) removing the organic solvent from the tape cast layers to leave first and second flexible self-supporting sheets; and
- (e) attaching the second sheet to the top of the first sheet to form a flexible self-supporting bilayered sheet.

4,228,215

LAMINATE INCLUDING FLUID COMPRESSION ROLLED POLYMER

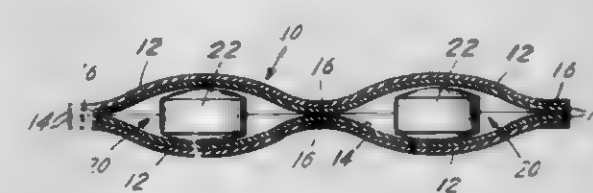
Carl C. Hein, III, Neenah, Wis.; Russell J. Lempke, Cleveland, Ohio; Harold K. Silver; Joseph J. Spitz, both of Neenah, Wis., and Don W. Seidler, Appleton, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Jun. 30, 1978, Ser. No. 920,710

Int. Cl.² B32B 7/02, 27/32, 27/40

U.S. Cl. 428—216

10 Claims



1. A biaxially tearable laminate having a low moisture vapor transmission rate, comprising:

- (a) a fluid compression rolled, uniaxially oriented base film about 0.5 to 2.5 mils thick comprised of at least a major proportion of high density polyethylene, said base film

having, in the direction of the axis of orientation, a tensile strength of at least about 15,000 pounds per square inch, an elongation value of less than about 150 percent, and a tear strength of about 5 to 100 grams, having, in the direction transverse to the direction of orientation, a tensile strength of about 2000 to 6000 pounds per square inch, an elongation value of less than about 75 percent, and a tear strength greater than about 500 grams, and having a moisture vapor transmission rate of less than 0.2 gram per 100 square inches per 24 hours; and

(b) a substantially unoriented heat seal film of synthetic resinous polymer bonded in full surface contact to said base film in a thickness ratio of heat seal film to base film of about 0.5-1.5:1.0, said heat seal film having a sealing temperature which is significantly less than that of said base film and which is below the temperature at which substantial deorientation occurs in said base film, having a tensile strength of less than about 12,000 pounds per square inch, and having an elongation value of at least 75 percent; said laminate having, in said base film orientation direction, a tensile strength of at least about 11,000 pounds per square inch and a tear strength of less than about 175 grams, having, in said base film transverse direction, an elongation value of at least about 100 percent and a tear strength of less than about 450 grams, and having a moisture vapor transmission rate of less than about 0.2 gram per 100 square inches per 24 hours.

4,228,216

PRODUCTION OF RADIATION CURABLE MICROCAPSULAR COATING COMPOSITIONS, PRESSURE-SENSITIVE TRANSFER PAPER AND ITS PRODUCTION

Robert A. Austin, and Dale R. Shackle, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 811,556, Jun. 30, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,376
Int. Cl. B32B 3/26; B05D 3/06; B41M 3/12; C09D 11/00
U.S. Cl. 428-307 13 Claims

9. A process for producing a pressure-sensitive transfer paper comprising the steps of:

- preparing an emulsion containing droplets of a hydrophobic emulsion component dispersed in a hydrophilic emulsion component, said hydrophobic emulsion component comprising a chromogenic material in a hydrophobic liquid, said chromogenic material being soluble in said hydrophobic liquid, said hydrophobic emulsion component additionally containing a first wall-forming material capable of reacting by condensation polymerization with a second wall-forming material to form a polymeric capsule wall, said first wall-forming material being soluble in said hydrophobic emulsion component, said polymeric capsule wall being substantially insoluble in said hydrophilic and said hydrophobic emulsion components, said hydrophilic emulsion component comprising an emulsifier dispersed in a radiation curable hydrophilic liquid, said radiation curable liquid comprising water and at least one radiation curable polar component, said emulsion additionally containing said second wall-forming material;
- subjecting said emulsion, with mixing, to temperature conditions for a period of time sufficient to polymerize said first and second wall-forming materials thereby forming a dispersion of microcapsules in said hydrophilic emulsion component, said microcapsules having a hydrophobic core material and capsule walls substantially impermeable to said hydrophilic and said hydrophobic emulsion components;
- adding a photoinitiator to said dispersion of microcapsules;
- applying said dispersion of said microcapsules to a paper substrate; and
- setting said dispersion of said microcapsules by subjecting said dispersion on said paper substrate to radiation for a period of time sufficient to cure said radiation curable

hydrophilic liquid to a dry, solid, tack-free resinous film on said paper substrate, said radiation being a combination of ultraviolet radiation and infra-red radiation.

11. The process of claim 9 wherein said combination of ultraviolet radiation and infra-red radiation is obtained from a mercury vapor lamp.

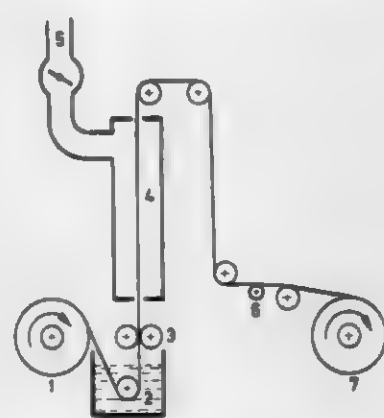
13. A pressure-sensitive carbonless transfer paper prepared by the process of claim 11.

4,228,217

LUBRICANT FOR METAL STRIP

Rudolf Baur, Kreuzlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Division of Ser. No. 936,828, Aug. 25, 1978, Pat. No. 4,193,881.
This application Apr. 18, 1979, Ser. No. 31,220
Claims priority, application Switzerland, Sep. 6, 1977, 10845/77

Int. Cl. B21B 45/02; B32B 15/20
U.S. Cl. 428-409 11 Claims



1. Metal strip, in particular for the production of containers, wherein at least one side of the metal strip is coated with a lubricant which has as its main constituent a minimum of 60% of a salt selected from the group consisting of the aluminum salt of a saturated C₁₁ to C₁₉ monocarboxylic acid, the magnesium salt of a saturated C₁₁ to C₁₉ monocarboxylic acid, and mixtures thereof, wherein said strip is suitable for coating or laminating one or both sides.

4,228,218

POLYMER COMPOSITE MATERIAL

Motowo Takayanagi, No. 20-20, Chuokutani 2-chome, Fukuoka-shi, Fukuoka, Japan, and Tisato Kajiyama, Fukuoka, Japan, assignors to Motowo Takayanagi, Fukuoka and Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, both of Japan
Filed Nov. 6, 1978, Ser. No. 958,324

Claims priority, application Japan, Nov. 4, 1977, 52-131436
Int. Cl. B32B 9/04, 27/08, 27/40
U.S. Cl. 525-58 19 Claims



1. A polymer composite material which comprises

a first rigid polymeric material composed substantially of rigid molecular chains having an average chain length of 50 Å or more, and comprising at least one member selected from the group consisting of poly(p-phenylene terephthalamide); copolymers prepared by substituting a portion of the poly(p-phenylene terephthalamide) with 2,6-naphthalene or p,p'-biphenyl, poly(p-benzamide); aromatic polyesters prepared from a halogenated hydroquinone, a methylhydroquinone or 2,6-dihydroxynaphthalene and terephthalic acid; aromatic poly-Schiff bases prepared from 2-methyl-p-phenylenediamine and terephthalaldehyde and copolymers thereof; N-substituted nylon-1; poly(spiro-2,3-hepta-4,6-diene) and hydrogenated derivatives thereof; poly(terephthaloyl-p-aminobenzoylhydrazide); and polymers comprising a straight chain of poly-p-phenylene; and

a flexible second polymeric material composed substantially of flexible molecular chains and comprising at least one member selected from the group consisting of polyacrylonitrile and copolymers thereof; nylons 6, 66, 610 and 12; polyethylene terephthalate; poly-butylene terephthalate; polyethylene terephthalate-polybutylene terephthalate block copolymer; polyethylene terephthalate-polytetraethylene glycol block copolymer; polyethylene terephthalate-polyethylene glycol block copolymer; polyurethane; segmented polyurethanes; polyethylene; polypropylene; polybutene; ethylene-propylene copolymer; polycarbonate; polyacetals; polysulfones; polyvinyl chloride and copolymers thereof; polyvinylidene chloride and derivatives thereof; polymethyl methacrylates; acrylate copolymer elastic materials; polystyrene; acrylonitrile-styrene copolymer; acrylonitrile-styrene-butadiene copolymer; polyvinyl acetates; polyvinyl formal; polyvinyl acetal; polyvinyl butyral; ethylene-vinyl acetate copolymers; ethyleneacrylate copolymers and hydrolyzed products thereof; polyvinyl alcohols; and styrene-butadiene block copolymers, wherein said first rigid polymeric material is present in an amount of 20% or less based on the total weight of polymeric material in said composite and said first material is uniformly dispersed in said second polymeric material in a microscopic region of 1 μm or less.

4,228,219

AROMATIC POLYETHER SULFONE USED AS A PRIME COAT FOR A FLUORINATED POLYMER LAYER

Leslie R. J. Hoy, St Neots, and Malcolm J. Sagers, Cheshunt, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 26, 1979, Ser. No. 33,715
Int. Cl. B05D 1/36, 3/02, 5/08; B32B 27/08
U.S. Cl. 428-422 8 Claims

1. A method of coating a substrate surface, which method comprises:

- applying a primer composition to the substrate surface which primer composition comprises thermoplastic polymeric material dispersed in an inert liquid diluent, at least 50% by weight of said thermoplastic polymeric material being constituted by at least one thermoplastic aromatic polyethersulphone;
- before the applied primer composition has become touch-dry, applying a dispersion of a tetrafluoroethylene polymer top-coat material in an inert liquid diluent over the coated substrate; and
- removing the inert liquid diluent or diluents and sintering the combined coating of the primer and top-coat layers.

4,228,220

SELECTIVE ABSORBER ON GLASS AND METHOD FOR ITS PRODUCTION

John D. Garrison, 5607 Yerba Anita Dr., San Diego, Calif. 92115

Filed Jun. 28, 1978, Ser. No. 920,073
Int. Cl. C25D 5/54, 5/10
U.S. Cl. 428-434 10 Claims

1. A method for producing a composite layer on a glass substrate for selectively absorbing solar radiation, the composite layer and glass substrate having a coefficient of solar absorption greater than 0.70 and an infrared emittance less than 0.20, comprising the steps of:

- cleaning the glass substrate;
- chemically depositing a layer of silver metal on the glass substrate by exposing the glass substrate to simultaneous sprays of a silvering solution and a reducing solution until said layer of silver metal achieves a thickness on the order of 0.10 microns;
- electroplating a layer of black nickel over the layer of silver by preparing a black nickel plating solution, bringing the plating solution to a temperature of between 20 and 53 degrees centigrade, submerging the glass substrate with the layer of chemically deposited silver into the plating solution, and applying electrical potential between the layer of deposited silver and an anode submerged in the black nickel plating solution until the layer of black nickel has achieved a thickness of between 0.02 and 0.5 microns; and
- heat treating said glass substrate and composite layer of silver and black nickel in a vacuum of about 20 microns or less and a temperature of about 200 to 600 degrees centigrade for about 2 to 24 hours.

4,228,221

PRIMER SYSTEM

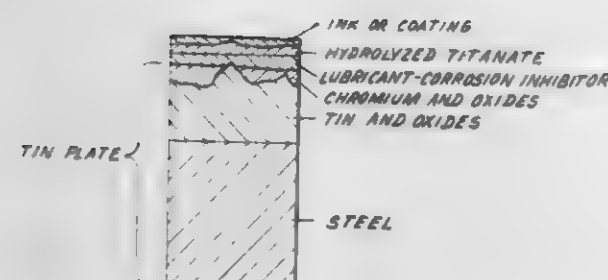
Stanley E. Rohowetz, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Apr. 4, 1979, Ser. No. 26,906
Int. Cl. B05D 3/06

U.S. Cl. 428-469 16 Claims

1. An applied primer covering a lightly lubricated metal

substrate including various metals and their oxides to form a surface for receiving a subsequently applied coating said



primer consisting essentially of a thin film of organic titanate treated momentarily with ultraviolet radiation.

4,228,223

WEAR AND CORROSION RESISTANT NICKEL-BASE ALLOY

Otto Knotek, Aachen, Fed. Rep. of Germany; Erich Lugschelder, Vaals, Netherlands, and Wolfgang Wichert, Aachen, Fed. Rep. of Germany, assignors to Eutectic Corporation, Flushing, N.Y.

Division of Ser. No. 784,376, Apr. 4, 1977, Pat. No. 4,118,254.

This application Mar. 1, 1978, Ser. No. 882,356

Int. Cl.² B22F 7/04

U.S. Cl. 428—558

3 Claims



1. A weld rod consisting essentially of a nickel tube with a metallic powder contained within said tube, such that a melt produced therefrom consists essentially of a nickel-base wear and corrosion resistant alloy containing by weight about 20% to 35% Cr, about 1% to 8% Si, about 1.7% to 3.5% C, 0 to 15% W and the balance essentially at least about 40% nickel, the amount of carbon present being stoichiometrically related to the chromium content to provide carbides based on the formula M_7C_3 , wherein M comprises essentially chromium, the amount of chromium in said M_7C_3 compound ranging from about 65% to less than about 100% of the total chromium content in said composition, the melting point of said alloy being less than about 1350° C. said alloy having a composition such that segregation of said alloy upon changing from the molten to the solid state is substantially inhibited.

4,228,224

POSITIVE ELECTRODE FOR ELECTRICAL ENERGY STORAGE DEVICE

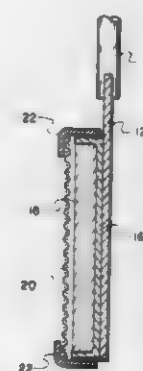
Lazslo A. Heredy, Canoga Park, and Lowell R. McCoy, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 12, 1979, Ser. No. 29,592

Int. Cl.² H01M 6/20

U.S. Cl. 429—112

15 Claims



1. In a rechargeable electrical energy storage device including a lithium halide-containing salt electrolyte which is molten at the operating temperature of the device, and electropositive and electronegative electrode structures spaced apart in said electrolyte, the improvement wherein said electropositive electrode structure comprises:

a housing for containing a body of electropositive active material, said housing having at least one open face; an electrolyte-permeable member affixed to said housing and

4,228,222

HEAT-SENSITIVE RECORD MATERIAL

Takeshi Murakami, Osaka; Tetsuo Nakamura, and Hisanori Yagi, both of Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,866

Claims priority, application Japan, Mar. 28, 1978, 53-36397.

Int. Cl.² B32B 27/00; B41M 5/18

U.S. Cl. 428—500

14 Claims

1. In a heat-sensitive record material comprising a base sheet and a color developing layer formed on at least one surface of said base sheet, said color developing layer comprising electron donating color forming material and acceptor which is reactive with said color forming material to develop a color, the improvement in said color developing layer further including as a binder water soluble resinous material having carboxyl radicals, at least 35% of said carboxyl radicals neutralized by alkaline materials to form magnesium salt and at least one other salt which is a member selected from the group consisting of sodium salt, potassium salt, ammonium salt and amine salt, 30 to 80% of the total carboxyl radicals existing in the form of magnesium salt and 5 to 70% of the total carboxyl radicals existing in the form of said other salt; wherein said water soluble resinous material having carboxyl radicals comprises a copolymer made by copolymerization of at least one ethylenic monomer, at least one conjugated diolefinic monomer and at least one unsaturated carboxylic acid; and wherein said unsaturated carboxylic acid component comprises 30 to 70% by weight of said copolymer.

covering said open face for retaining said active material in said housing; and

said housing and electrolyte-permeable member comprising a material selected from the group consisting of steel, nickel, copper and alloys thereof having at least a 0.3/1000ths of an inch thick electroless nickel coating thereon, said electroless nickel coating being selected from the group consisting of nickel phosphide and nickel boride.

4,228,225

BATTERY SEPARATOR

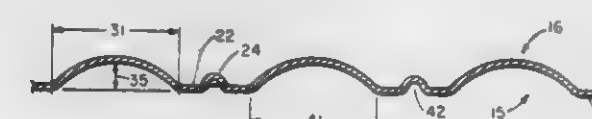
Dennis D. O'Rell, Boxboro, and Nan J. Lin, Burlington, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Jun. 22, 1979, Ser. No. 51,175

Int. Cl.² H01M 2/18

U.S. Cl. 429—147

29 Claims



1. In a battery separator comprising a porous sheet having at least one positive plate engaging face having a top and a bottom and at least one negative plate engaging face having a top and a bottom, said sheet being embossed to provide a reverse configuration of embossment on said positive plate engaging face and said negative plate engaging face, the improvement comprising having essentially all embossment walls opening continuously upwardly in the battery plate engagement areas and at least some of said embossment walls formed into a configuration angled from the vertical and comprising gas impeding restrictions on at least one of said faces, all restrictions being penetrated from their lower surface at its upper extremity.

4,228,226

NONAQUEOUS SECONDARY CELL USING VANADIUM OXIDE POSITIVE ELECTRODE

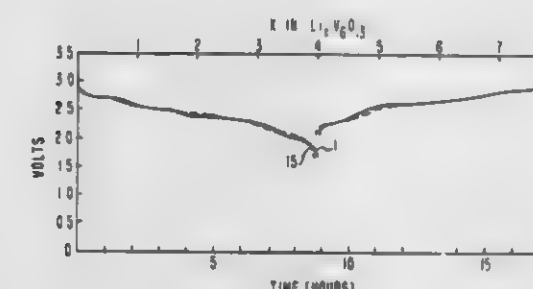
Paul A. Christian, Princeton; Francis J. Di Salvo, Jr., Florham Park, and Donald W. Murphy, Warren, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 10, 1978, Ser. No. 950,130

Int. Cl.² H01M 10/40

U.S. Cl. 429—194

8 Claims



1. A nonaqueous secondary cell comprising a negative electrode of lithium metal, an electrolyte and a positive electrode: CHARACTERIZED IN THAT said positive electrode comprises at least one vanadium oxide selected from the group consisting of $VO_2(B)$ and vanadium oxides having the nominal stoichiometry VO_{2+y} ; y greater than 0.0 and less than or equal to approximately 0.4.

4,228,227

RECHARGEABLE ELECTROCHEMICAL CELL

Deidrich J. Saathoff, Eagan, and Hanumanthiyna V. Venkatesetty, Burasville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 13, 1979, Ser. No. 66,154

Int. Cl.² H01M 10/40

U.S. Cl. 429—194

5 Claims

1. An electrolyte for use in rechargeable electrochemical cells having a lithium and a depolarizer, comprising: an electrochemically active amount of $LiAsF_6$ dissolved in tetrahydrofuran and a rechargeability improving amount of LiI contained therein to form an electrolyte solution, said solution being capable of passing through a molecular sieve on less than 5 Angstroms.

4,228,228

ELECTRODE STRUCTURE FOR ENERGY CELLS

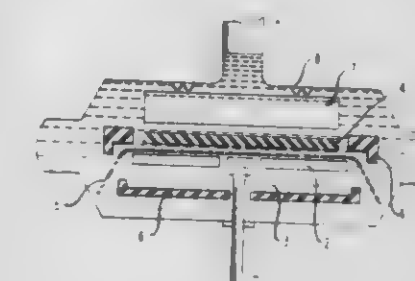
Richard L. Beauchamp, Whitefish Bay, Wis., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 4, 1979, Ser. No. 81,939

Int. Cl.² H01M 6/14

U.S. Cl. 429—194

10 Claims



1. An energy cell comprising electrolyte, electrolyte solvent and electrodes, at least one of said electrodes comprising active material and binder; characterized in that said binder comprises copolymer with from about 40 to 60 mole percent of ethylene comonomer and from about 40 to 60 mole percent of halogenated ethylene comonomer in which the halogenated ethylene comonomer is comprised of at least one substance selected from the group consisting of tetrafluoroethylene and chlorotrifluoroethylene.

4,228,229

LITHIUM PRIMARY CELL CONTAINING THIONYL CHLORIDE

Jean-Paul Gabano, Poitiers, and Jean-Yves Grassien, Gizay par La Villegie du Clain, both of France, assignors to Sait-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Jan. 18, 1979, Ser. No. 4,544

Claims priority, application France, Jan. 31, 1978, 78 02601; Feb. 17, 1978, 78 04530

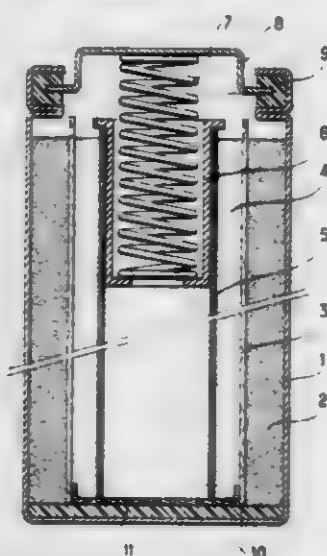
Int. Cl.² H01M 6/14

U.S. Cl. 429—196

15 Claims

1. An electrochemical primary cell whose negative active material is lithium, whose positive active material includes thionyl chloride, and whose electrolyte consists essentially of a solution of, as a solute, a complex salt resulting from the reac-

tion of aluminum chloride with an ionisable compound selected from the group consisting of lithium oxide (Li₂O), cal-



cium oxide (CaO), and barium oxide (BaO), dissolved in thionyl chloride.

4,228,230

ULTRASONIC IMAGING OF INTERNALLY FOGGED SILVER HALIDE ELEMENTS

Robert B. Rosenfeld, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,571

Int. Cl.³ G03C 5/24

U.S. Cl. 430—3

18 Claims

1. A process of producing an ultrasonographic image in an element comprised of a support and, coated thereon, a silver halide emulsion layer containing internally fogged silver halide grains, comprising

- contacting the element with a transport liquid in the presence of a diffusible solute capable of rendering the internally fogged silver halide grains, after contact with the solute, developable in a surface developer,
- exposing the element to ultrasound in an image pattern to accelerate imagewise diffusion of the solute into contact with the internally fogged silver halide grains and
- developing the internally fogged silver halide grains contacted with the solute in response to ultrasound exposure to produce a visible image defined by the imagewise pattern of ultrasonic exposure.

4,228,231

COLOR ELECTROPHOTOGRAPHIC PROCESS, APPARATUS AND RECORDING ELEMENT USEFUL THEREIN

Joseph Y. Kaukeinen, and Ernest W. Turnblom, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

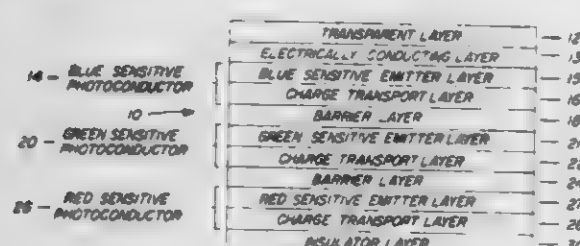
Continuation of Ser. No. 695,351, Jun. 14, 1976, abandoned.

This application Oct. 31, 1977, Ser. No. 847,464

Int. Cl.² G03G 13/01, 13/24

U.S. Cl. 430—46

17 Claims



1. A process for producing a multicolored image from a multicolored original comprising the steps of:

- (a) providing a recording element comprising (1) an electrically conducting layer, (2) a first photoconductive layer

conductively sensitive to light of substantially only a first color and substantially transparent to light of other colors, (3) a second photoconductive layer conductively sensitive to light of a second color and substantially transparent to at least light of a third color, (4) a third photoconductive layer conductively sensitive to light of a third color and (5) an electrically insulating layer, said photoconductive layers and said electrically conducting layer being disposed so as to allow charge migration therebetween and at least one of said conducting and insulating layers being substantially transparent to light in the visible region of the spectrum, said process comprising the steps of:

- (b) uniformly electrostatically charging said recording element across said photoconductive and insulating layers;
- (c) imagewise exposing the recording element to the multicolored original, such imagewise exposure being effected through said transparent layer using an exposure source comprising light of said first, second and third colors, to thereby form a charge distribution pattern across said photoconductive and insulating layers which is representative of the various colors comprising the original;
- (d) uniformly flooding said recording element through said transparent layer with light of a color to which one of said three photoconductive layers is responsive at an intensity sufficient to discharge such layer;
- (e) applying a first electroscopic toner to said insulating layer while simultaneously establishing a first biasing electrical potential relative to said conducting layer to produce a first toner image on said insulating layer, said first toner being of a color which is predominantly spectrally absorptive of one of said three colors;
- (f) uniformly flooding said recording element through said transparent layer with light of a color to which at least one of said photoconductive layers is unresponsive at an intensity sufficient to discharge said responsive layer, said responsive layer and said unresponsive layer comprising the two photoconductive layers which remained charged in step (d);
- (g) applying a second electroscopic toner to said insulating layer while simultaneously establishing a second biasing electrical potential relative to said conducting layer to produce a second toner image on said insulating layer which is superimposed on said first toner image, said second toner being of a color which is predominantly spectrally absorptive of another of said three colors;
- (h) uniformly flooding said recording element through said transparent layer with light of a wavelength and at an intensity sufficient to discharge at least said photoconductive layer which remained charged in step (f); and
- (i) applying a third electroscopic toner to said insulating surface while simultaneously establishing a third biasing electrical potential relative to said conductive layer to produce a third toner image on said insulating layer which is superimposed on said first and second toner images, said third toner being of a color which is predominantly spectrally absorptive of the third of said three colors, whereby a multicolored self-registered toner image is formed of the multicolored original.

4,228,232

PHOTOPOLYMERIZABLE COMPOSITION CONTAINING ETHYLENICALLY UNSATURATED OLIGOMERS

Alan D. Rousseau, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 901,480, May 1, 1978, abandoned. This application Feb. 27, 1979, Ser. No. 15,586

Int. Cl.³ G03C 1/68, 1/94

U.S. Cl. 430—271

68 Claims

1. A photopolymerizable composition comprising (1) 10% to 60% by weight of an oligomer of the formula



wherein

E is an ethylenically unsaturated, free radical polymerizable group,

D is the residue of a polyisocyanate having at least two of its isocyanate groups reacted to form



groups bonded to E and R,

R is the residue of a polyol having at least a +b hydroxyl groups, the residue formed by removal of hydrogen from the hydroxyl groups, said polyol having a number average molecular weight between 90 and 10,000,

A is a carboxylic acid containing group,

a is a number having an average value between 2 and 20, and

b is a number having an average value between 0.3 and 10,

(2) 10% to 60% by weight of an organic film forming polymer having a molecular weight of at least 6,000,

(3) 10% to 60% by weight of a free radical polymerizable monomer having at least one ethylenically unsaturated group, and

(4) 0.1% to 12% by weight of a photoinitiator system capable of initiating free radical polymerization upon absorption of electromagnetic radiation.

4,228,233

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Morio Yagihara, and Yukio Yokota, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 22, 1978, Ser. No. 944,834

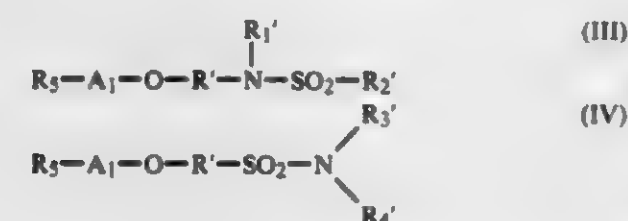
Claims priority, application Japan, Sep. 22, 1977, 52/114268

Int. Cl.³ G03C 7/00

U.S. Cl. 430—385

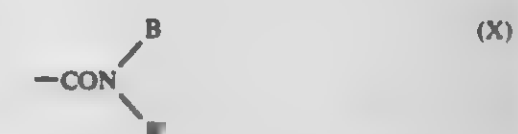
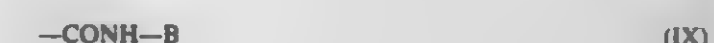
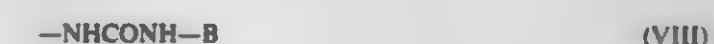
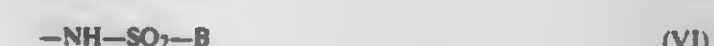
9 Claims

7. A method of forming an image comprising exposing a silver halide light-sensitive photographic material comprising a support having thereon at least one silver halide emulsion layer and developing said exposed silver halide photographic material with a developer containing an aromatic primary amine developing agent in the presence of at least one cyan dye-forming colorless photographic coupler residue containing an α -naphthol nucleus having, at the coupling position, an alkoxy group having at least one sulfonamido or sulfamoyl group as a substituent and represented by the following general formula (III) or (IV):



wherein A₁ represents said cyan dye-forming coupler residue containing an α -naphthol nucleus; R' represents a saturated or unsaturated divalent aliphatic group; wherein R₁' represents a hydrogen atom, an alkyl group containing up to 7 carbon atoms, an alkenyl group containing up to 7 carbon atoms, an aralkyl group with 7 carbon atoms, or an aryl group with 6 to 12 carbon atoms; and R₂' represents an alkyl group containing up to 18 carbon atoms, an alkenyl group containing up to 18 carbon atoms, an aralkyl group containing up to 18 carbon atoms, an aryl group containing 6 to 12 carbon atoms or a

heterocyclic group selected from the class consisting of a thiazolyl, a benzothiazolyl, an oxazolyl, a pyridyl, a 1,2,4-triazolyl, a pyrazolyl, a benzimidazolyl and a imidazolyl group; R₃' and R₄', which may be the same or different, each represents a hydrogen atom, an alkyl group containing up to 18 carbon atoms, an alkenyl group containing up to 18 carbon atoms, an aralkyl group containing 7 to 18 carbon atoms, an aryl group containing 6 to 12 carbon atoms; and R₃ and R₄ can combine and form a ring selected from the class consisting of a piperidine, a pyrrolidine, a pyrrole, a morpholine, an imidazole, a benzimidazole, a 1,2,4-triazole, a 1,2,3-triazole and a benzotriazole ring, R₅ represents a hydrogen atom, an aliphatic group containing up to 30 carbon atoms, an alkoxy group containing up to 30 carbon atoms, an aryloxy group, an acylamido group, a sulfonamido group, a phosphoramido group, a ureido group, or a carbamyl group, each represented by the general formula (V) to (X):



wherein B and B', which may be the same or different, each represents an aliphatic group containing 1 to 32 carbon atoms, a cycloalkyl group or an aryl group, wherein the alkyl group and the aryl group may be substituted with one or more of a hydrogen atom, a nitro group, a cyano group, a hydroxyl group, a carboxy group, an amino group, an alkyl group, an aryl group, an alkoxy group, an acyloxy group, an alkoxy group, an alkoxy group, an imido group, a carbamoyl group, an alkoxy group, or an aryloxy group; and C and C', which may be the same or different, each represents the groups described for B and additionally an —N—OB group, an —NH—B group, or an —NB₂ group.

4,228,234

METHOD FOR MAINTAINING THE DEVELOPMENT ACTIVITY OF A PHOTOGRAPHIC LITHOGRAPHIC DEVELOPER CONSTANT

Eiichi Okutsu, and Katsumi Hayashi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 30, 1978, Ser. No. 873,751

Claims priority, application Japan, Jan. 28, 1977, 52-8520; Feb. 15, 1977, 52-15117

Int. Cl.² G03C 5/30

U.S. Cl. 430—399

8 Claims

1. In a method for processing silver halide lithographic photosensitive materials with a lithographic developer using an automatic developing machine, the improvement comprising maintaining constant the development activity of the lithographic developer by adding supplemental amounts of two kinds of replenishers to the lithographic developer with a replenisher (RD) being employed to compensate for the decrease in the development activity of the lithographic devel-

oper resulting from the development-processing of lithographic photosensitive materials and a replenisher (RO) being employed to compensate for the decrease in the development activity of the lithographic developer resulting from the passage of time, where replenishers (RD) and (RO) differ in free sulfite ion concentrations, bromide ion concentrations and pH, wherein the method comprises adding replenisher (RD) during the development-processing operation in a supplemental amount in proportion to the size of the film processed, the degree of exposure of the film processed and the percentage of the exposed area of the film processed and, prior to the start of each development-processing operation, adding replenisher (RO) in a supplemental amount previously determined

(a) depending upon (i) the time interval from the suspension of the development-processing operation of the automatic developing machine when last operated to the start of the development-processing operation of the automatic developing machine and (ii) the temperature at which the lithographic developer was kept during the time interval (i), where replenisher (RO) was added during the previous development-processing operation of the automatic developing machine, or (b) depending upon (i') the time interval from the start of the development-processing operation of the automatic developing machine when last operated to the start of the development-processing operation of the automatic developing machine and (ii') the temperature at which the lithographic developer was kept during the time interval (i'), where no replenisher (RO) was added during the previous development-processing operation of the automatic developing machine.

4,228,235

COLOR PHOTOGRAPHIC MATERIAL

Kyobei Okonogi, Odawara; Mikio Sato, Ebina; Katsuo Mogaki, Isehara; Takashi Sasaki, Hino, and Takashi Uehida, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

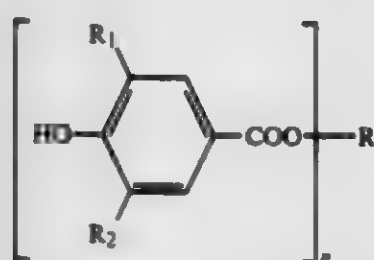
Filed Jan. 8, 1979, Ser. No. 1,926

Int. Cl.² G03C 1/06, 7/00

U.S. Cl. 430—542

7 Claims

1. A color photographic material comprising a support and a light sensitive silver halide emulsion layer thereon, which material comprises a compound represented by the following formula:



where R₁ and R₂ individually represent an alkyl group, R represents a n-valent organic group selected from the group consisting of an aliphatic, cycloaliphatic and aromatic group and n is an integer from 1 to 6.

4,228,236

PROCESS OF PRODUCING CARCINOEMBRYONIC ANTIGEN

Milda M. Jakstys, Chicago, Ill.; Baldwin H. Tom, and Barry D. Kahan, both of Houston, Tex., assignors to Northwestern University, Evanston, Ill.

Continuation of Ser. No. 785,565, Apr. 7, 1977, abandoned. This application May 15, 1978, Ser. No. 906,036

Int. Cl.² C12K 9/00

U.S. Cl. 435—1

5 Claims

1. The process of producing carcinoembryonic antigen (CEA) in vitro, comprising culturing cells selected from the cell lines consisting of LS-180 (ATCC No. CL-187), LS-174T

(ATCC No. CL-188), and CEA-producing cells derived therefrom, in a nutrient medium capable of supporting the growth of said cells until the number of cells present have at least doubled, and recovering the CEA thus produced.

4,228,237

METHODS FOR THE DETECTION AND DETERMINATION OF LIGANDS

Richard C. Hevey, Rockport, Me., and Mark K. Malmros, Newton, Pa., assignors to Calbiochem-Behring Corp., La Jolla, Calif.

Filed Sep. 21, 1978, Ser. No. 944,254

Int. Cl.² C12Q 1/66

U.S. Cl. 435—7

28 Claims

1. A method of determining a ligand in a liquid medium suspected of containing same, which method comprises:

- providing an insoluble phase containing a specific binding substance for said ligand;
- incubating said insoluble phase with the following reagents:
 - liquid medium suspected of containing said ligand;
 - biotin labeled specific binding substance for said ligand; and
 - enzyme labeled avidin;
- separating unreacted reagents from said insoluble phase after incubation; and
- determining the enzyme activity of either said insoluble phase or separated unreacted reagent whereby said activity is related to the amount of ligand in said liquid medium.

7. A method for determining a ligand in a liquid medium suspected of containing same, which method comprises:

- providing an insoluble phase containing a specific binding substrate for said ligand;
- incubating said insoluble phase with the following reagents:
 - liquid medium suspected of containing said ligand; and
 - biotin labeled specific binding substance for said ligand bound to enzyme labeled avidin;
- separating unreacted reagents from said insoluble phase after incubation; and
- determining the enzyme activity of either said insoluble phase or separated unreacted reagent whereby said activity is related to the amount of ligand in said liquid medium.

16. A method for determining a ligand in a liquid medium suspected of containing same, which method comprises:

- providing an insoluble phase containing a specific binding substance for said ligand;
- incubating said insoluble phase with the following reagents:
 - (A) liquid medium suspected of containing said ligand and (B) a known quantity of biotin labeled ligand; and
 - enzyme labeled avidin;
- separating unreacted reagents from said insoluble phase after incubation; and
- determining the enzyme activity of either said insoluble phase or separated unreacted reagent whereby said activity is related to the amount of ligand in said liquid medium.

22. A method for determining a ligand in a liquid medium suspected of containing same, which method comprises:

- providing an insoluble phase containing a specific binding substance for said ligand;
- incubating said insoluble phase with a reagent comprising
 - liquid medium suspected of containing said ligand and
 - a known quantity of biotin labeled ligand bound to enzyme labeled avidin;
- separating unreacted reagent from said insoluble phase after incubation; and
- determining the enzyme activity of either said insoluble phase or separated unreacted reagent whereby said activity is related to the amount of ligand in said liquid medium.

4,228,238

METHOD OF LABORATORY TESTING IN WATER-BASED CULTURE MEDIA FOR ZONES OF INHIBITION

Damon Swanson, Denver, Colo., assignor to The Allor Foundation, Boston, Mass.

Filed Aug. 23, 1979, Ser. No. 68,751

Int. Cl.² C12K 1/04

U.S. Cl. 435—32

3 Claims

1. A method of enabling zone of inhibition testing of essential oil extracts with non-miscible oil-based culture media and the like, that comprises, mixing said essential oil extracts with an alcohol that, in relatively dilute concentration, does not demonstrate substantial anti-microbial activity, to form an emulsion containing an extraction of the same materials; diluting the alcohol emulsion with water sufficient to bring the alcohol to said relatively dilute concentration of non-anti-microbial activity; saturating a sensitivity disc with a sample of the diluted emulsion after contacting the disc with a water-based culture medium; evaporating the alcohol saturated into the disc; inverting and incubating the culture medium carrying the disc; and observing zones of inhibition produced on the disc as a result of miscible reaction with the water-based culture medium of the alcohol-extracted originally non-miscible essential oil extracts.

4,228,239

METHOD FOR PRODUCING ANTIBIOTIC C-15003 P-3
Eiji Higashide, Takarazuka; Kazunori Hatano, and Mitsuko Asai, both of Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,602

Claims priority, application Japan, Nov. 18, 1977, 52/139385

Int. Cl.² C12P 17/18

U.S. Cl. 435—119

3 Claims

1. In a method for producing Antibiotic C-15003 P-3 by cultivating a microorganism belonging to the genus *Nocardia* and being capable of producing Antibiotic C-15003 P-3 in a culture medium containing assimilable carbon sources, and digestible nitrogen sources, wherein the improvement comprises incorporating about 0.01 to 1% by weight based on the volume of the culture medium of valine, isobutyric acid, α-ketoisovaleric acid or its salt or ester, amide or salt of valine or isobutyric acid as additive substances into the culture medium.

4,228,240

STABILIZATION OF PEROXIDASE

Edward C. Dawson, Berghem; Jan D. H. Homan, Oss, and Baume K. Van Weemen, Oss, all of Netherlands, assignors to Akzoona Incorporated, Asheville, N.C.

Continuation of Ser. No. 831,817, Sep. 9, 1977, Pat. No.

4,169,012. This application Jan. 25, 1979, Ser. No. 6,934

Claims priority, application Netherlands, Sep. 24, 1976, 7610608

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.² C07G 7/02; G01N 31/14

U.S. Cl. 435—188

12 Claims

5. An aqueous composition for use in enzyme immunoassay tests, consisting essentially of:

a peroxidase present from about 1 nanogram per milliliter to 25 micrograms per milliliter; and one or more polyvalent metal ions selected from the group consisting of Mg, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, and Al, wherein the ion is present in an amount of at least 0.0001 M.

4,228,241

METHOD FOR PRODUCING A PEPTIDASE

Hirofumi Hiraga, Kanagawa; Ryuichi Miyajima, and Koji Mit-sugi, both of Yokohama, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Mar. 24, 1978, Ser. No. 889,877

Claims priority, application Japan, Mar. 28, 1977, 52-34295

Int. Cl.² C12N 9/48

U.S. Cl. 435—212

9 Claims

1. A method for producing a peptidase capable of substantially completely hydrolyzing protein into its constituent amino acids which comprises culturing a strain of filamentous fungus, belonging to one of the species *Aspergillus oryzae* and *Aspergillus sojae* and characterized in that said strain is capable of producing said peptidase, in a nutrient culture medium containing

- a protein selected from the group consisting of soybean protein, defatted soybean, wheat, wheat bran, wheat bran extract, and mixtures thereof; and
- at least one substrate selected from the group consisting of a fatty acid having 14, 16, 18 or 20 carbon atoms and a derivative of said fatty acid,

and recovering said peptidase from said culture medium.

4,228,242

ARRANGEMENT FOR CULTIVATING CELLS OF ANIMAL AND HUMAN TISSUES

Henry Girard, Burtigny, and Rudolf Bühler, Wolfhausen, both of Switzerland, assignors to Chemap AG, Maennedorf, Switzerland

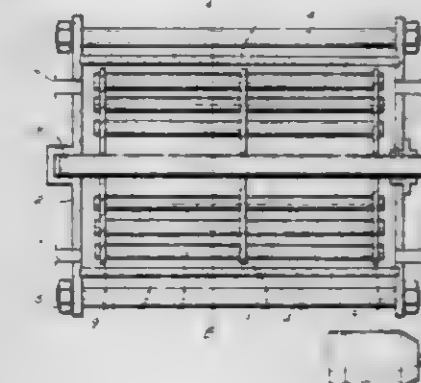
Filed Aug. 16, 1978, Ser. No. 934,315

Claims priority, application Switzerland, Aug. 16, 1977, 10058/77

Int. Cl.² C12M 3/00

U.S. Cl. 435—284

11 Claims



1. An apparatus for cultivating cells of animal and human tissues, comprising a container which forms an inner chamber having an axis; means for introducing a nutrient medium into said inner chamber so as to at least partially fill the latter; a plurality of tubular cell supporting elements located in said chamber and extending substantially in an axial direction of the latter, each of said tubular cell supporting elements forming an inner passage and having an inner surface and an outer surface, the inner passage of each of said tubular cell supporting elements having an axis and two axially spaced open ends, so that the nutrient medium not only surrounds said tubular cell supporting elements from outside but also fills said inner passages, and cells are cultivated both on the inner surfaces and on the outer surfaces of said tubular cell supporting elements; means for rotating said tubular cell supporting elements about said axis of said inner chamber and including an axle defining said axis and connected with said tubular cell supporting elements for joint rotation therewith; and means for tilting said tubular cell supporting elements from the horizontal, so that one of said open ends of each of said inner passages is located above the other of said open ends, whereby the nutrient medium flows in each of said inner passages from said one end toward said other end, said tilting means including at least two discs

arranged for connecting and supporting said tubular cell supporting elements wherein said tubular cell supporting elements are loosely fixed in said discs on said axle, said discs being turnable about said axis of said inner chamber of said container in two mutually opposite directions so as to tilt said tubular cell supporting elements from the horizontal.

4,228,243

CELL CULTURE PROPAGATION APPARATUS

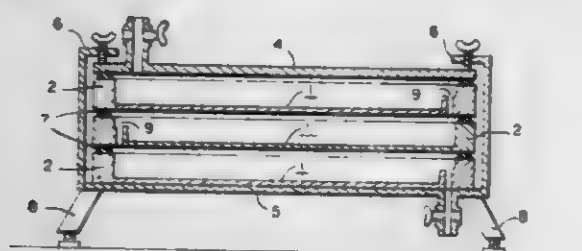
Masahiko Iizuka, Fujisawa, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 742,250, Nov. 16, 1976, abandoned.

This application Jul. 13, 1978, Ser. No. 924,221

Int. Cl.² C12M 3/04

U.S. Cl. 435—285



1. Apparatus for propagating tissue culture cells in a static culture system comprising:

a vessel reservoir for liquid culture medium, said vessel having four vertical walls at opposite ends of a first horizontal dimension thereof,

a plurality of substantially parallel spaced apart plates disposed within said vessel for providing surfaces to which cell growth can attach and liquid and gas phases can exist, said plates being enclosed and in sealing relationship with said vertical walls along three walls to form individual dishes, the portion of the plates along the wall not in sealing relationship with the wall being raised so that when the apparatus is positioned with said plates in a horizontal position all raised portions stand in a substantially vertical position and the liquid culture medium is maintained on said individual dishes, whereby said apparatus has at least one inter-dish passage, and at least one inlet and outlet means on said apparatus for passage of medium and gas.

4,228,244

PROCESS FOR PREPARING FINE PARTICLE EXPANDABLE STYRENE POLYMERS CONTAINING SMALL CONCENTRATIONS OF ORGANIC BROMINE COMPOUNDS

Josef K. Rigler; Horst Leimäcker; Karl Trukenbrod, all of Marl, and Werner Ogrzewalla, Dorsten, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Aug. 29, 1979, Ser. No. 70,814

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840355

Int. Cl.² C08J 9/12, 9/14, 9/16, 9/22

U.S. Cl. 521—56

10 Claims

1. In a particulate molding composition for the production of foamed articles consisting essentially of a mixture of an expanding agent and a polymerized styrene monomer or styrene monomer in admixture with comonomers, the improvement comprising said composition containing about 0.00005 to 0.01 percent by weight based on said monomers and comonomers of organic bromine compounds which evidence a chain transfer constant of at least 200 and at 100° C. in bidistilled water said organic bromine compounds split off less than one molar % of hydrogen bromide per equivalent of bromine present in the molecule.

5. In a process for the preparation of shaped bodies based on expanded styrene polymers comprising: the polymerization of styrene or a mixture thereof with at least one monomer copolymerizable therewith, the addition of an expanding agent, pre-forming of the resulting expandable particles, ageing of the formed particles, and molding thereof in a pressure resistant mold, the improvement comprising: carrying out the polymerization in the presence of about 0.00005 to 0.01 percent by weight based on the weight of said styrene or mixture thereof of organic bromine compounds which evidence a chain transfer constant of at least 200 and at 100° C. in bidistilled water said organic bromine compounds split off less than one molar % of hydrogen bromide per equivalent of bromine present in the molecule.

lymerizable therewith, the addition of an expanding agent, pre-forming of the resulting expandable particles, ageing of the formed particles, and molding thereof in a pressure resistant mold, the improvement comprising: carrying out the polymerization in the presence of about 0.00005 to 0.01 percent by weight based on the weight of said styrene or mixture thereof of organic bromine compounds which evidence a chain transfer constant of at least 200 and at 100° C. in bidistilled water said organic bromine compounds split off less than one molar % of hydrogen bromide per equivalent of bromine present in the molecule.

4,228,245

FOAM RUBBER POLYBLEND

Albert W. Morgan, Collinsville, Ill., and Roland G. Ribaud, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo. Continuation of Ser. No. 934,759, Aug. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 873,760, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 592,306, Jul. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 454,490, Mar. 25, 1974, abandoned. This application Jul. 2, 1979, Ser. No. 53,871

Int. Cl.² C08J 9/04, 9/10

U.S. Cl. 521—75

30 Claims

1. A foamed polyblend composition comprising a filled styrene-butadiene rubber blended with between about 10 and about 50 parts per hundred by weight, based on said rubber, of a vinyl chloride polymer plastisol which has been fused before being blended with said rubber, the weight ratio of said plastisol to the filler in said rubber being between about 0.09 and about 0.25.

4,228,246

MANUFACTURE OF FLUOROCARBON EXPANDED POLYSTYRENE

Bernard Taub, Williamsville; Daniel F. Harnish, Orchard Park, and Philip E. Jones, Snyder, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 26, 1975, Ser. No. 635,461

Int. Cl.² C08J 9/14

U.S. Cl. 521—98

6 Claims

1. In the process for the preparation of polyolefin foams comprising blending a thermoplastic polyolefin with a nucleating agent and a volatile foaming agent, and extruding said composition into a region of lower pressure to cause foaming; the improvement which comprises employing as the volatile foaming agent, a mixture comprising from about 3 to about 70 weight percent monochloromonofluoromethane and from 97 to about 30 weight percent dichlorodifluoromethane.

4,228,247

STABILIZED POLYOXYALKYLENE POLYETHER POLYOL

Richard A. Moore, Trenton; Robert J. Hartman, Southgate; William W. Levis, Jr., Wyandotte, and Ralph E. Bloom, South Rockwood, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 29, 1979, Ser. No. 70,561

Int. Cl.² C08K 5/34, 5/52

U.S. Cl. 521—107

8 Claims

1. A polyoxyalkylene polyether polyol containing an effective amount of a stabilizer composition containing

a. from about 20 to about 95 weight percent of a stabilizer selected from the group consisting of 2,6-di-*t*-butyl-4-methylphenol, 4,4'-bis(alpha,alpha-dimethylbenzyl)diphenylamine, *p,p'*-diocetyl-diphenylamine, phenyldidecylphosphite, and mixtures therefrom, and

b. from about 5 to about 80 weight percent of 3,5-di-*t*-butyl-4-hydroxyhydrocinnamic acid triester of 1,3,5-tris(2-hydroxyethyl)-*s*-triazine-2,4,6(1H,3H,5H)-trione.

5. A polyurethane foam prepared by the reaction of an organic polyisocyanate with a polyoxyalkylene polyether polyol in the presence of a blowing agent, said polyol stabilized against oxidation with an effective amount of a stabilizer composition containing

- from about 20 to about 95 weight percent of a stabilizer selected from the group consisting of 2,6-di-*t*-butyl-4-methylphenol, 4,4'-bis-*t*-(alpha,alpha-dimethylbenzyl)diphenylamine, *p,p'*-diocetyl-diphenylamine, phenyldidecylphosphite, and mixtures thereof, and
- from about 5 to about 80 weight percent of 3,5-di-*t*-butyl-4-hydroxyhydrocinnamic acid triester of 1,3,5-tris(hydroxyethyl)-*s*-triazine-2,4,6(1H,3H,5H)-trione.

4,228,248

MORPHOLINE DERIVATIVES AND USE AS POLYURETHANE CATALYST

Robert L. Zimmerman, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

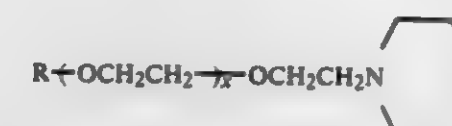
Filed Feb. 12, 1979, Ser. No. 11,352

Int. Cl.² C08G 18/14, 18/20

U.S. Cl. 521—115

5 Claims

1. A method for producing a polyurethane which comprises reacting an organic polyisocyanate with an organic polyester polyol or polyether polyol in the presence of a catalytic amount of an amine falling within the following structural formula:



where R is lower alkyl and X=0—4.

4,228,249

SEGMENTED POLYURETHANE RESINS

Johannes Blahak; Roland Gipp, both of Cologne; Kuno Wagner; Erwin Müller, both of Leverkusen; Jan Mazanek, Cologne, and Peter Haas, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 875,646, Feb. 6, 1978. This application Apr. 2, 1979, Ser. No. 26,110

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706297; Oct. 4, 1977, 2744599

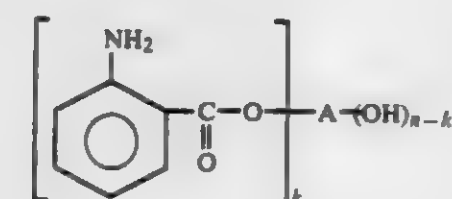
Int. Cl.² C08G 18/14

U.S. Cl. 521—159

5 Claims

1. A process for said preparation of polyurethane resin, which may be cellular, comprising: reacting polyisocyanates, high molecular weight compounds having at least two isocyanate-reactive hydrogen atoms and a molecular weight of from about 500 to about 25,000 and, optionally, low molecular weight chain-lengthening agents, optionally in the presence of catalysts, blowing agents and other known additives wherein the higher molecular weight compounds having isocyanate-reactive hydrogen atoms used comprise: a mixture of

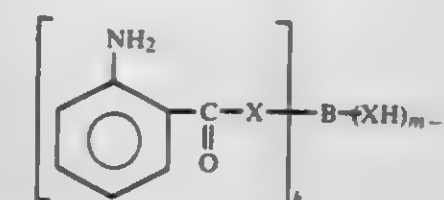
- from about 40 to about 85% by weight based on the total weight of (a)+(b), of compounds corresponding to the following general formula:



and

- from about 15 to about 60%, by weight, based on the

total weight of (a) and (b), of compounds corresponding to the following general formula:



wherein

X represents oxygen or sulfur;

A represents a k-valent residue obtained by the removal of k hydroxyl groups from a polyol having n hydroxyl groups, an average molecular weight of from about 500 to about 5000 and a melting point higher than 130° C.;

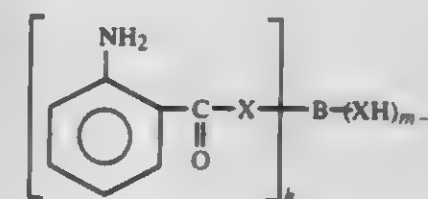
B represents an h-valent residue obtained by the removal of h hydroxyl groups and/or mercapto groups from a polyol or polythiol having m hydroxyl and/or mercapto groups, an average molecular weight of from about 500 to about 25,000 and a melting point below 60° C.;

k has an average value of from 0 to n;

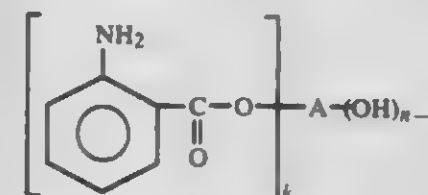
h has an average value of from 0 to m;

n represents 2 or 3; and

m represents an integer of from 2 to 8; characterized in that a prepolymer having isocyanate end groups is prepared in a first stage from said polyisocyanate and said compound of the formula:



and in a second stage, this prepolymer is reacted in the absence of a solvent with said compound of the formula:



and optionally low molecular weight chain-lengthening agents and another polyisocyanate.

4,228,250

BLENDS OF HYDROLYZED ETHYLENE-VINYL ACETATE RESINS HAVING INCREASED IMPACT STRENGTH

Ervin G. Pritchett, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,890

Int. Cl.² C08L 29/04

U.S. Cl. 525—57

9 Claims

1. A resin blend demonstrating improved impact-resistance which comprises (a) as host resin, a hydrolyzed ethylene-vinyl acetate copolymer in which ethylene is present at from about 2 to about 60 weight percent, vinyl acetate is present at from about 0 to about 10 weight percent, and vinyl alcohol is present at about 98 to about 40 weight percent, blended with (b) an impact-resistance-increasing amount of an impact modifying resin which is a partially hydrolyzed ethylene-vinyl acetate copolymer in which ethylene is present at about 25 to about 70 weight percent, vinyl acetate is present at about 20 to about 70 weight percent and vinyl alcohol is present at about 0.5 to about 25 weight percent.

4,228,251

RESIN COMPOSITION HAVING LOW SHRINK PROPERTIES

Iwao Maekawa; Isao Uchigasaki, and Noboru Monma, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Nov. 30, 1978, Ser. No. 964,798

Claims priority, application Japan, Dec. 26, 1977, 52-156903 Int. Cl.² C08L 67/06

U.S. Cl. 525—168

15 Claims

1. A resin composition having low shrink properties which comprises

(A) 50 to 90 parts by weight of an unsaturated ester oligomer produced by carrying out condensation reaction of a glycol and hydroxylated dicyclopentadiene in an amount of 100 to 200% by mole per mole of the glycol with at least one unsaturated dibasic acid or anhydride thereof until an acid value of less than 40,

(B) 50 to 10 parts by weight of one or more polymerizable monomers having one or more polymerizable double bonds in the molecule, and

(C) 3 to 15 parts by weight of polystyrene based on 100 parts by weight of the total of the components (A) and (B).

4,228,252

PROCESS FOR MAKING ALPHA-OLEFIN POLYMERS OR COPOLYMERS WITH HIGH ISOTACTICITY INDEX

Gilbert Marie, Pau, France, assignor to Ato Chimie, Paris, France

Filed Jun. 13, 1979, Ser. No. 48,171

Claims priority, application France, Jun. 21, 1978, 78 18530 Int. Cl.² 525/247; C08F 4/16, 4/52

U.S. Cl. 525—247

29 Claims

1. In a process for producing polymers or copolymers of alpha-olefins containing from 3 to 8 carbon atoms with a high isotacticity index, by homopolymerization of an alpha-olefin containing 3 to 8 carbon atoms, sequence copolymerization of such alpha-olefins with one another and/or with ethylene, or copolymerization of mixtures of such alpha-olefins with one another and/or with ethylene, such mixtures containing at least 85 moles percent of one such alpha-olefin, using a catalyst containing a titanium chloride and an organic aluminum compound, in the presence of a stereospecificity additive, the improvement which comprises using as the stereospecificity additive a compound of the formula:



where:

p is an integer from 1 to 6,

R₁ and R₂ are identical or different alkyl radicals containing 1 to 4 carbon atoms, or are linked together to form a divalent $-(C_mH_{2m})-$ radical,

where: m is an integer from 1 to 6.

4,228,253

PROCESS FOR MAKING ALPHA-OLEFIN POLYMERS OR COPOLYMERS WITH HIGH ISOTACTICITY INDEX

Gilbert Marie, Pau, France, assignor to Ato Chimie, Paris, France

Filed Jun. 13, 1979, Ser. No. 48,172

Claims priority, application France, Jun. 21, 1978, 78 18531 Int. Cl.² C08F 4/16, 4/52

U.S. Cl. 525—247

35 Claims

1. A process for making polymers or copolymers of alpha-olefins containing 3 to 8 carbon atoms with a high isotacticity index, comprising polymerizing an alpha-olefin containing 3 to 8 carbon atoms, using a catalyst consisting of a titanium chloride together with an organic aluminum compound, in the presence of a stereospecificity additive, said stereospecificity additive being a cyclic polyether of the crown ether type, in which the molecule is made up of from 0 to 20 p groups of the formula $-X-C_nH_{2n}-$ and from 0 to 4 q groups of the formula

$-[X-R]-$, with the number of p groups and q groups together being from 3 to 24, arranged in any order to form a cycle in which any two adjacent groups in the cycle are connected by a bond between the element X in one of these adjacent groups and a carbon atom in the other group, where n is an integer from 1 to 6, R, which is the same or different from one group to the other, represents divalent radicals selected from the group consisting of divalent radicals of aliphatic hydrocarbons containing 1 to 6 carbon atoms, divalent radicals of cycloaliphatic hydrocarbons containing 4 to 10 carbon atoms, divalent radicals of aromatic hydrocarbons containing 6 to 20 carbon atoms, and the divalent heterocyclic radicals of furane, thiophene and pyridine, in which both free valences are each borne by a carbon atom in the alpha position in relation to the heteroatom of these heterocycles, or by a carbon atom of an aliphatic hydrocarbon chain containing 1 to 6 carbon atoms fixed to the said carbon atom in the alpha position, and X is either identical in all the groups and represents oxygen atoms, or is different from one group to the other and represents partly oxygen atoms and partly sulphur atoms, nitrogen-containing radicals of the formula: $>N-R_1$, or both, where R₁ is a hydrogen atom or alkyl radical containing 1 to 4 carbon atoms, and the number of oxygen atoms r, sulphur atoms s and nitrogen-containing radicals t in the cyclic polyether molecule are such that $0 \leq t \leq r$, $0 \leq s \leq (r+t)$ and $1 \leq r \leq 28$.

4,228,254

FUNCTIONAL GROUP CONTAINING CYCLIC DIOLEFIN BUTYL RUBBERS

Kenneth W. Powers, Berkeley Heights; Robert Roper, Summit, and Martin L. Gorbaty, Fanwood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 784,656, Apr. 4, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,327

Int. Cl.² C08F 8/46

U.S. Cl. 525—256

7 Claims

1. A tack-free, air dryable, self-curing elastomeric terpolymer coating having a viscosity average molecular weight of about 15,000 to 80,000 which consists essentially of about 85 to 95 mol % isobutylene, about 5 to 9 mol % C₅-C₁₂ cyclic diolefin and about 0.5 to 5 mol % conjugated diolefin represented by the formula



where each R is are independently hydrogen or acyclic or alicyclic hydrocarbon radicals having from 1 to 12 carbon atoms and wherein the terpolymer has attached thereto a functional group selected from the group consisting of anhydride, carboxy or hydroxy said coating being self-curing through surface oxidative crosslinking of said cyclic diolefin.

4,228,255

METHOD FOR PRODUCING CROSSLINKED POLYETHYLENES

Ikuro Fujimoto; Setsuya Isshiki; Yoshikazu Kurita, and Yoji Sato, all of Tokyo, Japan, assignors to The Fujikura Cable Works Ltd., Tokyo, Japan

Continuation of Ser. No. 859,693, Dec. 12, 1977, abandoned. This application Jun. 28, 1979, Ser. No. 53,108

Claims priority, application Japan, Dec. 14, 1976, 51-150190; Dec. 7, 1977, 52-83206

Int. Cl.³ C08L 43/04

U.S. Cl. 525—268

9 Claims

1. A method for producing a crosslinked polyolefin comprising reacting a polyolefin which is a low density polyethylene having a density less than 0.93 and a melt index of 0.1 to 0.5 g/10 min. or a polyolefin mixture containing a low density polyethylene having a density less than 0.93 as major component, with a free radical generating compound and an organic

4,228,256

RESIN COMPOSITION CONTAINING POLYPHENYLENE OXIDE

Akitoshi Sugio, Omiya; Masanobu Masu, Tokyo; Masaharu Kimura, Tokyo; Norio Sayama, Tokyo; Keiun Ko, Minoo, and Eichi Yonemitsu, Kashiwa, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Division of Ser. No. 640,776, Dec. 15, 1975, Pat. No. 4,153,644.

This application Jan. 29, 1979, Ser. No. 7,572

Claims priority, application Japan, Dec. 26, 1974, 49-148445; Dec. 26, 1974, 49-148446

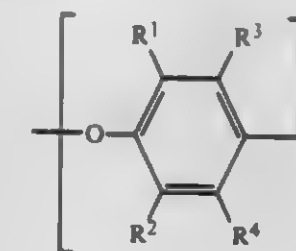
Int. Cl.³ C08L 71/04

U.S. Cl. 525—390

7 Claims

1. A resin composition containing a polyphenylene oxide, comprising

(A) a polyphenylene oxide having the following formula and having a molecular weight of 10,000 or higher:



wherein R₁ and R₂ are lower, straight chain alkyl groups of 1-4 carbon atoms; each of R₃ and R₄ is a hydrogen atom or has the same meaning as defined above for R₁ and R₂; the α-carbon atom in each R₁, R₂, R₃ and R₄ is not tertiary; n is an integer such that the molecular weight is 10,000 or more; and

(B) a thermoplastic modified aromatic hydrocarbon formaldehyde resin, which is obtained by reacting an aromatic hydrocarbon formaldehyde resin having a number average molecular weight of 500 or higher with at least one member selected from the group consisting of phenol, p-tert-butylphenol, p-octylphenol and p-nonylphenol in the presence of an acid catalyst, the weight ratio of said resin (A) to said resin (B) being from 10:90 to 99:1.

4,228,256

TRANSPARENT BLENDS OF RESINOUS COPOLYMERS AND GRAFTED ELASTOMERS

Joseph M. Schmitt, Ridgefield, Conn., assignor to CY/RO Industries, Stamford, Conn.

Filed Sep. 18, 1978, Ser. No. 943,604

Int. Cl.² C08L 9/00, 47/00

U.S. Cl. 525—302

8 Claims

1. A method of preparing a non-agglomerating, readily dispersible grafted rubber comprising: (1) placing a rubber latex in a reaction vessel; (2) adding thereto one or more monomers to be grafted thereon; (3) equilibrating said rubber latex; (4) controllably adding to said equilibrated rubber latex and said monomers at least one monomer to be grafted thereon, wherein the addition of said monomer takes at least 15 minutes and is in the substantial absence of added emulsifier; during which time a grafting reaction occurs.

4,228,257

POLYMERS FOR USE IN IMAGE RECEIVING ELEMENTS FOR METALLIZABLE DYES IN IMAGE TRANSFER FILM UNITS

Gerald A. Campbell; Lewis R. Hamilton, and David P. Brust, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

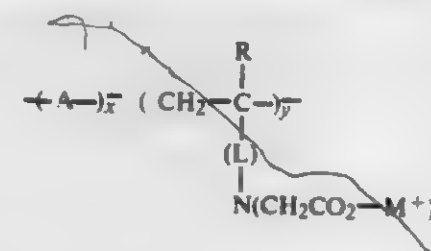
Division of Ser. No. 971,620, Dec. 20, 1978. This application Jun. 6, 1979, Ser. No. 46,138

Int. Cl.² C08F 8/44

U.S. Cl. 525—328

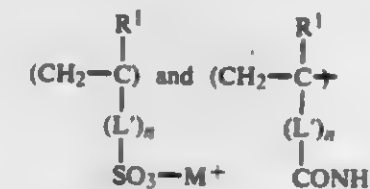
10 Claims

1. A polymer comprising units having the formula:



wherein:

(A) is a unit selected from the group consisting of:



R and R¹ are independently H, halogen or alkyl; L and L' are independent linking groups; n is 0 or 1;

M is selected from the group consisting of H, an ammonium cation and alkali metal;

x is from 20 to 95 weight percent; and

y is from 80 to 5 weight percent.

4,228,259

WATER-SOLUBLE CATIONIC POLYMER DYE COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Gregoire Kalopissis, Neuilly; Alexandre Zysman; Henri Sebag, both of Paris; Guy Vanlerberghe, Commune de Villenaude; Jean-Louis Huron, Mulhouse, and Andree Bugaut, Boulogne, all of France, assignors to L'Oreal, Paris, France

Filed Aug. 8, 1977, Ser. No. 822,912

Claims priority, application France, Aug. 12, 1976, 76 24618 Int. Cl.² C08G 69/48

U.S. Cl. 525—435

5 Claims

1. A water-soluble polymer dye which is the reaction product of

(1) as a water-soluble cationic polymer a polyamino amide, with

(2) as a chromophore or chromogen group carrying compound, an aromatic amine, said aromatic amine being linked to said polyamino amide by a tertiary amine group, the main chain of said polymer dye having at least 10% aliphatic amine groups relative to the total number of amine groups in said main chain.

4,228,260

SUPPORTED CHROMIUM-OXIDE POLYMERIZATION CATALYST HAVING A POROUS SILICA SUPPORT USED IN THE POLYMERIZATION OF OLEFINS

Joseph J. F. Scholten, Sittard, and Lambertus J. M. A. van de Leemput, Echt, both of Netherlands, assignors to Stamcarbon, B.V., Geleen, Netherlands

Division of Ser. No. 924,746, Jul. 14, 1978. This application Apr. 23, 1979, Ser. No. 32,223

Claims priority, application Netherlands, Jul. 18, 1977, 7707961

Int. Cl.² C08F 4/02, 4/24

U.S. Cl. 526—106

2 Claims

1. In a process for polymerizing olefines, the improvement consisting of using as the polymerization catalyst, a supported chromium-oxide catalyst having as the support a porous, pure silica with a sodium content of at most about 200 ppm and a pore volume of at least about 1.0 cm³/g prepared by the process comprising the steps of

- admixing to a non-porous silica prepared by the flame hydrolysis of a silica-halogen compound at least about 50% by weight of water per weight of water plus silica,
- forming a silica gel from said admixture of non-porous silica and water,
- spray drying said silica gel to form a catalyst support,
- placing a chromium compound on said support, and
- heating the supported chromium compound in a non-reducing atmosphere to form a supported chromium compound.

4,228,261

SUPPORTED CHROMIUM-OXIDE POLYMERIZATION CATALYST HAVING A POROUS SILICA SUPPORT USED IN THE POLYMERIZATION OF OLEFINS

Joseph J. F. Scholten, Sittard, and Lambertus J. M. A. van de Leemput, Echt, both of Netherlands, assignors to Stamcarbon, B.V., Geleen, Netherlands

Division of Ser. No. 924,742, Jul. 14, 1978. This application Apr. 23, 1979, Ser. No. 32,638

Claims priority, application Netherlands, Jul. 18, 1977, 7707960

Int. Cl.² C08F 4/02, 4/24

U.S. Cl. 526—106

2 Claims

1. In a process for polymerizing olefines, the improvement consisting of using as the polymerization catalyst, a supported chromium-oxide catalyst having as the support a porous, pure silica with a pore volume of at least about 1.0 cm³/gram and a sodium content of at most about 200 ppm prepared by the process comprising the steps of

- admixing to a non-porous silica prepared by the flame hydrolysis of a silicon-halogen compound at least about 50% by weight of water per weight of water plus silica,
- forming a silica gel from said admixture of non-porous silica and water,
- heating said gel at a temperature between about 200° C. to about 1000° C. to dry the gel,
- grinding the dried silica to a particle size of at least about 10 microns to form a catalyst support,
- placing a chromium compound on said support, and
- heating the supported chromium compound in a non-reducing atmosphere to form a supported chromium-oxide catalyst.

4,228,262

PROCESS FOR THE PRODUCTION OF POLYMER OR COPOLYMER OF AN OLEFIN MONOMER

Anthony D. Caunt, Weiwyn Garden City, and Ian G. Williams, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 849,357, Nov. 7, 1977, Pat. No. 4,161,461. This application Apr. 13, 1979, Ser. No. 29,881

Claims priority, application United Kingdom, Nov. 15, 1976, 47449/76

Int. Cl.² C08F 4/64

U.S. Cl. 526—119

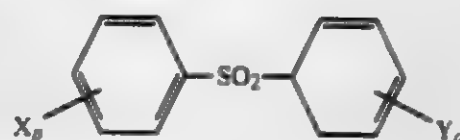
15 Claims

1. In a process for the production of a polymer or copolymer of an olefine monomer wherein at least one olefine monomer, or a mixture of at least one olefine monomer and ethylene, is contacted, under polymerization conditions, with an olefine polymerization catalyst comprising:

- a solid compound of a transition metal which is the product obtained by grinding a solid halide of a transition metal of Groups IVA to VIA of the Periodic Table in the presence of a Lewis Acid and at least one organic sulphur-containing compound of one of the formulae (A), (B) or C, and washing the ground product with a liquid medium; and
- at least one organo-metallic compound of aluminum, or of a non-transition metal of Group IIA of the Periodic Table, or a complex of an organo-metallic compound of a non-transition metal of Group IA or IIA of the Periodic Table and an organo-aluminum compound,

wherein

formula (A) is

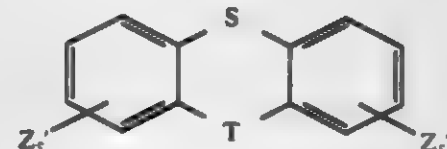


formula (B) is



and

formula (C) is



where

X, or each X, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group —NR¹R², or two groups X can together form an unsaturated hydrocarbon ring;

Y, or each Y, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group —NR¹R², or two groups Y can together form an unsaturated hydrocarbon ring; or a group X and a group Y may be replaced by a link between the two phenyl groups attached to the —SO₂— group, the linkage being either direct or through a group —O—, —CH₂—, —NR¹—, —S—, or —CO—;

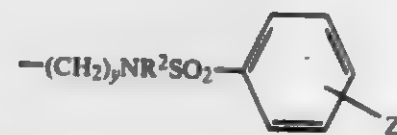
R¹ is a hydrogen atom or a hydrocarbyl group;

R² is a hydrocarbyl group;

p and q are each, independently, an integer from 0 up to 5;

Z, or each Z, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a

group —NR¹R², or two groups Z can together form an unsaturated hydrocarbon ring;
R³ is a hydrocarbyl group or a group



s is an integer from 0 up to 5;

y is a positive integer;

T is —S—, —O—, —NR²—, or —CO—; and

Z', or each Z', is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio, or arylthio group, or a group —NR¹R²; the improvement which comprises using as component (1) of the catalyst, the product obtained by adding up to 2.50 moles of aluminum chloride to the solid halide of the transition metal for each gram atom of the transition metal which is present in the solid halide of the transition metal, grinding the mixture of aluminum chloride and the solid halide of the transition metal, adding to the ground mixture from 0.01 up to 0.50 moles of titanium tetrachloride, and from 0.10 up to 2.50 moles of the organo-sulphur-containing compound, for each gram atom of the transition metal which is present in the solid halide of the transition metal, grinding the mixture thereby obtained and washing the ground product with a liquid medium capable of dissolving the at least one organic sulphur-containing compound and at least one of aluminum chloride or titanium tetrachloride or a complex of the at least one organic sulphur-containing compound and at least one of aluminum chloride or titanium tetrachloride.

4,228,263

POLYMERIZATION OF PROPYLENE WITH A CATALYST PREPARED IN SITU

Edward G. Howard, Jr., Hockessin, and Christos Sarafidis, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 20, 1978, Ser. No. 917,281

Int. Cl.² C08F 4/02, 10/06

U.S. Cl. 526—154

10 Claims

1. In the method of producing elastomeric polymers of propylene and up to about 5 mole % of another α-olefin by the polymerization of propylene in the presence of a catalyst system which is the reaction product of a metal oxide and an organometallic compound of the formula (RCH₂)₄M, where M is Zr, Ti or Hf; R is aryl, alkyl, tertiary alkyl or trialkylsilyl; the aforementioned alkyl groups are C₁—C₁₂; and the RCH₂ group has no hydrogen bonded to the carbon which is beta to M; at a temperature of 20° to 100° C. and a pressure of 147 psi up to 5000 psi (0.1–34.5 MPa) such that the reaction medium contains liquid propylene, the improvement which comprises mixing the components of the catalyst system together, whereby they react to form said catalyst system, in a solvent consisting principally of liquid propylene and the elastomeric polymer is produced as a mobile slurry in said liquid propylene.

4,228,264

SUSPENSION POLYMERIZATION OF VINYL CHLORIDE USING HYDROXYACRYLIC POLYMERS

Akira Yamamoto; Masaru Iida; Satoru Miyake; Hideo Yamaura, and Takeshi Inoue, all of Ichihara, Japan, assignors to Nissan Chemical Industries, Limited, Tokyo, Japan

Continuation of Ser. No. 732,537, Oct. 14, 1976, abandoned.

This application Mar. 27, 1978, Ser. No. 890,488

Claims priority, application Japan, Oct. 28, 1975, 50-129745

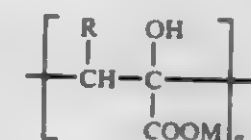
Int. Cl.² C08F 2/20, 14/06

U.S. Cl. 526—200

6 Claims

1. A method of suspension polymerization of vinyl chloride or vinyl chloride with a comonomer, which comprises: poly-

merizing said vinyl chloride or vinyl chloride with a comonomer in an aqueous medium in the presence of a combination of a polymerization improver having units of the formula:



(I)

wherein

M represents an alkali metal;

R represents hydrogen, methyl, ethyl, propyl or butyl and n represents an integer of 10 to 1500, and a suspending agent selected from the group consisting of methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, hydroxypropylmethyl cellulose, carboxymethyl cellulose, polyvinyl alcohol, partially hydrolyzed polyvinyl acetate, styrene-maleic anhydride copolymer, vinyl acetate-maleic anhydride copolymer, partially hydrolyzed polyacrylic acid ester, polymethacrylic acid ester, gelatin, and starch, the amount of said polymerization improver ranging from 0.00005 to 0.1 parts by wt. per 100 parts by wt. of total monomer and from 0.05 to 100 parts by wt. per 100 parts by wt. of the suspending agent.

4,228,265

PROCESS FOR PRODUCING SULFUR-CURABLE ACRYLIC RUBBERS

Tetsu Ohishi, Tokyo; Kohichi Handa, Kamakura, and Haruo Ueno, Tokyo, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,476

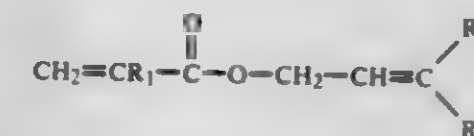
Int. Cl.² C08F 220/40

U.S. Cl. 526—230

10 Claims

1. A process for producing a sulfur-curable acrylic rubber, which comprises copolymerizing in the presence of a radical initiator

- 90 to 99.5% by weight of at least one alkyl acrylate with the alkyl group containing 1 to 8 carbon atoms, and
- 0.5 to 10% by weight of at least one monomer of the general formula



wherein R₁ represents a hydrogen atom or a methyl group, and R₂ and R₃, independently from each other, represent an alkyl group containing 1 to 3 carbon atoms.

4,228,266

PROCESS FOR PRODUCING COPOLYMERIZED RESINS

Ken-ichi Kudo; Yoshihiko Kitagawa; Teruhisa Koyama, all of Niigata; Akira Takata, Habikino; Shuichi Kanagawa, Osaka, and Tetsuo Yamaguchi, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 799,266, May 23, 1977, Pat. No. 4,129,557.

This application Aug. 21, 1978, Ser. No. 935,609

Claims priority, application Japan, May 26, 1976, 51/61614; May 26, 1976, 51/61615; Jul. 30, 1976, 51/91490; Jul. 30, 1976, 51/91491

Int. Cl.² C08F 236/00, 36/00, 232/08

U.S. Cl. 526—283

10 Claims

1. A thermally copolymerized resin having a softening point of 50° to 200° C., a number average molecular weight of 300 to 1,500 measured by vapor pressure osmometry and a bromine number of less than 120 and soluble in hydrocarbon solvents, the composition of said resin comprising (a) 30 to 97 mol % of

one or more monomeric substances selected from cyclopentadiene, dicyclopentadiene and alkyl-substituted compounds thereof, and (b) 3 to 70 mol % of one or more hydroxystyrene derivatives.

4. A method of producing a copolymerized resin, characterized in that a starting monomer component comprising (a) 30 to 97 mol % of one or more monomeric substances selected from cyclopentadiene, dicyclopentadiene and alkyl-substituted compounds thereof and (b) 3 to 70 mol % of one or more hydroxystyrene derivatives is copolymerized thermally at a temperature of 240° to 300° C. without using any catalyst.

4,228,267

METHYL METHACRYLATE-BASED RESIN FILM AND SHEET

Ryuichi Higashizume, and Masahiko Iyoku, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan
Filed Sep. 4, 1979, Ser. No. 72,170

Claims priority, application Japan, Sep. 9, 1978, 53-110228; Dec. 13, 1978, 53-153173; May 8, 1979, 54-055240
Int. Cl.² C08F 220/14

U.S. Cl. 526—328.5

7 Claims

1. A methyl methacrylate-based resin film and sheet containing as comonomer 1 to 15% by weight of an alkyl acrylate whose alkyl group has one to four carbon atoms and 0 to 3% by weight of an ultraviolet ray absorbent, which film and sheet possess a specific supra-molecular structure such that the melt flow rate (as measured under Conditions I defined by ASTM, D1238-70) falls in the range of from 0.5 to 12 g/10 min., the orientation release stress falls in the range of 5 to 30 kg/cm² (based on the method of ASTM D1504), the ratio of the orientation release stresses in the two axial directions (the ratio of the orientation release stress in the direction of its maximum value vs. the orientation release stress in the direction of its minimum value) falls in the range of from 1 to 2, the difference of the orientation release stresses in the two axial directions (the difference of the orientation release stress in the direction of its maximum value subtracted by the orientation release stress in the direction of its minimum value) falls below 10 kg/cm², the high-speed tensile strength exceeds 7 kg/mm² and the critical elongation exceeds 0.1%.

4,228,268

PROCESS FOR POLYMERIZING HOMOGENIZED VINYL CHLORIDE EMULSION WHICH HAD BEEN PRE-DISPERSED

Takanori Musha, and Yao Terutaka, both of Takaoka, Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,731

Claims priority, application Japan, May 23, 1978, 53-61392
Int. Cl.² C08F 14/06

U.S. Cl. 526—344.2

10 Claims

1. A process for polymerizing vinyl chloride, which comprises mixing in an agitation tank vinyl chloride monomer or a monomeric mixture composed of a major proportion of vinyl chloride and a minor proportion of a monomer copolymerizable therewith, with water, an emulsifier, a polymerization initiator soluble in the vinyl monomer and polymerization aids for each batch to form a preliminary dispersion in which liquid droplets of the vinyl chloride monomer have a weight average particle diameter of 5 to 40 microns, wherein the proportion of liquid droplets having a particle diameter of at least 30 microns is 0 to 10% by weight, based on the entire liquid droplets, applying a homogenizing technique to the preliminary dispersion to form a homogenized emulsion, and feeding the emulsion to a polymerization step and polymerizing said emulsion.

4,228,269

CONTACT LENSES OF HIGH GAS PERMEABILITY

Samuel Loshak, and Chah M. Shen, both of Chicago, Ill., assignors to Wesley-Jessen Inc., Chicago, Ill.

Filed Jun. 8, 1978, Ser. No. 913,569

Int. Cl.³ C08F 12/12

U.S. Cl. 526—346

29 Claims

1. A contact lens having an oxygen gas permeability of at least 1.5×10^{-11} (ml (O₂) cm²/sec ml mm Hg) comprising homopolymers and interpolymers formed by the polymerization of monomers comprising at least one alkyl styrene monomer having at least one C₂ or higher alkyl on the aromatic ring.

4,228,270

POLYBORODIPHENYLSILOXANES

Hiroshi Kobayashi, Fuji, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

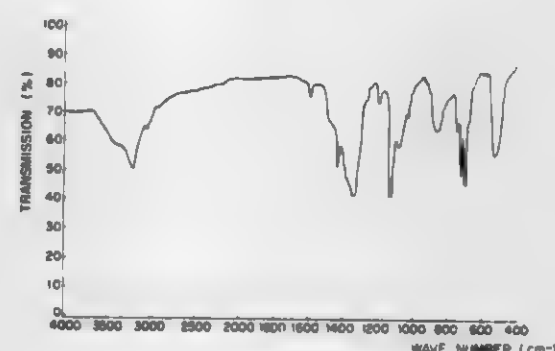
Filed Dec. 13, 1978, Ser. No. 969,006

Claims priority, application Japan, Dec. 14, 1977, 52-149395; Dec. 20, 1977, 52-152439

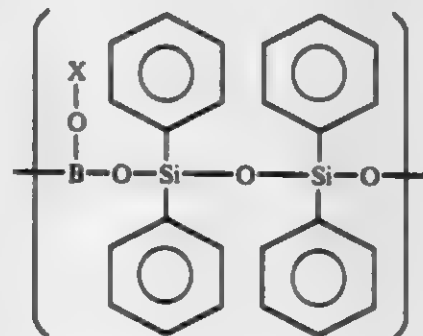
Int. Cl.² C08G 79/08

U.S. Cl. 528—8

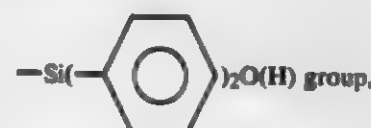
7 Claims



1. A polyborodiphenylsiloxane having main repeating units of the formula,

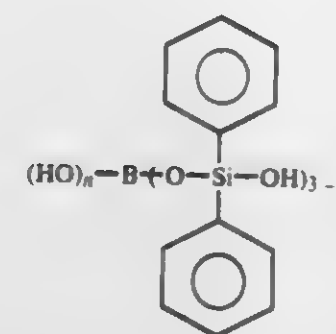


wherein X is a hydrogen atom or



and a weight-average molecular weight of about 800 to about 5,000.

3. A method of preparing the polyborodiphenylsiloxane of claim 1, which comprises polycondensing a borodiphenylsiloxanol of the formula,



wherein n is zero or one, at a temperature of from about 140° C. to about 400° C. in the absence of a solvent.

4,228,271

PROCESS FOR PREPARING EPOXY RESIN

Nikolai S. Enikolopov, Kutuzovskiy prospekt, 26, kv. 245; Anatoly I. Nepomnyaschy, ulitsa Scherbakovskaya, 5, kv. 52, both of Moscow; Viktor A. Pekarsky, ulitsa Kirova, kvartal 116, 24, kv. 30, Ljubertsy Moskovskoi oblasti; Tatyana A. Pekarskaya, Bratskaya ulitsa, 8, kv. 60, Moscow; Mikhail G. Brusilovsky, Krymsky val, 8, kv. 56, Moscow; Svetlana A. Gavrilina, Frunzenskaya naberezhnaya, 26, kv. 5, Moscow; Naum D. Lerman, ulitsa Volgogradskaya, 43a, kv. 40, Yaroslavl; Oleg K. Maimur, Zhivopisnaya ulitsa, 17, korpus 2, kv. 188, Moscow; Arkady L. Iljushin, ulitsa 9 Pyatiletki, 9, kv. 79, Kotovsk Tambovskoi oblasti; Mikhail A. Markevich, prospekt Vernadskogo, 89, korpus 4, kv. 12, Moscow; Susanna M. Karpacheva, ulitsa Marshala Novikova, 2, kv. 88, Moscow; Lidia P. Khorkhorina, 2 Peschany pereulok, 20, korpus 1, kv. 54, Moscow; Valeryan M. Muratov, Ostakhovskiy pereulok, 1/2, kv. 118, Moscow, and Semen F. Sholk, Zvenigorodskoe shosse, 3a, kv. 223, Moscow, all of U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,446

Int. Cl.² C08G 59/06

U.S. Cl. 528—95

6 Claims

1. A process for preparing epoxy resin, comprising allowing a mixture of epichlorohydrin, 2,2-bis(p-hydroxyphenyl) propane and a solvent in the presence of an alkali used in an amount of from 0.5 to 4% by weight of the epichlorohydrin, to stay at a temperature of from 45° to 70° C. to obtain a homogeneous mass with subsequent adding to the resultant mass of an alkali used in an amount of from 45 to 50% by weight of the epichlorohydrin and conducting polycondensation at a temperature of from 70° to 90° under stirring to obtain the end product.

4,228,272

METHOD OF CATALYTICALLY PREPARING TETRAHYDROFURAN/ALKYLENE OXIDE POLYMERIZATES USING A MONTMORILLONITE CLAY AS THE CATALYST

Thomas W. Del Pesco, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 923,570, Jul. 11, 1978, abandoned. This application Mar. 27, 1979, Ser. No. 24,385

Int. Cl.² C08G 65/20

U.S. Cl. 528—413

3 Claims

1. In a process for catalytically preparing a tetrahydrofuran/alkylene oxide polymerizate, the improvement comprising using as the catalyst an acid-activated montmorillonite clay having a pore volume of 0.4–0.8 cubic centimeter per gram, a surface area of 220–260 square meters per gram, and an average pore diameter of 0.1–0.3 micron.

4,228,273

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM AQUEOUS DISPERSIONS OF VINYL CHLORIDE RESINS

William G. Hughes, Plainfield, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Sep. 5, 1978, Ser. No. 939,769

Int. Cl.³ C08F 6/24, 6/16

U.S. Cl. 528—491

5 Claims



1. The process for the removal of vinyl chloride from an aqueous dispersion that contains 5%–50% by weight of a vinyl chloride resin and 1000 ppm–15,000 ppm of vinyl chloride that comprises the steps of

- feeding the aqueous dispersion into a first treatment zone having a series of surfaces each having therein perforations through which the dispersion can flow downward onto the next surface in the series;
- contacting the aqueous dispersion in the first treatment zone with a countercurrent stream of steam and vinyl acetate at a temperature in the range of 65°–85° C. at a pressure in the range of 200 torr to 600 torr to strip at least 90% of the vinyl chloride from the dispersion;
- passing the dispersion downward into a second treatment zone where it is maintained at a temperature in the range of 75°–85° C. at a pressure in the range of 200 torr to 400 torr for up to 30 minutes;
- passing the dispersion downward through a third treatment zone where it is contacted with a countercurrent flow of steam at a temperature in the range of 75°–95° C. at a pressure in the range of 300 torr to 600 torr; and
- recovering an aqueous dispersion that contains less than 10 ppm of vinyl chloride.

4,228,274

1-SUBSTITUTED GLYCOPYRANOSIDES

Mitree M. Ponpipom, North Plainfield; Robert L. Bugianesi, Colonia; Philippe L. Durette, New Providence; Howard M. Katzen, North Plainfield, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 898,265, Apr. 20, 1978, abandoned, which is a continuation of Ser. No. 727,551, Sep. 28, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 922,897

Int. Cl.² C07H 5/06, 5/08

U.S. Cl. 536—4

5 Claims

1. A hypoglycemic compound selected from the group consisting of 1-[(ω-aminoalkyl)thio]-1-deoxy-glycopyranosides and 1-[(ω-aminoalkanoylethyl)amino]-1-deoxy-glycopyranosides, wherein said alkyl contains 2 to 8 carbon atoms and said alkanoyl contains 3 to 9 carbon atoms.

4,228,275

NITROGEN CONTAINING POLYSACCHARIDE AND PROCESS FOR PREPARING SAME

Kiro Asano, Kukizaki; Tsuyoshi Saito, Tokyo; Masayoshi Hatanaka, and Susumu Ikeda, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1978, Ser. No. 943,474

Claims priority, application Japan, Sep. 16, 1977, 52/111968
Int. Cl.² A61K 31/73; C08B 37/00

U.S. Cl. 536—18

6 Claims

1. A product consisting of nitrogen-containing polysaccharides of the elementary composition of 38–50% of carbon, 2.5–10% of nitrogen, 5.5–7.5% of hydrogen and the balance of oxygen, having a systemic anti-plant viral activity, molecular weights between 500 and 10,000 and a characteristic infrared absorption band at about 1620 cm⁻¹, obtained by bringing a culture product of a fungus Basidiomycetes into reaction with an aqueous ammoniacal solution of the normality of 0.03 to 17 N, at a temperature of 150°–250° C. under pressure of said aqueous ammoniacal solution at said reaction temperature and by filtering the reaction product then by drying the filtered solution.

4,228,276

DIRECT PRECIPITATION METHOD FOR PRODUCING EXTRUSION-GRADE CELLULOSE ACETATE POWDER AND RESULTING PRODUCT

Chung-Ming Kuo, and Richard T. Bogan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 26, 1979, Ser. No. 24,281

Int. Cl.³ C08B 3/06, 3/22

U.S. Cl. 536—76

16 Claims

1. Method for preparing cellulose acetate powder from an acid dope containing from about 6% to about 15% by weight cellulose acetate ester, the acid dope comprising about 60 to about 100 percent aqueous acetic acid solution and a cellulose acetate ester dissolved in the solution and having an acetyl content of about 38 to about 41 weight percent; the method comprising:

- mixing in the dope about 0.25 to about 5.0 parts per part of cellulose acetate ester of a water immiscible coagulating agent having a boiling point less than 150° C. (302° F.) to form a mixture;
- precipitating from the mixture the cellulose acetate ester in about 25% to about 35% aqueous acid at a temperature of about 65° C. (149° F.) to about 95° C. (203° F.) by adding at a rate slow enough to prevent localized precipitation about 5% to about 12% aqueous acetic acid solution that is preheated to the same temperature as the acid dope while vigorously agitating the mixture sufficiently to keep large coagulate particles apart into smaller coagulate particles of a size that will pass through a 45 mesh screen so as to form a liquid powder slurry;
- aging the liquid powder slurry for about 15 minutes in about 25% to about 35% aqueous acetic acid;
- removing the coagulating agent from the liquid powder slurry down to about 1% or less by weight of the liquid powder slurry and at a temperature of about 65° C. to about 95° C.;
- removing liquid from the liquid powder slurry remaining after step (d) to obtain a wet powder of coagulate particles;
- washing the wet powder with water to remove the residual acetic acid; and drying the powder at a temperature of about 65° C. to about 95° C. to remove the water.

4,228,277

MODIFIED NONIONIC CELLULOSE ETHERS

Leo M. Landoll, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 12, 1979, Ser. No. 11,613

Int. Cl.³ C08B 11/08, 11/193

U.S. Cl. 536—90

6 Claims

1. A nonionic cellulose ether having a sufficient degree of nonionic substitution selected from the class consisting of methyl, hydroxyethyl and hydroxypropyl to cause it to be water-soluble and being further substituted with a long chain alkyl radical having 10 to 24 carbon atoms in an amount between about 0.2 weight percent and the amount which renders said cellulose ether less than 1% by weight soluble in water.

4,228,278

PREPARATION OF 2,4,6-TRI-ISOBUTYL DIHYDRO-1,3,5-DITHIAZINE

Chi-Kuen Shu, Cliffwood; Braja D. Mookherjee, Holmdel, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

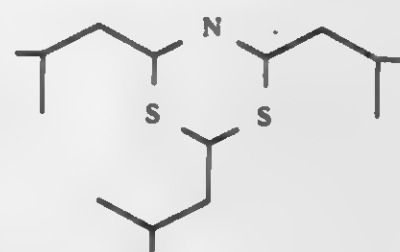
Division of Ser. No. 10,887, Feb. 9, 1979, which is a continuation-in-part of Ser. No. 961,684, Nov. 17, 1978. This application Sep. 13, 1979, Ser. No. 75,078

Int. Cl.³ C07D 285/00

U.S. Cl. 544—5

1 Claim

1. A process for producing crystalline 2,4,6-tri-isobutyl-dihydro-1,3,5-dithiazine having the structure:



comprising the steps of:

- reacting isovaleraldehyde with ammonium sulfide in the presence of citric acid in aqueous media at a temperature of between 0° C. and 15° C. with the mole ratio of ammonium sulfide:isovaleraldehyde being between 2:1 and 1:0.5; the reaction time being between one and five hours thereby forming a gel;
- converting the resulting reaction mass gel to a two-liquid phase system; an organic phase and an aqueous phase by means of mechanical agitation of said gel;
- separating the aqueous phase from the organic phase;
- admixing the organic phase with aqueous mineral acid whereupon a crystalline precipitate is formed;
- separating the resulting crystals from the resulting mixture;
- washing the resulting crystals with a non-dissolving hydrocarbon liquid;
- neutralizing the resulting washed crystals by dissolving said crystals in a solvent and admixing the resulting solution with a weak base;
- washing out the excess base from the resulting solution and drying the resulting organic solution;
- evaporating the solvent from said organic solution to yield 2,4,6-tri-isobutyl-dihydro-1,3,5-dithiazine in crystalline form.

4,228,279

PRODUCTION OF O,O-DIALKYL-S-(BENZAZIMIDOMETHYL)-THIOLPHOSPHORIC ACID ESTERS

Vidyanatha A. Prasad, Overland Park, Kans., and James H. Vines, Kansas City, Mo., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

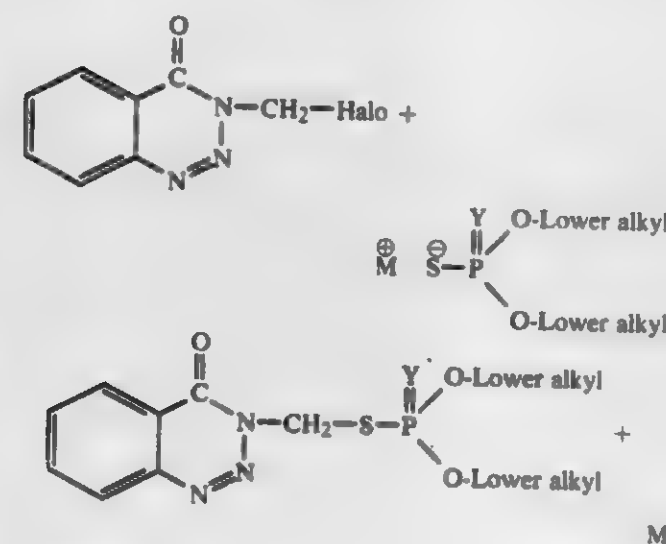
Filed Aug. 28, 1979, Ser. No. 70,478

Int. Cl.² C07D 253/08

U.S. Cl. 544—183

6 Claims

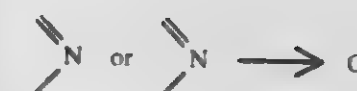
1. In the reaction of a halomethylbenzamide with an O,O-di-lower alkyl-thiolphosphoric acid ester to form an ester in accordance with the equation



in which

Y is oxygen or sulfur, and

M is an alkali metal or ammonium cation, the improvement which comprises starting the reaction at a pH from about 2.5 to 5.5, whereby the desired reaction product is produced in higher yield and assay;



provided that

- when one of R₁ and R₂ represents nitro, the other is other than nitro or trifluoromethyl;
- when R₁ and R₂ represent trifluoromethyl, they are on other than adjacent carbon atoms; and
- when R₁ and R₂ represent t-butyl, they are on other than adjacent carbon atoms; and
- when one of R₁ and R₂ is trifluoromethyl and the other is t-butyl, they are on other than adjacent carbon atoms.

4,228,281

DICARBOXYLIC ACIDS CONTAINING TRIAZINE RINGS

Thomas Kainmüller, Lindenfels, Fed. Rep. of Germany; Jürgen Habermeier, Pfeffingen, Switzerland, and Lothar Buxbaum, Lindenfels, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,031

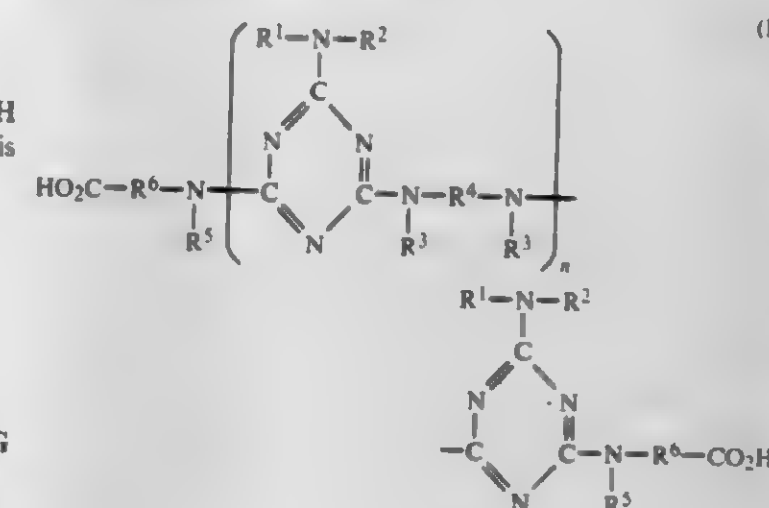
Claims priority, application Switzerland, Sep. 23, 1977, 11651/77

Int. Cl.² C07D 403/12

U.S. Cl. 544—198

15 Claims

1. A compound of the formula



in which

n has a value from 1 to 100, R¹, R², R³ and R⁵ independently of one another are each a hydrogen atom, a straight- or branched-chain alkyl of 1 to 22 C atoms, cycloalkyl of 5 to 7 C atoms, cyclohexylmethyl, aryl of 6 to 10 C atoms, benzyl, or said cycloalkyl, said cyclohexylmethyl, said aryl or said benzyl substituted with alkyl of 1 to 4 C atoms, or R¹ and R² together are alkylene of 3 to 7 C atoms, 3-oxapentylene or 3-thiapentylene, R⁴ is a straight- or branched-chain alkylene of 2 to 18 C atoms, cycloalkylene of 5 to 7 C atoms, arylene of 6 to 10 C atoms, cycloalkylenealkylene or cycloalkylenebisalkylene with 1 to 4 C atoms in the alkylene group, arylenealkylene or arylenebisalkylene with 1 to 4 C atoms in the alkylene group; or said cycloalkylene, said cycloalkylenealkylene or said cycloalkylenebisalkylene substituted with alkyl of 1 to 4 C atoms, or said arylene, said arylenealkylene or said arylenebisalkylene substituted by alkyl of 1 to 6 C atoms or by halogen, or R⁴ is phenylene-X-phenylene where X is a direct bond, O, S, SO₂, alkylene of 1 to 3 C atoms, alkylidene of 2 to 12 C atoms, cycloalkylidene of 5 to 6 C atoms, benzylidene, bisphenylmethylenidene, 1,1,1-trichloroethylidene or -O-p-phenylene-O-, or

4,228,280 PYRANO[4,3-e]-AS-TRIAZINES AND CORRESPONDING 4-OXIDES

Gregory B. Bennett, Mendham, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

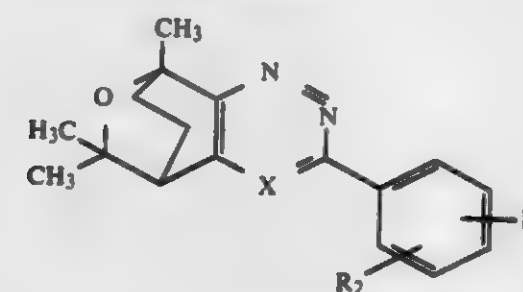
Continuation-in-part of Ser. No. 874,940, Feb. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 779,071, Mar. 18, 1977, abandoned. This application May 16, 1979, Ser. No. 39,659

Int. Cl.² C07D 491/08

U.S. Cl. 544—184

26 Claims

1. A compound of the formula



wherein

R₁ and R₂ each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, straight chain lower alkoxy, amino, nitro or trifluoromethyl, and X represents

R⁴ together with one R³ and the N atom to which they are bound form a ring having 4 to 7 C atoms, or R⁴, and also both R³s together, are alkylene groups having 1 to 5 atoms, and forming together with the two N atoms a 5- to 7-membered ring, and

R⁶ is a straight- or branched-chain alkylene or alkylidene of 1 to 12 C atoms, o-phenylene, m-phenylene, p-phenylene, p-benzylene or p-cyclohexylene or the corresponding acid halides, or the corresponding esters where the ester moiety is alkyl or hydroxyalkyl of 1 to 12 C atoms, cycloalkyl or hydroxycycloalkyl of 5 to 6 ring carbon atoms or aryl of 6 to 10 C atoms.

4,228,282

LUBRICATING OIL ADDITIVE

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

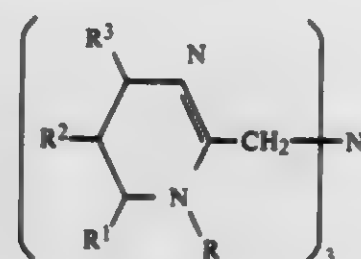
Division of Ser. No. 920,436, Jun. 29, 1978, which is a division of Ser. No. 845,700, Oct. 26, 1977, Pat. No. 4,157,972, which is a continuation-in-part of Ser. No. 610,761, Sep. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 431,831, Jan. 7, 1974, abandoned. This application Dec. 28, 1978, Ser. No. 974,199

Int. Cl.² C07D 403/14

U.S. Cl. 544—296

4 Claims

1. A compound of the formula



wherein R, R¹, R² and R³ are independently hydrogen or radicals composed primarily of carbon and hydrogen and containing from 1 to about 50 carbon atoms.

4,228,283

PROCESS FOR PREPARING PURE 2-METHYL-3-(β-HYDROXYETHYL-CARBAMOYL)-QUINOXALINE 1,4-DI-N-OXIDE, AND OTHER COMPOUNDS SIMILAR THERETO

Vincenzo Giobbio, Loranze' di Ivrea, Italy, assignor to Marzer S.p.A., Loranze', Italy

Filed Mar. 8, 1979, Ser. No. 18,516

Claims priority, application Italy, Nov. 24, 1978, 69686 A/78

Int. Cl.² C07D 241/44

U.S. Cl. 544—355

11 Claims

1. A process for preparing high purity 2-methyl-3-(β-hydroxyethyl-carbamoyl) quinoxaline 1,4-di-N-oxide, comprising the following stages carried out separately and in succession:

- reacting benzofuroxane with an acetacetic acid ester of formula CH₃-CO-CH₂-COOR in which R is a C₁-C₆ alkyl radical, in the presence of a catalyst in the form of ethanolamine, and in a suitable solvent;
- separating and isolating the 2-methyl-3-(alkylcarboxylate)quinoxaline-1,4-di-N-oxide reaction product formed in stage (a); and
- reacting the reaction product isolated in stage (b) with an excess of ethanolamine over the stoichiometric quantity to give the carbamoyl derivative.

4,228,284

BENZO[b,f]THIEPAN DERIVATIVES

Shigeru Yamabe, Kobe; Yasuo Fujimoto, Tokyo; Shoji Ryu, Noda; Yoshio Suzuki, Misato; Yoshihiro Tanaka, Soka; Toru Yamanaka, and Kiyosato Nyu, both of Misato, all of Japan, assignors to Nippon Chemphar Company, Limited, Tokyo, Japan

Division of Ser. No. 869,767, Jan. 16, 1978, Pat. No. 4,166,127, which is a division of Ser. No. 689,908, May 25, 1976, Pat. No. 4,101,667. This application Feb. 7, 1979, Ser. No. 10,320

Claims priority, application Japan, Oct. 28, 1975, 50-129490; United Kingdom, May 30, 1975, 23703/75

Int. Cl.² C07D 409/12

U.S. Cl. 544—375

1 Claim

1. 9-(β-hydroxyethyl)piperazinylcarbonyl-2-trifluoromethyl-10,11-dihydrodibenzo[b,f]thiepin.

4,228,285

14-HYDROXY-6-OXAMORPHINANS AND 14-HYDROXY-6-OXAISOMORPHINANS

Thomas A. Montzka, Manlius; John D. Matiskella, and Richard A. Partyka, both of Liverpool, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

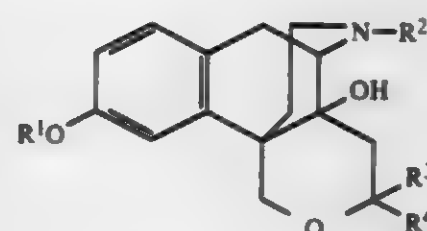
Filed Feb. 28, 1979, Ser. No. 16,050

Int. Cl.² C07D 491/18; A61K 31/435

U.S. Cl. 546—63

16 Claims

1. A compound of the formula



wherein R¹ is hydrogen, (lower)alkyl, (lower)alkanoyl or nicotinoyl; R² is hydrogen, (lower)alkyl, propargyl, allyl, 3,3-dimethylallyl, cyclopropylmethyl, cyclobutylmethyl,



in which R⁵ is hydrogen or (lower)alkyl, and R³ and R⁴ are the same or different and are hydrogen or (lower)alkyl, or R³ and R⁴, when taken together, represent an alkylene group of from 2 to 6 carbon atoms; or a pharmaceutically acceptable salt thereof.

4,228,286

INTERMEDIATES FOR 11-[3-OXO-ω(2- AND 3-FURYL)-LOWER-ALKYL]HEXAHYDRO-2,6-METHANO-3-BENZAZOCINES

Thomas R. Lewis, Bethlehem, and William F. Michne, Poestenkill, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

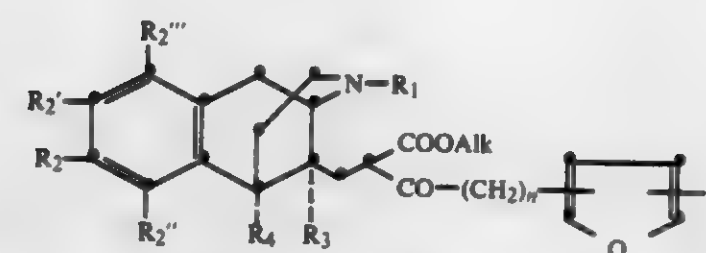
Division of Ser. No. 36,060, May 4, 1979, which is a continuation-in-part of Ser. No. 886,781, Mar. 15, 1978, abandoned. This application Aug. 30, 1979, Ser. No. 71,744

Int. Cl.² C07D 221/26, 221/28

U.S. Cl. 546—97

3 Claims

1. A compound having the formula



where R is hydrogen or lower-alkyl; R₁ is hydrogen, lower-alkyl, cyclo-lower-alkyl-lower-alkyl, phenyl-lower-alkyl, lower-alkenyl or lower-alkynyl; R₂, R₂', R₂'' and R₂''' are each hydrogen, or three of them are hydrogen and the fourth is hydroxy, methoxymethoxy, lower-alkoxy or 2-tetrahydropyranyloxy; R₃ and R₄ are each hydrogen or lower-alkyl, or R₃ and R₄ together are divalent lower-alkylene, —(CH₂)_m—, where m is one of the integers 3 and 4; n is one of the integers 1 and 2; and Alk is lower-alkyl.

4,228,287

PIPERIDINEMETHYL ETHERS

Cornelis van der Stelt, Haarlem, Netherlands, assignor to N.V. Koninklijke Pharmaceutische Fabrieken, Meppel, Netherlands

Filed Jul. 27, 1971, Ser. No. 166,641

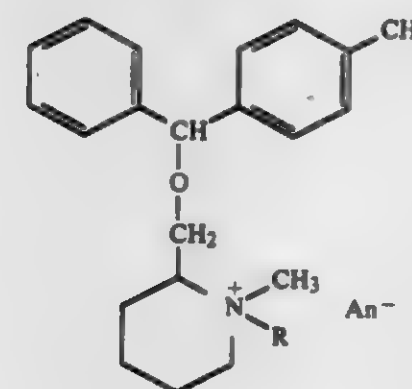
Claims priority, application United Kingdom, Aug. 5, 1970, 37746/70

Int. Cl.² C07D 211/22

U.S. Cl. 546—236

2 Claims

1. A non-toxic quaternary ammonium salt of 1-methyl-2-[(p-methyl-α-phenyl-benzyl)oxy]methyl]piperidine of the formula



in which R represents a methyl group and an-α halogen or sulfate anion.

4,228,288

CERTAIN SUBSTITUTED 3,4,5,6-TETRAHYDROPYRIDINIUM SALT INTERMEDIATES

Dennis M. Zimmerman, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

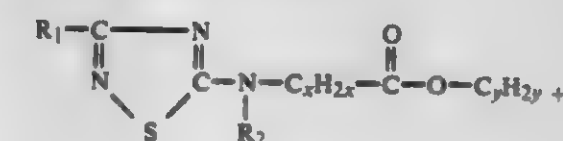
Division of Ser. No. 965,137, Nov. 29, 1978. This application Aug. 27, 1979, Ser. No. 69,650

Int. Cl.² C07D 213/24, 213/28

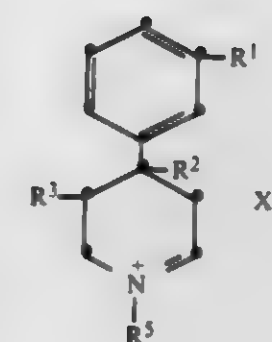
U.S. Cl. 546—339

8 Claims

1. A tetrahydropyridinium salt of the formula



wherein R₁ is a CCl₃ or CF₃ group; R₂ is a hydrogen or a lower alkyl group of 1 to 4 carbon atoms; x is from 1 to 4; and y is from 1 to 5.



wherein:

R¹ is hydrogen, hydroxy or methoxy; R² and R³ independently are C₁-C₅ alkyl; R⁵ is C₁-C₁₀ alkyl, benzyl, or CH₂R⁶ wherein R⁶ is C₂-C₇ alkenyl or C₃-C₆ cycloalkyl; and X⁻ is a suitable anion.

4,228,289

THIOLCARBAMATE DERIVATIVES OF 3-TRIHALOMETHYL-1,2,4-THIADIAZOLES

Walter A. Gay, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

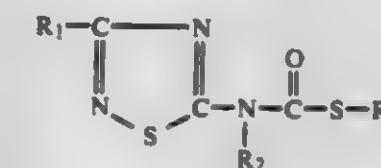
Division of Ser. No. 6,060, Jan. 24, 1979. This application Dec. 10, 1979, Ser. No. 102,052

Int. Cl.² A01N 47/18; C07D 285/08

U.S. Cl. 548—128

5 Claims

1. A compound of the formula



wherein R₁ is CCl₃ or CF₃; R₂ is a hydrogen or a lower alkyl group of 1 to 4 carbon atoms; and R₃ is a lower alkyl group of 1 to 4 carbon atoms.

4,228,290

AMINO ESTER DERIVATIVES OF 3-TRIHALOMETHYL-1,2,4-THIADIAZOLES

Eugene F. Rothgery, North Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

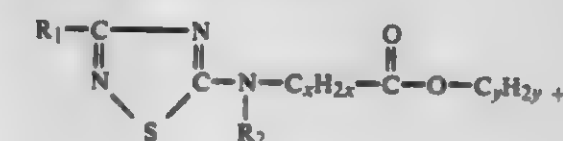
Division of Ser. No. 006,318, Jan. 25, 1979. This application Dec. 10, 1979, Ser. No. 102,053

Int. Cl.² A01N 43/80; C07D 285/08

U.S. Cl. 548—128

5 Claims

1. A compound of the formula



4,228,291

PHARMACOLOGICALLY ACTIVE THIADIAZOLE
GUANIDINE COMPOUNDS

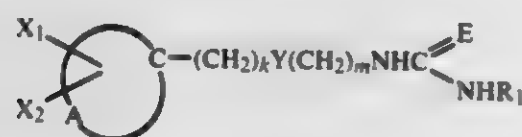
Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Genellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 764,921, Feb. 2, 1977, Pat. No. 4,137,237, which is a division of Ser. No. 637,496, Dec. 4, 1975, Pat. No. 4,022,797, which is a division of Ser. No. 450,957, Mar. 14, 1974, Pat. No. 3,950,333, which is a continuation-in-part of Ser. No. 290,584, Sep. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Oct. 4, 1978, Ser. No. 948,358

Int. Cl.² A61K 31/41; C07D 285/12

U.S. Cl. 548-138

1. A compound of the formula:



wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being a ring; X₁ is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl, halogen, amino or



X₂ is hydrogen or when X₁ is lower alkyl, lower alkyl or halogen, k is 0 to 2 and m is 2 or 3, provided that the sum of k and m is 3 or 4; Y is oxygen, sulphur or NH; E is NR₂; R₁ is hydrogen, lower alkyl or di-lower alkylamino-lower alkyl; and R₂ is hydrogen, nitro or cyano, or a pharmaceutically acceptable addition salt thereof.

4,228,292

N-SUBSTITUTED BENZOTHAZOLINES AND
BENZOXAZOLINES AND THEIR USE AS HERBICIDES
AND PLANT GROWTH REGULANTS

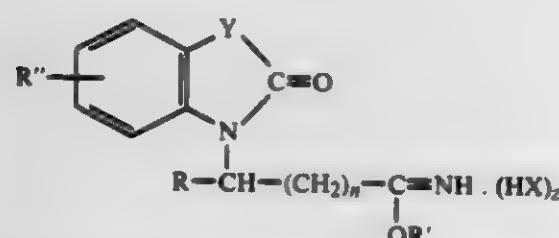
John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 20, 1978, Ser. No. 926,470

Int. Cl.² C07D 277/68, 263/58

U.S. Cl. 548-165

1. A compound having the formula



wherein R is hydrogen or lower alkyl; R' is lower alkyl; R'' is hydrogen, lower alkyl, halogen or lower alkoxy; Y is oxygen or sulfur; n is an integer from zero to two inclusive; X is an anionic moiety of a strong acid and z is zero or one.

4,228,293

IODO-A-23187 DERIVATIVES

R. Michael Molloy, and Manuel Debono, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

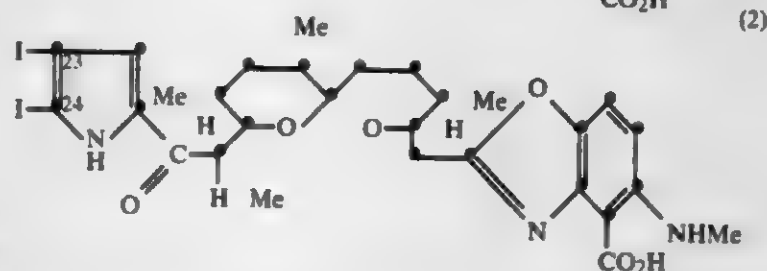
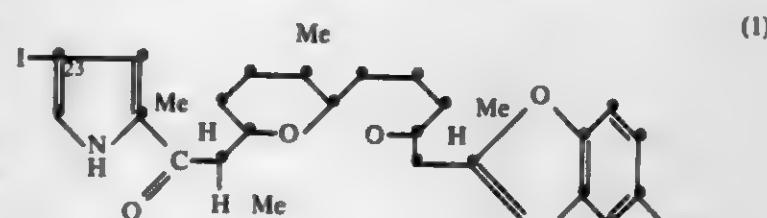
Filed Oct. 11, 1978, Ser. No. 950,486

Int. Cl.² C07D 493/10; A61K 31/42

U.S. Cl. 548-216

3 Claims

1. A compound selected from a group consisting of the following:



and the pharmaceutically acceptable cationic salts of (1) and (2).

4,228,294

ESTERS OF IMIDAZOLIDINEDIONE-BASED
DIEPOXIDES AND COATING COMPOSITIONS
CONTAINING SAME

Ronald J. Lewarchik, Natrona Heights; J. Alden Erikson, Gibsonia, and William J. Birkmeyer, Oakmont, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

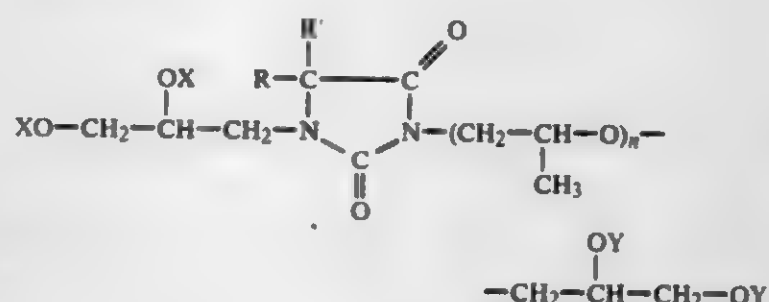
Filed Oct. 10, 1978, Ser. No. 950,105

Int. Cl. C07d 233/72

U.S. Cl. 548-312

27 Claims

1. An ester of imidazolidinedione-based diepoxide having the structure:



wherein R and R' are independently hydrogen or hydrocarbon groups having from 1 to 8 carbon atoms, one X is hydrogen and the other X is



one Y is hydrogen and the other Y is



where the R'' groups are independently (a) alkyl groups having from 1 to 17 carbon atoms or (b) aryl or alkylaryl groups having from 6 to 10 carbon atoms and n is 0 or 1.

4,228,295

NOVEL CYCLOHEPTATHIOPHENE INTERMEDIATES
FOR THE SYNTHESIS OF BIOTIN

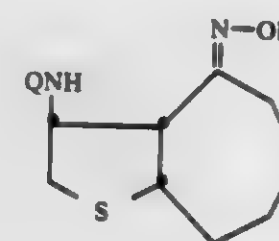
Pasquale N. Confalone; Elizabeth D. Lollar, both of Bloomfield; Giacomo Pizzolato, Belleville, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 929,870, Jul. 31, 1978, Pat. No. 4,175,086, which is a division of Ser. No. 836,876, Sep. 26, 1977, Pat. No. 4,124,595, which is a division of Ser. No. 771,218, Feb. 23, 1977, Pat. No. 4,062,868. This application Jun. 11, 1979, Ser. No. 47,199

Int. Cl.² C07D 333/80

U.S. Cl. 549-57

1. A compound of the formula:



wherein Q is selected from the group consisting of hydrogen, -COR₄, -COCH₃ and tosyl where R₄ is lower alkyl and X is halogen, the racemates and optical antipodes thereof.

4,228,296

16-ARYLOXY-17,18,19,20-TETRAHYDROPROSTANOIC
ACIDS AND DERIVATIVES

Charles V. Grudzinski, Garnerville, N.Y., and Martin J. Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

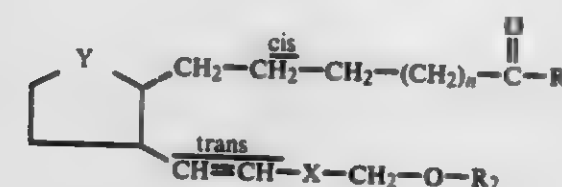
Division of Ser. No. 520,064, Nov. 1, 1974. This application Jan. 24, 1979, Ser. No. 6,164

Int. Cl.² C07C 177/00

U.S. Cl. 560-60

9 Claims

1. A compound selected from the group consisting of an optically active compound of the formula:



and a racemic compound of that formula and the mirror image thereof; wherein R₁ is hydroxy or alkoxy having from 1 to 12 carbon atoms; R₂ is a phenyl, benzyl, naphthyl, or 5,6,7,8-tetrahydronaphthyl group optionally substituted with one or two members selected from the group consisting of halogen, lower alkyl, lower alkoxy and trifluoromethyl; n is an integer from 2 to 4, inclusive; X is a divalent moiety selected from the group consisting of those of the formulae:



Y is a divalent moiety selected from the group consisting of those of the formulae:



and the non-toxic cationic salts thereof when R₁ is hydroxy.

4,228,297

PROCESS FOR THE PRODUCTION OF
HYDROXYALKYLPHENYL DERIVATIVES

Joerg Haeblerli, Warwick; Kyong P. Park, Cranston; Anthony F. Velturo, N. Kingstown, and George F. Nurnberger, Warwick, all of R.I., assignors to Ciba-Geigy Corporation, Ardley, N.Y.

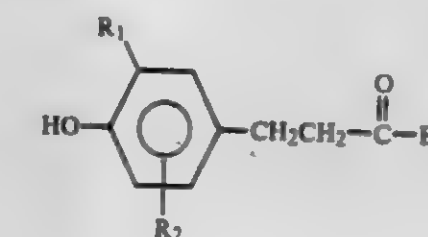
Continuation of Ser. No. 763,220, Jan. 27, 1977, abandoned, which is a continuation of Ser. No. 596,129, Jul. 15, 1975, abandoned, which is a continuation of Ser. No. 505,286, Sep. 12, 1974, abandoned, which is a continuation of Ser. No. 318,801, Dec. 27, 1972, abandoned. This application Mar. 21, 1979, Ser. No. 22,395

Int. Cl.² C07C 69/76

U.S. Cl. 560-75

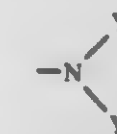
19 Claims

1. An improved process for the production of a compound having the formula I



wherein

R₁ and R₂ independently represent an alkyl group having from 1 to 6 carbon atoms, B₁ represents -O-(C_xH_{2x})-H or

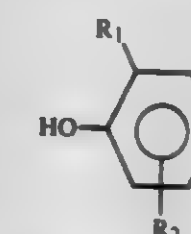


wherein x has a value from 6 to 30, inclusively.

Y₁ represent an alkyl group having from 1 to 18 carbon atoms or a cycloalkyl group having from 5 to 12 carbon atoms and

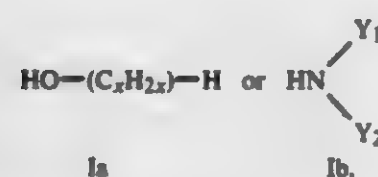
Y₂ represents hydrogen or an alkyl group having from 1 to 18 carbon atoms, a cycloalkyl group of 5 to 12 carbon atoms, or

Y₁ and Y₂ together with the nitrogen atoms to which they are linked form a piperidino ring, which process comprises gradually adding methyl acrylate to a phenol compound of the formula



wherein R₁ and R₂ are as defined above, in the presence of from 0.001 to 10 mole percent, based on the phenol compound, of an alkaline catalyst, and, after completion of the reaction, adding to the resultant reaction mixture a compound selected from

(a) a monohydric alcohol or a monoamine of the formulae



wherein x, Y₁ and Y₂ are as defined above, the second reaction being carried out in the presence of from 0 to 10 mole percent of a second alkaline catalyst which is different from the first catalyst.

4,228,298

15-DEOXY-16-HYDROXY-16-FLUOROMETHYL, DIFLUOROMETHYL OR TRIFLUOROMETHYL PROSTAGLANDINS OF THE E AND F SERIES

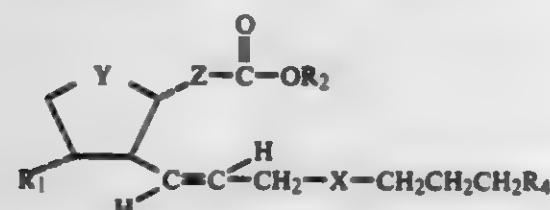
Sow-Mei L. Chen, Parkridge, N.J., and Charles V. Grudzinskas, Nyack, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 7, 1979, Ser. No. 46,724
Int. Cl.³ C07C 177/00

U.S. Cl. 560—121

12 Claims

1. An optically active compound of the formula:



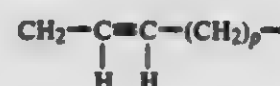
wherein Y is



X is:



R₁ is hydrogen or hydroxyl;
R₂ is hydrogen or C₁ to C₆ alkyl;
R₃ is —CH₂F, —CHF₂, and —CF₃;
R₄ is hydrogen, and C₁ to C₃ alkyl;
Z is



wherein p is 3 to 5, and the racemic mixture thereof; and when R₁ is hydrogen, the pharmaceutically acceptable salts thereof.

4,228,299

CHEMICAL PROCESS FOR PREPARING ALKYL ESTERS OR THE AMIDE OF 3-(β,β-DIHALOVINYL)-2,2-DIMETHYLCYCLOPROPANE-CARBOXYLIC ACID

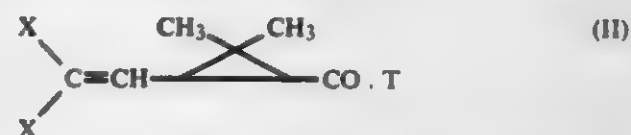
Ian Ferguson, and Robert J. Lindsay, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 17, 1977, Ser. No. 852,557
Claims priority, application United Kingdom, Nov. 18, 1976, 48078/76; May 25, 1977, 22046/77
Int. Cl.² C07C 102/08, 67/22

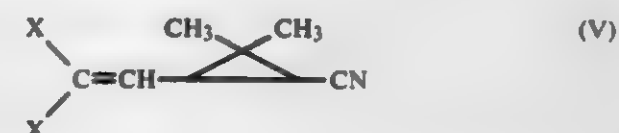
U.S. Cl. 560—124

2 Claims

1. A process for the preparation of a mixture of essentially cis-ester and amide compound of the formula:



wherein T represents —NH₂ or the group OR in which R is a lower alkyl group and X represents a chlorine atom or a bromine atom, which comprises treating a mixture of cis- and trans-nitrile of formula:



wherein X has the meaning stated above, with dry hydrogen chloride and an alcohol R.OH, wherein R has the meaning stated above, at a temperature at which only the trans-nitrile reacts, the cis-nitrile being left substantially unreacted, separating the unreacted cis-nitrile from the reaction mixture, followed by reaction of the cis-nitrile at an elevated temperature with dry hydrogen chloride and an essentially anhydrous alcohol R.OH and isolating from the reaction product the mixture of essentially cis-ester and amide compounds of formula (II).

4,228,300

POLYCARBOXYLATE ETHERS

Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

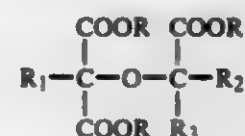
Continuation-in-part of Ser. No. 158,577, Jun. 30, 1971, abandoned, and a continuation-in-part of Ser. No. 158,540, Jun. 30, 1971, abandoned. This application May 15, 1972, Ser. No. 253,357

Int. Cl.² C07C 59/22

U.S. Cl. 560—180

10 Claims

1. Compounds having the formula



wherein R is selected from the group consisting of hydrogen, methyl, ethyl, alkali metal and ammonium; R₁ and R₂ are selected from the group consisting of hydrogen, methyl, and ethyl; and R₃ is selected from the group consisting of hydrogen, methyl, ethyl and COOR.

4,228,301

PROCESS FOR THE PREPARATION OF DIACETOXYBUTENE

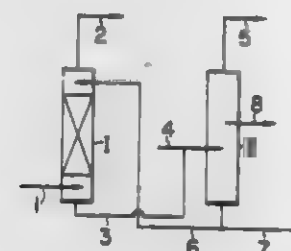
Yoshinori Yoshida, and Hironobu Shinohara, both of Yokohama, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,441
Claims priority, application Japan, Oct. 21, 1977, 52-125825; Feb. 8, 1978, 53-12348

Int. Cl.² C07C 67/05

U.S. Cl. 560—244

4 Claims



1. In a process for the production of diacetoxybutene wherein butadiene, acetic acid and oxygen are reacted in the presence of a catalyst and an inert gas to produce said diacetoxybutene and a discharge gas composed mainly of butadiene, acetic acid, oxygen and an inert gas released from the reaction, the improvement comprising separating said discharge gas into a first portion which is circulated back to the reaction for reuse and a second portion which is supplied to an absorption tower wherein said second portion is contacted with diacetoxybutene, diacetoxybutane or a mixture thereof.

4,228,303

3-(3,4-DIHYDROXYPHENYL)-N-(4-NITROBENZYL)ALANINE HYDROBROMIDE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,512
Int. Cl.³ C07C 79/46

U.S. Cl. 562—435

1 Claim

1. The compound 3-(3,4-dihydroxyphenyl)-N-(4-nitrobenzyl)alanine hydrobromide.

4,228,304

NOVEL CYCLOHEXANECARBOXYLIC ACID AND ITS DERIVATIVES

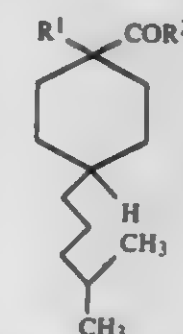
Kanji Noda, Chikushino; Akira Nakagawa; Kenji Yamagata, both of Tosu; Terumi Hachiyu, Chiyoda; Hiroyuki Ide, Fukuoka, and Akihiko Koda, Gifu, all of Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Saga, Japan

Filed Apr. 11, 1978, Ser. No. 895,485
Claims priority, application Japan, Jun. 16, 1977, 52-72639
Int. Cl.³ C07C 103/50

U.S. Cl. 562—507

3 Claims

1. A compound of the formula:



wherein R¹ is hydrogen or methyl and R² is amino acid rest which is selected from the group consisting of the rest of glutamic acid, aspartic acid, α-aminoadipic acid, α-aminopimelic acid, glutamine, cysteine, homocysteine, 2-amino-eicosanedicarboxylic acid, glycine, phenylalanine, phenylalanine, phenylglycine, alanine, α-aminobutyric acid, valine, norvaline, leucine, isoleucine, norleucine, p-nitro-phenylalanine, methionine, cysteine, homocystine, penicillamine, ethionine or a lower alkyl ester thereof; threonine, serine, β-hydroxy-leucine, or homoserine; the N-methyl or N-ethyl derivative of sarcosine; the o-acyl or o-methyl derivative of serine; a N^ω, N^ω-dilower alkyl derivative of lysine, or a N^ω, N^ω-dilower alkyl derivative of ornithine; β-alanine, or β-aminoisobutyric acid; and γ-aminovaleric acid, ε-aminocaproic acid or the N-methyl or N-ethyl derivative thereof.

4,228,302

PROCESS FOR PREPARING A METHYL-SUBSTITUTED BENZALDEHYDE

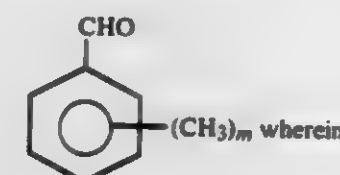
Carl A. Renner, Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 001,930, Jan. 8, 1979. This application Aug. 30, 1979, Ser. No. 71,281
Int. Cl.² C07C 51/26

U.S. Cl. 562—408

6 Claims

1. Improved process for preparing a methyl-substituted benzoic acid by oxidizing, in a reaction mixture, at a temperature within the range about 0° to 120° C., the methyl-substituted benzaldehyde of the formula



m is 2, 3, 4 or 5, with an excess of oxygen, in the presence of about 0.01 to 2 percent by weight, based on the weight of aldehyde, of an autoxidation initiator, with the methyl-substituted benzoic acid thus produced being separated from the reaction mixture and recovered, the improvement characterized in that the oxidation reaction is carried out in the reaction mixture in the presence of at least 0.5 molar equivalent, per mole of aldehyde, of cyclohexanone as a reductant.

4,228,305

PROCESS FOR PREPARING ACETIC ACID DERIVATIVES

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 861,070, Dec. 15, 1977, abandoned. This application May 7, 1979, Ser. No. 36,473
Int. Cl.² C07C 59/06

U.S. Cl. 562—579

4 Claims

1. A process for preparing glycolic acid which comprises contacting a reaction mixture comprising formaldehyde, formic acid and liquid hydrogen fluoride catalyst at a temperature of from about 0° C. to about 100° C.

4,228,306

PHENYLENE SUBSTITUTED POLYMERIC DIALKYL PEROXIDES

Roger N. Lewis, Martinez, and Lawrence A. Bock, Redwood City, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 819,318, Jul. 27, 1977, Pat. No. 4,146,583.

This application Nov. 1, 1978, Ser. No. 956,712

The portion of the term of this patent subsequent to Mar. 27, 1996, has been disclaimed.

Int. Cl.³ C07C 179/035, 179/047

U.S. Cl. 368—563

8 Claims

1. A method for making a phenylene substituted dialkyl peroxide comprising: etherifying a diol selected from 1,4-bis(hydroxyisopropyl)benzene and 1,3-bis(hydroxyisopropyl)benzene with a dihydroperoxide selected from 2,5-dimethyl-2,5-dihydroperoxyhexane, 2,5-dimethyl-2,5-dihydroperoxyoctane, said diol and dihydroperoxide being present in co-reactive amounts and under conditions which permit etherification therebetween, and recovering the organic peroxide reaction product.

4,228,307

REMOVAL OF BROMINE FROM ACETIC ACID

Wilford J. Zimmerchied, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,226

Int. Cl.² C07C 51/42, 53/08; B01J 1/22, 8/02

U.S. Cl. 562—608

5 Claims

1. The method of removing bromine from acetic acid of 95 to 100 weight percent concentration contaminated with ionic and co-ordinate bromine in a total amount of from 0.0005 to 0.015 weight percent by contacting hydrogen and said contaminated acetic acid with a palladium catalyst having Pd crystallites dispersed on the surface of low extraneous metal content activated carbon having a surface area to unit mass ratio of at least 800 m²/g, separating the acetic acid from the catalyst, contacting the separated acetic acid with a solid absorbant, and separating acetic acid from the absorbant.

4,228,308

DEHYDROCHLORINATION OF A DIHYDROXYDIPHENYL TRICHLOROETHANE

Michael R. Mac Laury, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

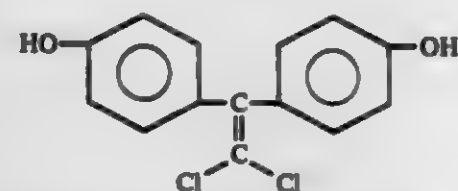
Filed May 9, 1979, Ser. No. 37,436

Int. Cl.³ C07C 39/367

U.S. Cl. 568—726

6 Claims

1. In a process for dehydrohalogenating the trichloride, 1,1,1-trichloro-2,2-bis-(4-hydroxyphenyl) ethane, to form the dichloride of the formula



which process comprises (1) treating the aforesaid trichloride with liquid methyl amine in an amount sufficient to act as both a dehydrohalogenating agent and solvent, the improvement comprising the said methyl amine in combination with an amount of a salt effective to accelerate the dehydrohalogenation reaction, wherein said salt is selected from the class consisting of methyl amine hydrochloride and hydrobromide, ethyl amine hydrochloride and hydrobromide, dimethyl amine hydrochloride and hydrobromide, ammonium chloride and bromide, lithium chloride and bromide, and sodium chloride and bromide, to form a substantially pure dichloride of the above formula, and (2) removing the unreacted methyl amine and salt thereby isolating the desired dichloride, the said salt

being used in an amount ranging from 0.5 to 20%, by weight, based on the weight of the methyl amine.

4,228,309

CYCLOHEXANE EXTRACTION TO REMOVE CHLORODIBENZO-P-DIOXINS

David B. Hatcher, 8433 Katy Freeway, Houston, Tex. 77024

Continuation-in-part of Ser. No. 876,999, Feb. 13, 1978,

abandoned. This application Apr. 20, 1979, Ser. No. 32,100

Int. Cl.³ C07C 37/70

U.S. Cl. 568—755

7 Claims

1. A method of removing chlorodibenzo-p-dioxin impurities from a water-soluble alkaline salt of a polychlorophenol that contains up to about two parts of at least one chlorodibenzo-p-dioxin per thousand parts of polychlorophenol, as an impurity, comprising the steps of preparing an aqueous solution of such a salt having a polychlorophenol content from about 0.5% to about 30%, at a temperature from room temperature to the boiling point of the solution, mixing the aqueous solution with one-tenth to ten times its volume of cyclohexane to extract the dioxins therefrom, and decanting the purified aqueous solution from the cyclohexane phase.

4,228,310

POLYOL PREPARATION

George P. Speranza; Robert L. Zimmerman, and Thomas H. Austin, all of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Continuation of Ser. No. 916,991, Jun. 19, 1978, abandoned.

This application Mar. 19, 1979, Ser. No. 21,517

Int. Cl.² C07C 43/11, 41/02

U.S. Cl. 568—620

10 Claims

1. A method of preparing a polyether polyol useful in making a polyisocyanurate polymer, which comprises the steps of oxyalkylating an alcohol having a functionality of two or three by the catalytic addition of an alkylene oxide to said alcohol in presence of an oxyalkylating catalyst selected from the group consisting of aminophenols, hexahydro-s-triazines and tetrahydrooxadiazines.

4,228,311

SELECTIVE DEALKYLATION OF 4-TERTIARY-ALKYL-2,5-XYLENOL

John R. Dodd, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jun. 8, 1979, Ser. No. 47,190

Int. Cl.² C07C 39/06, 37/22

U.S. Cl. 568—805

9 Claims

1. An improved method for selectively dealkylating 4-*t*-alkyl-2,5-xyleneol when in admixture with 6-*t*-alkyl-2,4-xyleneol by contacting a mixture of the above components with a strongly acidic polymer-bound sulfonic acid catalyst, the improvement comprising carrying out the dealkylation at temperatures equal to or less than 60° C. and pressures of from about 0.5 to about 5 atmospheres.

4,228,312

HYDROGENATION PROCESS

Jan G. Noltes, Huis Ter Heide; J. T. B. H. Jastrzebski, De Bilt, and Gerard van Koten, Bilthoven, all of Netherlands, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 7, 1979, Ser. No. 18,374

Int. Cl.² C07C 5/02, 5/06, 5/08, 5/10

U.S. Cl. 585—250

6 Claims

1. A process for the hydrogenation of aromatic, olefinic and acetylenic compounds comprising treating such compounds, which contain no nitrogen, phosphorous, tin or halogen, with hydrogen in the presence of a zero-valent mixed metal catalyst prepared by reacting an aliphatic metal cluster compound of the formula $R_{x+y}M_xLi_y$ where R is alkyl of 1-12 carbon atoms, M is a Group IB metal, x and y are each 1-4, and x+y

is 2-8, with a metal halide complex of the formula RhX_aL_b wherein X is chlorine or bromine, L is an olefinic hydrocarbon ligand, a is 1-3 and b is 1-4, in a hydrocarbon solvent.

4,228,313

COUPLING REACTION INVOLVING A GRIGNARD AND ALLYLIC HALIDE

Carlos G. Cardenas, and Zia U. Din, both of Jacksonville, Fla., assignors to SCM Corporation, N.Y.

Division of Ser. No. 786,973, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 596,273, Jul. 16, 1975,

abandoned, Ser. No. 596,426, Jul. 16, 1975, abandoned, Ser. No. 596,274, Jul. 16, 1975, abandoned, and Ser. No. 596,361, Jul. 16,

1975, abandoned. This application Dec. 29, 1977, Ser. No. 865,668

Int. Cl.³ C07C 1/26

U.S. Cl. 585—640

12 Claims

1. A process for the synthesis of long chain compounds having at least one point of unsaturation from an aliphatic or

araliphatic hydrocarbon of shorter length having an alkyl, alkenyl or aralkyl radical R and an unsaturated hydrocarbon having a terminal isopropenyl or isopropylidene group and zero or more additional points of double-bond unsaturation, comprising

halogenating said unsaturated hydrocarbon to produce an allylic halide having a terminal olefinic site and a halogen atom allylic to said site;

forming the Grignard $RMgX$ of said aliphatic or araliphatic hydrocarbon, X being halogen;

preparing a reaction mixture comprising said Grignard and said allylic halide; and

removing from said reaction mixture a compound in which coupling of the Grignard and allylic halide occurs by displacement by R of the Grignard at the terminal olefinic site of the allylic halide accompanied by double bond migration and loss of halide.

ELECTRICAL

4,228,314

DC ARC FURNACE HEARTH

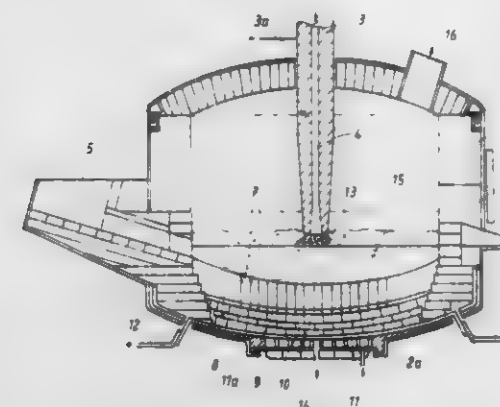
Sven-Einar Stenkvist, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Feb. 27, 1979, Ser. No. 15,587

Claims priority, application Sweden, Feb. 28, 1978, 7802240
Int. Cl.² H05B 7/00

U.S. Cl. 13-9 R

6 Claims



1. A DC arc furnace comprising an electrically conductive hearth adapted to contain a melt, at least one arcing electrode having a tip positioned substantially centrally above the hearth and adapted to form an arc with the melt, and means for connecting said electrode and hearth with DC power; wherein the improvement comprises said hearth comprising a substantially electrically non-conductive refractory compound rammed on a layer of electrically conductive bricks, and a cluster of vertically elongated metal elements which each extend through said compound from the top of the compound downwardly to electrical connection with said layer, said cluster extending from below said tip in all radial directions throughout an area large enough to carry DC power to a melt in the hearth and which is adequate to power said arc, and said bricks resting on a metal plate that is at least coextensive with said area and having means for connecting with said power.

4,228,315

SOLAR CELL GRID PATTERNS

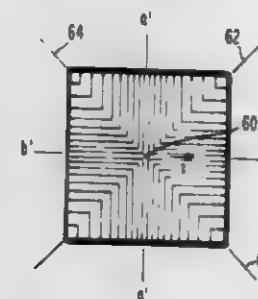
Louis S. Napoli, Hamilton Square, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 36,039

Int. Cl.³ H01L 31/04

U.S. Cl. 136-256

12 Claims



1. A solar cell having an electrode grid pattern on its light receiving surface comprising:
a plurality of conductors arranged in a symmetrical pattern; one part of the pattern comprising, relative to a line extending toward the center region of the cell from an edge of the cell, a plurality of parallel conductors spaced from one another, each conductor subtending an angle which is bisected by the line at the crossing of that conductor with the line, each conductor terminating at both its ends at the peripheral edge portion of the cell, each conductor comprising a first portion on one side of the line which is a mirror image of a second portion on the other side of the line, each conductor thus being symmetrical relative to

said line, said one part of the pattern occupying a 90° quadrant which is bisected by the line,
a second part of the pattern comprising a mirror image of the first part of the pattern;
third and fourth parts of the pattern comprising a mirror image of said first and second parts of the pattern, respectively, and
a common bus extending along said peripheral edge portion of the cell and in conductive contact with all of said conductors at their respective opposite ends,
the spacing between different pairs of said parallel conductors being different, the spacing between those conductors closest to the peripheral edge being the greatest.

4,228,316

HOLLOW POLE WITH INTERNAL WIRE GRIPPING AND SECURING MEANS

John H. T. MacFarlane, Middlessex, England, assignor to The Post Office, London, England

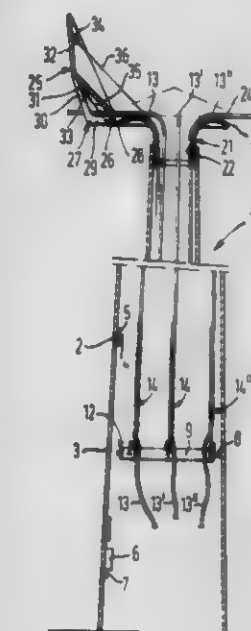
Filed Oct. 2, 1978, Ser. No. 947,954

Claims priority, application United Kingdom, Oct. 4, 1977, 41242/77

Int. Cl.² H02G 7/20; F16G 11/00

U.S. Cl. 174-45 R

7 Claims



1. In combination, a hollow pole and means located internally thereof for securing and retaining an electric wire, said means comprising:
an annular anchor ring secured in concentric spaced relation to the inner wall surface of said hollow pole;
a unitary anchoring member consisting of an elongate helical section terminating in a looped clasp having a hooked end; the diameter of said helical section being sized to receive and grip an electrical wire, and said hooked end engaging said anchoring ring for retaining a wire gripped by said helical section in said hollow pole.

4,228,317

PROTECTIVE FACE PLATE FOR AN ELECTRICAL OUTLET

Norbert Cziment, 1881 49th St., Brooklyn, N.Y. 11204

Filed Nov. 13, 1978, Ser. No. 959,674

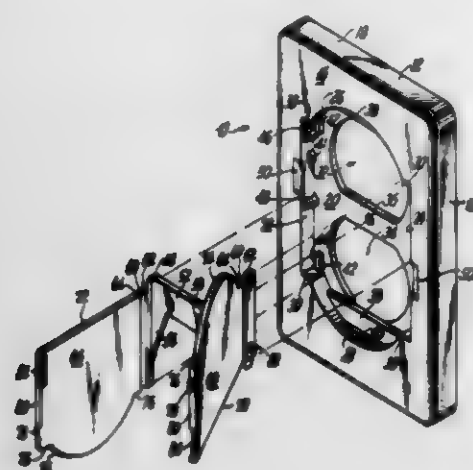
Int. Cl.² H05K 5/03

U.S. Cl. 174-67

15 Claims

1. A face plate for an electrical outlet, said face plate comprising a base member having an outer shell adapted to be positioned over the electrical outlet, a recessed compartment provided within said outer shell and including a bottom wall having a pair of socket openings for alignment with a duplex socket receptacle disposed within the electrical outlet, a removable insert member received in said recessed compartment

over said socket openings and providing in cooperation with said outer shell a substantially flush surface, said insert member having a pair of covers, each of said covers being selectively openable to uncover a respective one of said socket openings disposed therebeneath, cooperating securing means on said base member and said insert member for securely retaining said insert member in said recessed compartment, said base and insert members each being symmetrically structured so as to be



reversibly positionable with respect to each other, said insert member including central connecting bar means through upright sections lying in a common plane with said connecting bar means, said upright sections oppositely extending perpendicularly from ends of said connecting bar means, integral hinges forwardly extending from said upright sections, each cover being coupled to a respective one of said integral hinges, whereby said covers can swing outwardly from said connecting bar means in opposing directions from each other.

4,228,318

METHOD AND MEANS FOR DISSIPATING HEAT IN A HIGH VOLTAGE TERMINATION

Jorgen Selsing, Omaha, Nebr., assignor to G & W Electric Specialty Company, Blue Island, Ill.

Filed Jan. 16, 1978, Ser. No. 869,670
Int. Cl.² H02G 15/02

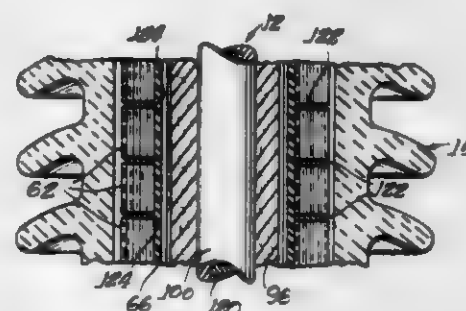
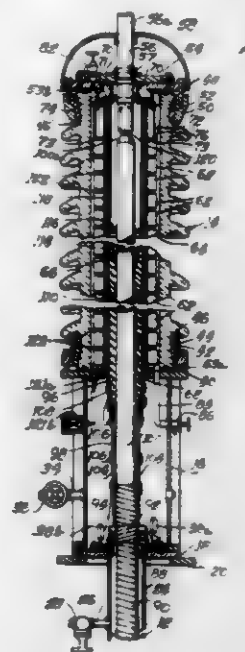
U.S. Cl. 174-73 R

13 Claims

1. In a graded capacitor type high voltage cable termination which includes, in combination, the prepared end of a high voltage cable having an axial conductor, an outer annular insulator disposed coaxially over said prepared end of said cable and defining a space therebetween, and a plurality of annular capacitor elements disposed over said prepared end of said cable in stacked relation within said space so that regions of substantially parallel equipotential planes are established between said stacked capacitors; the improvement comprising thermally conductive means interposed between at least two adjacent ones of said stacked capacitors and having thermal communication with the area inwardly of said capacitors, said thermally conductive means being substantially parallel to said parallel equipotential planes and having an inner opening defined by an inner peripheral edge surface of said conductive means, said conductive means having a configuration such that said inner peripheral edge surface lies wholly within the region between said adjacent capacitors in which the equipotential planes are substantially parallel.

12. A method of dissipating heat from an electrical high-voltage cable termination which includes, in combination, a prepared end of a high voltage electric cable having an axial conductor, an insulation layer immediately overlying said cable in coaxial relation thereon, and an outer conductive sheath layer coaxial along said insulation layer; said sheath and insulation layers being stripped back so as to expose predetermined lengths of said axial conductor and said insulation layer, a stack of annular capacitors disposed coaxially along said cable juxtaposed to said exposed axial conductor and said insulation layer so as to distribute electric stress along the

length of said insulation layer and establish regions of substantially parallel equipotential planes between said stacked capacitors, and an annular insulator disposed coaxially over said stack of capacitors, said method comprising inserting an annular thermally conductive disc between each pair of said stacked capacitors within the region of substantially parallel equipoten-



4,228,319

AUTOMATIC RADIO TELEPHONE SYSTEM

Johan B. De Jager, and Johannes Noordanus, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 807,005, Jun. 16, 1977, abandoned.

This application Oct. 26, 1978, Ser. No. 955,067

Claims priority, application Netherlands, Jul. 2, 1976, 1607300

Int. Cl.² H04M 7/04

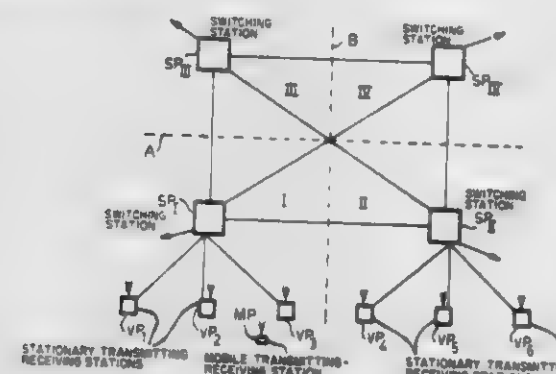
U.S. Cl. 179-2 EB

3 Claims

1. An automatic radio telephone system having: a plurality of mobile transmitting-receiving stations, a plurality of stationary transmitting-receiving stations which can be coupled through a plurality of duplex speech channels to said mobile transmitting-receiving stations, a common switching station means coupled to said stationary stations for establishing any desired connection between said mobile stations or between said mobile stations and the subscribers of a line-wire telephone network, each one of said stationary transmitting-receiving stations comprising at least a transmitting means for continuously transmitting a signal on an individual call channel frequency which is specific for each stationary station, and

furthermore each stationary station having means for using a plurality of duplex speech channels, each one of said mobile transmitting-receiving stations comprising a duplex speech channel selector and a call channel selector means for selecting the call channel frequency which is locally received strongest and which automatically tunes the mobile transmitting-receiving station for reception on the selected call channel,

wherein the improvement comprises a channel status store, a control means coupled to said store for up-dating in the channel status store of each stationary station the instantaneous occupancy status of duplex speech channels of that stationary station, a separate output register means coupled to each stationary station to the channel status store and controlled by said control means, said output register means providing the channel number of any free duplex speech channel,



the transmitter means present in each stationary station continuously transmitting a signal on the call channel frequency which is specific for the stationary station, said call channel frequency signal being modulated by a code which is representative of the channel number provided by said output register, and

each mobile station comprising a demodulator means and a storage register means for respectively demodulating and storing in said storage register the channel number transmitted over the received call channel, and a control device means coupled to said duplex speech channel selector for automatically tuning in response to a connection set-up command the transceiver of the mobile station to the duplex speech channel indicated by the channel number stored in said storage register.

4,228,320

NOISE DETECTOR FOR FREQUENCY MODULATION SYSTEMS

John R. Celli, Long Branch, and Donald H. Nash, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1978, Ser. No. 957,299

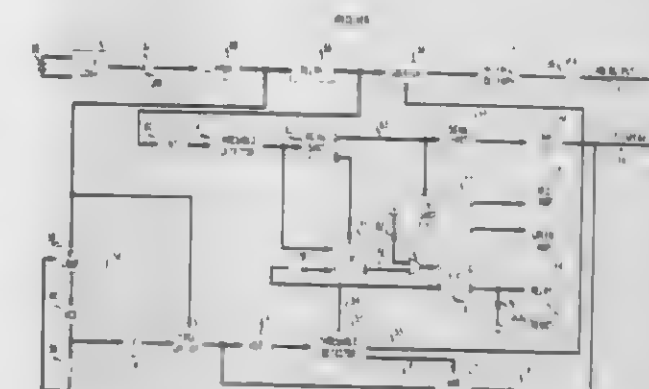
Int. Cl.² H04Q 7/04

U.S. Cl. 179-2 EA

10 Claims

1. A noise detector for a frequency modulated transmission system characterized by a phase-locked loop adapted to track the modulating signals of frequency modulated signals received in said transmission system, an exclusive OR circuit,

means for applying said frequency modulated signals to said phase-locked loop and to said exclusive OR circuit, and



means for integrating the output of said exclusive OR circuit.

4,228,321

PRIVACY TRANSMISSION SYSTEM WITH REMOTE KEY CONTROL

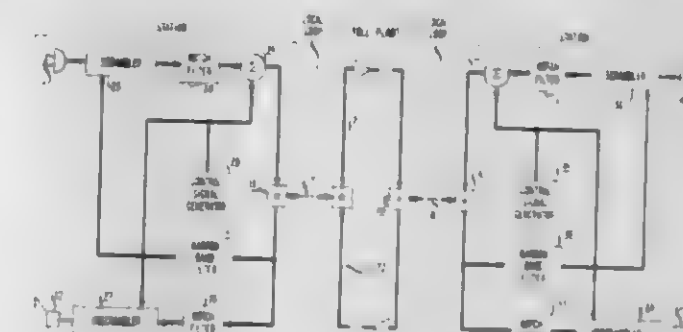
James L. Flanagan, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 16, 1978, Ser. No. 906,328

Int. Cl.² H04K 1/00

U.S. Cl. 179-1.5 S

5 Claims



1. In a two-way privacy communication system (FIG. 1) including a transmission link having separate paths (21,22) for opposite transmission directions between first and second stations, said first station having multikey scrambling means (23) and multikey unscrambling means (27) and said second station having multikey scrambling means (30) and multikey unscrambling means (34) CHARACTERIZED IN THAT means (35) for generating a first key control signal is provided at said second station, means also at said second station applies said first control signal to said unscrambling means (34), means (16,18) further at said second station transmits said first control signal over one unidirectional path (22) to said first station, means (28) for generating a second key control signal is provided at said first station, means also at said first station applies said second control signal to said unscrambling means (27), means (13,17) further at said first station transmits said second control signal over another unidirectional path (21) to said second station, means (29) at said first station applies said first key control signal received from said second station to said scrambling means (23) to control the scrambling of messages to be transmitted by said first station over another unidirectional path (21) to said second station, and means (36) at said second station applies said second key control signal received from said first station to said scrambling means (30) to control the scrambling of mes-

sages to be transmitted by said second station over one unidirectional path (22) to said first station.

4,228,322

DECREASING TIME DURATION OF RECORDED SPEECH

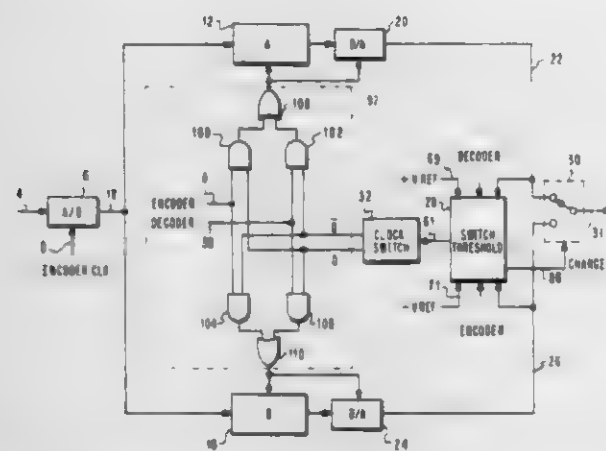
Charles R. Bringol, Austin, and Gary F. Snyder, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1979, Ser. No. 227

Int. Cl.³ G11B 5/02

U.S. Cl. 179—15.55 T

9 Claims



1. In a system for time compression of prerecorded speech signals which are played back at a rate greater than that at which they were recorded and in which the input speech is loaded alternately into first and second buffers and output from the buffers is alternatively applied to a using device, said system including

means for loading one of said buffers while the other is providing an output to said using device, the improvement comprising:

means for changing the source of output applied to said using device from said first buffer to said second buffer when the output level of both of said buffers falls within a predetermined range.

4,228,323

VARIABLE LOOP LENGTH COMPENSATED BARRIER CIRCUIT

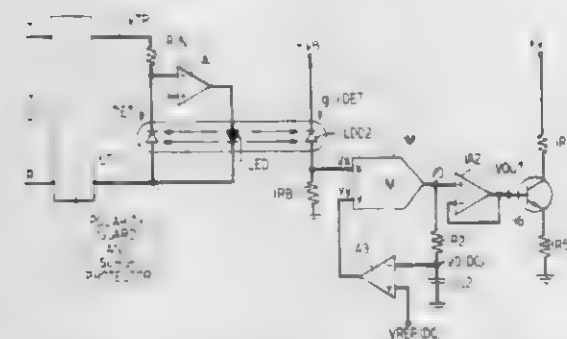
Alexander Feiner, Rumson; Chao Kai Liu, Matawan, and Sigurd G. Waaben, Princeton, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 893,794, Apr. 5, 1978, abandoned. This application Jan. 31, 1979, Ser. No. 8,194

Int. Cl.² H04B 9/00

U.S. Cl. 179—16 F

16 Claims



11. An isolation device having an input terminal and an output terminal said terminals separated by an interface, the input side of said interface containing transmitting means operable for providing transmission across said interface in accordance with input AC and DC transmission signals, and the output side of said interface containing detecting means opera-

ble under control of received transmission for providing an output transmission signal representative of said input transmission signal, said device including

means on said input side of said interface for generating a bias signal proportional to said input DC signal,

means for applying said generated bias signal to said transmitting means so that one component of said transmission across said interface is a function of said input DC transmission signal as well as a function of the physical characteristics of said interface,

means for comparing a reference DC voltage level to a DC voltage level generated by said detecting means as a result of transmission received across said interface, said means on said output side of said interface for modifying the AC gain of said output transmission signal in accordance with said compared voltage levels.

4,228,324

KEY TELEPHONE SYSTEM HAVING INTERSTATION SIGNALLING DURING HOLD CONDITION

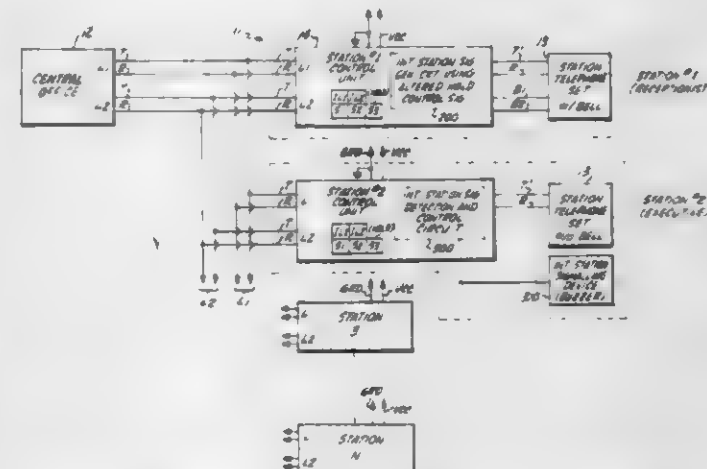
Harry R. Rasmussen, Tacoma, and Gene A. Kimzey, Puyallup, both of Wash., assignors to Crest Industries, Inc., Puyallup, Wash.

Filed May 14, 1979, Ser. No. 38,830

Int. Cl.² H04M 1/00

U.S. Cl. 179—99 H

10 Claims



10. In a telephone hold control system for selectively generating and applying a hold control signal to a telephone line at a first station, and for receiving such hold control signal on such line at a second station, the improvement in combination therewith comprising:

interstation signalling means associated with the first station for selectively altering said hold control signal so as to apply an altered hold control signal to the telephone line thereat;

interstation signal detection means associated with a second station for detecting said altered hold control signal received thereat; and

interstation signal utilizing means disposed at the second station and being responsive to said detection means.

4,228,325

TELEPHONE SET

Knut H. Blomberg, Lokattsvägen 39, S-161 37, Bromma, Sweden

Filed Jun. 19, 1978, Ser. No. 916,748

Claims priority, application Sweden, Jul. 5, 1977, 7707799

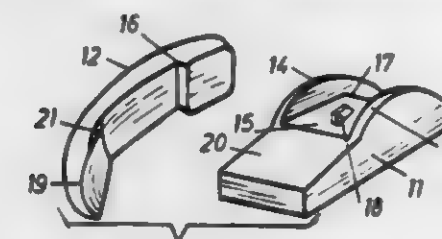
Int. Cl.² H04M 1/02

U.S. Cl. 179—100 R

4 Claims

1. A telephone set comprising a base, and a handset supportable on the base, said handset including a lower microphone part, an upper earphone part and a connecting handle part, said base including a cradle in which said handset can be supported at rest in a position in which the microphone part and earphone part project beyond the cradle and face downwardly, said cradle including upwardly projecting flanges forming a groove therebetween, which flanges flank said handle part over at

least a major part of the length thereof and extend at least the height thereof to prevent the handle part of the handset from being engaged to lift the handset from the base, said lower microphone part being shaped and proportioned such that it is



enlarged with respect to said handle part and forms bowl-shaped recesses at the edges formed between the microphone part and the handle part, said recesses receiving the ends of fingers of the hand gripping the microphone part without covering the sound inlet of the microphone part.

4,228,326

SYSTEM FOR RECORDING INFORMATION ON A ROTATABLE STORAGE DISC, IN A SUBSTANTIALLY UNIFORM RECORDING DENSITY

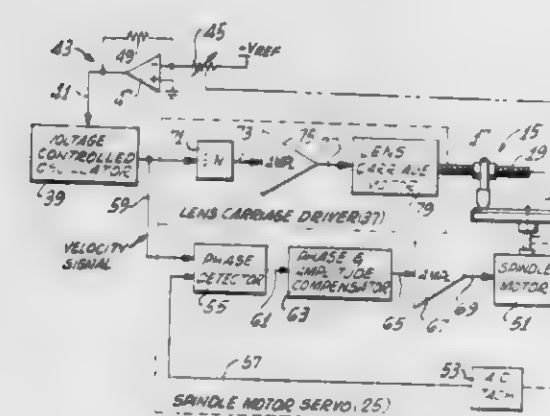
Wayne R. Dakin, Redondo Beach, and Ludwig Ceshkovsky, Fountain Valley, both of Calif., assignors to MCA Discovision Inc., Universal City, Calif.

Filed Nov. 16, 1978, Ser. No. 961,405

Int. Cl.² G11B 19/24

U.S. Cl. 179—100.1 G

8 Claims



2. Apparatus for recording information on an information storage disc, wherein the information is recorded in plurality of substantially circular and concentrically arranged information tracks, said apparatus comprising:

transducer means movable radially relative to the disc to be positioned in a prescribed relationship relative to a selected one of the information tracks;

means for producing a velocity signal having a frequency substantially inversely proportional to the radius of the selected track;

motor means for rotating the disc;

tachometer means coupled to said motor means for producing a tachometer signal having a frequency proportional to the angular velocity of said motor means; and

phase detector means for comparing the respective phase angles of the tachometer signal and the velocity signal, and for producing a control signal indicative of the phase difference thereof, said control signal being coupled to said motor means to appropriately control its angular velocity, whereby the selected information track is moved at a substantially constant linear velocity relative to said transducer means and a substantially uniform information recording density is achieved.

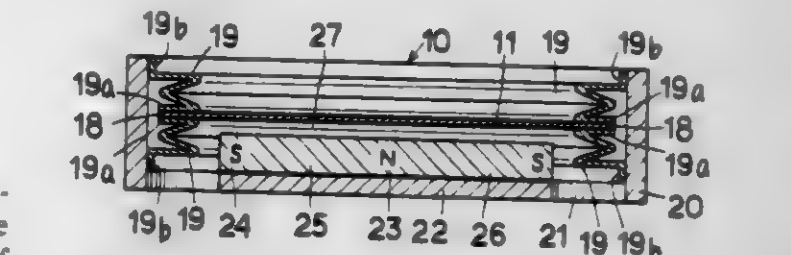
4,228,327

ELECTROMAGNETIC TYPE ACOUSTIC TRANSDUCERS

Tadashi Sawafuji, No. 9-15, Nishi-Sugamo, 1-chome, Toshima-ku, Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,301

Claims priority, application Japan, Feb. 25, 1978, 53-22931[U]
Int. Cl.² H04R 7/18, 9/02



1. An electromagnetic type acoustic transducer comprising a vibratable diaphragm including a conductor and disposed within a magnetic field defined by a permanent magnet, support members which are expandable and contractible in the direction at right angles with said diaphragm and are fixed to both surfaces thereof, and a frame to which said support members are fixed such that the expansion and contraction thereof are not prevented.

4,228,328

SIGNAL DISTRIBUTOR TEST ARRANGEMENT

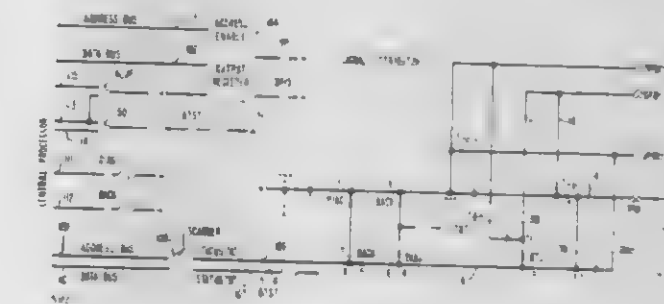
Louis Gawron, Jr., Reynoldsburg; Vincent H. Lindisch, Columbus, and John P. Petrucci, Pataskala, all of Ohio, assignors to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,017

Int. Cl.¹ H04M 3/26

U.S. Cl. 179—175.2 R

9 Claims



3. For use in testing a plurality of distributor circuits of a signal distributor wherein each distributor circuit comprises an individual switch effective when enabled for interconnecting an energizing potential on an input with a first output and effective when disabled for connecting said input with a second output, said outputs being connectable to circuits for energization thereof

CHARACTERIZED BY

a first plurality of diodes each coupling a corresponding one of said first outputs to a first switch circuit node, means coupling said switch inputs to a second circuit node, a second plurality of diodes each coupling a corresponding one of said second switch outputs to a third circuit node, a potential source,

a detector responsive to said source, and a multistate circuit means being effective when actuated in a first state for coupling said source and detector to said first and second nodes, respectively, to ascertain the selective enablement of each switch; effective when actuated in a second state for coupling said source and detector to said second and first nodes, respectively, to ascertain the continuity of said first diodes; effective when actuated in a third state for coupling said source and detector to said third and second nodes, respectively, to ascertain the selective disablement of each said switch; and effective when actu-

ated in a fourth state for coupling said source and detector to said second and third nodes, respectively, to ascertain continuity of said second diodes.

4,228,329

COMPACT KEYBOARD STRUCTURE

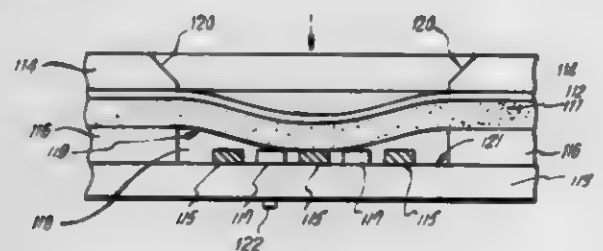
Fumiyuki Inose, San Jose; Hirohide Endo, and Akio Komatsu, both of Cupertino, all of Calif., assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 774,982, Mar. 7, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 919,276

Int. Cl.² H01H 13/70; H05K 1/00

U.S. Cl. 200—5 A

2 Claims



1. A keyboard structure including:

- a matrix of rows and columns of keyboard cells on an insulating layer, each cell including a first and second contact element electrically connectable by an overlying conductive membrane;
- means for electrically connecting in common each of the first contact elements in each respective row of said matrix;
- a plurality of vertical electrical contact points, one located on each second contact element and penetrating through said insulating layer, the vertical contact points of each second contact element in the same column being located upon a vertical line;
- a single horizontal electrical contact point for each commonly connected row, a pair of said horizontal contact points lying in each column of said matrix within a pair of said vertical lines and disposed horizontally apart from one another; and
- a plurality of vertical conductive lines located on the side of said insulating layer opposite said keyboard cells, one conductive line lying on each said vertical line and connecting the vertical contact points thereon in common and one conductive line connected to each of said horizontal contact points.

4,228,330

TOUCH PANEL MECHANISM

Gerald L. Larson, Minnetonka, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jul. 10, 1978, Ser. No. 923,305

Int. Cl.² H01H 13/70

U.S. Cl. 200—5 A

10 Claims

1. In a touch panel switch device having switch contactors positioned on a flexible, non-conductive surface aligned with respective switch contacts positioned on an opposite non-conductive surface to provide a plurality of switch contact positions, said flexible surface being depressable to enable engagement between a respective contactor and contact, the improvement comprising:

- a non-conductive spacer intermediate said surfaces including apertures therein extending over more than one of said switch contact positions; and
- a thin metal sheet overlying and immediately adjacent said flexible, non-conductive surface, said metal sheet being depressable at a switch contact position to depress said non-conductive surface and only enable engagement of the respective contactor and contact associated therewith

wherein the thickness of said non-conductive spacer and the stiffness of said thin metal sheet combine to provide



said touch panel switch device with the hard tactile feel characteristic of glass-capacitive touch panels.

4,228,331

GAS-BLAST VALVE OF A GAS-BLAST CIRCUIT-BREAKER

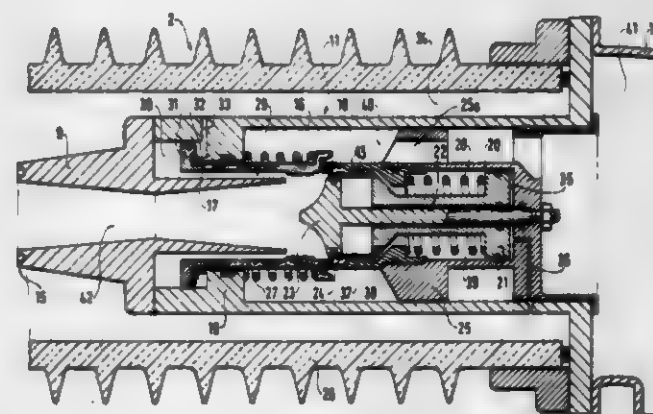
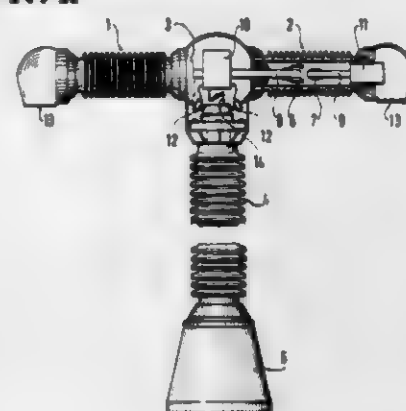
Armand Scarato, Lyon, France, assignor to Société Anonyme Dite: Delle-Alsthom, Villeurbanne, France

Filed Feb. 7, 1979, Ser. No. 10,283

Int. Cl.² H01H 33/82

U.S. Cl. 200—144 R

4 Claims



1. A gas-blast circuit breaker including at least one cut-out chamber, a gas blast-valve mounted within said cutout chamber for axial movement between open and closed position, means defining two seats for said gas-blast valve, one seat of which, when the gas-blast valve is opened, is situated on the blast-gas exit path, the improvement comprising a slide valve, means for mounting said slide valve within said chamber for

operative sliding movement relative to said gas-blast valve, means for moving said gas blast-valve from closed to open position, and means responsive to the opening of said gas blast-valve to cause a slightly delayed movement of said slide valve in the same direction as the gas-blast valve and along the same axis to mask said one valve seat situated on the exit path from hot blast-gas flow along said blast-gas exit path, and means for opening said slide valve by compressed gas contained in the gas-blast circuit-breaker.

4,228,332

GAS PRESSURE CIRCUIT INTERRUPTER

Koji Ibuki; Yoshihiro Ueda, and Masami Kii, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

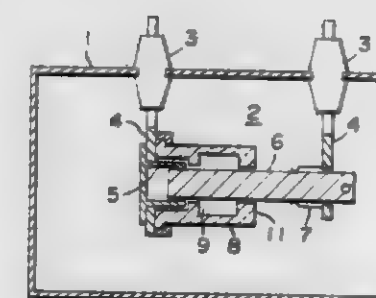
Filed Mar. 24, 1978, Ser. No. 889,878

Claims priority, application Japan, Mar. 24, 1977, 52/32916

Int. Cl.² H01H 33/64

U.S. Cl. 200—148 R

5 Claims



1. A circuit interrupter comprising:

- a container filled with a gas for extinction;
- a fixed contact in said container;
- a movable contact normally connected to said fixed contact;
- an insulation nozzle disposed around said contacts; said insulation nozzle including an enlarged portion which forms a unitary coextensive arc chamber and gas chamber; and
- means for moving said movable contact to destroy said connection between said fixed and movable contacts, whereby an arc is formed and the cool gas in said gas chamber easily mixes with and cools the hot gas in said arc chamber so that said arc may be easily extinguished.

4,228,333

CIRCUIT INTERRUPTER HAVING CONTROLLED RATE OF ARC EXTINGUISHMENT

Masami Kii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

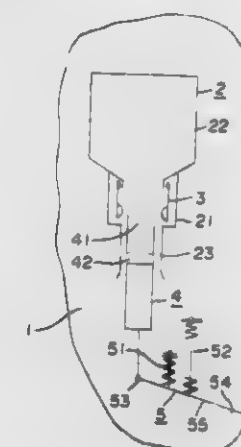
Filed Jul. 19, 1978, Ser. No. 926,131

Claims priority, application Japan, Jul. 21, 1977, 52/88073

Int. Cl.² H01H 33/70

U.S. Cl. 200—148 R

5 Claims



1. In a circuit interrupter comprising a pair of detachable contacts, and means for puffing the arc between the contacts

including an arc extinct chamber filled with a fluid for arc extinction which is pressurized by the arc formed between the contacts when they are disengaged, said pair of detachable contacts being at least one movable contact and at least one fixed contact; an improvement which comprises control means including a control device for controlling a departing speed of the movable contact after disengagement from said fixed contact in at least two steps and said control means further including at least two springs exerting force against said control device to force the movable contact mounted thereon out of engagement with the fixed contact at an accelerated rate; said at least two springs driving the movable contact until the movable contact is located a specified distance from the fixed contact; one of said at least two springs ceasing to work against said movable contact at this point and causing a reduction in the accelerated rate of disengagement to prevent rapid extension of the arc and thereby prevent excess arc energy from forming in the arc space between the movable contact and the fixed contact and to prevent the fluid from reaching an elevated temperature; the other of said at least two springs continuing the opening movement of the movable contact out of said arc extinct chamber at a decelerated rate to thereafter puff the pressurized fluid in the arc extinct chamber which is pressurized by the arc formed between the movable contact and the fixed contact to thereby control arc extinguishment by controlling the departing speed of the movable contact.

4,228,334

DYNAMIC MICROWAVE ENERGY MODERATOR

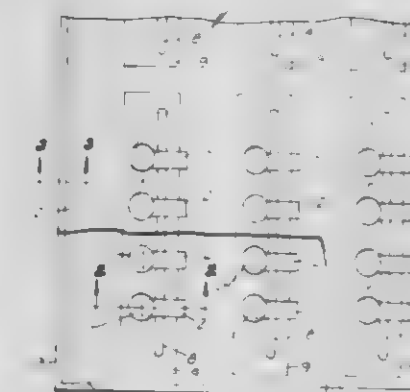
Clarence O. Clark; Thomas J. Flautt, Jr., and Donald T. Speckman, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 27, 1978, Ser. No. 963,695

Int. Cl.² H05B 6/80

U.S. Cl. 219—10.55 E

14 Claims



1. A macroscopically dimensionally stable, dynamically temperature responsive microwave energy moderator comprising a sheet-like laminate comprising at least one lamina of microwave energy reflective material with at least one aperture formed therein of such dimensions as to enable the passage therethrough of a substantial portion of impinging microwave energy of a predetermined nominal frequency, said laminate further comprising temperature responsive means for substantially reducing the transmissibility of microwave energy through said aperture without macroscopically reducing the size of said moderator as the temperature of said temperature responsive means is elevated through a predetermined temperature range.

4,228,335

MACHINE FOR PRODUCING REINFORCEMENTS, IN PARTICULAR FOR REINFORCED CONCRETE, AND THE REINFORCEMENTS PRODUCED THEREBY

Bernard Herlin, c/o Standard, 74, av. du General-de-Gaulle, 72000 Le Mans, France

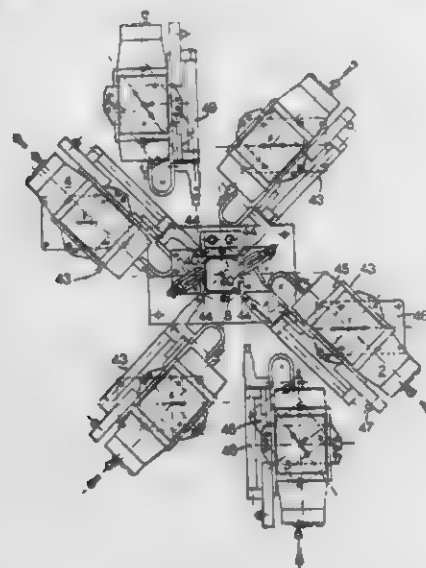
Filed Sep. 7, 1978, Ser. No. 940,313

Claims priority, application France, Oct. 6, 1977, 77 30083

Int. Cl.³ B23K 11/32, 37/04; B21F 27/10, 15/08

U.S. Cl. 219—56

18 Claims



1. A machine for producing a metal reinforcement for in particular reinforced concrete and comprising a plurality of metal longitudinal members and a plurality of metal straps in the form of frames which may be open or closed and are welded to the longitudinal members, said machine comprising a carrier for receiving and carrying a series of the metal straps, means defining open grooves extending longitudinally on the strap carrier for respectively receiving the metal longitudinal members, shifting means withdrawably engageable with the longitudinal members for advancing the longitudinal members step-by-step in a given direction in the grooves, the grooves having a depth which is such that the longitudinal members project sufficiently from the strap carrier to have a frictional contact with the straps which is sufficient to cause the straps to be driven along with the longitudinal members when the longitudinal members are advanced by the shifting means, structure for selecting and releasing only one strap at a time from said series of straps carried by the strap carrier, and welding devices arranged around the strap carrier downstream of the strap selecting device relative to said given direction and located in facing relation to zones of intersection between the longitudinal members and the straps released from the series of straps by the selecting and releasing structure.

4,228,336

METHOD OF MANUFACTURING STAY RING FOR WATER TURBINE AND PUMP TURBINE

Tetsuo Okuni, Masao Ishihara, and Takeshi Wada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,081

Claims priority, application Japan, Jun. 7, 1977, 52-66243

Int. Cl.³ B23K 25/00

U.S. Cl. 219—73.1

9 Claims

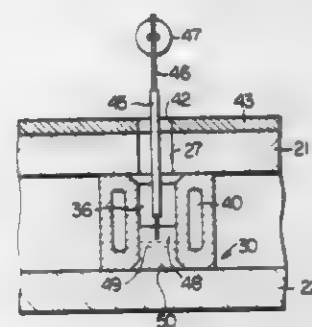
1. A method of manufacturing a stay ring for use in a water turbine and a pump turbine, the stay ring having an upper annular disc and a lower annular disc and a plurality of circumferentially spaced stay vanes each extending between the upper and the lower annular discs, comprising the steps of:

- providing upper and lower annular discs;
- forming openings in at least the upper annular disc of said upper and lower annular discs at each of the uniformly peripherally spaced locations where said stay vanes are to be positioned;
- locating said upper and lower annular discs in a spaced

parallel relation to each other with a fixed distance therebetween;

placing a plurality of molds, each having therein a space of a shape conforming to the shape of said stay vane, at fixed positions between said upper and lower annular discs, such that said spaces in the molds are put into communication with corresponding ones of said openings in said upper annular disc;

thereafter effecting an electroslag welding in each of said spaces in the molds by passing a consumable electrode through associated openings in said upper annular disc and into corresponding mold spaces to first bond electroslag molten metal material to said lower annular disc, to



second fill said space in the mold with electroslag molten metal material, and third to bond the electroslag molten metal material to said upper annular disc and at least fill a portion of a space defined by the associated opening in said upper annular disc with electroslag molten metal; thereafter cooling and solidifying said electroslag deposited molten metal filling said spaces in the molds to form said stay vanes and, at the same time, to permanently and rigidly connect said upper and lower annular discs through the thus formed stay vanes; and thereafter removing said molds from said stay vanes respectively by disassembling each mold into a plurality of pieces.

4,228,337

METHOD OF ELECTROSLAG WELDING

Robert A. Caldwell, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

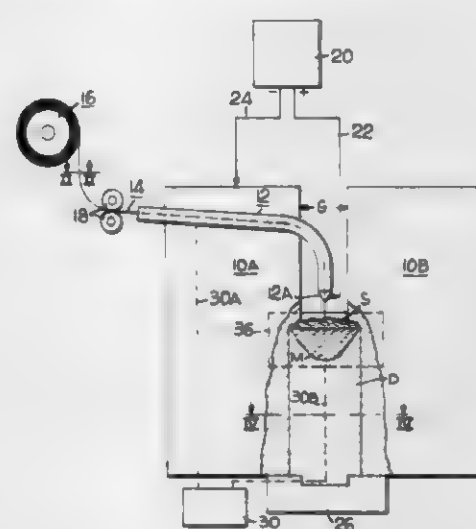
Division of Ser. No. 914,360, Jun. 12, 1978. This application

May 3, 1979, Ser. No. 35,611

Int. Cl.³ B23K 9/18

U.S. Cl. 219—73.1

4 Claims



1. The method of electroslag welding steel members of the ASTM A516-76 family which comprises the steps of (1) positioning said steel members to have a joint gap therebetween prior to the welding operation, (2) using in association with a welding flux a welding electrode having the following alloying constituents by percent weight of the weight of the total electrode:

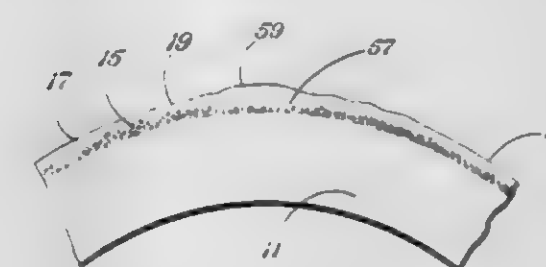
About 1.90% to about 2.10% manganese

About 0.30% to about 0.45% silicon

About 0.5% to about 1.5% nickel,

and in which the weight of the carbon content of said welding electrode does not exceed about 0.05% of the total weight of said electrode, and in which substantially the entire balance of the weight of said electrode is iron; (3) applying a direct current voltage between said electrode and said steel members whereby to cause said electrode and a portion of said steel members contiguous said joint gap to melt to form a puddle of molten metal, with a puddle of molten slag formed by said welding flux being superposed above said puddle of molten metal, with the joint gap between said steel members and the applied direct current voltage between said electrode and said steel members being parameters which may be controlled to control the percentage dilution of the electroslag weld deposit; and (4) correlating the values of said parameters to obtain a dilution of said electroslag weld deposit in the range of about 20% to about 50%.

the arc and tool joint rotation a selected distance to provide an overlapped protuberance at the tie-in that is substantially free of granules at the surface, allowing the protuberance to be easily ground.



stantially free of granules at the surface, allowing the protuberance to be easily ground.

4,228,340

VOLTAGE REGULATED CAPACITIVE DISCHARGE WELDING POWER SUPPLY

Gerald Dufrenne, La Verne, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Apr. 27, 1978, Ser. No. 900,666

Int. Cl.² B23K 11/26

U.S. Cl. 219—113

14 Claims

4,228,338

PROCESS FOR IMPLANTING RADIOACTIVE METAL ON A SUBSTRATE

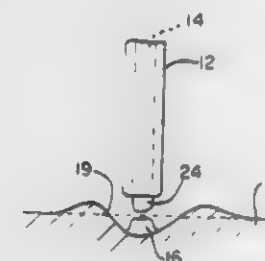
Nathan H. Cook, Cambridge, Mass., and Krishnamoorthy Subramanian, Inkster, Mich., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 8, 1978, Ser. No. 913,763

Int. Cl.² B23K 9/04

U.S. Cl. 219—76.13

4 Claims



1. The process for implanting a metal in a desired amount on the surface of a metal substrate subject to wear during use which comprises contacting to said substrate a wire comprising a metal core surrounded by a sheath of a conductive metal, said sheath of conductive metal having a thickness between about 0.0001 and 0.002 inch and a conductivity greater than that of said core, applying an electrical voltage across said wire and substrate to generate an electrical discharge in order to (a) form a pit on said substrate, (b) to weld the wire in said pit and (c) to evaporate a small portion of the conductive sheath adjacent said pit thereby to leave a portion of said core uncoated, and generating a second discharge through said wire in order to sever only a portion of the uncoated core adjacent said substrate.

1. A highly regulated welding energy power supply comprising:

- a welding energy storage capacitor;
- a first circuit means connected in series circuit relationship with the storage capacitor for initiating charging of the storage capacitor to a pre-selected energy level;
- switching means in series circuit arrangement with the first circuit means, the conduction angle of the switching means being phased forward as a function of the difference between the storage capacitor energy level and the pre-selected level; and
- second circuit means connected in shunt circuit relationship with the first circuit means for terminating charging of the storage capacitor when the pre-selected level is reached thereby preventing overcharge of the capacitor.

4,228,339

METHOD OF HARDFACING TOOL JOINTS

Stanley R. Seales, and Eric C. Sullivan, both of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Dec. 28, 1978, Ser. No. 974,168

Int. Cl.³ B23K 9/04

U.S. Cl. 219—77

4 Claims

1. An improved method for applying annular bands of hardfacing on a tool joint for earth boring drill pipe, the hardfacing having tungsten carbide granules in an alloy steel matrix, the method including the steps of rotating the tool joint, providing an arc between an electrode and the tool joint to create a weld puddle, reciprocating the electrode parallel to the tool joint axis, and feeding the granules by gravity into the weld puddle, the improvement comprising:

stopping the flow of granules into the puddle just before the tie-in at the end of each hardfacing band, but continuing

4,228,341

MECHANICAL CONTROL SYSTEM PARTICULARLY USEFUL FOR DIRECTING A LASER BEAM

Yoel Zandberg, Givataim, Israel, assignor to Laser Industries Ltd., Tel Aviv, Israel

Filed Dec. 12, 1978, Ser. No. 968,632

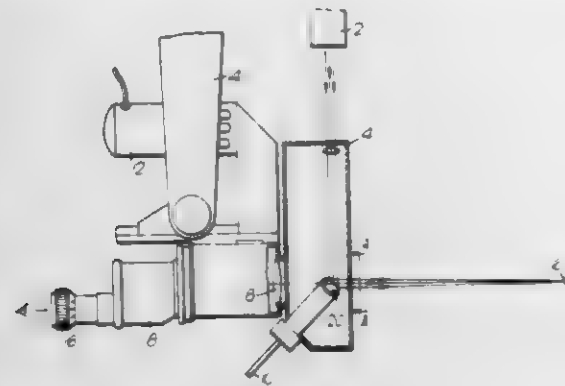
Int. Cl.³ B23K 27/00

U.S. Cl. 219—121 L

11 Claims

1. A mechanical control system for moving a controlled device in response to the movement of a universally movable control member, comprising: a first ball mounted for universal movement in a first socket; a second ball mounted for universal movement in a second socket, and having one side facing one side of the first ball; the control member being coupled to the opposite side of the first ball; the controlled device being

coupled to the opposite side of the second ball; and a connecting stem having a third ball at one end received in a third



socket formed in said one side of the first ball, the opposite end of the stem being fixed to said one side of the second ball.

4,228,342

ELECTROSLAG WELD DEPOSIT

Robert A. Caldwell, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Division of Ser. No. 914,360, Jun. 12, 1978. This application May 3, 1979, Ser. No. 35,612

Int. Cl.³ B23K 35/30

U.S. Cl. 219-137 WM

6 Claims



1. An electroslag weld deposit made between steel members which have a chemistry substantially as defined for steel of the ASTM A516-76 family, and using a consumable welding electrode having the following alloying constituents by percent weight of the total electrode:

- About 1.90% to about 2.10% manganese
- About 0.30% to about 0.45% silicon
- About 0.9% to about 1.0% nickel,

and in which the weight of the carbon content of said electrode does not exceed about 0.05% of the total electrode weight, and in which substantially the entire balance of the weight of said electrode is iron, and in which said weld deposit has the following constituents by percent weight of the total weight of the weld deposit:

- Carbon: about 0.06% to about 0.15%
 - Manganese: about 1.47% to about 1.80%
 - Nickel: about 0.49% to about 0.83%
 - Silicon: about 0.17% to about 0.20%
- with substantially the entire balance of the weight of said weld deposit being iron.

4,228,343
COLLAPSIBLE CORDLESS ELECTRIC HAIR CURLING APPLIANCE

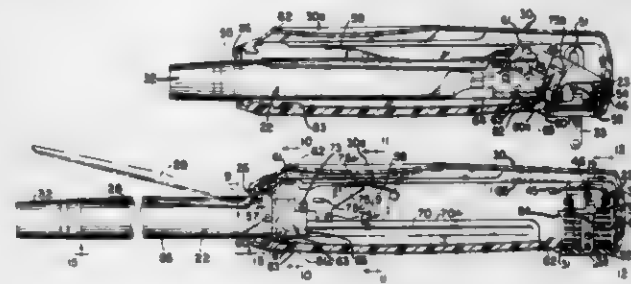
Gary L. Kanner, Lebanon; Samuel H. Kohler, Lancaster, and Robert E. Lewis, Peach Bottom, all of Pa., assignors to Schick Incorporated, Westport, Conn.

Filed Dec. 29, 1977, Ser. No. 865,363

Int. Cl.² A45D 1/04; H05B 3/06; H01R 11/02

U.S. Cl. 219-225

23 Claims



1. A hair curling appliance comprising in combination: a hollow handle adapted to be conveniently grasped by the hand of a user; an electrically heated curling wand including a heat retaining working portion therein, said wand being slidably mounted in said hollow portion of said handle for user operated movement between an exposed use position outwardly of said handle and an enclosed heating position inwardly of said handle thereof; electric connection means movably mounted in said handle and movable between a first inoperative position retracted into said handle and a second operative position extended at least partially outwardly of said handle for conductively engaging a conventional wall socket, said connection means, when in said extended position, being in conductive operating connection with said working portion of said wand for supplying electric power thereto; and cooperative means associated with said connection means and wand and responsive to sliding movement of said wand in said handle for moving said electrical connection means to said extended position only when said wand is substantially inserted into said handle in said heating position.

4,228,344

METHOD FOR PROVIDING ELECTRICAL CONNECTION

Charles J. Boos, Lewiston; Elwood B. Hausler, Grand Island; James A. Hirsch, Niagara Falls; Martin R. Kasprzyk, Buffalo, and Elmer G. Smith, Niagara Falls, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

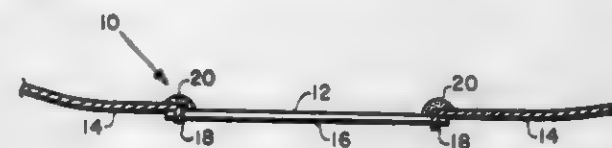
Division of Ser. No. 666,297, Mar. 12, 1976, Pat. No. 4,120,827.

This application Jun. 29, 1978, Ser. No. 920,427

Int. Cl.² F23Q 7/22

U.S. Cl. 219-270

7 Claims



1. A method for providing an electrical connection to a silicon carbide body comprising contacting the body with a conductor consisting essentially of a metal selected from the group consisting of tungsten, tantalum, molybdenum and niobium and melting silicon to both the conductor and the silicon carbide body.

4,228,345

TRAVELING INFRARED BELL OVEN SYSTEM

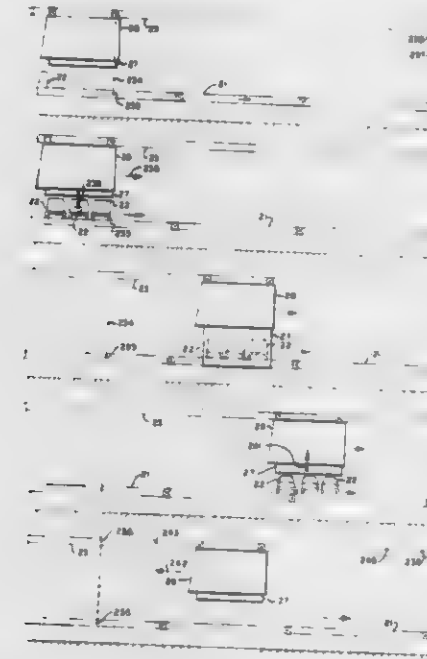
Jesse C. Stricker, Fenton, and Dennis L. Wagner, Ballwin, both of Mo., assignors to Black Body Corporation, St. Louis, Mo.

Filed Dec. 28, 1978, Ser. No. 973,894

Int. Cl.² F27D 11/03

U.S. Cl. 219-388

32 Claims



1. An oven system adapted for synchronous use with an extrinsic conveyor, said system providing automatic heating of objects successively being conveyed by said conveyor and comprising an oven having means defining a housing including side wall portions, front and rear wall portions, a top wall, and being open at the lower end, heating elements within said oven associated with predetermined ones of said wall portions, means for carrying said oven above an extrinsic conveyor for vertical movement with respect to said conveyor and for horizontal movement in forward and reverse directions along a reach of said conveyor, vertical drive means for vertically moving said oven up and down between an upper position within the lower end of said oven above objects of said conveyor and a lower position with said oven at least partially enclosing said objects on said conveyor for heating thereof by said heating elements, horizontal drive means for horizontally moving said oven in said forward and reverse directions, and control means for causing said horizontal drive means to move said oven forward in synchronism with movement of said objects upon said conveyor while causing said vertical drive means to move said oven to said lower position for heating of said objects and thereafter to move said oven to said upper position, and subsequently causing said horizontal drive means to move said oven in said reverse direction to return said oven for heating of further items upon said conveyor.

4,228,346

SELF-CALIBRATING ELECTRIC CLOCK CIRCUIT

Charles E. Barker, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 19, 1978, Ser. No. 907,550

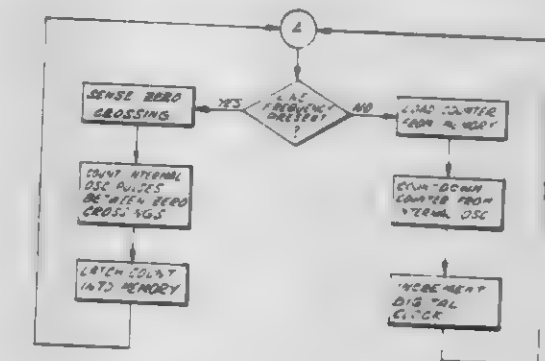
Int. Cl.³ G06M 3/12

U.S. Cl. 235-92 T

7 Claims

1. A method of self calibrating an electric clock circuit operated by a power source providing constant frequency alternating current and employing a direct current backup electrical power source, a high frequency oscillator for generating timing pulses of greater frequency than said alternating current, a time recorder for registering elapsed time, and by updating said time recorder with the elapse of cyclical periods of said alternating current comprising defining the duration of the periods of said constant frequency alternating current source in terms of a number of pulse counts from said high frequency oscillator by:

- (a) repetitively testing for the existence of said constant frequency alternating current, and upon detecting the presence of said alternating current,
- (b) ascertaining and storing the number of oscillator pulses from said high frequency oscillator occurring between successive repetition points in a cycle of said alternating current,
- (c) in the absence of detection of the existence of said alternating current,



- (i) loading said counter with said number of oscillator pulses that occurred between said successive repetition points,
- (ii) strobing said counter with said high frequency oscillator to change the contents thereof in a single direction of advancement incrementally with each oscillator pulse, and
- (iii) updating said time recorder upon advancing said counter to a limit, and retesting for the presence of said constant frequency alternating current.

4,228,347

ELECTROMAGNETIC COUNTING MECHANISM

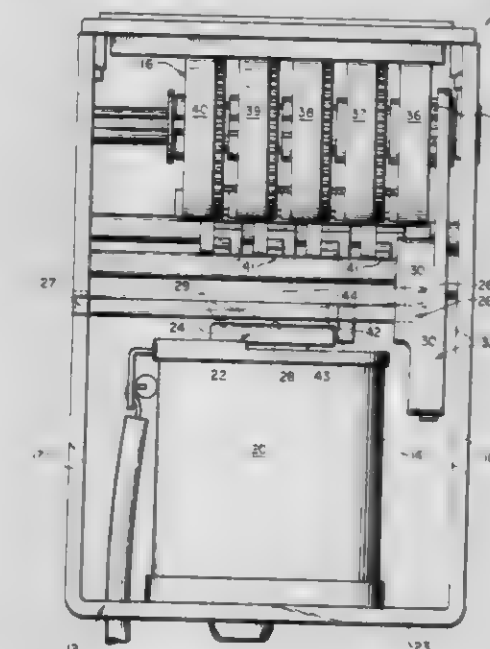
John G. Gamble, Simsbury, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Sep. 25, 1978, Ser. No. 945,422

Int. Cl.³ G06M 1/10

U.S. Cl. 235-92 C

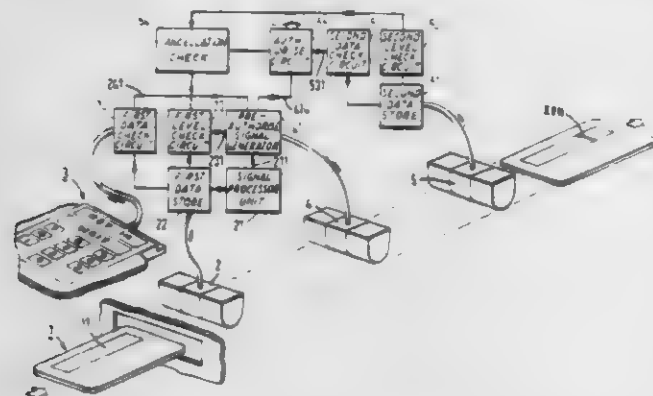
6 Claims



1. In an electromagnetic counting device having a rotary counter and an electromagnet adapted for indexing the counter comprising an electromagnet with a ferromagnetic core having a primary pole face, a ferromagnetic clapper pivotally mounted in operative magnetic association with the core having a primary face portion in direct tangential alignment with said primary pole face to be directly magnetically attracted thereby when the electromagnet is energized and

adapted to be magnetically pivotally actuated in one pivotal direction from a withdrawn position to an extended position by energization of the electromagnet, spring means biasing the clapper in the opposite pivotal direction to its withdrawn pivotal position with an angular bias which increases with the pivotal displacement of the clapper therefrom and indexing means operable by the clapper for indexing the counter in stepwise fashion upon pivotal movement of the clapper, the improvement wherein the electromagnet core comprises a secondary generally tangentially extending pole face having an area substantially less than the area of the primary pole face and wherein the clapper comprises a secondary generally tangentially extending face portion adjacent to but out of alignment with said primary pole face and spaced from said secondary pole face at a generally constant air gap therewith, but in increasingly overlapping relationship therewith, as the clapper is electromagnetically pivoted from its withdrawn to its extended position so that the electromagnet is operable to produce a magnetic force which increases with pivotal displacement of the clapper from its withdrawn position at a general rate less than the general rate of increase of the spring bias in the opposite direction and whereby the clapper is adapted to be pivotally actuated in accordance with the instantaneous current of the electromagnet.

4,228,348
SECURITY DOCUMENT AND SYSTEM
Cyril A. Lee, Littlewick Green, England, assignor to E M I Limited, Hayes, United Kingdom
Continuation-in-part of Ser. No. 859,236, Dec. 9, 1977. This application May 31, 1979, Ser. No. 44,223
Int. Cl.³ G06K 7/08, 19/06; G11B 25/04, 5/02
U.S. Cl. 235-449 10 Claims



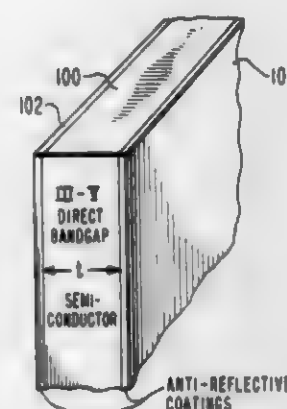
1. A secure document system comprising a secure document having a security feature of which at least a part is selectively cancellable, and apparatus for performing the cancellation, wherein in spaced first regions of said selectively cancellable part anisotropic magnetic particles are aligned and magnetized substantially solely along a preset direction and in the remaining regions of the part the particles are either not so aligned or are aligned and magnetized substantially solely along a different preset direction, and said apparatus comprises means for reading at least said part and means for cancelling a selected area, which cancelling means applies a uniaxial magnetic field to said area of such a strength and direction that the difference in remanence between said first regions and said remaining regions is significantly reduced.

4,228,349
III-V DIRECT-BANDGAP SEMICONDUCTOR OPTICAL FILTER
Michael Ettenberg, Freehold, and Charles J. Nuese, North Brunswick, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,566
Int. Cl.³ G01J 3/34

U.S. Cl. 250-226

5 Claims



1. In a duplex optical communication system comprising a fiber-optic transmission line having a first end thereof at a first terminal and a second end thereof at a second terminal and extending between said first and second terminals, first source means at said first terminal for applying relatively long-wavelength optical wave energy to said transmission line, second source means at said second terminal for applying relatively short-wavelength optical wave energy to said transmission line, first filter and detector means in cooperative spaced relationship with said first end of said transmission line at said first terminal for detecting substantially solely said relatively short-wavelength optical wave energy, and second filter and detector means in cooperative spaced relationship with said second end of said transmission line at said second terminal for detecting substantially solely said relatively long-wavelength optical wave energy; the improvement wherein: said second filter and detector means comprises a III-V direct bandgap semiconductor optical filter in the path of the optical wavelength energizing from said second end of said transmission line and an optical detector for detecting the optical wave energy which passes through said III-V direct bandgap semiconductor optical filter, said direct bandgap corresponding to an energy-level difference proportional to a preselected optical wavelength which is intermediate said relatively long-wavelength of optical wave energy from said first source means and said relatively short wavelength of optical wave energy from said second source means.

4,228,350
METHOD AND APPARATUS FOR MEASURING UNDERGROUND FLUID FLOW CHARACTERISTICS
Hans J. Paap; Albert P. Richter, Jr.; Harold E. Peelman; Dan M. Arnold, and Hubert D. Scott, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,357
Int. Cl.³ G01V 5/00

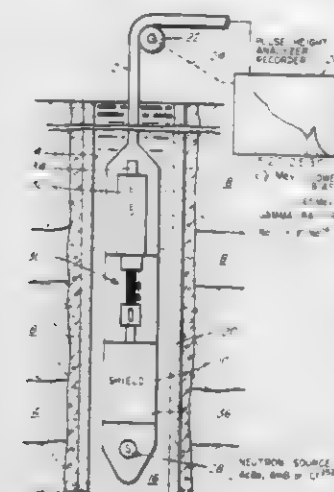
U.S. Cl. 250-267

23 Claims

1. Well logging apparatus comprising:
(a) a sonde adapted for passage through a well borehole;
(b) a neutron source with said sonde;
(c) a gamma ray detector within said sonde longitudinally displaced from said neutron source;
(d) collimating means for selectively circumscribing said detector to limit detection sensitivity to radiation passing to said detector through said collimating means, and selec-

tively rotatable to vary the rotational orientation of said collimating means relative to said detector; and

determining the density of said sample material independent of the thickness thereof.

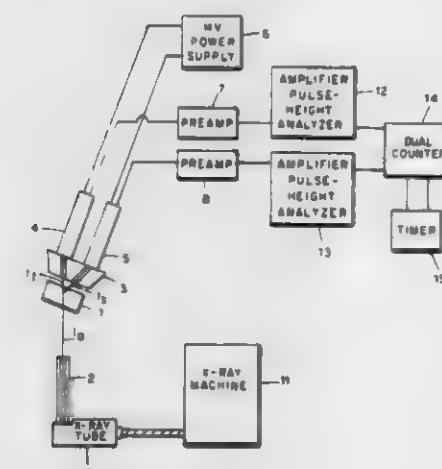


(e) gyrocompass means for identifying the direction of orientation of said collimating means with respect to a fixed reference direction on the surface of the earth.

4,228,351
METHOD FOR MEASURING THE DENSITY OF LIGHTWEIGHT MATERIALS
Samuel G. Snow, Oak Ridge, and Edward J. Giacomelli, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,259
Int. Cl.³ G01N 23/20; G21K 1/00
U.S. Cl. 250-273

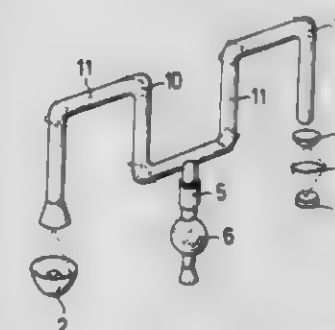
2 Claims



1. A method for determining the density of lightweight materials having low atomic numbers including plastics and carbon composites comprising the steps of:
directing a collimated beam of X-radiation onto a sample of lightweight material at a fixed oblique angle of incidence such that the scattered X-ray path length is equal to the transmitted X-ray path length within said sample;
simultaneously measuring the X rays transmitted and scattered by said sample with a first detector for measuring the transmitted radiation positioned in alignment with said beam of X radiation on that side of said sample opposite the origin of said beam and with a second detector for measuring scattered radiation positioned at an acute angle with respect to the first detector on that side of said sample opposite the origin of the radiation beam;
determining the ratio of the radiation scattered to the radiation transmitted; and
comparing said ratio with ratio values determined from corresponding measurements of standards having known densities that were prepared from similar material for

4,228,352
APPARATUS FOR MEASURING THE CONCENTRATION OF GASES
Werner Adrian, Im Roth 19, D-7505 Ettlingen-Oberweiler, Fed. Rep. of Germany
Filed Feb. 12, 1979, Ser. No. 11,718
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1978, 2805972
Int. Cl.³ G01J 1/00; G01N 21/00
U.S. Cl. 250-343

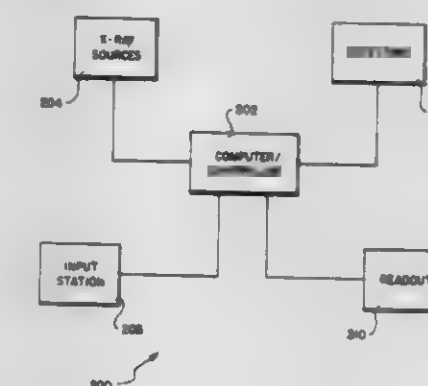
6 Claims



1. Apparatus for measuring the concentration of gases by radiation absorption comprising:
a source of infra red radiation;
a detector of infra red radiation;
a plurality of straight tube lengths each having fluid impervious side walls the inner surfaces of which are highly reflective of infra red radiation, a first end of a first of said tube lengths being located adjacent said source to receive infra red radiation therefrom, a first end of a second of said tube lengths being located adjacent said detector to direct infra red radiation thereto;
a plurality of connectors connecting the remaining ones of said plurality of tube lengths in sequence between the second end of said first tube length and the second end of said second tube length, each tube length being in angled relation to the adjacent tube lengths and each connector including infra red radiation reflecting means for directing radiation between successive tube lengths; and
gas inlet means connected to one of said tube lengths intermediate said first end of said first tube length and said first end of said second tube length.

4,228,353
MULTIPLE-PHASE FLOWMETER AND MATERIALS ANALYSIS APPARATUS AND METHOD
Steven A. Johnson, 136 N. First West, Preston, Id. 83772
Filed May 2, 1978, Ser. No. 902,208
Int. Cl.³ G01F 1/00; G01N 21/00, 23/20; G21K 1/00
U.S. Cl. 250-356

19 Claims



1. A non-invasive meter apparatus comprising:
a first radiation source and first radiation detector demountably attachable to a vessel at a first location;

a second radiation source and a second radiation detector demountably attachable to said vessel at a second location; computing means for comparing radiation signals detected by the first detector with radiation signals received by the second detector; and control means for selectively controlling the first and second radiation sources and the first and second detectors.

4,228,354

METHOD FOR DETECTING RADIATION

Ari Lehto, Laksyrinne 27-29 E 2, Helsinki 75, and Hannu Harjunmaa, Aallonhuippu 7 B 35, Espoo 32, both of Finland
Filed Jul. 13, 1979, Ser. No. 57,216
Int. Cl.² G01T 1/22

U.S. Cl. 250-371

6 Claims

1. In the method for detecting electromagnetic or particle radiation which comprises exposing a piece of semiconductor fitted with two or more electrodes to the radiation to be measured, applying an electric field between electrodes and observing the delay from the application of the electric field to the subsequent electric breakdown, the radiation-induced change in the delay serving as a measure of the intensity of the radiation to be measured.

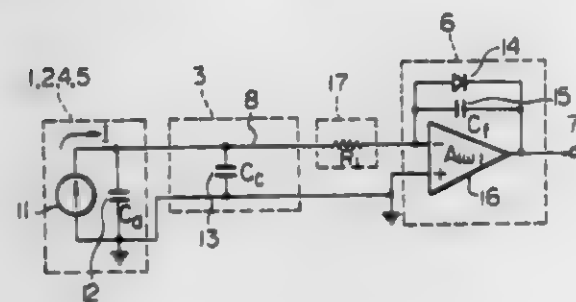
4,228,355

METHOD FOR SHORTENING RESPONSE TIME OF LOGARITHMIC MEASURING APPARATUS

Naoaki Wakayama, Ibaraki; Toshiyuki Iida, Wakayama, and Hideshi Yamagishi, Mito, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
Filed Jan. 18, 1978, Ser. No. 870,530
Claims priority, application Japan, Jan. 19, 1977, 52/3994
Int. Cl.² H01J 39/28; G06G 7/12

U.S. Cl. 250-374

1 Claim



1. In a method for shortening the response time of a logarithmic measuring apparatus which comprises using an ionization chamber sensitive to the nuclear radiation for nuclear radiation to be measured, a signal line connected to said ionization chamber to transmit the output current of said ionization chamber and a logarithmic amplifier having a feedback capacitor and a logarithmic diode in the negative feedback circuit of an operational amplifier of said logarithmic amplifier and connected to said signal line to receive said output current as the input of said logarithmic amplifier; inserting a resistor between said signal line and said logarithmic amplifier characterized in that the resistance value of said resistor is selected within a range that exceeds $A/10\pi C_f f_7$ but does not give any degradation on the plateau characteristics of said ionization chamber, whereby the capacitance of said feedback capacitor can be made substantially small including zero as compared with a capacitance which is needed in case when said resistor is not provided so that the response time of said logarithmic measuring apparatus is rendered to be short and a stable transient response can be obtained; wherein,

A is the D.C. gain of the operational amplifier to be used in said logarithmic amplifier,

C_f is the sum of the electrostatic capacitance C_d between electrodes of said ionization chamber and the electrostatic capacitance C_c to ground of said signal line, and f_7 is the unity gain frequency of said operational amplifier.

4,228,356

OPTIMUM CONTRAST PANORAMIC DENTAL RADIOGRAPHY AND METHODS OF PROVIDING THEREFOR

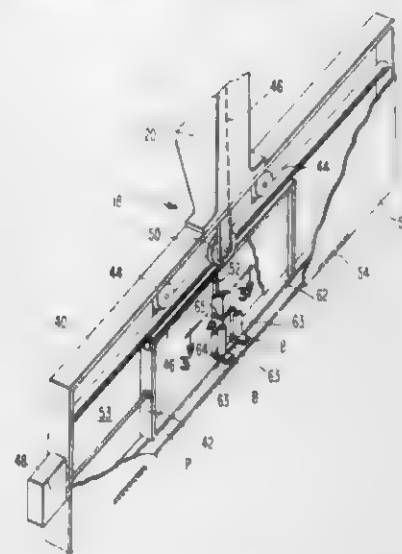
Robert H. Cushman, Princeton, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 1, 1978, Ser. No. 939,646

Int. Cl.³ G03B 41/16; A61B 6/14; H01J 31/50

U.S. Cl. 250-439 P

8 Claims



1. An x-ray machine comprising an X-ray source adapted to continuously direct radiation through a slot disposed in a front panel of a film holder assembly containing film controllably movable therewithin for sequentially exposing portions thereof to radiation passing through structures of a patient disposed between said X-ray source and film holder assembly to form a full size panoramic radiograph,

a plurality of identical image intensifying devices disposed in vertical alignment secured within said film holder assembly in operable alignment with said slot, said image intensifying devices substantially simultaneously converting said radiations passing through said structures of said patient to electrons and multiplying said electrons to form multiplied electrons,

means within said image intensifying devices for converting said multiplied electrons to photons to form corresponding photon images,

a plurality of control circuits, one each of said control circuits being connected to a different one of said plurality of image intensifying devices to vary intensity of said photon images of said structures of said patient, said film being in near-contacting relationship with output of said plurality of image intensifying devices for continuously receiving said photon images therefrom, said photon images having intensities which vary with varying densities of said structures on said full size radiograph.

4,228,357

DETECTOR ON WHEEL SYSTEM (FLYING SPOT)

Martin Anns, Newtonville, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Dec. 4, 1978, Ser. No. 966,227

Int. Cl.³ G01N 21/34, 23/04

U.S. Cl. 250-445 T

35 Claims

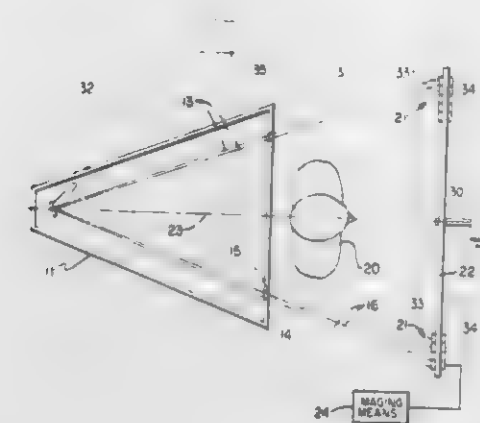
1. A radiant energy imaging apparatus for displaying the characteristic radiation absorption of cross-sectional areas of an irradiated body, comprising:

source means for generating penetrating radiation;

collimating means for interrupting said radiation to pass an arc-shaped fan beam of radiation and to direct said fan beam to pass through a corresponding arc-shaped cross section of said irradiated body;

a plurality of detectors arranged in an arc-shaped curve for receiving the unattenuated radiation transmitted through said arc-shaped cross section of the body and generating

electrical signals corresponding to the intensity of the unattenuated radiation; means for rotating said detectors to scan each of said detectors at least once across the unattenuated radiation transmitted through a particular cross section of the body; displacement means for relatively displacing said detectors



and said fan beam along the axis of said body to irradiate and to measure the unattenuated transmitted radiation through successive cross sectional areas of the body; and display means responsive to said detector electrical signals to display a two dimensional representation of the characteristic radiation absorption of the scanned cross-sectional areas of the body.

4,228,358

WAFER LOADING APPARATUS FOR BEAM TREATMENT

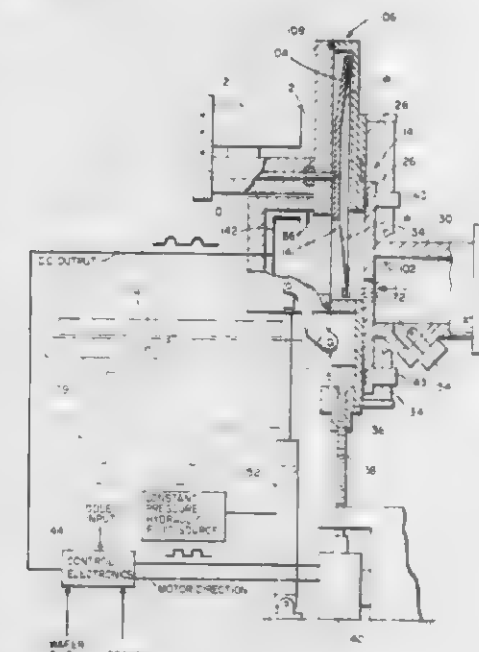
Geoffrey Ryding, Manchester, Mass., assignor to Nova Associates, Inc., Beverly, Mass.

Filed May 23, 1979, Ser. No. 41,807

Int. Cl.² A61K 27/02; H01J 9/38

U.S. Cl. 250-457

20 Claims



1. Apparatus for exchanging a treated disk for an untreated disk in ion implantation equipment, said implantation equipment being of the type comprising a vacuum chamber in which said disks are subjected to an ion beam and a rotating spindle to which said disks are attached for rotation with respect to said beam, said exchange apparatus comprising:

means for moving said treated disk from said vacuum chamber to a first exchange position,

means for supporting said untreated disk at a second exchange position adjacent said first position,

means for locking said disks to said spindle,

means for engaging and disengaging said locking means, and

means for simultaneously moving said treated disk from said

first to said second position and said untreated disk from said second position to said first position.

4,228,359

ROTOR-STRESS PREESTIMATING TURBINE CONTROL SYSTEM

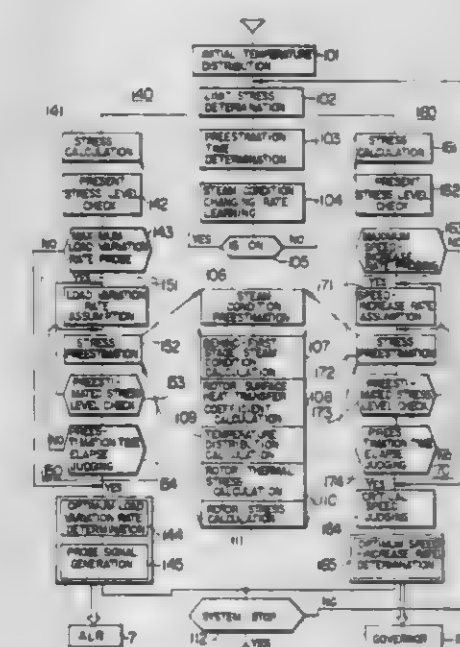
Hiroshi Matsumoto; Yoshio Sato, both of Hitachi; Shigeyoshi Kawano, Hitachi; Yoshiyuki Nakano, Hitachi; Fumio Kato, Hitachi; Katsukuni Hisano, Hitachi; Katsuo Kashiwahara, Hitachi; Yasuhiko Otawara, Katsuta; Toshihiko Higashi, Hitachi; Yasuhiro Tennichi, Hitachi; Jube Matsumura, Hitachi, and Koichiro Fukushima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan
Filed Jul. 28, 1978, Ser. No. 929,130

Claims priority, application Japan, Jul. 29, 1977, 52-90312; Jul. 29, 1977, 52-90313; Jul. 29, 1977, 52-90314; Jul. 29, 1977, 52-90315; Jul. 29, 1977, 52-90316; Jul. 29, 1977, 52-90317; Aug. 8, 1977, 52-94192; Aug. 8, 1977, 52-94195; Aug. 8, 1977, 52-94196; Aug. 8, 1977, 52-94198; Aug. 8, 1977, 52-94199; Aug. 10, 1977, 52-95176

Int. Cl.³ F01D 19/02

U.S. Cl. 290-40 R

29 Claims



1. A rotor-stress preestimating turbine control system adapted for use in a power generating plant having a source of a working fluid, a valve for regulating the flow rate of the working fluid generated by said source, a turbine adapted to be driven by said working fluid and an alternator mechanically connected to said turbine, said control system being adapted to calculate the stress caused in said turbine due to a change of the condition of said working fluid and to control the operation of said turbine in accordance with the calculated stress,

said control system being characterized by comprising: a first means for setting a plurality of changing rates of the running condition of said turbine; a second means adapted to preestimate the stress expected in the turbine rotor over a predetermined preestimation time on the assumption that said turbine is operated at said changing rates; and a third means adapted to select the maximum changing rate which would not cause the preestimated stress to exceed a limit stress; whereby said turbine is controlled in accordance with the output from said third means.

4,228,360

WAVE MOTION APPARATUS

Pablo Navarro, 2110 Magnolia Ave., Sanford, Fla. 32771
Filed Jun. 8, 1979, Ser. No. 46,713

Int. Cl.³ F03B 13/12

U.S. Cl. 290-43

9 Claims

1. Apparatus for producing useful work from wave motion in a body of water comprising:

selected spectral region and is further comprised of adjacent rows of Schottky barrier gates that are phase switched by a four phase switching system wherein each Schottky barrier gate that is activated is surrounded on all four sides by inactivated gates to electrically isolate alternate areas and each row of the Schottky barrier gates to prevent blooming into adjacent rows to screen out the previously punched through charge signals wherein said substrate punch through voltage is further timed to punch through the isolated charge signals that are continuously stored in said absorber layer at such a rate that said CCD channel wells are never completely filled wherein said Schottky barrier gates directly overlay said CCD channel layer and are phase switched to sweep out the previously punched through charge signals before a subsequent charge signal is punched through wherein said CCD electrical multiplexer video output producing means produces a video output therefrom in accordance with said IR scene image.

4,228,366

INTEGRATOR CIRCUIT WITH LIMITER

Werner Hüttemann, Herrenberg-Kuppigen, and Reinhard Falke, Altdorf, both of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

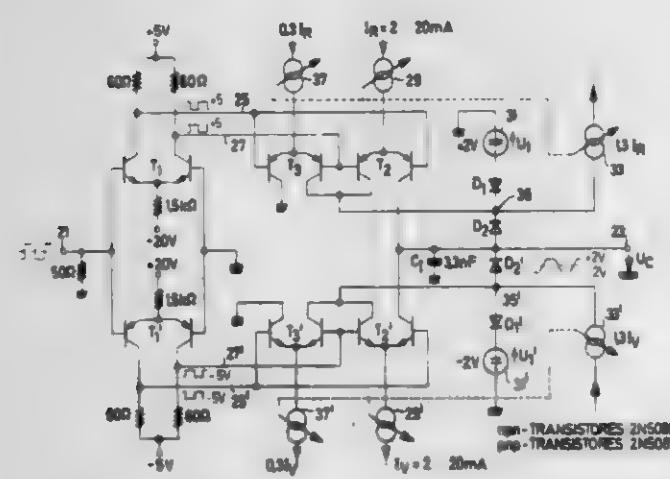
Filed Jul. 21, 1978, Ser. No. 926,788

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737432

Int. Cl.³ H03K 5/08; G06G 7/184

U.S. Cl. 307-229

2 Claims



1. An integrator circuit comprising:
 - a capacitor;
 - source means of current for charging and discharging the capacitor;
 - means connecting and disconnecting the source means and the capacitor;
 - limiter means including diodes connected to limit the capacitor voltage to a predetermined value; and
 - control means for simultaneously disconnecting the limiter means from the capacitor and connecting thereto the source means for charging the capacitor.

4,228,367

HIGH SPEED INTEGRATED SWITCHING CIRCUIT FOR ANALOG SIGNALS

Paul M. Jr. Brown, Morgan Hill, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Aug. 7, 1978, Ser. No. 931,672

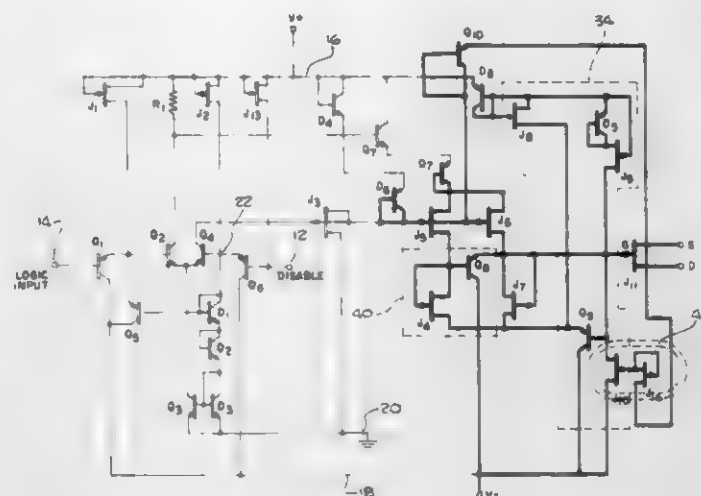
Int. Cl.³ H03K 17/687

U.S. Cl. 307-251

9 Claims

1. A high current switching circuit comprising:
 - a switch Junction Field Effect Transistor, or JFET, having a high current capacity;
 - means for switching said switch JFET off rapidly and holding the gate electrode more than a "pinch-off" voltage beyond the normal source electrode voltage; said switch-

ing means including second JFET means of intermediate size for charging the gate capacitance of said switch JFET, and third JFET means of relatively small size in series with said second JFET means for limiting current



flow after the gate capacitance of said switch JFET is charged while said switch JFET is off and for holding said switch JFET gate voltage more than a "pinch-off" beyond the normal source voltage.

4,228,368

POLARITY CORRECTING CIRCUIT

Robert A. Orban, 2413 Lincoln Ave., Belmont, Calif. 94002

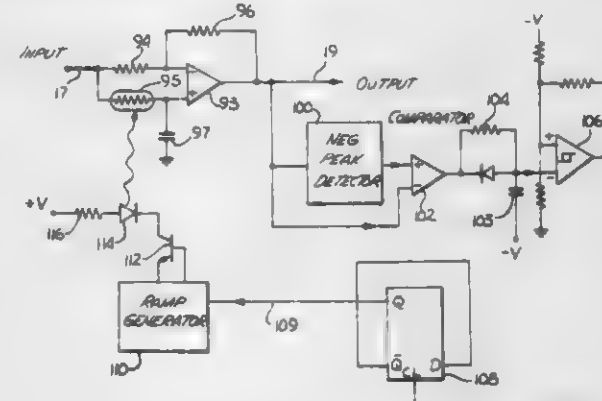
Division of Ser. No. 858,720, Dec. 8, 1977, abandoned. This

application Oct. 26, 1978, Ser. No. 954,927

Int. Cl.³ H03L 7/00

U.S. Cl. 307-262

7 Claims



1. A circuit for controlling the polarity of an asymmetrical input audio signal comprising:
 - a switching means for selectively providing an inverted or non-inverted audio output signal, the input of said switching means coupled to receive said input audio signal, said switching means providing a transition to said inverted or non-inverted output audio signal such that each frequency of said audio signal is changed to an inverted or non-inverted state at a different time;
 - detection means for sensing said polarity;
 - control means for controlling said switching means, said control means coupled to said detection means and said switching means;
 - whereby smooth polarity switching is provided for said audio signal.

4,228,369 INTEGRATED CIRCUIT INTERCONNECTION STRUCTURE HAVING PRECISION TERMINATING RESISTORS

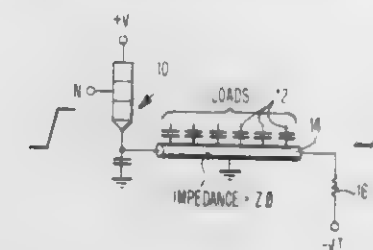
Narasipur G. Anantha, Hopewell Junction; Robert A. Henle, Clinton Corners, and James L. Walsh, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 865,808

Int. Cl.² H03K 5/08; H01P 1/26

U.S. Cl. 307-270

11 Claims



a first clamping network connected between the output and the clamped input of the first logic gate, and

a second clamping network connected between the output and the clamped input of the second logic gate.

4,228,371

LOGIC CIRCUIT

James D. Mazzy, Parsippany, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,759

Int. Cl.² H03K 17/00

U.S. Cl. 307-317 A

5 Claims



1. An integrated circuit interconnection structure comprising:
 - a driver circuit in an integrated circuit device;
 - a transmission line having a series of loads connected thereto;
 - said driver circuit driving said loads through said transmission line;
 - the last load in said series of loads being located in an integrated circuit chip which has a variable terminating resistor;
 - means for generating and applying a voltage to said variable terminating resistor to adjust its resistance so that there is precise termination of said line; and
 - said variable resistor is a pinch resistor having a contact to which said voltage to adjust its resistance is applied.

4,228,370

BISTABLE MULTIVIBRATOR WITH TRIGGER STEERING

Zachariah H. Milburn, Jr., Amherst, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 25, 1978, Ser. No. 945,265

Int. Cl.³ H03K 3/286

U.S. Cl. 307-291

8 Claims

1. A triggerable multivibrator comprising:
 - first and second multiple-input logic gates, each having a clamped input and an unclamped input wherein the output of the first logic gate is connected to the unclamped input of the second logic gate and the output of the second logic gate is connected to the unclamped input of the first logic gate,

1. The combination comprising:
 - an input point for the application thereto of an input signal;
 - an output point for producing thereat an output signal responsive to said input signal;
 - first and second power terminals for the application therebetween of an operating potential;
 - first and second transistors, each transistor having a base, an emitter and a collector;
 - means connected between said input point and the base of said first transistor for coupling the input signal to the base of said first transistor;
 - means connecting the collector of said first transistor to said first power terminal;
 - means connecting the base of said second transistor to the emitter of said first transistor, the collector of said second transistor to said output point, and the emitter of said second transistor to said second power terminal;
 - a resistor and a Schottky barrier diode; said diode characterized in that its forward drop is substantially greater than zero volts but less than the base-to-emitter forward drop (V_{BE}) of said second transistor and in that said diode has a larger rectifying area than the area of the base-to-emitter junction of said second transistor; and
 - negligible impedance means connecting said resistor and said diode in series between the base and emitter of said second transistor; said Schottky barrier diode being poled to conduct current in the same forward direction as the base-to-emitter junction of said second transistor for enabling current flow through the diode prior to the flow of current through the base-to-emitter junction of the second transistor in response to a forward biasing signal applied to the base of said second transistor.

4,228,372

LINEAR INDUCTION MOTOR

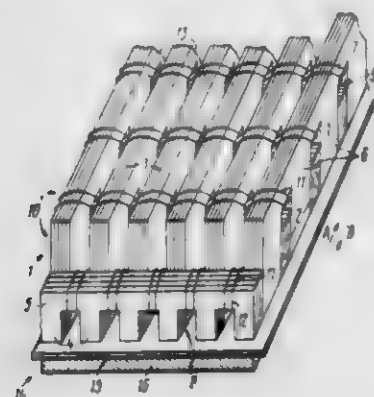
Alexandr D. Popov, pereulok Rynochny, 44, and Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, U.S.S.R.

Filed Dec. 6, 1978, Ser. No. 966,782

Claims priority, application U.S.S.R., Mar. 20, 1978, 2587755
Int. Cl.² H02K 41/02

U.S. Cl. 310-13

1 Claim



1. A linear induction motor comprising:
an inductor;

a magnetic core structure of said inductor;
laminations of a first group of said magnetic core structure of said inductor extended at right angles to the direction of movement of said inductor; a yoke of each of said first-group laminations of said magnetic core structure of said inductor; rods of each said first-group lamination of said magnetic core structure of said inductor interconnected by means of said yoke of each of said first-group laminations of said magnetic core structure of said inductor; each of said first-group laminations of said magnetic core structure of said inductor having n slots;

laminations of a second group of said magnetic core structure of said inductor extended in the direction of movement of said inductor; a yoke of each said second-group lamination of said magnetic core structure of said inductor; rods of each said second-group lamination of said magnetic core structure of said inductor interconnected by means of said yoke of each of said second-group laminations of said magnetic core structure of said inductor; slots in each said second-group lamination of said magnetic core structure of said inductor;

said first-group laminations of said magnetic core structure of said inductor interconnected by means of said second-group laminations of said magnetic core structure of said inductor;

one of said extreme first-group laminations of said magnetic core structure of said inductor having its rods adjacent all the extreme rods of said second-group laminations of said magnetic core structure of said inductor, arranged in mating relation the said first-mentioned rods;

said rods of the other first-group laminations of said magnetic core structure of said inductor fitting tightly in said slots of said second-group laminations of said magnetic core structure of said inductor so that no gaps exist therebetween and toothless active zones are formed in the direction of movement of said inductor; said yokes of said first-group laminations of said magnetic core structure of said inductor so arranged with respect to said yokes of said second-group laminations of said magnetic core structure of said inductor that appropriate gaps exist therebetween;

a polyphase winding of said inductor;
coils of said polyphase concentrated winding of said inductor arranged in a plurality of rows;

a first group and a second group of said coils of said polyphase concentrated winding of said inductor;

said first-group coils of said polyphase concentrated winding of said inductor arranged on said yoke of each said first-

group lamination of said magnetic core structure of said inductor, and equal in number to said slots in each said first-group lamination of said magnetic core structure of said inductor;

said second-group coils comprised in said polyphase concentrated winding of said inductor arranged on said yoke of each said second-group lamination of said magnetic core structure of said inductor and equal in number to said slots in each said second-group lamination of said core structure of said inductor;

a secondary element with respect to which said inductor moves;

a magnetically conductive base of said secondary element;
an electrically conductive part of said secondary element arranged on said magnetically conductive base of said secondary element.

4,228,373

ELECTROMAGNETIC MOTOR

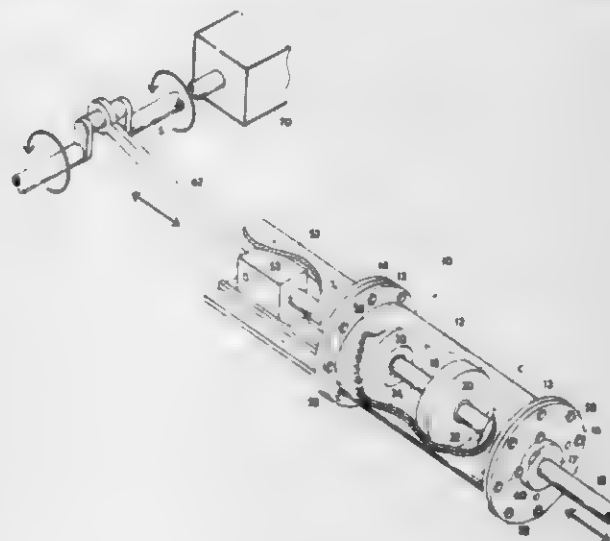
William S. Funderburg, 2103 Pender Ave., Wilmington, N.C. 28403

Continuation-in-part of Ser. No. 857,772, Dec. 5, 1977, Pat. No. 4,179,631. This application Sep. 10, 1979, Ser. No. 74,018

Int. Cl.³ H02K 7/06

U.S. Cl. 310-20

3 Claims



1. An electromagnetic motor comprising:

(a) a first pair of stationary toroidal-shaped, bifilar wound electromagnetic coils mounted in spaced relationship along an axis extending through the center of each coil, at least one of said coils being designated as a front end coil and having a central opening therein;

(b) an armature means having a drive rod extending therefrom and through said central opening, bearing means aligned with said central opening for supporting said drive rod therein, said armature being thereby mounted for reciprocal movement in said cylinder housing;

(c) said armature means comprising a second electromagnetic coil means attached to said drive rod and movable therewith relative to said first pair of coils, said second coil means being so arranged that its polarity, when activated, is the same as the polarity of the adjacent one of said first pair of coils;

(d) the arrangement and positioning of the magnetic coils and the armature being such that, upon activation of said armature, its path of movement is between said coils only and not within the central opening therein;

(e) a source of direct current and a switching means connecting said source of DC with said first pair of magnetic coils and said second magnetic coil means in such a manner that each of the first pair of coils is alternately activated and during a portion of the time each of said first pair of coils is activated, the second magnetic coil means is activated, whereby as the armature means is attracted to each one of

the first pair of coils it is then repelled by the same one of said first pair as said one coil is closely approached;
(f) a force transmitting means connected to the free end of said drive rod for delivering the force generated by said motor to a mechanism.

4,228,374

ARRANGEMENT FOR COOLING THE ROTOR OF AN ELECTRIC MACHINE, ESPECIALLY A TURBINE TYPE GENERATOR

Werner Elsel, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

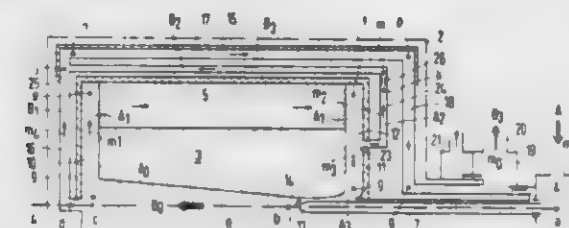
Filed Sep. 21, 1978, Ser. No. 944,391

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742477

Int. Cl.² H02K 9/00

U.S. Cl. 310-53

9 Claims



1. Apparatus for cooling the rotor of an electric machine having a superconducting field winding longitudinally disposed thereon comprising:

(a) a first cold shield exteriorly disposed on and co-rotating with the rotor;
(b) a mixing chamber interiorly and concentrically disposed on and co-rotating with said rotor;
(c) a coolant unit supplying coolant at a low temperature and receiving coolant at a relatively higher temperature;
(d) means for injecting a phase mixture of said coolant of said coolant unit into said mixing chamber via a coolant injecting line;

(e) a first coolant line for a first coolant stream of liquid coolant derived from said coolant phase mixture;

(f) said first coolant line comprising at least one winding feed line radially disposed at one end of said rotor and in communication with said mixing chamber; further a plurality of winding cooling canals interiorly disposed on said rotor and in heat transfer contact with said superconducting field winding, said winding cooling canals being in communication with said winding feed line; and at least one winding discharge line in communication with said winding cooling canals, radially disposed at the other end of said rotor and in communication with said mixing chamber for conducting at least a part of the first coolant stream into said mixing chamber;

(g) a second coolant line for a second coolant stream having at least partly evaporated coolant derived from said coolant phase mixture;

(h) said second coolant line comprising at least one cold shield feed line radially disposed at one end of said rotor and in communication with the radially inner part of the mixing chamber, further at least one cold shield cooling canal in communication with said cold shield feed line said shield cooling canal axially disposed in heat transfer contact with said cold shield; and at least one cold shield discharge line radially disposed at the other end of said rotor, said cold shield discharge line in communication with the input of said coolant unit and said cold shield cooling canal;

(i) a connecting line in communication with said winding discharge line of the first coolant stream and with the cold shield feed or discharge line of the second coolant stream for admixing a coolant substream derived from said first coolant stream after said first coolant stream has passed

through said field winding with said second coolant stream; and

(j) a throttling device incorporated within said connecting line whereby the amount of additional coolant fed of the coolant substream into said second coolant stream can be controlled.

4,228,375

DEVICE FOR BRACING AN AIR-GAP WINDING

Heinrich Beermann, and Dietrich Lambrecht, both of Mülheim, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

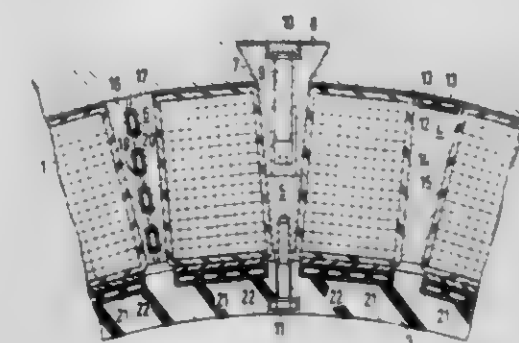
Filed Aug. 18, 1978, Ser. No. 934,677

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737959

Int. Cl.² H02K 3/48

U.S. Cl. 310-214

6 Claims



1. Device for bracing an air-gap winding in a stator of an electric machine wherein individual winding bars are secured between a radially outer stack of stator laminations and a radially inner nonmagnetic support cylinder, comprising spacer wedges disposed between respective pairs of the individual winding bars in circumferential direction, at least some of said spacer wedges being in the form of mounting wedges having dove-tailed extensions received and braced in corresponding recesses formed in the stack of stator laminations at the inner circumference thereof, and the remainder of said spacer wedges being in the form of tightening wedges having tangential prestressing bracing means comprising at least one flexible tube subjectible to internal pressure, and radial prestressing bracing means similarly comprising at least one flexible tube subjectible to internal pressure.

4,228,376

BRUSH DEVICE

Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co. Ltd., Tokyo, Japan

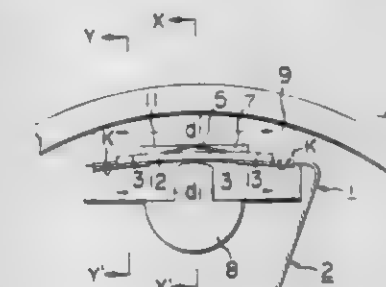
Filed Aug. 17, 1978, Ser. No. 934,355

Claims priority, application Japan, Sep. 8, 1977, 52-120900[U]

Int. Cl.² H02K 13/00

U.S. Cl. 310-242

3 Claims



1. A brush device comprising an integrally constructed commutator slide, a brush base and a terminal portion extending from the brush base; the terminal portion and the brush base being adapted to be passed through a terminal insert hole provided on a motor case cover made of synthetic resin, the

motor case cover having at least two projections provided at both side ends of the terminal insert hole and a first support member provided at a substantially central position of the terminal insert hole; the brush device being adapted to be resiliently supported by the first support member and the two projections at the central part and both sides of the brush base, wherein the brush base has a reinforcing piece formed by bending the side of the brush base opposite the terminal portion; and the reinforcing piece extends in the direction of the first support member and the projection and is adapted to be supported at least at the central portion thereof by the first support member.

4,228,377

ROTOR STRUCTURE FOR DYNAMO ELECTRIC MACHINES SUBJECT TO VIBRATORY, SHOCK, OR TEMPERATURE CHANGE EFFECTS

Helmut Kreuzer, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

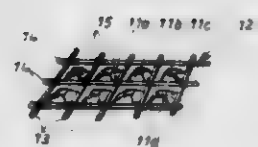
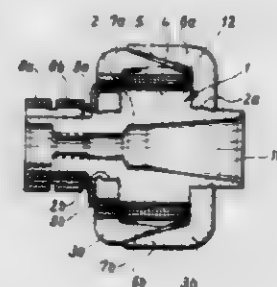
Filed Mar. 13, 1979, Ser. No. 20,237

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811323

Int. Cl.³ H02K 1/22

U.S. Cl. 310-263

16 Claims



1. Rotor structure for dynamo electric machines, particularly for such machines subject to oscillatory, vibratory, shock or temperature change effects, comprising a cylindrical pole core (2, 4); a plurality of axially located, radially projecting claw pole shoes (3a, 3b); and a winding (5) wound on the cylindrical core, wherein, in accordance with the invention, at least the portion (4) of the pole core on which the winding is placed is formed with surface deformations in the form of grooves, notches or knurls, and leaving projections (11a, 11b . . . 11d) between the deformations; and a layer (12) of mesh or net structure insulating fabric material positioned over the surface including said deformations, the winding (5) being located over said fabric layer (12).

4,228,378

WIRE WOUND DISC ARMATURE FOR DYNAMOELECTRIC MACHINE

Marcel E. Humbert, 295 Indian Rd., Toronto, Ontario, Canada (M6R 2X5)

Filed May 21, 1979, Ser. No. 40,485

Int. Cl.³ H02K 1/22

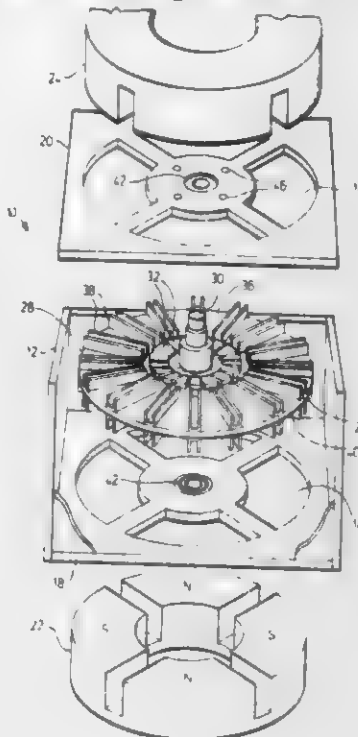
U.S. Cl. 310-268

6 Claims

1. An improved disc type armature for a dynamoelectric machine comprising:

(a) a body mounted on a central shaft and commutator

means adjacent the shaft, the body being disc shaped with first and second sides and an outer rim; and (b) a plurality of windings on the disc shaped body, each winding formed of insulated wire extending from the commutator means radially outward along the first side of the body and back along the second side of the body;



wherein the body is formed of a material of relatively high reluctance, and the windings extend through radially extending channels formed of relatively low reluctance material on both sides of the body.

4,228,379

DIAPHRAGM TYPE PIEZOELECTRIC ELECTROACOUSTIC TRANSDUCER

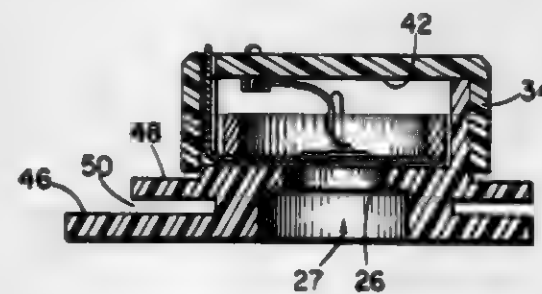
John K. Guscott, Lynnfield; Gerard Renner, Dorchester, both of Mass., and Roger Wendt, Londonderry, N.H., assignors to American District Telegraph Company, New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,126

Int. Cl.³ H01L 41/10

U.S. Cl. 310-322

21 Claims



1. An electroacoustic transducer comprising: a housing having a chamber therein and an aperture; a vibrating assembly mounted in the chamber of said housing and including: a metal diaphragm confronting the aperture; a piezoelectric element engaging one surface of the diaphragm; and an acoustically-massive clamp ring engaging the periphery of the diaphragm; first and second electrical terminals connected to said piezoelectric element; and an acoustic leakage path within the chamber between the back of the diaphragm and the front of the diaphragm and allowing a controlled portion of backward radiation from the back surface of the diaphragm to leak around the

periphery of the vibrating assembly to said aperture at a controlled phase with respect to the forward radiation from the front surface of the diaphragm to modify the directional characteristics of the transducer.

4,228,380

METHOD AND APPARATUS FOR HEATING AND COMPRESSING PLASMA

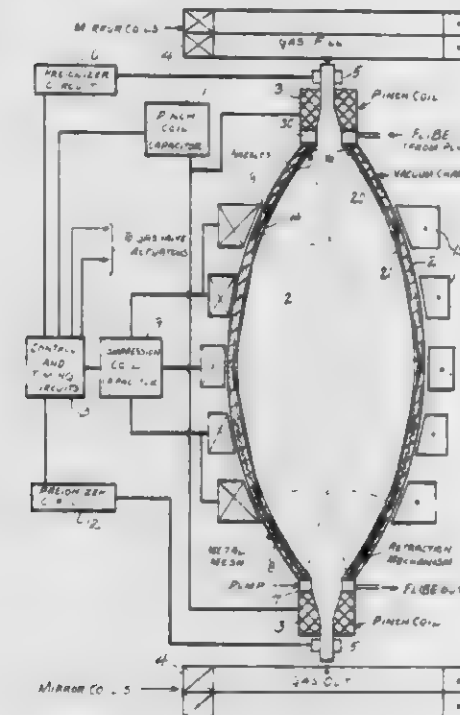
Daniel R. Wells, Miami, Fla., assignor to Trisops Inc., Austin, Tex.

Continuation-in-part of Ser. No. 954,249, Oct. 24, 1978, abandoned. This application Mar. 16, 1979, Ser. No. 21,206

Int. Cl.³ G21B 1/00

U.S. Cl. 315-111.4

14 Claims



1. A method of heating and compressing plasma comprising the steps of confining the plasma in a vacuum chamber, generating a containment seed magnetic field in said vacuum chamber, inductively energizing said plasma to generate ring-like plasmoids moving toward collision with each other in the chamber along an axis extending in a direction substantially parallel to said magnetic field, said magnetic field acting to constrain and guide said plasmoids along said axis, and collapsing a molten metal liner on said plasmoids when they have attained collision with each other, so as to amplify said seed magnetic field and heat the plasmoids to thermonuclear temperature.

4,228,381

FLASH TUBE APPARATUS WITH DELAYED EMISSION

Hiroshi Hasegawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

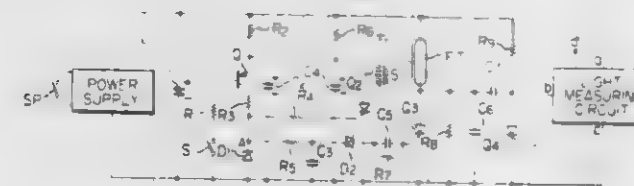
Filed Oct. 6, 1978, Ser. No. 949,266

Claims priority, application Japan, Oct. 6, 1977, 52-119422

Int. Cl.³ H05B 41/32

U.S. Cl. 315-151

6 Claims



1. In flash tube apparatus comprising a drive circuit for ionizing gas in a flash tube by means of a trigger circuit, thereby causing flash discharge in said flash tube, and comprising a light-measuring circuit for measuring the light emitted by

said flash tube and reflected by an object to be photographed and for controlling the light emitted by said flash tube, said light-measuring circuit being susceptible to erroneous operation caused by noise generated upon energizing of said trigger circuit, the improvement wherein said drive circuit includes delay means for delaying the flash emission from said flash tube until the lapse of a predetermined delay time commencing with the energizing of said trigger circuit, said delay time being longer than a period during which said light-measuring circuit may be adversely affected by noise generated upon the energizing of said trigger circuit.

4,228,382

POWER REGULATING INVERTER CIRCUIT

Kalervo M. Virtanen, Lahti, Finland, assignor to Teknoware Oy, Lahti, Finland

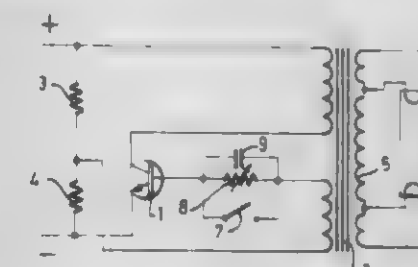
Filed Jan. 4, 1979, Ser. No. 928

Claims priority, application Finland, Jan. 9, 1978, 780060

Int. Cl.³ H05B 41/29, 41/40

U.S. Cl. 315-219

1 Claim



1. In a motor vehicle having a plurality of independently adjustable fluorescent light tubes, a power regulating inverter circuit for use with each such tube, said inverter circuit comprising an oscillator transistor having an emitter, a collector and a base, a pair of resistors and a transformer all connected to form an inverter circuit having provisions for connections with a DC source on its input and an AC load on its output; an adjustable RC circuit including a potentiometer and a parallel connected capacitor connected to the base of said transistor for controlling the power transmitted to said transformer and any AC load connected thereto; and a switch connected across said RC circuit such that the entire RC circuit is bypassed when said switch is closed and is wholly in the circuit when said switch is open, whereby a momentary closing of said switch after the inverter is turned on will supply full power to said transformer and load while allowing said potentiometer to be set for a predetermined level of power to be supplied upon the opening of said switch following the momentary closing.

4,228,383

SPEED CONTROL CIRCUIT ARRANGEMENT FOR AN AC COMMUTATOR MOTOR

Katsuji Soeda; Mitsuhiro Oyama; Fumio Sakuma, and Tadashi Nakajima, all of Sukagawa, Japan, assignors to Yamamoto Electric Industries, Ltd., Fukushima, Japan

Filed Dec. 28, 1978, Ser. No. 974,116

Claims priority, application Japan, Dec. 28, 1977, 52/158773

Int. Cl.³ H02P 5/40, 7/28

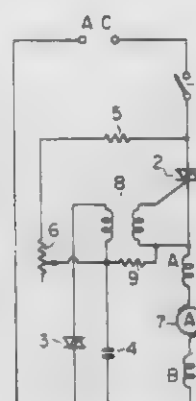
U.S. Cl. 318-245

2 Claims

1. A speed control circuit arrangement for an AC commutator motor, comprising:

an AC main control element having a control electrode, a first and a second main electrode, and connected at said first main electrode to one end of an external AC power source through a power switch and connected at said second main electrode to the other end of said external AC power source through an AC commutator motor, for controlling a drive current flowing into said motor; a pulse transformer having a primary and a secondary winding, and connected at said secondary winding between

said control electrode and said second main electrode, for supplying a trigger signal to said control electrode;
 a variable resistor for adjusting a rotational speed of said motor;
 a first capacitor connected between said first main electrode and the other end of said AC power source with said variable resistor intervening between said first capacitor and said first main electrode;



a pulse generating element connected across said first capacitor with said primary winding intervening therebetween; and
 a first resistor connected at one end to said second main electrode and at the other end to the other end of said AC power source through said first capacitor.

4,228,384

BRUSHLESS DC PRINTED MOTOR

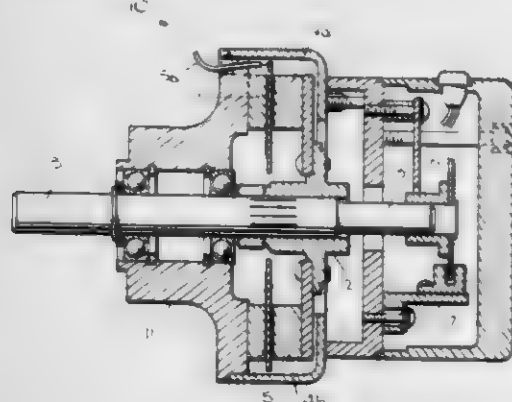
Frank Arnold, Jr., Locust Valley, and Dana F. Geiger, Great Neck, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed May 8, 1978, Ser. No. 903,677

Int. Cl.³ H02K 29/00

U.S. Cl. 318—254

11 Claims



1. A bidirectional, axial air gap, brushless, printed circuit DC motor comprising:

- (a) a rotor having a plurality of permanent magnet poles;
- (b) a stator having a flat, ironless, low inductance four layer, stamped armature with at least three fields per pole;
- (c) sensing means for sensing the position of said rotor and for producing an output signal indicative thereof;
- (d) decoder means connected to said sensing means for decoding said output signal; and
- (e) solid state commutating means connected to said armature and to said decoder for successively energizing said fields in accordance with the position of said magnets.

4,228,385

SPEED-REGULATED POSITIONING DRIVE

Wolfgang Angersbach, Darmstadt, and Karl-Heinz Meier, Zellhard, both of Fed. Rep. of Germany, assignors to Quick-Rotan Becker & Notz KG, Darmstadt, Fed. Rep. of Germany

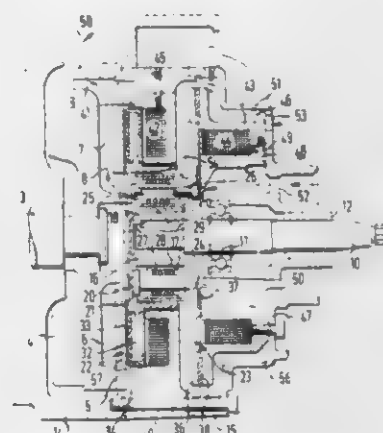
Filed Dec. 19, 1977, Ser. No. 861,636

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2657658

Int. Cl.² G05B 5/01

U.S. Cl. 318—614

21 Claims



1. A positioning system comprising, in combination, a drive motor having a drive member; an output shaft and means mounting the output shaft for rotation; an electromagnetically activatable clutch operative when activated for coupling the output shaft to the drive member, the clutch including a movable coupling structure movable between a first position coupling the output shaft to the drive member and a second position in which the output shaft and output shaft are not coupled; an electromagnetically activatable brake operative when activated for braking the output shaft, the brake including a movable braking structure movable between a first position applying braking force to the output shaft and a second position not applying braking force to the output shaft; negative-feedback speed control means including command transducer means generating a desired-speed signal, feedback transducer means generating an actual-speed signal and activating means operative in dependence upon the speed error indicated by the desired- and actual-speed signals for activating the clutch and the brake by applying thereto pulse-width-modulated actuating signals; and positioning means including means generating a position signal indicating when the output shaft has reached a predetermined angular position and means operative when activated for responding to the position signal and stopping the output shaft by activating the brake, further including roller-bearing means mounting the movable coupling structure of the clutch and the movable braking structure of the brake independently of each other on the output shaft non-rotatable relative to the output shaft but axially shiftable relative to the output shaft with a low-friction roller-bearing action, furthermore including a guide body mounted on the output shaft non-rotatable relative thereto, the guide body having a ring-like succession of angularly spaced axially extending openings encircling the output shaft, the roller-bearing means comprising a plurality of roller-bearing connectors each located in one of said openings, circumferentially successive ones of the roller-bearing connectors being alternately connected to the movable coupling structure of the clutch and to the movable braking structure of the brake, respectively, each roller-bearing connector comprising a guide sleeve coupled to a respective one of the movable braking structure of the brake and the movable coupling structure of the clutch, and a ball-bearing sleeve surrounding the guide sleeve and positioning for free rotation a plurality of spherical bearings, the negative-feedback speed control means including a monostable circuit connected to the output of the feedback transducer means and a timing capacitor connected to the monostable circuit, the monostable circuit controlling the charging of the timing capacitor, and further-

more including means for changing the discharge time of the timing capacitor in dependence upon the commanded speed, the feedback transducer means comprising means for generating pulses at a rate proportional to the rotary speed of the output shaft and frequency-multiplying means receiving the pulses and producing pulses of a higher frequency likewise proportional to the rotary speed of the output shaft, the frequency-multiplying means comprising a monostable circuit which produces an output pulse in response to the leading flank of an input pulse and also an output pulse in response to the trailing flank of an input pulse, the positioning signal being a positioning pulse, the positioning means comprising means for commanding that the output shaft be arrested at the predetermined angular position, means operative in response thereto for detecting the leading flank of the positioning pulse and automatically changing the commanded rotary speed for the output shaft to a lower shut-off value, and means responsive to the trailing flank of the positioning pulse for triggering the arresting of the output shaft.

4,228,386

AIRCRAFT SERVOACTUATOR APPARATUS

Carl D. Griffith, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 2, 1978, Ser. No. 912,165

Int. Cl.² G05B 11/01

U.S. Cl. 318—628

12 Claims



1. A combined series and trim actuator for aircraft automatic stabilization systems comprising:

- a housing adapted to be secured directly to the aircraft airframe and including input and output shafts coupled in the control rigging between the pilot's control member and an aircraft control member,
- a first coupling means between said input shaft and said output shaft so constructed and arranged to permit resilient, limited relative motion therebetween,
- a second coupling means between said input shaft and said output shaft including clutch means so constructed and arranged that in a first state of said clutch means said input and output shafts are directly connected and in a second clutch means state, said input and output shafts are disconnected,
- servomotor means having its output connected to drive said output shaft through said second coupling means in said second clutch means state, and
- electric signal means responsive to the difference in position between said input shaft and said output shaft for controlling said servomotor whereby to position said output shaft in accordance with the position of said input shaft within the authority of said first coupling means.

4,228,387

VARIABLE RELUCTANCE STEPPER MOTOR DRIVE AND METHOD OF OPERATION AS A DC BRUSHLESS MOTOR

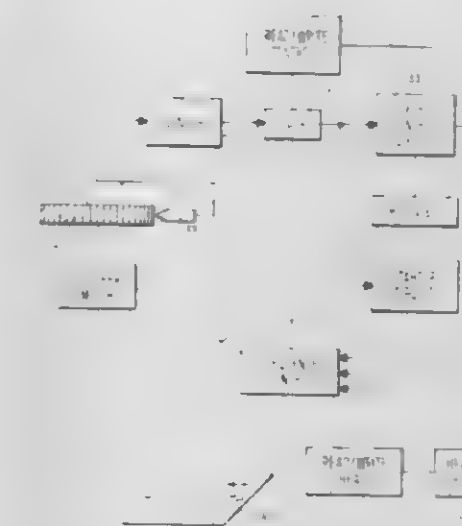
W. Sumner Brown, Cambridge, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 14, 1977, Ser. No. 833,265

Int. Cl.² H02K 37/00

U.S. Cl. 318—696

20 Claims



- 1. A drive for a magnetic storage disc comprising:
 - a rotary variable reluctance motor of the stepper type comprising a rotor, a stator having a plurality of pole positions and windings associated with said stator at said pole positions;
 - a read/write head for reading or writing data on the disc; means for coupling the rotor to a magnetic storage disc;
 - means for sensing the position of the rotor;
 - tachometer means coupled to said sensing means for generating a signal representing the rotational speed of said rotor;
 - speed control means including a supply voltage means coupled to said tachometer means for producing a supply voltage having a magnitude varying in response to the speed of the motor; and
 - a sequence control means coupled to said speed control means including means for sequentially supplying said supply voltage to said winding means for sequential energization thereof.

4,228,388

CONTROL CIRCUIT RESPONSIVE TO UTILITY VOLTAGE LEVEL

Gary E. Pochmara, Highland, Mich., assignor to Overhead Conveyor Company, Ferndale, Mich.

Filed Apr. 14, 1978, Ser. No. 896,305

Int. Cl.³ H02P 7/36

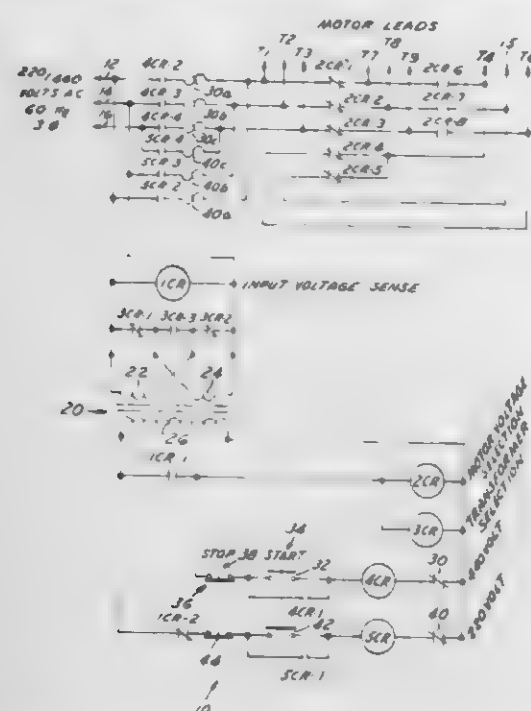
U.S. Cl. 318—770

2 Claims

1. For use in connecting apparatus adapted to be powered by multiple phase electrical energy at either of two discrete voltage levels to a utility power source of unknown voltage level corresponding to one of said two discrete voltage levels, said apparatus including interconnection means adapted to be interconnected in at least two combinations for correspondingly adapting said apparatus to be powered at said two discrete voltage levels, the combination comprising

- first connection means adapted for connection to a said utility power source;
- voltage transformer means having at least two primary windings and a secondary winding;
- first control relay means having first voltage sensing means connected to said first connection means and adapted to be responsive to the voltage level of the said utility power source, first relay switch means responsive to said first voltage sensing means for connecting said at least two

primary windings to said first connection means in series at one of said two voltage levels and in parallel at the other of said two voltage levels such that a control voltage is provided at said secondary winding at a preselected discrete voltage level which is independent of said unknown voltage level, and second relay switch means responsive to said first voltage sensing means; and second control relay means including second voltage sensing



means connected in series with said second relay switch means across said secondary winding and third relay switch means responsive to said control voltage through said second voltage sensing means and to said unknown voltage level through said second relay switch means to so interconnect said interconnection means to said first connection means as to adapt said apparatus to be powered at a one of said two discrete voltage levels corresponding to said unknown voltage level.

4,228,389

NON-REVERSIBLE CONSUMER REPLACEABLE WATCH BATTERY

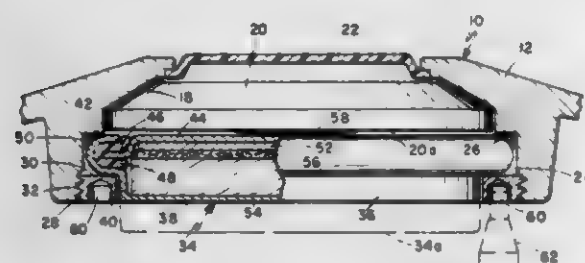
John Vennard, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 22, 1976, Ser. No. 753,599

Int. Cl.³ H01M 2/00; G04C 3/00

U.S. Cl. 320-2

6 Claims



1. A non-reversible battery and mounting assembly for electrically powered time pieces and the like comprising in combination:

a battery having a casing defining a generally cylindrical configuration and an annular radially extending shoulder adjacent one end defining the forward end thereof, wherein said battery is formed of a generally cup shaped member having a flat bottom thereof defining the back of said watch case, and includes a closure member of a substantially disc shape and said cup shaped member includes side walls crimped over the edge of said disc shaped

member for sealing said battery, and said crimped portion of said cup member defines said shoulder on said battery, a component housing having means defining a generally cylindrical battery receiving cavity having an inwardly extending annular shoulder fixed therein for abutment with said shoulder on said battery, battery retaining means removably mountable within said cavity and having means for cooperatively engaging the walls of said cavity and for engaging and biasing said shoulder on said battery into said cavity for retaining same against said inwardly extending shoulder within said cavity, the length of said battery being at least equal to the length of said cavity, and the length of said battery and said shoulder on said battery in relation to the length of said cavity being such that said battery retaining means can engage the walls of said cavity only with said forward end of said battery extending into said cavity.

4,228,390

BATTERY CHARGER

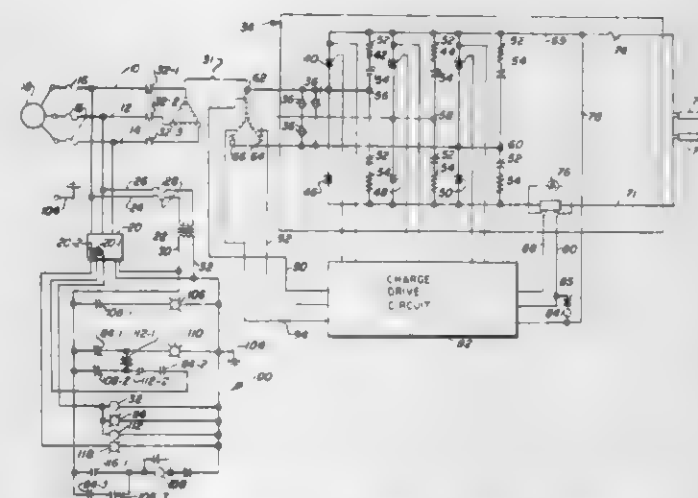
Raymond L. Knox, Bluefield, W. Va., assignor to A-T-O Inc., Willoughby, Ohio

Filed Mar. 31, 1978, Ser. No. 892,302

Int. Cl.² H02J 7/04

U.S. Cl. 320-38

8 Claims



1. In a system for charging storage batteries from a three phase power source, said charging system including three input lines, one for each phase of said source, charging output terminals for connection to storage batteries to be charged, and a charging circuit coupled to said input lines and energizable by said source for applying a charging signal across said charging output terminals; a control circuit for said battery charging system comprising:

a plurality of contactor means disposed in said input lines and operable to connect said source to said charging circuit and thereby effect energization thereof; and circuit means for controlling the operation of said contactor means including:

contactor control means energizable to operate said contactor means;

phase sensitive relay means connected to said input lines and enabled in response to the presence of a source voltage on each of said input lines of selected magnitude and phase sequence;

means connected to said input lines for producing a control signal and for applying said control signal to said phase sensitive relay; and

control switch means operable in response to enablement of said phase sensitive relay means and responsive to said applied control signal for connecting said control signal to said contactor control means to effect energization thereof;

whereby said contactor means are operated to energize a charging circuit.

4,228,391

INDUCTION MACHINE

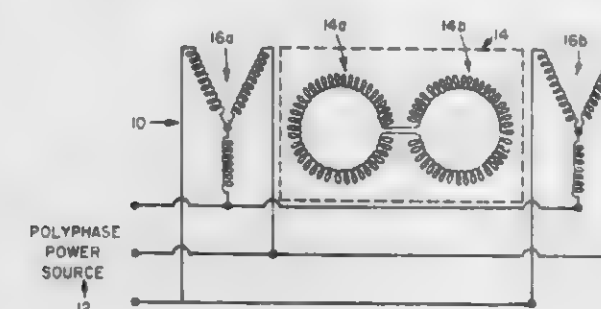
Whitney H. Owen, Ogden, Utah, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 14, 1978, Ser. No. 896,539

Int. Cl.³ H02P 9/46

U.S. Cl. 322-35

7 Claims



1. A rotary induction machine electric power generating system comprising a single rotor assembly, a first set of rotor windings fixed to said rotor assembly, a second set of rotor windings fixed to said rotor assembly at a location spaced from said first rotor windings, means for connecting each winding of said first rotor windings in series with a winding of said second rotor windings, a first stator winding disposed around said first rotor windings, a second stator winding disposed around said second rotor windings, means associated with one of said stator windings for controlling the current induced in one set of said rotor windings with respect to the current induced in the other set of rotor windings, means for connecting an alternating current source to said first and second stator windings, and wind turbine means for rotatably driving said rotor assembly, said single rotor assembly together with said rotor and stator windings providing unitary means for initiating rotation of said wind turbine means and for generating electrical power with a frequency equal to that of said alternating current source irrespective of the speed of rotation of said single rotor assembly.

4,228,392

SECOND ORDER CORRECTION IN LINEARIZED PROXIMITY PROBE

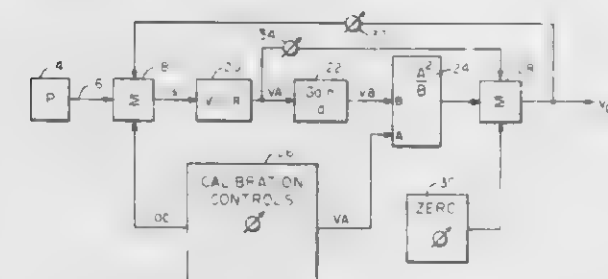
Robert C. Abbe, Newton; Noel S. Poduje, Needham Heights, and Daniel Klein, Boston, all of Mass., assignors to Ade Corporation, Watertown, Mass.

Filed Oct. 11, 1977, Ser. No. 840,852

Int. Cl.² G01R 27/26

U.S. Cl. 324-61 R

18 Claims



1. A system for providing higher order nonlinearity correction in the linearized output of a dimension gauge comprising: a probe sensitive to a physical dimension and providing an output signal varying inversely with said physical dimension; means responsive to said probe output for providing a linearized signal varying directly in magnitude with said physical dimension and having higher order nonlinearities in signal magnitude; and means for reducing said higher order nonlinearities in signal magnitude in said linearized signal.

4,228,393

MOISTURE METER

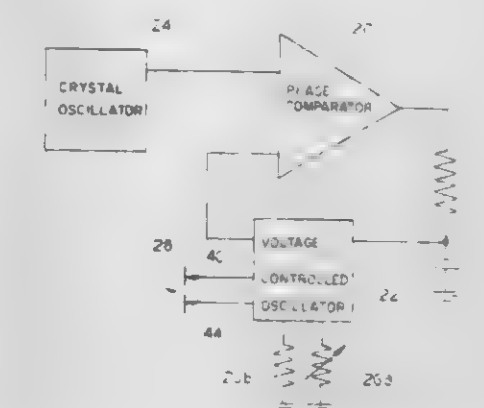
James E. Pile, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Aug. 14, 1978, Ser. No. 933,226

Int. Cl.³ G01R 27/26

U.S. Cl. 324-61 R

9 Claims



1. A meter for measuring the dielectric constant of a predetermined amount of material constituting a sample to determine the moisture content thereof comprising:

a capacitor having means to receive the sample, a stable reference frequency means, a phase comparator, and a voltage controlled oscillator interconnected to form a phase-locked loop frequency controller;

the voltage controlled oscillator being connected to the capacitor to detect a change in capacitance causing the voltage controlled oscillator to change frequency which due to the phase-locked loop condition causes the output of the phase comparator to change and maintain the frequency of the voltage controlled oscillator at the frequency of the stable reference frequency means;

the phase comparator output being proportional to the moisture content of the material; and

indicating means connected to the phase comparator and responsive to the output of the phase comparator to indicate the moisture content.

4,228,394

DIGITAL OHMMETER WITH ELECTRICAL CONTINUITY TESTER

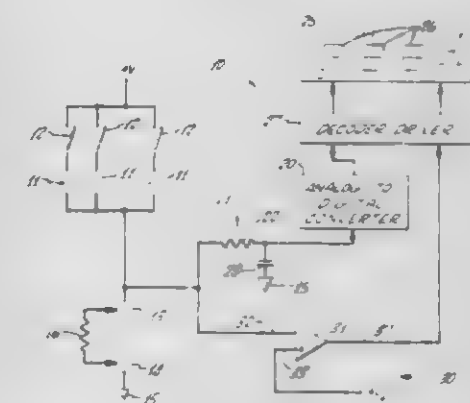
John B. Crosby, Yorba Linda, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 16, 1978, Ser. No. 961,154

Int. Cl.² G01R 27/02

U.S. Cl. 324-62

7 Claims



1. In a digital test instrument for measuring resistance including a pair of input terminals adapted to be connected across a circuit element of unknown resistance, a first reference current or voltage source operatively couple to said input terminals so that an analog voltage appears across said input terminals which is proportional to the resistance of said circuit element, a filter connected to one of said input terminals for filtering

noise in said analog voltage, an analog-to-digital converter having an input connected to said filter and an output, a digital display, and driver circuit means connected between said output of said analog-to-digital converter and said digital display, the improvement comprising means for detecting and immediately signalling electrical continuity across said input terminals comprising:

- s single bit analog-to-digital converter having first and second input terminals, said first input terminal being connected directly to said one of said input terminals, said converter having a sufficiently high input impedance not to affect the operation of said resistance measuring circuitry of said digital test instrument;
- a second source of reference voltage operatively connected to said second input terminal of said single bit analog-to-digital converter, said single bit analog-to-digital converter generating a logical true or logical false signal depending upon whether said analog voltage is higher or lower than said second reference voltage;
- a digital continuity display; and
- driver circuit means connected between said single bit analog-to-digital converter and said digital continuity display for instantaneously indicating continuity.

4,228,395

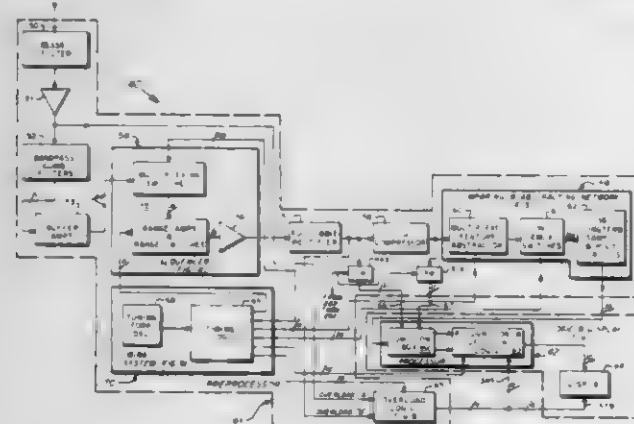
FEATURE RECOGNITION SYSTEM

George J. Dusheck, Jr., Cinnaminson, and Phillips B. Scott, Haddonfield, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 6, 1969, Ser. No. 795,392
Int. Cl.³ G01R 23/16

U.S. Cl. 324-77 B

17 Claims



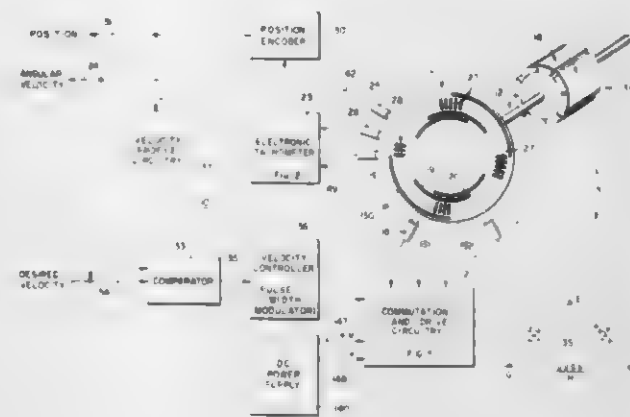
3. A feature recognition system comprising:

- first means for converting signals and signal-like noise in the amplitude-time domain into multiplexed sequentially sampled amplitude-time-frequency domain signals; and
- second means receiving said multiplexed sequentially sampled amplitude-time-frequency domain signals including a multiplexed feature abstractor means operatively connected to said first means for abstracting primary features at a controlled rate and said second means further automatically recognizing the relative presence of invariant recognition features associated with said primary features including the positive and negative slopes of said signals in the amplitude-time-frequency domain.

4,228,396
ELECTRONIC TACHOMETER AND COMBINED
BRUSHLESS MOTOR COMMUTATION AND
TACHOMETER SYSTEM

Gaston A. Palombo, Agoura, and Daniel B. Jones, Thousand Oaks, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed May 26, 1978, Ser. No. 910,126
Int. Cl.³ G01P 3/44, 13/00; H02P 3/08, 6/02
U.S. Cl. 324-163 5 Claims



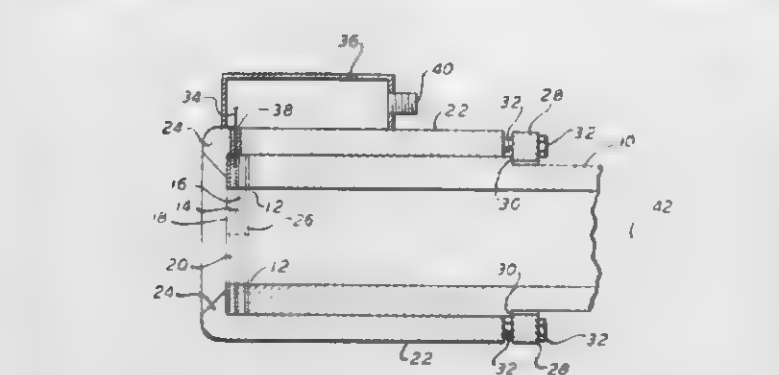
1. A combined electronic tachometer and position determining system for producing a first signal indicative of the rotational velocity of a motor and a second signal indicative of total angular rotation of said motor, comprising:

- transducer means, attached to said motor, for producing first and second triangular wave signals of the same period but offset in phase with respect to each other by a fixed angular amount, said same period being directly proportional to the rotational velocity of said motor, said transducer means including:
- an optically encoded disc driven by the shaft of said motor and containing a plurality of equally angularly spaced sector marks, and
- first and second optical sensors arranged with a fixed angular offset therebetween, each sensor detecting the passage of said sector marks so that the outputs of said optical sensors comprise said first and second triangular wave signals,
- first and second differentiators connected to differentiate respectively said first and second triangular wave signals and to produce corresponding first and second differentiator output signals indicative respectively of the first time derivative of said first and second triangular wave signals,
- gating control means for deriving from said first and second triangular wave signals a set of time sequential sample signals for sampling said differentiator output signals respectively during the intervals between occurrence of the corresponding triangular wave peaks,
- sampling means, actuated by said sample signals, for alternatively sequentially sampling both said first and second differentiator output signals and for providing the resultant sampled outputs to a common line as said velocity indicative signal,
- an accumulator, and
- position increment means, responsive to occurrence of each of said sample signals, for providing to said accumulator a value indicative of the extent of positional change of said encoded disc required to produce each sample signal, the resultant accumulated contents of said accumulator representing total angular rotation of said motor shaft.

4,228,397
ELECTRONIC VELOCIMETER HAVING AN
OSCILLATOR COUPLED COIL FOR MEASURING
PROJECTILE MUZZLE VELOCITY

Jimmy Q. Schmidt, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 13, 1978, Ser. No. 959,542
Int. Cl.³ G01P 3/66 10 Claims



1. In an electronic velocimeter for measuring muzzle velocity of a projectile exiting the muzzle of a weapon along a given trajectory, comprising: sensor means which includes:

- an annular conductive shield axially aligned in front of and spaced from said muzzle;
- a conductive coil insulated from and operatively mounted between said muzzle and said annular conductive shield, said conductive shield and said conductive coil each concentrically encircling said trajectory;
- oscillator means electrically coupled to said conductive coil, for generating electromagnetic radiations from said conductive coil, said oscillator means being inductively responsive to passage therethrough of said projectile, for producing localized eddy currents on a metallic surface of said projectile as said projectile moves through said conductive coil, said eddy currents inducing secondary electromagnetic fields which cause a loss due to change in impedance transformations of said conductive coil and modulates the amplitude of an output signal of said oscillator means to be proportional to the geometric shape of said projectile;
- timing means for shaping the amplitude of said output signal of said oscillator means and operatively connected for producing a timing signal representing the transit time for said projectile to pass through said sensor means, said timing signal varying inversely proportional to the length of said projectile divided by said projectile muzzle velocity, which includes;
- logic means for producing a single output pulse having a leading edge which coincides in time with a first point on said projectile as said projectile passes said sensor means and a trailing edge coinciding in time with passage of a second point on said projectile passing said sensor means.

4,228,398

METHOD OF TESTING DISTANCE RELAYS

Michael Fiorentzia, Wettingen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 14, 1979, Ser. No. 38,880
Claims priority, application Switzerland, May 30, 1978, 5874/78

Int. Cl.³ H01H 47/00

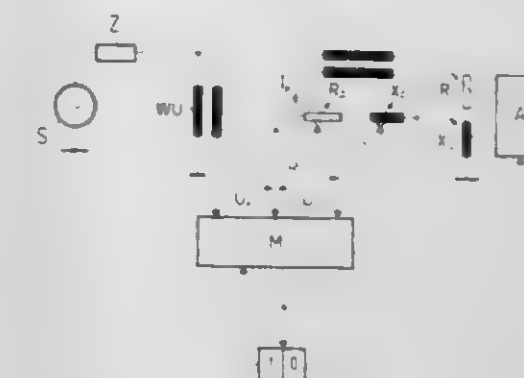
U.S. Cl. 324-418

16 Claims

- 1. A method for determining the trip characteristics of distance relays, especially having protection zone switching, for protection of an electrical line by means of variable comparison impedances, wherein the distance relay has a measuring

element employed as a comparison instrument, comprising the steps of:

- performing a first relay trip test, with a predetermined phase angle ϕ of the comparison impedance Z_1 , said comparison impedance having a magnitude greater than the magnitude of a predetermined image impedance Z_A of the line;
- performing a second relay trip test, with a magnitude of the comparison impedance $Z_2 \approx Z_1/2$ which is at least approx-



imately half as large as the magnitude of the first comparison impedance Z_1 ;

- during each further relay trip test n , wherein the number n of the relay trip tests are selected as a function of the desired accuracy of the trip characteristic to be determined, performing such relay trip test with a magnitude of the related comparison impedance Z_n which has been increased by at least one-half of the impedance change

$$\frac{|Z_n - Z_{n-1}|}{2}$$

- of the preceding relay trip test when the magnitude of the image impedance Z_A was greater than the magnitude of the comparison impedance Z_{n-1} ; or
- reducing such comparison impedance at least approximately by one-half of such impedance change

$$\frac{Z_n - Z_{n-1}}{2}$$

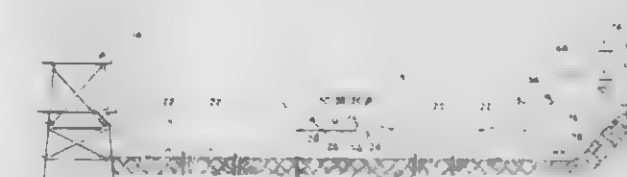
- of the preceding relay trip test when the magnitude of the image impedance Z_A is smaller or equal to the magnitude of the comparison impedance Z_{n-1} ; and
- producing a signal which is proportional to the comparison impedance of the last performed relay trip test.

4,228,399

OFFSHORE PIPELINE ELECTRICAL SURVEY METHOD AND APPARATUS

Frank E. Rizzo, Spring; Marvin L. Miller, and Clark Weldon, both of Houston, all of Tex., assignors to Harco Corporation, Medina, Ohio

Filed Feb. 27, 1978, Ser. No. 881,737
Int. Cl.³ G01V 3/15; G01N 27/26; G01R 31/00
U.S. Cl. 324-425 21 Claims



- 1. An apparatus for making offshore structure electrical surveys comprising reference electrode means in the environment proximate the structure, transport means to carry said reference electrode means along the length of the structure in close proximity to the structure, said transport means including

a boat and said reference electrode means being towed behind said boat, a supply of flexible, small gauge, disposable elongate electrically conductive insulated magnet wire means carried by said boat for electrically and mechanically connecting the apparatus with the structure at a reference location thereon, meter means electrically connected to said wire means and electrode means for indicating the potential difference between said reference electrode means and said electrically conductive magnet wire means, and means driven by said electrically conductive magnet wire means for measuring the length of said electrically conductive magnet wire means as it is played out from the apparatus as it is carried by said transport means whereby the structure-to-environment potential difference may be determined at measured distances along the length of the structure.

4,228,400

CONDUCTOMETRIC GAS ANALYSIS CELL

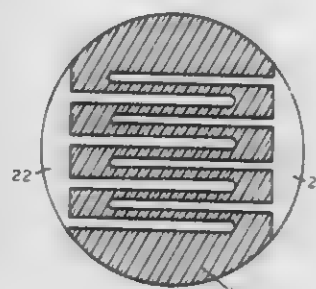
Stanley Bruckenstein, Amherst, and Gregory A. Martineck, Buffalo, both of N.Y., assignors to Research Corporation, New York, N.Y.

Filed Mar. 28, 1978, Ser. No. 890,951

Int. Cl.² G01N 27/42

U.S. Cl. 324-450

13 Claims



1. A conductometric gas analysis apparatus, comprising: a conductivity cell; and said conductivity cell comprises a gas permeable membrane having a liquid side and a gas side; a first electrode on said liquid side; a second electrode on said liquid side and spaced from the first electrode; a liquid chamber means for applying and renewing a thin film of liquid over said gas permeable membrane liquid side and said first and second electrodes, a gas chamber means associated with the gas side of the gas permeable membrane, liquid inlet and outlet means for said liquid chamber means, gas inlet means for said gas chamber means, and means for continuously supplying a liquid to the liquid inlet and a gas to be analyzed to the gas inlet.

4,228,401

COMMUNICATION SATELLITE TRANSPONDER INTERCONNECTION UTILIZING VARIABLE BANDPASS FILTER

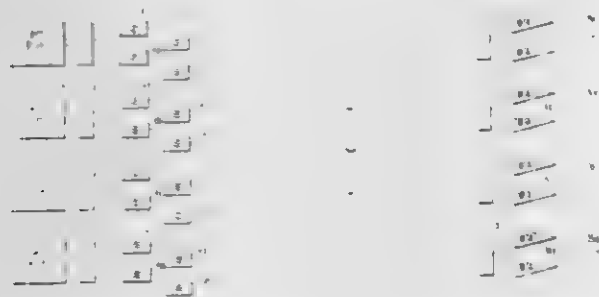
Marvin R. Wachs, Rockville, and Arnold Berman, Kensington, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 22, 1977, Ser. No. 863,562

Int. Cl.² H04B 7/14

U.S. Cl. 455/12

9 Claims



1. A communications satellite transponder comprising:

means for receiving a plurality of composite signals occupying overlapping frequency bands;
a plurality of groups of variable bandpass filters, each group of filters receiving a different one of said composite signals from said receiving means, and each filter within each group passing a selected portion of the frequency band of its composite signal; and
combining means for combining the outputs from said variable bandpass filters into a plurality of composite transmission signals occupying overlapping frequency bands.

4,228,402

DEVICE FOR REMOTE CONTROL OF STEREO HI-FI AMPLIFIER PARAMETERS

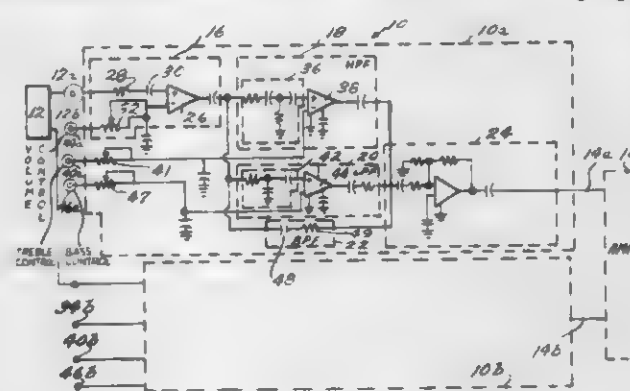
Jan P. Plummer, Atlanta, Ga., assignor to Sound-Mate Inc., Atlanta, Ga.

Filed Sep. 22, 1978, Ser. No. 945,019

Int. Cl.² H04B 1/00

U.S. Cl. 179-1 VL

17 Claims



1. Apparatus for remote control of audio signal parameters in an audio system an audio signal processing component for generating and amplifying said audio signal, said component having at least one record output terminal through which said audio signal is passed prior to final amplification and at least one corresponding record input terminal from which audio signals are passed to final amplification in said component, said apparatus comprising:

a remote control circuit for generating parameter control signals indicative of desired values of said parameters;
intermediate circuit means responsive to said parameter control signals and adapted for electrical connection between said component record output and input terminals for generating a modified audio signal input to said record input terminal having parameters in accordance with said parameter control signals; and
means for communicating said parameter control signals from said remote control circuit to said intermediate circuit.

4,228,403

SUBMULTIPLE-RELATED-FREQUENCY WAVE GENERATOR

Takatoshi Okumura, Akira Nakada, Yasuji Uchiyama, Eiichi Aoki, Eiichi Yamaga, and Akiyoshi Oya, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 13, 1978, Ser. No. 915,239

Claims priority, application Japan, Jun. 17, 1977, 52-71822; Ser. 1, 1977, 52-105105

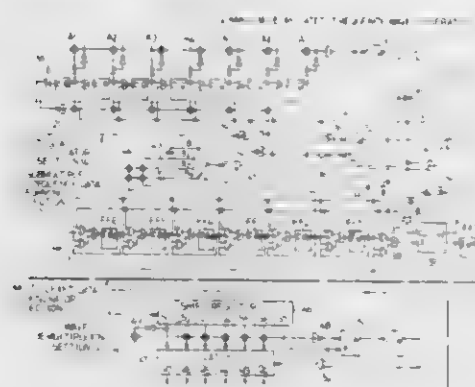
Int. Cl.² H03K 3/84; H03B 19/00; H03K 5/156

U.S. Cl. 328-15

11 Claims

1. A wave generator comprising:
a first means to generate a basic pulse having a basic period which defines a basic frequency;
a second means to generate time division multiplexed data each one of which occurs in a corresponding time division multiplex regular time interval and defines the state of a corresponding wave having a frequency which is sub-

multiple-related to said basic frequency, the data in each different corresponding time interval defining a respective different submultiple-related frequency;
a third means to deliver said basic pulse and said time division multiplexed data;



a fourth means demultiplexing the delivered basic pulse and data from said third means to form individual waves from the respective data in each of said regular time intervals, each wave having a frequency defined by said respective multiplexed data.

4,228,404

LOW VOLTAGE COMPOUND INVERTER BUFFER CIRCUIT

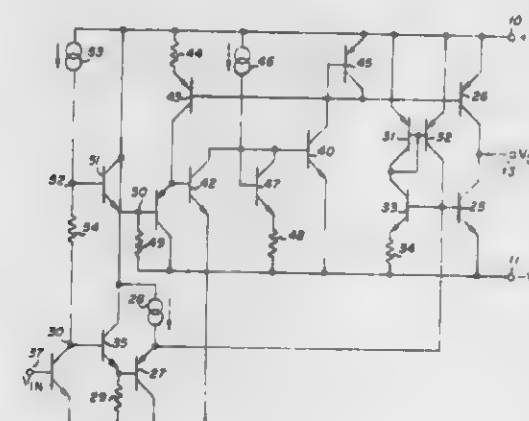
Robert J. Widlar, Puerto Vallarta Jalisco, Mexico, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 5, 1979, Ser. No. 8,987

Int. Cl.² H03F 3/30

U.S. Cl. 330-267

6 Claims



1. A compound buffer inverter for use in an integrated circuit that employs a single power supply connectible between first and second supply rails and that is particularly adapted for operation at low power supply voltages, said compound buffer inverter being operative to provide substantial current gain with a single signal polarity inversion and level shifting capability, said compound buffer inverter comprising:

a first transistor having its emitter coupled to said first rail, its collector providing a current output terminal capable of assuming a potential between said first and second rails and a base;
a second transistor complementary of said first transistor, said second transistor having a collector coupled to said first rail, an emitter coupled to said base of first transistor and a base coupled to a circuit input terminal;
current supply means coupled between said base of said first transistor and said second rail;
means for operating said first transistor such that its emitter base potential is equal to or greater than the emitter base potential of said second transistor;
and means for boosting the bias current to said first and second transistors with increasing load current.

4,228,405

LOAD ACTIVATED NORMALLY QUIESCENT WAVEFORM GENERATOR

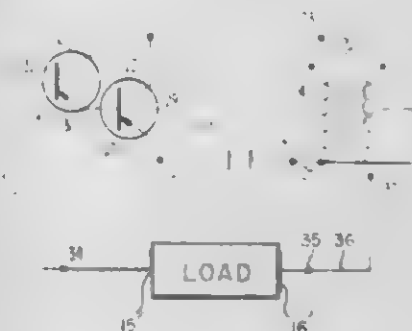
Kevin G. Rhoads, Leighton, Pa., and George M. Plotkin, Massapequa Park, N.Y., assignors to VRL Growth Associates, Incorporated, Boston, Mass.

Continuation of Ser. No. 737,641, Nov. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 722,313, Sep. 10, 1976, Pat. No. 4,120,305. This application Apr. 23, 1979, Ser. No. 32,603

Int. Cl.² H03K 3/30

U.S. Cl. 331-65

5 Claims



1. A voltage step-up circuit for delivering a stepped up voltage to a pair of output electrodes comprising: a normally quiescent oscillator circuit constituted by an inverting high gain transistor amplifier, said transistor amplifier having an emitter-collector output circuit and a base-emitter input circuit; a source of unidirectional voltage; an inverting voltage step-up transformer having a low voltage primary winding and a high voltage secondary winding; a first series circuit constituted by said source of unidirectional voltage, said emitter-collector circuit and said primary winding; and a second series circuit feedback arrangement constituted by said secondary winding, said pair of output electrodes, said base-emitter input circuit and said source of unidirectional voltage; said quiescent circuit being rendered oscillatory solely upon the presence of a high resistance load across said output electrodes.

4,228,406

LASER APPARATUS

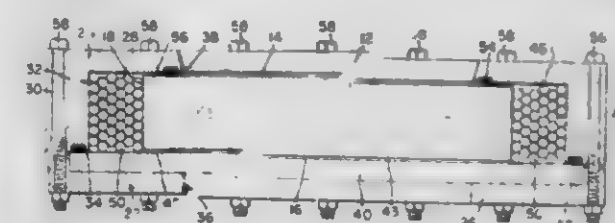
Owen Lewis, Fairport, and Edmund M. Stogran, North Syracuse, both of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Continuation of Ser. No. 738,500, Nov. 11, 1976, abandoned. This application May 10, 1978, Ser. No. 90,469

Int. Cl.² H01S 3/02

U.S. Cl. 331-94.5 D

14 Claims



1. In laser apparatus having a laser element for emitting laser radiation in the form of a solid body containing active laser material, said laser element body having first and second surfaces at the ends thereof and a third surface extending longitudinally between said first and second surfaces, an improved mounting for said laser element comprising a housing defining with said third surface a chamber adjacent to said third surface, said chamber being spaced radially outward from said third surface and being disposed along said third surface, a multiplicity of spherical bodies, said spherical bodies being disposed in contact with each other and extending along said third surface and radially outward to completely fill said chamber so as to support the weight of said laser element body in said housing, said spherical bodies having diameters such that a plurality of

said spherical bodies extend longitudinally along said third surface and another plurality of said spherical bodies extend radially outward from said third surface, said plurality of spherical bodies which extend along said third surface being in contact therewith.

4,228,407

ION-BEAM-EXCITED GAS LASER

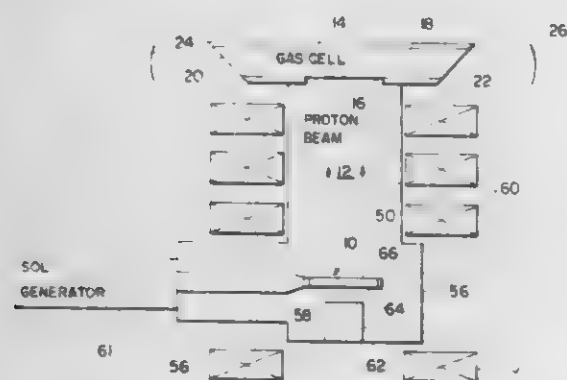
A. Wahab Ali, Rockville; Jeffrey Golden, Laurel; J. Gary Eden, Bowie; Redge A. Mahaffey, Wheaton, all of Md., and John A. Pasour, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1978, Ser. No. 936,158

Int. Cl.³ H01S 3/09

U.S. Cl. 331-94.5 P

33 Claims



1. In a high-pressure gas laser system comprising a high pressure gas cell filled with one or more laser gases at a total pressure greater than 0.1 atmosphere but not more than 10 atmospheres, said system including Brewster angle windows which are transparent to the laser output at each end of the gas cell in optical alignment about the optical axis of said gas cell and which provide a means for extraction of laser radiation, the improvement comprising:

means for producing a directed, pulsed beam of ions with sufficient energy and density to provide a pump source to excite said high-pressure gas in the laser system so that a population inversion results for an excited state of the laser gas.

4,228,408

PULSED CYCLIC LASER BASED ON DISSOCIATIVE EXCITATION

Erhard J. Schim, Schek, and John E. Celto, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 874,434, Feb. 2, 1978, Pat. No.

4,168,475. This application Oct. 23, 1978, Ser. No. 953,381

The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.

Int. Cl.³ H01S 3/22, 3/097

U.S. Cl. 331-94.5 G

37 Claims

1. A pulsed laser for producing emitted laser energy by dissociative excitation in an electric discharge of metal dihalides and their cyclic recombination comprising:

a sealed enclosure;

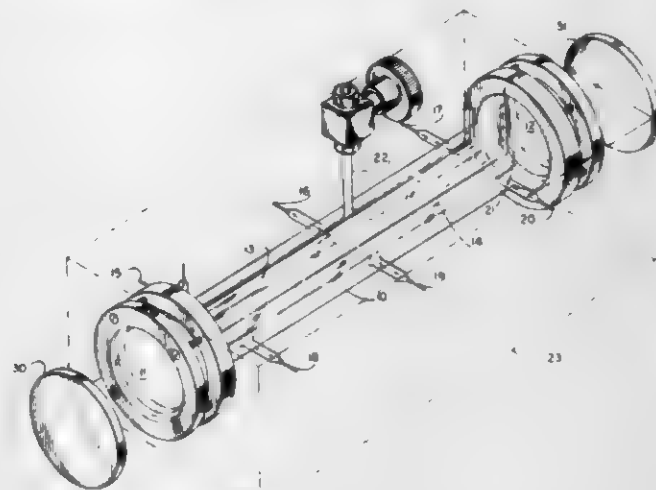
first and second electrodes having external terminals and supported within said sealed enclosure for forming a gap therebetween;

a source of pulsed electrical power connected to said terminals for producing a uniform electric discharge across said gap at pressures optimized for the lasing process;

a metal dihalide selected from subgroup II-B of the periodic table of elements and contained within said enclosure; means for maintaining said metal dihalide in a vaporized state;

a buffer gas contained within said sealed enclosure and selected for aiding electric discharge uniformity and for aiding in the dissociative excitation of the lasing medium

and to provide vibrational relaxation of the lasing medium in its electronic states; means disposed within said sealed enclosure for preionizing the lasing medium within said enclosure in response to pulses of electrical power cyclically applied in synchro-



nism immediately prior to the pulses produced by said source of pulsed electrical power; and two reflective surfaces disposed and aligned relative to said sealed enclosure for producing optical feedback for the emitted laser energy.

4,228,409

TRANSMISSION ARRANGEMENT HAVING AN ADJUSTABLE NETWORK

Kornelis J. Wouda; Alberto M. Giacometti, and Willem Riede, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 825,305, Aug. 17, 1977, abandoned.

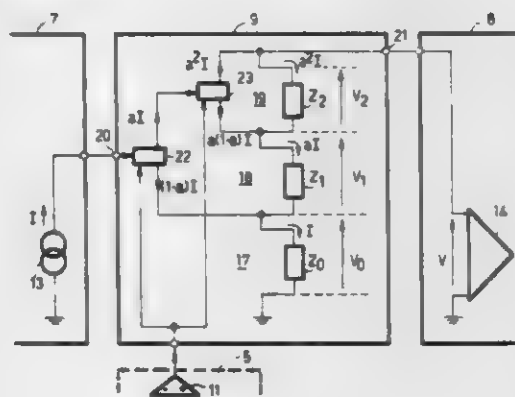
This application Dec. 21, 1978, Ser. No. 971,770

Claims priority, application Netherlands, Aug. 30, 1976, 7609605

Int. Cl.³ H03H 7/14

U.S. Cl. 333-28 R

9 Claims



1. Transmission arrangement comprising at least one adjustable network having a transfer characteristic between input and output as a function of the frequency ω within a predetermined frequency band approximately equal to $C \exp \{kf(\omega)\}$, where C is a constant and k a continuously variable parameter, wherein the adjustable network comprises a plurality of channels between input and output, the transfer characteristic of a channel being approximately proportional to a term, different for each channel, from the series of terms of the development of $\exp \{kf(\omega)\}$ to powers of $kf(\omega)$, the number of terms corresponding with the number of channels.

4,228,410

MICROWAVE CIRCULAR POLARIZER

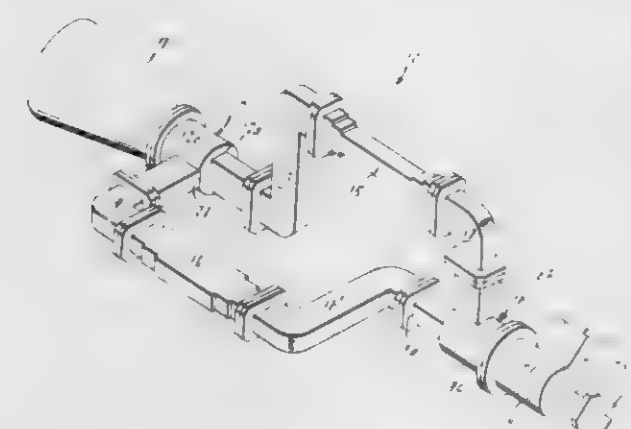
Kenneth R. Goudey, Sunnyvale, and Attilio F. Sciambi, Jr., Los Altos, both of Calif., assignors to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Jan. 19, 1979, Ser. No. 4,628

Int. Cl.³ H01P 1/16, 5/16

U.S. Cl. 333-122

10 Claims



1. A polarizer for converting a linearly polarized microwave signal to an elliptically polarized microwave signal and vice versa, said polarizer comprising:

compensation means for passing a signal between two points by a first path and a second path, said first and second paths producing a relative phase shift between the signal carried in said first path and the signal carried in said second path, said first and second paths each having a different length and width with respect to microwave signal propagation so that the phase vs. frequency characteristic of the signal has a point of inflection and there are two frequencies at which said phase shift is exactly a desired predetermined value, said first and second paths being rectangular waveguides and the signal passed by said first and second paths having a band of frequencies including two frequencies having said desired phase shift, the axial ratio being held to a specific design value over the band of frequencies;

a first dual mode transducer for joining a first end of each of said first and second paths;

a second dual mode transducer for joining a second end of each of said first and second paths;

said first and second dual mode transducers being adapted for joining two linearly polarized signals into one polarized signal and for splitting the power from one signal into two equal portions;

said first path including a longitudinally symmetrical decreasing and then increasing width with respect to longitudinal travel along said first path and;

said second path including a longitudinally symmetrical increasing and then decreasing width with respect to longitudinal travel along said second path, said increases being equal to said decreases in any given path, and only a decrease or an increase occurring in any given half about the midpoint of any given path.

4,228,411

BROADBAND FREQUENCY DIVIDER IN WAVEGUIDE

Robert G. Harrison, Montreal, Canada, assignor to Com Dev Ltd., Dorval, Canada

Filed Apr. 3, 1979, Ser. No. 26,765

Int. Cl.³ H01P 1/20

U.S. Cl. 333-218

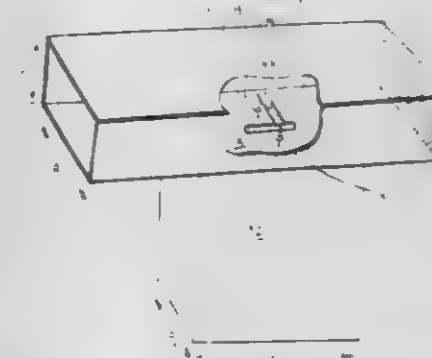
9 Claims

1. A microwave frequency divider, comprising: an input rectangular waveguide dimensioned to propagate a band of input frequencies;

an elongated slot substantially centered in one broadwall of said input rectangular waveguide, the slot substantially extending in parallel with a normal propagation direction of an input TE₁₀ mode wave;

a pair of nonlinear capacitive reactance elements symmetri-

cally and operatively disposed one along either long side of said slot so as to form therewith a resonance loop turned at subharmonic frequencies of about half the microwave frequencies of the input band; and



an output rectangular waveguide dimensioned to propagate a band of said subharmonic frequencies and so-disposed about said input waveguide and said slot as to define an output wave propagation direction substantially perpendicular to the propagation direction of the input wave.

4,228,412

ELECTRICAL SWITCHING APPARATUS AND ENERGIZING CIRCUITS THEREFOR

Robert J. Dalley, Camberley; Robert D. Owen, Farnborough, and George S. Parmenter, Hartley Wintney, all of England, assignors to The Solartron Electronic Group Limited, Farnborough, England

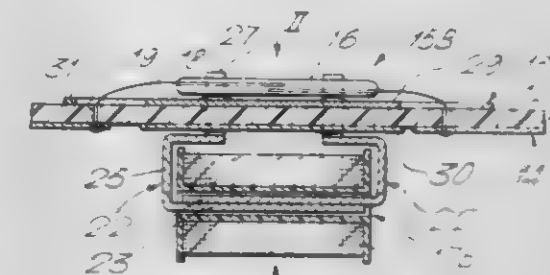
Filed Mar. 7, 1978, Ser. No. 884,309

Claims priority, application United Kingdom, Mar. 8, 1977, 09602/77

Int. Cl.³ H01H 1/66, 51/00

U.S. Cl. 335-152

13 Claims



1. Electrical switching apparatus for an electrical scanner unit, wherein a printed circuit board carries a plurality of reed relays each comprising an electric coil and at least one reed contact unit, wherein the coils are disposed on one surface of the board and the contact units are disposed on the other surface opposite their respective coils, and wherein screening means of substantially non-magnetic, electrically- and thermally-conductive material is disposed between each contact unit and its respective coil.

4,228,413

SADDLE-TOROID DEFLECTION WINDING FOR LOW LOSS AND/OR REDUCED CONDUCTOR LENGTH

Francis J. Campbell, Yardley, Pa., and William H. Barkow, Pennsauken, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,417

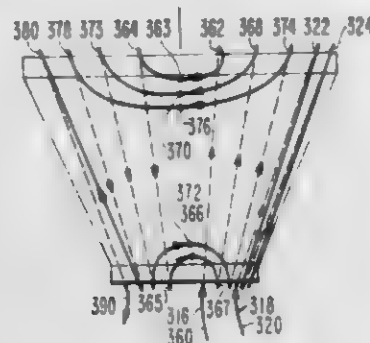
Int. Cl.³ H01F 5/00

U.S. Cl. 335-213

2 Claims

1. A deflection yoke adapted for deflection of an electron beam of a kinescope, comprising:

deflection winding means including first and second winding portions lying along the inner surface of a magnetically permeable annular core in a nonoverlapping manner for producing a field upon the passage of a deflection current therethrough for deflecting the electron beam to form a line, said winding means further comprising first return



conductors disposed at the entrance and exit ends of said core and associated with said first winding portions to form saddle windings, said winding means also comprising second return conductors girdling said core and associated with said second winding portions to form toroidal windings.

4,228,414

MAGNETIC DEFLECTION SYSTEM

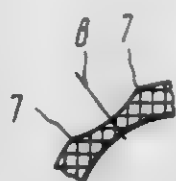
Albertas V. Bauzhis, ulitsa Marshala Krylova, 34, kv. 50; Petr P. Kornyak, ulitsa Daryaus-Gireno, 8, kv. 90; Vitautas K. Razhaitis, ulitsa Greifenbergerisa, 3, kv. 27, and Ioselis K. Shneideris, ulitsa Gagarina, 5, kv. 28, all of Vilnius, U.S.S.R.

Filed Jan. 12, 1979, Ser. No. 3,517

Int. Cl.² H01F 5/00

U.S. Cl. 335—213

1 Claim



1. A magnetic deflection system comprising: a cylindrical magnetic circuit; two pairs of saddle-shaped deflection coils, horizontal and vertical, disposed at right angles to each other within said magnetic circuit in coaxial relationship therewith; each of said coils having a longitudinal portion and a lateral portion which mate together through a jointing area; said jointing area of each said coil has its cross-section of a variable thickness, which cross-section diminishes from a maximum value measured along a section through a boundary line of the jointing area limiting either said longitudinal portion or said lateral portion to a minimum value measured along a section that passes through the jointing area at right angles to the deflection plane of the electron beam.

4,228,415

COMPACT SOLENOID WITH PIN TERMINALS

Spencer C. Schantz, 5880 Anchorage Rd., Oconomowoc, Wis. 53066

Filed Jul. 26, 1978, Ser. No. 928,208

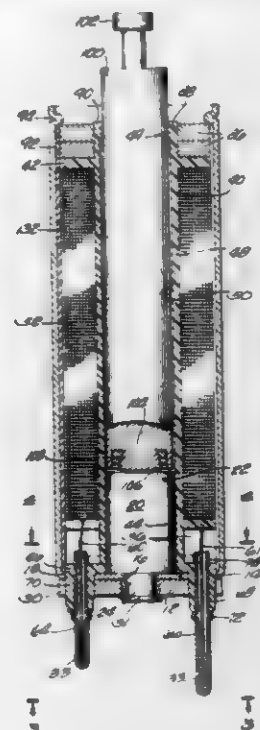
Int. Cl.³ H01F 7/10

U.S. Cl. 335—255

13 Claims

1. In a tubular electromagnetic solenoid having a bobbin, a coil wound on the bobbin, a bore in said bobbin, and a ferromagnetic plunger axially movable within said bore, the improvement comprising a tubular deep drawn ferromagnetic housing for said bobbin and coil, said housing being relatively

thin walled and having an integrally formed end wall, a ferromagnetic pole piece having a first portion sized to fit within said bore and a second mounting portion, a first ferromagnetic



flux disc to add effective flux carrying thickness to said housing end wall, and means for securing said second pole piece portion to said flux disc, with said end wall located therebetween.

4,228,416

COMPOSITE MAGNET AND MAGNETIC ANCHORING

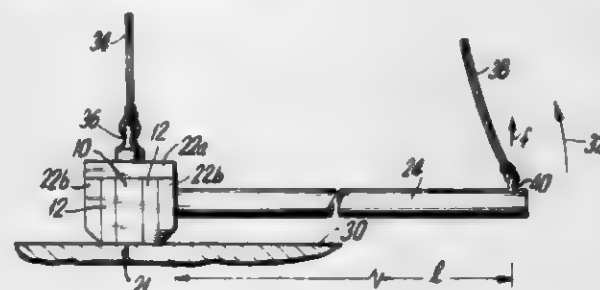
Saul I. Slater, Miami Beach, Fla., assignor to Hov-Air-Ship, Inc., Miami Beach, Fla.

Filed Sep. 15, 1978, Ser. No. 942,706

Int. Cl.² H01F 7/04, 7/02

U.S. Cl. 335—295

11 Claims



1. A composite magnet assembly which comprises: at least two magnet members oriented to have their polar axes generally parallel and in the same polar orientation; a pair of pole members made of a magnetically attractive material, each said pole member adapted to abut all the magnetic poles of similar polarity of said magnet members, such that each said pole member becomes a unipolar composite magnetic pole; a casing member encasing said magnet members and said pole members to expose an edge of each pole member, said exposed edges defining a generally planar magnetic engaging surface and said casing providing a bearing edge adjacent and parallel to said engaging surface, said casing being proportioned with its edge portion adjacent said bearing edge being beveled; and leverage means attached to said casing, said leverage means adapted to enable said casing to be rotated about said bearing edge, such that magnetic engagement between said engaging surface and any magnetically attractive structure can be relatively easily interrupted by rotating said anchoring assembly, by said leverage means, about

the bearing edge, the beveled casing edge facilitating rotation about said bearing edge.

4,228,417

ELECTRIC FUSE AND METHOD OF MANUFACTURING THE SAME

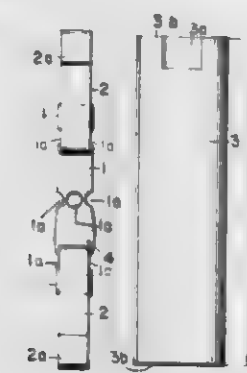
Richard A. Belcher, Hampton Falls, N.H., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 30, 1979, Ser. No. 62,267

Int. Cl.³ H01H 85/16

U.S. Cl. 337—252

9 Claims



1. A sub-assembly of an electric fuse comprising a tubular casing of electric insulating material having a pair of rims, a perforated fusible ribbon element inside said casing, said fusible ribbon element having a pair of ribbon ends bent around said pair of rims from the inside of said casing to the outside thereof, wherein the novel features consist in that said casing has at least one slot extending axially inwardly from one of said pair of rims and being of sufficient length to allow insertion of said fusible ribbon element and its ribbon ends into said casing with said pair of ribbon ends in pre-bent state and said pair of ribbon ends and said slot being angularly displaced relative to each other.

4,228,418

MODULAR TRIM RESISTIVE NETWORK

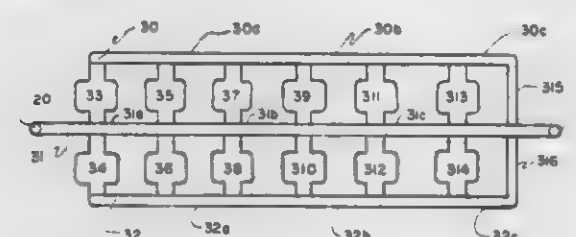
James R. Piedmont, Alexandria, and Michael Hacskeylo, Falls Church, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 28, 1979, Ser. No. 24,808

Int. Cl.³ H01C 10/00

U.S. Cl. 338—195

1 Claim



1. A trimmable resistive network consisting of a plurality of two-branched series resistors of essentially equal resistive elements connected in parallel, wherein each parallel branch consists of two resistive elements having first and second ends with the second ends connected in common; first and second conductive means including severable segmented conductive portions progressively interconnecting corresponding respective resistive element ends with the first conductive means interconnecting all the first ends of the resistive elements and the second conductive means interconnecting all the second ends of the resistive elements; an input terminal connected to the second conductive means and an output terminal connected to a common junction of the first and second conductive means whereby selective severing of the segmented conductive sections selec-

tively provides for separate input and output paths for a simple trimmable resistive network of parallel resistive elements or a parallel two branched series resistive network and whereby further selective severing of various segments of the conductive means interconnecting the ends of the various resistive elements provides for a precisely controlled resistance across the input and output terminals.

4,228,419

EMERGENCY VEHICLE TRAFFIC CONTROL SYSTEM

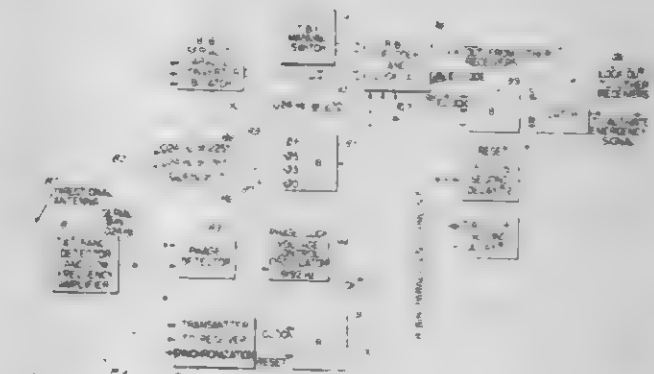
George P. Anderson, Pawtucket, R.I., assignor to Electronic Implementation Systems, Inc., Riverside, R.I.

Filed Aug. 9, 1978, Ser. No. 932,264

Int. Cl.² G08G 1/07

U.S. Cl. 340—32

5 Claims



1. An emergency traffic control system having in combination traffic lights including at least a proceed lamp and a stop lamp for directing the flow of vehicle traffic and a control system for said lamps, said control system comprising a first means to directionally receive a directionally transmitted pulse width-modulated signal including word bits transmitted from a vehicle; second means to detect the received signal; third means responsive to the detected signal for reconstructing said signal and including a phase lock loop and a synchronization circuit to synchronize said reconstructed signal with the transmitted signal; fourth means for comparing the reconstructed signal with a preset code of bits and means responsive to the output of said fourth means to generate a control signal to initiate lamp control.

4,228,420

MOSAIC OF CODED APERTURE ARRAYS

Edward E. Fenimore, and Thomas M. Cannon, both of Los Alamos, N. Mex., assignors to The United States Government as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 14, 1978, Ser. No. 942,228

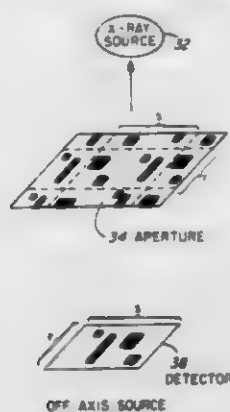
Int. Cl.³ G02B 5/00; G03B 5/17

U.S. Cl. 340—146.3 F

4 Claims

1. An imaging arrangement for a coded aperture imaging system comprising: a source of nonfocusable radiation; a position sensitive detector; mosaic array aperture means formed from a basic r by s array and neighboring cyclic versions of said basic r by s array adjacent to said basic r by s array, said mosaic array aperture means substantially aligned with said source of nonfocusable radiation and said position sensitive detector to form an encoded aperture image; said encoded aperture image formed by a circular correlation of said mosaic aperture array and said source of nonfocusable radiation such that all object source points of said source of nonfocusable radiation contribute a com-

plete cyclic version of said basic r by s array within a minimal detector area for sources aligned off axis;



means for reconstructing an image of said source from said encoded aperture image.

4,228,421

PATTERN IDENTIFICATION SYSTEM

Haruo Asada, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

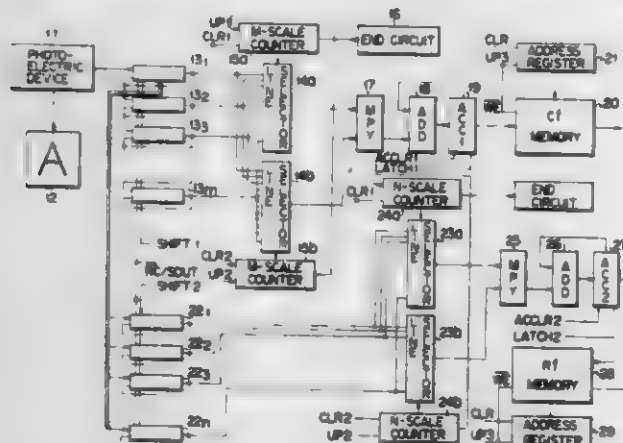
Filed Mar. 22, 1979, Ser. No. 22,875

Claims priority, application Japan, Mar. 28, 1978, 53-34803

Int. Cl.² G06K 9/12

U.S. Cl. 340-146.3 MA

7 Claims



1. A pattern identification system comprising memory means for storing a plurality of standard pattern data each calculated based on covariance matrix of a set of pattern components known to belong to a corresponding one of a plurality of categories; calculation means for obtaining an input pattern data based on covariance matrix of a set of pattern components of an input pattern; multiplier-adder means for multiplying and summing the element included in the covariance matrix of the input pattern data and the corresponding element of the covariance matrix of each standard pattern data; detection means for detecting the largest of the results obtained by the multiplier-adder means with respect to all categories; and identification means for identifying the input pattern as belonging to the category represented by the largest result detected by the detection means.

4,228,422 SYSTEM FOR DISPLAYING AT A REMOTE STATION DATA GENERATED AT A CENTRAL STATION AND FOR POWERING THE REMOTE STATION FROM THE CENTRAL STATION

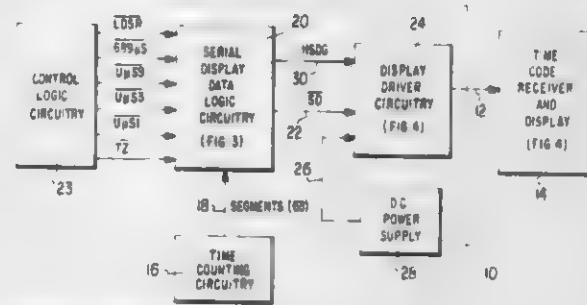
James C. Perry, Bowie, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 30, 1978, Ser. No. 965,367

Int. Cl.³ H04B 3/54; G04C 13/02

U.S. Cl. 340-310 A

13 Claims



1. A system for displaying at least one remote station data generated at a central station and for powering the remote station from the central station, said system comprising:
means at the central station for generating a data signal;
means at the central station for generating a power signal;
means at the central station for time multiplexing the data signal and power signal over a plurality of successive cycles so that said data signal occurs during a first interval of each cycle and said power signal occurs during a second interval of each cycle;
transmission means for transmitting the time multiplexed signals to the remote station;
storage means at the remote station responsive to the transmitted time multiplexed signals for storing said power signal; and
display means at the remote station for displaying said data signal, said display means being powered by said storage means during said first interval of each cycle.

4,228,423

OFFSET CORRECTION APPARATUS FOR A SUCCESSIVE APPROXIMATION A/D CONVERTER

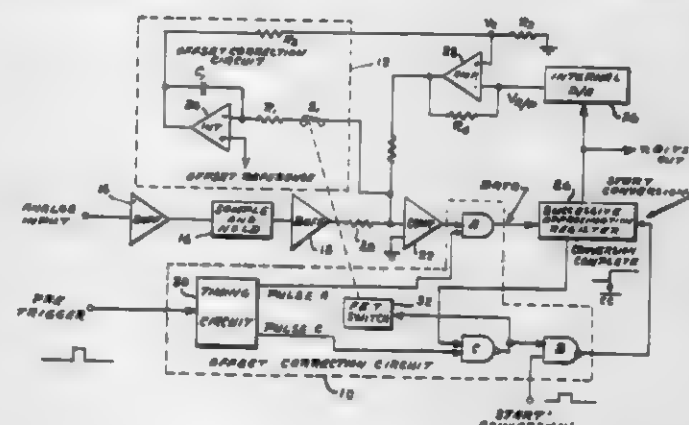
Christopher B. Schwerdt, Catonsville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 30, 1977, Ser. No. 866,143

Int. Cl.² H03K 13/02

U.S. Cl. 340-347 CC

6 Claims



1. A successive approximation analog-to-digital converter in combination with an offset correction generating means and offset correction control means wherein
said converter includes a successive approximation register for providing a successive approximation digital signal upon receipt of an analog input signal, a digital-to-analog

converter connected to the output of said successive approximation register, a comparator having an output for connection to the input of said register, a dual input amplifier connected between said digital-to-analog converter and an input to said comparator, said comparator also being connected to receive the input analog signal to be digitized by the analog-to-digital converter,
said offset correction generating means being connected to receive an offset reference voltage and selectively connected to receive the output from said dual input amplifier to provide an offset correction output signal which is applied to the other input of said dual input amplifier, the output of which is an offset correction voltage; and
said offset correction control means controls the selective connection of said offset correction generating means to said comparator, said correction control means including a logic gate connected between said comparator and said successive approximation register, said logic gate being operable upon receipt of a pretrigger signal to interrupt the normal analog-to-digital conversion and force said successive approximation register to have a predetermined state imposed thereon such that the correction voltage output from said dual input amplifier may be applied to said successive approximation register through said logic gate.

4,228,424

CENTRAL STATION ALARM

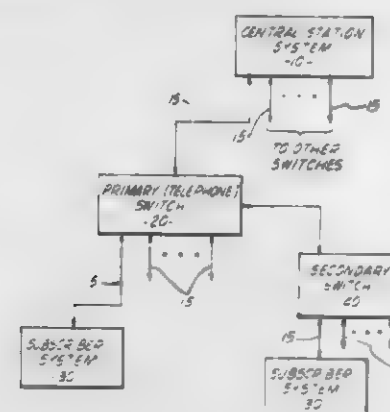
Tom W. Le Nay, Encino; Donald L. Hadden, Fountain Valley, and George S. Beckwith, Sherman Oaks, all of Calif., assignors to Baker Protective Services, Incorporated, Beverly Hills, Calif.

Filed Oct. 16, 1978, Ser. No. 951,958

Int. Cl.³ G08B 26/00

U.S. Cl. 340-506

21 Claims



1. An alarm apparatus operating within a predetermined set of operating parameters comprising
first input means adapted to receive at least one signal representative of the status of an alarm sensor,
second input means for entering changes to said operating parameters other than actuating or deactuating said alarm apparatus,
sequencing means responsive to said first and second input means for generating signals representative of the status of at least one alarm sensor and the changes received from said second input means, and
transmitting means for communicating to a central alarm station the status of the at least one alarm sensor together with the changes to system operating parameters.

4,228,425

TAMPER-PROOF TRANSPARENT SECURITY PLATE

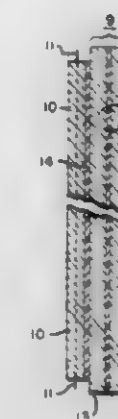
William C. Cooke, Kingsport, Tenn., assignor to AFG Industries, Inc., Kingsport, Tenn.

Filed Feb. 6, 1978, Ser. No. 875,283

Int. Cl.³ G08B 13/04, 13/12; E05G 1/10

U.S. Cl. 340-550

3 Claims



1. A tamper-proof transparent security plate comprising:
a break-resistant, normally transparent plate structure which becomes opaque upon forceful penetration, said plate structure comprising a pair of break-resistant glass plates laminated to one another by a thin layer of polyvinyl-butyl plastic which becomes opaque upon breakage;
a transparent alarm plate containing a plurality of frangible electrically connected conductive wires extending across an area to be protected, said alarm plate is laminated to said plate structure and comprises a single sheet of glass containing said wires embedded within said sheet; and
a variable voltage source connected to said wires for varying the current passing through said wires to provide said security plate with an optional heating, de-icing, or defogging capability.

4,228,426

HOSPITAL BED MONITOR

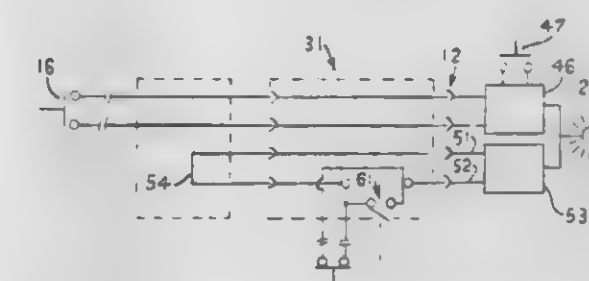
William A. Roberts, 340 Morietti Dr., Concord, Calif. 94520

Filed Sep. 29, 1978, Ser. No. 946,960

Int. Cl.² G08B 21/00

U.S. Cl. 340-573

6 Claims



1. In a nurse call system having a plug adapted for attachment to a receptacle, said plug having a shorting connection for completing an electrical alarm circuit that activates an alarm when not completed, the improvement comprising
a flat pressure actuated switch adapted for disposition on a hospital bed,
an electrical connector adapted for insertion between said plug and receptacle, and having separated terminals in a wire normally connecting said alarm circuit via said shorting connection; and
means connecting said pressure-operated switch across said terminals of said connector to complete said electrical circuit only when said switch is pressure activated.

4,228,427

MONITOR APPARATUS FOR SUMP PUMPS

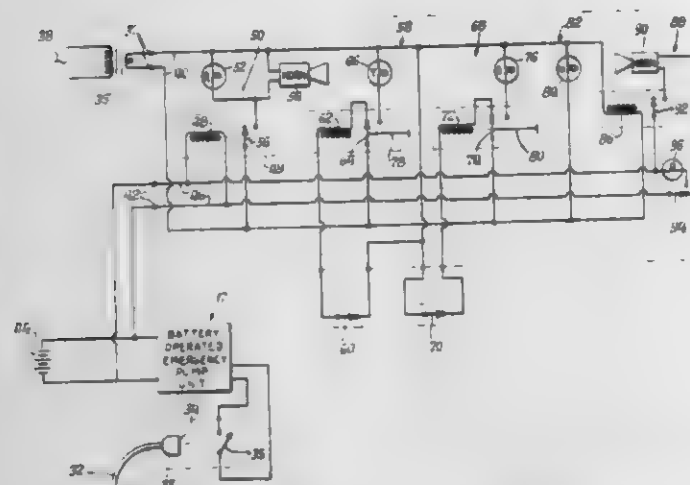
Karl O. Niedermeyer, 17W068 North St., Bensenville, Ill. 60106

Filed Mar. 29, 1979, Ser. No. 24,959

Int. Cl.² G08B 21/00

U.S. Cl. 340-623

3 Claims



1. In a monitor apparatus for a pump system for a sump or the like, which system includes a primary pump operated from a primary electrical power source, a secondary pump operated by an auxiliary electrical power source, and control means for energizing the primary pump from its source when the liquid level in the sump reaches a first, relatively low, elevation and for energizing the secondary pump from its source when the liquid level in the sump reaches a second, relatively high elevation, the improvement comprising:

first means for connecting said monitor apparatus to said primary power source to supply electrical power to said monitor apparatus from said primary power source;

second means for connecting said monitor apparatus to said auxiliary power source to supply electrical power to said monitor apparatus from said auxiliary power source;

relay means comprising a normally closed switch and connections at which when power is applied thereto will cause said switch to open;

means connecting said relay connections to said second means whereby said switch is open so long as said auxiliary power source is supplying electrical power to the monitor apparatus;

an auxiliary power source failure indicator producing, when energized, a sensory perceptible signal;

circuit means connecting said first means, said switch and said indicator for energizing said indicator from said primary power source when said switch is closed;

water level sensor means having a portion in the sump for detecting when the liquid level therein rises to a given elevation which is higher than said first elevation, said sensor means including a normally closed sensor switch which is opened when the liquid level rises to said given elevation;

a liquid level warning indicator producing, when energized, a sensory perceptible signal;

a second relay means comprising a second normally closed switch, switch holding means manually actuable to an active condition, and connections at which when power is applied thereto and said holding means is in said active condition will cause said second switch to open and remain open so long as said switch holding means remains in said active condition, said holding means returning to an inactive condition when power ceases to be supplied to said connections of the second relay means;

circuit means connecting said first means, said indicator and said second switch in series whereby said indicator is energized when said second switch is closed; and

circuit means connecting the connections of the second relay means, the sensor switch and the first means in series to

apply electrical power to the connections of the second relay means so long as the sensor switch is closed.

4,228,428

VISIBLE SIGNAL FOR ALARM, SUCH AS A SMOKE DETECTOR

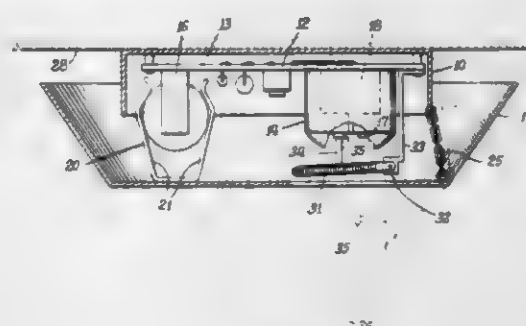
Karl O. Niedermeyer, 17W068 North St., Bensenville, Ill. 60106

Filed Apr. 2, 1979, Ser. No. 26,336

Int. Cl.³ G08B 17/10, 00/00

U.S. Cl. 340-628

5 Claims



1. A visible signal apparatus for an alarm device such as a smoke detector or the like, which alarm device is powered by a battery member and includes a horn with a diaphragm member which is vibrated to produce an audible alarm signal and a frame, said apparatus being characterized by:

a signal flag hingedly connected to said frame, said flag having a distal terminus spaced from the hinge connection to the frame, said flag being movable by gravity about said hinge connection between an upper position in juxtaposition to said member and a lower position away from said member; and

means secured to the flag, spaced from the hinge connection and releasably engaging one of said members and holding said flag in said upper position whereby when said engagement does not exist said flag will move to said lower position.

4,228,429

ALARM SYSTEM HAVING PHASE-SENSITIVE BRIDGE CIRCUIT

Keishin Tsuchiya, Higashi-Yamato; Ichiro Yoshihara, Funabashi; Kazuhito Saito, Kawasaki; Takeshi Abe; Kiyoshi Abe, both of Yokohama, and Kiyoshi Sone, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 11, 1978, Ser. No. 968,469

Claims priority, application Japan, Dec. 29, 1977, 52/159460; Dec. 29, 1977, 52/159461; Dec. 29, 1977, 52/159462

Int. Cl.² G08B 17/10

U.S. Cl. 340-632

4 Claims



1. An alarm system comprising

(a) an AC power supply circuit,

(b) a full-wave rectifier for effecting full-wave rectification of the alternating current supplied from said AC power supply circuit,

(c) an AC bridge circuit which is supplied with the power from said AC power supply circuit and which includes a sensor element in at least one branch of the bridge thereof,

(d) a DC blocking capacitor having one terminal connected to an output terminal of said bridge circuit,

(e) an operational amplifier which is supplied with power from said full-wave rectifier and receives the output signal from said AC bridge circuit through said DC blocking capacitor, an input terminal of said amplifier being connected to the other terminal of said blocking capacitor,

(f) a thyristor having main electrodes connected to said AC power supply circuit and a control electrode for receiving the output signal from said operational amplifier, and

(g) an alarm indicator coupled to at least one of said main electrodes of said thyristor and actuable when said thyristor is triggered into the conduction state by said operational amplifier output signal when the phase of the AC output signal from said AC bridge circuit is reversed by 180° due to the variation in resistance of said sensor element under abnormal conditions.

4,228,430

CRT DISPLAY APPARATUS WITH CHANGEABLE CURSOR INDICIA

Masahiro Iwamura; Nagaharu Hamada, both of Hitachi; Shigeo Kuboki, Nakaminato, and Kenichi Fukushima, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

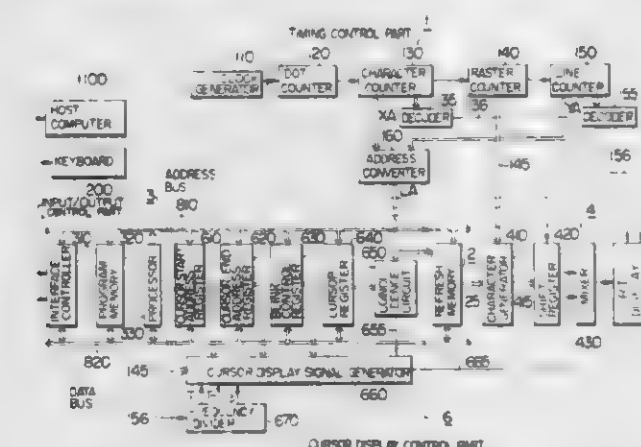
Filed Dec. 13, 1977, Ser. No. 860,117

Claims priority, application Japan, Dec. 17, 1976, 51-150859

Int. Cl.³ G06F 3/14

U.S. Cl. 340-709

2 Claims



1. A CRT display apparatus comprising:

a refresh memory for storing display data for one frame of an image in the form of coded data;

input/output control means coupled to the refresh memory for controlling the input and output of information to and from said refresh memory;

video control means coupled to the refresh memory for converting the display data read from said refresh memory into a video signal;

a CRT display device coupled to the video control means for converting said video signal into a visible image;

timing control means coupled to the refresh memory, the video control means and the CRT display device for generating a plurality of synchronizing signals for a raster scanning of said CRT display device and for generating a display address for reading said refresh memory corresponding to said raster scanning; and

cursor display control means coupled to the timing control means, the video control means, and the input/output means for generating a cursor display signal,

wherein said cursor display control means comprises:

a cursor start address register coupled to said input/output control means for producing a programmed cursor start address;

a cursor end address register coupled to said input/output control means for producing a programmed cursor end address;

control means for producing a programmed cursor end address;

a cursor register coupled to said input/output control means for generating a cursor display address;

a cursor coincidence detector coupled to said timing control means and said cursor register for producing a cursor coincidence signal representative of coincidence of said display address with said cursor display address;

a first coincidence detector coupled to said cursor start address register and said timing control means for producing a first signal pulse representative of coincidence of said programmed cursor start address and said display address;

a second coincidence detector coupled to said cursor end address register and said timing control means for producing a second signal pulse representative of coincidence of said programmed cursor end address and said display address;

a first differentiating circuit coupled to said first coincidence detector for producing a third signal pulse representative of a leading edge of said first signal pulse;

a second differentiating circuit coupled to said second coincidence detector for producing a fourth signal pulse representative of a trailing edge of said second signal pulse;

a flip-flop set by said third signal pulse and reset by said fourth signal pulse for producing the cursor display signal; and

a gate for passing said cursor display signal to said video control means only at a period during which said cursor coincidence detector produces the cursor coincidence signal.

4,228,431

ELECTROCHROMIC DISPLAY DEVICE

Donald J. Barclay, Winchester; Colin L. Bird, Eastleigh; Michael H. Hallett, Eastleigh, and David H. Martin, Eastleigh, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

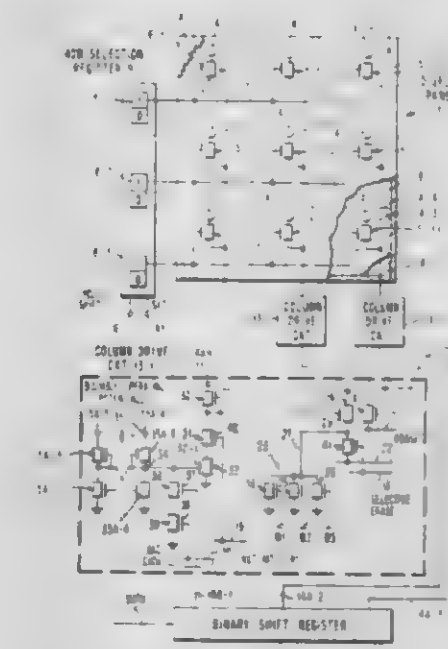
Filed Dec. 13, 1977, Ser. No. 860,265

Claims priority, application United Kingdom, Dec. 22, 1976, 53515/76

Int. Cl.² G06F 3/14; G09F 9/32

U.S. Cl. 340-719

4 Claims



1. Electrochromic display apparatus, comprising:

an electrolyte containing an electrochromic material,

a plurality of display electrodes in said electrolyte, said display electrodes being electrically connected in at least one group to enable selection of display electrodes,

means for selecting at least some display electrodes,

means to effect deposition of a visible coating of coloured material on the selected display electrodes.

species derived from the electrochromic material onto said selected display electrodes, and means to effect deposition of an invisible coating of the coloured species onto all unselected display electrodes, whereby the potentials of selected and unselected display electrodes are equalised.

4,228,432

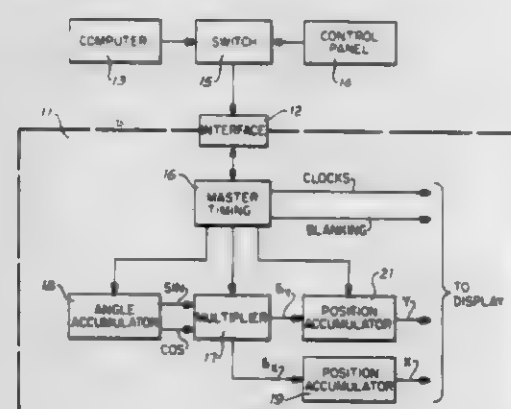
RASTER SCAN GENERATOR FOR PLAN VIEW DISPLAY
Scott R. Osborne, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1979, Ser. No. 70,294

Int. Cl.³ G06F 3/53

U.S. Cl. 340—736

6 Claims



1. A raster scan generator of the type receiving instructions from an external source and for generating different formats of rasters for a plan view display comprising:
interface means connected with an external source for receiving parameters for raster patterns;
an angle accumulator connected with said interface means for computing angles of rotation for successive lines of a raster pattern, and providing incremental horizontal and vertical values for generating each line of a raster pattern;
position accumulator means connected with said angle accumulator for calculating the starting position of each raster line, for computing the position sweep of each raster line and for generating a blanking signal for said plan view display; and
time means generating timing and sequencing signals for generating each raster line.

4,228,433

INFORMATION DISPLAY POSITION-DEFINING CIRCUIT FOR A CATHODE RAY TUBE

Katsumi Matsumoto, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 6, 1978, Ser. No. 967,154

Claims priority, application Japan, Dec. 15, 1977, 52/150928

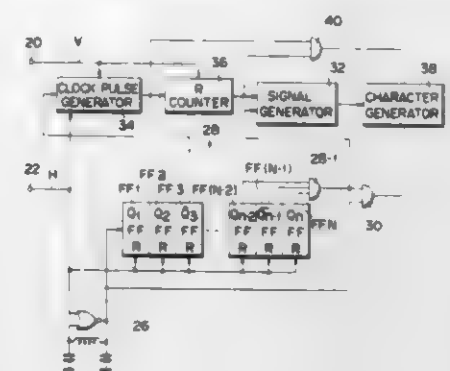
Int. Cl.³ G06F 3/153

U.S. Cl. 340—748

13 Claims

1. An information display position-defining circuit for a cathode-ray tube comprising:
a local pulse oscillator producing an output pulse train in response to a horizontal synchronization pulse;
first signal-generating means for producing a horizontal position signal corresponding to an output signal from the local pulse oscillator;
second signal-generating means for generating a first signal having a prescribed phase relationship with the horizontal synchronization pulse during a first operation mode and for generating a second signal having a different phase from the first signal during a second operation mode;
operation mode-setting means connected to receive an output signal from said second signal generating means and a vertical synchronization pulse for producing an output signal to change over the operation mode of said second signal generating means when substantial synchronization

arises between the output signal from said second signal generating means and the vertical synchronization pulse;
third signal-generating means for producing a vertical position signal in response to an output signal from the second signal-generating means; and



fourth signal-generating means for producing an information display position-specifying signal corresponding to the horizontal position signal and vertical position signal delivered from the first and third signal generators.

4,228,434

RADAR RECEIVER LOCAL OSCILLATOR CONTROL CIRCUIT

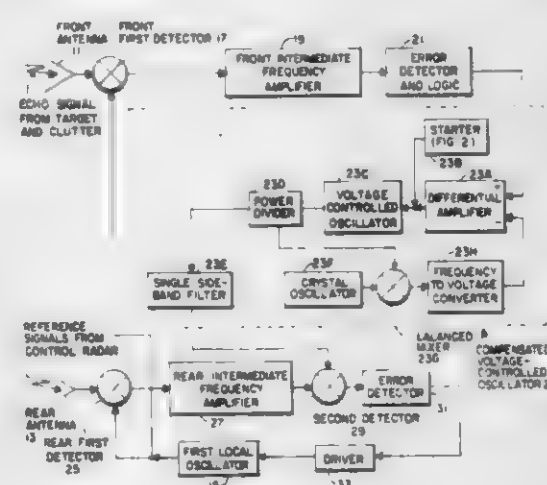
James Williamson, Franklin, and Paul G. Crete, Chelmsford, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jun. 5, 1978, Ser. No. 912,601

Int. Cl.³ G01S 13/00

U.S. Cl. 343—5 AF

3 Claims



1. In a missile-borne radar receiver incorporating an intermediate frequency amplifier having a bandwidth narrower than the band of possible Doppler shift frequencies impressed on echo signals from targets, an improved arrangement producing a control signal for a local oscillator to cause the frequency of the local oscillator signal to vary, in accordance with the Doppler shift frequency of the echo signal from a selected target, so that a difference signal resulting from the heterodyning of the local oscillator signal and the echo signal falls within the pass band of the intermediate frequency amplifier, such arrangement comprising:

- a stable oscillator for producing a reference signal with a frequency representative of a frequency lower than the lowest one of the possible Doppler shift frequencies;
- a voltage-controlled oscillator for producing a control signal with a frequency within a band of frequencies encompassing the possible Doppler shift frequencies;
- a mixer, responsive to the reference signal and the control signal, for producing a difference signal with a frequency representative of the difference between the reference and control signals;

4,228,436

LIMITED SCAN PHASED ARRAY SYSTEM
Edward C. DuFort, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 3, 1978, Ser. No. 892,721

Int. Cl.³ H01Q 3/26

U.S. Cl. 343—854

4 Claims



4,228,435

RADAR SENSITIVITY TIME CONTROL USING RANGE GATED FEEDBACK

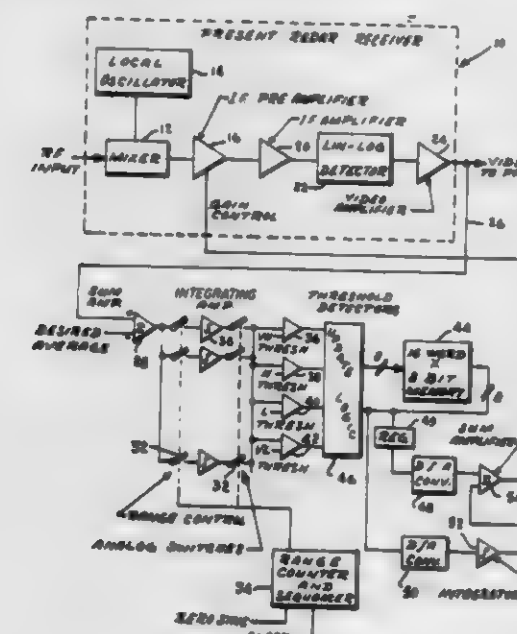
Robert L. Nevin, New Hartford, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 813,572, Jul. 7, 1977, abandoned. This application Jan. 23, 1979, Ser. No. 5,885

Int. Cl.³ G01S 13/00

U.S. Cl. 343—5 SM

2 Claims



1. A sensitivity time control for radar receiving having signal processing means including, an input, a signal mixing means, an IF preamplifier and amplifier connected serially to the mixer, a logarithmic detector connected to the amplifier output and a video amplifier for processing the output of the logarithmic detector; the improvement comprising: means for monitoring and controlling the output of the video amplifier including a summing amplifier connected to the output of the video amplifier for producing a difference voltage; a plurality of integrating operational amplifiers connected to said amplifier; a plurality of first switches positioned between each integrating operational amplifier and the summing amplifier and a range counting means for sequentially operating said first switches in range related sequence, a plurality of threshold detectors connected to the output of the integrating operational amplifiers through a plurality of second switches operating in range related sequence, and a logic means connected to the output of said threshold detectors and operated in range related sequence and means for processing the output of said logic means for each range sweep whereby high threshold voltages will provide a decreased output and low threshold voltages will increase the voltage output, and means connecting the output of the processing means to the IF preamplifier of the radar receiver.

4,228,437

WIDEBAND POLARIZATION-TRANSFORMING ELECTROMAGNETIC MIRROR

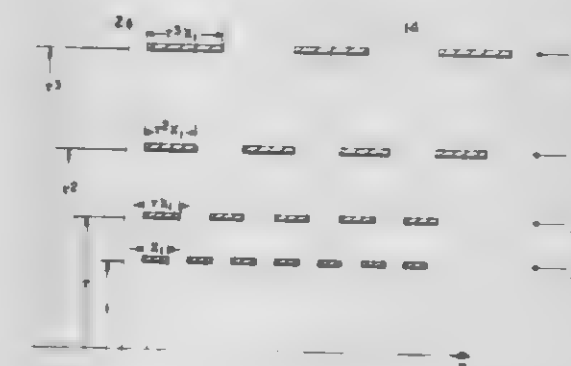
J. Paul Shelton, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 26, 1979, Ser. No. 52,298

Int. Cl.³ H01Q 15/24

U.S. Cl. 343—909

3 Claims



1. A reflecting mirror for transforming the polarization of incident electromagnetic waves independently of the frequency of the waves and over an arbitrarily wide frequency bandwidth, comprising:
two interleaved sets of planar arrays of resonant elements, the two sets being orthogonally polarized,

the arrays of the first set being alternately layered with the arrays of the second set, the layered elements of each set being spaced apart according to a logarithmic function, each set having a reflection coefficient function which varies approximately linearly with the logarithm of frequency, the difference in phase $\Delta\phi$ between the reflection coefficient functions of each set being essentially constant with change in frequency, said difference in phase being a function of the scale factor between adjacent arrays of dissimilar polarization and being defined by

$$\Delta\phi = 2\pi \log(f_x/f_y)/\log r$$

where f_x is a resonant frequency of an array of the first set, f_y is a resonant frequency of an array of the second set, the arrays applicable to f_x and f_y being adjacent, r represents the scale factor between adjacent arrays of similar polarization, and f_x/f_y represents the scale factor between adjacent arrays of dissimilar polarization.

4,228,438

VIDEO JET PRINTER PROCESS WITH RADIATION CURED INK

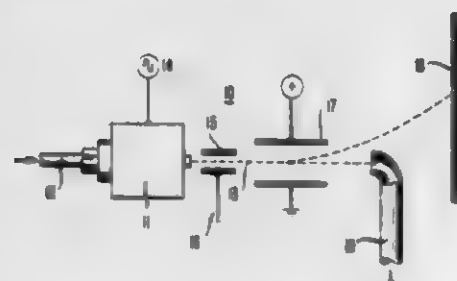
Hargovind N. Vazirani, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 965,777, Dec. 4, 1978, abandoned, which is a continuation of Ser. No. 793,861, May 4, 1977, abandoned. This application Mar. 14, 1979, Ser. No. 20,532

Int. Cl.³ G01D 15/18

U.S. Cl. 346—1.1

30 Claims



1. A process for jet video printing on a surface with diluted ink using a jet video printer in which printing takes place by forming a stream of ink droplets, some of which are charged electrically and electrostatically deflected onto the surface being printed, and the diluted ink is cured with radiation after printing CHARACTERIZED IN THAT the diluted ink comprises:

- a. polar organic solvent in sufficient quantity so that the viscosity of the diluted ink is less than 20 cps in which said polar organic solvent accepts electric charge when ionizing agent is dissolved in said polar organic solvent, said polar organic solvent comprising at least one substance selected from the group consisting of methanol and ethanol;
- b. radiation-curable prepolymer which on curing yields a polymer with elastic modulus between 2000 and 500,000 psi and elongation at least 10 percent, said prepolymer having a solubility in said polar organic solvent of at least 10 weight percent;
- c. pigment in which 90 percent by weight of said pigment has agglomerate size less than 40 microns, said pigment present in amounts between 5 and 50 weight percent of the prepolymer;
- d. ionizing agent which permits the diluted ink to accept electric charge present in amounts up to the weight of prepolymer.

4,228,439

LEVEL AND FREQUENCY MEASURING RECORDER

Bernhard Weingartner, Feldkirch, Austria, assignor to Neutrik Aktiengesellschaft, Schaan, Liechtenstein

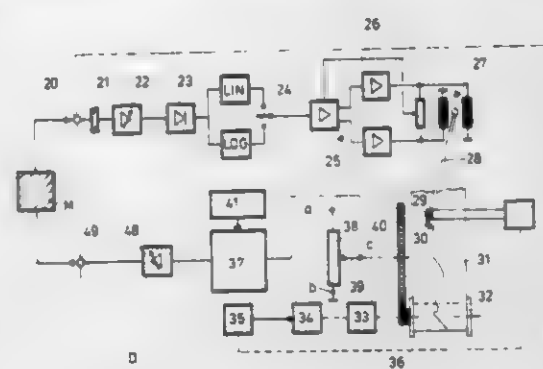
Filed Aug. 31, 1978, Ser. No. 938,638

Claims priority, application Austria, Sep. 5, 1977, 6350/77

Int. Cl.³ G01D 9/38

U.S. Cl. 346—33 R

13 Claims



1. In apparatus for recording output signals furnished by a unit under test in response to input signals applied thereto, said apparatus having means for generating input signals having a frequency varying as a function of a frequency control signal, means for applying said input signals to said unit under test, record carrier means, transport means for transporting said record carrier means along a predetermined path and movable recording means for recording signals on said record carrier means, the improvement comprising:

rotary measuring means connected to said movable recording means for driving said movable recording means in accordance with a drive signal applied to said rotary measuring means; a linear and a logarithmic transfer characteristic; selector means for selectively interconnecting one of said first and second amplifier means between said unit under test and said rotary measurement means so that the so-selected one of said amplifier means furnishes an amplified output signal constituting said drive signal; and control means coupled to said transport means for furnishing a position signal indicative of the position of said record carrier means relative to a starting position and for applying said position signal to said input signal generating means to constitute said frequency control signal, wherein said input signal generating means includes audio-frequency generator means; wherein said control means includes a potentiometer having a wiper arm and means for coupling the wiper arm to the transport means for movement therewith; and wherein said coupling means includes releasable coupling means.

4,228,440

INK JET PRINTING APPARATUS

Masanori Horike, Koichiro Jinnai, Kyuhachiro Iwasaki, and Yutaka Kodama, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 18, 1978, Ser. No. 970,736

Claims priority, application Japan, Dec. 22, 1977, 52-154638

Int. Cl.² G01D 15/18

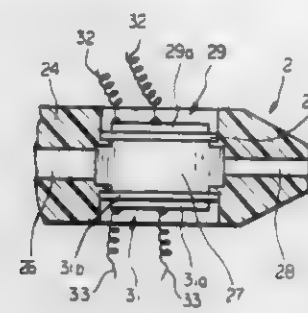
U.S. Cl. 346—75

7 Claims

1. An ink jet printing apparatus including an ink ejection head and a plurality of capacitive ultrasonic vibrators disposed in the ink ejection head for atomizing ink flowing there-through, characterized by comprising:

circuit means connecting the ultrasonic vibrators in parallel; an inductor connected to the ultrasonic vibrators to form a resonant circuit therewith; and

signal generator means for applying an alternating electrical signal to the resonant circuit, a frequency of the electrical



signal being equal to a resonant frequency of the resonant circuit.

4,228,441

PRINTER HEAD BIASING APPARATUS

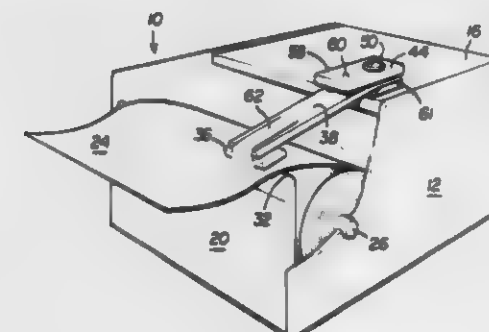
Samuel Rhine, Beaumont, Tex., assignor to Helena Laboratories Corporation, Beaumont, Tex.

Filed Feb. 9, 1979, Ser. No. 10,557

Int. Cl.² G01D 15/16

U.S. Cl. 346—139 C

10 Claims



1. In a chart recorder where a print head is used to record data on a moving strip of chart paper, said chart recorder including a support frame and means for supporting the moving chart paper, said moving chart paper supporting means being spaced apart from said print head to accommodate the moving chart paper therebetween, the improvement comprising:

a cantilevered leaf spring having a fixed end provided with an opening and a free end, said fixed end anchored by a retainer means to said support frame; said print head mounted on the free end of said leaf spring adjacent said paper supporting means; said leaf spring for biasing the print head for maintaining constant pressure between the print head and the moving chart paper; said retainer means comprising a plate overlying said fixed end of the leaf spring and having an opening aligned with the opening in said leaf spring; and a threaded fastener extending through said openings into said support frame.

4,228,442

MEANS FOR PREVENTING DRYING OF INK AT NOZZLES OF PRINT HEADS

Felix B. Krull, Leitershofen near Augsburg, Fed. Rep. of Germany, assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 24, 1979, Ser. No. 6,312

Int. Cl.³ G01D 15/18

U.S. Cl. 346—140 R

15 Claims

1. An ink jet print head having at least one nozzle through which pass droplets of ink onto a receiving medium, means associated with said print head capable of holding a quantity of liquid ink solvent, means adjacent said nozzle providing an area of atmosphere for a medium of gaseous nature, and wick means having capillary action properties and having a

portion immersed in said liquid ink solvent and another portion extending from said liquid ink solvent to and around said nozzle in said area of atmosphere for carrying



4,228,443

GRAPHIC ELECTRIC RECORDER

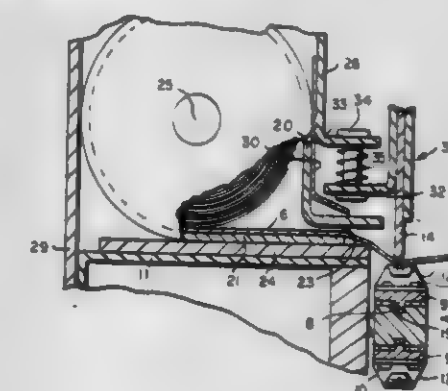
George C. Williams, South Easton, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Filed Dec. 6, 1978, Ser. No. 966,811

Int. Cl.³ G01D 15/06

U.S. Cl. 346—165

10 Claims



1. A graphic electric recorder for marking an electrosensitive recording paper, said recorder comprising: a housing including a base and a cover and a rear wall disposed on the base; a platform disposed within said housing for receiving a cassette containing a roll of recording paper; scanning electrode means disposed within said housing and in front of said platform; linear electrode means disposed in operative relationship with said scanning electrode, said linear electrode means being arranged substantially normal to the path of paper being withdrawn from a cassette and substantially parallel to the rear wall; feed roll means disposed in front of the electrodes, said feed roll means being disposed substantially parallel to the roll of recording paper and adapted to withdraw said paper from a cassette; means on the housing for engaging a cassette to align the roll of recording paper substantially parallel to the linear electrode and for holding said linear electrode.

4,228,444

SEMICONDUCTOR DEVICE

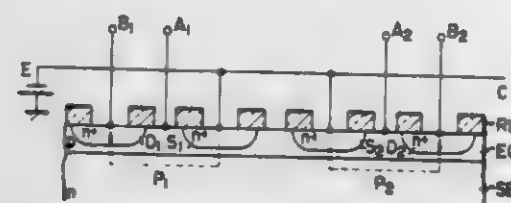
Ryoiku Togi, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 794,518, May 6, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,050

Claims priority, application Japan, May 28, 1976, 51/62606 Int. Cl.² H01L 29/80

U.S. Cl. 357-22

8 Claims



1. A semiconductor device comprising:
 - a semiconductor substrate of one conductivity type;
 - a semiconductor layer of the opposite conductivity type formed on the semiconductor substrate;
 - a source region and a drain region of the one conductivity type formed in the semiconductor layer of such depth therein as to be close to but not touching said semiconductor substrate so that junctions may be formed between them and the semiconductor layer, respectively, at such positions where a part of each of the depletion layers appearing around the source and drain regions during operation may easily reach the semiconductor substrate;
 - a local potential distribution generation electrode formed between the source and the drain regions to make an ohmic contact with the semiconductor layer; and,
 - the device characterized in that during operation a channel is set up between the source and drain regions with the depletion layers extending from the source and the drain regions to the semiconductor substrate within that portion of the semiconductor substrate where the depletion layers reach.

4,228,445

DUAL PLANE WELL-TYPE TWO-PHASE CCD

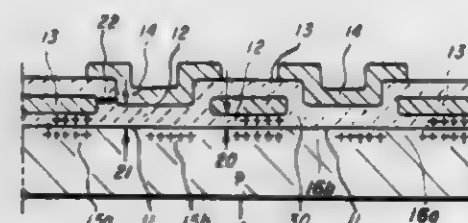
Al F. Taach, Jr., Richardson, and Pallab K. Chatterjee, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 27, 1977, Ser. No. 845,982

Int. Cl.³ H01L 29/78, 29/04; G11C 19/28

U.S. Cl. 357-24

8 Claims



1. A charge-coupled device comprised of:
 - (a) a semiconductor substrate having dopant impurity atoms of a first type and a first surface;
 - (b) a charge-transfer channel in said substrate near said first surface;
 - (c) an insulating layer of non-uniform thickness on said first surface over said channel;
 - (d) a plurality of first electrodes spaced apart from each other and lying on said insulating layer transversely to said channel;
 - (e) a plurality of second electrodes lying on said insulating layer transversely to said channel in the spaces between said first electrodes;
 - (f) a well region of dopant impurity atoms of a second type opposite to said first type under each of said first and

second electrodes; each of said well regions extending transversely across said channel and along said channel from one transverse edge of a respective one of said electrodes to a medial portion of said electrode; wherein said insulating layer underlies each of said first electrodes by a first uniform thickness, underlies each of said second electrodes by a second uniform thickness, and separates each of said first electrodes from adjacent second electrodes by approximately said second thickness, with said second thickness being approximately 20% to 60% greater than said first thickness.

4,228,446

REDUCED BLOOMING DEVICE HAVING ENHANCED QUANTUM EFFICIENCY

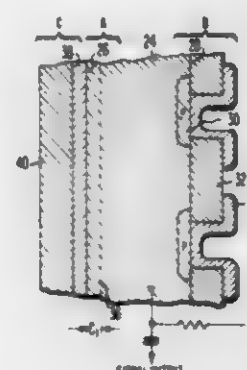
William M. Kramer, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 10, 1979, Ser. No. 37,832

Int. Cl.³ H01L 27/14

U.S. Cl. 357-31

7 Claims



2. In a charge storage device of the type having a single sensing element with an input signal sensing surface region and a charge storage region, and reading means for selectively contracting portions of said charge storage region, said sensing element including (a) a single crystal semiconductor wafer having a (1) plurality of discrete storage regions along a second surface, (2) a bulk region in said wafer, and (3) means for controlling blooming within said signal sensing surface region, and (b) a passivation layer for stabilizing the atomic energy level along a first surface of said wafer, the improvement comprising a coating on said passivation layer for improving the quantum efficiency of said device, said coating and said passivation layer in combination forming an anti-reflecting region having an optical thickness substantially equal to an odd multiple of a quarter of the wavelength of the light incident upon said device.

4,228,447

SUBMICRON CHANNEL LENGTH MOS INVERTER WITH DEPLETION-MODE LOAD TRANSISTOR

Shuichi Sato, Beaverton, and Tadanori Yamaguchi, Hillsboro, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 12, 1979, Ser. No. 11,598

Int. Cl.² H01L 27/02

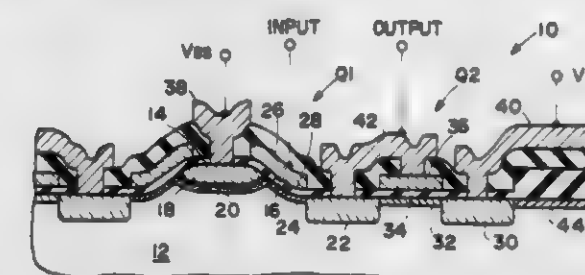
U.S. Cl. 357-42

5 Claims

1. A monolithic metal-insulator-semiconductor inverter circuit structure of the combined enhancement/depletion-mode type, comprising:

- a body of semiconductor material predominantly of one conductivity type, said body having a major surface that includes a substantially planar field and an adjoining non-planar field with surface portions of relatively higher and lower elevation joined by a slope,
- an enhancement-mode field effect device at least partially formed within said nonplanar surface field, said device including (a) a first, heavily doped region of the other conductivity type extending into said body at said higher surface portion, (b) a second, heavily doped region of said

other conductivity type extending into said body at said lower surface portion, said first and second regions respectively constituting source and drain regions for said enhancement-mode device, (c) a thin layer of said one conductivity type formed by implantation within said body beneath said first impurity region and including an upturned margin that terminates at said slope and constitutes a channel region for said device, (d) a third, more lightly doped region of said other conductivity type extending along said body surface between said channel region and drain region and constituting a drift region for said device, (e) a first insulating layer disposed over a portion of the body surface in said nonplanar field, including the portion extending between said first and second regions, and (f) a first gate electrode disposed on said first



- insulating layer overlying said channel and drift regions, and
- a depletion-mode field effect device integrated with said enhancement-mode device, and including (a) a fourth, heavily doped region of said other conductivity type extending into said body within said planar field at a location spaced from said second region by (b) a fifth, more lightly doped region of said other conductivity type, said second and fourth and fifth regions respectively constituting source, drain and channel regions for the depletion mode device, (c) a second insulating layer disposed over a portion of the body surface in said planar field, including the portion extending between said second and fourth regions, and (d) a second gate electrode disposed on said insulating layer overlying said fifth region.

4,228,448

BIPOLAR INTEGRATED SEMICONDUCTOR STRUCTURE INCLUDING I²L AND LINEAR TYPE DEVICES AND FABRICATION METHODS THEREFOR

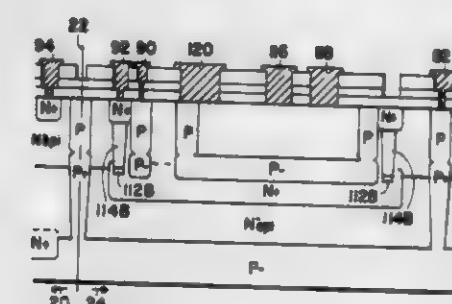
Thomas M. Lalumia, and James N. Forde, both of Tucson, Ariz., assignors to Burr Brown Research Corp., Tucson, Ariz.

Filed Oct. 7, 1977, Ser. No. 840,397

Int. Cl.³ H01L 27/02

U.S. Cl. 357-46

29 Claims



1. A bipolar integrated semiconductor structure comprising, in combination, a first portion having at least one linear type bipolar device having emitter, base and collector regions; a second portion separated in said structure from said first portion and having at least one I²L type bipolar device having emitter, base and collector regions, said structure having a substrate, a first epitaxial layer located on said substrate, and a second epitaxial layer located on said first epitaxial layer, said linear type bipolar device having one of a subcollector and a subbase region located in a region encompassing a portion of

the intersection between said substrate and said first epitaxial layer, said I²L type bipolar device having a subemitter region located in a region encompassing a portion of the intersection between said first epitaxial layer and said second epitaxial layer, said one of a subcollector and a subbase region of said linear type bipolar device and said subemitter region of said I²L type bipolar device being of the same conductivity type.

4,228,449

SEMICONDUCTOR DIODE ARRAY LIQUID CRYSTAL DEVICE

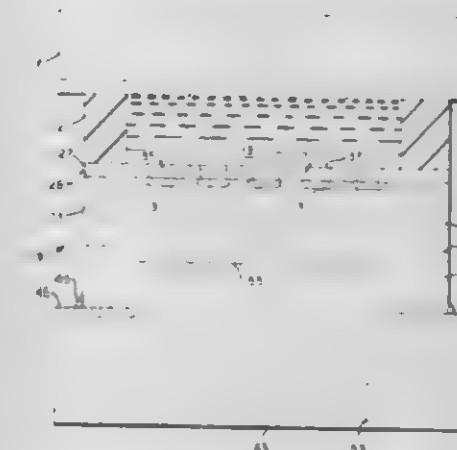
Paul O. Brantz, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1978, Ser. No. 973,513

Int. Cl.² H01L 27/14

U.S. Cl. 357-30

11 Claims



1. A semiconductor diode array liquid crystal device for storage mode and infrared applications, comprising:
 - a liquid crystal structure having an inner surface;
 - a semiconductor substrate having an inner surface;
 - an insulating film disposed between and separating said inner surfaces and including an array of windows that are both reflective of incident light energy thereon and conductive of electric current, said semiconductor substrate including an active region therein along said inner surface of said semiconductor substrate, a separate minority carrier collecting junction being disposed in said active region adjacent each of said windows, said active region being now wider than the diffusion length of the minority carriers in the material of said active region; and
 - bias means associated with said liquid crystal structure and said semiconductor substrate for producing an electric field within said liquid crystal substrate and for back biasing said minority carrier collection junction.

4,228,450

BURIED HIGH SHEET RESISTANCE STRUCTURE FOR HIGH DENSITY INTEGRATED CIRCUITS WITH REACH THROUGH CONTACTS

Narasipur G. Anantha, Hopewell Junction, and Augustine W. Chang, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1977, Ser. No. 844,768

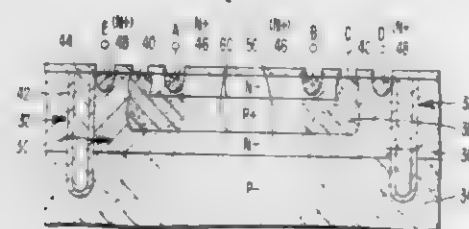
Int. Cl.² H01L 27/02

U.S. Cl. 357-51

12 Claims

1. A high resistance structure for high density integrated circuits comprising:
 - a silicon region separated from other silicon regions by a dielectric barrier surrounding said region;
 - a first resistor of a first conductivity encompassing substantially the surface of said silicon region;
 - electrical contacts to said first resistor;
 - a region highly doped of a second conductivity located below said region of a first conductivity with reach-

through of said highly doped second conductivity to the surface of the said region of a second conductivity and electric contacts thereto for biasing purposes; and a second resistor encompassing a region of said first conductivity located below said region of a second conductivity;



semiconductor resistor contact regions, said connecting semiconductor region being of lower resistivity than said shallow high resistivity region, and long sides of said elongated connecting semiconductor region forming a PN junction with said semiconductor region of one conductivity type.

4,228,452 SILICON DEVICE WITH UNIFORMLY THICK POLYSILICON

David L. Losee, Fairport, and Alvin D. Wilder, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 797,971, May 18, 1977, Pat. No. 4,179,528.

This application May 2, 1979, Ser. No. 35,162

Int. Cl.³ H01L 29/04

U.S. Cl. 357-59

1 Claim



reach-through regions of a first conductivity from the surface of said silicon region to said second resistor; and electrical contacts to said reach-through regions of a first conductivity.

4,228,451

HIGH RESISTIVITY SEMICONDUCTOR RESISTOR DEVICE

Ury Priel, Cupertino; Jerry D. Gray, San Jose, and Allen H. Frederick, Pacifica, all of Calif., assignors to Monolithic Memories, Inc., Sunnyvale, Calif.

Division of Ser. No. 805,534, Jun. 10, 1977, Pat. No. 4,152,627.

This application Jul. 21, 1978, Ser. No. 926,856

Int. Cl.³ H01L 27/02, 29/78, 29/72; H01C 1/012

U.S. Cl. 357-51

2 Claims



1. A high resistivity semiconductor resistor device comprising, in combination, a semiconductor region of one conductivity type, an insulating layer located on a surface of said semiconductor region, a shallow high resistivity region having a depth of no greater than about 0.5 microns located in said semiconductor region of one conductivity type and in contact with said insulating layer, said shallow high resistivity region having a higher resistivity than said semiconductor region of one conductivity type and containing impurities of opposite conductivity type, a pair of spaced semiconductor resistor contact regions having a depth greater than said shallow high resistivity region and having the same conductivity as said shallow high resistivity region located in contact with said semiconductor region of one conductivity type, said shallow high resistivity region being in electrical contact with each one of said pair of semiconductor resistor contact regions, and an electrical ohmic contact to each one of said pair of semiconductor resistor contact regions, said shallow high resistivity region being in direct semiconductor contact with only one of said pair of semiconductor resistor contact regions, an elongated connecting semiconductor region of the same conductivity type as said shallow high resistivity region in contact with said shallow high resistivity region and the other of said pair of

1. A semiconductor optical imaging device comprising:

- a chip of bulk silicon;
- a silicon dioxide coating on one surface of said chip; and
- doped vacuum deposited polysilicon having a reference thickness and overlaying said silicon dioxide coating, the thickness of said doped polysilicon being uniform, and variations in said uniformity being to within 20 Å of said reference thickness for said doped polysilicon.

4,228,453

(III) PLANE GALLIUM ARSENIDE IMPATT DIODE

Thomas P. Pearsall, Paris, France, assignor to Thomson-CSF, Paris, France

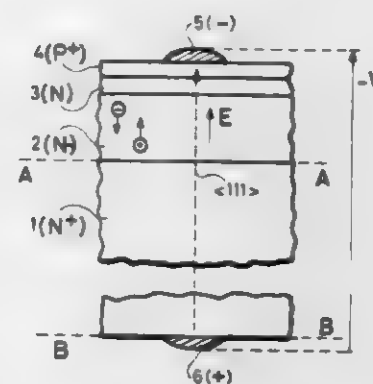
Filed Jun. 16, 1978, Ser. No. 916,820

Claims priority, application France, Jun. 21, 1977, 77 18952

Int. Cl.³ H01L 29/04, 29/20, 29/90

U.S. Cl. 357-60

3 Claims



1. An avalanche diode structure including a semiconducting substrate, layers of gallium arsenide forming with said substrate a monocrystalline assembly and metallic deposits bordering said assembly and forming the electrodes of a diode, the surface separating the layers from one another and the surfaces of said electrodes being perpendicular to the axis $\langle 111 \rangle$ of

said monocrystalline assembly in such a way that the electrical field generated by a biasing voltage applied to the electrode is parallel to said axis $\langle 111 \rangle$ said diode comprising between said electrodes, an N⁺-doped substrate, a first layer with N⁻-type doping, a second layer with N-type doping and a third layer with P⁺-type doping.

4,228,454

HIGH TEMPERATURE CADMIUM BORACITE SEMICONDUCTOR DEVICE

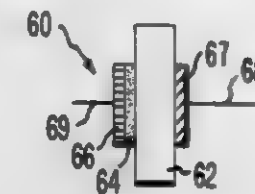
Tatsuo Takahashi, Isehara, and Osamu Yamada, Tama, Japan, assignors to RCA Corporation, New York, N.Y.

Filed Feb. 23, 1978, Ser. No. 880,484

Int. Cl.³ H01L 29/24, 29/46

U.S. Cl. 357-61

11 Claims U.S. Cl. 358-20



1. An electronic device comprising: a body of cadmium boracite crystal having first and second surfaces, said body fabricated by chemical vapor transport; first electrode means electrically contacting said first surface; and second electrode means electrically contacting said first or second surface, wherein one of said electrodes contains silver and the other electrode is free of silver, said body and said electrodes exhibit a high electrical resistance state which is independent of applied alternating current or direct current voltage and a low electrical resistance state dependent upon applied alternating current or direct current voltage, said body and said electrodes change from said high electrical resistance state to said low electrical resistance state at a temperature of at least about 300° C.

4,228,455

GALLIUM PHOSPHIDE SEMICONDUCTOR DEVICE HAVING IMPROVED ELECTRODES

Nobuaki Yasuda, Zushi; Takenobu Ogawa, Kawasaki, and Tetsuo Sadamasa, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

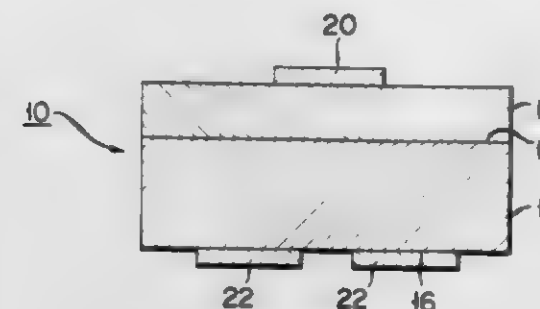
Filed Aug. 29, 1978, Ser. No. 937,786

Claims priority, application Japan, Sep. 5, 1977, 52-105770

Int. Cl.³ H01L 23/48, 29/46, 29/62

U.S. Cl. 357-67

10 Claims



1. A gallium phosphide semiconductor device comprising: an N type gallium phosphide monocrystal; a semiconductor layer formed in or on the monocrystal; and a pair of electrodes forming an ohmic contact, formed on a surface of the monocrystal and on a surface of the semiconductor layer, said electrode on the monocrystal surface being made of a film of a gold-germanium alloy containing germanium in a concentration ranging from

the upper limit at which germanium forms a solid solution with gold at room temperature to the upper limit at which germanium forms a solid solution with gold at the eutectic temperature of the alloy.

4,228,456

BURST GATING SIGNAL GENERATING CIRCUIT

John D. Lovely, Batavia, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 33,582, Apr. 26, 1979, abandoned. This application Jun. 20, 1979, Ser. No. 50,372

Int. Cl.³ H04N 9/46

16 Claims



1. A burst gating signal generating circuit comprising: first means having a first input coupled to a source of horizontal sync pulses and a second input coupled to a source of horizontal blanking pulses, said means for providing at its output differentiated sync pulses; clamping means coupled between the source of blanking pulses and the output of the first means for providing combined pulses including differentiated sync pulses clamped and added to the horizontal blanking pulses; a bias supply; gating means coupled between the output of the first means and the bias supply for providing resultant pulses corresponding to those portions of the combined pulses having an amplitude greater than a predetermined amplitude related to the value of the bias supply, and second means coupled between the gating means and the burst gate circuit for removing the DC component of the resultant pulses.

4,228,457

CONSTANT LUMINANCE TINT REFERENCE

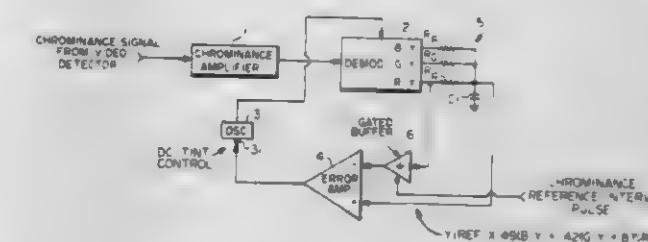
Paul G. Wolfe, Batavia, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 11, 1979, Ser. No. 56,570

Int. Cl.³ H04N 9/52

U.S. Cl. 358-21 R

8 Claims



1. In a VIR-responsive tint control circuit that effects accurate phasing of the chrominance subcarrier oscillator by comparing one output of the chrominance demodulator during the chrominance reference portion of the VIR signal to a ZERO-COLOR reference signal indicative of an absence of color information, the improvement comprising: dematrixing means for synthesizing from the chrominance demodulator outputs an appropriate ZERO-COLOR reference signal whereby only one sampling of the VIR signal need be taken in order to effect desired tint control.

4,228,458

OPTICAL COLOR-SEPARATION SYSTEM FOR USE IN A COLOR TELEVISION CAMERA

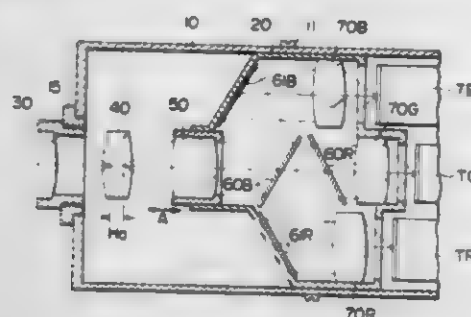
Toshiro Yamachi, Omiya; Takemi Saito, Kawagoe, and Shigehiro Kanayama, Omiya, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed May 31, 1978, Ser. No. 911,174

Claims priority, application Japan, May 31, 1977, 52-63593 Int. Cl.³ H04N 9/09, 5/30

U.S. Cl. 358-55

3 Claims



1. A color separation optical system for a color television camera of relay lens type wherein a set of color separating optical elements for separating light from a taking lens into red, green, and blue components of light by reflection and transmission are provided between a single first relay lens and three second relay lenses for the three colors, a removable field lens is provided between the taking lens and the first relay lens, and the light flux between the first relay lens and the second relay lenses is collimated, wherein the improvement comprises means for allowing axial movement of said single first relay lens with respect to the taking lens of the television camera, and means for axially moving said first relay lens, whereby the first relay lens is axially moved independently of the second relay lenses with respect to the taking lens of the camera to the position where the exit pupil of the taking lens is registered with the entrance pupil of the first relay lens.

4,228,459

ELECTRONIC BLACK MATRIX CIRCUITRY

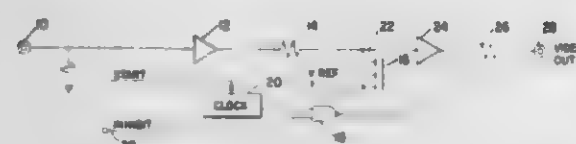
Leland B. Smith, Englewood, Colo., assignor to Unirad Corporation, Englewood, Colo.

Filed Jan. 26, 1978, Ser. No. 872,542

Int. Cl.³ H04N 5/30, 5/14; A61B 10/00

U.S. Cl. 358-112

28 Claims



1. The method of improving the clarity or apparent resolution of a video display in ultrasonic diagnostic equipment comprising the steps of:

- electrically pulsing transducers in a transducer array causing them to produce an ultrasonic sound wave;
- receiving ultrasonic echoes with transducers in the array and converting the echoes to an electrical signal whose amplitude varies in time with the amplitude of the echoes;
- transforming the electrical signal into a video signal;
- periodically blacking out the video signal only when said video signal is not transmitting synchronization data; and
- displaying the video signal on a video monitor wherein unirradiated lines between adjoining video sweep lines and periodically blacked out portions in the video sweep lines coact to form a black matrix superimposed on the video display.

4,228,460

METHOD AND APPARATUS FOR COMPENSATION OF TIME BASE ERRORS

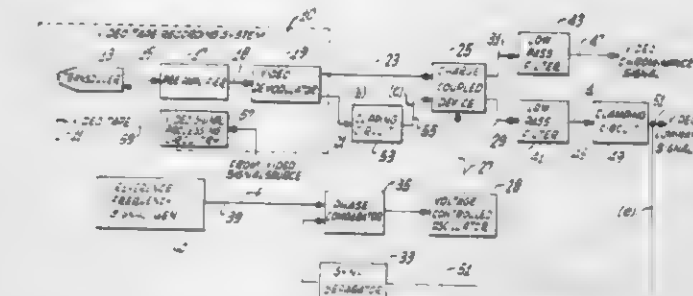
Gerhard Rotter, Mission Viejo, Calif., assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 12, 1978, Ser. No. 868,898

Int. Cl.³ H04N 5/76

U.S. Cl. 358-127

4 Claims



4. A method of correcting for time base variations in a video signal, said video signal including both information components and time base pulses, said method comprising the steps of:

- increasing the amplitude of the time base pulses relative to the information components of the video signal;
- clipping off a portion of each of the successive time base pulses, to remove any random noise superimposed thereon, the decrease in amplitude effected by said step of clipping corresponding generally to the increase in amplitude effected by said step of increasing;
- delaying the video signal by a variable amount to correct for the time base variations; and
- clamping the time base pulses of the video signal to a fixed reference level, to produce a video signal substantially free of variations in its level caused by said step of delaying, and wherein, because of the previous step of clipping, the video signal produced is also substantially free of variations in its level that otherwise would have resulted from clamping a signal containing such noise.

4,228,461

VERTICAL SYNCHRONIZATION SYSTEM

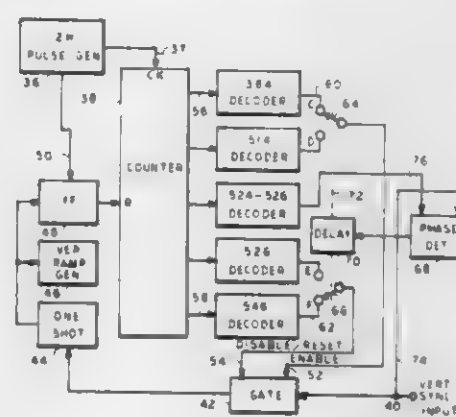
William R. Weissmueller, Wildwood, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed May 25, 1979, Ser. No. 42,697

Int. Cl.³ H04N 5/04

U.S. Cl. 358-148

14 Claims



1. In a vertical synchronization system for a television receiver receiving vertical sync pulses and having a local source of clock pulses whose frequency is a multiple of the nominal horizontal line frequency, a counter for counting the clock pulses, and means for enabling a vertical scan generator in response to the counter reaching a count representative of a nominal line rate/frame rate ratio coincidentally with receipt of a vertical sync pulse, the improvement comprising:

- a first sync window generator, including means responsive

to the counter reaching a first count representative of a line rate/frame rate ratio less than nominal for generating a first window-open signal, and means responsive to the counter reaching a second count representative of a line rate/frame rate ratio greater than nominal for generating a first window-close signal, the interval between said first window-open signal and said first window-close signal defining a wide sync window;

a second sync window generator, including means responsive to the counter reaching a third count representative of a line rate/frame rate ratio less than nominal but closer to nominal than the first count for generating a second window-open signal, and means responsive to the counter reaching a fourth count representative of a line rate/frame rate ratio greater than nominal but closer to nominal than said second count for generating a second window-close signal, the interval between said second window-open signal and said second window-close signal defining a narrow sync window;

means responsive to the counter reaching a count approximately equal to nominal line rate/frame rate ratio for generating a control signal;

a sync transmission path adapted to receive selected, time-spaced, window-open and window-close signals and vertical sync pulses, and responsive to receipt of said pulses in an interval between the received window-open and window-close signals for coupling said pulses to the vertical scan generator to initiate vertical scan and to the counter for resetting thereof to an initial count;

mode control means for applying said first window-open and window-close signals to said transmission path, and responsive to time-coincidence between said control signal and a received vertical sync pulse for removing said first window-open and window-close signals from said transmission path and for applying said second window-open and window-close signals to said transmission path, such that dual mode operation is effected wherein sync pulses received during the wide sync window initiate vertical scan and reset the counter, after which only sync pulses received during the narrow sync window initiate vertical scan and reset the counter to thereby exclude noise occurring outside the range of the narrow sync window.

4,228,462

LINE OSCILLATOR SYNCHRONIZING CIRCUIT

Jan van Straaten, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

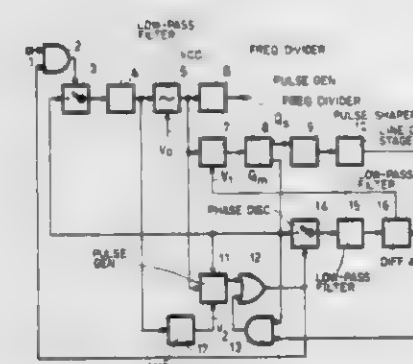
Filed Nov. 14, 1978, Ser. No. 960,528

Claims priority, application Netherlands, Dec. 19, 1977, 7714033

Int. Cl.³ H04N 5/12; H03L 7/08

U.S. Cl. 358-158

6 Claims



1. A television receiver having a line deflection circuit and a line synchronizing circuit, said line synchronizing circuit comprising a controllable oscillator, a signal derived therefrom being applicable to said line deflection circuit; a pulse generator coupled to said oscillator for deriving pulse-shaped gate signals; a coincidence detector; means for applying said pulse-shaped gate signals and pulse-shaped line synchronizing signals

to said coincidence detector; a first phase discriminator coupled to said coincidence detector for determining the phase difference between said line synchronizing signal and a reference signal derived from said oscillator signal; a first low-pass filter for smoothing the output voltage from said first phase discriminator, said controllable oscillator being coupled to said first low-pass filter whereby the output therefrom controls the frequency and/or phase of said controllable oscillator; a second phase discriminator for determining the interval between the center instant of a pulse of said pulse-shaped gate signal and the center instant of an edge occurring in said reference signal; a second low-pass filter for smoothing the output voltage from said second phase discriminator; and means for controlling the center instant of the edge in said reference signal using the output from said second low-pass filter; wherein said line synchronizing circuit further comprises gate means having a first input terminal for receiving the output from said pulse generator and a second input terminal for receiving an output signal from said line deflection circuit, said gate means also having an output terminal for generating the gate pulses for said coincidence detector and said second phase discriminator.

4,228,463

SWITCHED AFPC LOOP FILTER WITH OFFSET VOLTAGE CANCELLATION

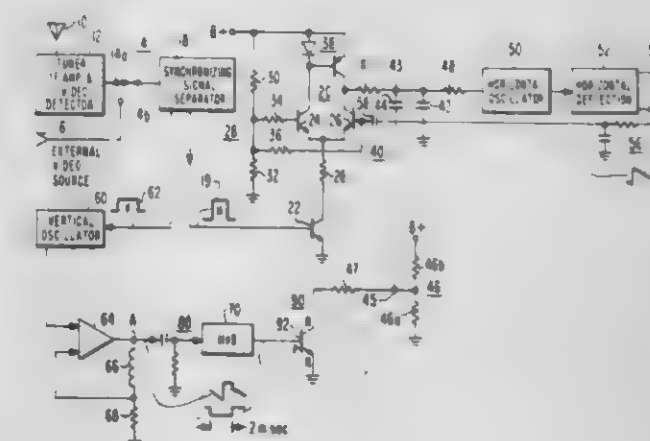
Steven A. Steckler, Clark, and Alvin R. Balaban, Lebanon, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 17, 1979, Ser. No. 39,883

Int. Cl.³ H04N 5/05; H03B 3/04

U.S. Cl. 358-158

12 Claims



1. A television horizontal oscillator phase control loop arrangement, comprising:

- a source of horizontal synchronizing signals;
- controllable oscillator means including a rate control input terminal and an output terminal at which oscillators are generated;
- a phase detector coupled to said source of horizontal synchronizing signals and to said output terminal of said oscillator means for generating an output signal representative of the frequency and phase difference between said synchronizing signals and said oscillations; and
- controllable filter means coupled to said output terminal of said phase detector and said rate control terminal of said oscillator means for closing a degenerative feedback AFPC loop for filtering said output signal to form an oscillator control voltage for synchronizing said oscillator with said synchronizing signals, said controllable filter means further comprising controllable impedance means by which the time constant of said filter is periodically changed, said controllable impedance means introducing during a portion of its operating time a first voltage offset which perturbs said control voltage and therefore said synchronization; wherein the improvement comprises: means for introducing a second offset voltage of magnitude equal to that of said first voltage offset for maintaining said

control voltage constant thereby reducing said perturbation.

4,228,464

PICTURE DISPLAY DEVICE COMPRISING A FIELD DEFLECTION CIRCUIT AND A FIELD BLANKING CIRCUIT

Peter A. Duijkers, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

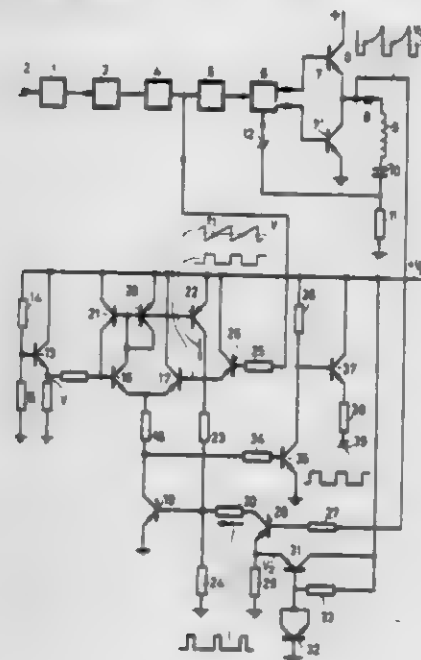
Filed Jan. 26, 1979, Ser. No. 6,607

Claims priority, application Netherlands, Feb. 6, 1978, 7801315

Int. Cl.³ H04N 3/24

U.S. Cl. 358—165

5 Claims



1. A picture display device comprising a picture display tube, a field deflection circuit for generating a deflection current having a trace and a retrace through a field deflection coil for the vertical deflection of one of more electron beam(s) generated in the picture display tube, and a pulse generator for generating a signal for blanking the electron beam(s) at least in the field retrace period, wherein the pulse generator comprises a gate circuit, the operation of which exhibits an OR-function, having means for receiving two input signals, namely a first input signal derived from the field deflection circuit and a second input signal derived from the field deflection coil, the gate circuit producing the blanking signal for the electron beam(s).

4,228,465

ANALOG VIDEO CONVOLVER FOR REAL TIME TWO-DIMENSIONAL IMAGE PROCESSING

Barry N. Stone, Waukesha, and Thomas W. Lambert, Dousman, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,281

Int. Cl.³ H04N 5/14, 5/21, 5/32

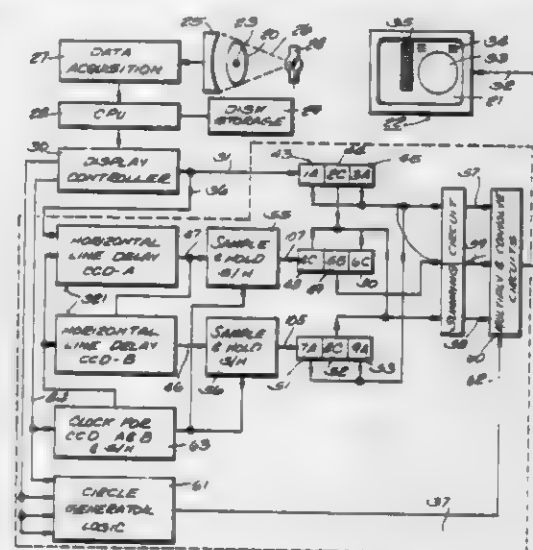
U.S. Cl. 358—166

5 Claims

2. A real time two-dimensional analog video convolver for modifying picture element (pixel) signals in a system including a video monitor for displaying a picture composed of successive horizontal lines of pixels, said monitor having composite video signal input means, said system further including display controller means for storing pixel signals representative of a picture to be displayed and operative to convert said pixel signals to analog video signals for successive horizontal lines, said controller being operative to provide the composite video waveform signals including synchronizing signals for controlling the monitor and to provide pixel clock pulses to enable reading out the stored pixel signals in phase with their display

by the monitor, said controller having output means for said composite video signal; said convolver comprising:

a series of shift register means each having a predetermined number of stages and each having input and output means, the input means of the first register in the series being for coupling to the output means of said display controller, the output means of each register being coupled to the input means of said next register in the series, means synchronized by said clock pulses for supplying sample clock pulses and shift clock pulses to said shift register means, said register means responding to said sample clock pulses by taking a series of successive samples of the voltage of said video signal waveform for a horizontal line and responding to said shift clock pulses by transporting said samples through the stages of said register, said series of samples from the first register being clocked repeatedly to the next register to enable the first register to obtain the next series of samples in phase with the samples in the next register, the series of samples in each said next register thereby being increasing delayed with respect to a preceding register for the time of a video signal series and the samples in said first register being delayed for the time of one video signal series relative to the next video signal waveform which will occur in real time, a plurality of delay line means each of which is comprised of delay elements and each having input and output means, the input means of said first delay line means being cou-



pled to the output means of said display controller and the input means of others of said plurality of delay line means being coupled to the output means of said registers, respectively,

the number of stages in each of said shift registers exceeding by the same amount the number of pixels that are required to fill a horizontal line across the display screen of said video monitor, and including

means operative for an interval after the pixel signals constituting the useful part of a video signal waveform for a horizontal line are outputted from said registers and before occurrence of the next horizontal sync pulse to increase the frequency of said shift clock pulses and sample clock pulses so that synchronism of sampling and the horizontal sync pulses will be maintained,

plural sample and hold circuit means interposed, respectively, between said output means of the registers and the input means of said delay line means,

means for gating said sample and hold circuits to transfer sample pixel signals from the respective output means of said registers to the delay line means to which they are coupled only between pixel clock and analog shift pulses, said delay line means each being operative to delay incoming pixel signals for periods of one or more pixels so that there will appear simultaneously at respective delay line output means delayed pixel signals from each horizontal line, said delayed pixel signals being maintained in a predetermined time relationship with each other,

means for summing the majority of pixel signals appearing at any instant in said delay line output means, means for optionally varying the magnitudes of said summed signals either negatively or positively, means for summing said summed signals with a selected one of the pixel signals from one of the delay elements to modify said one signal, and means for coupling the modified signal to said video signal input of the monitor.

4,228,466

TRANSMISSION MODE SIGNALING BETWEEN A FACSIMILE TRANSMITTER AND A FACSIMILE RECEIVER

John M. Vandling, Pleasantville, N.Y., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 617,104, Sep. 26, 1975, Pat. No. 4,079,425. This application Mar. 13, 1978, Ser. No. 886,147

Int. Cl.² H04N 1/36

U.S. Cl. 358—257

37 Claims



1. A facsimile unit for transmitting signals representing dark-light variations in a document to a remote location: sensor means for sensing dark-light variations in a document in two substantially orthogonal directions; scanning means for scanning said sensor means relative to the document; sync generator means coupled to said scanning means for generating synchronizing signals comprising a series of pulses representing the predetermined relative position between said scanning means and said sensor means; modulator means coupled to said sensor means and said sync generator means for generating modulated transmission signals representing dark-light variations in the document and said synchronizing signals; and mode signaling means associated with said sync generator means for selecting and controlling the time lapse between pulses in said synchronizing signals in response to the selection of a transmission mode during an initial synchronizing period prior to transmission of signals representing dark-light variations for signaling the scanning rates in both of said orthogonal directions.

4,228,467

REDUCED REDUNDANCY FACSIMILE TRANSMISSION INSTALLATION

Martin de Loye, Versailles, and Michel Beduchaud, Palaiseau, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jun. 20, 1978, Ser. No. 917,428

Claims priority, application France, Jun. 30, 1977, 77 20078

Int. Cl.³ H04N 7/12

U.S. Cl. 358—261

4 Claims

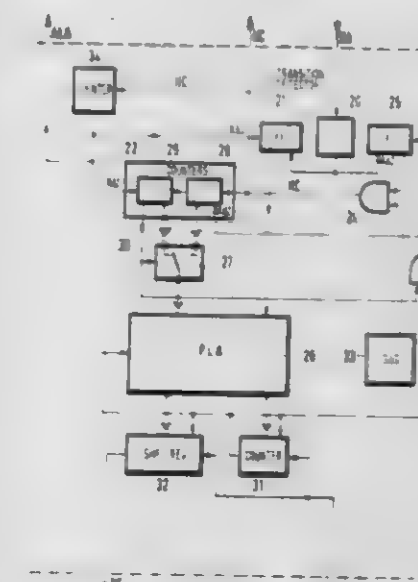
1. An installation for transmitting a facsimile signal of a document with reduced redundancy in transmission; the installation comprising a transmitter equipment and a receiver equipment; wherein the transmitter equipment comprises: document analysis means for scanning a document in succes-

sive scan lines and delivering binary analysis data DA representative of the scan lines;

conversion means connected to receive the analysis data and to derive run length words therefrom representative of the number of consecutive bits of the same level in each scan line of the analysis data;

a first array of combinatorial logic circuits connected to receive the run length words and to transcode them into other binary code words which constitute transmission data DE;

the transmission data DE being encoded using a truncated Huffman code to provide both terminal code words and composition code words, where terminal code words accurately define the lengths of runs which are shorter than a defined limit, and where composition code words coarsely define, in terms of sections, the lengths of runs which are not shorter than the defined limit, such a run length being accurately defined by assigning both a composition code word and a terminal code word thereto; and transmission means for applying said transmission data DE in the form of a facsimile signal to a transmission medium; and wherein the receiver equipment comprises: means for receiving the facsimile signal transmitted by the



transmitter equipment and deriving therefrom binary reception data DR corresponding to the transmission data DE which gave rise to the received facsimile signal;

a second array of combinatorial logic circuits connected to receive the reception data DR, to recognise the terminal code words and the composition code words therein, and to transcode these code words into run length words; restitution means responsive to the run length words to restore the analysis data;

a printer responsive to the analysis data to reproduce the analysed document; and

wherein said first array of combinatorial logic circuits is associated with a presettable counter and an output register for parallel to serial conversion of the transmission code data DE, both the counter and the output register being connected to load data in parallel form from the array when the counter is in its zero state, the output register being connected to receive a code word of the transmission data from the array and to deliver it in serial form to the transmission means at a transmission clock rate Hm, and the presettable counter being connected to be preset by the array to the length of the corresponding code word and to count down to the zero state at the transmission clock rate Hm.

4,228,468

OUTPUT CORRECTING SYSTEM FOR FACSIMILE

Humikazu Nagano, Nara; Hiromu Sasaki, Yamatokoriyama, and Syoichi Yasuda, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 22, 1978, Ser. No. 935,852

Claims priority, application Japan, Aug. 30, 1977, 52/105554
Int. Cl.² H04N 1/40

U.S. Cl. 358—280

7 Claims



1. An optical image reading apparatus comprising: a solid state image sensor for scanning a plurality of data blocks arranged in slices; means for generating video signals corresponding to an image to be read by said solid state image sensor; means for determining respective mean values of the video signals corresponding to each of said data blocks; means for storing the mean values in a memory as digital information; means for reading the stored mean values out of said memory and converting the digital information to analog information; and means for determining a corrected slice signal level in each of said blocks from said analog information.

4,228,469

METHOD AND APPARATUS FOR TIME COMPRESSION OF FACSIMILE TRANSMISSIONS

Herbert P. Ford, Jr., Orlando, Fla., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

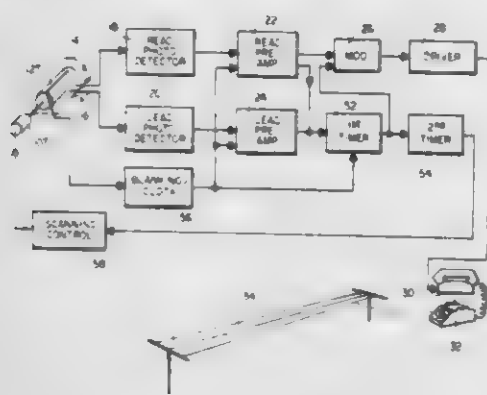
Continuation of Ser. No. 449,514, Mar. 8, 1974, Pat. No.

3,955,045. This application Apr. 30, 1976, Ser. No. 682,025

Int. Cl.² H04N 1/17, 1/00

U.S. Cl. 358—288

2 Claims



1. A facsimile receiver for receiving signals representing dark-light variations in a document at a remote location, said receiver comprising:

writing means for marking a copy medium; signal receiving means coupled to said writing means for generating information signals for actuating said writing means to mark said copy medium when signals representing dark regions are received; receiver scanning means for moving said document relative to said writing means in two substantially orthogonal

directions at a slow scanning rate and a fast scanning rate; and

receiver scanning control means coupled to said signal receiving means and responsive to the video density of said information signals for actuating said writing means for automatically initiating said fast scanning rate in both said directions when said information signals represent low video density and initiating said slow scanning rate in both said directions when said information signals represent high video density.

4,228,470

ELECTRONIC REMINDER SYSTEM

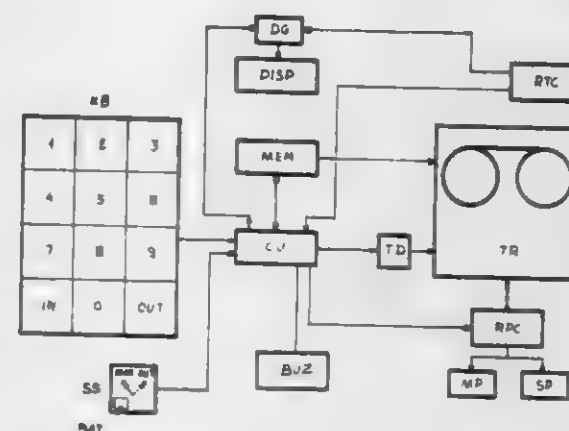
Raphael Rahamin, Rasco G-9, and Gabriel Cabelli, Rasco G-13, both of Hod Hasharon, Israel

Filed Oct. 26, 1978, Ser. No. 954,987

Int. Cl.³ G11B 5/00

U.S. Cl. 360—12

14 Claims



1. An electronic reminder system, comprising: means for receiving a record medium on which a plurality of different spoken messages are each to be recorded and to be played-back at a specified day, hour and minute point-of-time for each message; a microphone for recording the spoken messages; manual time selector means for inputting the specified day, hour and minute point-of-time at which the respective spoken message is to be played-back; a real-time clock for measuring time in a real-time manner and for producing an output corresponding to such real-time measurement; control means controlled by the output of said clock for signalling automatically the arrival of each specified point-of-time at which a recorded spoken message is to be played-back; play-back means including a speaker for effecting the play-back of such spoken messages; and a "Play" key for effecting the play-back of the respective recorded message after its specified point-of-time has arrived.

4,228,471

APPARATUS FOR SEARCHING A PIECE OF INFORMATION RECORDED ON A MAGNETIC TAPE

Takashi Shiga, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 4, 1978, Ser. No. 966,375

Claims priority, application Japan, Dec. 5, 1977, 52/145840

Int. Cl.² G11B 15/48, 15/18

U.S. Cl. 360—73

14 Claims

1. An apparatus for searching for a piece of information prerecorded on a magnetic tape, the information being reproduced by a tape player including a tape drive mechanism and reproducing means, said apparatus comprising:

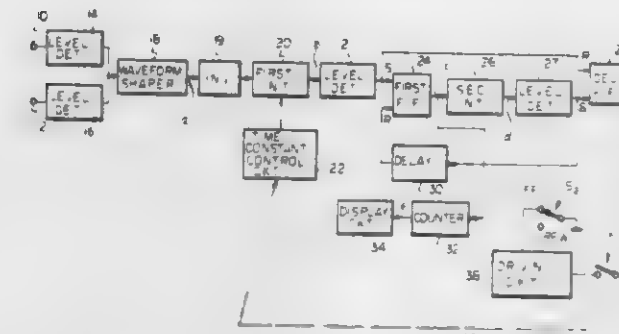
(a) means responsive to signals reproduced from the magnetic tape for deriving first and second signals respectively indicative of initial and end portions of each piece of information;

(b) delay means responsive to the first signal for delaying said first signal by a predetermined interval;

(c) means for assuming a first stable state in response to the

output signal of said delay means and a second stable state in response to said second signal;

(d) means for changing the reeling speed of said tape player from a normal playback speed to a high speed in response to said first stable state of said third mentioned means, and



from said high speed to said normal playback speed in response to said second stable state of said third mentioned means; and

(e) switching means for maintaining the normal playback operation of said tape player.

4,228,472

INTERVAL DETECTION AND DRIVE MECHANISM FOR CASSETTE TAPE RECORDER

Yoshihiro Magata, Kawagoe; Kobun Yoshida, Kamifukuoka, and Itsuo Kato, Sayama, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

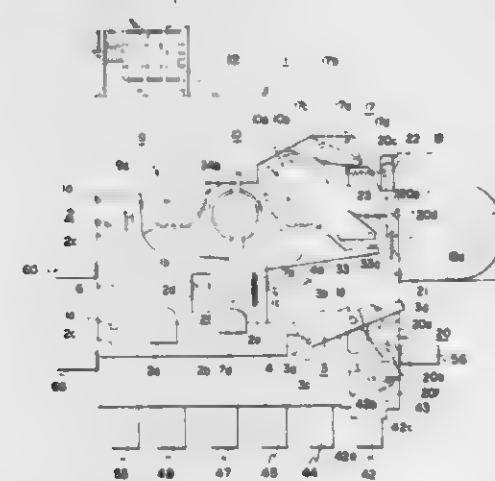
Filed Oct. 26, 1978, Ser. No. 954,883

Claims priority, application Japan, Oct. 28, 1977, 52-129350

Int. Cl.² G11B 27/22, 15/44, 19/26

U.S. Cl. 360—73

3 Claims



1. An interval detection and drive mechanism for a cassette tape recorder including playback, fast forward and rewind levers on a chassis, which comprises

electrical circuit means for detecting an interval between recorded tunes on the tape and generating a detection signal upon the detection of said interval,

switching means for actuating said detecting circuit means, tape drive control means shiftable between a fast forward or rewind state and a playback state, wherein said drive control means includes an eccentric cam disc adapted to be rotated a half turn in response to said detection signal,

and a head carriage slidably mounted on the chassis and shiftable between a recording/playback position and another position, said head carriage being operatively connected to said cam disc so that the head carriage is shifted from the other position to the recording/playback position as a result of the half turn of said cam disc,

a lock plate operatively coupled to the switching means and to the playback, fast forward and rewind levers, said lock plate locking the fast forward and rewind levers when the switching means is operated and releasing the fast forward

and rewind levers when the playback lever is moved to the playback position, and moving means operatively connected to said control means for moving and maintaining the playback lever to the playback position,

wherein when said switching means is operated to actuate the detecting circuit means during the fast forward or rewind operation, said detecting circuit means detects the first interval between tunes after the actuation to deliver the detection signal to said control means and to the moving means, thereby changing the control means from the fast forward or rewind state to the playback state and moving the playback lever to the playback position.

4,228,473

PICK-UP DEVICE FOR MAGNETICALLY RECORDED INFORMATION AND METHOD AND SYSTEM FOR USING SAME

Masami Himuro, Tokyo; Toshiro Yamada, Kamakura, and Yoshiaki Makino, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

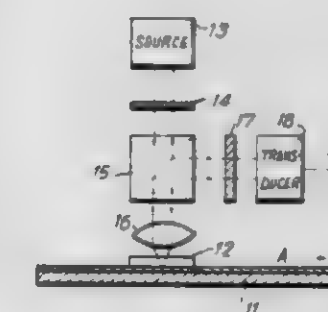
Filed Oct. 19, 1978, Ser. No. 952,663

Claims priority, application Japan, Oct. 20, 1977, 52-126193

Int. Cl.² G11B 5/32, 7/02; G11C 11/14, 11/42

U.S. Cl. 360—114

28 Claims



1. A pick-up device for reading out information which has been recorded as a patterned magnetic field on a magnetic recording medium, comprising:

a substrate;

a layer of soft magnetic material overlying a surface of said substrate, said magnetic material having an easy axis of magnetization normal to said surface and being of the type of magnetic material in which magnetic bubble domains can be generated and propagated in the presence of a bias magnetic field, and in which magnetic domains align themselves in a maze pattern in the absence of an applied magnetic field, said magnetic material having a magnetic wall coercivity which is sufficiently low so that, in the absence of said patterned magnetic field, said magnetic domains align themselves in said maze pattern, and, in the presence of said patterned magnetic field, said maze pattern easily changes to a signal pattern corresponding to that of said patterned magnetic field so as to read the information that has been recorded on said magnetic recording medium;

and means for sensing said signal pattern and providing a corresponding electrical output.

4,228,474

ADAPTER UNIT FOR TRANSLATING ELECTRICAL SIGNALS

Roy L. Neal, Jr., RFD 1, Box 56C Montreal, Mo. 65591

Filed Nov. 13, 1978, Ser. No. 959,887

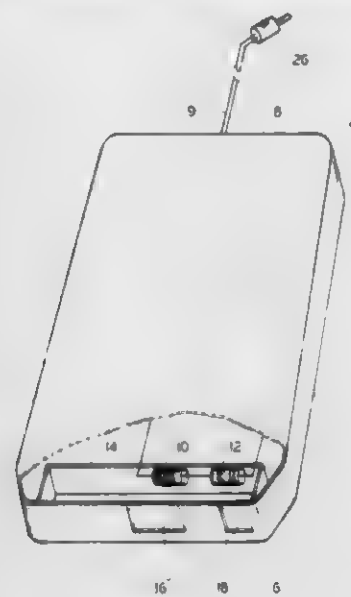
Int. Cl.³ G11B 31/00, 23/00

U.S. Cl. 360—137

1 Claim

1. An adapter unit for playing remotely located electronic apparatus through a magnetic tape player having a pick-up head, said adapter unit consisting essentially of: a housing; input connecting means extending through said housing to disengageably connect to the output of said remotely located

electronic apparatus; at least two stationarily and fixedly mounted magnetic field producing coils in spaced series relation disposed within said housing positioned to provide a magnetic field in the vicinity of said pick-up head of a magnetic



tape player, said magnetic field producing coils being spaced from said pick-up head when in operation; and, said connecting means and said magnetic field producing coils being in electrical communication.

4,228,475

GROUND MONITORING SYSTEM

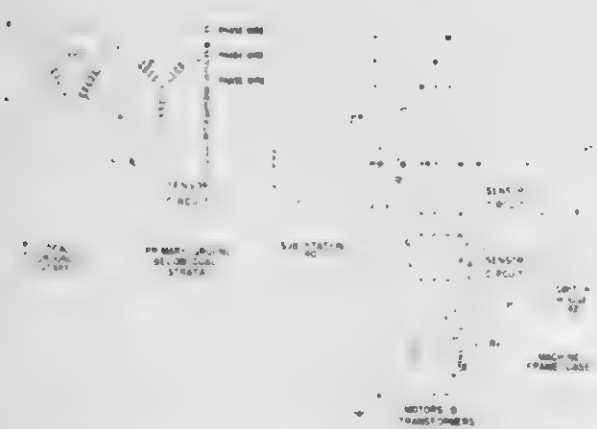
John R. Sherwood, Arlington, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,680

Int. Cl.² H02H 3/16

U.S. Cl. 361-47

18 Claims



1. In a ground wire sensor circuit for use with an electrical power cable that includes power conductors, at least one ground wire and at least one other wire that is not a power conductor, wherein said ground wire and other wire are joined together at one end of the power cable by a resistance means of given value, and wherein a sensing signal is coupled between the other ends of the ground and other wires to form a ground wire monitoring loop, said sensing signal being at a sensing frequency that is substantially different from that of the electrical power to be carried on the power conductors, and wherein the cable is connected to a source of power through circuit interrupting means,

the method of testing the electrical condition of said loop, comprising the steps

substantially blocking the sensing signal from leaving the loop at a region on the ground wire that is adjacent said resistance means,

sampling the sensing signal voltage on said loop and producing a sampled voltage signal in response thereto,

sampling the sensing signal current in said loop and producing a sampled current signal in response thereto,

comparing the sampled voltage and current signals and

producing a comparison output signal when a predetermined relationship exists between the compared signals, changing the condition of a circuit control means in response to the production of a comparison output signal, opening said circuit interrupting means to disconnect the power conductors of said cable from said source of power to response to said circuit control means changing conditions.

4,228,476

PROTECTIVE RELAYING SYSTEM

Yuji Okita, Chofu; Ryotaro Kondo, Fuchu, and Yoshiji Nii, Kawaguchi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa and Tokyo Denryoku Kabushiki Kaisha, Tokyo, both of Japan, part interest to each

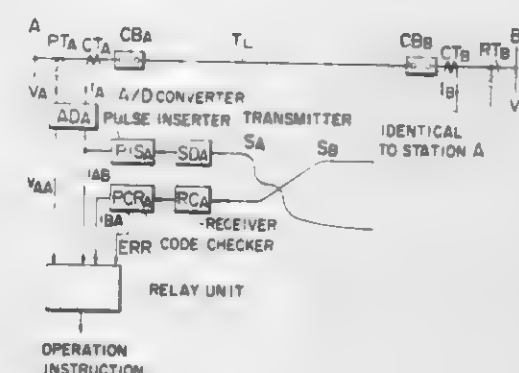
Filed Jun. 13, 1978, Ser. No. 915,231

Claims priority, application Japan, Jun. 13, 1977, 52-68942

Int. Cl.² H02H 3/28, 7/26

U.S. Cl. 361-68

7 Claims



5. A protective relaying system of an electric power transmission line between first and second stations, wherein each station comprises:

a digital current transformer, and a digital potential transformer for producing digital current and voltage code signals,

means for increasing the code lengths of said digital current and voltage code signals,

a first code checker for checking code errors of said digital current and voltage code signals, for producing a first error signal,

a transmitter for transmitting said digital current and voltage code signals having increased code length to the other station,

a second code checker for checking code errors of the digital current and voltage code signals transmitted from the other station for producing a second error signal,

processing means responsive to said current and voltage signals for producing an operation instruction, and means responsive to said first and second error signals for controlling said processing means.

4,228,477

CIRCUIT FOR MONITORING THE CURRENT DISTRIBUTION IN PARALLEL-CONNECTED CONVERTED BRANCHES

Achim Claus; Heinrich Geising, and Willi Ulbrich, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 31, 1979, Ser. No. 8,040

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1978, 2807095

Int. Cl.² H02H 3/28

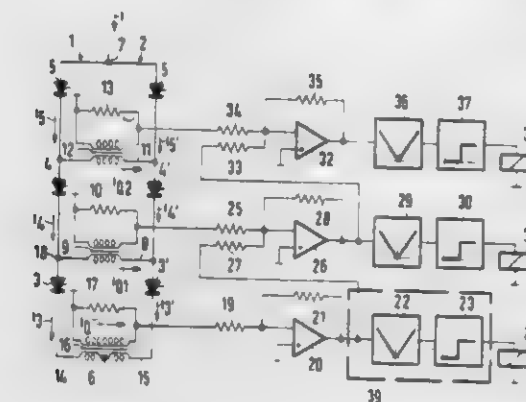
U.S. Cl. 361-87

10 Claims

1. A circuit arrangement for monitoring current in two parallel-connected converter branches each of which comprises at least two series-connected converter valves comprising:

a differential current transformer for measuring the differ-

ence between the levels of currents flowing in the two branches at a junction point of the branches, cross-connections, each containing the primary winding of a current transformer, for connecting the anodes and cathodes of corresponding converter valves in both branches, and threshold detection means associated with each transformer for triggering protective measures in response to current imbalance comprising an amplifier connected to the output of the differential current transformer for supplying a



signal to a threshold detector and a summing amplifier in each cross-connection for supplying a signal to a threshold detector,

the summing amplifier having one summing input connected to the current transformer and another summing input connected to the output of the respective preceding amplifier,

the gains of the circuits containing the amplifier and the summing amplifiers being in the ratio of 0.5 to 1, respectively.

4,228,478

OVERVOLTAGE ARRESTER

Werner Jakszt; Klaus Reichelt, and Gert Schiele, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

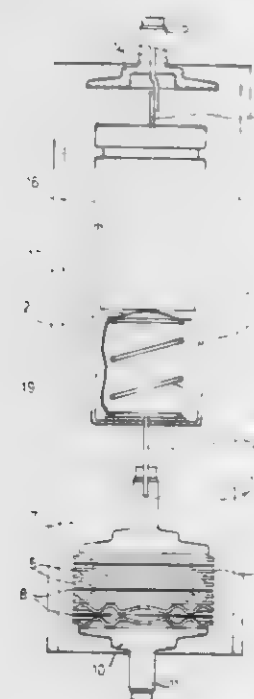
Filed Mar. 28, 1978, Ser. No. 890,921

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 7711213[U]

Int. Cl.² H02H 9/06

U.S. Cl. 361-128

3 Claims



1. An overvoltage arrester for use in protecting machines and transformers comprising: an insulating housing;

a voltage dependent resistor in said housing; a first connecting device connected to said resistor and having a protruding portion which extends out of said housing; a spark gap, formed as a separate unit, disposed in said housing, and having an outer diameter which corresponds to the inner diameter of the housing, said spark gap comprising a body of hardened cast resin in which a plurality of electrodes, a plurality of spacer washers arranged between said electrodes, and another connecting device are embedded; and a body of resin cast in said housing and on said spark gap in which said resistor body of a portion of said first connecting device are embedded.

4,228,479

DEVICE FOR THE PRODUCTION OF A GASEOUS STREAM CARRYING ELECTRIC CHARGES

Serge Larigaldie, Chatenay-Malabry, and Jean Carion, Chatillon, both of France, assignors to Office National d'Etudes et de Recherches Aeronautiques (O.N.E.R.A.), Chatillon, France

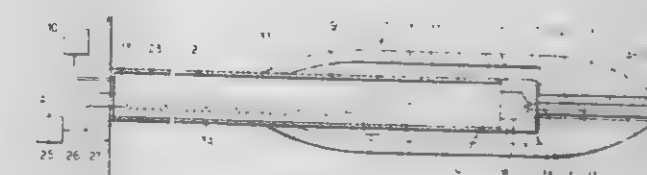
Filed Mar. 5, 1979, Ser. No. 17,090

Claims priority, application France, Mar. 10, 1978, 78 07067

Int. Cl.² H01G 1/08; H05F 3/00

U.S. Cl. 361-218

12 Claims



1. A device for producing a gaseous stream carrying electric charges, particularly in view of influencing the electric voltage of a body, particularly of an airship such as a helicopter, comprising a metallic needle connected to a first pole of a high voltage electric source and having a point which is arranged in the neck of a metallic nozzle supplied with a source of compressed air to create a stream carrying the electric charges, the nozzle being arranged at one end of an electrically insulating hollow duct means for ejecting the stream towards the atmosphere, the ejection opening of the stream being surrounded by a massive hood made of an electrically insulating material.

4,228,480

ELECTROPHOTOGRAPHIC APPARATUS WITH IMPROVED CORONA CHARGING

Bruce R. Benwood, Spenceport, and Paul A. LaChapelle, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,606

Int. Cl.² H01T 19/04

U.S. Cl. 361-235

10 Claims



1. In electrophotographic apparatus of the type having a charging station for applying a primary charge of nominal

potential level to the imaging surface of a stationary photoconductor, an improved charging device comprising:

- (a) corona discharge means for generating electrostatic charge when energized;
- (b) energizing means including a source of variably-biasable AC potential coupled to said corona discharge means; and
- (c) control means for varying the bias of said energizing means, during a period of primary charging, from a level substantially above said nominal potential level toward said nominal potential level.

4,228,481

CAPACITOR WITH EMBOSSED FOIL ELECTRODE

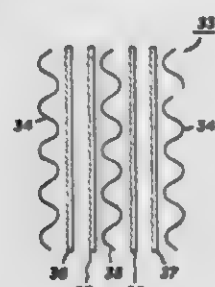
Nicola G. DiNicola; Robert V. Pastir, and William J. Wright, all of Glen Falls, N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Filed Oct. 19, 1978, Ser. No. 952,947

Int. Cl.³ H01G 0/15, 4/22

U.S. Cl. 361-314

10 Claims



1. An electrical capacitor grade aluminum foil comprising a soft annealed aluminum foil strip having a plurality of individual curvilinear surfaced dimple-like projections and depressions from the plane of the foil, said projections and depressions being coterminous with the length and breadth of the useful foil surface in an electrical capacitor, said dimples being formed and spaced apart in a manner whereby there is a smooth essentially continuously curving foil surface leading from one dimple to an adjacent projection so that a point on the base of one dimple projection and a point on the adjacent base of a dimple depression are essentially coincident.

9. In an electrical capacitor including a casing with electrical terminals thereon and one or more capacitor rolls in said casing and connected to the terminals and a dielectric fluid in the casing and impregnating the roll, the combination of

- (a) said roll comprising a pair of spaced full dimple pattern metallic electrode foil strips and a dielectric therebetween consisting solely of a synthetic resin material and comprising at least one synthetic resin strip,
- (b) said electrode foil strips having raised closely spaced uniform dimples coterminously on the surfaces thereof to provide a compressible thickness electrode,
- (c) said dimples providing a foil thickness of between 2 and 10 times the original thickness before winding in said roll,
- (d) said dimples being formed and spaced apart in a manner whereby there is a smooth essentially continuously curving foil surface leading from one dimple to an adjacent dimple so that a point on the base of one dimple and a point on the base of an adjacent dimple are essentially coincident.

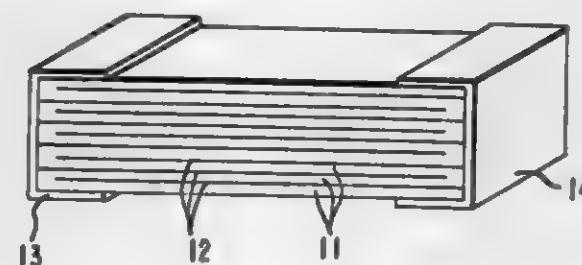
4,228,482
MULTILAYER CERAMIC CAPACITORS
Robert J. Bouchard, Wilmington, Del.; Lothar H. Brixner, West Chester, Pa., and Michael J. Popowich, Lewistown, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 757,097, Jan. 5, 1977, abandoned, which is a continuation of Ser. No. 594,281, Jul. 9, 1975, abandoned. This application Dec. 13, 1977, Ser. No. 850,211

Claims priority, application Canada, Jul. 7, 1976, 256456
Int. Cl.³ H01B 3/12

U.S. Cl. 361-321

10 Claims



1. A monolithic ceramic capacitor comprising a plurality of superimposed alternating layers of a dielectric composition and metal electrodes bonded together into a unitary body, the capacitor having a dielectric constant of at least 1000 and a dissipation factor of less than 5% and exhibiting a change in capacitance, at room temperature with time of about 1.5% or less per decade in hours even at a dielectric constant of 4000, the capacitor having been fired at a low temperature of 1050° C. or less in air, the electrodes being substantially embedded in the dielectric and having a melting point less than about 1050° C., the dielectric composition having the formula



wherein

x is 0-0.10,

a is 0.35-0.5,

b is 0.5-0.65, and

a plus b equals one

and the metal electrodes comprise silver.

4,228,483
SEQUENTIAL CONTROL ELECTRICAL CHAIN
COMPRISING ASSEMBLED COUPLING CONNECTOR
MODULES

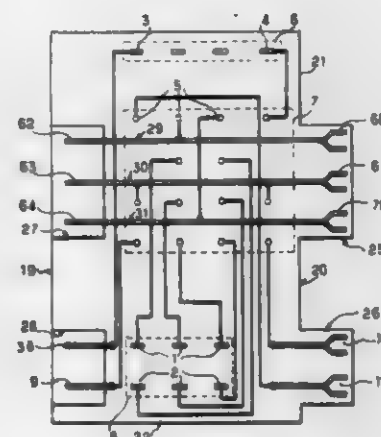
André Haury, Le Raincy, and Jacques Marcenne, Poitiers, both of France, assignors to La Telematique Electrique, France
Filed Mar. 14, 1978, Ser. No. 886,507

Claims priority, application France, Mar. 14, 1977, 77 07532

Int. Cl.² H05K 5/02

U.S. Cl. 361-393

5 Claims



1. A sequential automatic control device for controlling

electrical apparatuses which provide feedback signals upon completion of an operation, said control device comprising a plurality of mechanically coupled and electrically interconnected modules, electrical circuit means providing electrical supply and resetting signals to the modules; sequence circuit means connecting each module to each adjacent module and adapted to transmit setting signals from each module to the next module and resetting signals from each module to the preceding module, each module consisting of an insulating housing having a back face provided with means for securing the respective modules to a common supporting member, a front face opposite to the back face and first and second side faces substantially parallel to each other, the first side face of each module cooperating with the second side face of an adjacent module, said front face having first, second and third surface portions, input terminals projecting through the bottoms of outwardly opening sockets arranged on the first surface portion, connecting terminals projecting through the bottoms of outwardly opening sockets arranged on the second surface portion, output terminals projecting through the bottoms of outwardly opening sockets arranged on the third surface portion, said output terminals being connected to the said apparatuses, and said input terminals receiving the said feedback signals, a storage relay unit mechanically coupled in a removable manner to each module, said storage relay unit having a plurality of terminals which are electrically connected in a removable manner to said connecting terminals of the modules, first and second recesses in said first side face and first and second projections on said second side face, each first recess being adapted to receive the first projection of an adjacent module and each second recess being adapted to receive the second projection of an adjacent module; a plurality of transverse conductors within each module, said transverse conductors each having first and second terminals, the said first terminals in each module being adapted for electrical coupling with the second terminals of an adjacent module when said first projections are lodged into said first recesses, to complete the said electrical circuit means, first and second further terminals, the first further terminals in each module being adapted for electrical coupling with the second further terminals of an adjacent module when said second projections are lodged into said second recesses, to complete the said sequence circuit means; and interconnecting means, lodged within the module housing, for connecting the said connecting terminals to the said electrical circuit means, to the said sequence circuit means and to said input and output terminals.

4,228,484

LED FLASHER FOR BATTERY CELL-POWERED LAMP
Malcolm D. Johnstone, Little Sunapee Rd., New London, N.H.

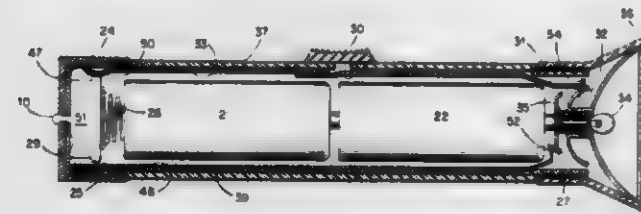
01217

Filed Dec. 4, 1978, Ser. No. 966,354

Int. Cl.³ F21V 33/00

U.S. Cl. 362-184

7 Claims



1. In a lamp powered by self-contained electric cells and having an auxiliary light source to aid in finding the lamp in the dark, the combination in said auxiliary light source comprising:
 - (a) a flasher circuit contained within said lamp;
 - (b) means automatically connecting said flasher circuit directly to said self-contained electric cells upon installation of said cells; and
 - (c) a light-emitting diode mounted in a visible location at the outer body of said lamp and connected directly to said flasher circuit, the flasher circuit being selected with

components to provide a flashing rate to said light-emitting diode of at least 1 Hertz with an average current drain from said electric cells of less than 1.0 milliamperes.

4,228,485

BLINKER AIMING POST LIGHT

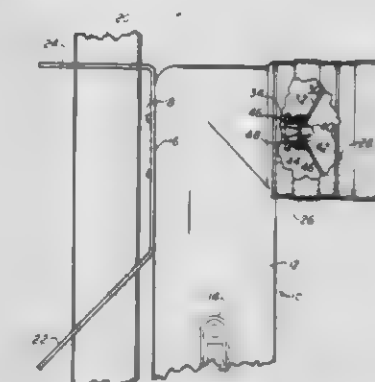
Carl A. Hubbard, and Colin M. Hudson, both of Hqs. I Corps. (RDK/US) Group, APO, San Francisco, Calif. 96358

Filed Feb. 9, 1979, Ser. No. 10,551

Int. Cl.³ H04M 1/22

U.S. Cl. 362-191

5 Claims



1. A blinker aiming post light comprising:
 - a stake,
 - a flashlight having a stake engaging clamp, said flashlight being attached to said stake,
 - a DC voltage source,
 - a flasher integrated circuit including a light emitting diode, and switch means for connecting said circuit to said voltage source,
 - said DC voltage source comprising flashlight batteries in a flashlight,
 - said switch means comprises a flashlight switch,
 - said diode replacing the conventional flashlight bulb,
 - said integrated circuit connecting with the battery contacts in said flashlight.

4,228,486

MINIATURE ELECTRIC LIGHT BULB SETS FOR DECORATIVE ILLUMINATION

Ryosuke Matsuya, Tokyo, Japan, assignor to Towa Dengyo Co., Ltd., Tokyo, Japan

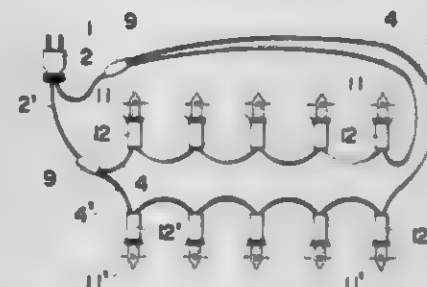
Filed Dec. 1, 1978, Ser. No. 965,414

Claims priority, application Japan, Mar. 23, 1978, 53/036253[U]

Int. Cl.³ F21V 11/02

U.S. Cl. 362-237

1 Claim



1. A miniature electric light bulb set for decorative illumination which comprises two electric wires leading from an attachment plug, and leads of each electric wire being connected to the leads of two separate electric wires through a branch plate, the entire branch plate being molded with a synthetic resin material to form a sleeve, a first group of miniature electric light bulbs being connected in series to a system of the separate electric wires and a second group of miniature electric bulbs being similarly connected in series to the system of sepa-

rate electric wires, and both groups of the miniature electric light bulbs being formed in a parallel circuit.

4,228,487

COMPOSITE LAMP ASSEMBLY WITH DETACHABLE CLAMPING MEANS

Kurt Hesse, Lemgo, and Hartmut S. Engel, Ludwigsborg, both of Fed. Rep. of Germany, assignors to Staff KG, Lemgo, Fed. Rep. of Germany

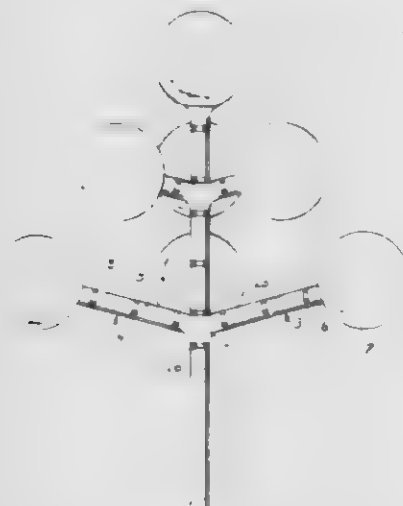
Filed Jan. 7, 1978, Ser. No. 913,421

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 7718119[U]

Int. Cl.² H01F 23/68

U.S. Cl. 362—240

18 Claims



1. A composite lamp assembly providing artificial illumination, and comprising:

a central mast having at least one composite arm extending from said mast, with said composite arm supporting at least one light fixture attached thereto;

said composite arm comprising a plurality of substantially similarly-shaped connecting sections having end portions adjacently positioned to one another, wherein each end portion is substantially circumferential cross-sectional configuration with inner and outer surfaces facing in opposite radial directions from one another;

detachable clamping means for joining said adjacently positioned end portions to form said composite arm;

wherein said detachable clamping means comprises a substantially ring-shaped clamping unit circumferentially overlapping radially outer surfaces of said adjacently positioned end portions, at least one wedging member engaging radially inner surfaces of said adjacently positioned end portions, and a tensioning screw extending between and threadably engaging said clamping ring and said wedging member, whereby selective rotation of said tensioning screw operates to draw said clamping unit and said wedging member toward one another and into clamping engagement with adjacently positioned end surfaces.

4,228,488

LUMINAIRE RAISING AND LOWERING SYSTEM

John S. Garchinsky, Aldan, Pa., assignor to Gar Design Research, Inc., Media, Pa.

Continuation of Ser. No. 723,099, Sep. 14, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,726

Int. Cl.² F21V 21/14

U.S. Cl. 362—250

9 Claims

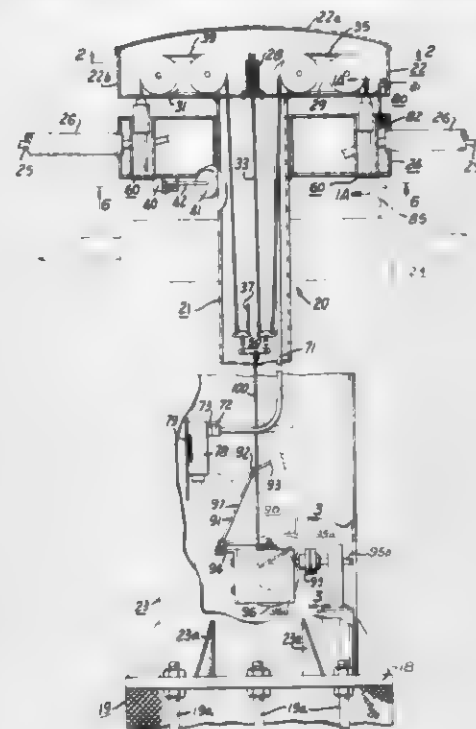
1. A system for raising and lowering luminaires or the like from the tops of poles comprising:

(a) support means toward the top of said poles including a plurality of pulleys,

(b) a carrier normally disposed adjacent said support means, said carrier including a plurality of luminaires or the like and being suspended from said support means by a plural-

ity of high tensile strength elongated means respectively associated with selected ones of said pulleys and having first ends thereof connected to said carrier,

(c) linkage means connected to the respective other ends of said plurality of high tensile strength means, and



(d) a single high tensile strength elongated means connected to said linkage means, the effective points of connection of all of said elongated means being disposed substantially in a common plane, said single high tensile strength elongated means being adapted to be connected to means for raising and lowering said single high tensile strength elongated means.

4,228,489

PORTABLE STAND APPARATUS FOR ELECTRIC FLOOD LIGHTS

Edward D. Martin, 3215 S. 84th St., Milwaukee, Wis. 53227

Continuation-in-part of Ser. No. 788,817, Apr. 19, 1977, abandoned. This application Mar. 1, 1979, Ser. No. 16,624

Int. Cl.³ F21J 21/14

U.S. Cl. 362—250

10 Claims



1. In a portable stand for the positioning of floodlights having power cords, said stand of the type having an upright and a

horizontal arm supported by said upright, the improvement comprising:

a base to support said upright, said base being generally rectangular, with four edges, said base being shaped into a generally V-shaped arched configuration; said base having two opposed edges which contact the surface upon which said base rests, said V-shaped configuration angling said two edges of said base onto the area of placement of said base.

4,228,490

DISPLAY DEVICE FOR USE WITH STRONG ILLUMINATION

Jacques-Claude Thillays, Herouville-St-Clair, France, assignor to U.S. Philips Corporation, New York, N.Y.

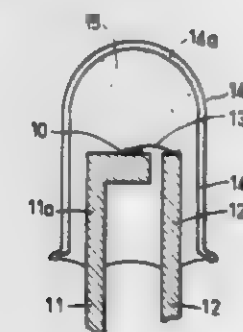
Filed Aug. 21, 1978, Ser. No. 935,100

Claims priority, application France, Aug. 19, 1977, 77 25406

Int. Cl.² F21V 3/00

U.S. Cl. 362—311

8 Claims



1. An electroluminescent device comprising at least one emissive diode emitting in the red, a filter element which is substantially transparent in the red and which covers the emissive face of said diode, the light transmission coefficient of said filter element in the blue being significantly higher than the light transmission coefficient of said filter element in the yellow and in the green.

4,228,491

CONTROL METHOD FOR A THREE-PHASE SELF-EXCITED INVERTER

Ludwig Abraham, Mannheim, and Armando Moschetti, Lampertheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

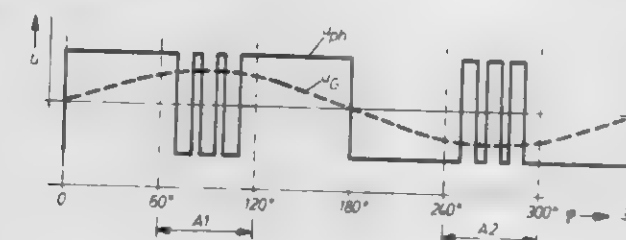
Filed Oct. 26, 1978, Ser. No. 954,833

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747964

Int. Cl.² H02M 1/14

U.S. Cl. 363—41

2 Claims



1. In a control method for a three-phase self-excited inverter which is fed from a DC voltage source and in which the fundamental oscillation of the output voltage is adjustable in frequency and amplitude, in particular by the subharmonic method, the improvement comprising:

generating three phased series of triangular waveform signals of the same amplitude and having repetition frequencies bearing predetermined relationships; generating an input command signal having an amplitude variable between predetermined limits;

level comparing selected of the triangular waveform signals with said input command signal; generating sequentially non-overlapping respective series of gate pulse signals for initiating switching of an inverter coupled to a respective phase (R, S or T), the gate pulse signals for a respective phase being generated only in two 60° (electrical)-wide operating pulse regions arranged symmetric to the maximum and minimum of the fundamental voltage oscillation of said respective phase (R, S or T) and such that said 60° (electrical)-wide pulse regions overlap the fundamental voltage oscillation of each respective phase.

4,228,492

CIRCUIT ARRANGEMENT AND METHOD FOR THE COMPENSATION OF HARMONIC CURRENTS

Michael Häusler, Hirschberg, and Karl W. Kanngiesser, Viernheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

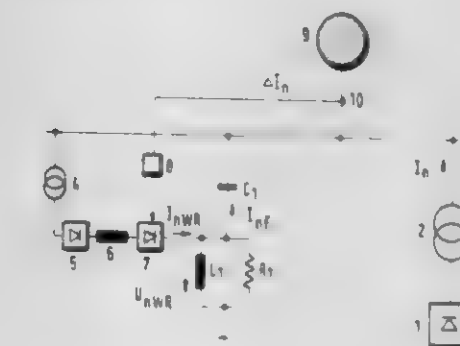
Filed Nov. 2, 1978, Ser. No. 957,424

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749360

Int. Cl.² H02M 1/12

U.S. Cl. 363—48

2 Claims



1. Circuit for coupling a harmonic converter formed of controllable rectifiers to collector bus bars of a three-phase a-c network to compensate harmonic currents in the network, the harmonic converter having an input and an output, including a rectifier and a choke connected to said input, comprising a damped low Q wideband highpass filter covering the entire frequency range of disturbing harmonics, said filter having a choke connected in parallel with a damping resistor, and a capacitor connected in series therewith, said capacitor being connected between the output of the harmonic converter and each collector bus bar of the three-phase a-c network and said parallel connected choke and resistor being connected between the output of the harmonic converter and ground.

4,228,493

POWER CONTROL CIRCUIT AND A SWITCHING MODE POWER SUPPLY EMPLOYING THIS CIRCUIT

Jean de Sartre, and Erich Geiger, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 21, 1978, Ser. No. 972,058

Claims priority, application France, Dec. 29, 1977, 77 39611

Int. Cl.³ H02M 3/335

U.S. Cl. 363—56

9 Claims

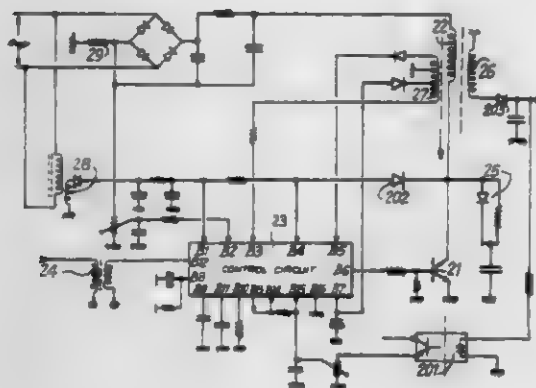
1. A power control circuit for controlling the base current to a switching transistor connected in series with a primary winding of a switching transformer comprising:

first means for detecting the current flow through said transistor and producing a first signal when said current flow exceeds a first predetermined value;

second means for detecting the current flow through a secondary winding of said transformer and producing a second signal when current flow through said second winding exceeds a second predetermined value;

means for generating a sawtooth waveform and comparing

said waveform to a reference voltage to produce a sequence of timing pulses;
 first amplifier means for supplying base current to said switching transistor;
 second amplifier means for absorbing base current from said switching transistor, said base current being cyclically supplied to and absorbed from said transistor;



logic means connected to said first and second detecting means, said generating and comparing means and said first and second amplifier means for controlling supplying of base current to and absorbing current from said switching transistor in accordance with said pulses and said first and second signals.

4,228,494

CONSTANT CURRENT SOURCE

Francis J. Stifter, c/o Electronic Specialists, Inc., 171 S. Main St., Natick, Mass. 01760

Filed Aug. 16, 1978, Ser. No. 934,030
 Int. Cl.² H02P 13/26

U.S. Cl. 363-85

9 Claims

greater than said given level so as to maintain a constant level of current flow to said load; and
 selective shut-off circuit means for shorting the positive half cycles supplied by said ac supply means to said phase shift network so as to disable said semiconductor switch and terminate said current flow.

4,228,495

MULTIPROCESSOR NUMERICAL CONTROL SYSTEM

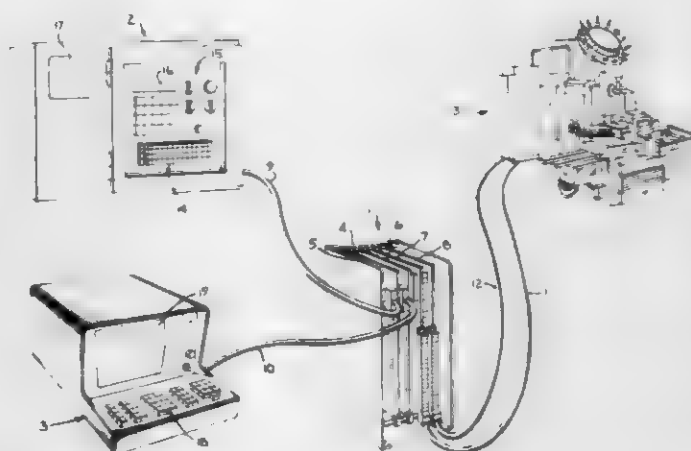
Theodore L. Bernhard, Mentor on the Lake; Ernst Dummermuth, Chesterland; Thomas M. Hoch, Woodmere; Bruce S. Jaffe, Mayfield Heights, and Gregory L. Merrell, Cleveland Heights, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Dec. 19, 1978, Ser. No. 970,959

Int. Cl.³ G05B 19/18; G06F 15/16

U.S. Cl. 364-101

26 Claims



9. A numerical control system for operating the servomechanisms and discrete devices on a machine tool which comprises:

a main processor having a main microprocessor which connects to a main memory through a main data bus and a main address bus, said main processor being operable in response to instructions which are stored in its memory and executed by its microprocessor to convert blocks of part program data into motion command signals for the servomechanisms on said machine tool; and

a front panel processor having an FP microprocessor which connects to an FP memory through an FP data bus and an FP address bus and having serial data link means for coupling it to the main processor, means for coupling it to a keyboard, means for coupling it to a display and means for coupling it to a set of front panel switches, said front panel processor being operable in response to instructions which are stored in its memory and executed by its FP microprocessor to couple data from said keyboard and said set of front panel switches to said main processor and to couple data received from said main processor to said display.

4,228,496

MULTIPROCESSOR SYSTEM

James A. Katzman, San Jose; Joel F. Bartlett, Palo Alto; Richard M. Bixler, Sunnyvale; William H. Davidow, Atherton; John A. Despotakis, Pleasanton; Peter J. Graziano; Michael D. Green, both of Los Altos; David A. Greig; Steven J. Hayashi, both of Cupertino; David R. Mackie, Ben Lomond; Dennis L. McEvoy, Scotts Valley; James G. Treybig, and Steven W. Wierenga, both of Sunnyvale, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Sep. 7, 1976, Ser. No. 721,043

Int. Cl.³ G06F 15/16, 15/06

U.S. Cl. 364-200

80 Claims

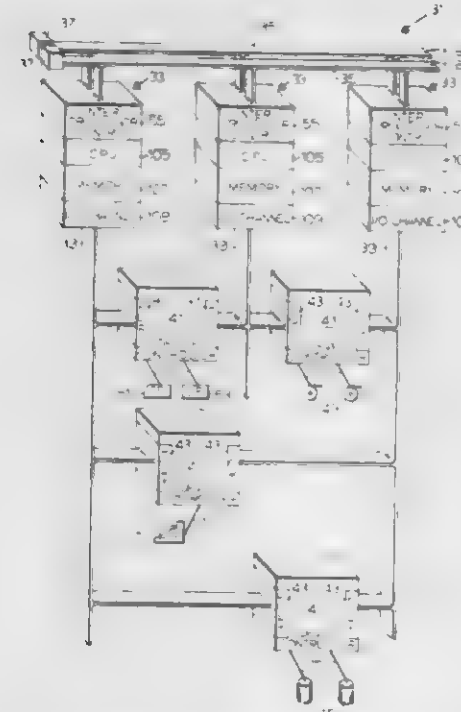
1. A multiprocessor system of the kind in which separate processor modules operate concurrently and cooperatively for

system control and application processing, said multiprocessor system comprising,

a plurality of separate processor modules,
 each processor module comprising a central processing unit within the processor module, a separate main read-write word addressable memory within the processor module having sufficient capacity for the storage of system control and application programs and data, and a dedicated memory bus within the processor module connecting the separate main memory in the processor module exclusively to its associated central processing unit in the processor module for access to said programs and data without contention with central processing units in other processor modules,

interprocessor bus means separate and distinct from an input/output system and from a memory bus and interconnecting the processor modules for direct processor module to processor module signaling and data transfer, said interprocessor bus means including,

a common shared interprocessor bus,
 interprocessor control means in each processor module for connection that processor module to the interprocessor bus, and



centralized bus controller means operatively associated with the interprocessor bus and each interprocessor control means for determining the priority of data transfers over the interprocessor bus and for controlling transmissions over the interprocessor bus,

said bus controller means including,
 arbitration means for centrally arbitrating the priority of said data transfers and

bus clock generator means for controlling the time sequence of data transfer by a processor module over the interprocessor bus, said processor module including:

reading means for reading data from the associated main read/write memory of that processor module for transmission to the interprocessor bus, and

writing means for writing data received from the interprocessor bus into a specified location in the association main read/write memory of that processor module, wherein said reading and writing means are effective to transfer data from the memory of a sender processor module to the memory of a receiver processor module, and wherein each processor module includes a buffer for each other processor module and also includes location pointing means for directing incoming data from an interprocessor bus to a specified location in a related buffer in the memory of a receiver processor module.

4,228,497

TEMPLATE MICROMEMORY STRUCTURE FOR A PIPELINED MICROPROGRAMMABLE DATA PROCESSING SYSTEM

Ram K. Gupta, Downingtown, and Chandrakant R. Vora, Audubon, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 17, 1977, Ser. No. 838,070

Int. Cl.³ G06F 9/38, 13/00

U.S. Cl. 364-200

4 Claims



1. A template micromemory structure for providing a series of addressed microinstructions to a pipelined data processing system, said structure comprising:

a plurality of addressable template micromemory units for storing microinstructions;

a plurality of microprogrammable pipelined stages, each stage therein associated with and receiving addressed microinstructions from at least one template micromemory unit in said plurality thereof with at least one stage thereof receiving addressed microinstructions from at least two template micromemory units in said plurality thereof; and

template micromemory addressing means connected to said plurality of addressable template micromemory units, said template micromemory addressing means addressing concurrently in each template micromemory units in said plurality thereof a microinstruction stored therein, said addressing means including a first address register serially followed by a plurality of serially connected address registers, said first register initially storing a first instruction address and sequentially incremented through a series of microinstruction addresses in coordination with data flow through said pipelined data processing system, each register in said following plurality thereof temporarily and sequentially storing an address previously stored in its serially preceding register, each register in said following plurality thereof and said first register individually associated with a single unit in said plurality of addressable template micromemory units for addressing a microinstruction stored therein, whereby said plurality of addressable template micromemory units are provided a series of microinstruction addresses and said pipelined data processing system is provided a series of addressed microinstructions.

4,228,498

MULTIBUS PROCESSOR FOR INCREASING EXECUTION SPEED USING A PIPELINE EFFECT

Stephen L. Moshier, Cambridge, Mass., assignor to Dialog Systems, Inc., Belmont, Mass.

Filed Oct. 12, 1977, Ser. No. 841,390

Int. Cl.² G06F 15/20, 15/34

U.S. Cl. 364-200

16 Claims

1. A computing apparatus comprising a plurality of elementary function modules, at least three buses, each bus comprising a plurality of individual lines, said individual lines being organized at least into

a group of source address lines,
a group of destination address lines, and
a group of data carrying lines,
a first one of said function modules being connected at least to the data and one other group of lines of a first one of said buses, a second one of said modules being connected at least to said data and one other group of lines of a second one of said buses, a third one of said modules being connected at least to the data and one other group of lines of a third one of said buses and a fourth one of said modules being connected at least to the data and one other group of lines of each of the first, second, and third buses,



each other of said plurality of modules being connected at least to said data and one other group of lines of a respective bus whereby each source and destination group of each of said plurality of buses is connected to at least one of said plurality of function modules, and each data group of each of said plurality of buses is connected to at least two of said plurality of function modules, and
a control means, said control means being connected to all of said buses for directing the operation of said function modules, and said control means placing sequentially changeable source and destination addresses on said bus source address and destination address lines respectively for effectively connecting the function modules in a selected configuration.

4,228,499

INTERFACE UNIT FOR DATA EXCHANGE BETWEEN A CENTRAL PROCESSOR AND A PERIPHERAL UNIT IN TDM TELECOMMUNICATION SYSTEM

Mario Springolo, Milan, and Umberto Lorenzini, Cesano-Boscone, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed Oct. 28, 1977, Ser. No. 846,452

Claims priority, application Italy, Oct. 29, 1976, 28837 A/76
Int. Cl.³ G06F 3/00

U.S. Cl. 364-200

10 Claims



1. In a TDM telecommunication system wherein a central processor dialogues with a plurality of peripheral units each having a multiplicity of loads activable in time slots individually assigned thereto in a recurrent scanning cycle, the combination therewith of an interface unit interposed

between said processor and an associated peripheral unit, said interface unit comprising:

- a receiving section with first input means connected to said processor and first output means connected to the associated peripheral unit;
- a transmitting section with second input means connected to the associated peripheral unit and second output means connected to said processor;
- a series/parallel register in said receiving section having a series input connected to said first input means for the temporary storage of incoming messages from said processor;
- a parallel/series register in said transmitting section with parallel inputs connected to said second input means for the temporary storage of return messages from the associated peripheral unit;
- memory means in said receiving section having a multiplicity of cells connected to said first output means, said cells being respectively allocated to said loads and identified by address codes corresponding to the time slots assigned thereto;
- timer-operated first control means in said receiving section responsive to a signal from said series/parallel register for directing the writing of an operative code of an incoming message, destined for a load of the associated peripheral unit identified by an accompanying address code, in the allocated cell of said memory means during one part of a time slot and for commanding the readout to said first output means, during another part of a time slot, of the contents of the cell allocated to the load which is activable in the immediately following time slot; and
- second control means in said transmitting section responsive to a signal from said parallel/series register for routing return messages from the associated peripheral unit to said second output means.

4,228,500

COMMAND STACKING APPARATUS FOR USE IN A MEMORY CONTROLLER

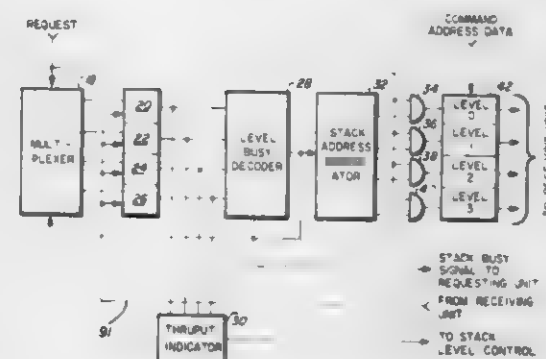
Marvin K. Webster, Glendale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Mar. 27, 1978, Ser. No. 890,006

Int. Cl.³ G06F 13/00, 3/04

U.S. Cl. 364-200

10 Claims



1. In a data processing system of the type wherein a memory controller coordinates the transfer of information between at least one memory device and at least one requesting unit, a stacking apparatus for temporarily storing said information when said at least one memory device is unavailable, comprising:

- a plurality of distinct storage levels each capable of storing information associated with a different request; and
- means for loading said information into the lowest unoccupied level.

4,228,501

DATA TRANSFER TECHNIQUE FOR USE WITH PERIPHERAL STORAGE DEVICES

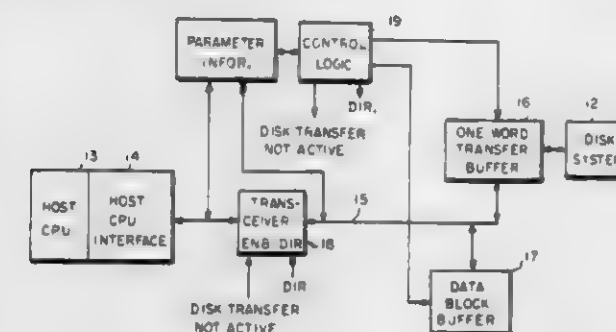
John M. Frissell, Dracut, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed Jun. 21, 1978, Ser. No. 917,631

Int. Cl.³ G06F 13/04

U.S. Cl. 364-200

7 Claims



1. A data processing system comprising a central processor unit; central processor interface means for transferring data to and from said central processor unit at a first transfer rate; data storage means including means for storing data; means for writing data into said data storing means; and means for reading data from said data storing means; said writing and reading of data occurring at a second transfer rate which is higher than said first transfer rate, said data writing means including means for storing blocks of data words in separate storage sectors, successively used blocks of data words being stored in nonadjacent ones of said storage sectors; data transfer bus means for use in transmitting data between said central processor means and said data storage means; temporary storage means in bi-directional communication with said bus means for storing a block of data words therein, said temporary storage means having a storage capacity sufficient to store all of the data words stored in any one of said storage sectors; control means for successively selecting non-adjacent storage sectors of said data storage means with respect to which data transfers are to occur; and means for transferring blocks of data words between said central processor interface means and said temporary storage means, the transfer of a block of data words with respect to one selected storage sector being completed during the intervening time period between the transfer of a block of data words with respect to said one selected storage sector and the transfer of a block of data words with respect to the next selected storage sector; and means positioned between said central processor interface means and said bus means and responsive to said control means for preventing the transfer of data between said data storage means and said temporary storage means on said bus means when data is being transferred between said data storage means and said temporary storage means.

4,228,502

ELECTRONIC COMPUTER SYSTEM

Yasuhito Wakasugi, Owariasahi, Japan, assignor to Hitachi, Ltd., Japan

Filed Jun. 26, 1978, Ser. No. 919,313

Claims priority, application Japan, Jun. 29, 1977, 52-76527; Jun. 29, 1977, 52-76528

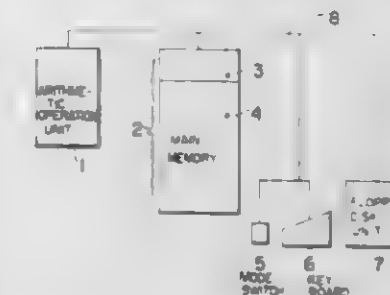
Int. Cl.³ G06F 3/00

U.S. Cl. 364-200

2 Claims

1. In an electronic computer system which automatically carries out initial program loading in response to an externally

given signal, an improvement comprising means for inhibiting the initial program loading which would otherwise be carried out in response to said externally given signal, and means for designating an alternative operation to be carried out in place of said initial program loading in response to said externally



4,228,503

MULTIPLEXED DIRECTORY FOR DEDICATED CACHE MEMORY SYSTEM

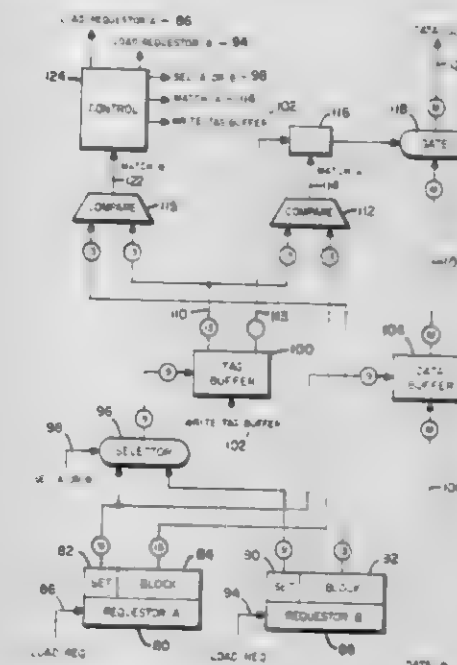
John C. Waite, St. Paul, and David J. Baber, Shoreview, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,791

Int. Cl.³ G06F 13/00

U.S. Cl. 364-200

6 Claims



1. In a computer system including a plurality of requestors, each requestor being a resident requestor to its own dedicated cache memory but a non-resident requestor to the dedicated cache memories of the other requestors of the computer system, the cache memories storing copies of data words that are stored in a main memory, the improvement wherein each of said dedicated cache memories comprises: data buffer means having a plurality of addressable locations therein for storing a plurality of data words thereat and having a first, relatively slow, memory cycle; tag buffer means having a plurality of addressable locations therein for storing a data word address and an associated invalidate bit at each of said addressable locations and having a second, relatively fast, memory cycle that is of substantially less duration than that of said first memory cycle; selector means for alternatively coupling to said tag buffer means a first portion of a resident requestor address or a

first portion of a non-resident requestor address for reading out the data word address and associated invalidate bit that are stored in said tag buffer means at the addressed addressable location;

resident requestor comparator means coupled to a second portion of said resident requestor address and to the data word address read out of said tag buffer means for generating a resident requestor match or mismatch signal;

non-resident requestor comparator means coupled to a second portion of said non-resident requestor address and to the data word address read out of said tag buffer means for generating a non-resident requestor match or mismatch signal;

invalidate bit bistable means for generating a data out gate signal upon the coupling thereto of a valid condition invalidate bit and a resident requestor match signal;

data out gating means coupled to said data buffer means and said invalidate bit bistable means for gating out a data word from said data buffer means only if the read out invalidate bit is in a valid condition and said resident requestor comparator means is generating a resident requestor match signal;

control means enabling said resident requestor comparator means to compare, during a first portion of a first one of said first memory cycles, the second portion of said resident requestor address of the data word address read out of said tag buffer means for generating said resident requestor match or mismatch signal, said resident requestor match signal enabling, in turn, said invalidate bit bistable means to gate said data word from said data buffer means through said data out gating means;

said control means enabling said non-resident comparator means to compare, during a second portion of said first one of said first memory cycles, the second portion of said non-resident requestor address to the data word address read out of said tag buffer means for generating said non-resident requestor match or mismatch signal; and,

said non-resident requestor comparator means match signal conditioning said control means to set, during a second portion of a second, subsequent one of said first memory cycles, the invalidate bit of the addressed addressable location in said tag buffer means to an invalid condition.

4,228,504

VIRTUAL ADDRESSING FOR I/O ADAPTERS

David O. Lewis, Rochester, and John W. Reed, Pine Island, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,659

Int. Cl.³ G06F 3/00

U.S. Cl. 364-200

7 Claims



1. In a virtual memory computer system having a central processing unit, main memory and I/O adapters connected to the main memory by a channel, wherein said main memory has a plurality of addressable storage locations and a group of storage locations form a memory page having memory address boundaries, wherein both the CPU and the I/O adapters use virtual addressing and wherein the channel has a priority mechanism for granting use of the channel to the highest prior-

ity I/O adapter requesting use of the channel, the improvement comprising:

an I/O address register for storing a memory address for addressing memory;

register means for storing memory addresses, where the register means is accessible by the channel and the CPU;

incrementing means for incrementing the memory address in the I/O address register;

detecting means for detecting when the incrementing means increments the memory address in the I/O address register to a value for addressing a memory location across a memory page boundary, said incremented memory address becoming invalid upon reaching the value for addressing a memory location across a memory page boundary;

means for translating an incremented memory address in said I/O address register which crosses a page boundary into a valid main memory address and for providing a translation completion signal to the channel upon completion of the address translation; and

disconnection means in the channel for disconnecting an I/O adapter from the channel when the I/O adapter requests use of the channel and the I/O address register after the detecting means has detected that a memory address in the I/O address register has crossed a page boundary, said disconnection means holding said I/O adapter disconnected when said I/O adapter requests use of the channel and the I/O address register until the channel receives the translation completion signal indicating completion of address translation, said disconnection means otherwise permitting the I/O adapter to request and use the channel via said register means and provided use of the I/O address register is not requested.

4,228,505

METHOD FOR COMPUTED TOMOGRAPHY

Wolfgang Wagner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

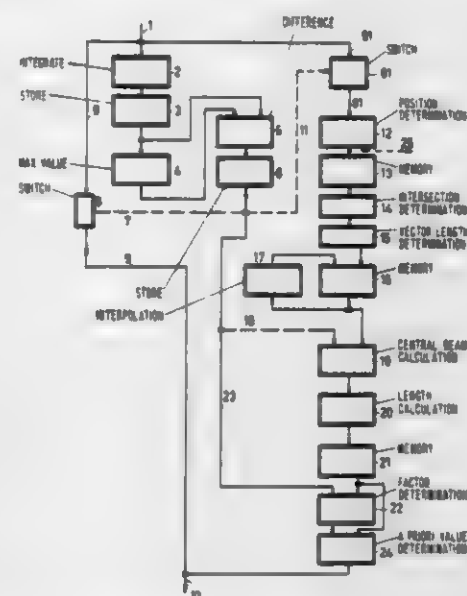
Filed Oct. 23, 1978, Ser. No. 953,512

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753260

Int. Cl.³ G01N 23/00

U.S. Cl. 364-414

5 Claims



1. A method for determining the spatial distribution of the absorption of radiation in a slice of a body comprising the steps:

irradiating the body from a plurality of different positions along a plurality of measuring beams which pass through a scanning zone, the slice of the body being completely irradiated by radiation from at least one of the positions and being less than completely irradiated by radiation from at least one other of the positions;

measuring the integral of the absorption of radiation by the

body along each of the measuring beams to produce measuring values, a measuring series comprising the set of all measuring values produced by radiation from a single position;

forming the sum of the measuring values in each of the measuring series;

identifying the maximum of all of said sums;

determining the difference between each of said sums and the maximum sum;

forming, in the case where at least one of the differences deviates from zero, a priori values so that for each measuring series the sum of the associated a priori values corresponds to the difference between the sum formed for that series and the maximum sum, each a priori value being proportional to the length of a beam extending through the body from the corresponding position, which length corresponds to the distance between the points of intersection of the associated beam and the edge of the body, said each being determined as the envelope of all beams which are tangent to the body inside the scanning zone and as an extension of the body which is determined by interpolation; and

reconstructing the absorption distribution inside the scanning zone, by the methods of computed tomography, utilizing both the measuring values and the a priori values.

4,228,506

CHARTER WITH AUTOMATIC EDITING

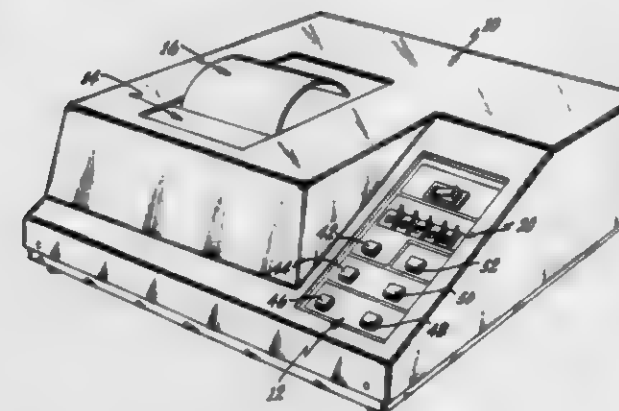
John A. Ripley, Newport Beach; Donald C. Woods, Lompoc, and James Kaine, Santa Ana, all of Calif., assignors to Del Mar Avionics, Irvine, Calif.

Filed Nov. 9, 1978, Ser. No. 959,091

Int. Cl.³ G06F 3/05

U.S. Cl. 364-415

9 Claims



1. A charter for use with a source of time correlated digital systolic and diastolic blood pressure data and heart rate data, for receiving, storing, analyzing, and editing the data, and for producing tables and charts having a particular format for displaying under control of an operator in edited and unedited form both the data as received from the source and the analyzed data, said charter comprising in combination:

first storage means connected to the source of data for storing words of data when they are received from the source of data, and including flag storage locations associated with each of the words of data for storing as required a flag along with each word of data;

automatic editing means connected to said first storage means and operable in response to an edit command to edit by testing stored words of data to determine whether the stored words of data meet certain pre-established qualifications and to write a flag in the flag storage location associated with each of the stored words of data if the stored words of data do not meet the pre-established qualifications, so that edited data words meeting the pre-established qualifications can subsequently be recognized by the absence of a flag in their associated flag storage locations, both the edited and unedited data being retained in said first storage means after editing for selected use

including verification and evaluation of the operation of said automatic editing means.

4,228,507

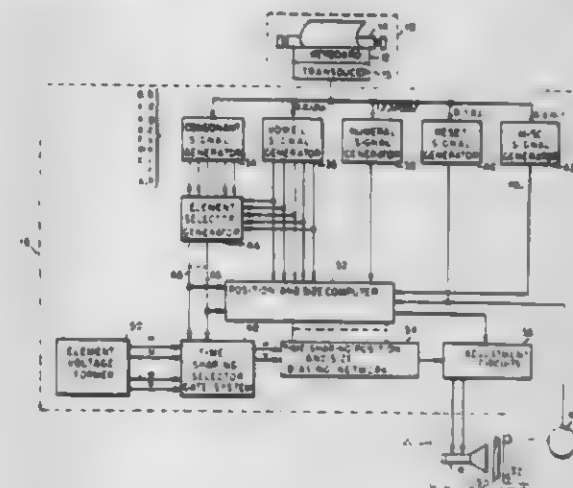
METHODS AND MEANS FOR REPRODUCING NON-ALPHABETIC CHARACTERS

Carl Leban, 608 Saratoga Pl., Lawrence, Kans. 66044
Continuation-in-part of Ser. No. 742,076, Jul. 2, 1968, Pat. No. 3,665,450, and Ser. No. 682,400, Nov. 13, 1967, abandoned, said Ser. No. 742,076, is a continuation-in-part of Ser. No. 682,400, abandoned. This application May 22, 1972, Ser. No. 255,867

Int. Cl.³ G06F 15/20

U.S. Cl. 364-419

11 Claims



1. The method of transcribing non-alphabetic characters comprising, entering into a computer one of a given finite plurality of symbols defining one of the elements in the character, successively entering into the computer given finite pluralities of symbols defining other elements in the character, and entering with the given finite plurality of symbols defining other elements in the character predetermined ones of a finite plurality of symbols defining the position of the other elements relative to the element defined by the previous symbol, in the computer decoding the string of symbols to determine a successive element, determining the element, determining the position of the element relative to the previous element, and plotting the elements on the basis of the information in the computer.

4,228,508

AUTOMATIC LONGWALL MINING SYSTEM AND METHOD

Friedrich Benthau, Essen-Bredeney, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 892,165, Mar. 31, 1978, abandoned. This application Sep. 29, 1978, Ser. No. 947,179

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714506

Int. Cl.³ G06F 15/20; E21C 41/00

U.S. Cl. 364-420

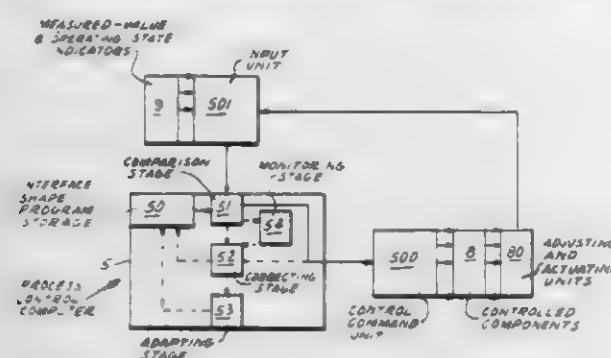
12 Claims

1. An improved method of controlling the operation of a longwall excavating machine which during a working trip works the face of a longwall excavation, particularly a power loader mounted for movement along the length of a face conveyor, or the like, the method being of the type wherein a coal-seam interface-shape program is stored in a programmable control arrangement operative for causing the excavating machine to excavate in accordance with the stored program during at least one working trip,

the improvement comprising:

using coal-seam interface sensor means to generate data indicative of true coal-seam interface-shape conditions; feeding said data into the programmable control arrangement and causing the latter to compare said data against the stored coal-seam interface-shape program and ascer-

tain the error in the stored coal-seam interface-shape program relative to the true coal-seam interface conditions detected by the sensor means; and causing the programmable control arrangement to auto-



matically and gradually modify the stored coal-seam interface-shape program in ongoing dependence upon the ascertained error to thereby automatically and continually update the stored coal-seam interface-shape program followed by the excavating machine.

4,228,509

MULTIVARIABLE CONTROL SYSTEM FOR REGULATING PROCESS CONDITIONS AND PROCESS OPTIMIZING

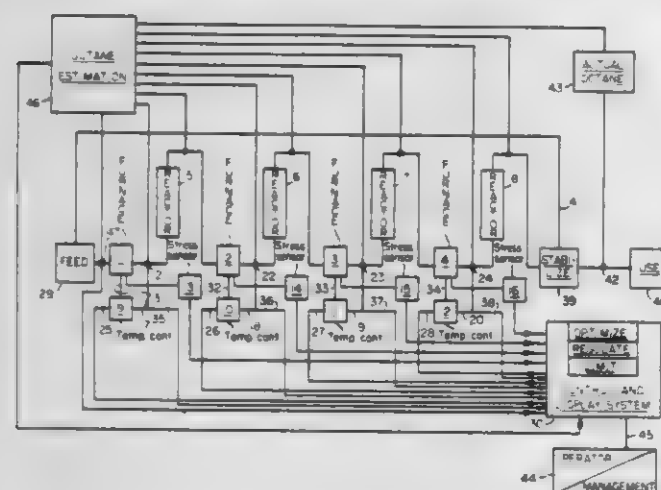
James P. Kennedy, 700 Cary Dr., San Leandro, Calif. 94577

Filed Apr. 7, 1977, Ser. No. 785,617

Int. Cl.² G06F 15/46; G05B 13/02; C10G 39/00

U.S. Cl. 364-501

12 Claims



1. In a reforming process having furnace and reactor pairs connected in series, furnace outlet to reactor inlet, for passing feedstock through said reactors for ultimately producing therefrom, stabilized product having a desired octane rating O ; said process also having an improved control system comprising temperature regulating means for causing said furnaces to heat said feedstock to predetermined furnace outlet temperatures, each said furnace being individually controllable to establish the corresponding furnace outlet temperature T_i , said temperature regulating means being adjustable to change the value of T_i for any furnace; and said control system also having furnace stress sensing means for producing stress signals which are measures of stress for each furnace, temperature sensing means for producing outlet temperature signals which are measures of T_i for each furnace, and product evaluating means for producing a product signal which is a measure of O for said product; said control system comprising computer means responsive to said stress signals, outlet temperature signals and product signals, for computing adjusting signals for adjusting said temperature regulating means such as to change the value of T_i for said furnace outlet temperatures, and said control system having means applying said adjusting sig-

nals to said temperature regulating means for making adjustments thereof such as to cause said furnace outlet temperatures to change by amounts ΔT_i , wherein:

$$\Delta T_i = -k_1 \left(\frac{\partial O}{\partial T_i} e_o + \frac{\partial \theta_i}{\partial T_i} e_{\theta_i} \right) + k_2 \frac{\partial J}{\partial T_i}$$

ΔT_i =change required in outlet temperature T_i of the i 'th furnace,

O =octane number, or equivalent,

e_o =difference between actual O and desired value therefore,

θ_i =stress in the i 'th furnace,

J =an "objective" function of arbitrary form, which defines an optimization criterion,

k_1, k_2 =weighting constants, where k_1 is much greater than k_2 , and

e_{θ_i} =a measure of the relation between actual furnace stress and maximum permissible value thereof.

4,228,510

CHARACTER GENERATOR

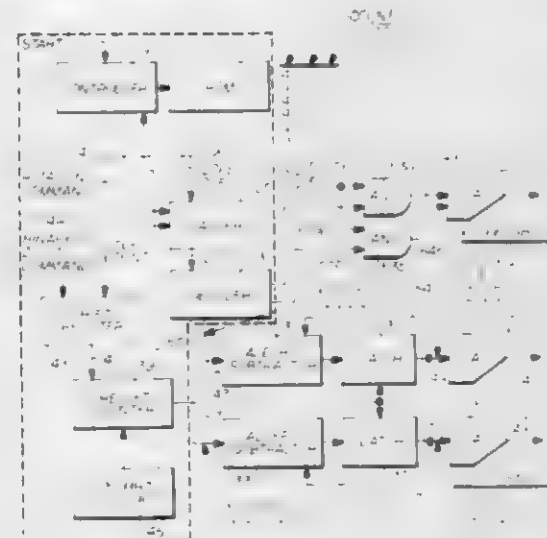
Walter J. Johnson, Seattle, and James J. Selis, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 1, 1978, Ser. No. 882,393

Int. Cl.² G06F 3/153

U.S. Cl. 364-521

8 Claims



1. A character generator for use with an electron beam controlled display in which the movement of the electron beam to generate a visible character is determined by a set of instruction words, wherein each instruction word in the set includes slope, count and visibility information for generating one straight line portion of a character on the display, each straight line portion comprising a plurality of strokes, the length of the strokes varying depending on the slope of the straight line portion but equal within a given straight line portion, wherein the slope information is a single number representative of the particular slope of the straight line portion on the display and the count information is a number representative of the number of strokes in the straight line portion, and thus determines the length of the straight line portion on the display, the display being arranged so that a character is formed by a series of straight line strokes between matrix points which comprise the display, the distance between successive matrix points in the horizontal direction being referred to as a ΔX unit value, and the distance between successive matrix points in the vertical direction being referred to as a ΔY unit value, the ΔX and ΔY unit values being equal to the shortest stroke generated, the generator comprising:

- a. memory means for storing a plurality of instruction words;
- b. controller means for retrieving each instruction word in

turn in a set of instruction words in order to produce a given character;

- a counter capable of being preset to a desired value;
- means setting said counter to the value of the count information in an instruction word;
- a clock set to run at a frequency which is selected so that the period between successive clock pulses corresponds to the desired time to generate a stroke section of the straight line portion of the given character corresponding to the instruction word;
- means connecting said clock with said counter such that in operation said clock counts down said counter at the selected frequency, wherein said counter produces a counter pulse in response to each clock pulse;
- decoder means responsive to said slope information to provide ΔX and ΔY display values which are appropriate multiples of the ΔX and ΔY unit values representative of the orthogonal components of the successive strokes comprising the straight line portion on the display which the slope information represents;
- means responsive to said decoder means for accumulating, at each counter pulse, the sum of the ΔX and ΔY display values for the successive strokes in successive straight line portions of a character, until the character has been completed, said accumulating means including first and second series connections of an adder/subtractor means, a latch circuit, and means feeding back the output of the latch circuit back to the adder/subtractor means;
- first and second digital-to-analog converters responsive to the latch circuits for converting the accumulated values of ΔX and ΔY into corresponding analog values which may in turn be applied to deflection circuits in order to move the electron beam on the display sufficiently to produce successive stroke sections of the straight line portion corresponding to the instruction word; and
- gate means responsive to the visibility information in the instruction word and to said decoder means to produce a beam intensity control signal, which varies in accordance with the length of each stroke section to be drawn, which control signal may be applied to intensity circuits to vary the intensity of each stroke in accordance with the length thereof.

4,228,511

SYSTEM AND METHOD OF POWER DEMAND LIMITING AND TEMPERATURE CONTROL

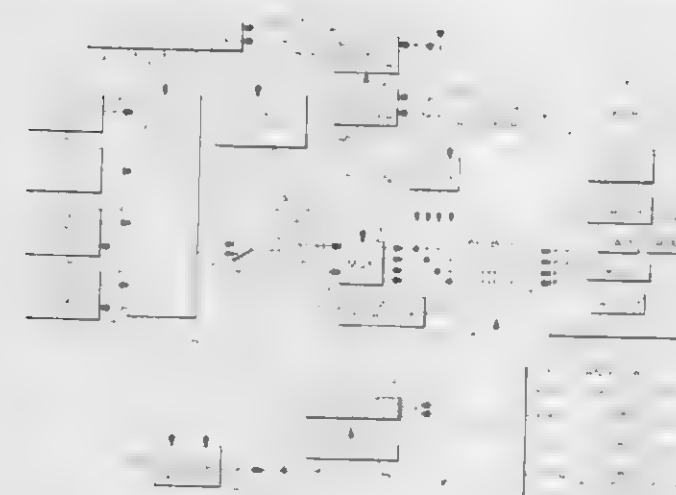
Robert J. Simcoe, Liverpool, N.Y., and David C. Finch, Roanoke, Va., assignors to General Electric Company, New York, N.Y.

Filed Oct. 6, 1978, Ser. No. 949,306

Int. Cl.² G05B 11/00; H02J 13/00

U.S. Cl. 364-506

33 Claims



3. A room thermostatic control for use in controlling indoor temperature within a structure and for selectively reducing electrical energy consumption of ambient temperature condi-

tioning means during intervals of peak load demand on the electrical system, comprising:

- (a) user adjustable reference temperature selection means for selecting a desired reference temperature and first means for deriving therefrom a temperature set point value;
- (b) second means for generating a power defer signal responsive to a signal condition, indicative of an imminent electric power peak demand and supplied from a location external of the thermostatic control and the structure being conditioned by ambient temperature conditioning means;
- (c) third means responsive to said power defer signal for automatically ramping said temperature set point value in a first boosting direction to increase energization of the ambient temperature conditioning means, and subsequently ramping said temperature set point value in a second defer direction to decrease electrical energization of the ambient temperature conditioning means, whereby indoor ambient temperature is offset in a boost direction from the desired reference temperature and during actual peak load demand is ramped in a defer direction from the desired reference temperature;
- (d) fourth means for deriving a signal representative of indoor ambient temperature value;
- (e) fifth means responsive to signals representative of said indoor ambient temperature value and said temperature set point value for generating a control signal; and
- (f) sixth means responsive to said control signal and adapted for connection to the ambient temperature conditioning means to modify operation of the last named means.

4,228,512

NUCLEAR PULSE COUNTING APPARATUS AND TECHNIQUE

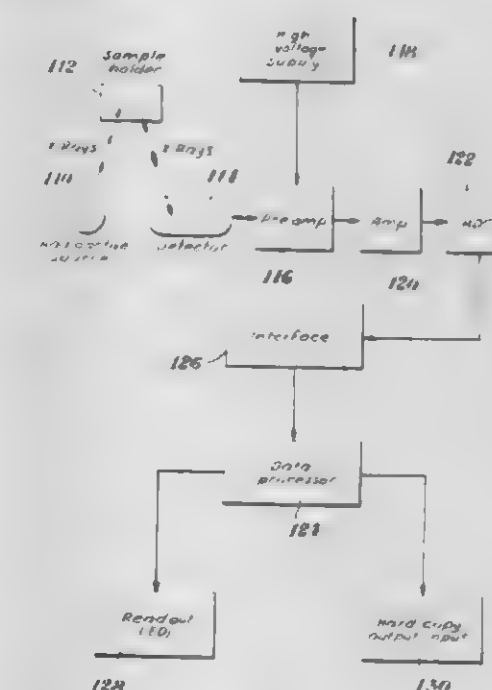
John W. Thompson, Arthur J. Kamp, both of Midland, and Edward R. Sederlund, Saginaw, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 3, 1978, Ser. No. 902,312

Int. Cl.² G06F 15/46

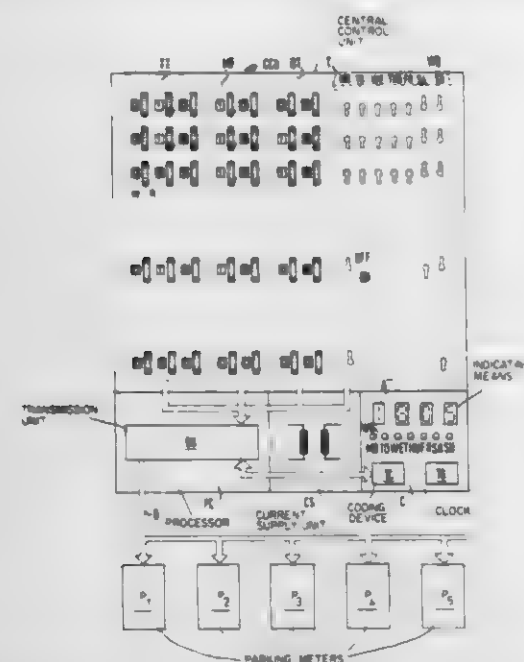
U.S. Cl. 364-527

5 Claims



1. In a nuclear pulse counting experiment wherein pulse charges are developed pursuant to a detection step, and converted to amplified voltage pulses proportional to the magnitude of the pulse charges, the method of tabulating such voltage pulses, occurring in a specified energy range, and defining the energy peak center, comprising the steps of: sorting the voltage pulses into at least 128 characterizations according to magnitude, said sorting function being performed essentially without compensation for meandering amplification gain shifts, discontinuing the experiment based on a statistically

being added to said actual time of day to arrive at a time of departure until which the tariff has been paid; and



repeatedly comparing the actual time of day with said time of departure in said control unit to determine whether the paid-for parking time has been exceeded.

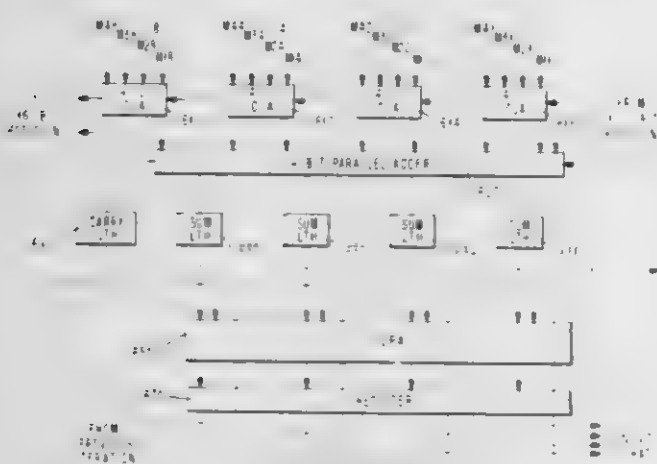
4,228,520

HIGH SPEED MULTIPLIER USING CARRY-SAVE/PROPAGATE PIPELINE WITH SPARSE CARRIES

Robert C. Letteney; Samuel R. Levine; David T. Shen, and Arnold Weinberger, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 4, 1979, Ser. No. 36,198
Int. Cl.³ G06F 7/52, 7/50

U.S. Cl. 364-760

7 Claims



1. In a multiplier apparatus wherein p bits of a q -bit ($p < q$) multiplier word are examined in one iteration to produce r multiples of a multiplicand word, said multiples being added together to produce a partial product for the selected p -bit multiplier portion, said partial product, after having been properly shifted, being added to a partial product to be generated in the next iteration for the next higher-order p -bit multiplier portion to be selected in said next iteration to produce a sum of the newly generated partial product and the previously generated and properly shifted partial products such that after the final iteration of the multiplication a final product of the multiplicand word and the multiplier word is produced;

a carry-save/propagate adder apparatus for performing iterative addition of the partial products comprising:
an n -to-2 ($n \geq 3$) carry-save adder stage having a plurality of n -to-2 carry-save adders, one for each bit position of input operands, and receiving n plural-bit operands including the multiples of said multiplicand word generated in each

iteration for reducing said n plural-bit operands to two other plural-bit operands representing a sum and a carry of said n plural-operands,

at least one first m -bit parallel adder, m being no larger than the number of said n -to-2 carry save adders, one for each m bit positions of said operands, said first m -bit parallel adder receiving corresponding bits of said two other plural-bit operands for providing m output signals representing a sum of the input operands thereto, and a carry from the highest order position thereof,

a second parallel adder receiving in each iteration said m output signals from said first m -bit parallel adder representing the sum of the input operands to said first m -bit parallel adder and generated in the current iteration, and m output signals generated in the previous iterations and representing high-order portions of the previous partial products; and

means transmitting said carry from said first m -bit parallel adder to a lower order input of said first m -bit parallel adder.

4,228,521

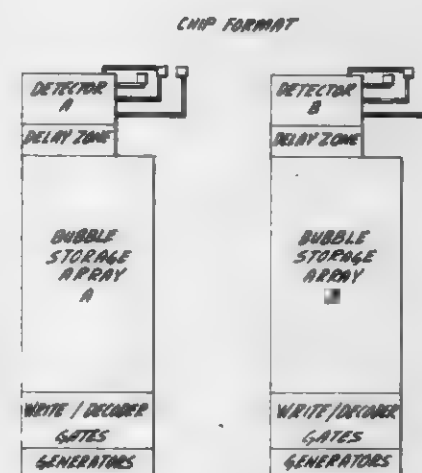
PHASE CONTROLLED DECODER FOR BUBBLE MEMORIES

Sidney J. Schwartz, Vista, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 8, 1979, Ser. No. 18,513
Int. Cl.³ G11C 19/08

U.S. Cl. 365-4

10 Claims



1. A phase controlled decoder on a magnetic bubble domain propagation structure which includes means capable of supporting magnetic domains thereon and which has propagate elements on which bubbles propagate element-to-element in response to a rotating in-plane magnetic field, said propagate elements defining bubble flow paths,

a plurality of said propagate elements being transfer elements, oriented on said structure differently from each other and relative to different field directions of said rotating in-plane magnetic field,

each said transfer elements being located in one flow path which forms an input flow path to receive bubbles therefrom and connected to two flow paths thus forming a gate by which bubbles from said input flow path will be directed to one of the two flow paths forming output flow paths from said gate,

at least one of said output flow paths from one gate being connected to the input flow path of a gate located subsequent to the flow of bubbles through said one gate, and
a single electrical conductor means coupled to a plurality of said transfer elements to activate said gate to direct said bubble onto one of said output flow paths in response to the application of a current pulse on said electrical conductor means.

4,228,522

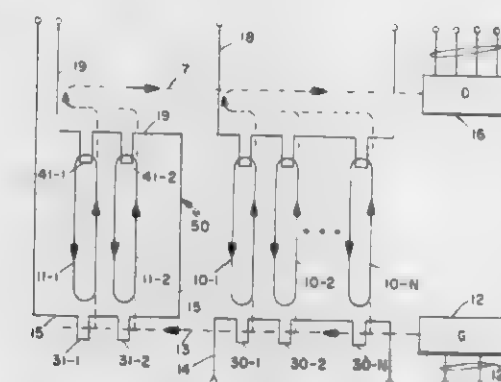
BUBBLE MEMORY WITH REDUNDANT ON CHIP ERROR MAP STORAGE LOOPS

Peter K. George, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 15, 1979, Ser. No. 3,651
Int. Cl.³ G11C 19/08

U.S. Cl. 365-15

10 Claims



1. A magnetic bubble memory chip comprised of:
one plurality of data loops, some of which may be defective, for storing magnetic bubbles representative of data bits;
a pair of error map loops, one of which may be defective, for selectively storing an error map containing magnetic bubbles that are respectively spaced apart by N_1 magnetic field rotations where N_1 is any integer greater than or equal to two;

a bubble generator for generating bubbles for said data loops and said error map loops in response to control signals applied thereto;

a serial-parallel bubble propagation path having a serial input for receiving bubbles from said generator and having parallel outputs respectively connected to each of said data loops and error map loops;

the serial portion of said serial-parallel path including respective transfer-in gates for said error map loops, a single transfer-in control line for said gates, and N_2 magnetic bubble propagation elements lying between said gates where N_2 is any positive integer not equal to KN_1-1 and where $K=1, 2, \dots$

4,228,523

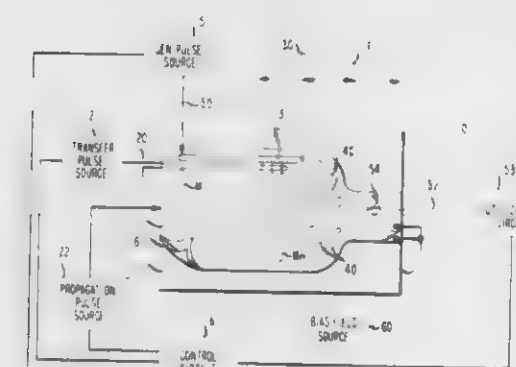
CONDUCTOR ACCESS BUBBLE MEMORY ARRANGEMENT

Andrew H. Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 8, 1979, Ser. No. 18,454
Int. Cl.³ G11C 19/08

U.S. Cl. 365-19

10 Claims



1. A magnetic bubble memory comprising a host layer (11) of a material in which magnetic bubbles can be moved, and means (16, 17, $M_1 \dots M_N, 13, 22$) for moving magnetic bubbles in the layer, the means comprising at least one continuous layer (16) of electrically-conducting material for providing a current path for pulses (see FIG. 3) impressed therein and means (M_1

M_N and 13) for defining a periodic pattern of magnetic field gradients in response to the pulses, the memory being characterized in that the overall width of the current path is sufficiently different in at least first and second areas (to the left of line 30 and to the right of line 31 in FIG. 1) to provide substantially different current densities in response to each of the current pulses.

4,228,524

MULTILEVEL SEQUENCE OF ERASE PULSES FOR AMORPHOUS MEMORY DEVICES

Ronald G. Neale, Beeches, England, and Grady M. Wood, Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jan. 24, 1979, Ser. No. 5,944
Int. Cl.³ G11C 7/00

U.S. Cl. 365-163

21 Claims



1. A method of resetting a filament-type memory device including spaced electrodes between which extend a body of generally amorphous substantially nonconductive memory semiconductor material which, when a set voltage pulse in excess of a given threshold voltage value and duration is applied to said electrodes, has formed therein a crystalline low resistance filamentous path resettable into a generally amorphous condition by application of one or more voltage pulses producing reset current pulses through said filamentous path to change the phase of the crystalline filament and are of a duration which is so short that upon termination of each reset current pulse the filamentous path will be quickly quenched to leave at least portions of the filamentous path in a substantially amorphous condition, said method comprising: applying to said electrodes a sequence of reset voltage pulses which produce a sequence of reset current pulses, a first plurality of reset voltage pulses in said sequence having a maximum amplitude below said given threshold voltage value to produce reset current pulses of a first constant amplitude, and a second plurality of reset voltage pulses in said sequence having a maximum amplitude above said given threshold voltage value to produce reset current pulses of a second constant amplitude less than said first constant amplitude.

4,228,525

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

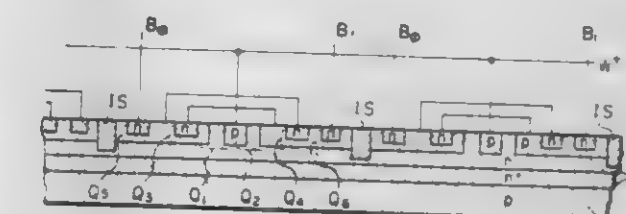
Kuniyasu Kawarada, Musashino; Masao Suzuki, Kodaira; Chikao Ono, Kawasaki, and Kazuhiro Toyoda, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Fujitsu Limited, Kanagawa, both of Japan

Filed May 11, 1979, Ser. No. 38,016
Claims priority, application Japan, May 11, 1978, 53-56007; Mar. 2, 1979, 54-24983

Int. Cl.³ G11C 11/40

U.S. Cl. 365-174

19 Claims



1. A semiconductor integrated circuit device having an

array of integrated injection logic memory cells, each said cell comprising first and second transistors of first conduction type with emitters connected in common to form an injector of said cell, third and fourth transistors of a second conduction type opposite said first type having their collectors respectively connected to the collectors of said first and second transistors, said third transistor having its base is connected to said collector of said fourth transistor and said fourth transistor having its base connected to said collector of said third transistor, and said first and second transistors having their bases connected in common with the emitters of said third and fourth transistors; said device comprising

- a first word line connecting said injectors of said cell,
- a second word line comprising a bulk portion of said semiconductor of said device selectively connected to said commonly connected bases of said first and second transistors and said emitters of said third and fourth transistors, and
- at least one dummy cell at each end of each said of said array, each said dummy cell comprising means for shunting a respective portion of a write current which flows when one of said integrated injection logic memory cells near said dummy cell is selected.

4,228,526

LINE-ADDRESSABLE SERIAL-PARALLEL-SERIAL ARRAY

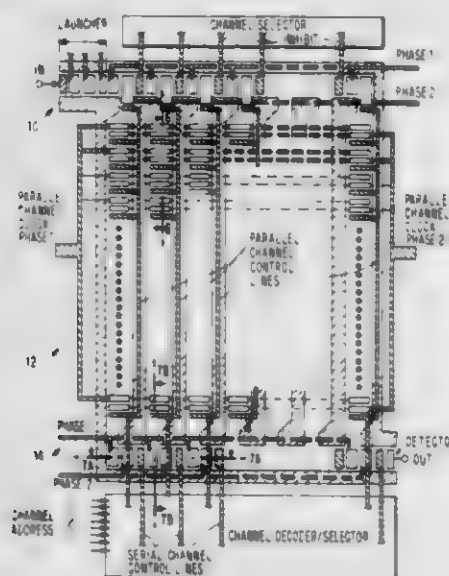
Hua-Tung Lee, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,634

Int. Cl.² G11C 9/00, 8/00, 11/34

U.S. Cl. 365-183

9 Claims



1. A line addressable serial parallel serial storage array comprising:

- a serial input register for accepting data bits at an input;
- a serial output register for providing data bits at an output;
- a parallel register between said input and said output registers for receiving data bits from said serial input register and for transferring data bits to said serial output register;
- first and second phase lines connected to each said registers; and
- control lines connected to each said registers, each one of said control lines being adapted to selectively inhibit the propagation of data bits in said registers.

4,228,527

ELECTRICALLY REPROGRAMMABLE NON VOLATILE MEMORY

Bernard Gerber, Neuchatel, and Fritz Leuenberger, Hinterkapelen, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

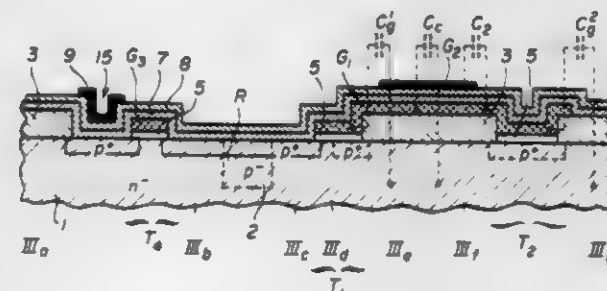
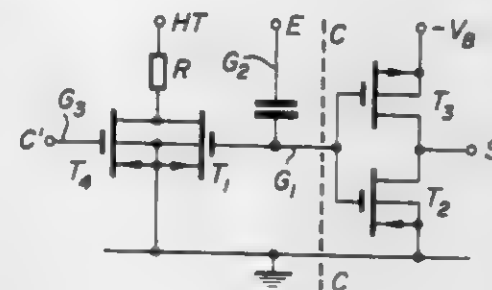
Filed Feb. 22, 1979, Ser. No. 14,251

Claims priority, application Switzerland, Feb. 22, 1978, 1889/78

Int. Cl.³ G11C 11/40

U.S. Cl. 365-185

9 Claims



1. An electrically reprogrammable non-volatile memory device comprising an integrated circuit including complementary MOS transistors provided with a polycrystalline silicon floating gate electrode, in a common n-type substrate which forms the grounded electrode, wherein said circuit is composed of three parts:

- the first part being utilized to perform writing of information and addressing;
- the second part being utilized to perform erasure; and
- the third part being utilized to perform read-out of the information;

said floating gate electrode forming a common electrode to said three parts of the device; said first part comprising a p-channel writing transistor, having its drain, which provides a p-n junction for injection of electrons, connected, on the hand, to the drain of a p-channel control transistor the source of which is grounded, and, on the other hand, to a resistance element which is connected to a terminal delivering a high negative voltage during the writing operation;

said second part of the circuit comprising a second gate electrode which is capacitively coupled to said floating gate electrode in such a manner that the electric field between both electrodes is lower than the electric field across the gate oxide layer of the said transistors, and said second gate electrode being connected to a terminal delivering a high negative voltage during the erasure operation; and

said third part of the circuit consisting of a p-channel read-out transistor, the source of which is grounded, its gate forming a portion of the floating gate electrode and its drain being connected to a read-out terminal and to a terminal of a loading element having its other terminal connected to a negative supply voltage.

4,228,528

MEMORY WITH REDUNDANT ROWS AND COLUMNS

Ronald P. Censer, Coplay, and Frank J. Procyk, Center Valley, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,739

Int. Cl.² G11C 13/00

U.S. Cl. 365-200

6 Claims



1. A semiconductor memory (10) comprising a semiconductor chip in which memory cells are arranged in vertical and horizontal lines each with its own decoder and in which some of the lines form the standard memory array (12) and some of the lines (13, 14) are initially spares to be substituted for lines which include defective cells characterized in that each of the decoders (20) associated with the standard lines includes means (21) for disconnecting the associated line from the standard memory array and in which each of the decoders (30) associated with the spare lines includes means (41) for providing any such decoder with the address of a decoder associated with a disconnected line, thereby effectively substituting its associated line in the standard array.

4,228,529

METHOD FOR DISPLAYING SEISMIC DATA

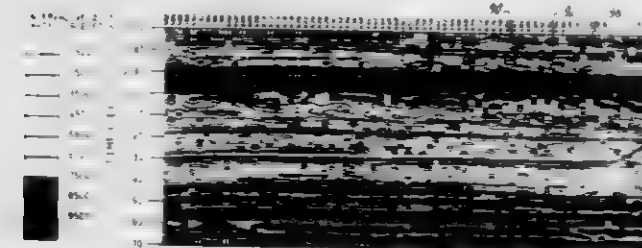
I-Chi Hsu, and Anne L. Simpson, both of Houston, Tex., assignors to Western Geophysical Co. of America, Houston, Tex.

Filed Feb. 28, 1979, Ser. No. 16,234

Int. Cl.³ G01V 1/34

U.S. Cl. 367-70

9 Claims



1. On a two dimensional seismic display of a cross section of subsurface earth layers, said display having a generally vertical Y axis divided into desired unit parameters of depth and an X axis generally representing horizontal distance over the surface of the earth along which are marked the locations of a plurality of data sampling points spaced apart at desired distance intervals, a method for resolving lineated data comprising the steps of:

- (a) beneath each data sampling point, determining along the Y axis a graph of a desired intrinsic property of said earth layers whose numerical data values change as a function of said depth parameter;
- (b) scanning the graphs along the Y axis of first and second adjacent data sampling points to define contour crossing points at desired unit intervals of said graphed numerical data values and determining the algebraic sign of the slope of said graph at each said contour crossing point;
- (c) connecting, by marked contour segments between said

adjacent data sampling points, contour crossing points that match as to numerical data value and algebraic sign;

- (d) terminating contour segments, from one said data sampling point, at a point between said two adjacent data sampling points, when no matching contour crossing is found on the other said sampling point;
- (e) forming a plurality of trapezoids between said adjacent sampling points, the top and bottom boundary of each said trapezoid being defined by neighboring contour segments, the lateral boundaries being defined by the respective Y axes; and
- (f) applying a shading pattern, having a desired characteristic, within one such trapezoid and applying shading patterns having other desired characteristics to other such trapezoids.

4,228,530

MUD LEVEL MONITOR

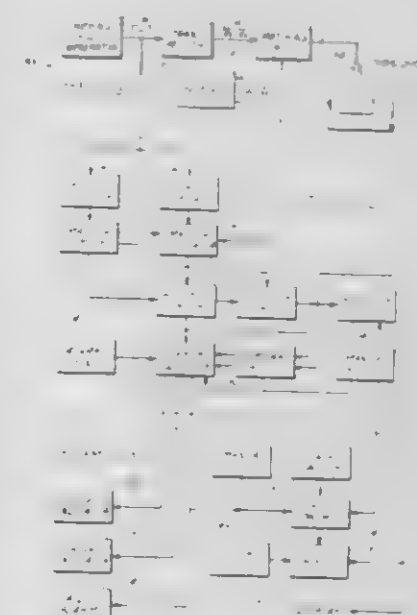
Taylor G. Bergey, 4306 Tonawanda, Houston, Tex. 77035

Filed May 19, 1978, Ser. No. 907,548

Int. Cl.² G01S 9/68

U.S. Cl. 367-112

22 Claims



1. In well drilling according to the rotary method in which liquid base drilling fluid is pumped down the bore of the well being drilled, through the drill bit and back up the well bore to a return line extending laterally from the well bore and thence to a reservoir from which it is again pumped, the method of monitoring the level of drilling fluid in the return line comprising the steps of:

- providing an open window in the top of the return line, positioning the windowed portion of the line above the level of the fluid in the path of drilling fluid from said portion to the reservoir;
- mounting an electro-sonic transducer above the window, beaming ultra sound from the transducer to the air-drilling fluid interface in the fluid return line,
- measuring the transit time of the beam from the window to the interface and back to the window to give information as to the level of the interface in the line,
- generating timing signals during such transit and counting down an accumulator with said signals during such transit to give information as to height of the air-drilling fluid interface in the return line,
- comparing the count in the accumulator with a preset datum count, and
- giving an alarm when the accumulator count departs from the datum count by a predetermined amount,
- recording the accumulator count,
- turning off the alarm, and
- resetting the datum count equal to said accumulator count.

4,228,531

AUTOMATIC UNDERWATER NULL STEERING

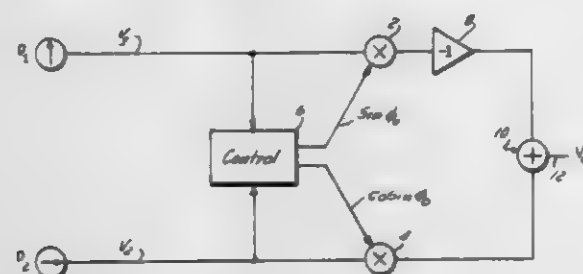
Bruce P. Bogert, Morristown, and Peter Hirsch, Parsippany, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 17, 1970, Ser. No. 57,841

Int. Cl.³ H04B 1/06

U.S. Cl. 367—135

3 Claims



1. In an underwater sound transmission system, the improvement comprising:

- a pair of dipole hydrophones, said hydrophones being positioned so that their sensitivity patterns are orthogonal with respect to each other, each of said hydrophones being adapted to receive sound energy approaching at an angle ϕ to develop a hydrophone output signal V ,
- said system developing an output signal V_0 in response to said hydrophone output signals V ,
- computing means connected to receive said hydrophone output signals V ,
- said computing means being adapted to derive functions of an angle ϕ_0 from said signals V ,
- a pair of multiplying means for multiplying each hydrophone output signal V by a respective function of ϕ_0 to generate a pair of product signals $V_1 \sin \phi_0$ and $V_2 \cos \phi_0$,
- combining means connected to said multiplying means to combine said product signals into the system output signal V_0 , the angle ϕ_0 being such that interference noise in said output signal V_0 is automatically minimized,
- said combining means including inverting means for inverting a product signal $V \sin \phi_0$,
- said combining means including summing means for summing said product signals $V \sin \phi_0$,
- said summing means including,
- a first summing circuit for summing one of said product signals $V_2 \cos \phi_0$ and an inverted product signal $-V_1 \sin \phi_0$ to derive a first system output signal V_{01} , and
- a second summing circuit for summing two of said product signals $V_2 \cos \phi_0$ and $V_1 \sin \phi_2$ to produce a second system output signal V_{02} .

4,228,532

PIEZOELECTRIC TRANSDUCER

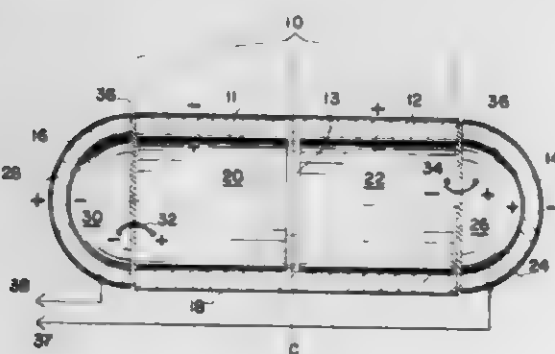
Claude C. Sims, 1308 Heron Dr., Orlando, Fla. 32803

Filed Jan. 29, 1979, Ser. No. 7,435

Int. Cl.³ H04R 17/00

U.S. Cl. 367—159

14 Claims



1. An electroacoustic transducer having high acoustic-to-electric energy conversion per unit volume comprising:

- a pair of output terminals; and
- a body having a cylindrical central section and hemispherical end sections, said central section is formed from a first type of active piezoelectric material and said end sections are formed from a second type of active piezoelectric material and electrically interconnected with respect to said output terminals wherein the polarizations of said central section and said end sections are arranged to convert acoustic pressure on the entire external surface area of said body to be effective in producing electrical energy.

11. An electroacoustic transducer having high acoustic-to-electric energy conversion per unit volume comprising:

- 1. a pair of output terminals; and
- 2. a body having
 - (a) a hollow cylindrical center section formed from a first type of active piezoelectric material, such section having two cylinders mechanically connected concentrically end to end, said two cylinders circumferentially polarized with opposite polarities and electrically connected in a series-aiding manner; and
 - (b) hemispherical end sections formed from a second type of active piezoelectric material, said two end sections radially polarized with opposite polarities and electrically connected with said central section in a series-aiding manner;

wherein said pair of output terminals is connected to said body so that the entire external surface area of said body is effective in producing electrical energy.

4,228,533

AUTONOMOUS PENDULUM MECHANISM FOR CLOCKWORKS

Roland Siefert, Bad Durrheim, Fed. Rep. of Germany, assignor to Kienzle Uhrenfabriken GmbH, Schweningen, Fed. Rep. of Germany

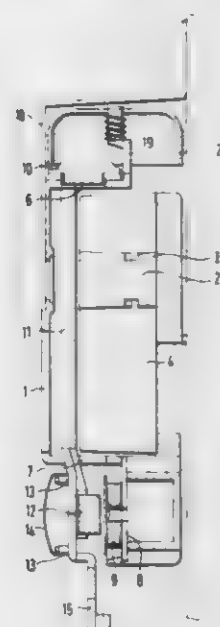
Filed Mar. 23, 1979, Ser. No. 23,365

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 7809694[U]

Int. Cl.³ G04B 15/00, 17/02, 37/00

U.S. Cl. 368—134

12 Claims



1. For use with a clockwork of the type comprising a clockwork casing the front face of which has spindles thereon for the clock hands, a pendulum mechanism adapted to be attached as a completely assembled unit to said clockwork casing and operative independently of said clockwork, said pendulum mechanism comprising a generally vertical supporting plate adapted to be attached to said clockwork casing in overlying spaced relation to the front face of said casing, said supporting plate having a pivot bearing thereon which is located vertically above said spindles when said pendulum mechanism is attached to said clockwork casing, a pendulum arm having

4,228,535

DUAL TDM SWITCHING APPARATUS

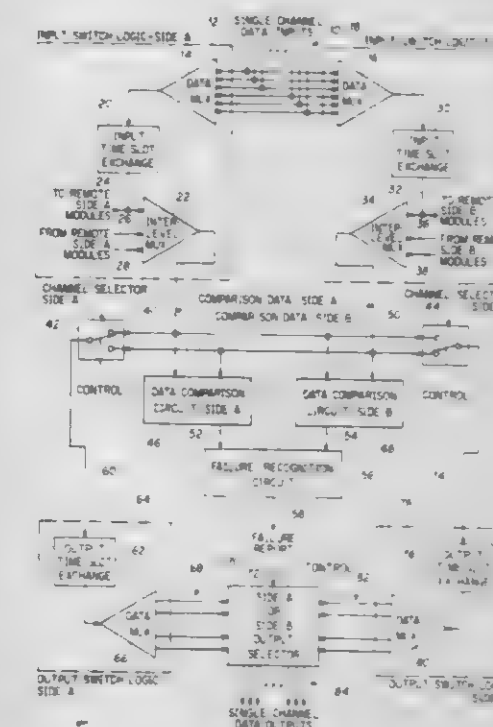
Harold W. Workman, and David C. Nicholas, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 26, 1979, Ser. No. 15,028

Int. Cl.³ H04Q 11/04; H04J 3/14

U.S. Cl. 370—16

15 Claims



an upper end mounted for pivotal motion in said bearing, said arm depending vertically downward from said pivot bearing across the rear side of said supporting plate for swinging motion across the front face of said clockwork casing in the space between said supporting plate and the front face of said casing, said arm in the direction of its extension being of generally V-shape and comprising a first portion which extends across the front face of said clockwork casing downwardly from said pivot bearing at an angle to the line between said pivot bearing and said spindles into the region between said spindles and one side of the clockwork casing and a second portion which is angled in a direction opposite to that of said first portion and extends across the front face of said clockwork casing downwardly from said first portion, whereby the swinging motion of said first portion across the front face of said clockwork casing occurs entirely in the said region between said spindles and said one side of said clockwork casing while the lower end of said second portion swings across the front face of said clockwork casing between points which are substantially equidistant from the opposite sides of said clockwork casing in the region below said spindles, and an electrical drive mechanism in said pendulum mechanism adjacent the lower end of said second portion for effecting swinging motion of said pendulum arm, said drive mechanism comprising a permanent magnet carried by one of said supporting plate and said second portion, and an electrically energizable coil carried by the other of said supporting plate and second portion.

4,228,534

ELECTRONIC WATCH CONTROL DEVICE FOR MANUAL ACTUATION

Jean Fellrath, Neuchâtel, and Jean-Felix Perotto, Hauterive, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchâtel, Switzerland

Filed Nov. 2, 1977, Ser. No. 847,813

Claims priority, application Switzerland, Nov. 4, 1976, 13899/76

Int. Cl.³ G04B 19/00; G04C 17/00; H01H 35/00, 47/00
U.S. Cl. 368—224

5 Claims



1. An electronic watch control device for manual actuation comprising a capacitive sensor which includes a conductive layer applied on at least a part of the inner surface of the watch-glass and the capacitance of which with respect to ground as represented by the watch-case varies when the user puts a finger on the watch-glass, the said sensor being part of a capacitive voltage divider, the control device further comprising means for applying to the said capacitive voltage divider an a.c. voltage of a substantially higher frequency than the mains frequency, synchronous detection means for detecting the high-frequency voltage across the said capacitive sensor, wherein the synchronous detection means include a switching device connected to the terminals of the capacitive sensor and controlled by the said high frequency so as to alternately short-circuit the sensor and apply the voltage appearing at the terminals of the sensor to a low-pass filter, and comparison means for comparing the value of the said high frequency voltage to a reference voltage, said comparison means being adapted for producing a control signal depending on whether or not the sensor is actuated by placing a finger-tip on the watch-glass.

4,228,536

TIME DIVISION DIGITAL COMMUNICATION SYSTEM

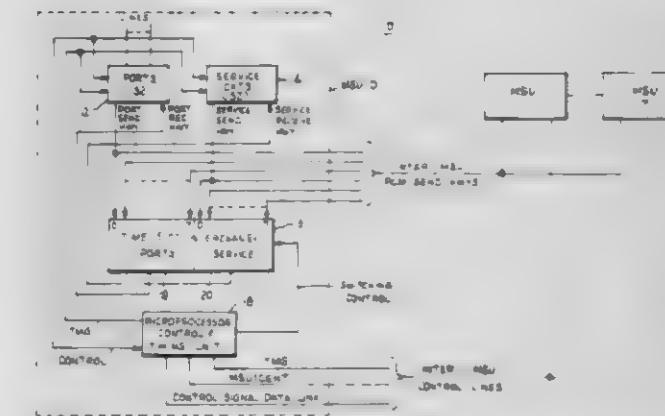
Klaus Gueldenpfennig, Penfield, and Charles J. Breidenstein, Rochester, both of N.Y., assignors to Redcom Laboratories, Inc., Fairport, N.Y.

Filed May 29, 1979, Ser. No. 42,742

Int. Cl.³ H04Q 11/04

U.S. Cl. 370—66

20 Claims



11. A TDM telecommunications system for providing two-way communications between a plurality of lines, said system comprising a plurality of switching units each serving a separate group of said lines, each of said units having port means interfacing with said lines for receiving and transmitting digital signals, time slot interchange means, and processor means, a

send highway and a receive highway, said time slot interchange means, processor means and port means interfacing with each other to provide time division multiplexed receiving connections for digital signals through said time slot interchange means and receive highway, and time division multiplexed transmitting connections along said send highways to said time slot interchange means, and said switching units being in direct communication with each other via control lines interconnecting the processors thereof and said send highways interconnecting the time slot interchanges thereof.

4,228,537

METHOD OF AND APPARATUS FOR AUTOMATIC FAULT DIAGNOSIS OF ELECTRICAL CIRCUITS EMPLOYING ON-LINE SIMULATION OF FAULTS IN SUCH CIRCUITS DURING DIAGNOSIS

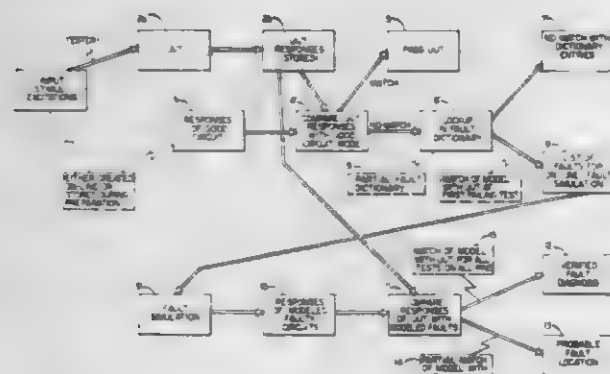
Lutz Henckels, Lexington; René Haas, Cambridge, and Ralph Anderson, Carlisle, all of Mass., assignors to GenRad, Inc., Concord, Mass.

Continuation of Ser. No. 809,101, Jun. 22, 1977, abandoned, which is a continuation of Ser. No. 583,539, Jun. 4, 1975, abandoned, which is a continuation of Ser. No. 443,853, Feb. 19, 1974, abandoned. This application Aug. 29, 1978, Ser. No. 937,789

Int. Cl.³ G01R 31/28

U.S. Cl. 371-23

9 Claims



1. A method of automatic fault diagnosis of an electrical circuit under test comprising applying a set of tests to the circuit under test; comparing the responses of the circuit under test with the responses of a good circuit to detect variations which are indicative of faults; selecting from a stored partial fault dictionary of modeled circuit faults a list of possible circuit faults which are capable of producing at least one of said variations; simulating on-line circuits having at least one of the faults from said list; generating the responses of the simulated circuits to the set of tests; and comparing the responses of the simulated circuits with the responses of the circuit under test to effect fault diagnosis.

4,228,538

REAL-TIME ADAPTIVE POWER CONTROL IN SATELLITE COMMUNICATIONS SYSTEMS

Hans Scharla-Nielsen, Palm Bay, and Frank A. Perkins, Melbourne, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Dec. 15, 1977, Ser. No. 860,988

Int. Cl.³ H04B 7/20

U.S. Cl. 455-9

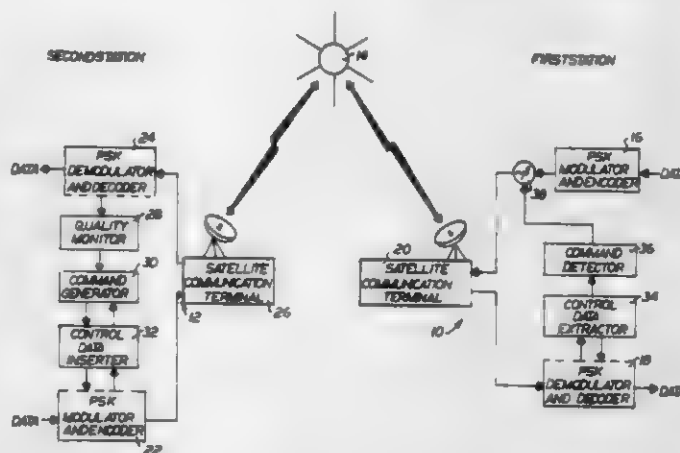
5 Claims

1. Apparatus for providing adaptive power control in communications systems wherein first and second stations communicate serial streams of binary data bits via a power-limited repeater having a power output which is functionally related to power input, comprising:

quality monitor means associated with said second station for providing an indication of the quality of the signal received by said second station from said first station via said power-limited repeater;

encoding means for encoding said signal quality indication onto a first serial stream of binary data bits transmitted to

said first station from said second station, and including means responsive to said signal quality indication for providing a second serial stream of binary data bits in accordance therewith and having a bit rate equal to X/N th that of said first serial stream of binary data bits, where X and N are integers and means responsive to said first and second serial streams of binary data bits for providing an output bit stream having a bit rate $(N+X)/N$ times the bit rate of said first serial stream of binary data bits, wherein $N/(N+X)$ of the bits of said output bit stream correspond to the bits of said first serial stream of binary data bits, and $X/(N+X)$ of the bits of said output bit stream correspond to the bits of said second serial stream of binary data bits, said output bit stream being



provided for transmission to said first station in place of said first serial stream of binary data bits; decoding means associated with said first station, responsive to said output bit stream received from said second station, for extracting said signal quality indication therefrom and including means responsive to said output bit stream for separating said first and second serial streams of binary data therefrom; and means at said first station for adjusting the power level of said signal transmitted by said first station to said second station via said repeater, in accordance with said signal quality indication as recovered by said decoding means, whereby said signal quality indications are communicated between said stations without requiring a separate communications channel.

4,228,539

HIGH FREQUENCY TRANSMITTER

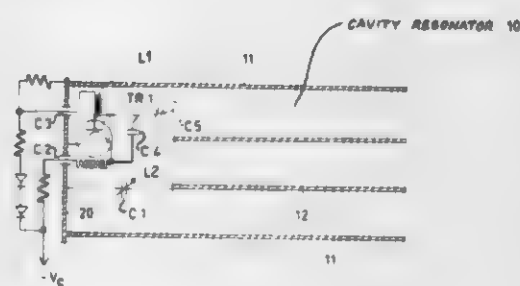
Reijo Hämmäläinen, Vantaa, Finland, assignor to Valsala Oy, Finland

Filed Dec. 28, 1978, Ser. No. 973,797

Int. Cl.² H04B 1/03; H03H 13/00

U.S. Cl. 455-124

7 Claims



1. A high frequency transmitter comprising a cavity resonator having an outer tube having spaced opposite ends, a coaxial inner tube spaced from and surrounded by the outer tube and an end cap coaxially rotatably mounted on said outer tube at one end thereof; and a transistor oscillator stabilized by the cavity resonator and having components mounted on the end cap of said reso-

nator whereby the intensity with which a high frequency is applied to said resonator is adjustable by rotation of said end cap.

4,228,540

RADIO RECEIVER

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

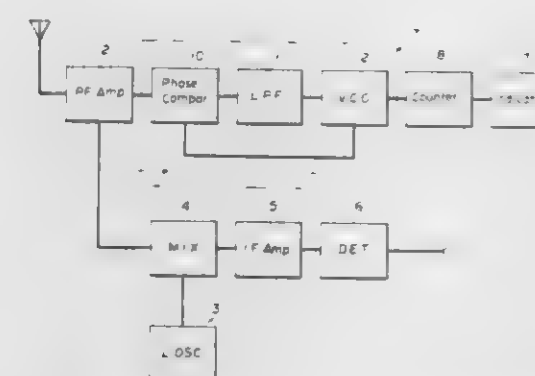
Filed Mar. 6, 1978, Ser. No. 883,965

Claims priority, application Japan, Mar. 11, 1977, 52/29347[U]

Int. Cl.³ H04B 1/26

U.S. Cl. 455-158

7 Claims



1. In a superheterodyne radio receiver having a radio frequency stage for receiving radio wave signals, an oscillator, a mixer stage coupled to said radio frequency stage and oscillator to provide intermediate frequency signals, and detector means for demodulating said intermediate frequency signals, the improvement comprising:

a tuning circuit coupled to said radio frequency stage and responsive to a radio wave signal applied to said receiver and producing a signal of a tuned frequency equal to the frequency of said radio wave signal; a phase-locked loop circuit responsive to said tuned-frequency signal and producing an output signal having a frequency in accordance with said tuned frequency; means for varying a free-running frequency of said phase-locked loop circuit; means for varying the tuning frequency of said tuning circuit and interlocked with said free-running frequency varying means; and means for displaying the value of said output signal frequency of said phase-locked loop circuit.

4,228,541

DEVICE FOR THE ELECTRO-OPTICAL DISPLAY OF THE TUNING OF A TELEVISION AND/OR SOUND RADIO RECEIVER

Ole Snedkerud, Windisch, and Peter J. Wild, Wettingen, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Sep. 11, 1978, Ser. No. 941,076

Claims priority, application Switzerland, Sep. 13, 1977, 11145/77

Int. Cl.² H04B 1/26

U.S. Cl. 455-158

11 Claims

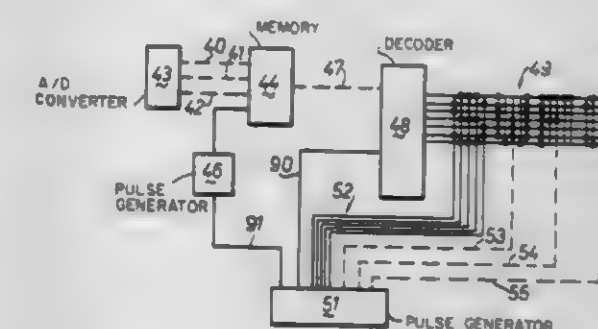
1. A device for the display of the name of a transmitter transmitting electromagnetic waves which are received by a receiver, such as a television or a radio, comprising:

a first circuit for directly measuring the frequency of incoming electromagnetic waves to which said receiver is tuned; an electro-optical display for displaying the name of the transmitter corresponding to the tuned electromagnetic waves received;

a memory having an input connected to an output of said first circuit, and an output, said memory comprising a plurality of memory blocks, a name of a transmitter being stored in each memory block;

display excitation means having an input connected to the

output of said memory and an output connected to said electro-optical display for producing the excitation of the electro-optical display; a second circuit measuring the amplitude of the tuned electromagnetic radiation received and for activating the electro-optical display only in the event that the measured



amplitude of the tuned electromagnetic waves received exceeds a predetermined threshold; wherein the output signal of the first circuit is used as the address of a memory block and the contents of the addressed memory block are coupled, for control of the electro-optical display, to the input of the display excitation means.

4,228,542

DIGITAL TUNING FM STEREOPHONIC RECEIVER INCLUDING PHASE LOCKED LOOP SYNTHESIZER

Akira Misawa, and Tatsuo Numata, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

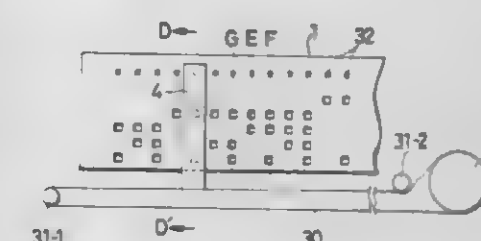
Filed Oct. 16, 1978, Ser. No. 951,820

Claims priority, application Japan, Oct. 17, 1977, 52-123442; Oct. 21, 1977, 52-125849

Int. Cl.³ H04B 1/26; H03J 5/00

U.S. Cl. 455-174

10 Claims



1. In a digital tuning FM stereophonic receiver of the type including a programmable frequency divider employed in a phase locked loop synthesizer wherein a digital code is provided in order to determine a frequency division number of said programmable frequency divider, the improvement comprising:

(a) coded means carrying a plurality of arrays of code-indicating indicia;

(b) first detecting means for detecting the digital code represented by each array of indicia when in alignment therewith;

(c) latch means for storing the detected digital code in response to a latch control signal, the output of said latch means being connected to said programmable frequency divider, and the stored digital code remaining in said latch until a subsequent latch control signal is received;

(d) alignment indicating means carried on said coded means; (e) second detecting means for providing an alignment output signal when aligned with said alignment indicating means, an alignment output signal from said second detecting means indicating that said first detecting means is aligned with one of said arrays of code-indicating indicia; and

(f) means for generating said latch control signal in response to said alignment output signal.

DESIGN PATENTS

GRANTED OCT. 14, 1980

ERRATA

For	See
CLASS	PATENT NO.
D24-056	257,394
D47-006 E	257,403
D47-006 F	257,404

DESIGNS

OCTOBER 14, 1980

257,296

AUTOMOBILE SERVING TRAY

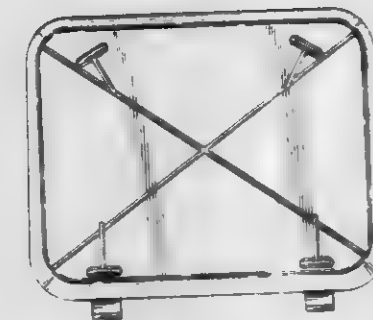
Robert W. White, 715 NW. 39th St., Oklahoma City, Okla. 73118

Filed Dec. 4, 1978, Ser. No. 965,771

Term of patent 14 years

Int. Cl. D3-99; D7-99

U.S. Cl. D3-40



257,298

HIGH CHAIR

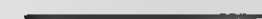
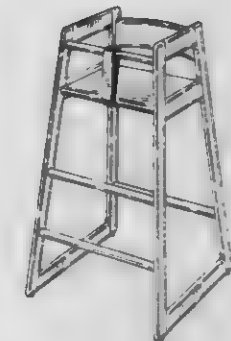
Oney Temple, Schaumburg, Ill., assignor to McDonald's Corporation, Oak Brook, Ill.

Filed Jan. 9, 1978, Ser. No. 868,137

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-8



257,297

FURSE HANDLE

Bernard L. Keller, 41 Eagle La., Palm Harbor, Fla. 33563

Filed Dec. 4, 1978, Ser. No. 966,109

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-54



257,299

PLAYPEN

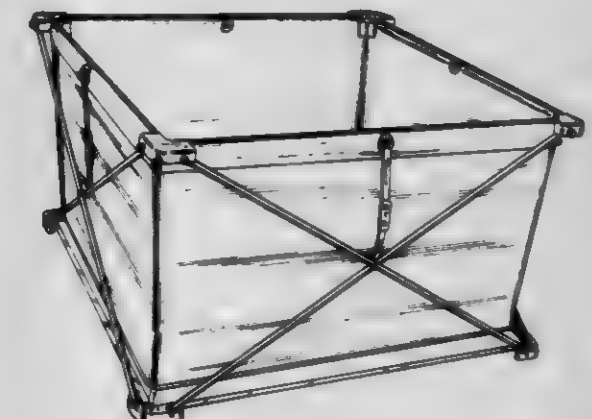
Richard E. Cone, Dayton, Ohio, assignor to Questor Corporation, Toledo, Ohio

Filed Sep. 20, 1978, Ser. No. 944,208

Term of patent 14 years

Int. Cl. D6-06

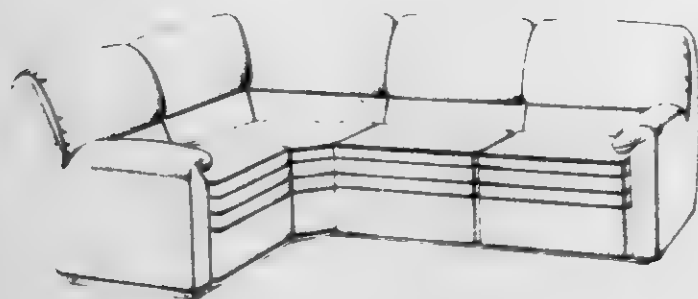
U.S. Cl. D6-13



257,300
SOFA

Morris F. Fisher, N. Palm Beach, Fla., assignor to Fatorian Corporation, Amsterdam, N.Y.
 Filed Feb. 13, 1978, Ser. No. 877,208
 Term of patent 14 years
 Int. Cl. D6-01

U.S. Cl. D6-63

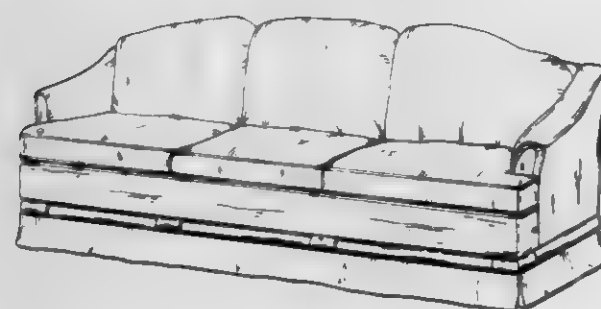


257,301

SEAT OR SIMILAR ARTICLE

Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.
 Filed Dec. 20, 1978, Ser. No. 971,352
 Term of patent 7 years
 Int. Cl. D6-01

U.S. Cl. D6-63

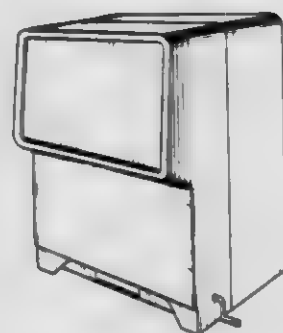


257,302

TOWEL DISPENSING CABINET

E. Burton Benjamin, Highland Park, Ill., assignor to Mosinee Paper Corporation, Mosinee, Wis.
 Filed Aug. 2, 1978, Ser. No. 930,337
 Term of patent 14 years
 Int. Cl. D6-04

U.S. Cl. D6-96

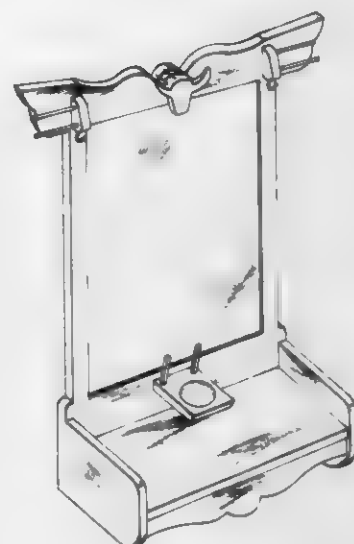


257,303

VALET WALL RACK

David Nuaz, 2025 W. Mark, Layton, Utah 84041
 Filed Dec. 26, 1978, Ser. No. 974,128
 Term of patent 14 years
 Int. Cl. D6-04

U.S. Cl. D6-123

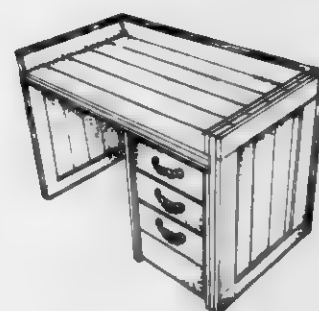


257,304

DESK OR THE LIKE

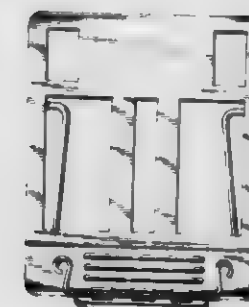
Stephen H. Robertson, 4108 Deep Hollow Dr., Apt. 277, and Randall L. Ward, 4102 Deep Hollow Dr., Apt. 284, both of Raleigh, N.C. 27612
 Filed Mar. 29, 1978, Ser. No. 884,380
 Term of patent 14 years
 Int. Cl. D6-04

U.S. Cl. D6-162

257,305
BOOKHOLDER

George A. Kaempkes, 1229 NE. 37th St., Pompano Beach, Fla. 33060
 Filed Oct. 12, 1978, Ser. No. 951,006
 Term of patent 14 years
 Int. Cl. D6-06

U.S. Cl. D6-184



257,307

CASSETTE BOX AND RECORD HOLDER

Eduard H. Schweizer, 5101 Boarshead Rd., Apartment 133, Minnetonka, Minn. 55343
 Filed Oct. 27, 1978, Ser. No. 955,722
 Term of patent 14 years
 Int. Cl. D6-04

U.S. Cl. D6-185

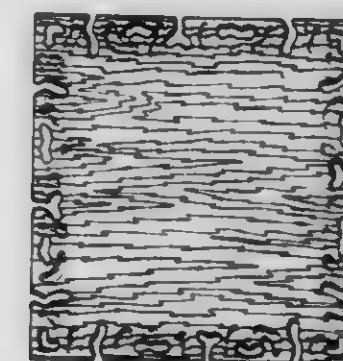


257,308

TABLE TOP

Michael D. English, 2281 N. Gettysburg Ave., Dayton, Ohio 45406
 Filed Nov. 25, 1977, Ser. No. 855,444
 Term of patent 14 years
 Int. Cl. D6-06

U.S. Cl. D6-192

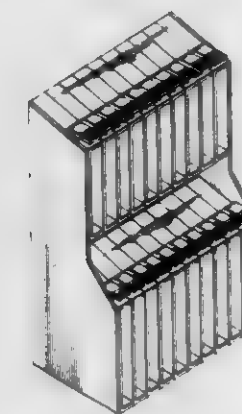


257,306

TAPE CARTRIDGE HOLDER

Michel F. Aboussouan, 8135 Clybourn Ave., Sun Valley, Calif. 91352
 Filed Sep. 11, 1978, Ser. No. 941,413
 Term of patent 14 years
 Int. Cl. D6-04

U.S. Cl. D6-185

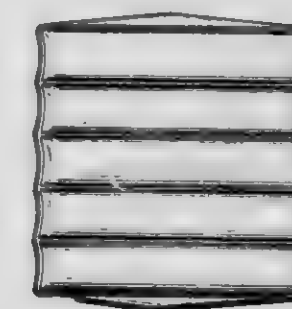


257,309

CHIROPRACTIC PILLOW, OR SIMILAR ARTICLE
 Frederick H. Kroll, 72 Woodhollow Ln., New Rochelle, N.Y. 10804

Filed Jan. 25, 1979, Ser. No. 6,300
 Term of patent 14 years
 Int. Cl. D6-09

U.S. Cl. D6-201



257,310

FOOD PLATE OR SIMILAR ARTICLE

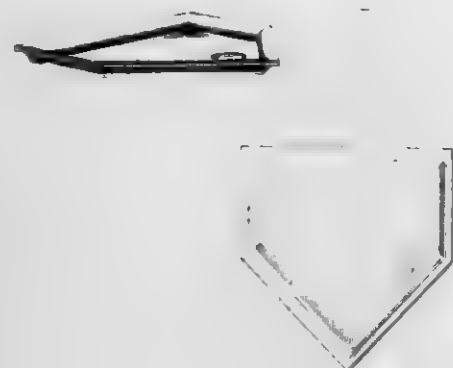
Stavros Cosmopolos, 8 Bridge St., Norwell, Mass. 02061

Filed Nov. 21, 1977, Ser. No. 853,560

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-1

257,311
PITCHER

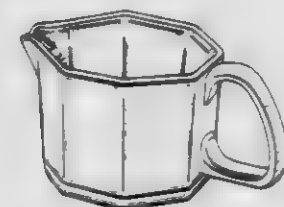
David L. Painter, Glenview, Ill., and Robert C. Zinkgraf, West Bend, Wis., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Mar. 8, 1979, Ser. No. 18,822

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-64



257,313

TEA POT

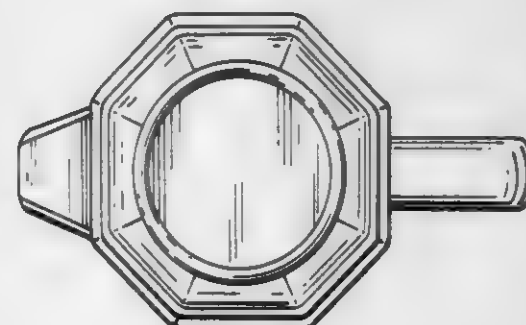
David L. Painter, Glenview, Ill., and Robert C. Zinkgraf, West Bend, Wis., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Mar. 8, 1979, Ser. No. 18,804

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-65



257,314

INSULATED BEVERAGE CAN HOLDER

John L. Robison, 396 9th St., and Oliver D. Abrahamson, 1196 12th St., both of Newport, Minn. 55055

Filed Sep. 29, 1978, Ser. No. 946,972

Term of patent 14 years

Int. Cl. D07-06

U.S. Cl. D7-70



257,312

CREAM PITCHER OR THE LIKE

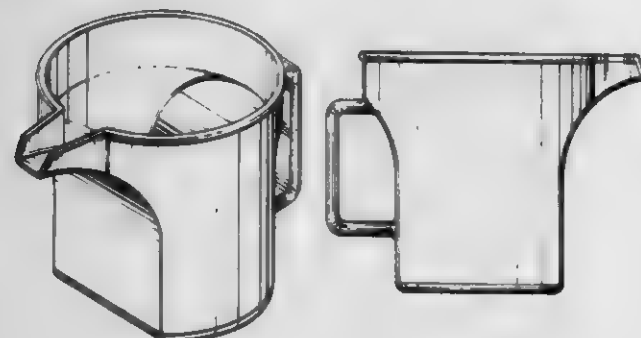
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed May 16, 1979, Ser. No. 39,534

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-64



257,315

GREASE SAVER CONTAINER

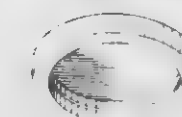
David W. Keon, 665 S. Almond St., Dixon, Calif. 95620

Filed Jun. 8, 1977, Ser. No. 804,609

Term of patent 14 years

Int. Cl. D7-07

U.S. Cl. D7-79



257,316

SPOON OR SIMILAR ARTICLE

Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.

Filed Feb. 15, 1979, Ser. No. 12,497

Term of patent 14 years

Int. Cl. D07-03

U.S. Cl. D7-137



257,317

SPOON OR SIMILAR ARTICLE

Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,465

Term of patent 14 years

Int. Cl. D07-03

U.S. Cl. D7-137



257,318

JAR OPENER

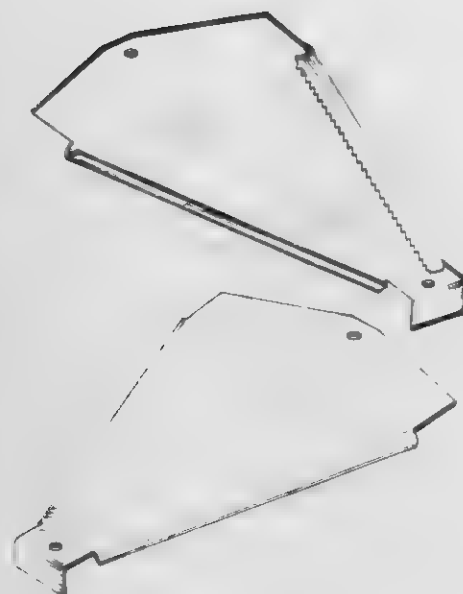
Marcello Zorzi, 287 Glidden Rd., Unit 13, Brampton, Ontario, Canada (L6W 1H9)

Filed May 11, 1978, Ser. No. 905,115

Term of patent 14 years

Int. Cl. D07-06

U.S. Cl. D8-18



257,320

AUTOMOBILE ANTI-THEFT DEVICE

Arthur E. Weisberg, 6473 Westchester Cir., Minneapolis, Minn. 55427

Filed Sep. 29, 1978, Ser. No. 941,041

Term of patent 14 years

Int. Cl. D8-07

U.S. Cl. D8-343



257,321

SUPPORT FOR CABLES, TUBING OR THE LIKE

James M. Voorhees, Jr., 3921 River Club Rd., Edgewater, Md. 21027

Filed Jun. 1, 1978, Ser. No. 911,302

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-356



257,319

SET OF SOCKET WRENCH EXTENSIONS

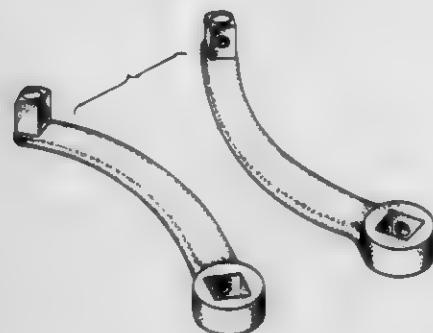
Richard T. Cremer, 312 Parkview Dr., Washington, Ill. 61571

Filed Mar. 16, 1978, Ser. No. 887,452

Term of patent 14 years

Int. Cl. D08-05

U.S. Cl. D8-29



257,322

BRACKET PLATE

Franklin D. Pichelman, and Donald N. Mehl, both of Minnetonka, Minn., assignors to Flo-Pac Corporation, Minneapolis, Minn.

Filed Jan. 29, 1979, Ser. No. 7,379

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-354



257,323

HALYARD STOPPER

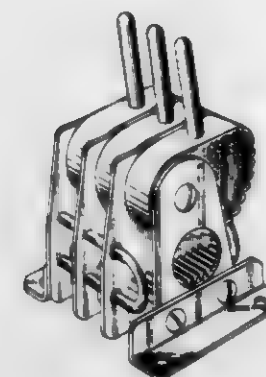
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.

Filed Mar. 13, 1978, Ser. No. 885,790

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-383



257,324

TUBE SUPPORTING CLIP

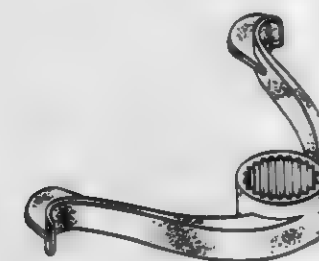
Marvin E. Huff, Jr., 2516 Carnoustie Ct., Union City, Calif. 94587

Filed Mar. 20, 1978, Ser. No. 888,674

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-396



257,325

COMBINED PARTING BEAD EXTENDER AND WEATHER STRIP CONNECTOR FOR WINDOW INSTALLATIONS

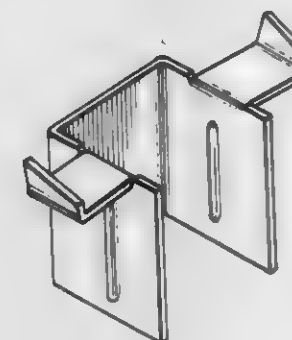
Barry M. Jones, Berwyn, Pa., assignor to Q. C. Glide Company, Sharon Hill, Pa.

Filed May 11, 1978, Ser. No. 905,421

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-400



257,326

BOTTLE OR SIMILAR ARTICLE

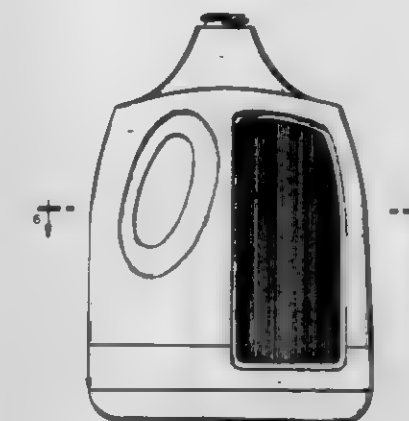
Gerald C. Wojta, Columbus, Ohio, assignor to North American Phillips Corporation, New York, N.Y.

Filed Apr. 27, 1978, Ser. No. 901,281

Term of patent 14 years

Int. Cl. D9-07

U.S. Cl. D9-40



257,327

RAZOR DISPLAY PACKAGE

Rolf A. Samsing, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.

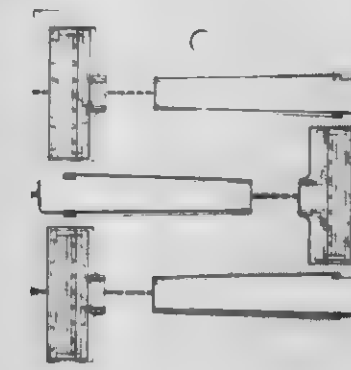
Filed Jan. 12, 1978, Ser. No. 868,844

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-186



257,328

ELECTRONIC METAL WALL SCANNER

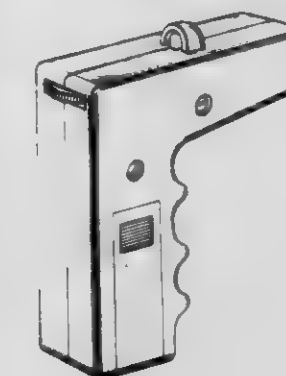
Frederic W. Schwartz, 338 Rochambeau Ave., Providence, R.I. 02906

Filed Jul. 10, 1978, Ser. No. 923,470

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-47

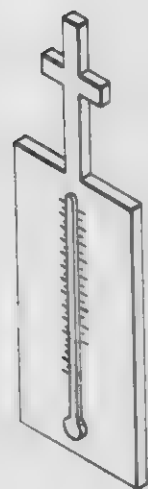


257,329

THERMOMETER

David T. Langley, Jr., 4632 N. 9th St., Philadelphia, Pa. 19140
Filed Dec. 28, 1978, Ser. No. 974,143
Term of patent 14 years
Int. Cl. D10-04

U.S. Cl. D10-54

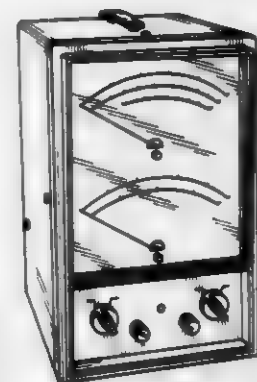


257,331

ENGINE EXHAUST EMISSION ANALYZER

James R. Shaffer, Mt. Prospect; David E. Maxwell, Cary, and Lee F. Radtke, Lake Zurich, all of Ill., assignors to Sun Electric Corporation, Crystal Lake, Ill.
Filed Jul. 28, 1978, Ser. No. 928,889
Term of patent 14 years
Int. Cl. D10-04

U.S. Cl. D10-81

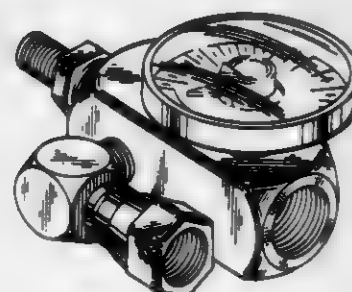


257,332

COMBINED GAUGE AND MOUNTING BLOCK

Aubrey L. Lewis, Rte. 1, Box 53L, Frisco, Tex. 75034
Filed Nov. 9, 1978, Ser. No. 959,429
Term of patent 14 years
Int. Cl. D10-04

U.S. Cl. D10-85



257,330

CORNER LEVEL

Robert H. VanderWerf, Redding, Calif., assignor to Vy-Dawn, Inc., San Rafael, Calif.
Filed Dec. 28, 1978, Ser. No. 973,974
Term of patent 14 years
Int. Cl. D10-04

U.S. Cl. D10-69



257,333

WATCHSTRAP

Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,748
Term of patent 14 years
Int. Cl. D11-01

U.S. Cl. D11-3

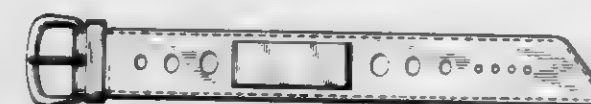


257,334

WATCHSTRAP

Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,763
Term of patent 14 years
Int. Cl. D11-01

U.S. Cl. D11-3



257,335

WATCHSTRAP

Bronislaw L. Hofman, New York, N.Y., assignor to Genal Strap, Inc., New York, N.Y.
Filed Aug. 15, 1978, Ser. No. 933,770
Term of patent 14 years
Int. Cl. D11-01

U.S. Cl. D11-3

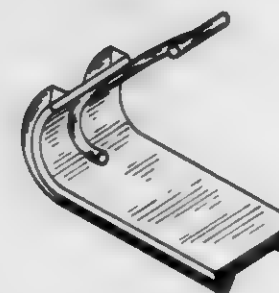


257,336

SKI SCOOTER

Joe Brumby, 9008 Tomahawk Blvd., Omaha, Nebr. 68134
Filed Jul. 2, 1979, Ser. No. 53,842
Term of patent 14 years
Int. Cl. D12-14

U.S. Cl. D12-8

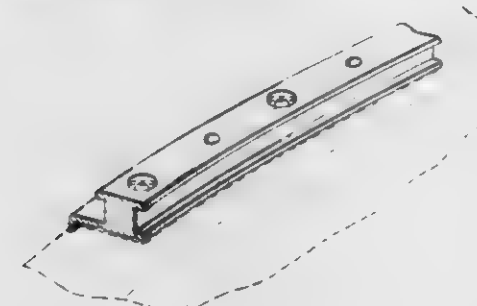


257,337

TOE-RAIL

Warren M. Black, Newbury, Ohio, assignor to Merriman Holbrook, Inc.
Filed Nov. 13, 1978, Ser. No. 959,686
Term of patent 14 years
Int. Cl. D12-16, 03

U.S. Cl. D12-70

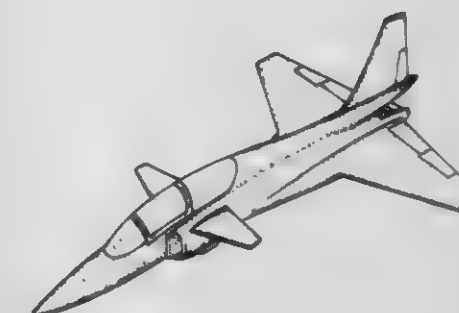


257,338

AIRCRAFT

Jean W. McComas, West Islip, and Gordon Rosenthal, Jericho, both of N.Y., assignors to Fairchild Industries, Inc., Germantown, Md.
Filed Nov. 9, 1978, Ser. No. 959,139
Term of patent 14 years
Int. Cl. D12-07

U.S. Cl. D12-78



257,339

WINDSHIELD WIPER UNIT

Paul Ellinwood, 1618 Fairway Dr., Clinton, Iowa 52732
Continuation-in-part of Ser. No. 847,317, Oct. 31, 1977, abandoned. This application Nov. 23, 1979, Ser. No. 97,057
Term of patent 14 years
Int. Cl. D12-16

U.S. Cl. D12-155



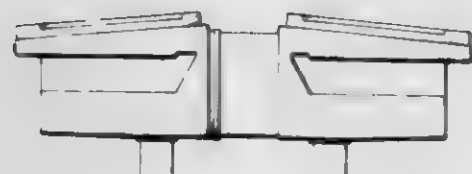
257,340

ADJUSTABLE CONTAINER FOR A PICK-UP TRUCK OR THE LIKERobert D. Grossman, 22 Rivo Alto Dr., Miami Beach, Fla. 33139
Filed Jan. 22, 1979, Ser. No. 5,529

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-157



257,343

ACTUATOR BAR FOR A ZERO INSERTION FORCE CONNECTOR, OR THE LIKE

Gene C. Hollingsworth, Cerritos, Calif., assignor to Zero Corporation, El Monte, Calif.

Filed Jun. 5, 1978, Ser. No. 912,575

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-24



257,344

LIMIT SET MODULE

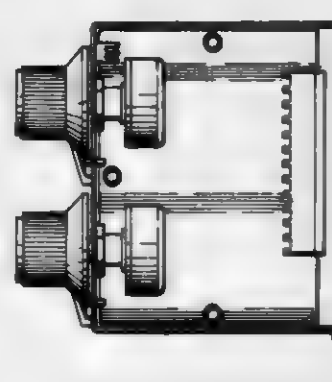
Seymour Barth, Searingtown, N.Y., assignor to Astrosystems, Inc., New York, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,881

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-32



257,341

LICENSE PLATE HOLDER

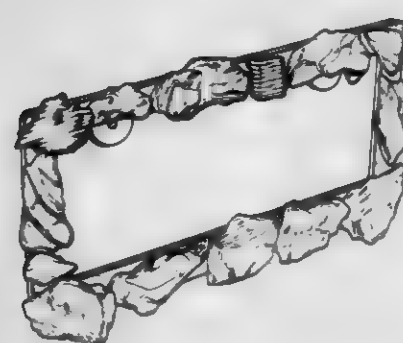
Steffan E. Blaser, 918 W. 6th, Benicia, Calif. 94510

Filed Oct. 2, 1978, Ser. No. 947,932

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-193



257,342

ELECTRICAL TRANSFORMER

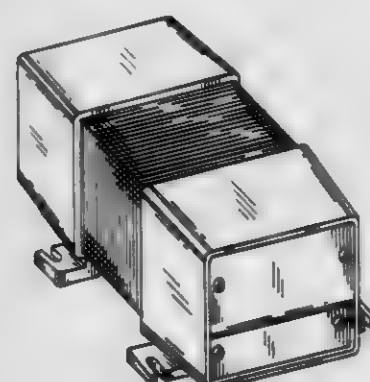
George L. Payne, 345 Bedford Center Rd., Bedford Hills, N.Y. 10507

Filed Dec. 11, 1978, Ser. No. 968,593

Term of patent 14 years

Int. Cl. D13-02

U.S. Cl. D13-4

**PLUG-IN MEMORY MODULE CARTRIDGE FOR ELECTRONIC TRANSLATOR, CALCULATOR AND INFORMATION RETRIEVAL DEVICE**

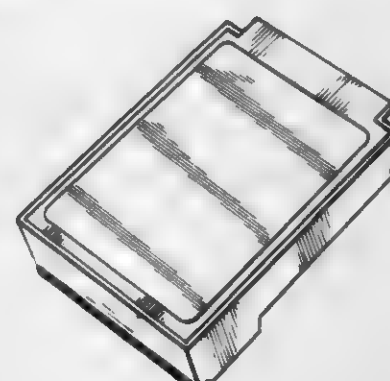
Michael Levy, Plantation, Fla., assignor to Lexicon Corporation, Miami, Fla.

Filed Nov. 17, 1978, Ser. No. 964,066

Term of patent 14 years

Int. Cl. D14-02, 99

U.S. Cl. D14-11



257,346

CONFERENCE MICROPHONE

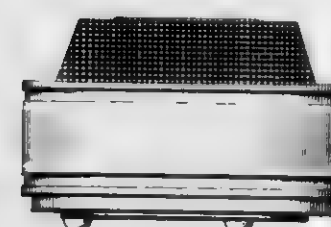
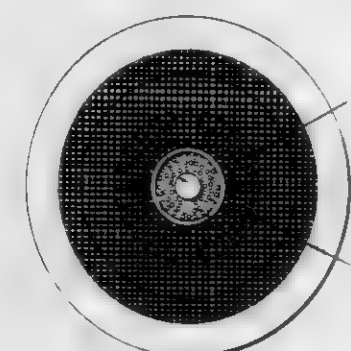
Charles R. Garrigus; Gary L. Over, and Henry J. Cvetko, all of Conneaut, Ohio, assignors to The Astatic Corporation, Conneaut, Ohio

Filed May 22, 1978, Ser. No. 908,138

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-12



257,348

FACE PLATE FOR A LOUD SPEAKER CABINET OR SIMILAR ARTICLE

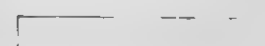
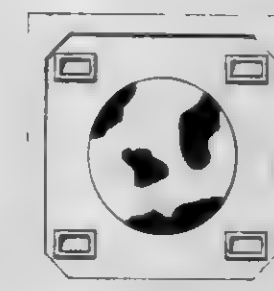
Michael T. Sansone, Jr., 156 Suellen Dr., Rochester, N.Y. 14609

Filed Jul. 19, 1978, Ser. No. 926,137

Term of patent 14 years

Int. Cl. D14-01, 99

U.S. Cl. 14-39



257,347

COMBINED CODED DIGITAL DISC PHONOGRAPH AND STORAGE UNIT OR THE LIKE

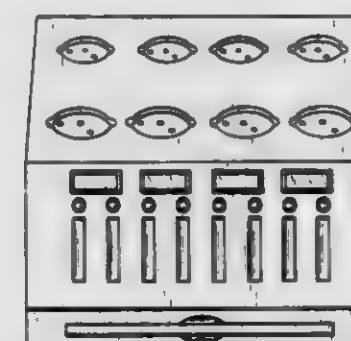
Robert W. Lester, Manhasset, N.Y., assignor to Sonadisc, Inc., New York, N.Y.

Filed May 11, 1978, Ser. No. 904,944

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-20



257,349

HAND HELD TAPE WINDER

Ronald B. Thomas, Delano, Minn., assignor to Computer Products Corporation, Edina, Minn.

Filed May 24, 1978, Ser. No. 908,994

Term of patent 14 years

Int. Cl. D14-99

U.S. Cl. D14-40



257,350

LOUDSPEAKING TELEPHONE HOUSING

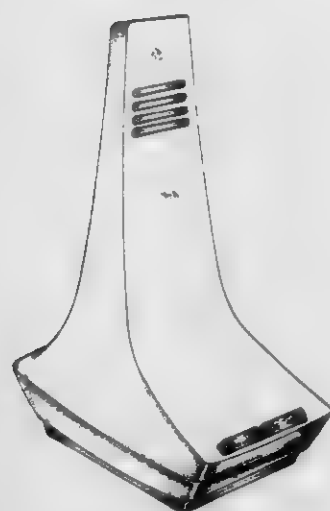
George M. Janda, Westchester, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 21, 1978, Ser. No. 971,989

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-33



257,352

DIGITAL CLOCK RADIO

Katsuhiko Makino, and Kazuo Kosugi, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

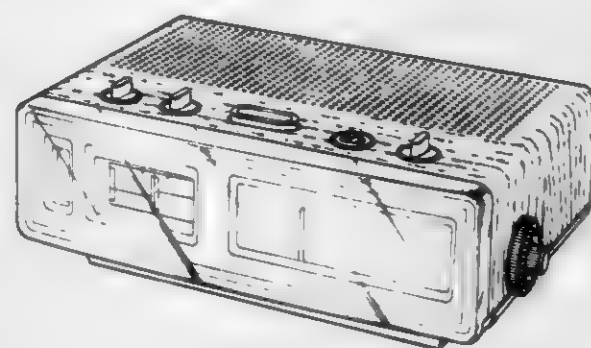
Filed Jul. 20, 1977, Ser. No. 817,283

Claims priority, application Japan, Jan. 20, 1977, 52-1470

Term of patent 14 years

Int. Cl. D14-03; D10-01

U.S. Cl. D14-73



257,353

OUTBOARD MOTOR PROTECTOR

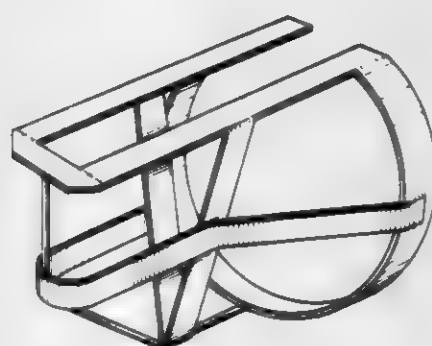
Florevante Fogolin, Pointe au Baril, Ontario, Canada (POG 1K0)

Filed Jul. 7, 1978, Ser. No. 922,636

Term of patent 14 years

Int. Cl. D15-99

U.S. Cl. D15-4



257,351

RADIO RECEIVER

Toshimasa Akazawa, Ashiya; Munenori Fujimoto, Neyagawa; Kikuo Ohta, Ikoma, and Benito Mishiro, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

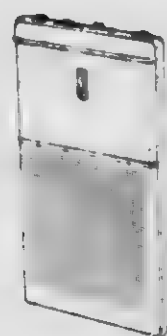
Filed Sep. 27, 1978, Ser. No. 946,856

Claims priority, application Japan, Apr. 4, 1978, 53-13248

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-68



257,354

PORTABLE TIRE INFLATING UNIT

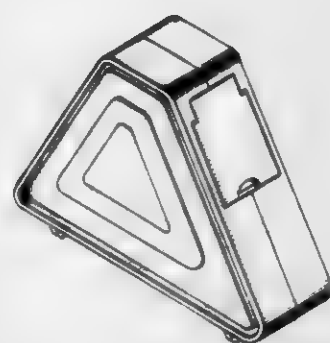
Darrell D. Fish, Timonium, Md., assignor to Universal Security Instruments, Inc., Owings Mills, Md.

Filed Mar. 13, 1978, Ser. No. 886,616

Term of patent 14 years

Int. Cl. D15-02

U.S. Cl. D15-9



257,355

MOTORIZED BASE FOR USE IN DEVELOPING PHOTOGRAPHIC PRINTS

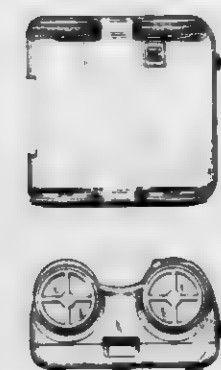
Darwin E. Chapman, Palo Alto, Calif., assignor to Creative Phototronics, Inc., Mountain View, Calif.

Filed Mar. 27, 1978, Ser. No. 890,830

Term of patent 14 years

Int. Cl. D16-04

U.S. Cl. D16-33



257,357

BODY OF A TISSUE CULTURE MICROSCOPE

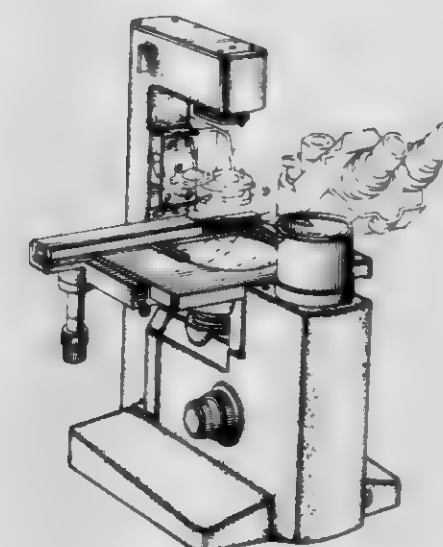
John T. Armbruster, Niagara Falls, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 18, 1978, Ser. No. 897,464

Term of patent 14 years

Int. Cl. D16-06

U.S. Cl. D16-58



257,356

MOVIE LAMP OR SIMILAR ARTICLE

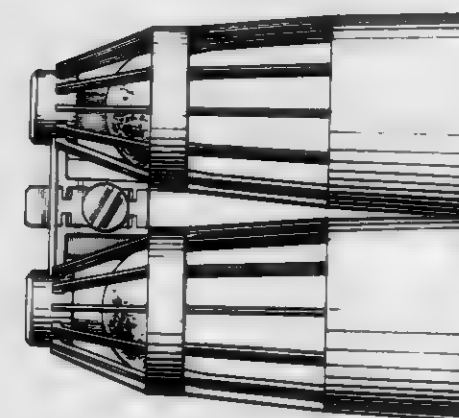
Warren H. Young, Marshfield; Nolan A. Drevitch, South Easton, and Anthony G. Rosati, Salem, all of Mass., assignors to Polaroid Corporation

Filed Sep. 20, 1978, Ser. No. 944,326

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-42



257,358

BODY AND ILLUMINATOR OF A TISSUE CULTURE MICROSCOPE

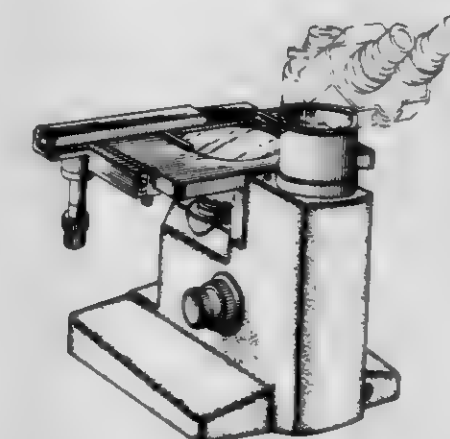
John T. Armbruster, Niagara Falls, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 18, 1978, Ser. No. 897,465

Term of patent 14 years

Int. Cl. D16-06

U.S. Cl. D16-58



257,359

PRINTER STAND

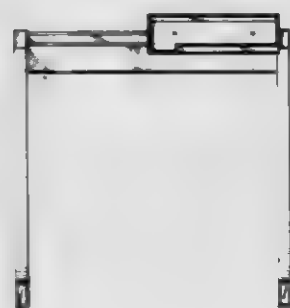
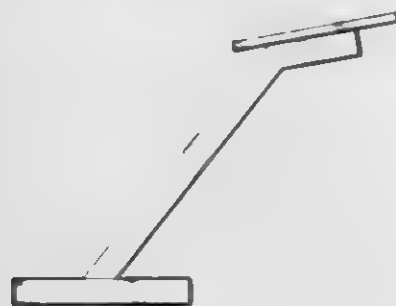
Kenneth A. Lloyd, Jr., 10192 Orchard Park, West Dr., Indianapolis, Ind. 46280

Filed Jan. 26, 1978, Ser. No. 872,592

Term of patent 14 years

Int. Cl. D6-04; D14-02; D18-02

U.S. Cl. D18-23



257,361

COMBINED PERPETUAL CALENDAR AND CONTAINER FOR STATIONERY ARTICLES AND THE LIKE

Albert Leung, Kowloon, Hong Kong, assignor to Kenki (Hong Kong) Limited, Kowloon, Hong Kong

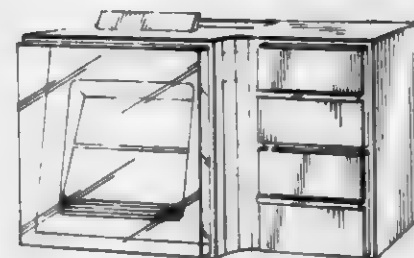
Filed Aug. 1, 1978, Ser. No. 930,004

Claims priority, application United Kingdom, Feb. 2, 1978, 983190/78

Term of patent 14 years

Int. Cl. D19-03

U.S. Cl. D19-21



257,362

TOY VEHICLE

Goro Imura, Tateishi, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

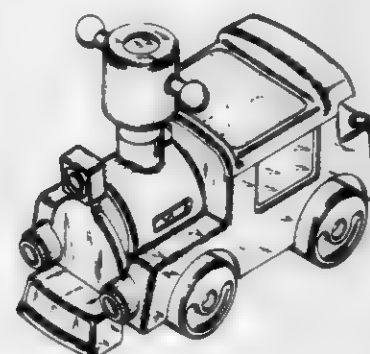
Filed Nov. 8, 1978, Ser. No. 958,946

Claims priority, application Japan, Jun. 10, 1978, 53-24238

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-87



257,360

FONT OF CHARACTERS FOR FORMING A GRAPHIC DISPLAY

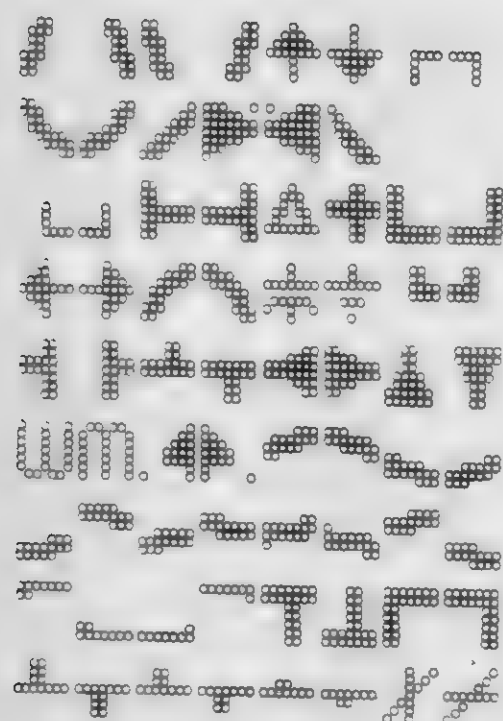
James J. McCarthy, Glendale, Ariz., and Joseph M. Wozniak, Scottsdale, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 17, 1978, Ser. No. 879,008

Term of patent 14 years

Int. Cl. D18-03

U.S. Cl. D18-26



257,363

AERIAL TOY

James Collins, 7710 Watson St., Philadelphia, Pa. 19111, and Joseph Gerstenbacher, 2435 46th St., Pennsauken, N.J. 08110

Filed Dec. 30, 1977, Ser. No. 865,928

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-96



257,364

PINWHEEL

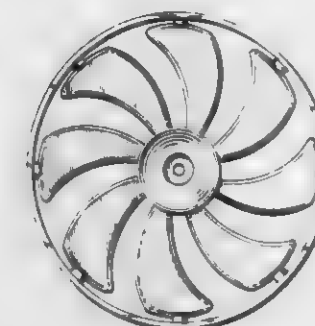
Lester V. Molenaar, Willmar, Minn., assignor to James Industries, Inc., Hollidaysburg, Pa.

Filed Aug. 17, 1978, Ser. No. 934,526

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-93



257,367

TOY AMBULANCE

Patrick T. A. Burdock, Broadstairs, England, assignor to Rover Limited, London, England

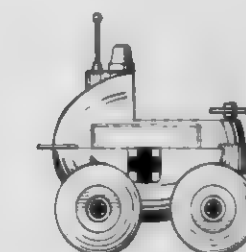
Filed Jul. 11, 1978, Ser. No. 923,740

Claims priority, application United Kingdom, Jan. 13, 1978, 984237/78

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-134



257,365

JOINT ELEMENT FOR CONSTRUCTION SET

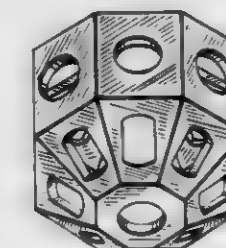
Richard J. Gabriel, Portland, Ore., assignor to Matrix Toys, Beaverton, Ore.

Filed May 8, 1978, Ser. No. 903,980

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-108



257,368

TOY TOW TRUCK BODY

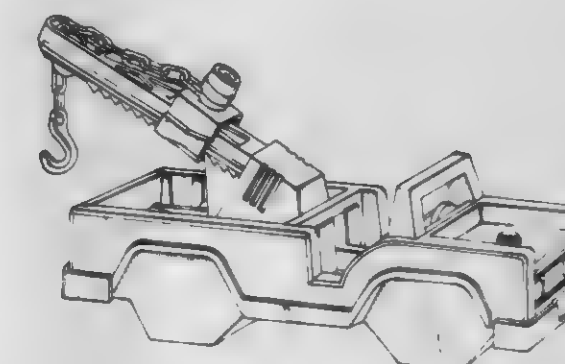
Jack L. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,848

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-139



257,366

JOINT ELEMENT FOR CONSTRUCTION SET

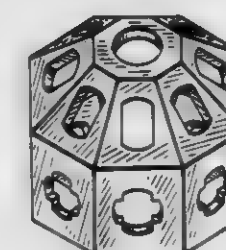
Richard J. Gabriel, Portland, Ore., assignor to Matrix Toys, Beaverton, Ore.

Filed Feb. 8, 1979, Ser. No. 10,216

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-108



257,369

DINOSAUR FIGURE

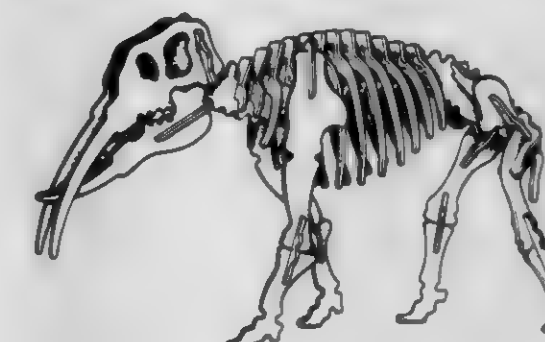
Tatuya Kodaka, 25-6, 1-chome, Wakamiya, Nakano-ku, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,811

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-154

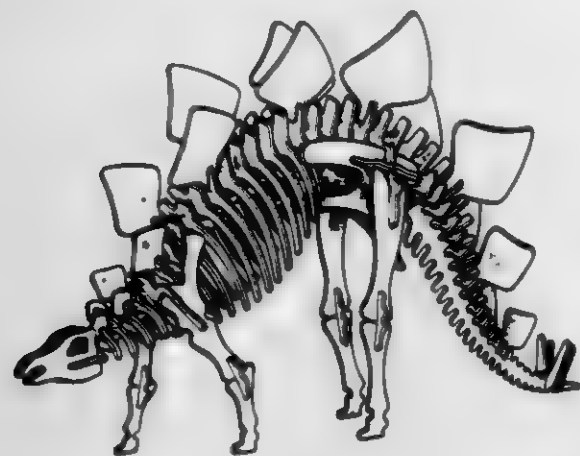


257,370
DINOSAUR FIGURE

Tatuya Kodaka, 25-6, 1-chome, Wakamiya, Nakano-ku, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,813
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-154



257,371
DINOSAUR FIGURE

Tatuya Kodaka, 25-6, 1-chome, Wakamiya, Nakano-ku, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,838
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-154

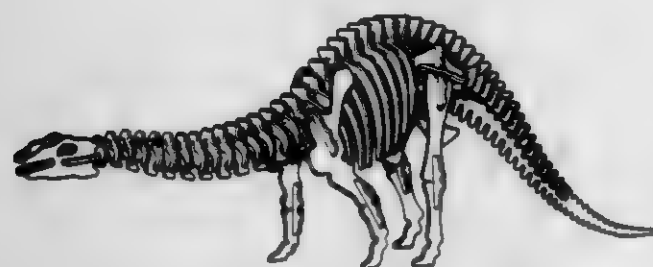


257,372
DINOSAUR FIGURE

Tatuya Kodaka, 25-6, 1-chome, Wakamiya, Nakano-ku, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,839
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-154

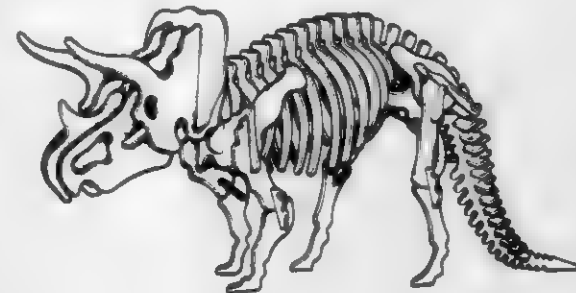


257,373
DINOSAUR FIGURE

Tatuya Kodaka, 25-6, 1-Chome, Wakamiya, Nakano-ku, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,840
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-154

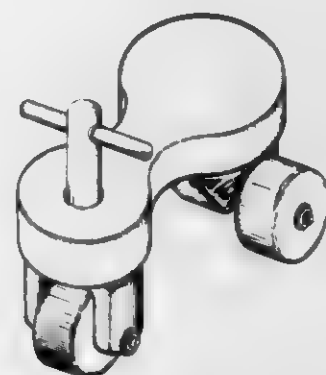


257,374
TOY VEHICLE OR SIMILAR ARTICLE

John R. Nottingham, 2997 Washington Blvd., Cleveland Heights, Ohio 44118, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106

Filed Nov. 20, 1978, Ser. No. 962,298
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-80

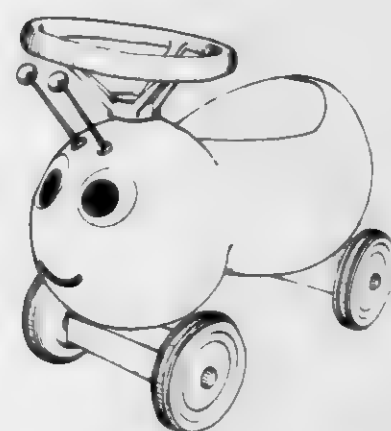


257,375
SIMULATIVE TOY VEHICLE OR SIMILAR ARTICLE

John R. Nottingham, 2997 Washington Blvd., Cleveland Heights, Ohio 44118, and John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106

Filed Aug. 9, 1978, Ser. No. 932,210
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-74

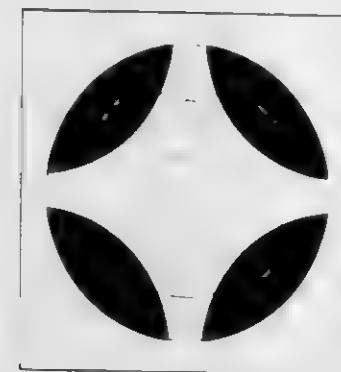


257,376
GUN TARGET

Charles R. Dulude, 33 Burnside Ave., East Hartford, Conn. 06108

Filed Apr. 7, 1978, Ser. No. 894,643
Term of patent 14 years
Int. Cl. D22-04

U.S. Cl. D22-15

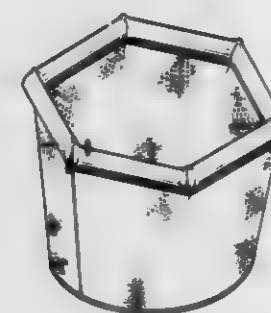


257,377
HEXAGONAL FLOATING LIVE BAIT CONTAINER

Del Andrews, 1238 Hermosa Ave., Hermosa Beach, Calif. 90254

Filed Jun. 8, 1978, Ser. No. 913,751
Term of patent 14 years
Int. Cl. 22-05

U.S. Cl. D22-22

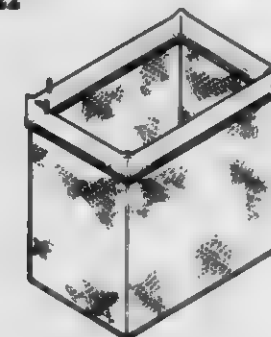


257,378
FLOATING LIVE BAIT CONTAINER

Del Andrews, 1238 Hermosa Ave., Hermosa Beach, Calif. 90254

Filed Jun. 8, 1978, Ser. No. 913,752
Term of patent 14 years
Int. Cl. 22-05

U.S. Cl. D22-22



257,379
FISHING ROD GRIP

Hideo Nakamura, Koganei, Japan, assignor to Daiwa Seiko, Inc., Higashikurume, Japan

Filed Oct. 11, 1978, Ser. No. 950,341
Claims priority, application Japan, Jun. 1, 1978, 53-22745
Term of patent 14 years
Int. Cl. D22-05

U.S. Cl. D22-23



257,380
FISHING ROD GRIP

Hideo Nakamura, Koganei, Japan, assignor to Daiwa Seiko, Inc., Higashikurume, Japan

Filed Oct. 11, 1978, Ser. No. 950,342
Claims priority, application Japan, Jun. 1, 1978, 53-22744
Term of patent 14 years
Int. Cl. D22-05

U.S. Cl. D22-23

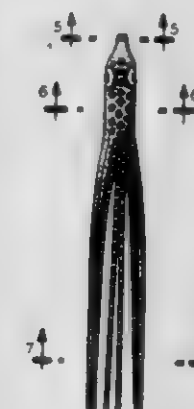


257,381
FISHING JIG

Hiroshi Yano, 18-17, 2-chome, Terazuka, Minami-ku, Fukuoka, Japan

Filed Oct. 4, 1977, Ser. No. 839,241
Term of patent 14 years
Int. Cl. D22-05

U.S. Cl. D22-27



257,382

SPINNER ASSEMBLY FOR FISHING LURE

William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C. 29710

Filed Oct. 10, 1978, Ser. No. 949,695

Term of patent 14 years

Int. Cl. D22-05

U.S. Cl. D22-27



257,383

FISHERMAN'S TOOL

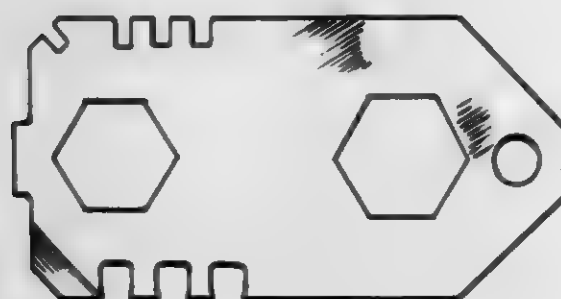
Betty B. Davenport, Texarkana, Ark., assignor to Daveco Fishing Products, Texarkana, Ark.

Filed Nov. 29, 1978, Ser. No. 964,732

Term of patent 14 years

Int. Cl. D22-05

U.S. Cl. D22-31



257,384

MODULAR MULTI-COLOR PAINT SELECTION AND SUPPLY SYSTEM MANIFOLD OR THE LIKE

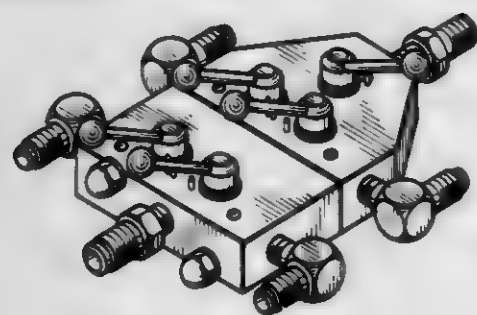
Robert D. Hetherington, Sunland, and David W. Goetz, Burbank, both of Calif., assignors to Poly-Glas Systems

Filed Nov. 20, 1978, Ser. No. 962,355

Term of patent 14 years

Int. Cl. D23-01

U.S. Cl. D23-40

257,385
TOILET

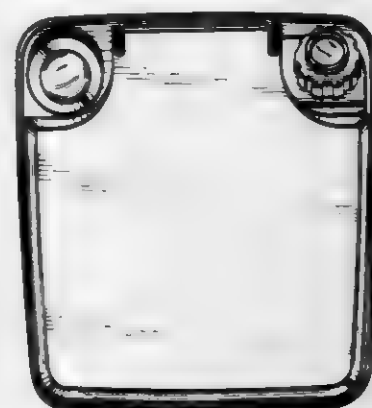
Frank T. Sargent; John M. Antos; Arthur W. Henke, all of Ann Arbor, and John A. Hoffman, Brighton, all of Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Filed Oct. 27, 1978, Ser. No. 955,151

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D23-48



257,386

TOILET RISER

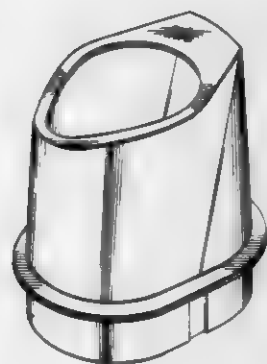
David B. Bogan, 15587 N. Bank Rd., Roseburg, Oreg. 97470

Filed Aug. 4, 1978, Ser. No. 931,112

Term of patent 3 1/2 years

Int. Cl. D23-02

U.S. Cl. D23-69



257,387

DENTAL TRAY

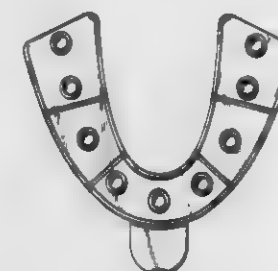
Floyd E. Skarky, 2233 NW. 46th, Oklahoma City, Okla. 73112

Filed Aug. 7, 1978, Ser. No. 931,822

Term of patent 14 years

Int. Cl. D24-02

U.S. Cl. D24-10



257,388

ACUITY PROJECTOR OR SIMILAR ARTICLE

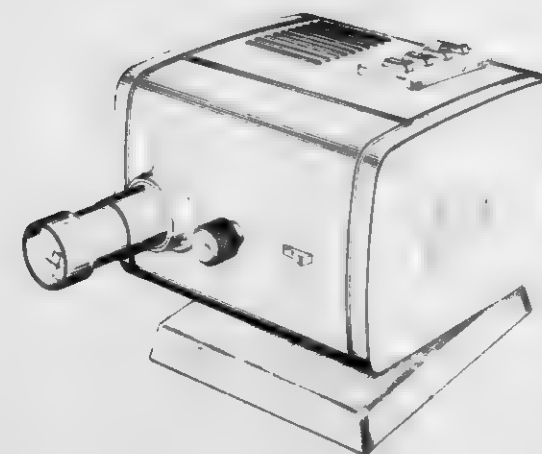
Paul A. Jordan, Fairport, N.Y., assignor to Bausch & Lomb Incorporated

Filed Jun. 28, 1978, Ser. No. 919,653

Term of patent 14 years

Int. Cl. D24-02

U.S. Cl. D24-17



257,389

DIALYZER

Henry Pande, Parker, Colo., assignor to Hospal Medical Corporation, Littleton, Colo.

Filed Mar. 13, 1978, Ser. No. 885,693

Term of patent 14 years

Int. Cl. D24-01

U.S. Cl. D24-21



257,390

TEST TUBE RACK

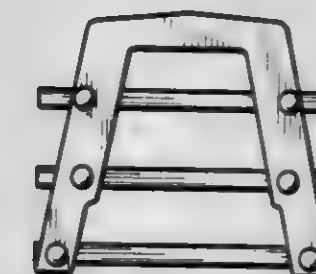
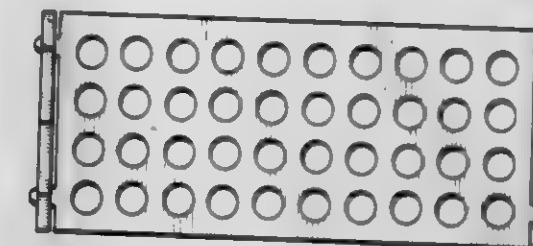
Heinz W. Hahn, Rochester, and Ravinder C. Mehra, Fairport, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jul. 7, 1978, Ser. No. 922,810

Term of patent 14 years

Int. Cl. D6-04; D24-02

U.S. Cl. D24-32



257,391

CARDIO COMPRESSOR

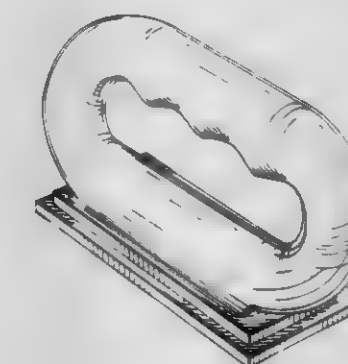
Samuel L. Gammon, 1169 Bryn Mawr, Daytona Beach, Fla. 32014

Filed Jan. 23, 1978, Ser. No. 871,469

Term of patent 14 years

Int. Cl. D24-02

U.S. Cl. D24-36



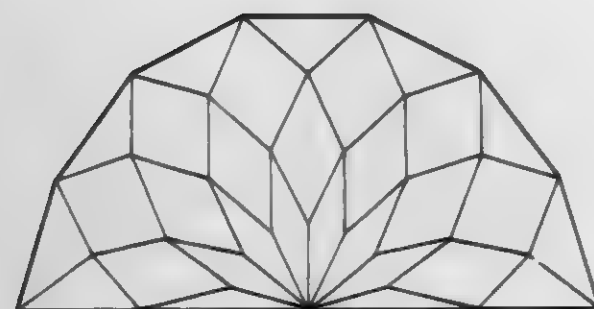
257,392

SOUND SHELL STRUCTURE

John P. Goodman, The Patch Rd., Kallista, Victoria, Australia
Filed Jul. 28, 1978, Ser. No. 929,111

Term of patent 14 years
Int. Cl. D25—03

U.S. Cl. D25—18



257,394

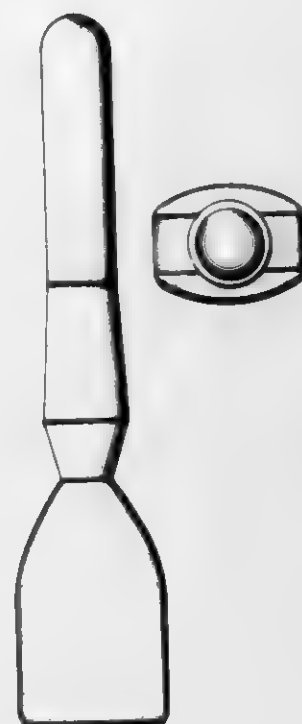
AMPULE CUVETTE

Allen S. Reichler, Dallas, Tex., assignor to Abbott Laboratories,
North Chicago, Ill.

Filed Jul. 13, 1978, Ser. No. 924,254

Term of patent 14 years
Int. Cl. D24—04

U.S. Cl. D24—56



257,393

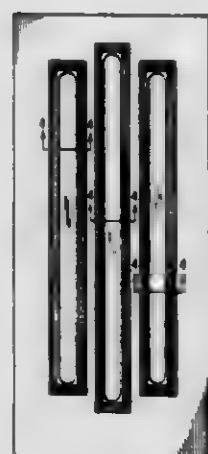
METAL DOOR

George S. Hull, and Raymond E. Imperial, both of Richmond,
Ind., assignors to Johnson Sheet Metal Works Corp., Dallas,
Tex.

Filed Mar. 29, 1978, Ser. No. 891,477

Term of patent 14 years
Int. Cl. D25—02

U.S. Cl. D25—48



257,395

SAWHORSE

William L. Correll, 333 N. Basin St., Ephrata, Wash. 98823
Filed Apr. 28, 1978, Ser. No. 901,266

Term of patent 14 years
Int. Cl. D08—99

U.S. Cl. D25—67



257,396

BUILDING SHEET AND THE LIKE

Erik Gustafsson, Myntvägen 14, S-951 45 Luleå, Sweden
Filed Nov. 13, 1978, Ser. No. 946,683

Term of patent 14 years
Int. Cl. D25—02

U.S. Cl. D25—80



257,399

LAMP SHADE

Hans von Klier, Milan, Italy, assignor to Skipper S.p.A., Milan,
Italy

Filed Jun. 23, 1978, Ser. No. 918,660

Claims priority, application Italy, Jan. 18, 1978, 20498 A/78
Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—118



257,400

MASCARA APPLICATION AID

Bette Cunningham, 10916 Peach Grove, North Hollywood,
Calif. 91601

Filed Oct. 23, 1978, Ser. No. 953,657

Term of patent 14 years
Int. Cl. D28—03

U.S. Cl. D28—7



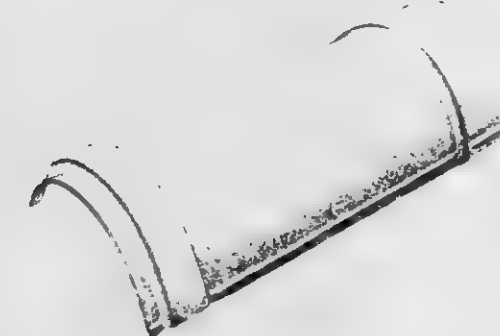
257,397

BUILDING SHEET AND THE LIKE

Erik Gustafsson, Myntvägen 14, S-951 45 Luleå, Sweden
Filed Nov. 13, 1978, Ser. No. 946,684

Term of patent 14 years
Int. Cl. D25—02

U.S. Cl. D25—80



257,401

SHAVER

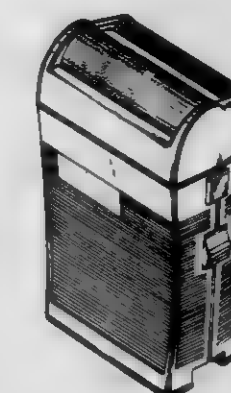
Richard Antretter, Stockdorf, and Werner Stersch, Soecking,
both of Fed. Rep. of Germany, assignors to Rian-Apparate-
und Vorrichtungsbau GmbH, Gauting, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,183

Claims priority, application Fed. Rep. of Germany, Jun. 20,
1978, 11369

Term of patent 14 years
Int. Cl. D28—03

U.S. Cl. D28—49



257,398

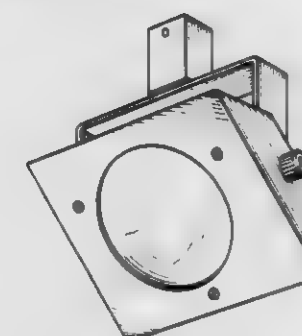
OVERHEAD TRACK LIGHT

John A. Tedesco, San Francisco, Calif., assignor to The Phoebus
Company, Inc.

Filed Jul. 24, 1978, Ser. No. 927,023

Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—85



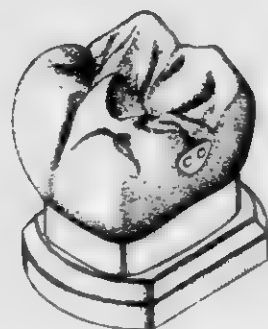
257,402

DENTAL FLOSS DISPENSER

David H. Denton, 20172 Santiago Canyon Rd., Orange, Calif. 92669, and David D. Purdom, 2626-C N. Tustin Ave., Santa Ana, Calif. 92705

Filed Oct. 31, 1978, Ser. No. 956,250
Term of patent 14 years
Int. Cl. D24—99

U.S. Cl. D28—64



257,404

CURTAIN MATERIAL

Hans Stöcker, Fuerstenlandstrasse 49, CH-9500 Wil, Switzerland

Filed Feb. 28, 1978, Ser. No. 882,968
Term of patent 14 years
Int. Cl. D5—02, 05

U.S. Cl. D47—6 F



257,403

CURTAIN MATERIAL

Hans Stöcker, Fuerstenlandstrasse 49, CH-9500 Wil, Switzerland

Filed Feb. 28, 1978, Ser. No. 882,966
Term of patent 14 years
Int. Cl. D5—02, 05

U.S. Cl. D47—6 E



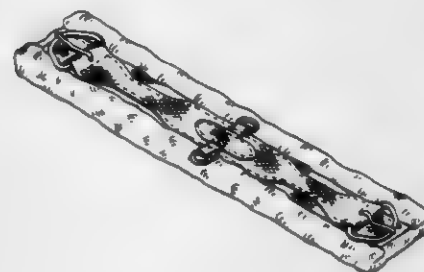
257,405

SADDLE CINCH

Thomas G. Land, P.O. Box 145, Cranfills Gap, Tex. 76637

Filed Jan. 5, 1979, Ser. No. 1,268
Term of patent 14 years
Int. Cl. D30—04

U.S. Cl. D30—19



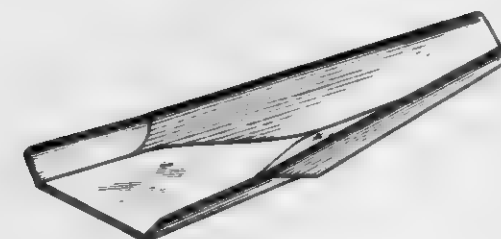
257,406

PET LITTER RETRIEVER

Dawn Ouellette, 336 E. 30th St., New York, N.Y. 10016
Filed Mar. 8, 1978, Ser. No. 884,726

Term of patent 14 years
Int. Cl. D30—99; D15—99

U.S. Cl. D30—99



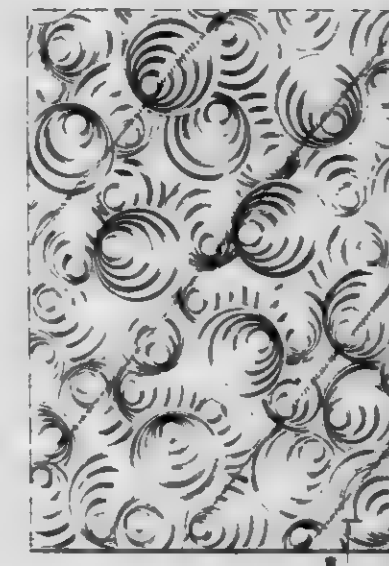
257,407

GLASS SHEET MATERIAL

Jo Maahsen, A. Feuerbachstrasse 10, 5102 Wurselen, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,862
Claims priority, application France, Nov. 8, 1977, 77 40748
Term of patent 14 years
Int. Cl. D28—01

U.S. Cl. D92—31



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF OCTOBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A/S Niro Atomizer: See—
Larsson, Finn H.; and Schwartzbach, Christian, 4,227,896, Cl. 55-260.000.
- A-T-O Inc.: See—
Knox, Raymond L., 4,228,390, Cl. 320-38.000.
- AB Bahco Ventilation: See—
Gustavsson, Karl-Axel G.; and Persson, Holger A., 4,227,903, Cl. 55-302.000.
- AB Bahco Verktyg: See—
Jansson, Conny; and Wahlberg, Ulf, 4,227,430, Cl. 81-177.00M.
- Abbe, Robert C.; Poduje, Noel S.; and Klein, Daniel, to Ade Corporation. Second order correction in linearized proximity probe. 4,228,392, Cl. 324-61.00R.
- Abbruzzese, Luigi: See—
Gozzo, Franco; Abbruzzese, Luigi; and Siddi, Giorgio, 4,228,101, Cl. 260-561.0HL.
- Abe, Kiyoshi: See—
Tsuchiya, Keishin; Yoshihara, Ichiro; Saito, Kazuhito; Abe, Takeshi; Abe, Kiyoshi; and Sone, Kiyoshi, 4,228,429, Cl. 340-632.000.
- Abe, Luis A. P. Nozzle for use on the exhaust of internal combustion engines. 4,227,651, Cl. 239-428.000.
- Abe, Takeshi: See—
Tsuchiya, Keishin; Yoshihara, Ichiro; Saito, Kazuhito; Abe, Takeshi; Abe, Kiyoshi; and Sone, Kiyoshi, 4,228,429, Cl. 340-632.000.
- Abraham, Ludwig; and Moschetti, Armando, to Brown, Boveri & Cie AG. Control method for a three-phase self-excited inverter. 4,228,491, Cl. 363-41.000.
- Abramovich, Abe, to RCA Corporation. Relative humidity measurement. 4,227,411, Cl. 73-336.500.
- Acevedo, Hernan F.; Slifkin, Malcolm; and Dalbow, Milton H., to International Radioimmune Systems, Inc. Kit for detecting human chorionic gonadotropin. 4,228,127, Cl. 422-61.000.
- Ackermann, Rolf; Kolb, Heinz; Morlock, Gerhard; and Schreyer, Gerd, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of glycidyl methacrylate. 4,228,084, Cl. 260-348.120.
- Adair, Reginald J. Road traction apparatus. 4,227,562, Cl. 152-214.000.
- Adams, Frederick J., to Cam Gears Limited. Fluid pressure control valves. 4,227,549, Cl. 137-625.690.
- Ade Corporation: See—
Abbe, Robert C.; Poduje, Noel S.; and Klein, Daniel, 4,228,392, Cl. 324-61.00R.
- Adler, Alan J. Amusement device. 4,227,326, Cl. 40-527.000.
- Adolph Saurer Limited: See—
Oesterle, Gerhard, 4,227,825, Cl. 403-322.000.
- Adrian, Werner. Apparatus for measuring the concentration of gases. 4,228,352, Cl. 250-343.008.
- Advance Mining Products, Inc.: See—
Denny, John L.; and Alley, Robert H., 4,227,660, Cl. 242-86.520.
- AFG Industries, Inc.: See—
Cooke, William C., 4,228,425, Cl. 340-550.000.
- AGA Aktiebolag: See—
Scholdstrom, Ragnar; Marcus, Holger; and Nordstrom, Lennart, 4,227,802, Cl. 356-5.000.
- Agence Nationale de Valorisation de la Recherche (ANVAR): See—
Jouve, Hubert; Meyer, Robert; Szttern, Jacques; Krishnan, Ramathan; Suran, Gabor; and Tessier, Michel, 4,227,947, Cl. 148-122.000.
- AGFA-Gevaert, A.G.: See—
Massengeil, Hans A.; Bock, Georg; and Steinlehner, Fritz, 4,227,803, Cl. 355-50.000.
- Thate, Kurt, 4,227,702, Cl. 277-34.300.
- Aginsky, Jacob. Intramedullary retraction nail for fixation of comminuted fractured bones. 4,227,518, Cl. 128-92.0BC.
- Aguiar, Robert H. Cast cutting system. 4,227,517, Cl. 128-91.00A.
- Air Products and Chemicals, Inc.: See—
Pippin, Wallace H.; and Daniels, Wiley E., 4,228,047, Cl. 260-17.4ST.
- Aizawa, Hiroshi; Shimizu, Masami; Uchidoi, Masanori; Tsunekawa, Tokuchichi; Iura, Yukio; and Yamamichi, Masayoshi, to Canon Kabushiki Kaisha. Bulb photographing control system for an electric shutter camera. 4,227,787, Cl. 354-51.000.
- Aizawa, Hiroshi: See—
Shimizu, Masami; and Aizawa, Hiroshi, 4,227,788, Cl. 354-60.00R.
- Ajinomoto Company, Incorporated: See—
Hiraga, Hirofumi; Miyajima, Ryuichi; and Mitsugi, Koji, 4,228,241, Cl. 435-212.000.
- Akitomo, Nobuo: See—
Tohyama, Shigeo; and Akitomo, Nobuo, 4,227,811, Cl. 356-325.000.
- Aktiebolaget Atomenergi: See—
Margen, Peter H. E.; Roseen, Rutger A.; and Zinko, Heimo, 4,227,511, Cl. 126-415.000.
- Akzona Incorporated: See—
Dawson, Edward C.; Homan, Jan D. H.; and Van Weemen, Bauke K., 4,228,240, Cl. 435-188.000.
- Albert, Ernst, to Deutsche Star Kugelhalter GmbH. Ball bushing with axial extending ball guides. 4,227,751, Cl. 308-6.00C.
- Albrecht, Leman P.; and Willis, W. Coy, to Aluminum Company of America. Container closure. 4,227,617, Cl. 215-251.000.
- Alden Research Foundation: See—
Williams, George C., 4,228,443, Cl. 346-165.000.
- Alexander, John B.; Dennehey, T. Michael; Greff, Richard J.; and Munsch, John M., to Baxter Travenol Laboratories, Inc. Gripper member for retention of a plastic tube. 4,227,730, Cl. 294-16.000.
- Alexandrov, Adolf M.: See—
Slavinsky, Valentin N.; Bairon, Genrikh V.; Alexandrov, Adolf M.; Alexeev, Gennady M.; Savenok, Alexandr F.; Matveev, Vladimir M.; Elin, Fedor E.; Provalsky, Gennady B.; Shulbakh, Boris P.; and Tsimbler, Jury A., 4,227,451, Cl. 100-295.000.
- Alexeev, Gennady M.: See—
Slavinsky, Valentin N.; Bairon, Genrikh V.; Alexandrov, Adolf M.; Alexeev, Gennady M.; Savenok, Alexandr F.; Matveev, Vladimir M.; Elin, Fedor E.; Provalsky, Gennady B.; Shulbakh, Boris P.; and Tsimbler, Jury A., 4,227,451, Cl. 100-295.000.
- Alfio, Deregibus, to Goodyear Tire & Rubber Company. The Autoclave for thermally treating very long rubbery hose products, and the like. 4,228,134, Cl. 422-208.000.
- Alfthan, Bjorn J. V.; and Pettersson, Karl G. Method and an arrangement for obtaining a translatory movement between two mutually contacting bodies. 4,227,608, Cl. 198-630.000.
- Ali, A. Wahab; Golden, Jeffry; Eden, J. Gary; Mahaffey, Redge A.; and Pasour, John A., to United States of America, Navy. Ion-beam-excited gas laser. 4,228,407, Cl. 331-94.50P.
- Allan, Geoffrey: See—
Eakins, Kenneth E.; and Allan, Geoffrey, 4,228,176, Cl. 424-273.00R.
- Allen-Bradley Company: See—
Bernhard, Theodore L.; Dummermuth, Ernst; Hoch, Thomas M.; Jaffe, Bruce S.; and Merrell, Gregory L., 4,228,495, Cl. 364-101.000.
- Allen, Donald L., to Don Allen, Inc. Replication apparatus. 4,227,557, Cl. 142-7.000.
- Alley, Robert H.: See—
Denny, John L.; and Alley, Robert H., 4,227,660, Cl. 242-86.520.
- Allied Chemical Corporation: See—
Patel, Gordhanbhai N.; and Yee, Kwok C., 4,228,126, Cl. 422-56.000.
- Pez, Guido, 4,228,060, Cl. 260-30.40R.
- Taub, Bernard; Harnish, Daniel F.; and Jones, Philip E., 4,228,246, Cl. 521-98.000.
- Allis-Chalmers Corporation: See—
Caldwell, Robert A., 4,228,337, Cl. 219-73.100.
- Caldwell, Robert A., 4,228,342, Cl. 219-137.0WM.
- Allor Foundation, The: See—
Swanson, Damon, 4,228,238, Cl. 435-32.000.
- Alsen, Klaus; Neidhardt, Hans; Maletzke, Jurgen; and Wimmer, Johann, to Dyckerhoff & Widmann Aktiengesellschaft. Method for the construction of elongated concrete structures such as bridges and the like. 4,228,114, Cl. 264-33.000.
- Altschul, Barry: See—
Neumann, George J.; and Altschul, Barry, 4,227,765, Cl. 339-143.00R.
- Aluminum Company of America: See—
Albrecht, Leman P.; and Willis, W. Coy, 4,227,617, Cl. 215-251.000.
- Amend, William E.; and Studhalter, Walter K., to Biphasic Energy Systems, Inc. Waste heat recovery cycle for producing power and fresh water. 4,227,373, Cl. 60-618.000.
- Amerace Corporation: See—
Heenan, Sidney A., 4,227,772, Cl. 350-103.000.
- American Associated Companies: See—
McNelly, H. William, Jr., 4,227,277, Cl. 15-229.00R.
- American Can Company: See—
Hein, Carl C., III; Lempke, Russell J.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Don W., 4,228,215, Cl. 428-216.000.
- Rohowetz, Stanley E., 4,228,221, Cl. 428-469.000.
- American Color & Chemical Corporation: See—
Huffman, Allan M., 4,227,879, Cl. 8-602.000.

- American Cyanamid Company: See—
 Bezawada, Rao S., 4,228,045, Cl. 260-4.00R.
 Blake, David W.; Delgado, Alberto W.; and Sheehan, Gerard M., 4,227,935, Cl. 106-308.00B.
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- Bergeson, Richard P., to Maytag Company, The. Dishwasher fluid control system. 4,227,546, Cl. 137-387.000.
- Bergey, Taylor G. Mud level monitor. 4,228,530, Cl. 367-112.000.
- Bergvall, Bengt A., to Husqvarna AB. Sewing machine with electronic pattern data circuits. 4,227,472, Cl. 112-158.00E.
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- Better Wire Products, Inc.: See—
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- Bio-Tronics, Inc.: See—
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- Blum, Alvin S. Urine specimen collector. 4,227,413, Cl. 73-421.00R.
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- Bonner, John J.; and Clayton, C. William, to Fischer & Porter Company. Capacitive pressure transducer. 4,227,418, Cl. 73-706.000.
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- Borgeas, Alexander T. Cushioned sole for footwear. 4,227,320, Cl. 35-81.000.
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- Botnick, Irvin H. Multiple control valve for mixing fluids. 4,227,548, Cl. 137-606.000.
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- Bourassa, Joseph R.; and Lopez, Manuel, to Parker-Hannifin Corporation. Vehicle rear view mirror mounting. 4,227,671, Cl. 248-480.000.
- Bouvier, Julien J. Motorcycle safety device. 4,227,717, Cl. 280-753.000.
- Bowers, William J.; and Grooms, William L., Jr. Spanner socket wrench. 4,227,429, Cl. 81-90.00C.
- Bowles Fluidics Corporation: See—
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- Bowley, Thomas W.: See—
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- Boyd, Gary L.: See—
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- Braatz, Paul O., to Hughes Aircraft Company. Semiconductor diode array liquid crystal device. 4,228,449, Cl. 357-30.000.
- Bradley Enterprises, Inc.: See—
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- Breeze Corporations, Inc.: See—
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- Breidenstein, Charles J.: See—
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- Bricmont, Robert J.; Hamilton, Philip A.; and Ting, Raymond M. L., to H. H. Robertson Company. Kinetic energy absorbing pad. 4,227,593, Cl. 188-1.00C.
- Bridgestone Tire Company, Limited: See—
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- Bringol, Charles R.; and Snyder, Gary F., to International Business Machines Corporation. Decreasing time duration of recorded speech. 4,228,322, Cl. 179-15.55T.
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- Brooker, Dennis B., to Brooker Folding Knives, Inc. Folding knife. 4,227,303, Cl. 30-154.000.
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- Brown, Abner D., to Chatham Manufacturing Company. Sonic or ultrasonic apparatus for simultaneously cutting and seaming sheet material. 4,227,959, Cl. 156-515.000.
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- Brown, W. Sumner, to Eaxon Research & Engineering Co. Variable reluctance stepper motor drive and method of operation as a DC brushless motor. 4,228,387, Cl. 318-696.000.
- Brown & Williamson Tobacco Corporation: See—
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- Bruckenstein, Stanley; and Martineck, Gregory A., to Research Corporation. Conductometric gas analysis cell. 4,228,400, Cl. 324-450.000.
- Bruning, Rolf; and Roth, Jurgen, to Heraeus Quarzschmelze GmbH. Cleaning attachment to clean flask-shaped receivers of chemical analysis apparatus. 4,228,129, Cl. 422-102.000.
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- Bullock, David G.; Bunce, Roger A.; Clark, Ian R.; Duff, Ian D.; Greaves, Geoffrey S.; Lloyd, Peter H.; Peters, Ann M.; Whitehead, Thomas P.; and Wilding, Peter, to National Research Development Corporation. Testing in a cuvette for cleanliness. 4,227,886, Cl. 23-230.00R.
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- Burger, Manfred; Dukek, Waldeman; Gagel, Ernst; Pretchtl, Alfred; and Kalmovicz, Rudolf. Process and heat pump for the transfer of heat and cold. 4,227,905, Cl. 62-113.000.
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- Burroughs Corporation: See—
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- McElligott, Michael J.; and Tkachenko, Victor J., Jr., 4,227,719, Cl. 283-8.00R.
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- Butler, L. Dennis: See—
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- Cam Gears Limited: See—
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- Cameron Iron Works, Inc.: See—
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- Campbell, Gerald A.; Hamilton, Lewis R.; and Brust, David P., to Eastman Kodak Company. Polymers for use in image receiving elements for metallizable dyes in image transfer film units. 4,228,257, Cl. 525-328.000.
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- Cannon, Thomas M.: See—
- Fenimore, Edward E.; and Cannon, Thomas M., 4,228,420, Cl. 340-146.30F.
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- Carborundum Company, The: See—
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- Carlson, Floyd W.; Hester, Michael L.; and Popelka, David A., to Textron, Inc. Fixed leading edge slat spoiler for a horizontal stabilizer. 4,227,665, Cl. 244-210.000.
- Carlson, Lee G., to American Petro Mart, Inc. Folded moving bed ion exchange apparatus and method. 4,228,001, Cl. 210-676.000.
- Carman, Vincent E., to Vehicle Energy Corporation. Automotive drive system. 4,227,587, Cl. 180-165.000.
- Carney, Robert L.; and Henrick, Clive A., to Zeecon Corporation. (11Z,13Z)-11,13-Hexadecadien-1-ol and (11Z,13Z)-11,13-hexadecadien-1-ol and trimethylsilyl ethers thereof. 4,228,093, Cl. 556-482.000.
- Carr, Norman L.; and Schmid, Bruce K., to Gulf Oil Corporation. Coal liquefaction process with a plurality of feed coals. 4,227,991, Cl. 208-8.0LE.
- Carras, Peter A., to Jane C. Terry. Motor mount bracket for twin-hull sail boats. 4,227,480, Cl. 440-63.000.
- Carrier Corporation: See—
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- Cascade Corporation: See—
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- Castanis, George. Word game apparatus. 4,227,697, Cl. 273-272.000.
- Castelli, Bertrand. Dual game ball paddle. 4,227,692, Cl. 273-67.00R.
- Castle, Alfred B. Tool for lifting and maneuvering utility access covers. 4,227,731, Cl. 294-17.000.
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- Livesay, Richard E., 4,227,744, Cl. 299-94.000.
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- Celanese Corporation: See—
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- Conway, Hugh T., to Becton, Dickinson and Company: Specimen collecting tube, 4,227,620, Cl. 215-355.000.
- Cook, Nathan H.; and Subramanian, Krishnamoorthy, to Massachusetts Institute of Technology: Process for implanting radioactive metal on a substrate, 4,228,338, Cl. 219-76.130.
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- D'Amico, John J., to Monsanto Company: N-Substituted benzothiazolines and benzoxazolines and their use as herbicides and plant growth regulants, 4,228,292, Cl. 548-165.000.
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- Del Pesco, Thomas W., to Du Pont de Nemours, E. I., and Company: Method of catalytically preparing tetrahydrofuran/alkylene oxide polymerizates using a montmorillonite clay as the catalyst, 4,228,272, Cl. 528-413.000.
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- Denny, John L.; and Alley, Robert H., to Advance Mining Products, Inc.: Method and apparatus for extending conveyor belts, 4,227,660, Cl. 242-86.520.
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- Fuji Photo Film Co., Ltd.: See—
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- Yagihara, Morio; and Yokota, Yukio, 4,228,233, Cl. 430-385.000.
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- Gabano, Jean-Paul; and Grassien, Jean-Yves, to Saft-Societe des Accumulateurs Fixes et de Traction. Lithium primary cell containing thionyl chloride. 4,228,229, Cl. 429-196.000.
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- Gardner, Lawrence B.; and Hopf, Philip W., to General Motors Corporation. Method of making a horn pad. 4,228,115, Cl. 264-46.400.
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Hines, Henry P.: See—
Lindquist, Morris W.; and Hines, Henry P., 4,227,725, Cl. 292-202.000.

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Hirsch, Harold H., to General Electric Company. Method for producing high density and high conductivity metal pressings. 4,227,926, Cl. 75-200.000.

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Boos, Charles J.; Hausler, Elwood B.; Hirsch, James A.; Kasprzyk, Martin R.; and Smith, Elmer G., 4,228,344, Cl. 219-270.000.

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Hladik, Stephen M.: See—
Wasielewski, Stanley J.; and Hladik, Stephen M., 4,227,953, Cl. 156-227.000.

Hnidek, Jaroslav: See—
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Engelbreiten, Einar O., 4,227,656, Cl. 241-93.000.

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Bernhard, Theodore L.; Dummermuth, Ernst; Hoch, Thomas M.; Jaffe, Bruce S.; and Merrell, Gregory L., 4,228,495, Cl. 364-101.000.

Hoehn, Hans, to E. R. Squibb & Sons, Inc. 2,3-Dihydro-3-(1H-imidazol-1-ylmethylene)-4H-1-benzothiopyran-4-ones. 4,228,177, Cl. 424-273.00R.

Hoekstra, Albert: See—
Van Hemmen, Dirk J.; and Hoekstra, Albert, 4,227,301, Cl. 30-43.600.

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Hofler, Wolfgang; and Lursen, Klaus, to Bayer Aktiengesellschaft. Novel halogenoethyl sulphones and their use as plant growth regulators. 4,227,918, Cl. 71-103.000.

Hoffa, Jack L., to Beckman Instruments, Inc. Magnetic stirrer for sample container of photometric analyzer. 4,227,815, Cl. 356-436.000.

Hofferbert, William L., Jr.; and Preston, Jack, to Monsanto Company. Solution annealing of aramid and structurally related fibers. 4,227,885, Cl. 8-925.000.

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Confalone, Pasquale N.; Lollar, Elizabeth D.; Fizzolato, Giacomo; and Uskokovic, Milan R., 4,228,295, Cl. 549-57.000.

Grethe, Guenter; Uskokovic, Milan R.; and Sereno, John, 4,228,080, Cl. 260-345.90R.

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Hohenegger, Helmut; Baumann, Hanspeter; and Buchel, Urs, to Ciba-Geigy Corporation. Process for the production of dustfree granules of dyes and optical brighteners. 4,227,880, Cl. 8-524.000.

Holcombe, Cressie E., Jr.; Condon, James B.; and Johnson, D. H. Process for producing diamond-like carbon. 4,228,142, Cl. 423-449.000.

Hold, Peter; and Tadmor, Zehev, to USM Corporation. Rotary processor. 4,227,816, Cl. 366-99.000.

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Brinkman, Willem, 4,227,499, Cl. 123-499.000.

Holland, David; Milner, David J.; and Huff, Roger K., to Imperial Chemical Industries Limited. Polyhalogenated hydrocarbons, useful as insecticide intermediates, and methods for their preparation. 4,228,107, Cl. 570-134.000.

Hollander, Edward F., Jr., to Glass, John P. Package. 4,227,611, Cl. 206-219.000.

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Holloway, Huland L.; and Norum, Edward M., Jr., to Lockwood Corporation. Center pivot irrigation system having apparatus for irrigating corners. 4,227,648, Cl. 239-11.000.

Holmberg, Gote E. Y., to Broderma Holmbergs Fabriks AB. Strap tightener. 4,227,286, Cl. 24-68.00C.

Homan, Jan D. H.: See—
Dawson, Edward C.; Homan, Jan D. H.; and Van Weemen, Bauke K., 4,228,240, Cl. 435-188.000.

Honda Giken Kogyo Kabushiki Kaisha: See—
Kawashima, Yoshinori; and Watanabe, Masaki, 4,227,422, Cl. 474-156.000.

Honda, Makoto: See—
Aoki, Kunitoshi; Honda, Makoto; Dozono, Tetsuro; and Katsumata, Tsutomu, 4,228,098, Cl. 260-465.300.

Honda, Toshio; Fukaura, Yukio; Tanuma, Itsuo; Ishikawa, Hikaru; Ogawa, Masao; Kojima, Shozo; and Ueno, Kazunori, to Bridgestone Tire Company, Limited. Hot-melt adhesion process for vulcanized rubber. 4,227,956, Cl. 156-334.000.

Honeywell Inc.: See—
Falcetti, Carlo G., 4,227,820, Cl. 400-195.000.

Saathoff, Deidrich J.; and Venkatesetty, Hanumanthiyna V., 4,228,227, Cl. 429-194.000.

Honeywell Information Systems Inc.: See—
Avalon, Max; Kowalski, John L.; and Tippetts, K. Boyd, 4,227,289, Cl. 29-33.00K.

Webster, Marvin K., 4,228,500, Cl. 364-200.000.

Hooker Chemicals & Plastics Corp.: See—
Tang, David Y.; and Foster, Arthur M., 4,228,085, Cl. 260-348.490.

Hooker, Res F. Polyhedral annular structures, and blanks therefor. 4,227,334, Cl. 46-1.00L.

Hoover, Donald L. Boring bar. 4,227,841, Cl. 408-197.000.

Hopf, Philip W.: See—
Gardner, Lawrence B.; and Hopf, Philip W., 4,228,115, Cl. 264-46.400.

Horellou, Michel R.: See—
Woodford, Alan T.; and Horellou, Michel R., 4,227,853, Cl. 414-738.000.

Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,228,440, Cl. 346-75.000.

Hornyak, Emery J., Jr.; Perry, Philip D.; and Sherman, James E., to Owens-Illinois, Inc. Electric forehearth and method of melting therein. 4,227,909, Cl. 65-135.000.

Horvay, Julius B., to General Electric Company. Refrigerator including through-the-door ice service. 4,227,383, Cl. 62-344.000.

Hosoi, Yujo; Shinoda, Noboru; Tsuchida, Yutaka; Sekino, Shozo; Sakakihara, Mizuo; and Murota, Shoji, to Nippon Steel Corporation. Heat-resistant alloy for welded structures. 4,227,925, Cl. 75-171.000.

Hotten, Bruce W., to Chevron Research Company. Lubricating oil additive. 4,228,282, Cl. 544-296.000.

Houlihan, William J., to Sandoz, Inc. 2-Keto-4,5-dihydro-3 (2H)-pyridazinones, and their use in treating muscle tension. 4,228,166, Cl. 424-250.000.

Hov-Air-Ship, Inc.: See—
Slater, Saul I., 4,228,416, Cl. 335-295.000.

Howard, Edward G., Jr.; and Sarafidis, Christos, to Du Pont de Nemours, E. I., and Company. Polymerization of propylene with a catalyst prepared in situ. 4,228,263, Cl. 526-154.000.

Howarth, Thomas T.: See—
Ponsford, Roger J.; and Howarth, Thomas T., 4,228,174, Cl. 424-272.000.

Howell, Alexander G., Jr.; and Settle, Evan E., III, to Reynolds Metals Company. Solar distillation apparatus. 4,227,970, Cl. 202-234.000.

Hoy, Leslie R. J.; and Siggers, Malcolm J., to Imperial Chemical Industries Limited. Aromatic polyether sulfone used as a prime coat for a fluorinated polymer layer. 4,228,219, Cl. 428-422.000.

Hrescak, Stan, to B. C. Gearworks Ltd. Hydraulic winch. 4,227,680, Cl. 254-344.000.

Hrinda, Michael E.: See—
Fisher, Joseph D.; Curry, Willie M.; and Hrinda, Michael E., 4,228,154, Cl. 424-101.000.

Hsu, I-Chi; and Simpson, Anne L., to Western Geophysical Co. of America. Method for displaying seismic data. 4,228,529, Cl. 367-70.000.

Hubbard, Carl A.; and Hudson, Colin M. Blinker aiming post light. 4,228,485, Cl. 362-191.000.

Hudecek, Slavko; Hnidek, Jaroslav; Heidingsfeld, Viktor; Kolarik, Jan; and Zelinger, Jiri, to Ceskoslovenska akademie ved. Method for producing thin-walled articles from plastic or rubber. 4,228,205, Cl. 428-35.000.

Hudson, Colin M.: See—
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Huff, Roger K.: See—
Holland, David; Milner, David J.; and Huff, Roger K., 4,228,107, Cl. 570-134.000.

Huffman, Allan M., to American Color & Chemical Corporation. Concentrated direct dye solution. 4,227,879, Cl. 8-602.000.

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Braatz, Paul O., 4,228,449, Cl. 357-30.000.

DuFort, Edward C., 4,228,436, Cl. 343-854.000.

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Glass, Joseph M., Jr., 4,227,585, Cl. 175-325.000.

Scales, Stanley R.; and Sullivan, Eric C., 4,228,339, Cl. 219-77.000.

Hughes, William G., to Tenneco Chemicals, Inc. Process for the removal of vinyl chloride from aqueous dispersions of vinyl chloride resins. 4,228,273, Cl. 528-491.000.

Huige, Nicolaas J.: See—
Westermann, Donald H.; Sawicki, John E.; and Huige, Nicolaas J., 4,228,188, Cl. 426-11.000.

Hulyalkar, Ramchandra K.; and Lauzon, Rodrigue V., to Syntex (U.S.A.) Inc. Flame retardant latexes. 4,228,058, Cl. 260-29.70A.

Humbert, Marcel E. Wire wound disc armature for dynamoelectric machine. 4,228,378, Cl. 310-268.000.

Humke, Byron M.; Gruber, Gerald W.; Dowbenko, Rostyslaw; and Friedlander, Charles B., to PPG Industries, Inc. Radiation-curable coating compositions containing amide acrylate compounds. 4,227,979, Cl. 204-159.160.

Humphreys, James R. Aircraft propeller pitch control. 4,227,860, Cl. 416-155.000.

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Hurkmans, Antoon M.: See—
Arnoldi, Douglas R.; Hurkmans, Antoon M.; and Tolman, Wayne D., 4,227,801, Cl. 355-75.000.

Huron, Jean-Louis: See—
Kalopissis, Gregoire; Zymann, Alexandre; Sebagn, Henri; Vanlerberghe, Guy; Huron, Jean-Louis; and Bugaut, Andree, 4,228,259, Cl. 525-435.000.

Hurst, Eric J.; and MacAulay, Hugh G., to Bata Shoe Company, Inc. Method and apparatus for slush molding articles of footwear. 4,227,556, Cl. 141-137.000.

Hurt, Henry W., to Lubbock Manufacturing Company. Isolation frame. 4,227,578, Cl. 172-40.000.

Husqvarna AB: See—
Bergvall, Bengt A., 4,227,472, Cl. 112-158.00E.

Huttemann, Werner; and Falke, Reinhard, to Hewlett-Packard Company. Integrator circuit with limiter. 4,228,366, Cl. 307-229.000.

Hydes, Paul C.; and Watkins, David M., to Johnson, Matthey & Co., Limited. Compositions containing platinum. 4,228,090, Cl. 260-429.00R.

Ibuki, Koji; Ueda, Yoshihiro; and Kii, Masami, to Mitsubishi Denki Kabushiki Kaisha. Gas pressure circuit interrupter. 4,228,332, Cl. 200-148.00R.

Ide, Hiroyuki: See—
Noda, Kanji; Nakagawa, Akira; Yamagata, Kenji; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihito, 4,228,304, Cl. 562-507.000.

Ideta, Yasufumi; and Watanabe, Shoji, to Nissan Motor Company, Limited. Hydraulic power clutch control system having an inching valve. 4,227,602, Cl. 192-109.00F.

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Iida, Makoto, to Security Patrols Co., Ltd. Fire-extinguishing system. 4,227,577, Cl. 169-61.000.

Iida, Masaru: See—
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Iizuka, Masahiko, to Toray Industries, Inc. Cell culture propagation apparatus. 4,228,243, Cl. 435-285.000.

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Asano, Kiro; Saito, Tsuyoshi; Hatanaka, Masayoshi; and Ikeda, Susumu, 4,228,275, Cl. 536-18.000.

Ijushin, Arkady L.: See—
Enikolopov, Nikolai S.; Nepomnyaschy, Anatoly I.; Pekarisky, Viktor A.; Pekariskaya, Tatyana A.; Bruslovsky, Mikhail G.; Gavrilina, Svetlana A.; Lerman, Naum D.; Maimur, Oleg K.; Ijushin, Arkady L.; Markevich, Mikhail A.; Karpacheva, Susanna M.; Khorkhorina, Lidia P.; Muratov, Valeryan M.; and Sholk, Semen F., 4,228,271, Cl. 528-95.000.

Imamura, Yuzo. Method of producing radioactive carbon powder. 4,228,146, Cl. 424-1.000.

Imperial Chemical Industries Limited: See—
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Coffey, William A., 4,227,854, Cl. 414-746.000.

Ferguson, Ian; and Lindsay, Robert J., 4,228,299, Cl. 560-124.000.

Holland, David; Milner, David J.; and Huff, Roger K., 4,228,107, Cl. 570-134.000.

Hoy, Leslie R. J.; and Siggers, Malcolm J., 4,228,219, Cl. 428-422.000.

Industrial Management Co.: See—
Rooklyn, Jack, 4,227,466, Cl. 108-93.000.

Ingall, Anthony H.: See—
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Ingenjorsfirman Percy Blanck AB: See—
Karlsson, Bertil, 4,227,560, Cl. 151-24.000.

Inoes, Thomas L.; and George, Darwin E. Frequency detecting apparatus. 4,227,437, Cl. 84-454.000.

Inose, Fumiyuki; Endo, Hirohide; and Komatsu, Akio, to Hitachi, Ltd. Compact keyboard structure. 4,228,329, Cl. 200-5.00A.

Inoue, Takeshi: See—
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Insulan, Stig G. E.; and Stubbal, Jom, to Viking-Askim A/S. Protective suit with insulated head piece. 4,227,262, Cl. 2-2.10R.

International Business Machines Corporation: See—
Anantha, Narasipur G.; Henle, Robert A.; and Walsh, James L., 4,228,369, Cl. 307-270.000.

Anantha, Narasipur G.; and Chang, Augustine W., 4,228,450, Cl. 357-51.000.

Barclay, Donald J.; Bird, Colin L.; Hallett, Michael H.; and Martin, David H., 4,228,431, Cl. 340-719.000.

Bringol, Charles R.; and Snyder, Gary F., 4,228,322, Cl. 179-15.55T.

- Galwey, Ronald K.; and Kanazawa, Kay K., 4,227,988, Cl. 204-231.000.
- Lee, Hua-Tung, 4,228,526, Cl. 365-183.000.
- Letteney, Robert C.; Levine, Samuel R.; Shen, David T.; and Weinberger, Arnold, 4,228,520, Cl. 364-760.000.
- Lewis, David O.; and Reed, John W., 4,228,504, Cl. 364-200.000.
- Mathewson, James A.; and Pasterchick, Harry, Jr., 4,227,283, Cl. 16-128.00R.
- Pennebaker, William B., 4,227,455, Cl. 101-93.050.
- International Computers Limited: See—
- Manriquez, Ralph F., 4,227,819, Cl. 400-56.000.
- International Flavors & Fragrances Inc.: See—
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- Shu, Chi-Kuen; Mookherjee, Braja D.; and Vock, Manfred H., 4,228,278, Cl. 544-5.000.
- International Harvester Company: See—
- Kerber, Dathan R.; Johnson, Orlin W.; Week, Robert D.; Benson, Richard E.; VandeWiele, John L.; and Lucas, James R., 4,227,363, Cl. 56-10.200.
- Luft, Robert G., 4,227,598, Cl. 192-4.00A.
- Vander Burgh, Lloyd A.; Moore, R. Dale; and Paplaski, Joseph, 4,227,670, Cl. 248-416.000.
- International Paper Company: See—
- La Rosa, John F., 4,227,534, Cl. 128-349.00B.
- International Radiimmune Systems, Inc.: See—
- Acevedo, Herman F.; Slifkin, Malcolm; and Dalbow, Milton H., 4,228,127, Cl. 422-61.000.
- International Shoe Machine Corporation: See—
- Becka, Michael M., 4,227,483, Cl. 118-411.000.
- International Standard Electric Corporation: See—
- Gunn, Duncan A., 4,227,770, Cl. 350-96.230.
- International Telephone and Telegraph Corporation: See—
- Witek, Roman J., Jr., 4,227,760, Cl. 339-14.00R.
- Internationale Octrooi Maatschappij "Octropa" B.V.: See—
- Tjaden, Jan, 4,227,571, Cl. 165-167.000.
- Iowa State University Research Foundation, Inc.: See—
- Robyt, John F.; and Zikopoulos, John N., 4,228,150, Cl. 424-48.000.
- Irmischer, Helmut, to VEB Werkzeugmaschinenbau Karl-Marx-Stadt. Knitting-machine patterning system, 4,227,384, Cl. 66-75.100.
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- Nienow, John F.; Irving, Christopher L.; and Shaw, Lynwood V., 4,227,400, Cl. 73-81.000.
- Isbell, William C., to Isom, Ken; Isom, Larry; and Isom, Rex, part interest to each. Dike producing device, 4,227,579, Cl. 172-64.000.
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- Sato, Yasuhiko; Mizoguchi, Tomohige; Kudo, Yukitsuka; and Ishida, Ryuichi, 4,228,168, Cl. 424-256.000.
- Ishihara, Masao: See—
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- Ishikawa, Hikaru: See—
- Honda, Toshio; Fukuura, Yukio; Tanuma, Itsuo; Ishikawa, Hikaru; Ogawa, Masao; Kojima, Shozo; and Ueno, Kazunori, 4,227,956, Cl. 156-334.000.
- Ishiko, Masahiro: See—
- Oguni, Hiroshi; Ishiko, Masahiro; and Nakayama, Kazuyoshi, 4,227,442, Cl. 91-392.000.
- Ishino, Kunihiko: See—
- Ishiwata, Hideyuki; and Ishino, Kunihiko, 4,227,599, Cl. 192-54.000.
- Ishiwata, Hideyuki; and Ishino, Kunihiko, to Automobile Parts Manufacturing Company Limited. Automatic clutch, 4,227,599, Cl. 192-54.000.
- Ishizaki, Yoshihiro. Cooling system, 4,227,376, Cl. 62-434.000.
- Ishizuki, Saburo, to Kabushikikaisha Anoa. Table game, 4,227,698, Cl. 273-309.000.
- Isom, Ken: See—
- Isbell, William C., 4,227,579, Cl. 172-64.000.
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- Isbell, William C., 4,227,579, Cl. 172-64.000.
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- Isbell, William C., 4,227,579, Cl. 172-64.000.
- Ishiki, Setsuya: See—
- Fujimoto, Ikuo; Ishiki, Setsuya; Kurita, Yoshikazu; and Sato, Yoji, 4,228,255, Cl. 525-288.000.
- Itaya, Reijiro, to Itaya Seisakusho Co., Ltd. Spring winding machine, 4,227,392, Cl. 72-137.000.
- Itaya Seisakusho Co., Ltd.: See—
- Itaya, Reijiro, 4,227,392, Cl. 72-137.000.
- Ito, Yoichiro, to United States of America, Health, Education and Welfare. Toroidal coil planet centrifuge, 4,228,009, Cl. 210-198.00C.
- Itoh, Tsutomu, to Onoda Cement Co., Ltd. Powder charging device, 4,227,652, Cl. 239-706.000.
- ITT Industries, Inc.: See—
- Haglund, Sture, 4,227,733, Cl. 294-83.00R.
- Schopper, Bernd; and Tandler, Peter, 4,227,746, Cl. 303-6.00R.
- Iura, Yukio: See—
- Aizawa, Hiroshi; Shimizu, Masami; Uchidoi, Masanori; Tsunekawa, Tokuchika; Iura, Yukio; and Yamamichi, Masayoshi, 4,227,787, Cl. 354-51.000.
- Ivanov, Jury P.; and Evstafiev, Evgeny A. Building berth vessel support and handling system, 4,227,828, Cl. 405-1.000.
- Ivans, Lennart; and Lekander, Karl-Erik, to Sunds Aktiebolag. Method for combusting a mixture of spent magnesium sulphate digestion liquor and alkaline oxygen bleach liquor, 4,227,966, Cl. 162-36.000.
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- King, Stephen J., to Nash Engineering Company, The. Production of phosphates. 4,228,140, Cl. 423-320.000.
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- Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., 4,227,476, Cl. 114-240.000.
- Klaus, Arthur; and Tacke, Horst, to Signode Corporation. Muffler for air-powered nailers and the like. 4,227,591, Cl. 181-230.000.
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- Kline, Harry A.: See—
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- Kling, Stephen C.; and Sands, William A. Safety wrapper and strap. 4,227,321, Cl. 36-91.000.
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- Manshausen, Theodor; and Fritsch, Walter, 4,227,873, Cl. 432-131.000.
- Klotzbach, Harry A. Ground preparing apparatus for no-till planting. 4,227,581, Cl. 172-142.000.
- Kluger, Michael A., to Bendix Corporation, The. Backing plate-wheel cylinder retaining clip. 4,227,594, Cl. 188-361.000.
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- Knapp, Heinrich; and Jaggle, Gunther, to Robert Bosch GmbH. Fuel injection apparatus. 4,227,501, Cl. 123-453.000.
- Knebel, Alfred H.; and Rhodes, Donald E., to Kerr-McGee Corporation. Operation of a coal deashing process. 4,227,994, Cl. 208-177.000.
- Knotek, Otto; Lugscheider, Erich; and Wichert, Wolfgang, to Eutectic Corporation. Wear and corrosion resistant nickel-base alloy. 4,228,223, Cl. 428-558.000.
- Knowles, Horace A., to Knowles, Horace A. Thumb twiddling toy. 4,227,342, Cl. 46-228.000.
- Knox, Raymond L., to A-T-O Inc. Battery charger. 4,228,390, Cl. 320-38.000.
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- Kobe, Inc.: See—
- Erickson, John W.; and Kelleher, John M., 4,227,865, Cl. 417-365.000.
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- Kodaira, Masaru: See—
- Kakimoto, Kunihiko; and Kodaira, Masaru, 4,227,372, Cl. 60-602.000.
- Kodama, Mikio: See—
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- Horike, Masanori; Jinnai, Koichiro; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,228,440, Cl. 346-75.000.
- Kofke, William A.: See—
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- Kohara, Hideo: See—
- Yagi, Toshiro; Yamamoto, Junichi; and Kohara, Hideo, 4,228,203, Cl. 427-229.000.
- Kohler Co.: See—
- Greene, Norman D., 4,227,567, Cl. 165-1.000.
- Kohler, Samuel H.: See—
- Kanner, Gary L.; Kohler, Samuel H.; and Lewis, Robert E., 4,228,343, Cl. 219-225.000.
- Kojima, Shozo: See—
- Honda, Toshio; Fukuura, Yukio; Tanuma, Itsuo; Ishikawa, Hikaru; Ogawa, Masao; Kojima, Shozo; and Ueno, Kazunori, 4,227,956, Cl. 156-334.000.
- Kokubu, Teruo, to Zebra Co., Ltd. Composite writing instrument. 4,227,822, Cl. 401-17.000.
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- Kolb, Heinz: See—
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- Kollmorgen Technologies Corporation: See—
- Arnold, Frank, Jr.; and Geiger, Dana F., 4,228,384, Cl. 318-254.000.
- Komatsu, Akio: See—
- Inose, Fumiyuki; Endo, Hirohide; and Komatsu, Akio, 4,228,329, Cl. 200-5.00A.
- Komoto, Shinsuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens barrel for flash photography. 4,227,791, Cl. 354-196.000.
- Kondo, Mitsuru: See—
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- Kondo, Ryotaro: See—
- Okita, Yui; Kondo, Ryotaro; and Nii, Yoshiji, 4,228,476, Cl. 361-68.000.
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- Konig, Peter, to Tioxide Group Limited. Method for the preparation of catalyst of vanadium pentoxide on substrate of titanium dioxide. 4,228,038, Cl. 252-461.000.
- Konishioku Photo Industry Co., Ltd.: See—
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- Okonogi, Kyohei; Sato, Mikio; Mogaki, Katsuo; Sasaki, Takashi; and Uchida, Takashi, 4,228,235, Cl. 430-542.000.
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- Korcz, Eugene: See—
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- Yamamoto, Michihiro; Koshiba, Masao; and Aono, Shunji, 4,228,167, Cl. 424-251.000.
- Koskivirta, Veikko, to Valmet Oy. Method and apparatus for loading or unloading water vessels. 4,227,846, Cl. 414-139.000.
- Koster, Karl H.: See—
- Gunther, Roland; and Koster, Karl H., 4,227,609, Cl. 198-711.000.
- Koszi, Louis A.: See—
- Hartman, Robert L.; Koszi, Louis A.; Mogab, Cyril J.; and Schwartz, Bertram, 4,227,975, Cl. 204-15.000.
- Kothe, Dieter: See—
- Rahmfeld, Werner; and Kothe, Dieter, 4,227,636, Cl. 226-189.000.
- Kotzsch, Hans-Joachim; Seiler, Claus-Dietrich; and Vahlsieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of organokoxysilanes. 4,228,092, Cl. 556-422.000.
- Kowalski, John L.: See—
- Avalon, Max; Kowalski, John L.; and Tippett, K. Boyd, 4,227,289, Cl. 29-33.00K.
- Koyama, Masahiro: See—
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- Koyama, Teruhisa: See—
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- Kraftwerk Union Aktiengesellschaft: See—
- Beermann, Heinrich; and Lambrecht, Dietrich, 4,228,375, Cl. 310-214.000.
- Kramer, William M., to RCA Corporation. Reduced blooming device having enhanced quantum efficiency. 4,228,446, Cl. 357-31.000.
- Krass, Dennis K., to PPG Industries, Inc. Control of weeds with 1-(3-methyl-5-isothiazolyl)-3-alkoxyl-3-methylureas. 4,227,916, Cl. 71-90.000.
- Kreiskorte, Heinz, to Thyssen Industrie AG. Press with small ram stroke. 4,227,450, Cl. 100-214.000.
- Kreuzer, Helmut, to Robert Bosch GmbH. Rotor structure for dynamo electric machines subject to vibratory, shock, or temperature change effects. 4,228,377, Cl. 310-263.000.
- Kriechbaum, Kurt; Kienhofer, Hans; and Picht, Rin J., to Zinser Textilmaschinen GmbH. Can changing device. 4,227,848, Cl. 414-395.000.
- Krieg, John J., to Eaton Corporation. Hydraulic lash adjuster with oil reservoir separator. 4,227,495, Cl. 123-90.550.
- Krishnan, Ramanathan: See—
- Jouve, Hubert; Meyer, Robert; Sztern, Jacques; Krishnan, Ramanathan; Suran, Gabor; and Tessier, Michel, 4,227,947, Cl. 148-122.000.
- Krone, Harimut; van Acken, Rudiger; Trede, Wolfgang; and Schmidlin, Robert, to Buck Chemisch-Technische Werke GmbH & Co. Practice war head device. 4,227,460, Cl. 102-66.000.
- Krull, Felix B., to NCR Corporation. Means for preventing drying of ink at nozzles of print heads. 4,228,442, Cl. 346-140.000.
- Kryzanowski, Dmytro M. Musical instrument keyboard. 4,227,436, Cl. 84-423.00A.
- Kubik, Hans, to Golde GmbH. Modular case section and frame section for lifting and/or sliding windows or doors. 4,227,346, Cl. 49-425.000.
- Kuboki, Schigeo: See—
- Iwamura, Masahiro; Hamada, Nagaharu; Kuboki, Schigeo; and Fukushima, Kenichi, 4,228,430, Cl. 340-709.000.
- Kudo, Ken-ichi; Kitagawa, Yoshihiko; Koyama, Teruhisa; Takata, Akira; Kanagawa, Shuichi; and Yamaguchi, Tetsuo, to Sumitomo Chemical Company, Limited. Process for producing copolymerized resins. 4,228,266, Cl. 526-283.000.
- Kudo, Yukitsuka: See—
- Sato, Yasuhiko; Mizoguchi, Tomishige; Kudo, Yukitsuka; and Ishida, Ryuichi, 4,228,168, Cl. 424-256.000.
- Kuehling, Guenter, to Bunker Ramo Corporation. Hand tool for terminal connection of electrical cable to an electrical connector. 4,227,299, Cl. 29-751.000.
- Kuhle, Engelbert; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with novel N-sulphenylated carbamoyl compounds. 4,228,178, Cl. 424-274.000.
- Kuiper, Jan, to Lever Brothers Company. Selective hydrogenation. 4,228,088, Cl. 260-409.000.
- Kulka, Thomas S. Foot supporting strap for hospital bed. 4,227,271, Cl. 5-443.000.
- Kuna, Wayne A.; and Terzian, Rouben T., to Marvin Glass & Associates. Graphic art toy. 4,227,335, Cl. 46-1.00R.
- Kunath, Helfrid: See—
- Bluhm, Karl H.; and Kunath, Helfrid, 4,227,532, Cl. 128-328.000.
- Kuo, Chung-Ming; and Bogan, Richard T., to Eastman Kodak Company. Direct precipitation method for producing extrusion-grade cellulose acetate powder and resulting product. 4,228,276, Cl. 536-76.000.
- Kupelian, Robert H., to American Cyanamid Company. Inhibiting plant bud growth with substituted 2,6-dinitroanilines. 4,227,913, Cl. 71-78.000.

- Kupka, Horst: See—
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- Kuramoto, Akio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Semicircular plug for preventing leakage of oil in a cylinder head of an overhead cam shaft engine. 4,227,705, Cl. 277-160.000.
- Kureha Kagaku Kogyo Kabushiki Kaisha: See—
Asano, Kiro; Saito, Tsuyoshi; Hatanaka, Masayoshi; and Ikeda, Susumu, 4,228,275, Cl. 536-18.000.
- Hino, Kuniaki; Uehara, Yasuo; Nishimura, Yasushi; Watanabe, Kazuhiro; and Okada, Yoshio, 4,228,037, Cl. 252-444.000.
- Kurganov, Georgy I.: See—
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- Kurita, Yoshikazu: See—
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- Kuzovkov, Yuri S.: See—
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- La Telemechanique Electrique: See—
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- LaChapelle, Paul A.: See—
Benwood, Bruce R.; and LaChapelle, Paul A., 4,228,480, Cl. 361-235.000.
- Lachmann, Burkhard; Rudolph, Hans; and Cohnen, Wolfgang, to Bayer Aktiengesellschaft. UV Light stabilized polycarbonate composition. 4,228,067, Cl. 260-45.85V.
- LaConti, Anthony B.: See—
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- Lacroix, Michel A. B.: See—
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- LaFlame, Frank E., to General Motors Corporation. Cooling fan with viscous-magnetic fan clutch. 4,227,861, Cl. 416-169.00A.
- Laky, Elmer, to Breeze Corporations, Inc. Cable tensioning device. 4,227,678, Cl. 254-391.000.
- Lalumia, Thomas M.; and Fordemwalt, James N., to Burr Brown Research Corp. Bipolar integrated semiconductor structure including I²L and linear type devices and fabrication methods therefor. 4,228,448, Cl. 357-46.000.
- Lamadrid, Rene G., to Baxter Travenol Laboratories, Inc. Pressure coupling mechanism in a pressure monitoring assembly. 4,227,420, Cl. 73-756.000.
- Lamadrid, Rene G.: See—
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- Lambelin, Georges E.; Gillet, Claude L.; and Roba, Joseph L., to Continental Pharma. Alkyl and cycloalkylthiophenylalkylaminoalkanoils, their salts and the preparation thereof. 4,228,187, Cl. 424-330.000.
- Lambert, Thomas W.: See—
Stone, Barry N.; and Lambert, Thomas W., 4,228,465, Cl. 358-166.000.
- Lamberti, Vincent; and Konort, Mark D., to Lever Brothers Company. Detergent compositions. 4,228,027, Cl. 252-174.190.
- Lambrecht, Dietrich: See—
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- Landoll, Leo M., to Hercules Incorporated. Modified nonionic cellulose ethers. 4,228,277, Cl. 536-90.000.
- Landry, Kossuth J., Jr. Soil erosion prevention blocks. 4,227,829, Cl. 405-203.000.
- Lane, E. James: See—
Larson, Gerald L.; Lane, E. James; and Mueller, Robert S., 4,227,505, Cl. 123-198.00F.
- Lang, Gerard; and Forestier, Serge, to L'Oreal. Cosmetic composition for imparting to human skin a coloration resembling a natural tan. 4,228,151, Cl. 424-60.000.
- Lange, Harold T., to Sporian Valve Company. Filter-drier for heat pump systems. 4,227,901, Cl. 55-301.000.
- Lannert, Kent P., to Monsanto Company. Polycarboxylate ethers. 4,228,300, Cl. 560-180.000.
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- La Rosa, John F., to International Paper Company. Self-inflating urinary catheter. 4,227,534, Cl. 128-349.00B.
- Larson, Gerald L.; Lane, E. James; and Mueller, Robert S., to Eaton Corporation. Valve selector control system. 4,227,505, Cl. 123-198.00F.
- Larson, Gerald L., to Litton Systems, Inc. Touch panel mechanism. 4,228,330, Cl. 200-5.00A.
- Larson, Finn H.; and Schwartzbach, Christian, to A/S Niro Atomizer. Gas distribution device for the supply of a processing gas to an atomizing chamber. 4,227,896, Cl. 55-260.000.
- Laser Industries Ltd.: See—
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- Laub, Bernard C., to Finnerty, Hugh J., a part interest. Mobile baseball equipment storage device. 4,227,710, Cl. 280-47.190.
- Laucks, F. Michael; and Stegmann, Rudolph, to Frick Company. Single casing, multiple duty valve. 4,227,380, Cl. 62-217.000.
- Laufer, Jay K.: See—
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- Laurel Bank Machine Co., Ltd.: See—
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- Lauson, Rodrigue V.: See—
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- Lavanchy, Gerard A.; Rossier, Marc-Henry; and Mezger, Fritz, to Maschinenfabrik & Eisengieserei Ed. Mezger AG. Flow cut-off method and apparatus for foundry installations. 4,227,565, Cl. 164-155.000.
- Law, Gabriel H.; and Gysegem, Albert P., to Ameron, Inc. Siloxane-tin coatings. 4,227,929, Cl. 106-1.170.
- Lawhorne, Earl R., to American Cyanamid Company. Use of ion exchange resins in preparation of high solid TiO₂ slurries. 4,227,934, Cl. 106-300.000.
- Laws, William R.; and Reed, Geoffrey R., to Encomech Engineering Services Ltd. Material separation. 4,227,922, Cl. 75-64.000.
- Lazrus, Julian: See—
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- Le Materiel Telephonique: See—
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- Leah, George R.; and Pierce, Robert R., to Pennwalt Corporation. Single component potassium silicate cement for dry gunning. 4,227,932, Cl. 106-84.000.
- Leban, Carl. Methods and means for reproducing non-alphabetic characters. 4,228,507, Cl. 364-419.000.
- Lebault, Jean-Claude; and Rabouille, Guy, to Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Convertible seat for automobile vehicles. 4,227,736, Cl. 296-65.00R.
- Lecinski, Frank H., Jr.; and Banich, John N., Sr., to Continental Group, Inc. The Molded gasket press-on closure. 4,227,616, Cl. 215-246.000.
- Lee, Cyril A., to E M I Limited. Security document and system. 4,228,348, Cl. 235-449.000.
- Lee, Damong: See—
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- Lee, Gim F., Jr., to General Electric Company. Thermoplastic molding compositions of rubber modified copolymers of a vinyl aromatic compound and an α,β -unsaturated cyclic anhydride. 4,228,046, Cl. 260-5.000.
- Lee, Henry L., Jr.; and Orlowski, Jan A., to Lee Pharmaceuticals. Rapid setting high bond strength adhesive. 4,228,062, Cl. 260-42.280.
- Lee, Hua-Tung, to International Business Machines Corporation. Line-addressable serial-parallel-serial array. 4,228,526, Cl. 365-183.000.
- Lee, Jiunn-Feng. Speed indicating apparatus for automobile. 4,227,416, Cl. 73-499.000.
- Lee Pharmaceuticals: See—
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- Lee, Walter; and Litt, Kenneth C., to Pace Incorporated. Container having threadable clip members and method of assembling same. 4,227,759, Cl. 312-257.00R.
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- Leen, Morris W.: See—
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- Lefebvre, Benny M.: See—
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- Lefebvre, Gilbert H.: See—
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- Le Goff, Yannick: See—
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- Lehman, Richard F.: See—
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- Lehto, Ari; and Harjunmaa, Hannu. Method for detecting radiation. 4,228,354, Cl. 250-371.000.
- Leithauser, Horst: See—
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- Lekander, Karl-Erik: See—
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- Lempke, Russell J.: See—
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- Lenack, Alain L. P., to Exxon Research & Engineering Co. Chloro-sulphur additive. 4,228,021, Cl. 252-32.70R.

- Le Nay, Tom W.; Hadden, Donald L.; and Beckwith, George S., to Baker Protective Services, Incorporated. Central station alarm. 4,228,424, Cl. 340-506.000.
- Leonard, James D.; and Lewis, Michael J., to Conklin Company, Inc. Wetting agent and use thereof in agriculture. 4,227,911, Cl. 71-77.000.
- Leonard, Willie B. Fluidic repeater. 4,227,440, Cl. 91-51.000.
- Leone, Anthony J.; Leone, Raymond A.; and Long, James. Dockside protective device for boats. 4,227,832, Cl. 405-215.000.
- Leone, Raymond A.: See—
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- Lerman, Naum D.: See—
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- Lesk, Israel A.: See—
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- Luft, Robert G.: to International Harvester Company. Transmission disconnect with parking brake application, 4,227,598, Cl. 192-4.00A.
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- Lundquist, Ingemar H.: to Valleylab. Intravenous administration set, 4,227,525, Cl. 128-214.00R.
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- Ma, Joseph K. H.: See—
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- MacLeay, Ronald E.: to Pennwalt Corporation. Azoxy compound having use in a process for preparing foamed structures, 4,228,069, Cl. 260-143.000.
- MacMillan, Melvin J.: to Diamond Shamrock Corporation. Stabilization of vitamin A in presence of trace minerals, 4,228,159, Cl. 424-175.000.
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- Malavenda, Peter P.: High volume method and system for dynamically storing articles for sorting and routing, 4,227,607, Cl. 198-460.000.
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- Manriquez, Ralph F.: to International Computers Limited. Printer platen, 4,227,819, Cl. 400-56.000.
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- Maroney, Peter F.: See—
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- Marshall, Preston F.: to Kendall Company. The. Method of making biaxially oriented nonwoven fabrics, 4,228,123, Cl. 264-557.000.
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- Martel, Bernard, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Fuel supply devices for internal combustion engines, 4,227,496, Cl. 123-440.000.
- Martin, Carl J.; Voelker, Marvin J.; and Ryan, Robert J.: to RCA Corporation. Conductive molding composition, 4,228,050, Cl. 260-23.0XA.
- Martin, David H.: See—
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- Martin, Edward D.: Portable stand apparatus for electric flood lights, 4,228,489, Cl. 362-250.000.
- Martin, Henry, to Ciba-Geigy Corporation. Phenylglyoxalonitrile-2-oxime-cyanomethyl ether as a crop safener, 4,227,917, Cl. 71-100.000.
- Martin Marietta Corporation: See—
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- Martineck, Gregory A.: See—
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- Marxer S.p.A.: See—
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- Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft (M.A.N.): See—
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- Mason, Ronald F.; and Wood, Derek A.: to Shell Oil Company. Separation of isomers, 4,228,081, Cl. 260-326.620.
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- Masters, William E.: Supportive framework for a boat, 4,227,272, Cl. 9-6.00R.
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- Mathieson, Roy W.: Fuel metering and transfer control system, 4,227,497, Cl. 123-525.000.
- Matiskella, John D.: See—
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- Mattox, Darryl F.: Waterborne sidewall air cushion vehicle, 4,227,475, Cl. 114-67.00A.
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 National Research Development Corporation: See—
 Bullock, David G.; Bunce, Roger A.; Clark, Ian R.; Duff, Ian D.; Greaves, Geoffrey S.; Lloyd, Peter H.; Peters, Ann M.; Whitehead, Thomas P.; and Wilding, Peter, 4,227,886, Cl. 23-230.00R.
 National Semiconductor Corporation: See—
 George, Peter K., 4,228,522, Cl. 365-15.000.
 Vennard, John, 4,228,389, Cl. 320-2.000.
 Widlar, Robert J., 4,228,404, Cl. 330-267.000.
 National Starch and Chemical Corporation: See—
 Chiu, Chung W.; and Rutenberg, Morton W., 4,228,199, Cl. 426-578.000.
 National Tube and Reel Corporation: See—
 Loudon, Samuel, 4,227,958, Cl. 156-443.000.
 National Wire Products: See—
 Schlenker, Robert W., 4,227,359, Cl. 52-713.000.
 Naunas, Robert A., Jr.: See—
 Andrew, Eduardo V.; Naunas, Robert A., Jr.; and Armstrong, Richard C., Jr., 4,227,862, Cl. 417-12.000.
 Navarro, Pablo. Wave motion apparatus, 4,228,360, Cl. 290-43.000.
 NCR Corporation: See—
 Krull, Felix B., 4,228,442, Cl. 346-140.00R.
 Neal, Charles M., Jr. Battle of the Alamo game, 4,227,695, Cl. 273-255.000.
 Neal, Roy L., Jr. Adapter unit for translating electrical signals, 4,228,474, Cl. 360-137.000.

Neale, Ronald G.; and Wood, Grady M., to Harris Corporation. Multi-level sequence of erase pulses for amorphous memory devices. 4,228,524, Cl. 365-163.000.

Nechutny, Zdenek L. A. Z.: See—
Burge, Malcolm L. E.; and Nechutny, Zdenek L. A. Z., 4,228,198, Cl. 426-548.000.

Neidhardt, Hans: See—
Alsen, Klaus; Neidhardt, Hans; Maletzke, Jürgen; and Wimmer, Johann, 4,228,114, Cl. 264-33.000.

Neil, Clyde C.: See—
Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., 4,227,769, Cl. 350-96.190.

Nelson Research & Development Company: See—
Eakins, Kenneth E.; and Allan, Geoffrey, 4,228,176, Cl. 424-273.00R.

Nepomnyashchy, Anatoly I.: See—
Enikolopov, Nikolai S.; Nepomnyashchy, Anatoly I.; Pekarsky, Viktor A.; Pekarskaya, Tatyana A.; Brusilovsky, Mikhail G.; Gavrilina, Svetlana A.; Lerman, Naum D.; Maimur, Oleg K.; Iljushin, Arkady L.; Markevich, Mikhail A.; Karpacheva, Susanna M.; Khorkhorina, Lidia P.; Muratov, Valeryan M.; and Sholk, Semen F., 4,228,271, Cl. 528-95.000.

Neri, Bruno, to Cir S.p.A. Divisione Sasib. Method for testing cigarettes. 4,227,397, Cl. 73-38.000.

Neue, Uwe D.: See—
Rausch, Carl W.; Tuvin, Yury; and Neue, Uwe D., 4,228,007, Cl. 210-198.00C.

Neumann, George J.; and Altschul, Barry, to Raytheon Company. Coaxial electrical connector. 4,227,765, Cl. 339-143.00R.

Neutrik Aktiengesellschaft: See—
Weingartner, Bernhard, 4,228,439, Cl. 346-33.00R.

Nevin, Robert L., to United States of America, Air Force. Radar sensitivity time control using range gated feedback. 4,228,435, Cl. 343-5.05M.

New York Institute of Technology: See—
Glenn, William E., 4,227,417, Cl. 73-625.000.

Newall, Christopher E.: See—
Cherry, Peter C.; Newall, Christopher E.; and Watson, Nigel S., 4,228,074, Cl. 260-239.00A.

Newman, Jerry C. Hand tool for cutting blind strips and the like. 4,227,305, Cl. 30-229.000.

Newsom, Bobby G. Construction blocks. 4,227,357, Cl. 52-344.000.

Nezu, Takao, to Konishiroku Photo Industry Co., Ltd. Apparatus for loading cassette containing recording sheets. 4,227,800, Cl. 355-72.000.

Ng, Keng C.: See—
Weaver, Merle L.; and Ng, Keng C., 4,228,196, Cl. 426-407.000.

Nicholas, David C.: See—
Workman, Harold W.; and Nicholas, David C., 4,228,535, Cl. 370-16.000.

Nichols, John T.; and White, Horace S. Apparatus for filtering gas streams. 4,227,900, Cl. 55-288.000.

Niedermeyer, Karl O. Monitor apparatus for sump pumps. 4,228,427, Cl. 340-623.000.

Niedermeyer, Karl O. Visible signal for alarm, such as a smoke detector. 4,228,428, Cl. 340-628.000.

Nienow, John F.; Irving, Christopher L.; and Shaw, Lynwood V., to Philip Morris Incorporated. Measuring cigarette characteristics during pyrolysis smoking. 4,227,400, Cl. 73-81.000.

Nigrelli, Gus; and Baron, Bruce. Security covering box. 4,227,388, Cl. 70-427.000.

Nii, Yoshiji: See—
Okita, Yuji; Kondo, Ryotaro; and Nii, Yoshiji, 4,228,476, Cl. 361-68.000.

Nilsson, Tage: See—
Wallgren, Kurt; and Nilsson, Tage, 4,228,190, Cl. 426-421.000.

Nippon Cable System Inc.: See—
Okamura, Koshiro, 4,227,304, Cl. 30-169.000.

Nippon Chemphar Company, Limited: See—
Yamabe, Shigeru; Fujimoto, Yasuo; Ryu, Shoji; Suzuki, Yoshio; Tanaka, Yoshihiro; Yamanaka, Toru; and Nyu, Kiyosato, 4,228,284, Cl. 544-375.000.

Nippon Gakki Seizo Kabushiki Kaisha: See—
Ando, Shigeo; and Kondou, Takayasu, 4,227,435, Cl. 84-1.190.

Chibana, Masanobu, 4,227,433, Cl. 84-1.010.

Ogita, Minoru, 4,228,540, Cl. 455-158.000.

Ogita, Minoru, 4,228,546, Cl. 455-302.000.

Okumura, Takatoshi; Nakada, Akira; Uchiyama, Yasuji; Aoki, Eiichi; Yamaga, Eiichi; and Oya, Akiyoshi, 4,228,403, Cl. 328-15.000.

Nippon Kogaku K.K.: See—
Hasegawa, Hiroshi, 4,228,381, Cl. 315-151.000.

Nippon Steel Corporation: See—
Hosoi, Yuzo; Shinoda, Noboru; Tsuchida, Yutaka; Sekino, Shozo; Sakakihara, Mizuo; and Murota, Shoji, 4,227,925, Cl. 75-171.000.

Kitayama, Minoru; and Odashima, Hisao, 4,227,945, Cl. 148-6.000.

Nippon Telegraph and Telephone Public Corporation: See—
Kawarada, Kuniyasu; Suzuki, Masao; Ono, Chikai; and Toyoda, Kazuhiro, 4,228,525, Cl. 365-174.000.

Murakami, Hideyo, 4,228,545, Cl. 455-296.000.

Nippon Zemon Co. Ltd.: See—
Musha, Takanori; and Terutaka, Yao, 4,228,268, Cl. 526-344.200.

Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, 4,228,265, Cl. 526-230.000.

Nishikawa, Yoshiyasu; Harada, Chosei; and Nakano, Masao, to Kawasaki Jukogyo Kabushiki Kaisha. Single-curvature fan wheel of diagonal-flow fan. 4,227,868, Cl. 416-186.00R.

Nishimura, Akira: See—
Kashihara, Takanobu; Okuda, Fukuyasu; Yamaguchi, Masanaga; and Nishimura, Akira, 4,228,124, Cl. 422-36.000.

Nishimura, Yasushi: See—
Hino, Kuniaki; Uehara, Yasuo; Nishimura, Yasushi; Watanabe, Kazuhiro; and Okada, Yoshio, 4,228,037, Cl. 252-444.000.

Nissan Chemical Industries, Limited: See—
Yamamoto, Akira; Iida, Masaru; Miyake, Satoru; Yamaura, Hideo; and Inoue, Takeshi, 4,228,264, Cl. 526-200.000.

Nissan Motor Company, Limited: See—
Hamada, Mitsuharu, 4,227,595, Cl. 191-2.000.

Ide, Yasufumi; and Watanabe, Shoji, 4,227,602, Cl. 192-109.00F.

Kakimoto, Kunihiro; and Kodaira, Masaru, 4,227,372, Cl. 60-602.000.

Sone, Masazumi; Suzuki, Kazuhiko; and Fukumori, Yukitsugu, 4,227,446, Cl. 98-2.110.

Takase, Sadao; Asano, Masaharu; and Manaka, Nobuzi, 4,227,507, Cl. 123-492.000.

Nissin Kogyo Kabushiki Kaisha: See—
Takeuchi, Hiroo, 4,227,371, Cl. 60-547.00R.

Niwa, Takazumi: See—
Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Uemura, Katsumi; and Oda, Tetsuya, 4,228,144, Cl. 423-498.000.

Noda, Kanji; Nakagawa, Akira; Yamagata, Kenji; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihito, to Hisamitsu Pharmaceutical Co. Inc. Novel cyclohexanecarboxylic acid and its derivatives. 4,228,304, Cl. 562-507.000.

Nolan, Daniel A., to Corning Glass Works. Monolithic optical waveguide having a plurality of cores. 4,227,771, Cl. 350-96.330.

Nolan, Mary E.: See—
Dempsey, Russell M.; LaConti, Anthony B.; and Nolan, Mary E., 4,227,984, Cl. 204-195.00S.

Noltes, Jan G.; Jastrzebski, J. T. B. H.; and van Koten, Gerard, to Borg-Warner Corporation. Hydrogenation process. 4,228,312, Cl. 585-250.000.

Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Image forming apparatus. 4,227,799, Cl. 355-27.000.

Nooner, Daryl W., to Texaco Inc. Reservoir stabilization by treating water sensitive clays. 4,227,575, Cl. 166-303.000.

Noordanus, Johannes: See—
De Jager, Johan B.; and Noordanus, Johannes, 4,228,319, Cl. 179-2.05B.

Nordstrom, Lennart: See—
Scholdstrom, Ragnar; Marcus, Holger; and Nordstrom, Lennart, 4,227,802, Cl. 356-5.000.

Nordstrom, Sigurd A. M., to Saab-Scania Aktiebolag. Arrangement for attaching spring assemblies to vehicle axle housings. 4,227,716, Cl. 280-719.000.

Norris, Philip R., to Polaroid Corporation. Card motion picture projection system. 4,227,782, Cl. 352-82.000.

Norris, Philip R.: See—
Driscoll, John J.; Gold, Nicholas; Norris, Philip R.; and Wareham, Richard R., 4,227,789, Cl. 354-86.000.

Northrup, Lynn L., Jr.: See—
Blake, Floyd A.; and Northrup, Lynn L., Jr., 4,227,513, Cl. 126-425.000.

Northwestern University: See—
Jakstys, Milda M.; Tom, Baldwin H.; and Kahan, Barry D., 4,228,236, Cl. 435-1.000.

Norum, Edward M., Jr.: See—
Holloway, Huland L.; and Norum, Edward M., Jr., 4,227,648, Cl. 239-11.000.

Nova Associates, Inc.: See—
Ryding, Geoffrey, 4,228,358, Cl. 250-457.000.

Nuese, Charles J.: See—
Ettenberg, Michael; and Nuese, Charles J., 4,228,349, Cl. 250-226.000.

Nugarus, Anthony R.: See—
Schindler, James; and Nugarus, Anthony R., 4,228,193, Cl. 426-233.000.

Nugent, John J., to Rolock, Inc. Temperature resistant, structurally stable member. 4,227,874, Cl. 432-261.000.

Numata, Tatsuo: See—
Misawa, Akira; and Numata, Tatsuo, 4,228,542, Cl. 455-174.000.

Nurnberger, George F.: See—
Haebler, Joerg; Park, Kyong P.; Velturo, Anthony F.; and Nurnberger, George F., 4,228,297, Cl. 560-75.000.

Nussbaum, Herbert, to Plasmaint AG. Apparatus for the metered supply of powder to a powder processing unit. 4,227,835, Cl. 406-52.000.

N.V. Koninklijke Pharmaceutische Fabrieken: See—
van der Stelt, Cornelis, 4,228,287, Cl. 546-236.000.

N.V. Optische Industrie "De Oude Delft": See—
Schoonmade, Bertus, 4,227,687, Cl. 271-139.000.

Nyu, Kiyosato: See—
Yamabe, Shigeru; Fujimoto, Yasuo; Ryu, Shoji; Suzuki, Yoshio; Tanaka, Yoshihiro; Yamanaka, Toru; and Nyu, Kiyosato, 4,228,284, Cl. 544-375.000.

O & K Orenstein & Koppel Aktiengesellschaft: See—
Hofling, Peter, 4,227,605, Cl. 198-331.000.

Oakite Products, Inc.: See—
Williamson, Stanley C., 4,227,946, Cl. 148-6.160.

Occidental Oil Shale, Inc.: See—
Cha, Chang Y., 4,227,574, Cl. 166-259.000.

Oda, Tetsuya: See—
Kono, Hisashi; Terai, Kenji; Niwa, Takazumi; Uemura, Katsumi; and Oda, Tetsuya, 4,228,144, Cl. 423-498.000.

Odashima, Hisao: See—
Kitayama, Minoru; and Odashima, Hisao, 4,227,945, Cl. 148-6.000.

Oesterle, Gerhard, to Adolph Saurer Limited. Release device for the automatic rapid braking of moving machine parts, particularly of looms. 4,227,825, Cl. 403-322.000.

Offermanns, Heribert: See—
Kleemann, Axel; Klenk, Herbert; Offermanns, Heribert; Scherberich, Paul; and Schwarze, Werner, 4,228,082, Cl. 260-347.300.

Office National d'Etudes et de Recherches Aérospatiales (O.N.E.R.A.): See—
Larigaldie, Serge; and Cariou, Jean, 4,228,479, Cl. 361-218.000.

Ofusa, Masaatsu, to Yoshida Kogyo K.K. Woven slide fastener stringer. 4,227,555, Cl. 139-384.00B.

Ogata, Masaru; Watanabe, Yoshihachi; Matsumoto, Hiroshi; and Tawara, Katsuya, to Shionogi & Co., Ltd. Phenyl isothiocyanate derivatives and their production. 4,228,165, Cl. 424-248.500.

Ogawa, Masao: See—
Honda, Toshio; Fukuura, Yukio; Tanuma, Itsuo; Ishikawa, Hikaru; Ogawa, Masao; Kojima, Shozo; and Ueno, Kazunori, 4,227,956, Cl. 156-334.000.

Ogawa, Takenobu: See—
Yasuda, Nobuaki; Ogawa, Takenobu; and Sadamasa, Tetsuo, 4,228,455, Cl. 357-67.000.

Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Radio receiver. 4,228,540, Cl. 455-158.000.

Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. AM Radio receiver. 4,228,546, Cl. 455-302.000.

Ogrzewalla, Werner: See—
Rigler, Josef K.; Leithauser, Horst; Trukenbrod, Karl; and Ogrzewalla, Werner, 4,228,244, Cl. 521-56.000.

Oguchi, Masao: See—
Saito, Toshio; Oguchi, Masao; and Kisaichi, Akio, 4,227,862, Cl. 8-115.500.

Oguni, Hiroshi; Ishiko, Masahiro; and Nakayama, Kazuyoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Cylinder control device of hydraulic cylinder apparatus. 4,227,442, Cl. 91-392.000.

Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, to Nippon Zeon Co. Ltd. Process for producing sulfur-curable acrylic rubbers. 4,228,265, Cl. 526-230.000.

Ohm, Klaus, to Chemische Fabrik Dr. Wiedeking. Wire enamel. 4,228,059, Cl. 260-30.200.

Ohta, Shinichi; Kobayashi, Kazunobu; and Madate, Haruhisa, to Canon Kabushiki Kaisha. Eye examining instrument. 4,227,780, Cl. 351-7.000.

Okada, Yoshio: See—
Hino, Kuniaki; Uehara, Yasuo; Nishimura, Yasushi; Watanabe, Kazuhiro; and Okada, Yoshio, 4,228,037, Cl. 252-444.000.

Okamoto, Shigeo: See—
Iwasaki, Hiroshi; Okamoto, Shigeo; and Kondo, Mitsuru, 4,228,031, Cl. 252-316.000.

Okamura, Koshiro, to Nippon Cable System Inc. Device for removal of ice fixed to rod of control cable. 4,227,304, Cl. 30-169.000.

Okamura, Masatoshi; Shiba, Haruo; and Tanaka, Kimio, to TDK Electronics Company, Limited. Tape cassette. 4,227,622, Cl. 220-4.00R.

Okita, Yuji; Kondo, Ryotaro; and Nii, Yoshiji, to Tokyo Shibaura Denki Kabushiki Kaisha; and Tokyo Denryoku Kabushiki Kaisha. part interest to each. Protective relaying system. 4,228,476, Cl. 361-68.000.

Okonogi, Kyohar; Sato, Mikio; Mogaki, Katsuo; Sawaki, Takashi; and Uchida, Takashi, to Konishiroku Photo Industry Co., Ltd. Color photographic material. 4,228,235, Cl. 430-542.00A.

Okuda, Fukuyasu: See—
Kashihara, Takanobu; Okuda, Fukuyasu; Yamaguchi, Masanaga; and Nishimura, Akira, 4,228,124, Cl. 422-36.000.

Okumura, Takatoshi; Nakada, Akira; Uchiyama, Yasuji; Aoki, Eiichi; Yamaga, Eiichi; and Oya, Akiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Submultiple-related-frequency wave generator. 4,228,403, Cl. 328-15.000.

Okuni, Tetsuo; Ishihara, Masao; and Wada, Takeshi, to Hitachi, Ltd. Method of manufacturing stay ring for water turbine and pump turbine. 4,228,336, Cl. 219-73.100.

Okutsu, Eiichi; and Hayashi, Katsumi, to Fuji Photo Film Co., Ltd. Method for maintaining the development activity of a photographic lithographic developer constant. 4,228,234, Cl. 430-399.000.

Ohm Corporation: See—
Belangee, Kenneth, 4,227,391, Cl. 72-54.000.

Gay, Walter A., 4,228,289, Cl. 548-128.000.

Kircher, Morton S.; and Specht, Steven J., 4,227,987, Cl. 204-228.000.

Rothgery, Eugene F., 4,228,290, Cl. 546-128.000.

Wood, Joseph L.; and Lipworth, Matthew F., 4,227,890, Cl. 55-30.000.

Olson, Donald F., to St. Charles Manufacturing Co. Bench structure with dust collector. 4,227,902, Cl. 55-302.000.

Olympus Optical Co., Ltd.: See—
Tojo, Tsutomu; and Uetake, Toshifumi, 4,227,773, Cl. 350-175.00ML.

Ona, Isao; Ozaki, Masaru; and Usui, Katsutoshi, to Toray Silicone Company, Ltd. Organopolysiloxane latex compositions. 4,228,054, Cl. 260-29.20M.

Ondetti, Miguel A.; and Weisenborn, Frank L., to E. R. Squibb & Sons, Inc. N-[2-(mercaptoalkyl)-3-mercaptoalkanoxy]-L-tryptophanes. 4,228,077, Cl. 260-326.14T.

Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc. Carboxyalkylacylamino acids. 4,228,184, Cl. 424-309.000.

O'Neal, Thomas D., to American Cyanamid Company. Method for controlling the relative stem growth of plants. 4,227,912, Cl. 71-78.000.

Ono, Chikai: See—
Kawarada, Kuniyasu; Suzuki, Masao; Ono, Chikai; and Toyoda, Kazuhiro, 4,228,525, Cl. 365-174.000.

Onoda Cement Co., Ltd.: See—
Itoh, Tsutomu, 4,227,652, Cl. 239-706.000.

Uchikawa, Hiroshi; and Kato, Hajime, 4,227,931, Cl. 106-38.350.

Onopchenko, Anatoli: See—
Schulz, Johann G. D.; Onopchenko, Anatoli; and Kofke, William A., 4,228,023, Cl. 252-63.000.

Schulz, Johann G. D.; Onopchenko, Anatoli; and Kofke, William A., 4,228,024, Cl. 252-63.000.

Oonishi, Toshiyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Cooling apparatus. 4,227,379, Cl. 62-198.000.

Opelika Manufacturing Corp.: See—
Brocklehurst, Charles E., 4,227,684, Cl. 270-67.000.

Optical Coating Laboratory, Inc.: See—
Ling, Ku Sun; and Khemthong, Seksan, 4,227,940, Cl. 136-256.000.

Orban, Robert A. Polarity correcting circuit. 4,228,366, Cl. 307-262.000.

O'Rell, Dennis D.; and Lin, Nan J., to W. R. Grace & Co. Battery separator. 4,228,225, Cl. 429-147.000.

Orlowski, Jan A.: See—
Lee, Henry L., Jr.; and Orlowski, Jan A., 4,228,062, Cl. 260-42.280.

Ortega, Edwin: See—
Gouzien, Michel J. Y.; and Ortega, Edwin, 4,227,859, Cl. 416-134.00A.

Ortel, Stanley G., to Better Wire Products, Inc. Tray stacking wire. 4,227,642, Cl. 229-52.0AW.

Orth, Winfried: See—
Pastorek, Emmerich; Orth, Winfried; and Fickert, Werner, 4,228,083, Cl. 260-347.800.

Osaka Gas Company, Limited: See—
Yamauchi, Kiaki; Morimoto, Yukihiko; Sasaki, Toshikazu; and Nakai, Katsumi, 4,228,033, Cl. 252-412.000.

Osborne, Scott R., to United States of America, Navy. Raster scan generator for plan view display. 4,228,432, Cl. 340-736.000.

Osman, Maged A., to BBC Brown Boveri & Company Limited. Liquid crystalline compositions. 4,228,029, Cl. 252-299.000.

Osswald, Gunter; and Gouders, Willy, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of readily dispersible pigment preparations. 4,227,936, Cl. 106-309.000.

Otawara, Yasuhiko: See—
Matsumoto, Hiroshi; Sato, Yoshio; Kawano, Shigeyoshi; Nakano, Yoshiyuki; Kato, Fumio; Hisano, Katsukum; Kishiwahara, Katsuo; Otawara, Yasuhiko; Higashi, Toshitoku; Tennichi, Yasuhiro; Matsumura, Jube; and Fukushima, Koichiro, 4,228,359, Cl. 290-40.00R.

Otis Engineering Corporation: See—
Pearce, Joseph L.; Ray, Thomas W.; Taylor, Donald F.; and Yonker, John H., 4,227,573, Cl. 160-153.000.

Otsuka, Koichi: See—
Matoba, Yoshiyuki; and Otsuka, Koichi, 4,227,921, Cl. 75-41.000.

Otsuki, Juko S.: See—
Zorn, Milton J.; Slater, Edward L.; Matzner, Neil L.; Eagles, Brian J.; Minard, Hubert C.; Otsuki, Juko S.; and Sprengark, Daniel H., 4,227,786, Cl. 374-10.000.

Outboard Marine Corporation: See—
Hernandez, Pablo M.; and Luplow, William J., 4,227,972, Cl. 203-37.000.

Outokumpu Oy: See—
Lindroos, Leo E.; Turpemen, Ahti E.; and Kapanen, Aarne A., 4,228,133, Cl. 422-195.00X.

Overhead Conveyor Company: See—
Pochmara, Gary E., 4,228,388, Cl. 318-770.000.

Owen, Robert D.: See—
Dalley, Robert J.; Owen, Robert D.; and Parmenter, George S., 4,228,412, Cl. 335-152.000.

Owen, Whitney H., to United States of America, Energy. Induction machine. 4,228,391, Cl. 322.35.00C.

Owens-Corning Fiberglass Corporation: See—
Rieser, Elmer P., 4,227,906, Cl. 65-2.000.

Owens-Illinois, Inc.: See—
Hornyak, Emory J., Jr.; Perry, Philip D.; and Sherman, James E., 4,227,909, Cl. 65-135.00X.

Oxford Industries, Inc.: See—
Mitchell, William O.; Ellington, Gordon H.; and Hamilton, C. Ray, 4,227,470, Cl. 112-121.120.

Oxley, Alan J. Methods and means for storing energy. 4,227,374, Cl. 60-651.000.

Oya, Akiyoshi: See—
Okumura, Takatoshi; Nakada, Akira; Uchiyama, Yasuji; Aoki, Eiichi; Yamaga, Eiichi; and Oya, Akiyoshi, 4,228,403, Cl. 328-15.000.

Oyama, Mitsuhiro: See—
Sueda, Katsuji; Oyama, Mitsuhiro; Sakuma, Fumio; and Nakajima, Tadashi, 4,228,383, Cl. 318-245.000.

- Ozaki, Masaru: See—
Ona, Isao; Ozaki, Masaru; and Usui, Katsutoshi, 4,228,054, Cl. 260-29.20M.
- P. J. Company: See—
Chung, Tai H.; and Lee, Damong, 4,227,281, Cl. 16-29.000.
- Paap, Hans J.; Richter, Albert P., Jr.; Peelman, Harold E.; Arnold, Dan M.; and Scott, Hubert D., to Texaco Inc. Method and apparatus for measuring underground fluid flow characteristics, 4,228,350, Cl. 250-267.000.
- Pace Incorporated: See—
Lee, Walter; and Litt, Kenneth C., 4,227,759, Cl. 312-257.00R.
- Pall Corporation: See—
Pall, David B., 4,228,012, Cl. 210-238.000.
- Pall, David B., to Pall Corporation. End cap coupler system for linking one filter cartridge to another filter cartridge or functional member, 4,228,012, Cl. 210-238.000.
- Palmer, Dennis L.: See—
Meny, Allan H.; and Palmer, Dennis L., 4,227,899, Cl. 55-279.000.
- Palombo, Gaston A.; and Jones, Daniel B., to Dataproducts Corporation. Electronic tachometer and combined brushless motor commutation and tachometer system, 4,228,396, Cl. 324-163.000.
- Pang, Sing C.: See—
Genna, Sebastian; and Pang, Sing C., 4,228,515, Cl. 364-571.000.
- Paoletti, Rodolfo: See—
Ferruti, Paolo; and Paoletti, Rodolfo, 4,228,152, Cl. 424-81.000.
- Papay, Andrew G., to Edwin Cooper, Inc. Lubricating oil composition, 4,228,020, Cl. 252-29.000.
- Papalski, Joseph: See—
Vander Burgh, Lloyd A.; Moore, R. Dale; and Papalski, Joseph, 4,227,670, Cl. 248-416.000.
- Papp, Gyula: See—
Szebeni, Rudolf; Korbonits, Dezso; Harsanyi, Kalman; Molnar, Leventene; Szekeres, Laszlo; Papp, Gyula; and Sebestyen, Gyula, 4,228,164, Cl. 424-246.000.
- Paradis, Roger: See—
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- Parker-Hannifin Corporation: See—
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- Parolini, Leo B.: See—
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- Parsons, Frederick L. Fluid dispensing pump having axially deformable valve, 4,227,628, Cl. 222-380.000.
- Partenheimer, Walter, to Standard Oil Company (Indiana). Removal of nickel from cobalt and manganese, 4,228,091, Cl. 260-439.00R.
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- Pasour, John A.: See—
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- Pasterchick, Harry, Jr.: See—
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- Patel, Gordhanbhai N.; and Yee, Kwok C., to Allied Chemical Corporation. Diacetylene time-temperature indicators, 4,228,126, Cl. 422-56.000.
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- Peabody-Myers Corporation: See—
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- Pearsall, Thomas P., to Thomson-CSF. (III) Plane gallium arsenide IMPATT diode, 4,228,453, Cl. 357-60.000.
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- Peignier, Michel; and Renault, Claude, to Rhone Poulenc Industries. Process and composition for cleaning or de-oiling textile materials, 4,227,883, Cl. 8-142.000.
- Pekarskaya, Tatyana A.: See—
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- Pennebaker, William B., to International Business Machines Corporation. Suspension arrangement for an oscillating body, 4,227,455, Cl. 101-93.050.
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- Leah, George R.; and Pierce, Robert R., 4,227,932, Cl. 106-84.000.
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- Persson, Holger A.: See—
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- Petersen, Otto; and Schmidt, Hans-Dieter, to Bayer Aktiengesellschaft. Electrochemical cell having a polarographic device with ion selective electrode as working electrode and method of use, 4,227,974, Cl. 204-1.00T.
- Petrucchi, John P.: See—
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- Pettersson, Karl G.: See—
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- Pettingell, Winslow L., to Foam Cutting Engineers, Inc. Method of densifying open-celled polyurethane material, 4,228,076, Cl. 264-321.000.
- Pez, Guido, to Allied Chemical Corporation. Polymerization of acetylene, 4,228,060, Cl. 260-30.40R.
- Pfeifer, Heinrich, to Kienzle Apparate GmbH. Monitoring method and system for a parking lot, 4,228,519, Cl. 364-900.000.
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- Pflegger, Robert H., to Pflow Industries, Inc. Apparatus for removing and installing batteries, 4,227,463, Cl. 104-34.000.
- Pflow Industries, Inc.: See—
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- Phillips Petroleum Company: See—
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- Picker Corp.: See—
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- Pindell, Roy K. Fishing line storage reel, 4,227,659, Cl. 242-84.10R.
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- Pirlet, Robert A., to Centre de Recherches Metallurgiques Centrum voor Research in de Metallurgie. Method of determining a dimension of an article, 4,227,812, Cl. 356-372.000.
- Pirlet, Robert A., to Centre de Recherches Metallurgiques Centrum voor Research in de Metallurgie. Process for determining a dimension of an object, 4,227,813, Cl. 356-372.000.
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- Plasmaintent AG: See—
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- Plavitsky, Louis, to Babcock & Wilcox Company, The. Tube crimping device, 4,227,395, Cl. 72-402.000.
- Plaza, Mario G.; and Cushman, James E., to Durango Systems, Inc. Web drive mechanism for line/series printers, 4,227,821, Cl. 400-616.300.
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- Plummer, Jan P., to Sound-Mate Inc. Device for remote control of stereo hi-fi amplifier parameters, 4,228,402, Cl. 179-1.0VL.
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- Hardy, Herbert L., 4,227,781, Cl. 352-41.000.
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- Shenk, Edwin K., 4,227,790, Cl. 354-195.000.
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- Ponpippom, Mitree M.; Bugianesi, Robert L.; Durette, Philippe L.; Katzen, Howard M.; and Shen, Tsung-Ying, to Merck & Co., Inc. 1-Substituted glycopyranosides, 4,228,274, Cl. 536-4.000.
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- Poore, Donald L. Farrowing house, 4,227,485, Cl. 119-16.000.
- Popelka, David A.: See—
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- Porte, Pierre; and Tognny, Jean, to Societe Civile d'Etudes et de Recherches pour l'Obtention de Fibres Minerales (S.E.R.O.F.I.M.). Three-dimensional shaped articles, 4,228,207, Cl. 428-80.000.
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- Powers, Kenneth W.; Roper, Robert; and Gorbaty, Martin L., to Exxon Research & Engineering Co. Functional group containing cyclic diolefin butyl rubbers, 4,228,254, Cl. 525-256.000.
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- Krass, Dennis K., 4,227,916, Cl. 71-90.000.
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- Seymour, Samuel L., 4,227,908, Cl. 65-106.000.
- Wallace, David R., 4,228,055, Cl. 260-29.300.
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- Prasad, Vidyantath A.; and Vines, James H., to Mobay Chemical Corporation. Production of O,O-dialkyl-S-(benzazimidomethyl)-thiophosphoric acid esters, 4,228,279, Cl. 544-183.000.
- Precision Monolithics, Inc.: See—
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- Pregitzer, Siegfried A.; Laufer, Jay K.; Marino, John J.; and Hancock, James W., to Whittaker Corporation. Photoreactive coating compositions based on urethane modified acrylates, 4,227,980, Cl. 204-159.230.
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- Pretchtl, Alfred: See—
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- Preus, Paul. Inflatable barge, 4,227,477, Cl. 114-256.000.
- Preus, Paul. Inflatable barge with compartmented interior, 4,227,478, Cl. 114-256.000.
- Price, Ernest H. Well perforating apparatus and method, 4,227,582, Cl. 175-16.000.
- Priegnitz, Ronald D., to Quaker Oats Company, The. Semi-moist pet food produce and process, 4,228,195, Cl. 426-321.000.
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- Primm, Richard W., deceased (by Primm, Gertrude B., executrix). Method of handling yarn, 4,227,884, Cl. 8-155.100.
- Prine, Eugene D.: See—
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- Prochazka, Kamil; and Suter, Franz, to BBC Brown Boveri & Company Limited. Hydraulic servo-motor for a regulating valve having a hydraulic closing mechanism, 4,227,441, Cl. 91-374.000.
- Procter & Gamble Company, The: See—
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- Letton, James C., 4,228,042, Cl. 252-528.000.
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- R & Z Vermögensverwaltungsgesellschaft mbH: See—
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- Rabouille, Guy: See—
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- Rainville, Dewey; and Wunderlich, Ernst D., to Rainville Company, Inc. Location of equipment on blow molding machines, 4,227,871, Cl. 425-533.000.
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- Raskin, Sidney; and Mantel, Nate, Jr., to H. K. Specialty Co., Inc. Feather duster, 4,227,278, Cl. 15-234.000.
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- Raymond International Builders, Inc.: See—
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- Raynes, Edward P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal material mixtures and devices incorporating such mixtures, 4,227,778, Cl. 350-350.00R.
- Raytheon Company: See—
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- Kramer, William M., 4,228,446, Cl. 357-31.000.
- Martin, Carl J.; Voelker, Marvin J.; and Ryan, Robert J., 4,228,050, Cl. 260-23.0XA.
- Mazzy, James D., 4,228,371, Cl. 307-317.00A.
- Napoli, Louis S., 4,228,315, Cl. 136-256.000.
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- Reed, Robert D., to John Zink Company. Apparatus for recovery of flared condensable vapors, 4,227,897, Cl. 55-269.000.
- Reed, Robert D.: See—
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- Renner, Gerard: See—
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- Rentschler, Waldemar, to Pronator-Werk Alfred Gauthier GmbH. Device for setting exposure time and aperture size on cameras, 4,227,792, Cl. 354-230.000.
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- Luzzi, Louis A.; and Ma, Joseph K. H., 4,228,162, Cl. 424-232.000.
- Wong, John L., 4,228,078, Cl. 260-326.320.
- Respass, Herman M.: See—
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- Restaurant Technology, Inc.: See—
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- Reyes, Peter A., to Textron, Inc. Composite flexural yoke for helicopters, 4,227,857, Cl. 416-134.00A.
- Reymore, Harold E., Jr.: See—
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- Rhine, Samuel, to Helena Laboratories Corporation. Printer head biasing apparatus, 4,228,441, Cl. 346-139.00C.
- Rhoads, Kevin G.; and Plotkin, George M., to VRL Growth Associates, Incorporated. Load activated normally quiescent waveform generator, 4,228,405, Cl. 331-65.000.
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- Rigler, Josef K.; Leithauser, Horst; Trukenbrod, Karl; and Ogrzewalla, Werner, to Chemische Werke Huls AG. Process for preparing fine particle expandable styrene polymers containing small concentrations of organic bromine compounds, 4,228,244, Cl. 521-36.000.
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- Ritter, Ernst, to Robert Bosch GmbH. Limitation apparatus for full-load injection quantity in a supercharged internal combustion engine with fuel injection, 4,227,504, Cl. 123-380.000.
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- Robert Bosch GmbH: See—
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- Knapp, Heinrich; and Jaggle, Gunther, 4,227,501, Cl. 123-453.000.
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- Roberts, William A. Hospital bed monitor, 4,228,426, Cl. 340-573.000.
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- Schlenker, Robert W., to National Wire Products. Adjustable single unit masonry reinforcement, 4,227,359, Cl. 52-713.000.
- Schliep, Edward. Carpenter square with tape holder, 4,227,314, Cl. 33-480.000.
- Schloesser, Gert: See—
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- Schlunssen, Christoffer: See—
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- Schmelzer Corporation: See—
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- Schmid, Bruce K.: See—
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- Schmidlin, Robert: See—
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- Schmidt, Hans-Dieter: See—
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- Schmidt, Herbert J.: See—
Suci, Thomas N.; and Schmidt, Herbert J., 4,227,537, Cl. 128-756.000.
- Schmidt, Jimmy Q., to United States of America, Army. Electronic velocimeter having an oscillator coupled coil for measuring projectile muzzle velocity, 4,228,397, Cl. 324-179.000.

- Schmidt, Volker: See—
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- Schmitt, Frederick L.: See—
Mookherjee, Braja D.; Wilson, Richard A.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; Schmitt, Frederick L.; and Granda, Edward J., 4,228,026, Cl. 252-174.110.
- Schmitt, Joseph M., to CY/RO Industries. Transparent blends of resinous copolymers and grafted elastomers, 4,228,256, Cl. 525-302.000.
- Schmitz, Floyd A.; and Joy, William F., to J. I. Case Company. Releasable backhoe boom lock, 4,227,852, Cl. 414-694.000.
- Schmoock, Roy F.; and Yard, John S., to Fischer & Porter Company. Harmonic noise suppression in electromagnetic flowmeter, 4,227,408, Cl. 73-661.170.
- Schneider, Helmut, to Werner & Mertz GmbH. Discharge duct for apparatuses for extracting water from carpets, 4,227,316, Cl. 34-151.000.
- Schneider, Hilmar. Valve for a spray container, 4,227,631, Cl. 222-635.000.
- Schnell, William J.: See—
Bodnar, Bert S.; and Schnell, William J., 4,227,295, Cl. 29-527.300.
- Schnurle, Hans; and Bertsch, Richard, to Robert Bosch GmbH. Warm-up regulator for enriching the air-fuel mixture delivered to an internal combustion engine, 4,227,491, Cl. 123-488.000.
- Schnurrbusch, Karl: See—
Genth, Hermann; Paulus, Wilfried; Schiller, Paul; Sattlegger, Hans; and Schnurrbusch, Karl, 4,228,065, Cl. 260-45.80N.
- Schoenenberger, Raymond, to Haterbur Umformmaschinen AG. Transfer mechanism for multiple punch presses, 4,227,390, Cl. 721-4.000.
- Scholdstrom, Ragnar; Marcus, Holger; and Nordstrom, Lennart, to AGA Aktiebolag. Apparatus for measuring the distance to a point on the inner wall of a hot furnace, 4,227,802, Cl. 356-5.000.
- Scholten, Joseph J. F.; and van de Leemput, Lambertus J. M. A., to Stamicarbon, B.V. Supported, chromium-oxide polymerization catalyst having a porous silica support used in the polymerization of olefines, 4,228,260, Cl. 526-106.000.
- Scholten, Joseph J. F.; and van de Leemput, Lambertus J. M. A., to Stamicarbon, B.V. Supported chromium-oxide polymerization catalyst having a porous silica support used in the polymerization of olefines, 4,228,261, Cl. 526-106.000.
- Schoolar, Richard B.: See—
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- Schoonmade, Bertus, to N.V. Optische Industrie "De Oude Delft". Apparatus for separating and removing a sheet from a stack of such sheets, 4,227,687, Cl. 271-139.000.
- Schopper, Bernd; and Tandler, Peter, to ITT Industries, Inc. Braking pressure control unit for a dual circuit brake system, 4,227,746, Cl. 303-6.00R.
- Schreyer, Gerd: See—
Ackermann, Rolf; Kolb, Heinz; Morlock, Gerhard; and Schreyer, Gerd, 4,228,084, Cl. 260-348.120.
- Schroeder, Guenter: See—
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- Schulz, Johann G. D.; Onopchenko, Anatoli; and Kofke, William A., to Gulf Research & Development Company. Paraffinic insulating oils containing a diarylalkane, 4,228,023, Cl. 252-63.000.
- Schulz, Johann G. D.; Onopchenko, Anatoli; and Kofke, William A., to Gulf Research & Development Company. Insulating oil compositions containing a fraction derived from the alkylation product of benzene with ethylene, 4,228,024, Cl. 252-63.000.
- Schumacher, John B. Rotatable ram bar apparatus and carrier adapter, 4,227,729, Cl. 293-145.000.
- Schumacher, John C., to J. C. Schumacher Co. Energy efficient process for continuous production of thin semiconductor films on metallic substrates, 4,227,291, Cl. 29-572.000.
- Schwan, Thomas J., to Morton-Norwich Products, Inc. 3-(3,4-Dihydroxyphenyl)-N-(4-nitrobenzyl)alanine hydrobromide, 4,228,303, Cl. 562-435.000.
- Schwanz, Wilfried; and Seiffert, Ulrich, to Volkswagenwerk Aktiengesellschaft. Device for longitudinal displacement of a flexible drive wire, 4,227,426, Cl. 74-424.80R.
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- Schwartz, Sidney J., to Burroughs Corporation. Phase controlled decoder for bubble memories, 4,228,521, Cl. 365-4.000.
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- Schwerdt, Christopher B., to United States of America, Air Force. Offset correction apparatus for a successive approximation A/D converter, 4,228,423, Cl. 340-347.0CC.
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Goudey, Kenneth R.; and Sciambi, Attilio F., Jr., 4,228,410, Cl. 333-122.000.
- Sciffer, Jack P.: See—
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- SCM Corporation: See—
Cardenas, Carlos G.; and Din, Zia U., 4,228,313, Cl. 585-640.000.
- Scobey, Fred J.: See—
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- Scott, Hubert D.: See—
Paap, Hans J.; Richter, Albert P., Jr.; Peelman, Harold E.; Arnold, Dan M.; and Scott, Hubert D., 4,228,350, Cl. 250-267.000.
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- Scott Paper Company: See—
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- Scott, Phillips B.: See—
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- Scribner, Jack B., to TRW Inc. Plate or the like with serrated opening, 4,228,210, Cl. 428-131.000.
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- Seefeld, Dean E.; and Schirer, David K., to Geil Company. Bale processor, 4,227,654, Cl. 241-34.000.
- Seidler, Don W.: See—
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- Seitz, Karl: See—
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- Seitz, Peter. Lid for goods dispatch container, 4,227,613, Cl. 206-459.000.
- Sekino, Shozo: See—
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- Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Electrodeposition of aqueous dispersions of copolymers of polyethylenically unsaturated epoxy-amine adducts, 4,227,982, Cl. 204-181.00C.
- Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Aqueous coatings based on copolymers with a mixture of unsaturated esters of polymeric polyol and bisphenol-ethylene oxide adduct, 4,228,049, Cl. 260-21.000.
- Selis, James J.: See—
Johnson, Walter J.; and Selis, James J., 4,228,510, Cl. 364-521.00N.
- Sellberg, Jan B. R. Wheel-locking device to secure vehicles on the cargo platform of transport vehicles, 4,227,633, Cl. 224-42.280.
- Selsing, Jorgen, to G & W Electric Specialty Company. Method and means for dissipating heat in a high voltage termination, 4,228,318, Cl. 174-73.00R.
- Senes, Michel; Le Goff, Yannick; Gourdiere, Jean F.; and Quibel, Jacques, to Societe Chimique de la Grand e Paroisse. Catalytic composition used in purifying gaseous effluents polluted by nitrogen oxides and process for preparing the composition, 4,228,034, Cl. 252-462.000.
- Senoh, Fushi: See—
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- Senoh, Hisao; and Senoh, Fushi. Exercise assembly with flexible bar mounting, 4,227,688, Cl. 272-62.000.
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- Sereno, John: See—
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- Sermon, Paul A., to Johnson, Matthey & Co., Limited. Catalysis, 4,228,138, Cl. 423-239.000.
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Harlan, Courtney S., 4,227,572, Cl. 165-184.000.
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- Seymour, Samuel L., to PPG Industries, Inc. Shaping glass sheets by drop forming with sag control means, 4,227,908, Cl. 65-106.000.

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Shaddock, Roland E., to Peabody-Myers Corporation. Mobile non-polluting cleaning and processing apparatus and method. 4,227,997, Cl. 209-250.000.

Shaffer, Glenn A., deceased: See—
Steigelman, James Q.; Bargannier, Roger B.; Shaffer, Glenn A., deceased; Charland, Irene S., administrator DBN CTA; and Harris, Geoffrey L., 4,228,214, Cl. 428-212.000.

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Sheehan, Gerard M.: See—
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Shelton, J. Paul, to United States of America, Navy. Wideband polarization-transforming electromagnetic mirror. 4,228,437, Cl. 343-909.000.

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Shimenkov, Marat; and Froyman, Abraham. Article imitating a part of a woman's breast. 4,227,536, Cl. 128-479.000.

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Ilyushin, Arkady L.; Markevich, Mikhail A.; Karpacheva, Susanna M.; Khorkhorina, Lidia P.; Muratov, Valeryan M.; and Sholk, Semen F., 4,228,271, Cl. 528-95.000.

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Simpson, Anne L.: See—
Hsu, I-Chi; and Simpson, Anne L., 4,228,529, Cl. 367-70.000.

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Smith, Leland B., to Unirad Corporation. Electronic black matrix circuitry. 4,228,459, Cl. 358-112.000.

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Snow, Samuel G.; and Giacomelli, Edward J., to United States of America, Energy. Method for measuring the density of lightweight materials. 4,228,351, Cl. 256-273.000.

Snyder, Gary F.: See—
Bringol, Charles R.; and Snyder, Gary F., 4,228,322, Cl. 179-15.55T.

Snyder, Richard C.: See—
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Societa Impianti Termoelettrici Industriali (s.a.s.): See—
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Societe Anonyme Automobiles Citroen: See—
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Societe Anonyme Dite: D'Alstom: See—
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Societe Anonyme Francaise du Ferodo: See—
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Societe Chimique de la Grand e Paroisse: See—
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Societe Civile d'Etudes et de Recherches pour L'Obtention de Fibres Minerales (S.E.R.O.F.I.M.): See—
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Societe d'Etudes, de Realisations et d'Applications Techniques: See—
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Societe Europeenne de Propulsion: See—
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Societe Nationale Industrielle Aerospatiale: See—
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Soeda, Katsuji; Oyama, Mitsuhiro; Sakuma, Fumio; and Nakajima, Tadashi, to Yamamoto Electric Industries, Ltd. Speed control circuit arrangement for an AC commutator motor. 4,228,383, Cl. 318-245.000.

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Tsuchiya, Keishin; Yoshihara, Ichiro; Saito, Kazuhito; Abe, Take-shi; Abe, Kiyoshi; and Sone, Kiyoshi, 4,228,429, Cl. 340-632.000.

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Soodak, Charles; Lamadrid, Rene G.; and Lohr, David, to Baxter Travenol Laboratories, Inc. Optical density detector. 4,227,814, Cl. 356-410.000.

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Speckman, Donald T.: See—
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Speicher, Edwin W., to M. E. Cunningham, Company. Hydraulically operated drum series printer. 4,227,454, Cl. 101-93.010.

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Skutecki, Edmund R., 4,227,664, Cl. 244-194.000.

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Spitzer, Hermann J. Solar energy collectors. 4,227,514, Cl. 126-426.000.

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Steckler, Steven A.; and Balabin, Alvin R., to RCA Corporation. Switched AFPC loop filter with offset voltage cancellation. 4,228,463, Cl. 358-158.000.

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- Stelron Cam Company: See—
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- Sterling Drug Inc.: See—
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- Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Fluidized bed unit including a cooling device for bed material, 4,227,488, Cl. 122-4.00D.
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- Stifter, Francis J. Constant current source, 4,228,494, Cl. 363-85.000.
- Stilber, John. Building solar energy heating system and cooling system, 4,227,566, Cl. 165-1.000.
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- Subramanian, Krishnamoorthy: See—
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- Samanta, Shyam K.; Subramanian, Krishnamoorthy; and Ezis, Andre, 4,227,842, Cl. 409-131.000.
- Subramanian, Sundaresa V.; Ghosh, Debabrata S.; Gray, John M.; Kay, David A. R.; and Purdy, Gary R., to Microalloying International, Inc. Process for the production of vermicular cast iron, 4,227,924, Cl. 75-130.00R.
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- Swanson, Damon, to Allor Foundation, The. Method of laboratory testing in water-based culture media for zones of inhibition, 4,228,238, Cl. 435-32.000.
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- Sze, Morgan C.; and Schindler, Harvey D., to Lummus Company, The. Demetallization of hydrocarbon feedstock, 4,227,995, Cl. 208-251.00H.
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- Takahashi, Tatsuo; and Yamada, Osamu, to RCA Corporation. High temperature cadmium boracite semiconductor device, 4,228,454, Cl. 357-61.000.
- Takahashi, Yoshihiro; Moore, Robert T.; and Joyce, Robert J., to Envirotech Corporation. Determination of total organic halides in water, 4,227,887, Cl. 23-230.0PC.
- Takase, Sadao; Asano, Masaharu; and Manaka, Nobuzi, to Nissan Motor Company, Limited. Air/fuel ratio control system for internal combustion engine with airflow rate signal compensation circuit, 4,227,507, Cl. 123-492.000.
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- Terutaka, Yoo: See—
Musha, Takanori; and Terutaka, Yoo, 4,228,268, Cl. 526-344.200.
- Terzian, Rouben T.: See—
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- Tesdahl, Thomas C., to Chemed Corporation. Foam cleaner for food plants, 4,228,048, Cl. 260-17.4UC.
- Tessier, Michel: See—
Jouve, Hubert; Meyer, Robert; Szttern, Jacques; Krishnan, Ramana-than; Suran, Gabor; and Tessier, Michel, 4,227,947, Cl. 148-122.000.
- Texaco Development Corp.: See—
Hunter, Walter D., 4,228,016, Cl. 252-8.55D.
- Hunter, Walter D., 4,228,017, Cl. 252-8.55D.
- Hunter, Walter D., 4,228,018, Cl. 252-8.55D.
- Hunter, Walter D., 4,228,019, Cl. 252-8.55D.
- Speranza, George P.; Zimmerman, Robert L.; and Austin, Thomas H., 4,228,310, Cl. 568-620.000.
- Zimmerman, Robert L., 4,228,248, Cl. 521-115.000.
- Texaco Inc.: See—
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- Nooner, Daryl W., 4,227,575, Cl. 166-303.000.
- Paap, Hans J.; Richter, Albert P., Jr.; Peelman, Harold E.; Arnold, Dan M.; and Scott, Hubert D., 4,228,350, Cl. 250-267.000.
- Texas Instruments Incorporated: See—
Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,228,445, Cl. 357-24.000.
- Texeira, Patrick D.: See—
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- Textron, Inc.: See—
Carlson, Floyd W.; Hester, Michael L.; and Popelka, David A., 4,227,665, Cl. 244-210.000.
- Reyes, Peter A., 4,227,857, Cl. 416-134.00A.
- Thate, Kurt, to AGFA-Gevaert, A.G. Inflatable sealing device, 4,227,702, Cl. 277-34.300.
- Thermco Products Corporation: See—
Foster, Robert B., 4,228,004, Cl. 210-739.000.
- Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile apparatus for distributing and shaping ballast of a railroad bed, 4,227,324, Cl. 37-104.000.
- Thillays, Jacques-Claude, to U.S. Philips Corporation. Display device for use with strong illumination, 4,228,490, Cl. 362-311.000.
- Thivierge, Clovis. Drilling attachment for chain saw, 4,227,840, Cl. 408-20.000.
- Thomas, Michael D., to Ryder International Corporation. Lens holder and sterilizer, 4,228,136, Cl. 422-307.000.
- Thomas, Morton L., to Temco Products, Inc. Multi-position, retractable leg rest for a wheelchair, 4,227,742, Cl. 297-430.000.
- Thompson, John W.; Kamp, Arthur J.; and Sederlund, Edward R., to Dow Chemical Company, The. Nuclear pulse counting apparatus and technique, 4,228,512, Cl. 364-527.000.
- Thompson, Marion E. Solar sign assembly, 4,227,327, Cl. 40-473.000.
- Thomson-CSF: See—
de Sartre, Jean; and Geiger, Erich, 4,228,493, Cl. 363-56.000.
- Dubois, Jean C.; and Barre, Francoise, 4,228,087, Cl. 260-408.000.
- Pearshall, Thomas P., 4,228,453, Cl. 357-60.000.
- Thoren, Sten. Method and device for improving the efficiency of a heat generator, 4,227,378, Cl. 62-82.000.
- Thyssen Industrie AG: See—
Kreiskorte, Heinz, 4,227,450, Cl. 100-214.000.
- Tiber Corporation: See—
Talansky, Alan R.; Respess, Herman M.; and Borst, William A., 4,227,308, Cl. 33-169.00B.
- Tillery, Richard L.: See—
Ursrey, Curtis W.; and Tillery, Richard L., 4,227,331, Cl. 43-17.600.
- Timex Corporation: See—
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- Timm, Hans; Fries, Soren; and Wenzlaff, Axel, to Gesellschaft fur Kernenergieverwertung in Schiffbau und Schifffahrt mbH. Apparatus for desalination and purification of water by reverse osmosis and ultrafiltration, 4,228,014, Cl. 210-321.00R.
- Ting, Chihyuan C.: See—
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- Ting, Raymond M. L.: See—
Bricmont, Robert J.; Hamilton, Philip A.; and Ting, Raymond M. L., 4,227,593, Cl. 188-1.00C.
- Tioxide Group Limited: See—
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- Tippetts, K. Boyd: See—
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- Tjaden, Jan, to Internationale Octrooi Maatschappij "Octropa" B.V. Plate heat exchanger, 4,227,571, Cl. 165-167.000.
- Tjannberg, Bo C. E. Method for making a cellulosic material fire-resistant, 4,228,202, Cl. 427-212.000.

- Tjunkin, Boris A.: See—
Ruzin, Leonid M.; Spiridonov, Jury A.; Chuprov, Gennady S.; Tjunkin, Boris A.; and Tabakov, Vladimir P., 4,227,743, Cl. 299-2.000.
- Tkalenko, Victor J., Jr.: See—
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- Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; and Baran, Joseph, 4,227,720, Cl. 283-8.00R.
- TMC Corporation: See—
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- Togi, Ryoiku, to Fujitsu Limited. Semiconductor device, 4,228,444, Cl. 357-22.000.
- Togny, Jean: See—
Porte, Pierre; and Togny, Jean, 4,228,207, Cl. 428-80.000.
- Tohyama, Shigeo; and Akitomo, Nobuo, to Hitachi, Ltd. Spectrophotometer, 4,227,811, Cl. 356-325.000.
- Tojo, Tsutomu; and Uetake, Toshifumi, to Olympus Optical Co., Ltd. Objective lens system for microscopes, 4,227,773, Cl. 350-175.0ML.
- Tokas, Edward F.: See—
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- Tokyo Denryoku Kabushiki Kaisha: See—
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- Tokyo Shibaura Denki Kabushiki Kaisha: See—
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- Matsumoto, Katsumi, 4,228,433, Cl. 340-748.000.
- Okita, Yuji; Kondo, Ryotaro; and Nii, Yoshiji, 4,228,476, Cl. 361-68.000.
- Oonishi, Tohiyuki, 4,227,379, Cl. 62-198.000.
- Yasuda, Nobuaki; Ogawa, Takenobu; and Sadamasa, Tetsuo, 4,228,455, Cl. 357-67.000.
- Tolman, Wayne D.: See—
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- Tom, Baldwin H.: See—
Jakstys, Milda M.; Tom, Baldwin H.; and Kahan, Barry D., 4,228,236, Cl. 435-1.000.
- Tompkins, Leo; and Strain, Harold. Desiccant thermal energy storage system for compact heating and cooling, 4,227,375, Cl. 62-2.000.
- Tonka Corporation: See—
Murray, Dale L.; and Dohse, Jerry L., 4,227,337, Cl. 46-12.000.
- Toot, Peter D., to General Electric Company. Fail-fixed servovalve, 4,227,443, Cl. 91-459.000.
- Toray Industries, Inc.: See—
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- Toray Silicone Company, Ltd.: See—
Ona, Isao; Ozaki, Masaru; and Usui, Katsutoshi, 4,228,054, Cl. 260-29.20M.
- Toro Company, The: See—
Comer, Robert C., 4,227,280, Cl. 15-330.000.
- Scherbring, David J., 4,227,364, Cl. 56-10.800.
- Torrance, William L. Shaving apparatus, 4,227,302, Cl. 30-47.000.
- Torrington, Leslie A., to RCA Corporation. Manual scanning mechanism for video disc player, 4,227,699, Cl. 274-13.00R.
- Towa Dengyo Co., Ltd.: See—
Matsuya, Ryosuke, 4,228,486, Cl. 362-237.000.
- Towmotor Corporation: See—
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- Toyo Kogyo Co., Ltd.: See—
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- Yagi, Tohiro; Yamamoto, Junichi; and Kohara, Hideo, 4,228,203, Cl. 427-229.000.
- Toyoda, Kazuhiro: See—
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- Toyota Jidosha Kogyo Kabushiki Kaisha: See—
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- Kuramoto, Akio, 4,227,705, Cl. 277-160.000.
- Toyota Kidosha Kogyo Kabushiki Kaisha: See—
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- Toyoto Jidosha Kogyo Kabushiki Kaisha: See—
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- Traber, Water: See—
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- Trede, Wolfgang: See—
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- Treybig, James G.: See—
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- Tribolet, Herbert. Double insulated apparatus, 4,227,279, Cl. 15-321.000.
- Trisope Inc.: See—
Wells, Daniel R., 4,228,380, Cl. 315-111.400.
- Trukenbrod, Karl: See—
Rigler, Josef K.; Leithausner, Horst; Trukenbrod, Karl; and Ogrzewalla, Werner, 4,228,244, Cl. 521-56.000.
- TRW Inc.: See—
Clewes, Antony B.; and Bowley, Thomas W., 4,227,768, Cl. 339-198.00H.
- Scribner, Jack B., 4,228,210, Cl. 428-131.000.
- Updike, Stanley H., 4,227,493, Cl. 123-90.300.
- Tseng, Chien K.: See—
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- Tsimpler, Jury A.: See—
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- Tsuchida, Takashi; Shinoda, Kenichi; and Takase, Takao, to Fuji Electrochemical Co., Ltd. Rupturable sealing structure of cell, 4,227,701, Cl. 277-12.000.
- Tsuchida, Yutaka: See—
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- Tsuchiya, Keishin; Yoshihara, Ichiro; Saito, Kazuhito; Abe, Takeshi; Abe, Kiyoshi; and Sone, Kiyoshi, to Ricoh Company, Ltd. Alarm system having phase-sensitive bridge circuit, 4,228,429, Cl. 340-632.000.
- Tsujino, Takeshi: See—
Sugikawa, Susumu; Maeda, Mitsuru; and Tsujino, Takeshi, 4,228,141, Cl. 423-415.00A.
- Tsunekawa, Tokuchi: See—
Aizawa, Hiroshi; Shimizu, Masami; Uchidoi, Masanori; Tsunekawa, Tokuchi; Iura, Yukio; and Yamamichi, Masayoshi, 4,227,787, Cl. 354-51.000.
- Tsunoi, Haruo, to Canon Kabushiki Kaisha. Wet developing apparatus for electrostatic latent images, 4,227,797, Cl. 355-10.000.
- Tucker, Robert W., to United States of America, Army. Lock out proximity fuse amplifier, 4,227,462, Cl. 102-220.000.
- Tucson Medical Instruments, Inc.: See—
Suci, Thomas N.; and Schmidt, Herbert J., 4,227,537, Cl. 128-756.000.
- Tureaud, Kenneth E.; Ginsburg, Stephen; and Draheim, Frederick, to Black Knight Investments, Limited. Anatomical intra-orally moldable dental impression tray and method, 4,227,877, Cl. 433-37.000.
- Turnblom, Ernest W.: See—
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- Turpeinen, Ahti E.: See—
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- Tuson, Samuel, to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H. Ancillary off-shore column located near a sea-bed working column or platform, 4,227,830, Cl. 405-195.000.
- Tuviv, Yury: See—
Rausch, Carl W.; Tuviv, Yury; and Neue, Uwe D., 4,228,007, Cl. 210-198.00C.
- Twin Harbor Dredging Co.: See—
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- Ube Industries Ltd.: See—
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- Uchida, Shinya; and Arikawa, Junichi, to Laurel Bank Machine Co., Ltd. Apparatus for extraction of desired number of sheets for use in a sheet counting machine, 4,227,686, Cl. 271-95.000.
- Uchida, Takashi: See—
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- Uchidoi, Masanori: See—
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- Uchigasaki, Isao: See—
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- Uchikawa, Hiroshi; and Kato, Hajime, to Onoda Cement Co., Ltd. Self-hardening mold sand, 4,227,931, Cl. 106-38.350.
- Uchiyama, Yasuji: See—
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- Ueda, Yoshihiro: See—
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- Uehara, Yasuo: See—
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- Uemura, Katsumi: See—
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- Ueno, Haruo: See—
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- Ueno, Kazunori: See—
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- Uetake, Toshifumi: See—
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- Uitvlugt, Martin W., to Eaton Corporation. Valve disabler and control, 4,227,494, Cl. 123-90.160.

- Ulbrich, Willi: See—
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- Ulrich, Gunter. Catamaran equipped with re-righting device, 4,227,474, Cl. 114-61.000.
- Uveling, Leon; Maillet, Pierre; and Metz, Jean, to Wurth, Paul. Guide and support structure for furnace taphole plugging or drilling device, 4,227,682, Cl. 266-271.000.
- Under Sea Industries, Inc.: See—
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- Underground Location Services Limited: See—
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- Underwood, James L. Sealing lid and sealing lid-container combination, 4,227,625, Cl. 220-307.000.
- Union Carbide Corporation: See—
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- Crowe, John J., 4,227,396, Cl. 72-469.000.
- Unirad Corporation: See—
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- Unirof GmbH: See—
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- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: See—
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- United States Gypsum Company: See—
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- Luszczak, Myron M., 4,227,965, Cl. 162-13.000.
- Wendt, Alan C., 4,227,355, Cl. 52-64.000.
- United States of America
Agriculture: See—
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- Weaver, Merle L.; and Ng, Keng C., 4,228,196, Cl. 426-407.000.
- Air Force: See—
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- Schwerdt, Christopher B., 4,228,423, Cl. 340-347.00C.
- Army: See—
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- Menke, Joseph T., 4,227,976, Cl. 204-56.00M.
- Merritt, James A., 4,227,907, Cl. 65-3.00R.
- Piedmont, James R.; and Hackaylo, Michael, 4,228,418, Cl. 338-195.000.
- Schmidt, Jimmy Q., 4,228,397, Cl. 324-179.000.
- Tucker, Robert W., 4,227,462, Cl. 102-220.000.
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- Owen, Whitney H., 4,228,391, Cl. 322-35.000.
- Snow, Samuel G.; and Giacomelli, Edward J., 4,228,351, Cl. 250-273.000.
- Health, Education and Welfare: See—
Ito, Yoichiro, 4,228,009, Cl. 210-198.00C.
- Mabie, Curtis P., 4,227,937, Cl. 106-313.000.
- National Aeronautics and Space Administration: See—
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- Navy: See—
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- Beezley, Dale L.; and Goodman, Wolf, 4,227,461, Cl. 102-218.000.
- Bogert, Bruce P.; and Hirsch, Peter, 4,228,531, Cl. 367-135.000.
- Dusheck, George J., Jr.; and Scott, Phillips B., 4,228,395, Cl. 324-77.00B.
- Gertler, Morton; Whicker, Lester F.; and Gibbons, Thomas, 4,227,479, Cl. 114-312.000.
- Jensen, James D.; and Schooler, Richard B., 4,227,948, Cl. 148-175.000.
- McKechnie, John C., 4,227,401, Cl. 73-105.000.
- Osborne, Scott R., 4,228,432, Cl. 340-736.000.
- Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., 4,227,476, Cl. 114-240.00A.
- Schmittschek, Erhard J.; and Celto, John E., 4,228,408, Cl. 331-94.50G.
- Shelton, J. Paul, 4,228,437, Cl. 343-909.000.
- Verrill, Thomas D.; and Ewans, John R., 4,227,856, Cl. 416-1.000.
- Wheeler, John G., 4,227,711, Cl. 280-81.00R.
- U.S. Philips Corporation: See—
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- De Jager, Johan B.; and Noordanus, Johannes, 4,228,319, Cl. 179-2.0EB.
- Duijkers, Peter A., 4,228,464, Cl. 358-165.000.
- Thillays, Jacques-Claude, 4,228,490, Cl. 362-311.000.
- Van Hemmen, Dirk J.; and Hoekstra, Albert, 4,227,301, Cl. 30-43.600.
- van Straaten, Jan, 4,228,462, Cl. 358-158.000.
- Wagner, Wolfgang, 4,228,505, Cl. 364-414.000.
- Wouda, Kornelis J.; Giacometti, Alberto M.; and Riede, Willem, 4,228,409, Cl. 333-28.00R.
- United Technologies Corporation: See—
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- Morton, William A.; and Caporini, John I., 4,227,776, Cl. 350-285.000.
- Unitek Corporation: See—
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- UOP Inc.: See—
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- Updike, Stanley H., to TRW Inc. Valve rotator, 4,227,493, Cl. 123-90.300.
- Upjohn Company, The: See—
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- Sih, John C., 4,228,104, Cl. 568-379.000.
- Ursrey, Curtis W.; and Tillery, Richard L., to Lite-Bait, Inc. Fish lure, 4,227,331, Cl. 43-17.600.
- Uskokovic, Milan R.: See—
Confalone, Pasquale N.; Lollar, Elizabeth D.; Pizzoloto, Giacomo; and Uskokovic, Milan R., 4,228,295, Cl. 549-57.000.
- Grethe, Guenter; Uskokovic, Milan R.; and Sereno, John, 4,228,080, Cl. 260-345.90R.
- USM Corporation: See—
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- Usui, Katsutoshi: See—
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- Vaca, Humberto. Cake frosting device, 4,227,484, Cl. 118-502.000.
- Vahlensieck, Hans-Joachim: See—
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- Vaidyanathan, Kumbakonam R.; Henry, Joseph D., Jr.; and Verhoff, Francis H., to Electric Power Research Institute, Inc. Enhanced anti-solvent sedimentation of solids from liquids using pressurized carbon dioxide gas, 4,228,002, Cl. 210-729.000.
- Vaillant, Christian; and Korcz, Eugene, to Fives-Cail Babcock. Vehicle unloading machine, 4,227,676, Cl. 254-277.000.
- Valleylab: See—
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- Valmet Oy: See—
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- van de Leemput, Lambertus J. M. A.: See—
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- Scholten, Joseph J. F.; and van de Leemput, Lambertus J. M. A., 4,228,261, Cl. 526-106.000.
- van den Brom, Guido C., to Lever Brothers Company. Liquid detergent composition, 4,228,043, Cl. 252-529.000.
- Vanderburgh, Lloyd A.; Moore, R. Dale; and Paplaski, Joseph, to International Harvester Company. Pivotable seat support, 4,227,670, Cl. 248-416.000.
- van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N. V. Mowing machine, 4,227,363, Cl. 56-13.600.
- van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N. V. Implement with side screening plates and soil roller, 4,227,580, Cl. 172-112.000.
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Wong, John L., to Research Corporation. Polycyclic chlorinated hydrocarbons containing bridgehead or imino nitrogen. 4,228,078, Cl. 260-326.320.

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Mason, Ronald F.; and Wood, Derek A., 4,228,081, Cl. 260-326.320.

Wood, Grady M.: See—
Neale, Ronald G.; and Wood, Grady M., 4,228,524, Cl. 365-163.000.

Wood, Joseph L.; and Lipworth, Matthew F., to Olin Corporation. Process for cooling and drying chlorine gas. 4,227,890, Cl. 55-30.000.

Woodford, Alan T.; and Horellou, Michel R., to Spar Aerospace Limited. Manipulator wrist tool interface. 4,227,853, Cl. 414-738.000.

Woods, Donald C.: See—
Ripley, John A.; Woods, Donald C.; and Kaine, James, 4,228,506, Cl. 364-415.000.

Woods, Donald E.: See—
Ramsey, Vernon B.; and Woods, Donald E., 4,227,663, Cl. 244-149.000.

Woods, Quentin T.; and Gerverdinck, William D., to FMC Corporation. Article taping system. 4,227,955, Cl. 156-269.000.

Workman, Harold W.; and Nicholas, David C., to Rockwell International Corporation. Dual TDM switching apparatus. 4,228,535, Cl. 370-16.000.

Worthington, Wayne H., to Worthington, Wayne H. Refuse collection device. 4,227,849, Cl. 414-408.000.

Wouda, Komeis J.; Giacometti, Alberto M.; and Riede, Willem, to U.S. Philips Corporation. Transmission arrangement having an adjustable network. 4,228,409, Cl. 333-28.00R.

Wright, Robert L., to Monsanto Company. Effecting condensation of nitrohaloarene and formyl derivative of a primary aromatic amine with alkali metal hydroxide. 4,228,103, Cl. 260-576.000.

Wright, William J.: See—
DiNicola, Nicola G.; Pastor, Robert V.; and Wright, William J., 4,228,481, Cl. 361-314.000.

Wu, E-Ming: See—
Chapman, Derek D.; and Wu, E-Ming, 4,228,073, Cl. 260-176.000.

Wu, Wen-Li; and Black, William B., to Monsanto Company. Process for producing high tenacity polyethylene fibers. 4,228,118, Cl. 264-210.800.

Wunderlich, Ernst D.: See—
Rainville, Dewey; and Wunderlich, Ernst D., 4,227,871, Cl. 425-533.000.

Wurth, Paul: See—
Ulveling, Leon; Mailliet, Pierre; and Metz, Jean, 4,227,682, Cl. 266-271.000.

Xerox Corporation: See—
Bobbe, Richard M.; Durbin, John A.; Lehman, Richard F.; and Seedhouse, Frederick A., 4,227,795, Cl. 355-3.00R.

Steiner, Edward, 4,227,798, Cl. 355-14.00C.

Yagi, Hisanori: See—
Murakami, Takeshi; Nakamura, Teruo; and Yagi, Hisanori, 4,228,222, Cl. 428-500.000.

Yagi, Sumio: See—
Kamekawa, Kunio; and Yagi, Sumio, 4,227,898, Cl. 55-276.000.

Yagi, Toshiro; Yamamoto, Junichi; and Kohara, Hideo, to Toyo Kogyo Co., Ltd. Method of forming aluminum coating layer on ferrous base alloy workpiece. 4,228,203, Cl. 427-229.000.

Yagihara, Morio; and Yokota, Yukio, to Fuji Photo Film Co., Ltd. Photographic silver halide light-sensitive material. 4,228,233, Cl. 430-385.000.

Yamabe, Shigeru; Fujimoto, Yasuo; Ryu, Shoji; Suzuki, Yoshio; Tanaka, Yoshihiro; Yamanaka, Toru; and Nyu, Kiyosato, to Nippon Chemphar Company, Limited. Benzo[b,f]thiepan derivate. 4,228,284, Cl. 544-375.000.

Yamada, Osamu: See—
Takahashi, Tatsuo; and Yamada, Osamu, 4,228,454, Cl. 357-61.000.

Yamada, Toshiro: See—
Himuro, Masami; Yamada, Toshiro; and Makino, Yoshimi, 4,228,473, Cl. 360-114.000.

Yamaga, Eiichi: See—
Okumura, Takatoshi; Nakada, Akira; Uchiyama, Yasuji; Aoki, Eiichi; Yamaga, Eiichi; and Oya, Akiyoshi, 4,228,403, Cl. 328-15.000.

Yamagata, Kenji: See—
Noda, Kanji; Nakagawa, Akira; Yamagata, Kenji; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihiko, 4,228,304, Cl. 562-507.000.

Yamagishi, Hideshi: See—
Wakayama, Naoki; Iida, Toshiyuki; and Yamagishi, Hideshi, 4,228,355, Cl. 250-374.000.

Yamaguchi, Isao: See—
Kiguchi, Tasaburo; Hayashi, Kimiaki; and Yamaguchi, Isao, 4,228,183, Cl. 424-301.000.

Yamaguchi, Masanaga: See—
Kashihara, Takao; Okuda, Fukuyasu; Yamaguchi, Masanaga; and Nishimura, Akira, 4,228,124, Cl. 422-36.000.

Yamaguchi, Tadanori: See—
Sato, Shuichi; and Yamaguchi, Tadanori, 4,228,447, Cl. 357-42.000.

Yamaguchi, Tetsuo: See—
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Yamaha Hatsudoki Kabushiki Kaisha: See—
Kamekawa, Kunio; and Yagi, Sumio, 4,227,898, Cl. 55-276.000.

Yamamichi, Masayoshi: See—
Aizawa, Hiroshi; Shimizu, Masami; Uchidoi, Masanori; Tsunekawa, Tokuchi; Iura, Yukio; and Yamamichi, Masayoshi, 4,227,787, Cl. 354-51.000.

Yamamoto, Akira; Iida, Masaru; Miyake, Satoru; Yamaura, Hideo; and Inoue, Takeshi, to Nissan Chemical Industries, Limited. Suspension polymerization of vinyl chloride using hydroxyacrylic polymers. 4,228,264, Cl. 526-200.000.

Yamamoto Electric Industries, Ltd.: See—
Soeda, Katsuji; Oyama, Mitsuhiro; Sakuma, Fumio; and Nakajima, Tadashi, 4,228,383, Cl. 318-245.000.

Yamamoto, Junichi: See—
Yagi, Toshiro; Yamamoto, Junichi; and Kohara, Hideo, 4,228,203, Cl. 427-229.000.

Yamamoto, Michihiro; Koshiba, Masao; and Aono, Shunji, to Sumitomo Chemical Company, Limited. Diuretic and vasodilating tricyclic quinazolines. 4,228,167, Cl. 424-251.000.

Yamanaka, Toru: See—
Yamabe, Shigeru; Fujimoto, Yasuo; Ryu, Shoji; Suzuki, Yoshio; Tanaka, Yoshihiro; Yamanaka, Toru; and Nyu, Kiyosato, 4,228,284, Cl. 544-375.000.

Yamashita, Toshio: See—
Gamo, Takaharu; Moriwaki, Yoshio; Yamashita, Toshio; and Fukuda, Masataro, 4,228,145, Cl. 423-644.000.

Yamauchi, Kiaki; Morimoto, Yukihiko; Sasaki, Toshikatu; and Nakai, Katsumi, to Osaka Gas Company, Limited. Method for reactivation of platinum group metal catalyst with aqueous alkaline and/or reducing solutions. 4,228,033, Cl. 252-412.000.

Yamauchi, Toshiro; Saito, Takemi; and Kanayama, Shigehiro, to Fuji Photo Optical Co., Ltd. Optical color-separation system for use in a color television camera. 4,228,458, Cl. 358-55.000.

Yamaura, Hideo: See—
Yamamoto, Akira; Iida, Masaru; Miyake, Satoru; Yamaura, Hideo; and Inoue, Takeshi, 4,228,264, Cl. 526-200.000.

Yara Engineering Corporation: See—
Chapman, John H.; and Anderson, David, 4,227,920, Cl. 75-1.00R.

Yard, John S.: See—
Schmoock, Roy F.; and Yard, John S., 4,227,408, Cl. 73-861.170.

Yasuda, Nobuaki; Ogawa, Takenobu; and Sadamasa, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Gallium phosphide semiconductor device having improved electrodes. 4,228,455, Cl. 357-67.000.

Yasuda, Syoichi: See—
Nagano, Humikazu; Sasaki, Hiromu; and Yasuda, Syoichi, 4,228,468, Cl. 358-280.000.

Yee, Kwok C.: See—
Patel, Gordhanbhai N.; and Yee, Kwok C., 4,228,126, Cl. 422-56.000.

Yodoshii, Shigeyasu. Router bit. 4,227,837, Cl. 407-53.000.

Yokota, Yukio: See—
Yagihara, Morio; and Yokota, Yukio, 4,228,233, Cl. 430-385.000.

Yonemitsu, Eiichi: See—
Sugio, Akitoshi; Masu, Masanobu; Kimura, Masaharu; Sayama, Norio; Ko, Keiun; and Yonemitsu, Eiichi, 4,228,258, Cl. 525-390.000.

Yonker, John H.: See—
Pearce, Joseph L.; Ray, Thomas W.; Taylor, Donald F.; and Yonker, John H., 4,227,573, Cl. 166-153.000.

Yoshida, Isao: See—
Sakano, Hajime; Kodama, Mikio; Shoji, Toshihiro; and Yoshida, Isao, 4,228,051, Cl. 260-23.70R.

Yoshida, Kobun: See—
Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, 4,228,472, Cl. 360-73.000.

Yoshida Kogyo K.K.: See—
Ofusa, Masaatsu, 4,227,555, Cl. 139-384.00B.

Yoshida, Yoshinori; and Shinohara, Hironobu, to Japan Synthetic Rubber Co., Ltd. Process for the preparation of diacetoxybutene. 4,228,301, Cl. 560-244.000.

Yoshihara, Ichiro: See—
Tsuchiya, Keishin; Yoshihara, Ichiro; Saito, Kazuhito; Abe, Takeshi; Abe, Kiyoshi; and Sone, Kiyoshi, 4,228,429, Cl. 340-632.000.

Young, Claude A. Can edge riding can opener. 4,227,473, Cl. 113-1.00K.

Youngstown Sheet and Tube Company: See—
Maguire, Keith D.; and Currie, Royce A., 4,227,891, Cl. 55-85.000.

Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Digital light measuring device. 4,227,808, Cl. 356-218.000.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: See—
Gier, Georg, 4,227,597, Cl. 192-3.330.

Zaluski, John. Auxiliary lock assembly. 4,227,728, Cl. 292-297.000.

Zandberg, Yoel, to Laser Industries Ltd. Mechanical control system particularly useful for directing a laser beam. 4,228,341, Cl. 219-121.00L.

Zebra Co., Ltd.: See—
Kokubu, Tetsuo, 4,227,822, Cl. 401-17.000.

Zebroski, Edwin L., to Electric Power Research Institute, Inc. Method and apparatus for reducing the power level in a nuclear reactor during temperature transient. 4,227,967, Cl. 176-36.00R.

Zelamy, John W.: See—
Stalker, Kenneth W.; Zelamy, John W.; and Fairbanks, Norman P., 4,227,703, Cl. 277-53.000.

Zelinger, Jiri: See—
Hudecek, Slavko; Hudek, Jaroslav; Heidingsfeld, Viktor; Kolarik, Jan; and Zelinger, Jiri, 4,228,205, Cl. 428-35.000.

Zenith Radio Corporation: See—
Weissmueller, William R., 4,228,461, Cl. 358-148.000.

Zernig, Ernst, to Richard Heinze GmbH & Co. KG, Firma. Base or adjustment plate for cabinet hinges. 4,227,284, Cl. 16-129.000.

Zewail, Ahmed H.; and Batchelder, J. Samuel, to California Institute of Technology. Luminescent solar energy concentrator devices. 4,227,939, Cl. 136-247.000.

Zichis, Joseph, deceased; and Zichis, Lillian K., executrix. Heterophil antibody differentiation (HAD) test. 4,228,148, Cl. 424-12.000.

Zichis, Lillian K., executrix: See—
Zichis, Joseph, deceased; and Zichis, Lillian K., executrix, 4,228,148, Cl. 424-12.000.

Zidele, Israel. Reversible baseball glove. 4,227,263, Cl. 2-19.000.

Ziebrecht, Hans-Jorg: See—
Warnow, Detlef; and Ziebrecht, Hans-Jorg, 4,227,519, Cl. 128-205.240.

Warnow, Detlef; and Ziebrecht, Hans-Jorg, 4,227,523, Cl. 128-204.240.

Zifferer, Morton F.; and Finchbaugh, Donald E., to Mordo Company. Throttle synchronizer for internal combustion engines. 4,227,428, Cl. 74-526.000.

Zikopoulos, John N.: See—
Robyt, John F.; and Zikopoulos, John N., 4,228,150, Cl. 424-48.000.

Zilic, Charles: See—
Stratynski, Eugene; and Zilic, Charles, 4,227,412, Cl. 73-368.300.

Zilling, Helmut: See—
Augsburger, Rolf; Kupka, Horst; and Zilling, Helmut, 4,227,545, Cl. 137-340.000.

Zimmerman, Dennis M., to Eli Lilly and Company. Certain substituted 3,4,5,6-tetrahydropyridinium salt intermediates. 4,228,288, Cl. 546-339.000.

Zimmerman, George M., to Bon Aqua, Inc. Magnetic fluid treating unit. 4,228,010, Cl. 210-222.000.

Zimmerman, Robert L., to Texaco Development Corp. Morpholine derivatives and use as polyurethane catalyst. 4,228,248, Cl. 521-115.000.

Zimmerman, Robert L.: See—
Speranza, George P.; Zimmerman, Robert L.; and Austin, Thomas H., 4,228,310, Cl. 568-620.000.

Zimmerschied, Wilford J., to Standard Oil Company (Indiana). Bromine removal from acetic acid. 4,227,971, Cl. 203-32.000.

Zimmerschied, Wilford J., to Standard Oil Company (Indiana). Removal of bromine from acetic acid. 4,228,307, Cl. 562-608.000.

Zink, John S.; and Reed, Robert D., to John Zink Company. Apparatus for supplying alternate gases to steam injection means on a flare stack. 4,227,872, Cl. 431-90.000.

Zinko, Heimo: See—
Margen, Peter H. E.; Roseen, Rutger A.; and Zinko, Heimo, 4,227,511, Cl. 126-415.000.

Zinser Textilmaschinen GmbH: See—
Kriechbaum, Kurt; Kienhofer, Hans; and Picht, Rin J., 4,227,848, Cl. 414-395.000.

Zipper, Donald H., to Continental Group, Inc., The. Expansion section for tamper-indicating ring of squeeze-off closure. 4,227,618, Cl. 215-253.000.

Zoecon Corporation: See—
Carney, Robert L.; and Henrick, Clive A., 4,228,093, Cl. 556-482.000.

Zorn, Milton J.; Slater, Edward L.; Maizner, Neil L.; Eccles, Brian J.; Minard, Hubert C.; Otsuki, Yuko S.; and Sprengart, Daniel H., to Visual Graphics Corporation. Photoprinting apparatus employing base line control imaging font. 4,227,786, Cl. 354-10.000.

Zysmann, Alexandre: See—
Kalopissis, Gregoire; Zysmann, Alexandre; Sebagn, Henri; Vanlerberghe, Guy; Huron, Jean-Louis; and Bugaut, Andree, 4,228,259, Cl. 525-435.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF OCTOBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Rand, Earl W., Jr. Fuel saving apparatus for multiple cylinder internal combustion engines. Re. 30,417, Cl. 123-198.00F

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Abbott Laboratories: See—
Reichler, Allen S., 257,394, Cl. D24-56.000.
Aboussouan, Michel F. Tape cartridge holder. 257,306, 10-14-80, Cl. D6-185.000.
Abrahamson, Oliver D.: See—
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Akazawa, Toshimasa; Fujimoto, Munenori; Ohta, Kikuo; and Mishihiro, Benito, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 257,351, 10-14-80, Cl. D14-68.000.
American Optical Corporation: See—
Armbruster, John T., 257,357, Cl. D16-58.000.
Armbruster, John T., 257,358, Cl. D16-58.000.
Andrews, Del. Hexagonal floating live bait container. 257,377, 10-14-80, Cl. D22-22.000.
Andrews, Del. Floating live bait container. 257,378, 10-14-80, Cl. D22-22.000.
Antos, John M.: See—
Sargent, Frank T.; Antos, John M.; Henke, Arthur W.; and Hoffman, John A., 257,385, Cl. D23-48.000.
Antretter, Richard; and Siersch, Werner, to Rian-Apparate - und Vorrichtungsbau GmbH. Shaver. 257,401, 10-14-80, Cl. D28-49.000.
Armbruster, John T., to American Optical Corporation. Body of a tissue culture microscope. 257,357, 10-14-80, Cl. D16-58.000.
Armbruster, John T., to American Optical Corporation. Body and illuminator of a tissue culture microscope. 257,358, 10-14-80, Cl. D16-58.000.
Astatic Corporation, The: See—
Garrigus, Charles R.; Over, Gary L.; and Cvetko, Henry J., 257,346, Cl. D14-12.000.
Astrosystems, Inc.: See—
Barth, Seymour, 257,344, Cl. D13-32.000.
Barth, Seymour, to Astrosystems, Inc. Limit set module. 257,344, 10-14-80, Cl. D13-32.000.
Bausch & Lomb Incorporated: See—
Jordan, Paul A., 257,388, Cl. D24-17.000.
Benjamin, E. Burton, to Mosinee Paper Corporation. Towel dispensing cabinet. 257,302, 10-14-80, Cl. D6-96.000.
Black, Warren M., to Merriman Holbrook, Inc. Toe-rail. 257,337, 10-14-80, Cl. D12-70.000.
Blaser, Steffen E. License plate holder. 257,341, 10-14-80, Cl. D12-193.000.
Bogan, David B. Toilet riser. 257,386, 10-14-80, Cl. D23-69.000.
Breneman, Jack L., to Quaker Oats Company, The. Toy tow truck body. 257,368, 10-14-80, Cl. D21-139.000.
Brumbt, Joe. Ski scooter. 257,336, 10-14-80, Cl. D12-8.000.
Burdock, Patrick T. A., to Rovex Limited. Toy ambulance. 257,367, 10-14-80, Cl. D21-134.000.
Chapman, Darwin E., to Creative Phototronics, Inc. Motorized base for use in developing photographic prints. 257,355, 10-14-80, Cl. D16-33.000.
Collins, James; and Gerstenbacher, Joseph. Aerial toy. 257,363, 10-14-80, Cl. D21-86.000.
Computer Products Corporation: See—
Thomas, Ronald B., 257,349, Cl. D14-40.000.
Cone, Richard E., to Questor Corporation. Playpen. 257,299, 10-14-80, Cl. D6-13.000.
Conti, Rino, to Dart Industries Inc. Cream pitcher or the like. 257,312, 10-14-80, Cl. D7-64.000.
Correll, William L. Sawhorse. 257,395, 10-14-80, Cl. D25-67.000.
Cosmopolis, Stavros. Food plate or similar article. 257,310, 10-14-80, Cl. D7-1.000.
Creative Phototronics, Inc.: See—
Chapman, Darwin E., 257,355, Cl. D16-33.000.
Cremer, Richard T. Set of socket wrench extensions. 257,319, 10-14-80, Cl. D8-29.000.
Cunningham, Bette. Mascara application aid. 257,400, 10-14-80, Cl. D28-7.000.
Cvetko, Henry J.: See—
Garrigus, Charles R.; Over, Gary L.; and Cvetko, Henry J., 257,346, Cl. D14-12.000.
Daiwa Seiko, Inc.: See—
Nakamura, Hideo, 257,379, Cl. D22-23.000.
Nakamura, Hideo, 257,380, Cl. D22-23.000.
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Conti, Rino, 257,312, Cl. D7-64.000.
Painter, David L.; and Zinkgraf, Robert C., 257,311, Cl. D7-64.000.
Painter, David L.; and Zinkgraf, Robert C., 257,313, Cl. D7-65.000.
Davco Fishing Products: See—
Davenport, Betty B., 257,383, Cl. D22-31.000.
Davenport, Betty B., to Davco Fishing Products. Fisherman's tool. 257,383, 10-14-80, Cl. D22-31.000.
Denton, David H.; and Purdom, David D. Dental floss dispenser. 257,402, 10-14-80, Cl. D28-64.000.
Drevitch, Nolan A.: See—
Young, Warren H.; Drevitch, Nolan A.; and Rosati, Anthony G., 257,356, Cl. D16-42.000.
Dulude, Charles R. Gun target. 257,376, 10-14-80, Cl. D22-15.000.
Ellinwood, Paul. Windshield wiper unit. 257,339, 10-14-80, Cl. D12-155.000.
English, Michael D. Table top. 257,308, 10-14-80, Cl. D6-192.000.
Fairchild Industries, Inc.: See—
McComas, Jean W.; and Rosenthal, Gordon, 257,338, Cl. D12-78.000.
Fish, Darrell D., to Universal Security Instruments, Inc. Portable tire inflating unit. 257,354, 10-14-80, Cl. D15-9.000.
Fisher, Morris F., to Futurian Corporation. Sofa. 257,300, 10-14-80, Cl. D6-63.000.
Flo-Pac Corporation: See—
Pichelman, Franklin D.; and Mehl, Donald N., 257,322, Cl. D8-354.000.
Fogolin, Fiorevante. Outboard motor protector. 257,353, 10-14-80, Cl. D15-4.000.
Fujimoto, Munenori: See—
Akazawa, Toshimasa; Fujimoto, Munenori; Ohta, Kikuo; and Mishihiro, Benito, 257,351, Cl. D14-68.000.
Futurian Corporation: See—
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Gabriel, Richard J., to Matrix Toys. Joint element for construction set. 257,365, 10-14-80, Cl. D21-108.000.
Gabriel, Richard J., to Matrix Toys. Joint element for construction set. 257,366, 10-14-80, Cl. D21-108.000.
Gammon, Samuel L. Cardio compressor. 257,391, 10-14-80, Cl. D24-36.000.
Garrigus, Charles R.; Over, Gary L.; and Cvetko, Henry J., to Astatic Corporation, The. Conference microphone. 257,346, 10-14-80, Cl. D14-12.000.
Genal Strap, Inc.: See—
Hofman, Bronislaw L., 257,333, Cl. D11-3.000.
Hofman, Bronislaw L., 257,334, Cl. D11-3.000.
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Gillette Company, The: See—
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Goelz, David W.: See—
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Goodman, John P. Sound shell structure. 257,392, 10-14-80, Cl. D25-18.000.
Grossman, Robert D. Adjustable container for a pick-up truck or the like. 257,340, 10-14-80, Cl. D12-157.000.
GTE Automatic Electric Laboratories Incorporated: See—
Janda, George M., 257,350, Cl. D14-53.000.
Gustafsson, Erik. Building sheet and the like. 257,396, 10-14-80, Cl. D25-80.000.
Gustafsson, Erik. Building sheet and the like. 257,397, 10-14-80, Cl. D25-80.000.
Hahn, Heinz W.; and Mehra, Ravinder C., to Sybron Corporation. Test tube rack. 257,390, 10-14-80, Cl. D24-32.000.

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Henke, Arthur W.: See—
Sargent, Frank T.; Antos, John M.; Henke, Arthur W.; and Hoffman, John A., 257,385, Cl. D23-48.000.
Hetherington, Robert D.; and Goelz, David W., to Poly-Glas Systems. Modular multi-color paint selection and supply system manifold or the like. 257,384, 10-14-80, Cl. D23-40.000.
Hoffman, John A.: See—
Sargent, Frank T.; Antos, John M.; Henke, Arthur W.; and Hoffman, John A., 257,385, Cl. D23-48.000.
Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 257,333, 10-14-80, Cl. D11-3.000.
Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 257,334, 10-14-80, Cl. D11-3.000.
Hofman, Bronislaw L., to Genal Strap, Inc. Watchstrap. 257,335, 10-14-80, Cl. D11-3.000.
Hollingsworth, Gene C., to Zero Corporation. Actuator bar for a zero insertion force connector, or the like. 257,343, 10-14-80, Cl. D13-24.000.
Honeywell Inc.: See—
McCarthy, James J.; and Wozniak, Joseph M., 257,360, Cl. D18-26.000.
Hospital Medical Corporation: See—
Pande, Henry, 257,389, Cl. D24-21.000.
Huff, Marvin E., Jr. Tube supporting clip. 257,324, 10-14-80, Cl. D8-396.000.
Hull, George S.; and Imperial, Raymond E., to Johnson Sheet Metal Works Corp. Metal door. 257,393, 10-14-80, Cl. D25-48.000.
Imperial, Raymond E.: See—
Hull, George S.; and Imperial, Raymond E., 257,393, Cl. D25-48.000.
Imura, Goro, to Tomy Kogyo Co., Inc. Toy vehicle. 257,362, 10-14-80, Cl. D21-129.000.
James Industries, Inc.: See—
Molenaar, Lester V., 257,364, Cl. D21-93.000.
Janda, George M., to GTE Automatic Electric Laboratories Incorporated. Loudspeaking telephone housing. 257,350, 10-14-80, Cl. D14-53.000.
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Hull, George S.; and Imperial, Raymond E., 257,393, Cl. D25-48.000.
Jones, Barry M., to Q. C. Glide Company. Combined parting bead extender and weather strip connector for window installations. 257,325, 10-14-80, Cl. D8-400.000.
Jordan, Paul A., to Bausch & Lomb Incorporated. Acuity projector or similar article. 257,388, 10-14-80, Cl. D24-17.000.
Kaempkes, George A. Bookholder. 257,305, 10-14-80, Cl. D6-184.000.
Keller, Bernard L. Purse handle. 257,297, 10-14-80, Cl. D3-54.000.
Kenki (Hong Kong) Limited: See—
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Keon, David W. Grease saver container. 257,315, 10-14-80, Cl. D7-79.000.
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ISSUED OCTOBER 14, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 166		159 16	4,227,978	264	4,227,677	67 R	4,227,692	
153	4,227,573	159 23	4,227,979	270	4,227,679	86 C	4,227,693	
259	4,227,574	180 P	4,227,980	277	4,227,676	164	4,227,694	
312	4,227,575	181 C	4,227,981	255	4,227,695	255	4,227,695	
CLASS 169		195 S	4,227,982	260	4,227,696	260	4,227,696	
61	4,227,577	196	4,227,983	272	4,227,697	272	4,227,697	
CLASS 172		209	4,227,984	309	4,227,698	309	4,227,698	
40	4,227,578	228	4,227,985	CLASS 274		13 R	4,227,699	
64	4,227,579	231	4,227,986	CLASS 277		CLASS 277		
112	4,227,580	CLASS 206	4,227,988	433	4,227,644	12	4,227,700	
142	4,227,581	219	4,227,611	449	4,228,348	34.3	4,227,701	
CLASS 174		459	4,227,612	CLASS 236		53	4,227,702	
45 R	4,228,316	8 LE	4,227,989	49	4,227,645	84	4,227,703	
67	4,228,317	8 R	4,227,990	93 R	4,227,646	160	4,227,705	
73 R	4,228,318	11	4,227,991	CLASS 237		CLASS 280		
CLASS 175		139	4,227,992	2 B	4,227,647	3	4,227,706	
16	4,227,582	177	4,227,993	CLASS 239		47.11	4,227,709	
65	4,227,583	251 H	4,227,994	11	4,227,648	47.19	4,227,710	
95	4,227,584	CLASS 209	4,227,995	124	4,227,649	81 R	4,227,711	
325	4,227,585	12	4,227,996	333	4,227,650	236	4,227,712	
346	4,227,586	250	4,227,997	428	4,227,651	434	4,227,713	
CLASS 176		36 R	4,227,998	706	4,227,652	605	4,227,714	
87	4,227,968	198 C	4,228,000	CLASS 241		618	4,227,715	
CLASS 179		207	4,228,001	24	4,227,653	719	4,227,716	
1 VL	4,228,402	222	4,228,002	34	4,227,654	753	4,227,717	
1.5 S	4,228,321	232	4,228,003	92	4,227,655	770	4,227,718	
2 EA	4,228,320	238	4,228,004	93	4,227,656	809	4,227,708	
2 EB	4,228,319	264	4,228,005	CLASS 242		814	4,227,707	
15.55 T	4,228,322	321 R	4,228,006	47.01	4,227,657	CLASS 283		
16 F	4,228,323	609	4,228,007	66	4,227,658	8 R	4,227,719	
99 H	4,228,324	650	4,228,008	84.1 R	4,227,659	CLASS 285		
100 R	4,228,325	673	4,228,009	86.52	4,227,660	18	4,227,721	
100.1 G	4,228,326	676	4,228,010	107.7	4,227,661	56	4,227,722	
115.5 ES	4,228,327	725	4,228,011	CLASS 244		CLASS 290		
175.2 R	4,228,328	729	4,228,012	76 C	4,227,662	40 R	4,228,359	
CLASS 180		167	4,228,013	149	4,227,663	43	4,228,360	
165	4,227,587	206	4,228,014	194	4,227,664	44	4,228,361	
CLASS 181		175	4,228,015	210	4,227,665	44	4,228,362	
230	4,227,591	355	4,228,016	CLASS 246		450	4,228,363	
CLASS 182		355	4,228,017	187 C	4,227,666	CLASS 292		
56	4,227,592	CLASS 215	4,227,615	CLASS 248		34	4,227,723	
CLASS 188		222	4,227,616	229	4,227,667	145	4,227,724	
1 C	4,227,593	246	4,227,617	317	4,227,668	202	4,227,725	
361	4,227,594	251	4,227,618	416	4,227,669	251.5	4,227,726	
CLASS 191		255	4,227,619	480	4,227,670	270	4,227,727	
2	4,227,595	355	4,227,620	CLASS 249		297	4,227,728	
23 A	4,227,596	CLASS 217	4,227,621	28	4,227,671	CLASS 293		
CLASS 192		117	4,227,672	117	4,227,673	145	4,227,729	
333	4,227,597	CLASS 219	4,227,622	CLASS 250		16	4,227,730	
4 A	4,227,598	10.55 E	4,228,334	226	4,228,349	17	4,227,731	
54	4,227,599	56	4,228,335	267	4,228,350	71	4,227,732	
84 C	4,227,600	73.1	4,228,336	273	4,228,351	83 R	4,227,733	
105 BA	4,227,601	76.13	4,228,337	343	4,228,352	CLASS 296		
109 F	4,227,602	77	4,228,338	356	4,228,353	24 R	4,227,735	
111 A	4,227,603	113	4,228,339	371	4,228,354	65 R	4,227,736	
CLASS 193		121 L	4,228,340	374	4,228,355	76	4,227,737	
CLASS 194		137 WM	4,228,341	439 P	4,228,356	224	4,227,738	
331	4,227,605	225	4,228,342	445 T	4,228,357	CLASS 297		
459	4,227,606	270	4,228,343	457	4,228,358	310	4,227,740	
471	4,227,607	388	4,228,344	CLASS 251		362	4,227,741	
711	4,227,608	CLASS 220	4,227,622	15	4,227,674	430	4,227,742	
831	4,227,610	4 B	4,227,623	173	4,227,675	CLASS 299		
CLASS 200		91	4,227,624	8.55 D	4,228,016	2	4,227,743	
5 A	4,228,329	265	4,227,625	CLASS 252		94	4,227,744	
144 R	4,228,330	307	4,227,626	29	4,228,020	CLASS 300		
148 R	4,228,332	CLASS 221	4,227,626	32.7 R	4,228,021	2	4,227,745	
CLASS 201		188	4,227,627	42.7	4,228,022	CLASS 303		
CLASS 202		282	4,227,628	63	4,228,023	6 R	4,227,746	
CLASS 203		380	4,227,629	99	4,228,024	24 C	4,227,747	
CLASS 204		566	4,227,630	174.11	4,228,025	CLASS 305		
CLASS 205		600	4,227,631	188.3 R	4,228,026	10	4,227,748	
CLASS 206		635	4,227,632	299	4,228,027	30	4,227,749	
CLASS 207		94	4,227,633	316	4,228,028	CLASS 307		
CLASS 208		42.28	4,227,634	400 R	4,228,029	38	4,228,364	
CLASS 209		42.45 R	4,227,635	412	4,228,030	221 D	4,228,365	
CLASS 210		431 R	4,227,636	430	4,228,031	229	4,228,366	
CLASS 211		437	4,227,637	433 R	4,228,032	251	4,228,367	
CLASS 212		96.5	4,227,638	444	4,228,033	262	4,228,368	
CLASS 213					4,228,034	270	4,228,369	
CLASS 214					4,228,035	291	4,228,370	
CLASS 215					4,228,036			
CLASS 216					4,228,037			

CLASSIFICATION OF PATENTS

573	4,228,426	67	4,228,455	112	4,228,530	CLASS 422																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
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D3— 40 257,296	79 257,315	D11— 3 257,333	D15— 1 257,353	257,370	32 257,390
D6— 54 257,297	137 257,316	257,334	9 257,354	257,371	36 257,391
13 257,298	257,317	257,335	33 257,355	257,372	18 257,392
63 257,299	18 257,318	D12— 8 257,336	42 257,356	257,373	48 257,393
257,301	29 257,319	70 257,337	11 257,357	257,374	67 257,395
257,302	343 257,320	78 257,338	11 257,358	257,375	80 257,396
123 257,303	354 257,322	155 257,339	D18— 23 257,359	257,376	118 257,399
162 257,304	356 257,321	157 257,340	11 257,360	257,377	257,397
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185 257,306	396 257,324	D13— 4 257,342	D21— 74 257,375	257,379	257,399
257,307	257,325	24 257,343	86 257,374	257,380	D28— 7 257,400
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201 257,309	186 257,327	11 257,345	86 257,374	257,382	19 257,405
1 257,310	39 257,348	12 257,346	86 257,374	257,383	D47— 6 E 257,403
64 257,311	47 257,328	20 257,347	86 257,374	257,384	6 F 257,404
257,312	54 257,329	20 257,347	129 257,362	257,385	D92— 31 257,407
65 257,313	69 257,330	53 257,350	134 257,367	257,386	
70 257,314	81 257,331	58 257,351	139 257,368	257,387	
	83 257,332	73 257,352	154 257,369	257,388	
				257,389	

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PATENTS

4 : 4,227,289	4,227,669	4,228,389	4,227,480	4,227,360	4,228,307
4,227,320	4,227,672	4,228,394	4,227,497	4,227,368	4,228,427
6 : 4,227,339	4,227,689	4,228,408	4,227,515	4,227,377	4,228,428
4,227,347	4,227,690	4,228,410	4,227,517	4,227,387	4,228,461
4,227,453	4,227,691	4,228,424	4,227,526	4,227,391	4,227,427
4,227,466	4,227,692	4,228,426	4,227,566	4,227,402	4,227,465
4,227,521	4,227,693	4,228,436	4,227,728	4,227,403	4,227,492
4,227,522	4,227,707	4,228,449	4,227,776	4,227,412	4,227,594
4,227,712	4,227,711	4,228,451	4,227,832	4,227,432	4,227,617
4,227,817	4,227,713	4,228,459	4,227,987	4,227,444	4,227,699
4,228,137	4,227,724	4,228,496	4,227,969	4,227,473	4,227,855
4,228,171	4,227,737	4,228,509	4,227,987	4,227,527	4,227,933
4,228,185	4,227,784	4,228,517	4,228,117	4,227,540	4,228,050
4,228,196	4,227,785	4,228,521	4,228,118	4,227,544	4,228,288
4,228,396	4,227,815	4,228,522	4,228,120	4,227,570	4,228,293
4,228,460	4,227,819	4,228,543	4,228,140	4,227,598	4,227,278
4,228,506	4,227,821	4,227,279	4,228,209	4,227,616	4,227,303
4,227,671	4,227,826	4,227,327	4,228,313	4,227,618	4,227,363
4,227,910	4,227,845	4,227,431	4,228,360	4,227,624	4,227,487
4,228,256	4,227,865	4,227,513	4,228,361	4,227,638	4,227,546
01 : 4,228,136	4,227,887	4,227,740	4,228,362	4,227,640	4,227,849
04 : 4,227,298	4,227,919	4,227,960	4,228,363	4,227,641	4,227,852
4,227,311	4,227,929	4,228,112	4,228,380	4,227,667	4,227,976
4,227,537	4,227,939	4,228,125	4,228,416	4,227,670	4,228,150
4,227,664	4,227,940	4,228,238	4,228,469	4,227,730	4,228,535
4,227,863	4,227,943	4,228,459	4,228,532	4,227,744	Re. 30,417
4,227,894	4,227,955	4,228,485	4,228,538	4,227,748	4,227,269
4,228,000	4,227,962	4,227,425	4,228,544	4,227,772	4,227,448
4,228,386	4,227,967	4,227,528	4,227,777	4,227,792	4,227,486
4,228,448	4,227,967	4,227,655	4,227,792	4,227,836	4,228,279
4,228,500	4,227,988	4,227,779	4,227,893	4,227,902	4,228,507
4,228,518	4,228,004	4,227,801	4,227,893	4,227,954	4,227,357
06 : 4,227,281	4,228,010	4,227,816	4,227,934	4,227,972	4,227,996
4,227,291	4,228,013	4,227,874	4,227,935	4,227,972	4,228,078
4,227,305	4,228,022	4,227,977	4,227,938	4,227,997	4,228,393
4,227,326	4,228,032	4,228,053	4,227,954	4,228,001	4,227,674
4,227,330	4,228,035	4,228,169	4,227,972	4,228,015	4,227,829
4,227,340	4,228,062	4,228,289	4,227,982	4,228,049	4,227,423
4,227,367	4,228,093	4,228,290	4,227,982	4,228,057	4,228,237
4,227,373	4,228,110	4,228,347	4,227,920	4,228,076	4,227,359
4,227,406	4,228,148	4,228,347	4,227,934	4,228,091	4,227,420
4,227,419	4,228,172	4,228,005	4,227,935	4,228,121	4,227,479
4,227,461	4,228,182	4,228,109	4,227,938	4,228,154	4,227,550
4,227,516	4,228,220	4,228,263	4,227,954	4,228,193	4,227,584
4,227,525	4,228,224	4,228,272	4,227,972	4,228,195	4,227,627
4,227,561	4,228,282	4,228,277	4,227,982	4,228,221	4,227,677
4,227,567	4,228,305	4,228,302	4,227,997	4,228,236	4,227,717
4,227,574	4,228,306	4,228,482	4,227,997	4,228,245	4,227,731
4,227,582	4,228,329	4,228,482	4,227,997	4,228,269	4,227,814
4,227,590	4,228,345	4,228,482	4,227,997	4,228,300	4,227,890
4,227,601	4,228,364	4,227,413	4,227,997		
4,227,604	4,228,367	4,227,417	4,227,997		
4,227,634	4,228,368	4,227,429	4,227,997		
		4,227,469	4,227,997		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

4,227,937	27	4,227,280	4,228,139	4,227,950	4,228,210	4,228,142
4,227,948		4,227,337	4,228,159	4,227,953	4,228,216	4,228,155
4,228,009		4,227,350	4,228,161	4,227,980	4,228,250	4,228,156
4,228,079		4,227,364	4,228,166	4,227,981	4,228,328	4,228,157
4,228,099		4,227,510	4,228,170	4,228,012	4,228,334	4,228,158
4,228,132		4,227,557	4,228,180	4,228,028	4,228,495	4,228,276
4,228,397		4,227,681	4,228,184	4,228,030	4,228,513	4,228,351
4,228,401		4,227,911	4,228,191	4,228,046	4,228,516	4,228,425
4,228,407		4,227,978	4,228,199	4,228,069	4,227,267	4,227,274
4,228,422		4,228,227	4,228,201	4,228,073	4,227,404	4,227,331
4,228,423		4,228,232	4,228,213	4,228,085	4,227,405	4,227,382
4,228,432		4,228,330	4,228,226	4,228,147	4,227,481	4,227,393
4,227,349		4,228,503	4,228,254	4,228,176	4,227,710	4,227,440
4,227,637		4,228,504	4,228,273	4,228,212	4,227,872	4,227,543
4,227,673	28	4,227,375	4,228,274	4,228,230	4,227,891	4,227,573
4,227,700		4,228,292	4,228,278	4,228,231	4,227,897	4,227,575
4,227,765		4,227,310	4,228,280	4,228,246	4,227,994	4,227,576
4,227,781	29	4,227,312	4,228,285	4,228,257	4,228,040	4,227,578
4,227,782		4,227,424	4,228,298	4,228,285	4,228,143	4,227,579
4,227,789		4,227,485	4,228,315	4,228,286	4,228,311	4,227,585
4,227,790		4,227,626	4,228,320	4,228,296	4,227,332	4,227,586
4,227,928		4,227,764	4,228,321	4,228,303	4,227,437	4,227,592
4,227,941		4,227,842	4,228,323	4,228,308	4,227,587	4,227,632
4,227,984		4,227,888	4,228,349	4,228,317	4,227,709	4,227,665
4,228,007		4,227,901	4,228,356	4,228,344	4,227,850	4,227,695
4,228,075		4,228,119	4,227,915	4,228,369	4,228,006	4,227,831
4,228,123		4,228,020	4,228,395	4,228,370	4,228,447	4,227,857
4,228,225		4,228,345	4,228,438	4,228,384	4,227,266	4,227,990
4,228,338		4,228,474	4,228,463	4,228,400	4,227,273	4,228,016
4,228,357	30	4,227,467	4,228,514	4,228,406	4,227,366	4,228,017
4,228,358	31	4,227,648	4,228,523	4,228,435	4,227,380	4,228,018
4,228,379		4,228,318	4,228,531	4,228,450	4,227,408	4,228,019
4,228,387	33	4,227,483	4,227,774	4,228,452	4,227,409	4,228,066
4,228,392		4,227,762	4,228,420	4,228,456	4,227,418	4,228,186
4,228,434		4,228,206	4,227,263	4,228,457	4,227,421	4,228,248
4,228,443		4,228,417	4,227,270	4,228,466	4,227,428	4,228,309
4,228,494		4,228,484	4,227,287	4,228,480	4,227,454	4,228,310
4,228,498	34	4,227,264	4,227,290	4,228,481	4,227,464	4,228,322
4,228,501		4,227,288	4,227,328	4,228,511	4,227,530	4,228,339
4,228,515		4,227,306	4,227,334	4,228,520	4,227,593	4,228,350
4,228,537		4,227,348	4,227,388	4,228,526	4,227,611	4,228,399
4,227,276		4,227,398	4,227,396	4,228,536	4,227,614	4,228,441
4,227,282		4,227,411	4,227,407	4,227,283	4,227,763	4,228,445
4,227,294		4,227,476	4,227,410	4,227,285	4,227,794	4,228,529
4,227,338		4,227,477	4,227,414	4,227,308	4,227,879	4,228,530
4,227,386		4,227,478	4,227,434	4,227,506	4,227,892	4,228,391
4,227,445		4,227,488	4,227,436	4,227,538	4,227,908	4,227,482
4,227,484		4,227,508	4,227,455	4,227,841	4,227,913	4,227,400
4,227,494		4,227,620	4,227,458	4,227,884	4,227,927	4,227,514
4,227,495		4,227,628	4,227,524	4,227,885	4,227,932	4,227,683
4,227,505		4,227,678	4,227,533	4,227,959	4,227,979	4,227,759
4,227,509		4,227,742	4,227,536	4,228,373	4,227,983	4,227,970
4,227,547		4,227,745	4,227,542	4,227,314	4,227,991	4,228,365
4,227,559		4,227,758	4,227,581	4,227,344	4,228,023	4,228,418
4,227,562		4,227,766	4,227,588	4,227,271	4,228,024	4,228,437
4,227,568		4,227,769	4,227,607	4,227,315	4,228,036	4,228,475
4,227,589		4,227,806	4,227,612	4,227,361	4,228,055	4,227,323
4,227,666		4,227,851	4,227,629	4,227,395	4,228,127	4,227,535
4,227,694		4,227,871	4,227,642	4,227,439	4,228,163	4,227,807
4,227,725		4,227,876	4,227,696	4,227,443	4,228,214	4,228,197
4,227,732		4,227,881	4,227,697	4,227,457	4,228,294	4,228,324
4,227,738		4,227,895	4,227,719	4,227,493	4,228,343	4,228,510
4,227,739		4,227,899	4,227,720	4,227,548	4,228,405	4,227,660
4,227,760		4,227,912	4,227,721	4,227,572	4,228,413	4,228,002
4,227,761		4,227,946	4,227,735	4,227,643	4,228,446	4,228,094
4,227,775		4,227,958	4,227,752	4,227,656	4,228,488	4,228,162
4,227,838		4,227,975	4,227,753	4,227,703	4,228,497	4,228,390
4,227,839		4,227,989	4,227,756	4,227,704	4,228,528	4,227,381
4,227,877		4,227,992	4,227,771	4,227,861	4,227,307	4,227,463
4,227,889		4,227,995	4,227,786	4,227,867	4,227,389	4,227,654
4,227,904		4,228,008	4,227,795	4,227,870	4,227,534	4,227,658
4,227,909		4,228,026	4,227,796	4,227,906	4,228,011	4,227,668
4,228,061		4,228,027	4,227,798	4,227,916	4,228,297	4,227,718
4,228,095		4,228,045	4,227,805	4,227,957	4,228,419	4,227,952
4,228,096		4,228,047	4,227,810	4,227,963	4,227,272	4,228,188
4,228,104		4,228,058	4,227,818	4,228,025	4,227,684	4,228,215
4,228,108		4,228,060	4,227,856	4,228,042	4,227,341	4,228,228
4,228,128		4,228,063	4,227,862	4,228,044	4,227,729	4,228,337
4,228,247		4,228,077	4,227,926	4,228,048	4,227,659	4,228,342
4,228,346		4,228,080	4,227,930	4,228,103	4,227,663	4,228,415
4,228,388		4,228,126	4,227,942	4,228,115	4,227,844	4,228,465
4,228,512		4,228,135	4,227,944	4,228,130	4,227,907	4,228,489

DESIGN PATENTS

6	257,398	08	257,386	18	257,350		257,322		257,357	41	257,387
	257,400		257,389		257,359		257,349		257,358		257,365
04	257,402	09	257,376		257,393		257,364		257,368		257,366
	257,360	12	257,297	19	257,339	31	257,336		257,388	42	257,325
06	257,383		257,300	24	257,321	36	257,309		257,390		257,329
	257,306		257,305		257,354		257,316		257,406		257,363
	257,315		257,340	25	257,310		257,317	37	257,304	44	257,328
	257,324		257,345		257,312		257,333	39	257,299	45	257,382
	257,330		257,391		257,323		257,334		257,308	48	257,332
	257,341	17	257,298		257,327		257,335		257,326		257,394
	257,343		257,302		257,356		257,338		257,337		257,405
	257,355		257,311	26	257,385		257,342		257,346	49	257,303
	257,377		257,313	27	257,307		257,344		257,374	53	257,395
	257,378		257,319		257,314		257,347		257,375		
	257,384		257,331		257,320		257,348	40	257,296	55	257,301

PLANT PATENTS

39	4,601				
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Vol. 999 Number 3

OFFICIAL GAZETTE

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October 27, 1980

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Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee.....	\$35.00
Search fee.....	300.00
Basic fee (first 30 pages).....	190.00
Basic fee supplement (each sheet over 30).....	3.50
Designation fee.....	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

June 17, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,935,959, Re. S.N. 168,978, Filed Jul. 14, 1980, Cl. 220/22, CONTAINER FOR BULK TOBACCO, William R. Long, Owner of Record: Long Mfg. N.C. Inc., Tarboro, N.C., Attorney or Agent: A Yates Dowell, Jr., et al., Ex. Gp.: 241

999 OG 18

4,109,712, Re. S.N. 163,231, Filed Jun. 25, 1980, Cl. 166/340, SAFETY APPARATUS FOR AUTOMATICALLY SEALING HYDRAULIC LINES WITHIN A SUB-SEA WELL CASING, A. Michael Regan, Owner of Record: Regan Offshore International Inc., Torrance, Calif., Attorney or Agent: Robert A. Felsman, et al., Ex. Gp.: 354

4,155,929, Re. S.N. 163,702, Filed Jun. 27, 1980, Cl. 260/465.1, PROCESS FOR THE PREPARATION OF AN ACETONITRILE DERIVATIVE, Michel Chignac, et al., Owner of Record: Labaz, Paris, France, Attorney or Agent: Richard D. Mason, et al., Ex. Gp.: 121

4,168,798, Re. S.N. 165,132, Filed Jul. 1, 1980, Cl. 239/121, FULL COVERAGE RECIRCULATING SPRAYER, John O. Moore, et al., Owner of Record: Sprayrite Manufacturing Company, West Helena, Ark., Attorney or Agent: James Van Santen, et al., Ex. Gp.: 313

4,182,362, Re. S.N. 161,128, Filed Jun. 19, 1980, Cl. 137/340, DIFFERENTIAL TRANSMITTER AND MANIFOLD MOUNTING, John E. Hewson, et al., Owner of Record: Anderson Greenwood & Co., Houston, Tex., Attorney or Agent: Jack R. Springgate, et al., Ex. Gp.: 341

4,186,137, Re. S.N. 163,500, Filed Jun. 27, 1980, Cl. 549/79, PROCESS FOR PREPARING 3-THIENYL-ACETATE DERIVATIVES, Charles Pigerol, et al., Owner of Record: Labaz, Paris, France, Attorney or Agent: Richard D. Mason, et al., Ex. Gp.: 122, Pub. Oct. 21, 1980

PATENT NOTICES

Certificates of Correction for the Week of Oct. 21, 1980

D. 255,236	4,194,935	4,204,540	4,209,574
D. 256,041	4,195,220	4,204,863	4,210,188
3,923,638	4,196,265	4,205,124	4,210,953
4,064,048	4,196,288	4,205,614	4,210,990
4,074,814	4,198,545	4,205,967	4,211,182
4,108,988	4,198,707	4,206,002	4,211,636
4,138,194	4,199,142	4,206,258	4,211,699
4,140,793	4,199,528	4,206,393	4,211,761
4,163,183	4,199,642	4,206,846	4,211,806
4,168,258	4,200,021	4,207,125	4,212,345
4,168,267	4,200,488	4,207,140	4,212,518
4,169,946	4,201,361	4,207,471	4,212,696
4,174,207	4,201,816	4,208,010	4,213,242
4,175,180	4,202,558	4,208,539	4,213,374
4,176,927	4,202,600	4,208,780	4,213,383
4,178,465	4,202,621	4,208,931	4,213,920
4,182,548	4,203,343	4,208,989	4,214,255
4,188,436	4,203,626	4,209,133	4,214,286
4,192,062	4,203,786	4,209,239	4,214,594
4,192,688	4,203,986	4,209,520	4,216,426
4,192,785	4,204,003		

Disclaimers

3,740,403.—Keith Chadwick Murdock, Pearl River, N.Y. 3,6-bis - (DIALKYLAMINOALKOXY)ACRIDINES. Patent dated June 19, 1973. Disclaimer filed July 18, 1980, by the assignee, American Cyanamid Company.

Hereby enters this disclaimer to claim 3 of said patent.

3,402,086.—William F. Smith, Lake Jackson and Donald J. Endsley, Clute, Tex. HOT-MELT EXTRUSION COATING PROCESS. Patent dated Sept. 17, 1968. Disclaimer filed Oct. 3, 1977, by the assignee, The Dow Chemical Company.

Hereby enters this disclaimer to claims 1, 2, 3, 5 and 6 of said patent.

3,838,404.—Richard H. Heeren, Palatine, Ill. RANDOM ACCESS MEMORY SYSTEM AND CELL. Patent dated Sept. 24, 1974. Disclaimer filed June 27, 1977, by the assignee, Teletype Corporation.

Hereby enters this disclaimer to claims 16, 24 through 35, inclusive, 37 through 41, inclusive and 44 through 50, inclusive of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for \$5.00 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for \$5.00 each (\$10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be

made available to serious prospective licensees upon execution of a non-disclosure agreement.

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administration
Service Division Federal Bldg., Science and Education
Administration, Hyattsville, Md. 20782

Patent application 6-110,860. Controlled Release of Bioactive Materials Using Alginate Gel Beads. Filed Jan. 9, 1980.

Patent application 6-140,911. Anti-Feedant for Boll Weevils. Filed Apr. 16, 1980.

Patent 4,203,892. Method of Protecting Proteins for Animal Feed. Filed Apr. 17, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,204,008. Preparation of Protein Concentrates From Whey and Seed Products. Filed Dec. 28, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,204,043. Method of Removing Piment From Anatto Seed. Filed Apr. 4, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,205,602. Apparatus for Tying Cauliflower. Filed Dec. 19, 1978. Patented June 3, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent 4,178,285. Separation of Active α -Acid Glycoprotein and Utilization in the Lipoprotein Lipase Enzyme System. Filed Dec. 20, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,183,864. Cobalt Catalyzed Steroid Synthesis. Filed Feb. 21, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,200,806. Scanning Flow Indicator for Rotameters. Filed Apr. 25, 1978. Patented Apr. 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-086,213. Diamond Supported Helix Assembly and Method. Filed Oct. 18, 1979.

Patent application 6-091,224. Automatic Parachute Release System. Filed Nov. 6, 1979.

Patent application 6-116,351. A New Method for Preparing Pentanitroaniline and Triaminotri-nitrobenzenes From Trinitrotoluene. Filed Jan. 28, 1980.

Patent application 6-121,550. Transducer Array Release and Pressure Compensation System. Filed Feb. 14, 1980.

Patent application 6-130,804. A Simplified Multilayer Circuit Board. Filed Mar. 17, 1980.

Patent application 6-133,753. Electrical Connector Receptacle Assembly. Filed Mar. 25, 1980.

Patent application 6-135,563. Bonding Agent for HMX (Cyclotetramethylenetetranitramine). Filed Mar. 31, 1980.

Patent application 6-137,226. Portable Battery Operated Smoke Generator. Filed Apr. 4, 1980.

Patent application 6-137,227. Nontoxic Smoke Generator. Filed Apr. 4, 1980.

Patent application 6-141,703. Apparatus and Method for Radio Channel Selection. Filed Apr. 18, 1980.

Patent application 6-143,079. Automatic Temperature Control System for Diver Heating System. Filed Apr. 4, 1980.

Patent application 6-143,707. Dynamics Parachute Four-Line Release Simulator. Filed Apr. 25, 1980.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent 4,193,435. Floating Nut Retention System. Filed Aug. 31, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,195,666. Quartz Ball Valve. Filed Aug. 31, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,199,764. Dual Band Combiner for Horn Antenna. Filed Jan. 31, 1979. Patented Apr. 22, 1980. Not available NTIS.

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Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table follow-

ing, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 6, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-26-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins with Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prostodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director..... Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-27-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Oas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	4-16-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluid Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-78
DESIGNS, GROUP 290—Vacant..... Industrial Arts; Household, Personal and Fine Arts.	10-10-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-4-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-24-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements, Clutches.	3-11-79

Expiration of patents: The patents within the range of numbers indicated below expire during September 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 1440) and Public Law 619, 83rd Congress, approved August 23, 1954 (64 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,102,270 to 3,105,236, inclusive
Plant Patents..... Numbers 2,277 to 2,286, inclusive

999 OG 21

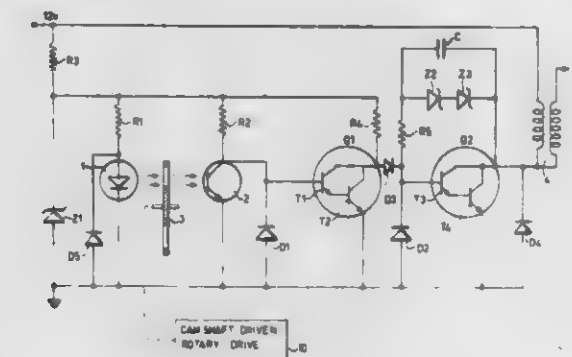
REISSUES

OCTOBER 21, 1980

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,418
**OPTO-ELECTRONIC IGNITION SYSTEMS FOR
INTERNAL COMBUSTION ENGINES**
Eric H. Ford, London, England, assignor to Lumenition Limited,
London, England
Original No. 4,122,814, dated Oct. 31, 1978, Ser. No. 820,744,
Aug. 1, 1977. Continuation-in-part of Ser. No. 655,138, Feb. 3,
1976, abandoned. Application for reissue Mar. 1, 1979, Ser.
No. 16,369
Claims priority, application United Kingdom, Feb. 12, 1975,
6028/75

Int. Cl.² F02P 1/00
U.S. Cl. 123—651 11 Claims

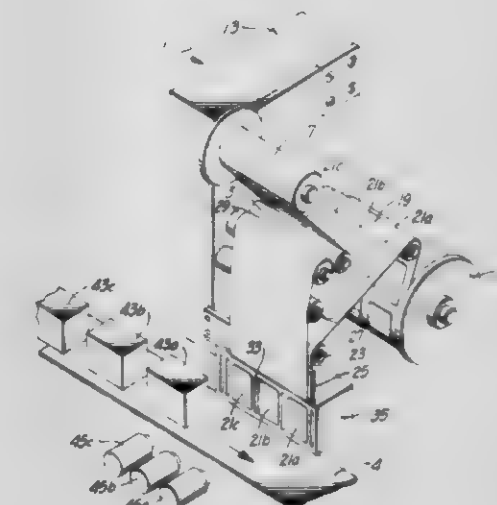


1. An opto-electronic ignition system for controlling switching of the primary winding of an ignition coil of an internal combustion engine and capable of reliable operation at temperatures above about 125° C., said system comprising a source of radiation; a photo-transistor sensitive to radiation which will switch on or conduct when exposed to the radiation and switch off when the radiation is cut off; means disposed between said source and said photo-transistor for intermittently blocking radiation from said source in timed relation to the engine revolutions so as to control the periods during which radiation is received by said photo-transistor; and a switching circuit for controlling switching of the ignition coil responsive to the output of said photo-transistor; said switching circuit comprising a plurality of pairs of transistors the components of each pair being connected in a Darlington configuration and means for connecting said pairs of transistors to each other between said photo-transistor and the ignition coil such that each Darlington pair switches in inverse relationship to at least one other Darlington pair and a first Darlington pair switches in inverse relationship to said photo-transistor, so as to cause fast switching of the primary winding of the ignition coil thereby inducing a spark voltage in the second winding of the coil.

Re. 30,419
**APPARATUS AND METHOD FOR TRANSMITTING
ELEMENTS TO ARTICLES**
Michael Crankshaw, Santa Fe Springs; Leo Kuckeck, Irvine, and
Donald L. Caudill, Riverside, all of Calif., assignors to Label-
Aire Inc., Fullerton, Calif.
Original No. 4,089,723, dated May 16, 1978, Ser. No. 786,186,
Apr. 11, 1977. Continuation-in-part of Ser. No. 699,264, Jun.
24, 1976, Pat. No. 4,024,011. Application for reissue Dec. 14,
1978, Ser. No. 969,301
The portion of the term of this patent subsequent to May 17,
1994, has been disclaimed.
Int. Cl.² B32B 31/00

U.S. Cl. 156—249 20 Claims
18. A method of transferring elements to articles comprising:
repetitively supplying elements to a plurality of positions with

such positions being arranged in a sequence which defines a row at a work station and with a first of said positions being next in said sequence to a second of said positions, first and second of said elements being supplied to said first and second positions, respectively;
with said first and second elements releasably retained at the first and second positions, respectively, advancing a plurality of articles, including first and second articles in a sequence, through said work station generally from one end of said row to the other end of said row with said first article being next in the sequence of articles to the second article and with the first article leading the second article, said other end of said row being closer to said first position than to said second position;
said step of advancing including advancing said first article past said second element at said second position; and



transferring the first and second elements from the first and second positions to said first and second articles, respectively, as the articles are advanced through the work station and preventing the transfer of elements from the first and second positions to the second and first articles, respectively, as the articles are advanced through the work station.
19. An apparatus for transferring elements to articles which are moved in a first direction through a station wherein a first of the articles leads a second of the articles through the station, said apparatus comprising:
means for releasably retaining first and second of the elements at first and second positions with said positions defining a row at said station, the axis of the row extending generally in said first direction and the first position being downstream, in the direction of article movement, of said second position;
sensor means responsive to the location of at least one of the first and second articles for providing a control signal;
means for transferring the elements from the retaining means to the articles as the articles are moved through said station; and
control means responsive to said control signal for controlling said transferring means so that said transferring means transfers the first element to the first article and the second element to the second article, said control means preventing the transfer of elements to the first and second articles at the second and first positions, respectively.

Re. 30,420
PYRAZOL-5-ONES

Elke Möller, Wuppertal, Fed. Rep. of Germany; Karl-August Meng, deceased, late of Wuppertal, Fed. Rep. of Germany by Ilse Heide Frieda Meng, heir and legal representative; Egbert Wehinger, Veiibert, Fed. Rep. of Germany, and Harald Horstmann, Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Original No. 4,000,294, dated Dec. 28, 1976, Ser. No. 632,165, Nov. 14, 1975, Division of Ser. No. 461,285, Apr. 15, 1974, Pat. No. 3,952,008. Application for reissue Feb. 4, 1977, Ser. No. 765,666

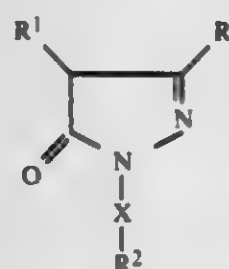
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1973, 2319279; Dec. 17, 1973, 2363138

Int. Cl.² A61K 31/415

U.S. Cl. 424—273 P

22 Claims

1. A pharmaceutical composition useful for effecting diuresis or saluresis in humans and animals and for treating hypertension in humans and animals which comprises a diuretically effective amount, a saluretically effective amount or an antihypertensive amount of a compound of the formula



or a pharmaceutically acceptable nontoxic salt thereof, wherein

R is amino;

R¹ is [hydrogen,] lower alkyl or lower alkenyl;

X is

ethylene, ethylene wherein 1 hydrogen atom on 1 of the carbon atoms is substituted by alkyl of 1 to 4 carbon atoms or ethylene wherein 1 hydrogen atom on each of the two carbon atoms is substituted by alkyl of 1 to 4 carbon atoms, linked to R² via an oxygen or sulphur atom;

R² is aryl of 6 to 10 carbon atoms unsubstituted or substituted by:

- 1 or 2 of the same or different substituents selected from the group consisting of halogen, trifluoromethyl, alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms and lower alkoxy;
- cycloalkyl of 5, 6 or 7 carbon atoms or cycloalkenyl of 5, 6 or 7 carbon atoms;
- nitro or
- nitro, and 1 or 2 of the same or different substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, halogen and trifluoromethyl

in combination with a pharmaceutically-acceptable, nontoxic, inert diluent or carrier.

Re. 30,421

PROCESS FOR PREPARING

N-ALKOXYCARBONYL-N-ALKYLCYANAMIDE

Charles D. Adams, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,138,585, dated Feb. 6, 1979, Ser. No. 874,354, Feb. 1, 1978. Application for reissue Oct. 11, 1979, Ser. No. 83,446

Int. Cl.³ C07C 125/065

U.S. Cl. 560—159

7 Claims

1. In a process for preparing N-[ethoxycarbonyl]alkoxycarbonyl-N-alkylcyanamides of the formula



wherein R is alkyl of 1-3 carbon atoms and R' is alkyl of 1-3 carbon atoms by mixing an aqueous solution of an alkali or alkaline earth metal salt of N-alkoxycarbonyl cyanamide with a di-C₁₋₃ alkyl sulfate, the improvement which comprises mixing said aqueous solution with said di-C₁₋₃ alkyl sulfate in the presence of at least about 0.1 mole % of quaternary hydrocarbyl ammonium ions per mole of N-alkoxycarbonyl cyanamide, the hydrocarbyl moieties being selected from the group consisting of alkyl, aryl, alkaryl and aralkyl groups having a total carbon content of from 7 to 60 carbon atoms.

Re. 30,422

GRAPHIC RECORDER

Jean Mourier, Savigny-sur-Orge, France, Assignor to Benson-France, Fontenay-sous-bois, France

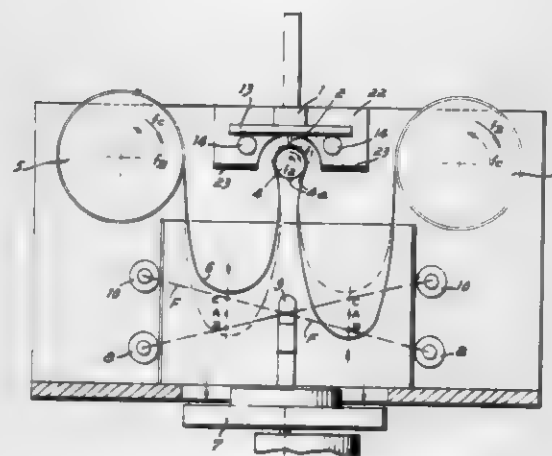
Original No. 3,305,873, dated Feb. 21, 1967, Ser. No. 408,159, Nov. 2, 1964. Application for reissue Jan. 9, 1979, Ser. No. 2,144

Claims priority, application France, Nov. 8, 1963, 63,953,207

Int. Cl.¹ G01D 9/38, 15/28

U.S. Cl. 346—112

5 Claims



4. An instrument for graphically recording information by providing a visually perceptible image on a web of flexible, wide sheet material comprising:

a pair of spools with flexible wide sheet material extending therebetween,

a head for graphically transferring information onto said flexible material,

means for displacing said head in two different transverse directions across at least a portion of the width of said flexible material during transferring of information,

a driving means located opposite said head for contacting said flexible material between said spools and for moving said flexible material in two different longitudinal directions past said head during transferring of information, said directions being perpendicular to the displacement of said head,

said driving means including a control spindle of low rotational inertia and having a minimum diameter compatible with the flexibility of said flexible material,

and air pressure means to hold said flexible material against a portion of the surface of said control spindle and applied between said control spindle and each of said pair of spools forming loops therebetween and isolating said control spindle from the inertial action of said spools, whereby said control spindle and said air pressure means cooperate to positively control movement of said flexible material past said head without the use of any other drive means for said flexible material.

PLANT PATENTS

GRANTED OCTOBER 21, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,602

PLANT VARIETY OF THE ACANTHUS FAMILY

Barnell L. Cobia, P.O. Box 1307, Winter Garden, Fla. 32707

Filed May 7, 1979, Ser. No. 36,541

Int. Cl.¹ A01H 5/12

U.S. Cl. Plt.—88

1 Claim

1. The new and distinct variety of the Acanthus family substantially as herein shown and described.

PATENTS

GRANTED OCT. 21, 1980

ERRATA

For	See
CLASS	PATENT NO.
052-035	4,228,552
119-001	4,228,554
368-028	4,228,644
368-075	4,228,645
368-066	4,228,646
368-185	4,228,647
368-185	4,228,648
368-093	4,228,649
474-012	4,228,691
474-251	4,228,692
081-460	4,228,723
440-086	4,228,760
123-437	4,228,788
568-380	4,229,377
568-313	4,229,378
568-437	4,229,379
568-435	4,229,380
568-454	4,229,381
428-113	4,229,472
428-113	4,229,473
428-162	4,229,474
428-196	4,229,475
428-201	4,229,476
370-084	4,229,621
370-081	4,229,622
370-004	4,229,623
375-088	4,229,698
370-024	4,229,741

PATENTS

GRANTED OCTOBER 21, 1980

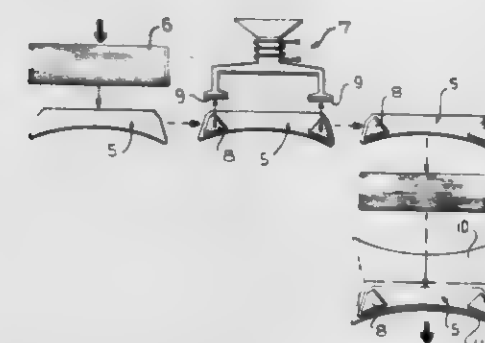
GENERAL AND MECHANICAL

4,228,547 REINFORCED CLOTHING COMPONENT AND METHOD OF MAKING SAME

Paul G. Peterson, 52 Bruce St., Kitchener, Ontario, Canada
(N2B 1Y5)

Continuation of Ser. No. 747,957, Dec. 6, 1976, abandoned. This
application Jan. 30, 1979, Ser. No. 7,770

Int. Cl.² A41B 3/00
U.S. Cl. 2-129 9 Claims



1. A method of reinforcing an article of clothing such as a shirt collar and cuffs, said method comprising the steps of forming a clothing component in a customary manner, applying a reinforcing coating of heated thermoplastics material to the formed clothing component in a definite preselected pattern to accomplish the desired reinforcement, then incorporating the clothing component with another clothing component in the making of an article, and the thermoplastics material being self-bonding to the first-mentioned and another clothing component.

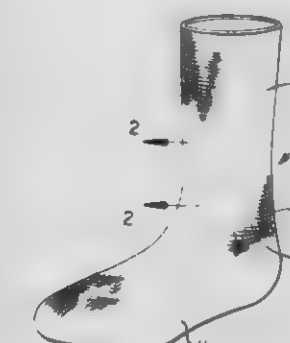
motion, the hand, wrist, and arm portions of said extremity move in unison.

4,228,549 DEODORIZER FOOTWEAR

John L. Rispoli, 1304 Huron Ave., New Castle, Pa. 16101

Filed Aug. 31, 1977, Ser. No. 829,522
Int. Cl.² A41B 11/00; A43B 17/00

U.S. Cl. 2-239 5 Claims



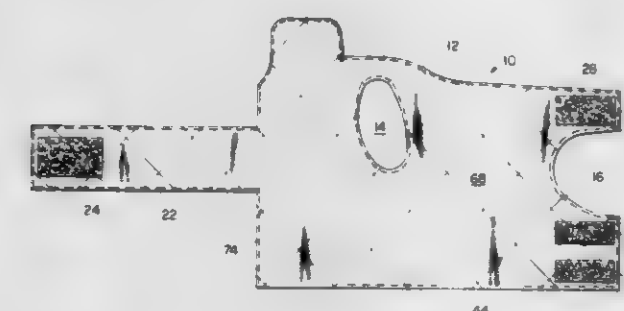
1. As a new article of manufacture an article of footwear comprising a sock or stocking, said article formed of a fabric, the yarns of said fabric formed of synthetic resin containing activated charcoal particles homogeneously distributed therein, said charcoal particles being present in, on and extending from the surface of said yarns in an amount effective to absorb odors when said article is subjected to contact with foot perspiration and to a passage of odor filled air through said fabric.

4,228,548 ATHLETIC GLOVE

David L. Cohen, 6517 Tower Dr., Apt. T-3, Alexandria, Va. 22306

Filed Mar. 28, 1978, Ser. No. 891,135
Int. Cl.² A41D 19/00; A43D 5/00

U.S. Cl. 2-161 A 4 Claims



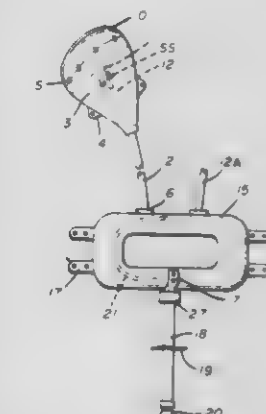
1. An athletic glove comprising:
a glove body adapted to be disposed upon an arm extremity within the vicinity of the arm wrist; and
means operatively associated with said glove body for positively restraining movement of said wrist with respect to and for fixing said wrist in a predetermined disposition, wherein said restraining means comprises a first rigid brace operatively engaged with the interior, palm-side of said extremity; and a second rigid brace operatively engaged with the exterior, back side of said extremity, wherein said second brace has a longitudinal extent such that the same overlies a portion of the arm of said extremity, the wrist of said extremity, and the first joint of the hand fingers, whereby when said extremity is moved through a particular

4,228,550 DISTAL URINARY REPLACEMENT PROSTHESIS

Henry Salkind, 3415 Fifth Ave., Youngstown, Ohio 44505

Filed Jun. 29, 1979, Ser. No. 53,431
Int. Cl.² A61F 1/24

U.S. Cl. 3-1 13 Claims



1. A surgically implantable distal urinary replacement prosthesis for the collection and removal of urine from at least one kidney in a patient's body and comprising at least one flexible cone-shaped sheath having a first open end arranged for engagement about and attachment to at least a portion of said kidney so as to enclose the renal pelvis area thereof, a second end of said cone-shaped sheath being spaced from said renal pelvis area, a flexible tubular replacement ureter positioned partially within said cone-shaped sheath and extending outwardly thereof through said second end thereof and attached thereto in sealing relation, an end of said flexible tubular replacement ureter located within said cone-shaped sheath and arranged for engagement over a ureter in said renal pelvis area

and adapted to be attached thereto, openings in said flexible tubular replacement ureter within said flexible cone-shaped sheath so that liquid within said flexible cone-shaped sheath can flow into said tubular replacement ureter, a tank forming a replacement bladder, said tubular replacement ureter being in communication with said tank and a flexible tubular member communicating with said tank and forming a discharge passageway extending therefrom.

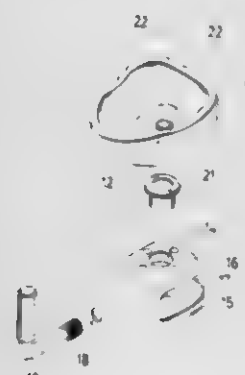
4,228,551 BABY TOILET

Lee Chung-Feng, No. 103 Wutsang St. Sec. 2, Taipei, Taiwan
Filed Mar. 26, 1979, Ser. No. 23,535

Int. Cl.³ A47K 11/02

U.S. Cl. 4-484

6 Claims



1. A portable toilet employing a flexible bag, comprising: a toilet bowl, said bowl having a flat bottom of uniform thickness, said bowl having a hole in said flat bottom and a tube extending from the outer surface of said bottom, said tube communicating with said bowl through said hole in the bottom; a base having an upper and a lower surface, said upper surface having an outer contour which is substantially identical to the inner contour of said bowl, said base having a hole therethrough from said upper surface to said lower surface located at the same position as the hole in said bowl, said hole at the upper surface of said base being of sufficient diameter to permit insertion of the tube extending from said bowl therethrough, wherein the top of the flexible bag is inserted upwardly through the hole in said base and spread partly over the upper surface of the base, said bowl being placed over the base with the tubular extension inserted into the hole in the upper surface of the base, said bowl and said base being pressed firmly together to retain the bag while the toilet is in use, and wherein said upper surface of the base is inserted into said bowl by inverting said base for transportation and storage.

4,228,552 BATHTUB WALL-SURROUND

Charles S. Weaver, Jr., Evansville, Ind., assignor to Peerless Pottery, Inc., Evansville, Ind.

Continuation of Ser. No. 544,869, Jan. 29, 1975, abandoned. This application Jan. 7, 1976, Ser. No. 693,143

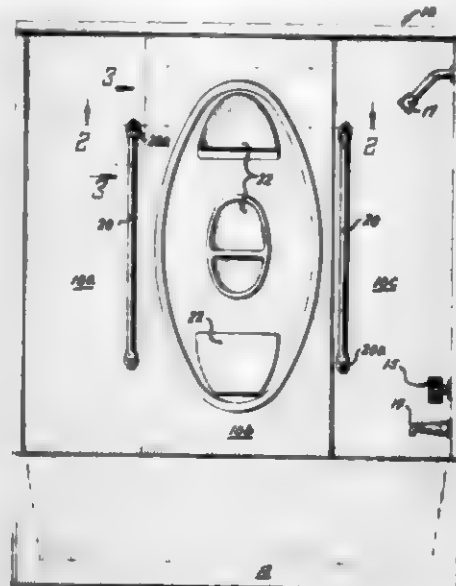
Int. Cl.³ A47K 3/00, 3/16

U.S. Cl. 52-35

3 Claims

1. A wall-surround installed on wooden studding comprising a first panel and a second panel each having substantially coplanar front surfaces and where a side edge of said first panel and an adjacent side edge of said second panel are in a spaced-apart overlapping relationship to define a receiving space, a

spacer block disposed within said receiving space, a grab bar, and threaded mounting means for said grab bar extending



through said first panel, said spacer block, said second panel and into said wooden studding in an assembled relationship.

4,228,553 STORAGE AND DISPENSING APPARATUS FOR SWIMMING POOL VACUUM HOSE

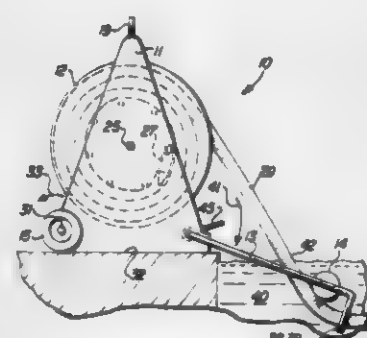
Luther L. Genuit, 6231 Calle Del Paisano, Scottsdale, Ariz. 85251

Filed Nov. 6, 1978, Ser. No. 957,899

Int. Cl.³ E04H 3/20; B65H 75/40

U.S. Cl. 4-490

14 Claims



1. A swimming pool vacuum hose storage and dispensing device comprising:

- a frame,
- a reel rotatably mounted on said frame for storage and dispensing of a vacuum hose coiled therearound,
- a hose submerging means mounted on said frame,
- said submerging means being movable to a hose dispensing position where a part of said submerging means is positioned below said frame and in the water of a pool when said device is positioned poolside, and
- hose guiding means positioned on said part for guiding and submerging the hose in the water of the pool when dispensed from said reel,
- said submerging means comprising at least one arm member pivotally mounted at one end on said frame with its free end being rotatably movable to said hose dispensing position, and
- said guiding means comprising a roller mounted on said free end for guiding and submerging the hose when it is passed under said roller during a hose dispensing operation of the device.

4,228,554

TOILET FOR ANIMALS

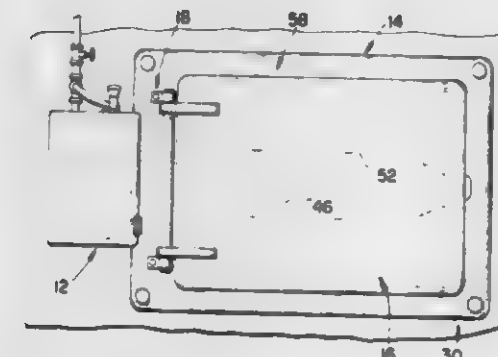
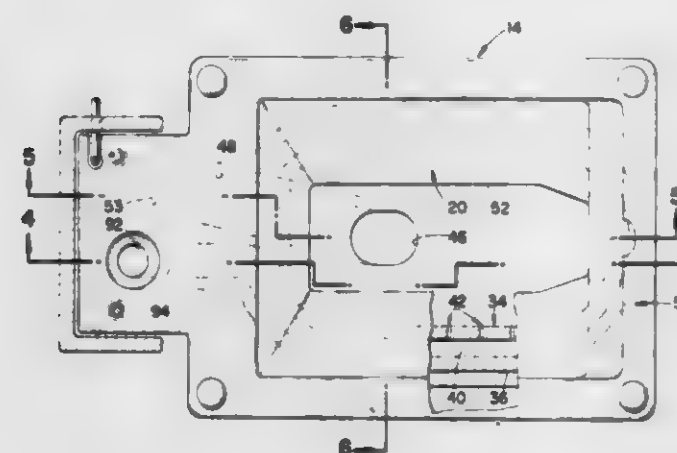
Anthony J. Tumminaro, 4945 Holly View Dr., Vermilion, Ohio 44089

Filed Apr. 2, 1979, Ser. No. 25,912

Int. Cl.³ E03D 1/00, 3/00, 5/00

U.S. Cl. 119-1

3 Claims



1. A toilet comprising:

- (a) a user platform having an outer peripheral portion and a generally central opening; said user platform further having an upper surface sloping gradually downwardly from said outer peripheral portion toward said central opening;
- (b) flushing means for providing a flow of flushing liquid across said upper surface from adjacent said outer peripheral portion toward said central opening;
- (c) a waste receiving bowl beneath said user platform for receiving waste material passing through said opening in said user platform;
- (d) said flushing means providing a flow of flushing liquid to said bowl separate from the flow of flushing liquid supplied across said upper surface;
- (e) said flushing means providing sequential flow of flushing liquid across said upper surface of said user platform and then to said bowl;
- (f) said generally central opening in said user platform comprising a relatively narrow slot extending front to back across said user platform; and
- (g) said flushing means including a source of flushing liquid, a liquid supply passage extending around at least a portion of said user platform adjacent said outer peripheral portion thereof, and lateral openings extending from said liquid supply passage to open outwardly at said upper surface of said user platform.

4,228,555

WATER BED SHEET FRAME

Terry A. Katzakian, 101 John Muir Ct., Modesto, Calif. 95350

Filed Apr. 30, 1979, Ser. No. 35,086

Int. Cl.³ A47C 27/08

U.S. Cl. 5-498

10 Claims

1. A frame structure for securing sheets to a water bed comprising, a water bed frame defining an interior for supporting a water mattress, removable frame means arranged to be supported on said water bed frame within said interior in over-

lying relationship with said water mattress with said frame means extending along the top inner periphery of said water bed frame, and sheet means detachably connected to said frame



means along the periphery of said sheet means in overlying relationship with said water mattress and within the interior of said water bed frame.

4,228,556

AUTOMATICALLY ENERGIZABLE LIFESAVING EQUIPMENT

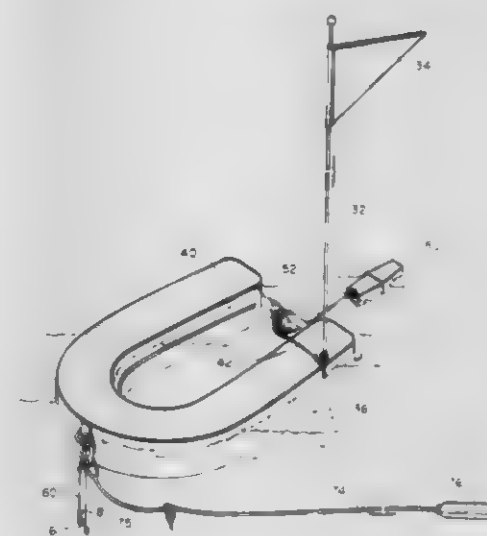
Henry H. Searls, 5 Canyon Island Dr., Newport Beach, Calif. 92660

Filed Apr. 10, 1978, Ser. No. 894,692

Int. Cl.³ B63C 9/20

U.S. Cl. 9-14

10 Claims



1. In a lifesaving apparatus for unassisted utilization by an overboard person, the combination of: a support securable to a portion of a boat which is accessible to the surface of the body of water being traversed by said boat; a life buoy mounted on said support; a trailing line connected to said life buoy and towed behind said vessel as said vessel traverses said water surface; and connecting means for removably securing said life buoy to said support, said connecting means being capable of sustaining the load imposed thereon as said trailing line is towed by said vessel through the water but being separable when the drag of an overboard individual, grasping the line, is imposed upon said trailing line to cause said life buoy to be released from said support and rendered accessible to said overboard person.

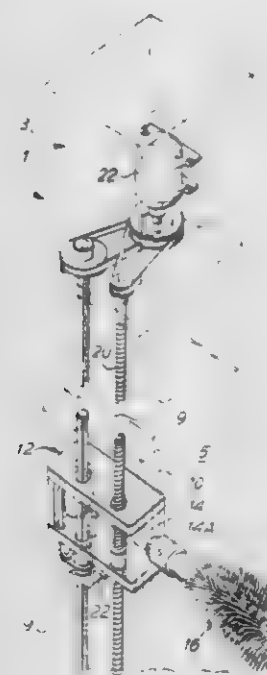
4,228,557

APPARATUS FOR TREATMENT OF THE PERSON
Alessandro De Vivo, Via Bardazzi 33, Florence; Gianni Pierantozzi, Via dei Ciliegi 6, Scandicci, Florence; Diodato Santarpia, Via Conti 9, San Miniato Alto, Pisa, and Renzo Spolverini, Via Roma 65, Rignano Sull'Arno, Florence, all of Italy
Filed May 9, 1979, Ser. No. 37,308

Claims priority, application Italy, May 19, 1978, 9469 A/78
Int. Cl.³ A47K 7/04

U.S. Cl. 15—21 E

5 Claims



1. An apparatus for treatment of the person, which comprises a rotatable spindle having mounted thereon a brush means, a fitting carrying the brush means, a structure which is attachable to a wall and incorporates an upwardly extending guiding means for the fitting, a first rotatable, longitudinally extending threaded shaft which cooperates with a female screw fixably attached to said fitting to vertically reciprocate said fitting within the guiding means in response to the clockwise and counterclockwise rotation of said threaded shaft, a second, rotatable, longitudinally extending shaft having a splined outer surface for non-rotational, longitudinal sliding engagement of a transfer means for transferring the rotation of the second longitudinal shaft to the rotatable spindle, and a drive means for simultaneously driving said first and second longitudinally extending shafts.

4,228,558

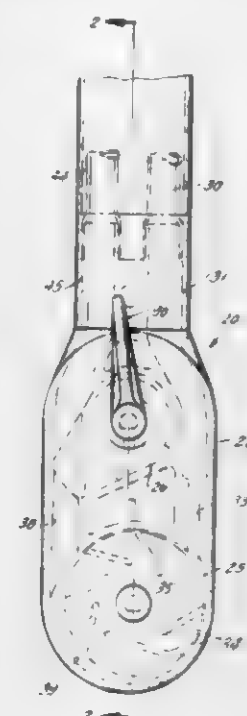
WATER IMPELLER BRUSH AND MASSAGE
Semen Zhadanov, 2944 W. 5th St., Brooklyn, N.Y. 11224
Filed Feb. 9, 1979, Ser. No. 10,516
Int. Cl.³ A46B 13/04

U.S. Cl. 15—29

11 Claims

1. A shower head, comprising:
a housing including a generally circular portion;
a water inlet opening for said housing and a water outlet opening for said housing;
means for connecting water conduits to said respective inlet and outlet openings;
means for passing water out of said housing in the form of a shower spray;
a rotor mounted within and eccentric with respect to said generally cylindrical portion of said housing, said rotor including a base having a plurality of blades mounted thereon, said blades being so positioned that they are rotated by the force of water exiting said inlet opening;
said blades of said rotor extending substantially radially of said rotor but having a gap between the inner end of each blade and the center of said rotor providing a means for dissipation of water under pressure thereinto;

a rotor massage member coupled to said rotor for rotation therewith;
said eccentric mounting of said rotor providing a steadily increasing spacing between the outer ends of said blades of



said rotor and the inner wall of the housing in the area of said generally cylindrical portion to provide further relief for water under pressure as the water is directed to said outlet.

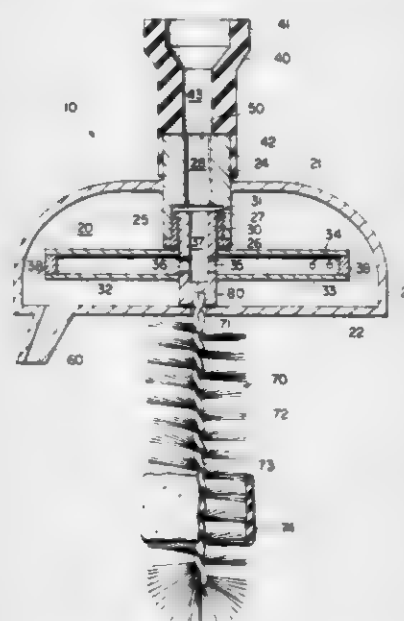
4,228,559

BRUSH DEVICE

Norbert A. Kirk, 43 E. Ohio St., Room 930, Chicago, Ill. 60611
Filed Sep. 6, 1978, Ser. No. 940,303
Int. Cl.³ A46B 13/06; A47L 15/00

U.S. Cl. 15—75

11 Claims



1. A rotating brush device comprising: a chamber, round in horizontal cross-section, and having a top wall, a bottom wall, and a peripheral side wall joining top and bottom walls; a bearing member attached to said top wall, said bearing member having a bearing surface; a rotatable tubular member having a flange, said flange resting on said bearing surface so that said rotatable tubular member is mounted for rotation in said chamber; at least two tubular arms mounted on said rotatable tubular member for rotation therewith and extending radially outward therefrom for rotation in a substantially horizontal plane in said chamber, said arms each including at least one opening in the walls for discharge of a high velocity stream of water out of a respective tubular arm in a direction to impart rotation of said

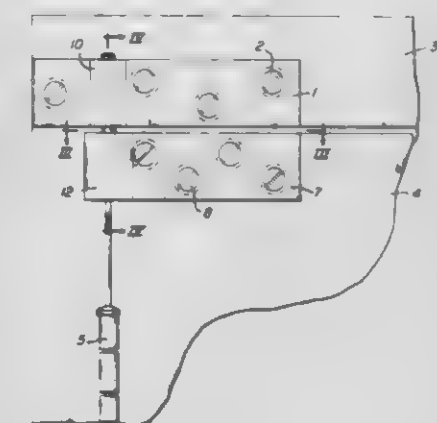
4,228,561

SHOCK PIVOT HINGE

Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKinney Manufacturing Company, Scranton, Pa.
Filed Mar. 8, 1979, Ser. No. 18,509
Int. Cl.³ E05D 7/00

U.S. Cl. 16—131

8 Claims



arms and said rotatable member; a weighted baffle located at the outer ends of said tubular arms for defining a flow path directing water into a stream flowing in the direction of the water stream discharged from said orifices and also for increasing the rotational inertia and momentum of said arms; said rotatable tubular member forming with each of said tubular arms a conduit for conveying water under pressure through said rotatable tubular member and each of said tubular arms for discharge through said openings in said arms; means for securing said brush device to a water faucet; conduit means for conveying water under pressure from a faucet to which the device is secureable to said rotatable tubular member; water outlet means for removing water from said chamber to permit unobstructed rotation of said horizontal arms in said chamber; a rotatable brush mounted on the device for rotation below the bottom wall of said chamber and extending downwardly therefrom; and means connecting said rotatable brush means and said rotatable tubular member such that rotation of said rotatable brush member caused by rotation of said tubular arms caused by the flow of a high velocity stream of water through said arm openings effects rotation of said brush.

4,228,560

LOWER GUIDE FOR A SLIDING PARTITION

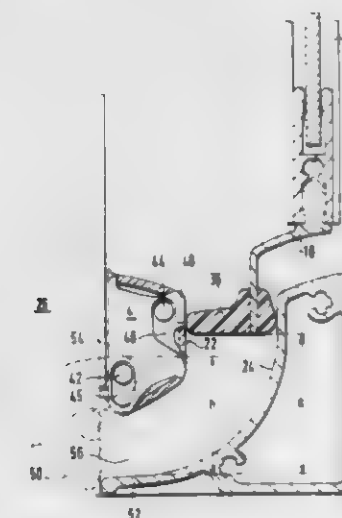
Heinz-Georg Baus, Ulmenweg 46, 3601 Thun, Switzerland
Filed Oct. 19, 1978, Ser. No. 952,676

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747480

Int. Cl.³ A47H 15/00

U.S. Cl. 16—90

5 Claims



1. Lower guide for a sliding partition for a wet chamber, particularly bath and shower rooms, with sliding doors which are suspended from an upper guide rail and can be pushed together and apart in telescopic fashion and which doors extend down into a guide slot open at the top and confined by an elongated lower guide member having two lateral guide walls and a bottom, the improvement comprising pivotal means for swinging a lateral guide wall outwardly in the direction from the guide slot about a horizontal swivel axis with the height of the swung-out lateral guide wall measured from its highest point to the bottom of the lower guide member smaller than the distance between the bottom of the doors extending into the guide slot and the bottom of the lower guide member, the swinging guide wall being supported between lateral frame parts with each lateral frame part having, coaxially with the swivel axis, a pivot pin, and, associated with each end of the swinging guide wall, there is a vertically extending elongated hole into which the pivot pin protrudes and is in the upper end of the elongated hole when the swinging guide wall is in the normal not swung-out position; and latch means being provided to prevent the pivotal guide wall from being swung out sideways until it is raised far enough for the pivot pin to reach the lower end of the elongated hole.

4,228,562

BILATERAL SWINGABLE SELF-CLOSING DOOR HINGE

Yun T. Hsu, 30-27, Chun In Rd., Chun In Village, Tong Sun Hsiang, I Lan Hsien, Taiwan

Filed Sep. 25, 1978, Ser. No. 946,057

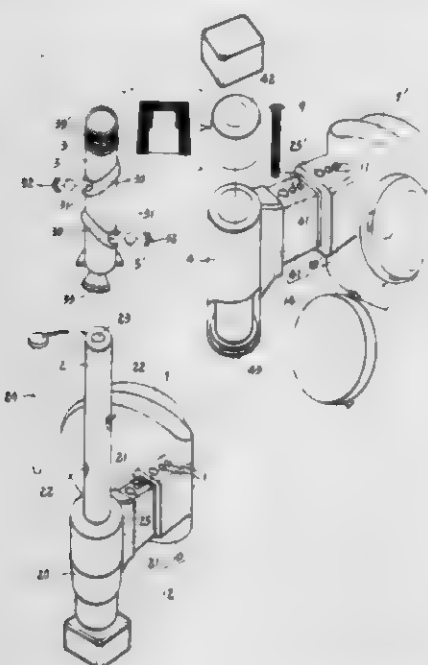
Int. Cl.³ E05F 1/06

U.S. Cl. 16—154

5 Claims

1. A bilateral swingable self-closing door hinge for mounting to a door having a door leaf and a door frame, comprising:
a first hinge part, said first hinge part including
a lower axle base having an upwardly extending center axle, a first hinge leaf including means for securing said first hinge leaf to the door leaf in either an upright or upside down orientation, and means mounted to said lower axle base for removably rigidly mounting said lower axle base to said first hinge leaf with said center axle upright and said first hinge leaf secured to said door either upright or upside down,
a second hinge part, said second hinge part including
a socket part slidably and rotatably fitted onto said center axle,
a second hinge leaf including means for securing said first hinge leaf to the door frame, in either an upright or an upside down orientation, and
means mounted to said socket part for removably rigidly mounting said socket part to said second hinge leaf with said second hinge leaf either upright or upside down so that said door hinge may be mounted to either the left side of said door for counterclockwise opening or to the right

side of said door for clockwise opening with said center axle upright;
said second hinge part including means, associated with said

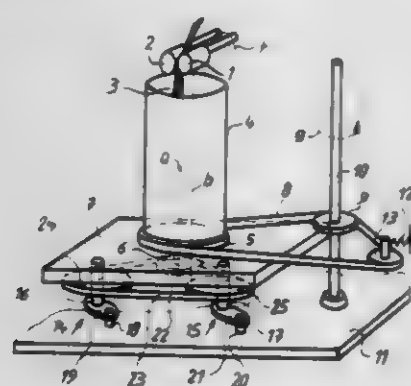


center axle and said socket part, for causing said first hinge leaf to rise when swung in one direction from a first position relative to said center axle and to rise when swung in the opposite direction from said first relative position.

4,228,563
DRIVE APPARATUS OF A CAN FOR DEPOSITING TEXTILE FIBRE SLIVERS
Kurt Weber, Elgg, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland
Filed Feb. 26, 1979, Ser. No. 15,348
Claims priority, application Switzerland, Mar. 3, 1978, 1320/78

Int. Cl.³ B65H 54/80
U.S. Cl. 19—159 R

18 Claims



1. In a drive apparatus for a can for depositing textile fibre slivers in spinning preparatory machines, in which the can effects a rotational movement about its axis, and in which the can axis in turn rotates about an axis substantially parallel to it which is fixed with respect to space, the improvement which comprises:

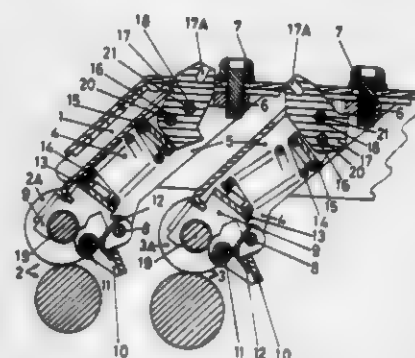
at least one can table for supporting and centering the can; a plate for rotatably supporting and driving the can table; means for driving said can table and the can supported thereby; and said driving means including means for placing said plate into a translatory circular movement.

4,228,564
TOP ARMS FOR TEXTILE FIBRE ROLLER
John M. Noguera, 1 Greville House, Kinnerton St., London S.W.1, England

Filed Mar. 7, 1978, Ser. No. 884,233
Claims priority, application United Kingdom, May 9, 1977, 19409/77

U.S. Cl. 19—282
Int. Cl.² D01H 5/50

7 Claims

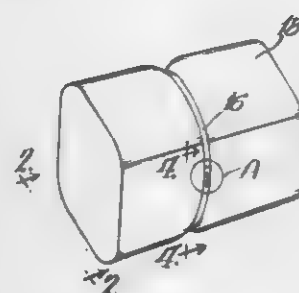


1. A top-roller weighting device for use with a textile fibre roller drafting mechanism top arm; the device comprising a body, a top-roller retainer guided by the body, spring means acting so as to apply pressure on the top-roller retainer, and a weight adjuster that moves between at least two rest positions to alter the angle of action of the spring means but not its length to thereby alter the effective weight applied to the top-roller by changing the direction of force of the spring from a substantially linear force to a force having components in two directions and in which the weight adjuster is pivotally connected to the body of the device.

4,228,565
STRAP FOR FORMING A READILY DISENGAGEABLE ANTI-REVERSE SEALLESS STRAP CONNECTION
Peter Lems, Wilmette, and William A. Meier, Hoffman Estates, both of Ill., assignors to Signode Corporation, Glenview, Ill.
Filed Aug. 17, 1978, Ser. No. 934,497

U.S. Cl. 24—20 EE
Int. Cl.³ B65D 63/02

11 Claims



1. In a bale tie of the type comprising a generally flat metal strap adapted for forming a loop about compressible material and having a first joint-forming portion on one end and a second joint-forming portion on the other end, said joint-forming portions each containing an array of longitudinally spaced joint elements, said joint elements on one of said portions being adapted to interlock with the joint elements on the other portion for forming a sealless strap connection when the joint-forming portions are overlapped with said second joint-forming portion lying between said material and said first joint-forming portion, said strap further having an inner side adapted to lie against said material and an outer side opposite the inner side, the improvement comprising:

an abutment depending from said outer side of said strap on said second joint-forming portion and a disengageable anti-reverse bale tie engaging means on said first joint-forming portion for aligning with said abutment on said second joint-forming portion when said strap is formed

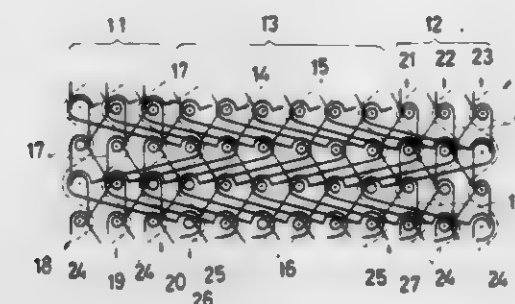
into a loop and when said sealless connection is formed between said joint-forming portions, said abutment being located on said second joint-forming portion outwardly of and adjacent the array of all of the longitudinally spaced joint elements, said engaging means located at said inner side of said strap inwardly of and adjacent the array of all of the longitudinally spaced joint elements for aligning with said abutment on said second joint-forming portion when the connected strap loop is placed about said material and is outwardly bowed to force said abutment against the inner side of said first portion and adjacent said engaging means whereby, when the joint-forming portions are moved relative to each other in a disengaging direction, said abutment bears against said engaging means and disengagement of the connection is prevented, said connection being easily disengaged, however, by orienting said overlapped and connected joint-forming portions of said strap in a generally inwardly bowed configuration and then displacing one of said portions longitudinally relative to the other portion in the disengaging direction.

4,228,566
SLIDE FASTENER STRINGER
Yoshio Matsuda, Toyama, Japan, assignor to Yoshida Kogyo KK, Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 972,699
Claims priority, application Japan, Dec. 29, 1977, 52-176719[U]

U.S. Cl. 24—205.16 C
Int. Cl.² A44B 19/00

7 Claims



1. A slide fastener stringer comprising:

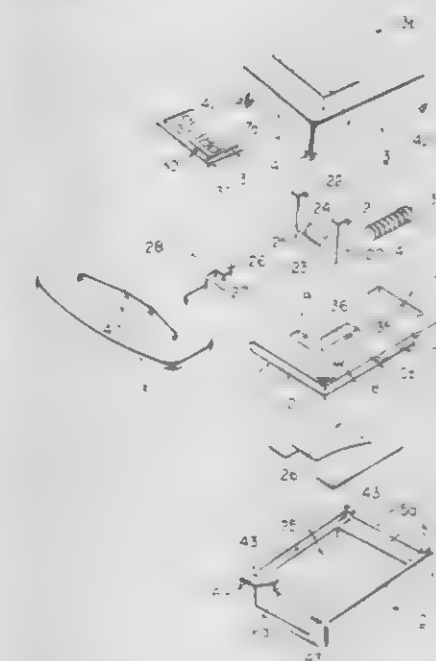
(a) a warp-knit stringer tape having a pair of spaced edge portions and a central portion extending between said edge portions, said stringer tape comprising:

- (1) a first set of yarns forming a first knit ground structure containing stitch loops in every course and wale of said tape;
 - (2) a second set of yarns knit in said first ground structure and each extending coursewise across at least one wale, said yarns of the second set comprising textured yarns and forming a second knit ground structure containing stitch loops in every wale of the tape other than said one wale, said central portion consisting of said first set of yarns and said second set of yarns;
 - (3) a third set of yarns forming a plurality of chains of loops knit in said first and second ground structures and extending along wales in at least one of said edge portions; and
 - (4) a fourth set of yarns laid in said first and second ground structures and extending in and along said last-named wales; and
- (b) a row of coupling elements mounted on and along said one of the edge portions of the tape.

4,228,567
BUCKLE ASSEMBLY FOR SEAT BELT
Haruyuki Ikesue, Fujisawa, and Kazuo Yamamoto, Sagami-hara, both of Japan, assignors to NSK-Warner K.K., Tokyo, Japan
Filed Sep. 11, 1978, Ser. No. 941,164
Claims priority, application Japan, Sep. 20, 1977, 52-126632[U]

U.S. Cl. 24—230 AL
Int. Cl.² A44B 11/26

5 Claims



1. A buckle assembly for a vehicle seat belt comprising first and second opposing cover members defining a tongue insertion opening and a chamber therebetween communicating with the tongue insertion opening, a base member disposed within the chamber, the base member folded into a substantially U-shape to provide a pair of parallel plates defining a tongue guide path therebetween contiguous with the tongue insertion opening and extending in a tongue insertion direction, the fold connecting the parallel plates extending parallel to the tongue insertion direction, a portion of the parallel plates opposite to the tongue insertion opening being overlapped and in contact to provide a connecting portion adapted for connecting the buckle assembly to a vehicle body, the parallel plates having opposing guide slots extending transversely to the tongue insertion direction, a latch member slidably disposed within the guide slots, the latch member having a contacting portion for contacting a tongue inserted into the tongue guide path and for causing the latch member to slide to a non-locking position, the latch member having a restraining portion engageable with the tongue for locking the tongue, biasing means within the chamber for biasing the latch means toward a tongue locking position, and a push button for operating the latch member to move it to a non-locking position, the biasing means, latch member, and base member being serially disposed, in order, within the second cover member and the push button being disposed within the first cover member.

4,228,568
RELEASABLE FASTENER FOR AIRCRAFT EJECTION SEATS

Richard H. Frost, Littleton, and Charles W. Dodge, Golden, both of Colo., assignors to Frost Engineering Development Corp., Englewood, Colo.

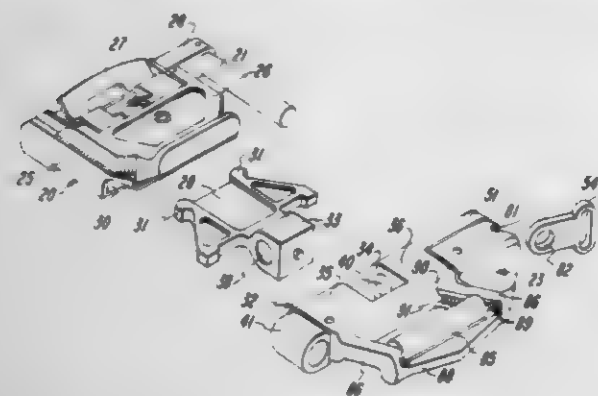
Filed Nov. 13, 1978, Ser. No. 959,769
Int. Cl.² A44B 19/00

U.S. Cl. 24—230 R

13 Claims

6. A releasable fastener for use with an aircraft ejection seat for releasably joining lap belts, shoulder straps and a key connected to a parachute ripcord, comprising, in combination, a manually actuable release assembly secured to one lap belt and having means thereon for receiving looped ends of shoulder straps, a link assembly secured to another lap belt and engageable

ble with said release assembly for coupling said lap belts and shoulder straps, means on said link assembly for powerably disconnecting the link assembly to release said shoulder straps and separate said lap belts, means on said link assembly for releasably engaging said ripcord key, said ripcord key engaging means including means for precluding the coupling of said



release assembly and said link assembly in the absence of an engaged ripcord key, and means on said disconnecting means engageable with said ripcord key engaging means for locking said ripcord key engaging means to prevent withdrawal of said key upon the powered disconnection of the link assembly from the release assembly to release the shoulder straps and separate the lap belts.

4,228,569

IDENTIFICATION BADGE CLIP

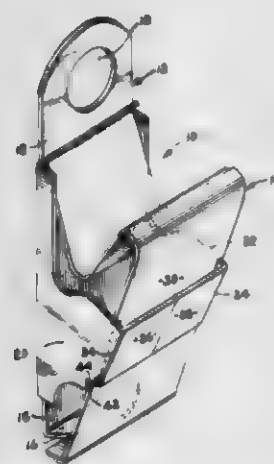
George R. Snyder, Woodbridge, Conn., assignor to Risdon Corporation, Naugatuck, Conn.

Filed Jan. 11, 1979, Ser. No. 2,666

Int. Cl.² A44B 21/00

U.S. Cl. 24-252 R

3 Claims



1. An identification badge clip comprising:

(a) a hardened sheet metal base member including a flat strip having a first jaw bent up substantially at right angles at one end and a pair of aligned arms extending up from opposite sides of the strip, and being formed with aligned notches spaced up from the strip, the distal ends of the arms each being bent at a point spaced outward of the strip from the notches and extending inward in flanges toward each other, and

(b) a Z-shaped member of resilient metal strip disposed within the embrace of said arms to hold the base member and strip together as an assembly and including an inner end run, an intermediate run and an outer end run engaging the flanges, the outer end run having a second jaw at its free end bent down substantially at right angles and aligned with the first jaw, the inner end run contacting the base member, the Z-shaped member being biased to close the jaws, the outer end run being enlarged between the second jaw and the engagement of the lastmentioned run

with the arms and the enlargement presenting shoulders which engage the arms in the notches, whereby the notches present an outward-facing fulcrum so that downward pressure on the outer end run adjacent its non-free end opens the jaws.

4,228,570

ELECTRODING PREPARATION APPARATUS

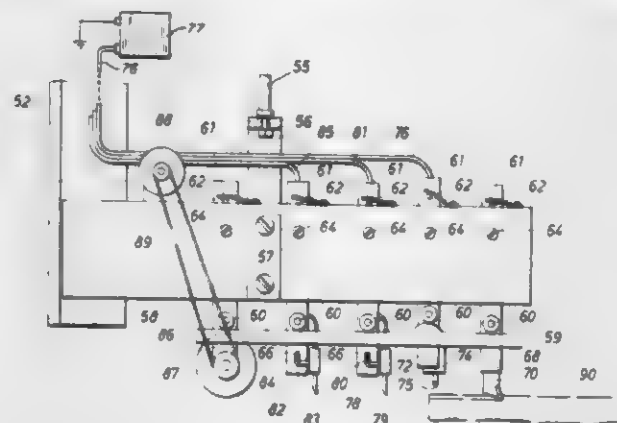
Rhodes R. Chamberlin, and Herbert L. Bigham, both of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Continuation of Ser. No. 847,784, Nov. 2, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,571

Int. Cl.³ B23P 23/04, 25/00

U.S. Cl. 29-33 R

8 Claims



1. Apparatus for operating on a vitreous substrate having a plurality of contiguous component layers of a photovoltaic cell, comprising:

a base member;
holding means located on said base member and adapted to define edge positions of said substrate on said base member;

a head member vertically displaced from said base member; positioning means for relatively moving said head member with respect to said base member in a preselected pattern; component layer removal means located on said head member and directed toward said base member for forming a track having defined sides while moving in said preselected pattern within said defined edge positions on said base member;

at least one applicator pen located on said head member and aligned substantially along one of said defined sides of said track of said component layer removal means for depositing a strip of insulating material therealong; and an actuating system responsive to the location of said head member relative to said defined edge positions on said base member for selectively actuating said component layer removal means and said at least one applicator pen as said removal means and said pen cross at least one of said defined edge positions.

4,228,571

HYDRAULIC SUPPORT ELEMENT

Mario Biondetti, Schlo, Italy, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Nov. 16, 1978, Ser. No. 961,241

Claims priority, application Switzerland, Dec. 20, 1977, 15715/77

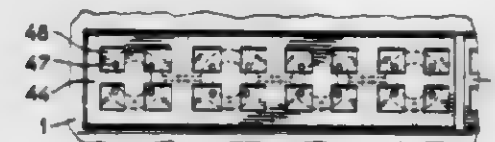
Int. Cl.² B21B 21/02

U.S. Cl. 29-116 AD

25 Claims

1. A hydraulic support element for mounting a movable part upon a stationary support, comprising:
an elongate support ledge having a bearing surface for slidably supporting the movable part;
said elongate support ledge together with said support or a part arranged at the support delimiting a hydraulic pressure chamber for a hydraulic medium which is under

pressure and by means of which the support element is supported at the support;
said elongate support ledge having an extended dimension sufficient for coacting with at least two hydrostatic support arrangements;



at least two hydrostatic support arrangements having substantially cylindrical guide surfaces for supporting the elongate support ledge at the support; and said two hydrostatic support arrangements being disposed adjacent one another in the lengthwise direction of the elongate support ledge and containing substantially piston-like parts.

4,228,572

HEAT EXCHANGER ASSEMBLY

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 880,991, Feb. 24, 1978, Pat. No. 4,181,173.

This application Jun. 4, 1979, Ser. No. 44,855

Int. Cl.³ F28F 3/12; F25B 39/02; B23P 15/26

U.S. Cl. 29-157.3 R

1 Claim



1. A method of making a heat exchanger assembly comprising the steps of: forming at least two horizontally spaced embossments in a first plate member and having one end of each of said embossments terminating to define a flat intermediate portion of said first plate member between each of said horizontally spaced embossments, forming at least one embossment in a second plate member, mating and fastening said plate members together to define channel passages wherein each of said embossments in said second plate member extend over said flat intermediate portion of said first plate member and overlap a portion of each of said horizontally spaced embossments whereby the latter are interconnected, and bending said plate members at said flat intermediate portion to define a corner whereby one of said first-mentioned embossments are on each side of said corner and are interconnected by said second-mentioned embossments extending about the outside of said corner.

4,228,573

METHOD FOR ASSEMBLING HEAT EXCHANGERS

James A. Barnard, Okeett, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 29, 1979, Ser. No. 53,361

Int. Cl.³ B23P 15/26

U.S. Cl. 29-157.3 R

1 Claim

1. A method of assembling a heat exchanger comprised of perforated fins, a pair of perforated headers and a plurality of reverse bent tubes as the fins are being stamped from sheet stock, said method comprising:

accumulating the fins in face-to-face relationship and in stacks following their stamping,

sequentially feeding the stacks of fins onto a stationary path with their faces vertical to the path and transverse to the sides thereof whereby a column of fins in face-to-face relationship is formed and advanced along the path as stacks of fins following stamping continue to be fed thereto,

lifting a pallet fixture from an endless continuously moving

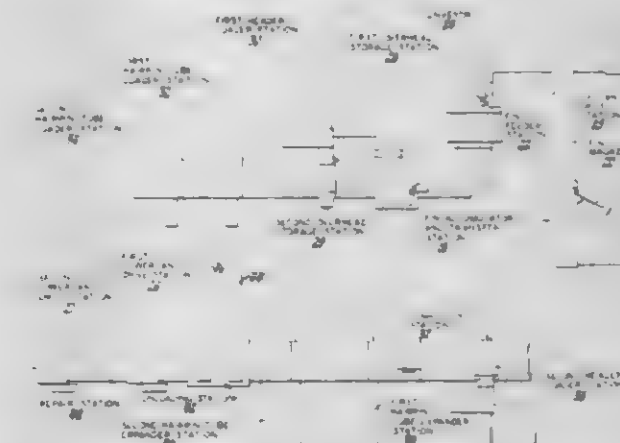
conveyor and holding it in a predetermined position overhead thereof,

separating a complete pack of fins for a heat exchanger from the head of the column in the time interval between an advancement and feeding the pack of fins onto the pallet fixture,

clamping the pack of fins at opposite ends thereof to the pallet fixture and then lowering the pallet fixture onto the conveyor to be advanced thereby with the faces of the fins oriented parallel to the sides of the conveyor,

lifting the advancing pallet fixture from the conveyor and holding it in a predetermined position overhead thereof while releasing the clamping from one end of the fin pack and guiding and then clamping one of the headers against this end of the fin pack and thereafter lowering the pallet fixture back onto the conveyor to be advanced thereby,

lifting the advancing pallet fixture from the conveyor and holding it in a predetermined position overhead thereof while guidably inserting the reverse bent tubes through the one header and then the fin pack and thereafter lowering the pallet fixture back onto the conveyor to be advanced thereby,



lifting the advancing pallet fixture from the conveyor and holding it in a predetermined position overhead thereof while releasing the clamping from the opposite end of the fin pack and guiding the other header onto the tubes and then forcing same against this end of the fin pack and thereafter clamping this header against this end of the fin pack and then lowering the pallet fixture back onto the conveyor to be advanced thereby,

lifting the advancing pallet fixture from the conveyor and holding it in a predetermined position overhead thereof while radially expanding the tubes to tightly engage both the fins and the headers and thereafter lowering the pallet fixture back onto the conveyor to be advanced thereby, and

lifting the advancing pallet fixture from the conveyor and holding it in a predetermined position overhead thereof while unloading the thus assembled fin pack, headers and tubes therefrom and thereafter lowering the empty pallet fixture back onto the conveyor for its conveyance thereby to repeat another assembly of a heat exchanger thereon according to the above steps.

4,228,574

AUTOMATED LIQUID CRYSTAL DISPLAY PROCESS

Bobby G. Culley, Wylie, and Kishin Surtani, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1979, Ser. No. 43,068

Int. Cl.³ H01J 9/26

U.S. Cl. 29-25.13

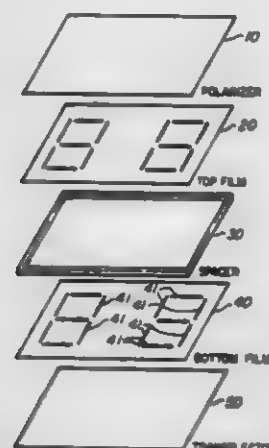
13 Claims

1. A liquid crystal display unit fabrication process comprising:

forming conductive electrode patterns on surfaces of respective first and second elongated strips of flexible transparent insulating film;

forming an alignment layer on each of the patterned surfaces of the first and second film strips;

bringing the film strips adjacent each other with the electrode patterns on the two strips facing each other such that the respective electrode patterns on one strip are positioned opposite corresponding electrode patterns on the other strip, to define pairs of corresponding electrode patterns;



introducing liquid crystal material and spacing means between the two film strips and forming seals between the film strips such that the liquid crystal material is enclosed in respective volumes between said corresponding pairs of electrode patterns on the two film strips to provide a plurality of joined liquid crystal display units, in each enclosed volume the two film strips being separated by a predetermined distance defined by said spacing means.

4,228,575

TANK CLOSURE ASSEMBLY

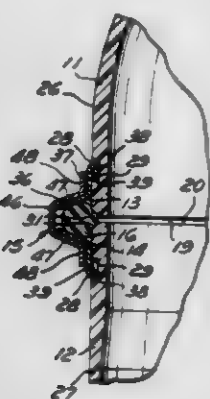
Arthur J. Wiltshire, Richmond Heights; Harry R. Nara, Novelty; Edward T. Le Breton, Mentor, and Ward L. Bliley, Chesterland, all of Ohio, assignors to Structural Fibers, Inc., Chardon, Ohio

Division of Ser. No. 754,830, Dec. 27, 1976, Pat. No. 4,133,422. This application Nov. 27, 1978, Ser. No. 963,796

Int. Cl.² B23Q 17/00

U.S. Cl. 29-407

2 Claims



1. A method of making a split tank assembly comprising the steps of providing an integrally molded tank of circular cross section and having substantially closed ends, severing the tank into two sections by developing rotational movement between a cutting station and the tank about a central tank axis, providing cutting means for simultaneously forming axially spaced grooves and an intermediate cut-off plane, with the elements forming said grooves and cut-off plane all with a fixed axial separation relative to each other, during said relative rotational movement engaging the outer surface of the tank with said cutting means to thereby form said space grooves and intermediate cut-off planes, inserting circumferentially split flanges into the grooves of a pair of sections, positioning said sections in fact-to-face relation, disposing a gasket between said flanges, and drawing said flanges into tight engagement with said gasket by positioning and circumferentially tightening a band

around said flanges to draw them together by means of working surfaces integral with said band.

4,228,576

TENSION CONTROL OF FASTENERS

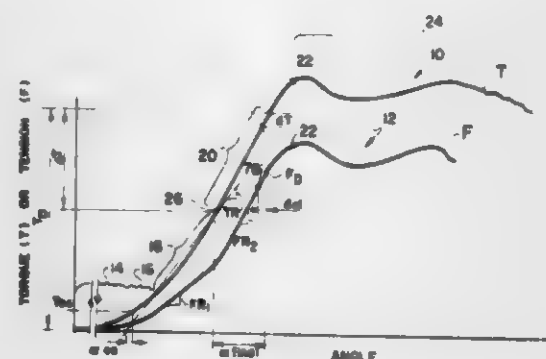
Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,365

Int. Cl.² B25B 23/14; G01L 5/24

U.S. Cl. 29-407

6 Claims



1. A method of tightening a threaded fastener with a tool of the type including means for energizing and deenergizing the tool for starting and stopping tightening wherein the tool exhibits overrun after deenergization, comprising applying torque to the fastener for threadably advancing the same; sensing applied torque and the angle of threading advance; deenergizing the tool at a location where the fastener is stressed; determining a first torque rate of the fastener over an angle increment including at least part of the overrun of the tool; comparing the first torque rate with a second torque rate; and generating a signal in response to the comparison of the first and second torque rates.

4,228,577

METHOD OF MAKING ROTARY TYPE WHEELS

Takami Suzuki; Nobuo Iwata, and Masami Tsunawawa, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 722,243, Sep. 10, 1976, Pat. No. 4,126,400.

This application Sep. 6, 1978, Ser. No. 939,948

Claims priority, application Japan, Sep. 12, 1975, 50-109978

Int. Cl.² B23P 17/00

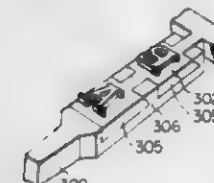
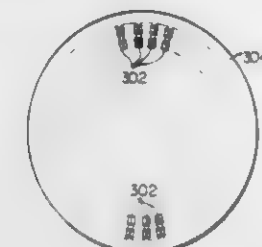
U.S. Cl. 29-418

3 Claims

3. A method of making a rotary type wheel comprising the steps of:

- forming an integral molding comprising an annular portion and a plurality of equiangularly disposed supports each extending radially inwardly from the radially inner periphery of the annular portion, each support incorporating at least one type face accurately positioned with respect to the center of the annular portion;
- positioning the integral molding in a mold;
- molding in said mold a hub and radially outwardly directed tongues corresponding in number and angular

disposition to the plurality of supports, each of said tongues being molded about a corresponding support such



that each support is thereby fixedly secured to each tongue; and
(d) disconnecting the annular portion from the support.

4,228,578

METHOD FOR OFF-ORIENTATION POINT ROTATION SAWING OF CRYSTALLINE ROD MATERIAL

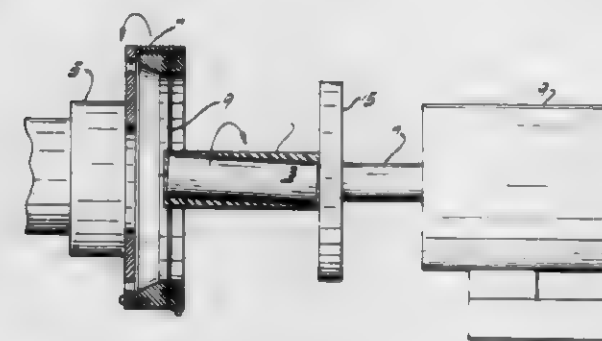
Lawrence Y. Lin; Henry W. Gutsche, and James A. Collier, all of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 15, 1979, Ser. No. 3,563

Int. Cl.² B23P 17/00; H01L 7/66; B25B 1/00

U.S. Cl. 29-423

18 Claims



1. A method for point rotation sawing of crystalline rod material at off-orientation angles comprising: determining the off-orientation angle of the rod crystallographic axis; encapsulating the rod in a molding media forming a cylindrical geometric encapsulation containing the rod with its crystallographic axis at an angle to the cylindrical axis of the encapsulation, the angle being substantially equal to the predetermined off-orientation angle; rotating the cylinder about its axis; contacting the rotating cylinder with a sawing means at one or more points tangent to the cylinder surface and perpendicular to the cylinder's axis of rotation; positioning the sawing means and the cylinder in constant rotating point contact; and sawing a thin wafer from the cylinder which is inclusive of an off-orientation crystalline material wafer.

4,228,579
METHOD AND APPARATUS FOR WINDING A STRIP OF FILM AND FOR INSERTING IT IN A CASSETTE

Franz-Heinz Dunkel, Leverkusen; Ralf L. Klinkhammer, Cologne; Heinz Nebel, Leverkusen; Siegfried Spanner, Langenfeld, and Gerd Seibel, Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

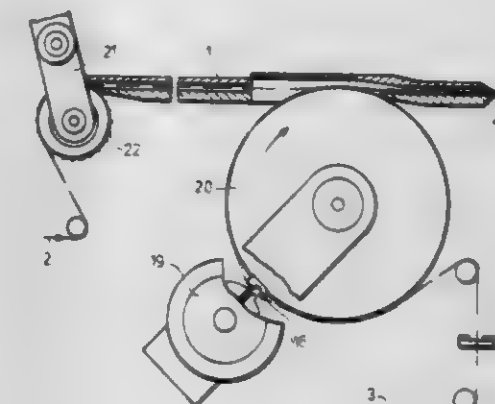
Filed Feb. 27, 1979, Ser. No. 15,800

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809360

Int. Cl.² B23P 19/00

U.S. Cl. 29-430

7 Claims



2. An apparatus for cutting a strip of film and a light protective paper tape to length, winding them and inserting them into a cassette, in which the strip of film together with the protective tape which is offset in the longitudinal direction, is cut to length on distribution wheels, and after being fed via a guide means to a spindle, is wound and inserted into a cassette which is open at the side comprising distribution wheels for the strip of film and the protective paper tape, a spindle, a feed duct for conducting a strip of film and protective paper tape to the spindle, the feed duct is arranged downstream of the spindle, slits on the spindle which can be connected selectively to a vacuum line or compressed air line, the spindle is connected via an annular spring coupling to a spindle drive mechanism, the spindle is provided with a brake, a pusher plate is provided adjacent the spindle, and the pusher plate having a clamp for gripping the end of the protective paper tape.

7. A method as set forth in claim 1, wherein a leading end of the paper tape is shaped to fit the outside of the spindle before it is moved into contact therewith.

4,228,580

PROCESS FOR MAKING WROUGHT, LEAD-CALCIUM BATTERY GRID ALLOY HAVING HIGH TEMPERATURE TENSILE STRENGTH STABILITY

Robert C. Matter, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 886,078, Mar. 13, 1978, abandoned. This application Sep. 11, 1978, Ser. No. 940,993
Int. Cl.³ C22F 1/12; C22C 11/02

U.S. Cl. 29—527.7

4 Claims

1. A process for making wrought, lead-calcium, automotive, battery grids comprising the steps of: casting a substantially continuous strip of alloy consisting essentially of about 0.07% to about 0.11% by weight calcium, less than about 1.5% by weight tin and the balance principally lead, said calcium and tin alloyants being precipitable out of solid solution with said lead upon aging; and continuously rolling said strip rapidly in one direction through a plurality of rolling stations to significantly reduce its thickness, said rolling being such as to cold work said alloy by a sufficient amount to induce strain hardening, and at a sufficient rate as not to induce any significant strain aging of said strip during said rolling, and so as to yield an alloy which recrystallizes at room temperature to a substantially fine-grained structure having small islands of a uniform-alloyant-content structureless phase dispersed throughout a pearlite-like lamellar-structure phase having alternate layers of Ca-rich and Ca-lean lamella within about 30 days after said rolling.

4,228,581

METHOD FOR PRODUCING SEMICONDUCTOR BODIES HAVING A DEFINED EDGE PROFILE WHICH HAS BEEN OBTAINED BY ETCHING AND IS COVERED WITH A GLASS

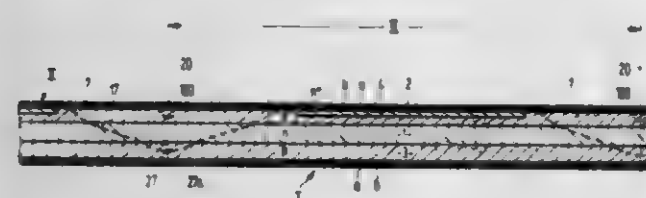
Madan M. Chadda, Nürnberg-Gaulnhofen, and Reinhold Maier, Nürnberg, both of Fed. Rep. of Germany, assignors to SEMIKRON Gesellschaft für Gleichrichterbau und Elektronik m.b.H., Nürnberg, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,649
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 2751485

Int. Cl.² B01J 17/00

U.S. Cl. 29—578

7 Claims



1. In a method for producing semiconductor bodies having a glass-covered defined edge profile, said semiconductor bodies being obtained by etching from a large-area semiconductor basic wafer having a sequence of layer-type zones of different conductivity type with at least one pn-junction and a surface oxide layer thereon, the steps comprising

applying an etch-resistant protective coating onto said surface oxide layer,
cutting groove-shaped recesses in said semiconductor wafer in a predetermined pattern which extend through said protective coating and said surface oxide layer to the surface of said semiconductor wafer for subdividing said wafer into said semiconductor bodies or smaller areal expanse,
etching said semiconductor wafer through said recesses to produce each a deep portion therein which passes through at least one pn-junction of said wafer, the side faces of said deep portion being shaped to form a predetermined edge profile of adjacent semiconductor bodies,
removing said surface oxide layer and etch-resistant coating from said wafer having deep portions, applying an insulat-

ing and stabilizing glass coating onto the side faces of said deep portions,
cleaning the surface of said semiconductor wafer and applying a contact metal coating thereof,
dividing said wafer into semiconductor bodies along the center planes of selected deep portions of said wafer, and covering the surface of said semiconductor bodies with an insulating lacquer at those portions which have been exposed by said dividing step.

4,228,582

AUTOMATIC PRODUCTION SYSTEM FOR PRINTED-WIRING BOARDS

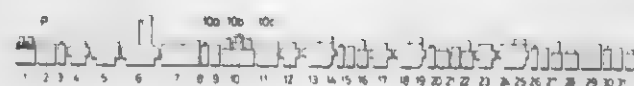
Minoru Arai, Tokyo, Japan, assignor to Tokyo Print Industry Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 946,061

Int. Cl.³ H05K 3/00

U.S. Cl. 29—650

12 Claims



1. An automatic production system for producing printed wiring boards in which previously drilled and contoured bases having rear surfaces and copper foil front surfaces are subjected to continuous and automatic operations, said system comprising:

a series of successive production elements arranged to operate on said bases in a successive order to produce said wiring boards;
transfer means for automatically transferring said bases between each of said successive production elements;
said successive production elements including:

- (1) means for retaining a stack of said bases and automatically delivering said bases one-by-one onto said transfer means;
- (2) means, adapted to automatically receive said bases one-by-one from said transfer means, for automatically washing, buffing and drying said bases;
- (3) first straightening means, adapted to automatically receive said bases one-by-one from said washing, buffing and drying means, for automatically removing warp from said bases;
- (4) first printer means, adapted to automatically receive said bases one-by-one from said first straightening means, for automatically printing a printed circuit pattern on said copper foil surface of each of said bases;
- (5) forced drying means, adapted to automatically receive said bases one-by-one from said first printer means, for automatically forced-drying said printed circuit pattern onto said copper foil surface of each of said bases;
- (6) etching means, adapted to automatically receive one-by-one said bases from said forced drying means, for automatically removing copper foil which is not beneath said printed circuit pattern from said copper foil surface to form electrical circuits on each of said bases;
- (7) washing means, adapted to automatically receive one-by-one said bases from said etching means, for automatically washing said printed circuit pattern from said bases;
- (8) second straightening means, adapted to automatically receive said bases one-by-one from said washing means, for automatically removing warp from said bases;
- (9) first selection means, adapted to automatically receive said bases one-by-one from said second straightening means, for automatically detecting defective electronic circuits among the electrical circuits on each of said

- bases and stacking the ones of said bases having defective electrical circuitry;
- (10) first buffing and drying means, adapted to automatically receive from said first detecting and stocking means, those of said bases not detected as having defective electrical circuitry in said first detecting and stacking means for buffing and drying those of said bases received from said first detecting and stacking means;
 - (11) second printing means, adapted to automatically receive said bases one-by-one from said first buffing and drying means for automatically printing resistance material on said printed electrical circuitry;
 - (12) first cooling and hardening means, adapted to automatically receive said bases one-by-one from said second printing means, for cooling and hardening said resistance printing on said bases;
 - (13) third straightening means, adapted to automatically receive said bases one-by-one from said first cooling and hardening means, for automatically removing warp from said bases; and
 - (14) third printing means, adapted to automatically receive said bases one-by-one from said third straightening means, for automatically printing first indicia, corresponding to the electrical characteristics of said resistance printing such as a service map on said base;
 - (15) second cooling means, adapted to automatically receive one-by-one said bases from said third printing means, for cooling said bases;
 - (16) fourth straightening means, adapted to automatically receive said bases one-by-one from said second cooling and for automatically removing warp from said bases;
 - (17) first reverser means, adapted to automatically receive said bases one-by-one from said fourth straightening means, for automatically reversing the front and rear faces of said bases;
 - (18) fourth automatic printing means, adapted to automatically receive said bases one-by-one from said first reverser means, for printing on said rear face of said bases, second printed indicia corresponding to a load map for said electrical circuit;
 - (19) second drying means, adapted to automatically receive said bases one-by-one from said fourth printing means, for drying said rear face of said bases;
 - (20) fifth automatic straightening means, adapted to automatically receive said bases one-by-one from said second drying means, for automatically removing warp from said bases;
 - (21) second automatic reverser means, adapted to automatically receive said bases one-by-one from said fifth automatic straightening means, for automatically reversing the front and rear faces of said bases;
 - (22) second buffing and drying means, adapted to automatically receive bases one-by-one from said second reverser means, for automatically buffing and drying said bases; and
 - (23) fluxing finisher means, adapted to automatically receive said bases one-by-one from said second buffing and drying means, for automatically fluxing said bases to form completed printed wiring boards.

4,228,583

SCREW SOCKET ASSEMBLY DEVICE

Stanley J. Noesen, Hendersonville, and Fredrick M. Baldwin, Asheville, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,571

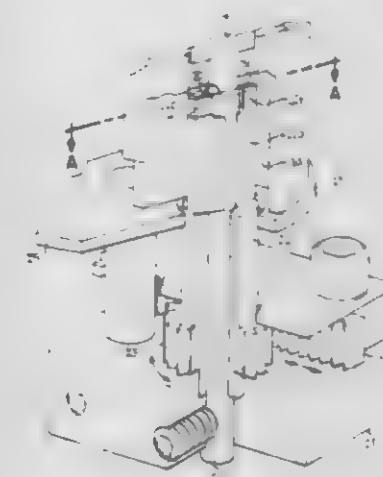
Int. Cl.³ H01R 43/04

U.S. Cl. 29—747

6 Claims

1. Apparatus for securing a screw-shell to a lamp socket housing, wherein the screw-shell has a terminal strip extending through a slot in the housing into a confined space between the slot and the open bottom of the socket housing, the terminal strip being formed at its free end with a terminal tab and a pair of oppositely projecting ears spaced axially away from the

terminal tab, said apparatus comprising a fixed mandrel having a slot at its end for receiving the terminal tab, and a tubular mandrel surrounding and rotatable about said fixed mandrel, said tubular mandrel formed at its end with a pair of radially



spaced projections for respectively engaging the opposite ears of the terminal strip, and means for turning said tubular mandrel for bending the opposite ears about 90° to the plane of the terminal strip while said fixed mandrel holds the terminal tab stationary.

4,228,584

METHOD OF ELECTRICAL CONNECTOR

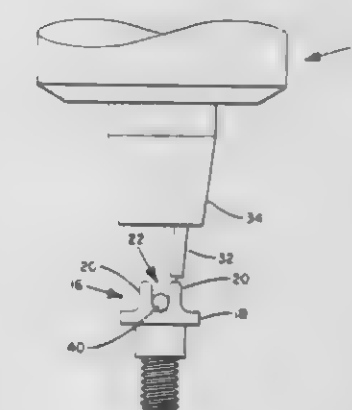
C. David Sherrod, Knoxville, Tenn., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 863,481, Dec. 22, 1977, abandoned. This application Sep. 22, 1978, Ser. No. 944,947

Int. Cl.³ H01R 43/04

U.S. Cl. 29—863

2 Claims



1. A method of securing a wire to a head of an electrical connector, the head including a base and a pair of spaced members extending upwards from the base, the method including the steps of:

placing the wire in a groove defined by the base and the upwardly extending members;
applying a plurality of hammering forces directly to the upwardly extending members, the direction of the hammering forces forming an acute angle with a vertical plane generally bisecting the groove for deforming the upwardly extending members to substantially cover the wire in the groove; and
moving the direction of the hammering forces around the upwardly extending members while maintaining an acute angle between the direction of the hammering forces and the vertical plane generally bisecting the groove to apply a plurality of hammering blows spaced around the periphery of the upwardly extending members to force material over the wire.

4,228,585

ANIMAL NAIL CLIPPER

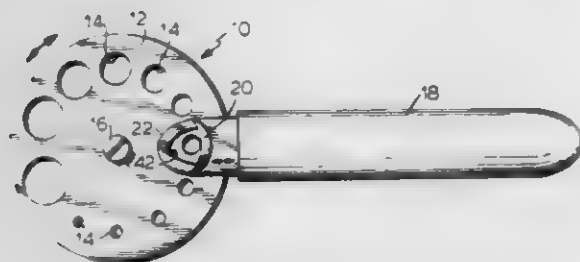
Wilbur C. Nelson, 2754 NE. 31st Ct., Lighthouse Point, Fla. 33064

Filed Jan. 29, 1979, Ser. No. 7,020

Int. Cl.³ A45D 29/02

U.S. Cl. 30—29

1 Claim



1. A device for safely cutting individual nails of an animal to a predetermined length while securely holding the nail in position relative to the cutting blade, comprising:

- a cutting blade;
- a means for mounting said cutting blade, said mounting means having an aperture disposed therethrough;
- mechanical actuating means for reciprocally moving said blade from a first position to a second position past said mounting aperture connected to said cutting blade and said mounting means; and
- a nail holding plate connected to said actuating means, said plate including at least two apertures, said apertures being of different diameters each aperture diameter sized to allow receipt of a portion of an animal nail to a predetermined length, said plate being movable to coaxially position one of said apertures relative to said blade mounting aperture, whereby an aperture may be selected to receive an animal nail to provide penetration to a predetermined length of said nail.

4,228,586

SHAVING APPARATUS

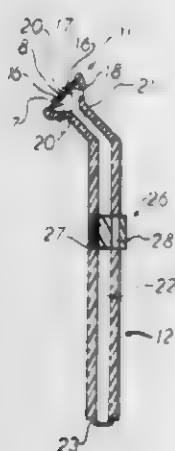
Timothy T. Thierry, 1116 N. 31st St., Billings, Mont. 59101

Filed Feb. 23, 1979, Ser. No. 14,370

Int. Cl.³ B26B 21/40

U.S. Cl. 30—41

10 Claims



1. Shaving apparatus including a shaver head portion, a handle portion and a liquid conveying portion, said shaver head portion including a substantially planar face, an orifice in said shaver head face, at least one razor blade disposed adjacent to said face central of said orifice with the sharpened edge thereof extending outwardly therefrom, said orifice being significantly larger than the width of said blade to provide open areas on both sides of said blade, a passage extending through said shaver head portion from said orifice, said handle portion including a conduit extending along the length thereof with one end communicating with said passage through said shaver head portion and the other end of said conduit within said handle portion which is remote from said shaver head

portion being connected to one end of said liquid conveying portion, the opposite end of said liquid conveying portion being adapted for attachment to a source of water under pressure, and said handle portion including valve means for controlling the flow of water from said water source through said liquid conveying portion, said conduit of said handle portion, said shaver head passage and out said orifice of said shaver head face.

4,228,587

COMBINED RAZOR HOLDER AND SHAVING FLUID DISPENSER

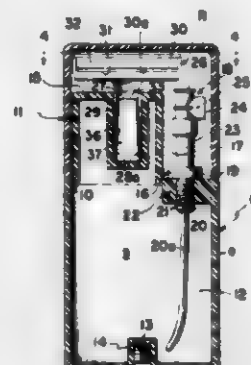
Charles H. Bennett, 8320 Russell St., Utica, Mich. 48067

Filed May 2, 1979, Ser. No. 35,252

Int. Cl.³ B26B 21/44

U.S. Cl. 30—41

10 Claims



1. In a compact, portable, pocket size, shaving product; a reusable container having a chamber for holding a shaving lotion and configured to be gripped by the hand of a shaver; said container having an open ended vertical well of predetermined length in the upper end of the container, separated from said chamber; and open to the top wall of the container at its upper end; a device for dispensing lather from said container; a disposable safety razor comprising a stem with an overhanging head having an exposed blade; the stem being of a cross-sectional size and shape to be received in said well; releasable means cooperating between said well and stem for releasably holding said stem in a lowermost position in which the razor head is adjacent the top wall of the container in stored position; and in a raised position extended from said well substantially, in which the head is in shaving position; the said releasable means permitting withdrawal of the stem from the well entirely to permit the replacement of one razor with another; and a removable container cap for the upper end of the container and the exposed safety razor head.

4,228,588

GRADE CHECKER

Lloyd E. Horton, Jr., New Milford, Pa. 18834

Filed Nov. 17, 1978, Ser. No. 961,647

Int. Cl.³ G01C 15/00

U.S. Cl. 33—1 H

1 Claim

1. A grade checker instrument comprising; a vertically adjustable rod having a level and a scale thereon, a ground supported hollow shaft having a foot support attached thereto completely telescopically enclosing and protecting said rod when in closed position and partially enclosing and protecting said rod when in extended position, a line guide attached to said rod, a handle means mounted on the top of said rod, a line reel having line thereon connected to the upper portion of said rod, the free end of said line having a loop formed thereon and

being passed vertically downwardly through said line guide, then turned horizontally and passed through a line



level and adapted to be attached temporarily to a grade stake for indicating grade level.

4,228,589

TAPE MEASURE FOR UNDERWATER USE

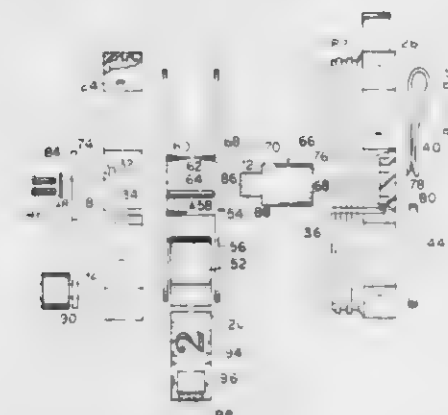
Theodore L. Chemay, 3132 Birch La., Marrero, La. 70072

Filed Jul. 18, 1979, Ser. No. 58,390

Int. Cl.³ G01B 3/10

U.S. Cl. 33—138

12 Claims



1. In a measuring tape assembly with an extensible and retractable tape mounted on a spool in a case divided transverse to the spool axis into two parts and having a peripheral portion around the spool with structure defining an opening for passage of the tape, and means for winding the spool, the improvement comprising: the two case parts including a front and a back with integral means detachably joining the front and back, the detachably-joining means including the front and back each having a respective screw thread around said peripheral portion, and said structure defining the tape opening in the form of an "L" shaped slot with a horizontal portion extending across said front and back for holding the width of the tape partly in said front and partly in said back and with a vertical portion in said front for receiving the tape width vertically therealong for clearing the tape from said back and permitting said front and back to be rotated relative to each other on said screw threads for assembly and disassembly of said measuring tape assembly.

4,228,590

LEVELING POLE

Shinhichi Kimura, 2-11, Kita, 4-chome, Imazu, Tsurumi-ku, Osaka, Japan

Filed Mar. 16, 1979, Ser. No. 20,988

Int. Cl.³ G01B 3/10, 3/08; G01C 15/00

U.S. Cl. 33—138

3 Claims



1. A portable measuring pole comprising
(A) a circular cylindrical hollow outer pole having a first diameter, a top end, a bottom end, and having an opening in the vertical wall thereof toward said top end;
(B) a first roller means positioned within said outer pole toward said bottom end thereof;
(C) a plurality of circular cylindrical hollow inner poles having diameters successively smaller than said first diameter and positioned to telescope within each other and within said outer pole, said inner poles having top ends and bottom ends;
(D) a non-skid ring disposed at the top end of said outer pole and at the top end of each of said inner poles except the innermost pole, for holding the next inner pole at an extended position;
(E) end means disposed at the top end of said innermost pole;
(F) a flat plastic tape of a predetermined length and width and having side by side on one surface thereof two sets of calibrated measurements;
(G) spring wound means for holding said plastic tape in a wound position when said outer pole and said inner poles are telescoped in a closed position and for enabling the tape to be under tension when said tape is rolled out upon extension of said innermost pole;
(H) casing means of substantially circular cylindrical shape and having the diameter portion as an end portion for tightly and detachably fitting to said outer pole with the end portion thereof fitting into said opening of said vertical wall of said outer pole with the axis of said casing disposed transverse to the axis of said outer pole, said casing means comprising means for holding said spring means and said plastic tape therein, second roller means disposed within said casing, and guide means disposed on said casing to be positioned within said outer pole when said casing is attached to said outer pole at said opening in said outer pole, said casing also having an aperture at the top of the cylindrical wall of said casing, transparent means for covering said aperture, and movable opaque means disposed in said aperture for blocking substantially one half of the width of said tape thereby to enable reading through said transparent means of one set or the other set of calibrated measurements; whereby said tape is treaded along said second roller means within said casing, then outside of said casing and within said guide means, and then down through the inside of said outer pole and

then around said first roller means located at the bottom end of said outer pole, and then attached to one end of said innermost pole; and wherein said inner poles are extendable by manual means to a desired length with said non-skid rings holding by friction the inner poles next adjacent in the extended position; and whereby said tape is wound out to correspond to the point to point measurement, at said aperture of said casing, of the measurement from the bottom end of said outer pole to the top end of said innermost pole.

4,228,591

MEASUREMENT SENSING DEVICES

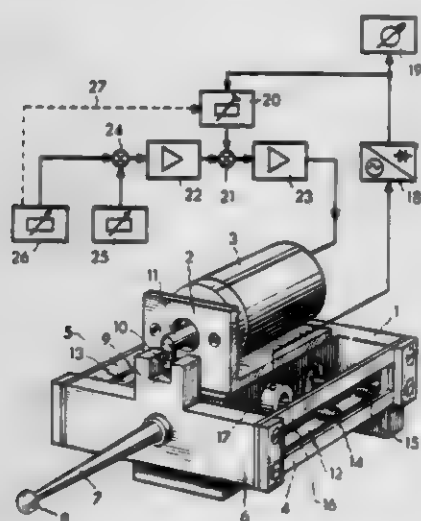
Armin Sterki, Thalwil, and Gerd Sommer, Dietikon, both of Switzerland, assignors to Maag Gear Wheel & Machine Co. Ltd., Zurich, Switzerland

Continuation of Ser. No. 765,191, Feb. 3, 1977, abandoned. This application Feb. 16, 1979, Ser. No. 12,724

Claims priority, application Switzerland, Feb. 12, 1976, 1742/76

Int. Cl.³ G01B 7/28, 7/34

U.S. Cl. 33—174 L



1. A device for length or position measurements comprising a sensor element, a mounting for movably supporting said element means coupled to said mounting for sensing the displacement of said element, an electric motor coupled to said mounting for operating on said element to control the bearing pressure of said sensor element on an object to be measured, control means acting on said motor for arresting the motor at a predetermined position of the sensor while causing the motor to develop a torque that is operative on the sensor for said bearing pressure control, said electric motor operating on the element for maintaining continuous displacement of said sensor of the element with the object in response to the contact sensed by the sensing means after contact of the element with the object has been established.

4,228,592

MEASURING TOOL ESPECIALLY FOR CARPENTERS

Harold J. Badger, R.F.D. 2, Box 71, Dover Foxcroft, Me. 04426

Filed Jun. 14, 1979, Ser. No. 48,484

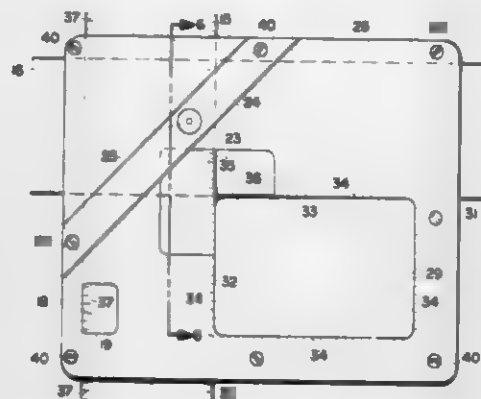
Int. Cl.³ G01B 5/14, 3/02; B25H 7/00

U.S. Cl. 33—174 G

10 Claims

1. A runner for a T-square, comprising guide channel means for the T-square, readout window means in said runner for reading a scale on said T-square, and aperture means extending through said runner, said aperture means being located in said runner so as to form marking template means, said aperture means being bounded by straight edges, said guide channel means having longitudinal channel defining walls at least one

of which coincides with one of said straight edges bounding said aperture means, whereby said at least one channel defining



wall forms a tangent relative to any marking made directly through said aperture means.

4,228,593

INTERNAL DIAMETER MEASURING APPARATUS

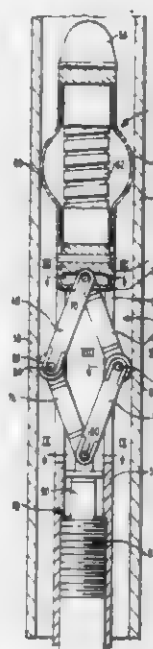
Joseph M. Frank, Penn Hills, and Robert A. Hufnagel, Forest Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 5, 1978, Ser. No. 903,377

Int. Cl.² G01B 7/12, 7/34

U.S. Cl. 33—178 F

3 Claims



1. Measuring apparatus for internally measuring tubes comprising:

a flexible supporting member capable of being inserted into a tube;

flexible centering devices disposed on said flexible supporting member at various locations along said flexible supporting member for centering said flexible supporting member with respect to the inside surface of said tube while being capable of negotiating constricted portions of said tube;

electromagnetic means disposed in said flexible supporting member for detecting metal members through which said tubes are disposed thereby indicating the longitudinal location of said measuring apparatus in said tube;

a linear variable differential transformer disposed in said flexible supporting member for transforming the force exerted on said linear variable differential transformer into a reading corresponding to the internal diameter of said tube;

a slotted member disposed in said flexible supporting member;

a first and a second link pivotally connected at their first

ends through said slotted member and capable of sliding along said slotted member;

a third link and a fourth link pivotally connected at their first ends to said linear variable differential transformer with the second end of said third link pivotally connected to the second end of said first link and with the second end of said fourth link pivotally connected to the second end of said second link; and

a first roller attached to the connection of said first and third links and a second roller attached to the connection of said second and fourth links, said rollers contacting said inside surface of said tube and causing said third and fourth links to exert force on said linear variable differential transformer when either of said rollers encounters a constriction in said tube with said linear variable differential transformer transforming the so monitored force into readings indicating the internal diameter of said tube.

4,228,594

LAYOUT TOOL FOR LOCATING HOLES ON STRUCTURAL STEEL

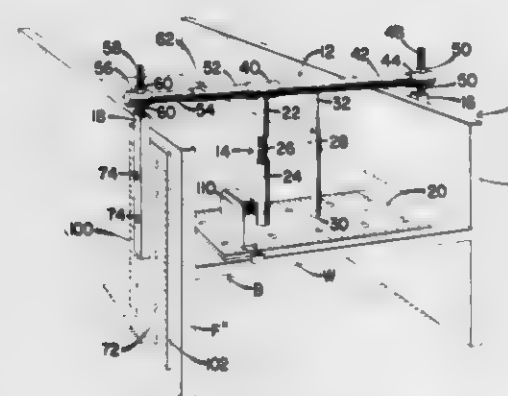
Abraham E. Shlager, 4911 Bimini Dr., Brandenton, Fla. 33507

Filed Jun. 6, 1979, Ser. No. 46,201

Int. Cl.³ B23B 49/02; G01B 5/14

U.S. Cl. 33—189

5 Claims



1. A layout tool for structural steel beams having flanges and a web comprising:

a frame having a central vertical post and a horizontal bridge connected intermediate its ends to the top of the post,

a horizontal plate connected to the bottom of the post, said plate being arranged to rest on the upper surface of the web of the beam when the beam is positioned with its web in a horizontal plane so as to support the tool on the beam, a pair of legs connected to the ends of the bridge and for extending downwardly therefrom on the outside of the flanges of the beam,

vertical plates connected to the legs for lying against the outer surfaces of the flanges,

and scales provided on each of the plates for measuring distances on the web from one of the flanges and on the flanges from the central plane of the web.

4,228,595

TOOL SETTING GAGE

Harold Steinbach, Rte. 1, Box 165 B, Menasha, Wis. 54962

Filed Apr. 18, 1979, Ser. No. 31,060

Int. Cl.³ G01B 5/00

U.S. Cl. 33—201

6 Claims

1. A tool setting gage for ascertaining the radial and axial position of an element of a tool comprising:

a base member having means for mounting said tool thereon to extend vertically above said base member;

a first pair of spaced, parallel, horizontal rails affixed to said base member;

a first carriage mounted on said first rails for movement toward and away from the tool mounting means normal to the extension of the tool;

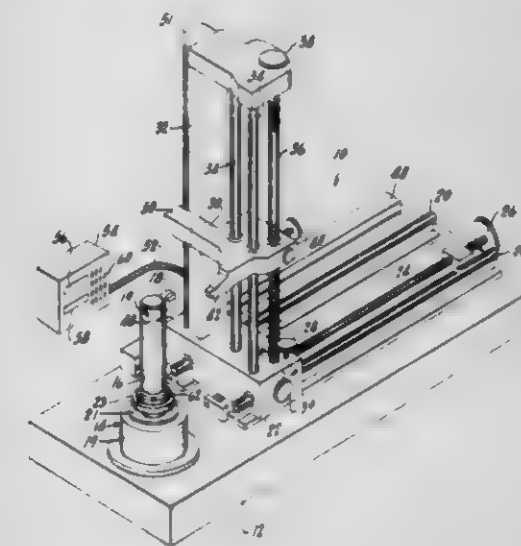
a horizontal lead screw rotatably journaled on said base member intermediate said first rails;

a first nut mechanism mounted on said first carriage and selectively engageable with said horizontal lead screw for providing fine adjustment movement of said first carriage with respect to said tool mounting means and for retaining the first carriage in position on said first pair of rails;

a second pair of spaced, parallel, vertical rails affixed to said first carriage;

a second carriage mounted on said second rails for movement up and down along the extension of the tool;

a vertical lead screw rotatably journaled in said first carriage;



a second nut mechanism mounted on said second carriage and selectively engageable with said second lead screw for providing fine adjustment movement of said second carriage with respect to said tool mounting means and for retaining the second carriage in position on said second pair of rails;

a feeler mounted on said second carriage for contacting the tool element responsive to movement of said first and second carriages;

transducer means for ascertaining the movement of said carriages; and

digital readout means coupled to said transducer means for indicating the position of said feeler.

4,228,596

ILLUMINATED TEACHING DEVICE AND BOARD GAME

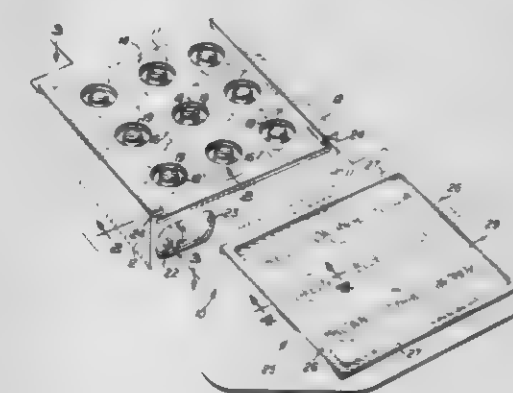
Linda A. Daniel, Phoenix, Ariz., assignor to Jerry W. Daniel, Phoenix, Ariz., a part interest

Filed Mar. 30, 1978, Ser. No. 891,616

Int. Cl.³ G09B 5/02, 7/00; A63F 3/00

U.S. Cl. 35—9 B

7 Claims



1. An educational device comprising in combination:

a. a plurality of separate compartments each having an opening defined by walls of that compartment, said openings being substantially co-planar;

b. a plurality of light sources disposed, respectively, in said compartment;

c. power source means for supplying electrical power to said plurality of said light sources;

d. a plurality of switches for controllably connecting said power source means to said respective ones of said light sources; and

e. a flexible information bearing panel through which light can pass disposed over said plurality of compartments, said flexible information bearing panel including pieces of information corresponding to separate ones of said compartments, each of said plurality of switches being disposed in respective ones of said compartments, said flexible information bearing panel having a plurality of force receiving points located so that when a deforming force is applied to a first one of said force receiving points, said flexible information bearing panel deforms to actuate a first one of said switches, turning on a first one of said light sources, causing certain information of said flexible information bearing panel to become clearly visible to a user of said teaching device, said certain information being relatively invisible to the user of said educational device before said turning on of said first switch, said flexible information bearing panel being translucent, said flexible information bearing panel including a first information bearing section aligned over a first one of said compartments, said first information bearing section containing first information which is clearly externally visible to a user of said educational device whether or not the one of said lighting sources in said first compartment is turned off, said first information bearing section being disposed on an outer surface of said flexible information panel, said flexible information bearing panel including a second information bearing section aligned over said first compartment, said second information bearing section containing second information which becomes clearly visible to a user of said educational device only when said one of said lighting sources in said first compartment is turned on.

4,228,597

TEACHING DEVICE

Abraham R. Albenda, 45 Falmouth St., Brooklyn, N.Y. 11235

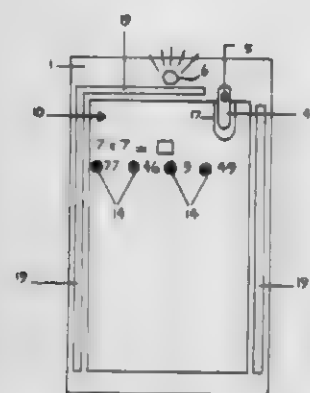
Filed Aug. 7, 1978, Ser. No. 931,508

The portion of the term of this patent subsequent to Feb. 14, 1995, has been disclaimed.

Int. Cl.³ G09B 7/06

U.S. Cl. 35—9 B

23 Claims



1. An electrical teaching apparatus comprising:

a substantially rigid base member;

a first electrically conductive layer at least partially covering a face of said base member;

an electrically conducting contact member on said base member, said contact member being spaced from and always out of contact with said first electrically conductive layer;

a source of power coupled between said contact member and said first electrically conductive layer;

an indicator means coupled in series circuit with said power

source, said first electrically conductive layer and said contact member; and

a question and answer member adapted to overlie said first electrically conductive layer and to engage said contact member, said question and answer member including an electrically insulating bottom control layer which has at least one aperture therein; a second electrically conductive layer; an upper electrically insulating question layer having at least one question imprinted thereon and indicia for selecting an answer, said second electrically conductive layer being interposed between said control and question layers; at least said control layer and question layer being permanently coupled together in registration with each other and with said at least one aperture in registration with a correct answer indicia, said second conducting layer being located at least between said at least one aperture and its associated correct answer indicia; and said question layer covering all but a portion of said second electrically conductive layer, said contact member being engageable with said question and answer member for electrically contacting at least a part of said uncovered portion of said second electrically conductive layer;

whereby when pressure is applied in the area of a correct answer indicia, an electrical circuit is completed to said indicator means from said power source, through said contact member and through said first and second electrically conductive layers which contact each other via said pressure in the vicinity of said at least one aperture in said control layer.

4,228,598

RADAR SIMULATION APPARATUS

Richard T. Warner, London, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

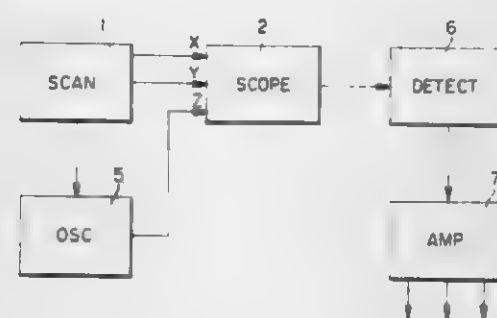
Filed Sep. 16, 1977, Ser. No. 834,524

Claims priority, application United Kingdom, Sep. 21, 1976, 39152/76

U.S. Cl. 35—10.4

Int. Cl.³ G09B 9/00

5 Claims



1. Radar simulation apparatus comprising a cathode ray tube oscilloscope having a display screen, said oscilloscope having means for producing a movable screen spot, scanning means connected to the oscilloscope for causing the spot to be scanned over the screen in a radar transmitter type scanning pattern, photo-detector means mounted in front of the screen and closely adjacent or on said screen for detecting light from said spot only when said spot is near said photo-detector means and for producing an electrical signal when said light is detected, and modulation means connected to receive and modulate said signal in simulation of a radar pulse repetition.

4,228,599

METHOD FOR RECORDING THE WALKING ABILITY OF AN INDIVIDUAL

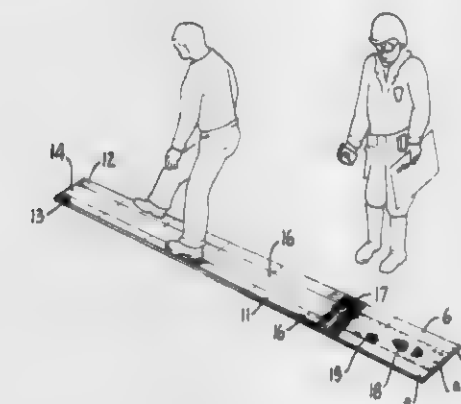
David F. Webster, 1325A Edwards Ave., Santa Rosa, Calif. 95401

Division of Ser. No. 862,093, Dec. 19, 1977, which is a continuation-in-part of Ser. No. 773,683, Mar. 22, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,769

Int. Cl.² B41L 1/00

U.S. Cl. 35—29 R

4 Claims



1. A method for recording a person's ability to walk in a predetermined area comprising the steps of:

providing a bottom sheet with at least one record area and marginal portions on either side of the record area;

placing adhesive means on said bottom sheet only in said record area and maintaining said marginal areas free of adhesive;

placing a cover sheet over said bottom sheet;

placing at least one strip of transfer means on the underside of said cover sheet;

defining a test area on said cover sheet between the marginal edges of said cover sheet so that said test area is coincident only with said bottom sheet adhesive means and said record area;

walking on said test area by a person undergoing a test;

forming prints on said record area only of that portion of a person's foot which contacts said test area and forming a record of a person's path as such person traverses said test area.

4,228,600

SHOE BOTTOM

Hans-Dietrich Krug, Heidelberg, and Willi Mildnerberger, Weinheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

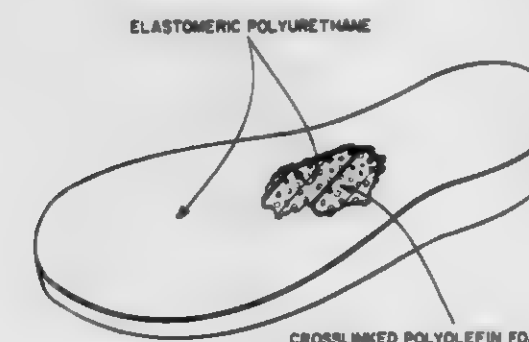
Filed Feb. 5, 1979, Ser. No. 9,714

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 7807113[U]

Int. Cl.² A43B 13/04, 13/12

U.S. Cl. 36—32 R

2 Claims



1. A shoe bottom consisting of a closed-cell crosslinked polyolefin foam having at least one surface with opened cells, the closed cells of the foam layer having a diameter of about 0.3 to 0.9 mm, and a film of an elastomeric polyurethane of

about 0.1 to 0.3 mm thickness adhered to said opened cell surface.

4,228,601

SNOW-SHOE

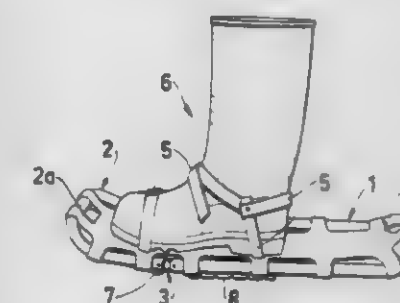
Peter Lawton, 104 Hågerstensvägen, Hågersten, Sweden (S-126 49), and Per Börjesson, Stockholm, Sweden, assignors to Peter Lawton, Hågersten, Sweden

Filed Jul. 14, 1978, Ser. No. 924,758

Int. Cl.³ A43B 5/04

U.S. Cl. 36—124

4 Claims



1. A snow-shoe comprising a snow-shoe frame having a support surface adapted to support said frame on a snow surface and fastening means for fastening the snow-shoe to a shoe at a position between the opposite ends of the frame, said frame comprising front and rear portions having mutually adjacent ends positioned below said means and which are interconnected by elastic means for holding said ends against separation and resiliently biased so as to normally hold said portions in alignment with each other and elastically permitting said portions to angularly deflect relative to each other so as to substantially conform to bending of a shoe fixed to the snow shoe by said fastening means.

4,228,602

SKI BOOT ATTACHMENT

E. Stuart Groves, Sanders Rd., Hudson, N.H. 03051

Filed Dec. 6, 1978, Ser. No. 966,877

Int. Cl.² A43B 5/00, 3/10; A43D 5/00

U.S. Cl. 36—132

8 Claims



1. An attachment for ski boots and the like, comprising

(a) a body portion having a length and width generally corresponding with the length and width of the sole of a boot to which the body portion is to be attached;

(b) said body portion being formed with a generally flat upper face and a longitudinally curved and transversely straight lower tread face;

(c) said body portion being thicker at the mid-portion thereof than at the ends thereof;

(d) a bail hinged to the rear part of said body portion and adapted to engage the heel portion of a boot placed on said upper face, and;

(e) a longitudinally retractable spring loaded clamp mounted to the forward end of said body portion and adapted to engage the toe portion of said boot;

(f) said body portion being formed with at least one longitudinal passage therethrough, a resilient element disposed in said passage, a pin extending transversely through said

body portion and engaging the rearward end of said element and pivotally connected at its ends to said bail, the forward end of said element connected to said clamp.
(g) the forward end of said body portion being formed with a longitudinal slot through the upper face thereof and in communication with said passage.

4,228,603

APPARATUS FOR FOLDING OVER AND PRESSING INTO POSITION THE EDGE STRIPS OF TWO MATERIAL WEBS

Theo Groenebaum, and Hans-Heinrich Kuper, both of Rietberg, Fed. Rep. of Germany, assignors to Firma Heinrich Kuper, Fed. Rep. of Germany

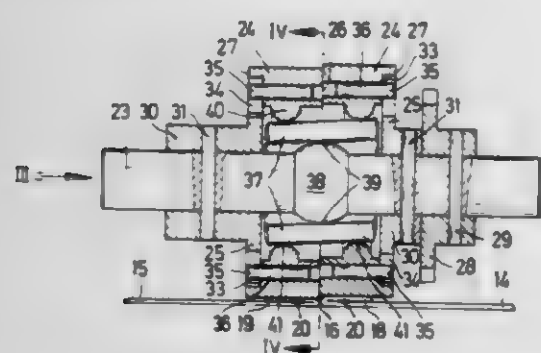
Filed Jan. 8, 1979, Ser. No. 2,015

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801569

Int. Cl.² D06F 69/00

U.S. Cl. 38—1 B

9 Claims



1. An apparatus for folding over and pressing into position the edge strips of two material webs, stitched together along the seam, comprising two co-operating superposed feeding and pressing devices, one of said feeding and pressing devices including two cylindrical jacket members of substantially identical size, which members are radially displaceably mounted relative to each other and, at their respective outer end faces are axially retained by two respective lateral end plates, in which radial grooves are machined in each lateral end plate at its outer circumference, into which grooves axial cams secured to a respective one of the associated jacket members project, whereby a spacing is maintained between the grooves and the cams, which spacing determines the radial displaceability of the jacket member.

4,228,604

BIORHYTHMIC DEVICE

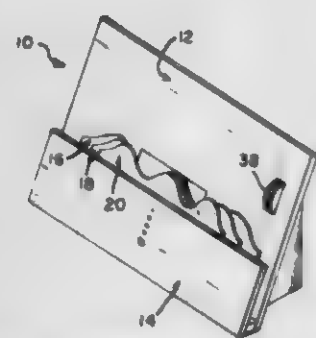
Gabriel B. Cherian, 4200 Livingstone Dr., York, Pa. 17402

Filed Oct. 10, 1978, Ser. No. 949,887

Int. Cl.³ G09D 3/00

U.S. Cl. 40—107

1 Claim



1. A biorhythmic device comprising:

- a. a back plate having a front surface that displays indicia depicting a time period divided into days with said days being represented by spaces defined by spaced vertical lines, said indicia further comprising a horizontal line dividing the spaces into upper and lower regions;

b. three sliding members, each comprising a translucent sheet having a lower edge and an upper edge, said upper edge having a sine wave contour of a different biorhythmic cycle; said sliding members overlay each other and the back plate such that the sine wave contours overlay the time period indicia, said sliding members are slidable, in relation to the other members and the back plate, in the direction of the horizontal line, thus providing means to define positive and negative regions and transition points on the cycles; and

c. means for edge illuminating the sine wave contours comprising:

- a light source on the back plate,
- means, on the sliding plates, for introducing light from the light source into the sliding member, and
- means, on the upper edge, for emitting the light introduced into the sliding member.

4,228,605

ADJUSTABLE COUPLING APPARATUS FOR SUPERPOSED BARRELS OF A SPORTING GUN OR THE LIKE

Georges Chacornac, Saint-Etienne, France, assignor to Manufacture Francaise d'Armes et Cycles de Saint-Etienne Manufacture S.A., St. Etienne, France

Filed May 25, 1978, Ser. No. 909,658

Claims priority, application France, May 27, 1977, 77 16935

Int. Cl.³ F41C 21/06

U.S. Cl. 42—1 R

12 Claims



1. An adjustable coupling apparatus for first and second spaced superposed barrels of a sporting gun, the barrels being secured at the rear ends thereof to a mounting of the gun and projecting freely forwards therefrom, said apparatus comprising holding means at the front ends of the barrels and fixed to one of the barrels for holding said barrels in fixed transversely spaced relation while permitting relative axial movement therebetween, collar means engaging said barrels at an intermediate location along the lengths thereof for transverse adjustment of the spacing therebetween, and a detachable and interchangeable sight band disposed above the upper one of the barrels and secured to said mounting, said sight band being slidably mounted on said holding means to permit slidable movement of said holding means and said one barrel to which it is fixed while said band remains stationary.

4,228,606

MEANS FOR MOUNTING CYLINDER TO FRAME OF SMALL HAND GUN

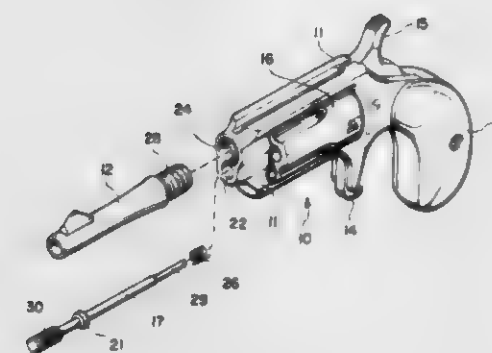
Richard J. Casull, P.O. Box 276, Freedom, Wyo. 83120

Filed Nov. 20, 1978, Ser. No. 961,979

Int. Cl.³ F41C 1/00

U.S. Cl. 42—59

4 Claims



1. In a small, single action revolver of the type comprising a frame including a handle and a barrel, a cylinder having a plurality of cartridge-receiving chambers and being rotatably mounted in the frame by a cylinder axis pin which extends through a central bore in the cylinder and engages axially aligned bores, respectively, in the front and rear portions of the frame, and a hammer mounted to the frame for reciprocal, pivotal movement between fired and cocked positions, with said cylinder being adapted for partial rotation each time the hammer is pivoted from its fired position to its cocked position, the improvement comprising a particular cylinder axis pin and cooperating means for releasably locking the cylinder axis pin in engagement with the frame of the revolver, said particular cylinder axis pin comprising an elongate, substantially cylindrical pin having a lug extending from the cylindrical surface of the pin in a direction substantially normal to the cylindrical axis of said pin, and said cooperating means for releasably locking the cylinder axis pin in engagement with the frame comprising a counterbore extending inwardly, coaxially with said aligned bores in said frame, into the front portion of the frame from the front or barrel side thereof, with said counterbore having a radius at least equal to the radius of said bore in said front portion plus the height of said lug extending from the cylindrical surface of said pin, a downwardly extending lip at the front or barrel side of said front portion of said frame, said lip covering the top portion of the open end of said counterbore without covering any portion of the open end of said bore in said front portion of the frame; and a cylindrical coil spring positioned in said counterbore, whereby when the cylinder is placed in the frame in axial alignment with said bores in the front and rear portions of the frame, respectively, and when said pin is aligned with said bores with the lug extending in a downward direction away from the lip covering the top portion of said counterbore, said pin can be inserted from the front or barrel side of said front portion through the coil spring in said counterbore so as to extend through the bore in said front portion, the bore in said cylinder and into the bore in said rear portion, and the pin is releasably locked in engagement with the frame by pushing the pin sufficiently into said bores so that said lug thereon pushes against said coil spring and slides past said lip into said counterbore, whereupon the pin is rotated so that when the pin is released, the spring pushes the lug thereon into contact with said lip.

4,228,607

SINGLE ACTION REVOLVER WITH SAFETY LOCKING CYLINDER

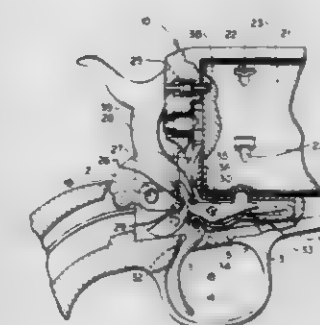
Richard J. Casull, P.O. Box 188, Freedom, Wyo. 83120

Continuation-in-part of Ser. No. 759,416, Jan. 14, 1977, Pat. No. 4,126,953. This application Nov. 20, 1978, Ser. No. 962,140

Int. Cl.³ F41C 1/00

U.S. Cl. 42—66

1 Claim



1. In a single action, single barreled revolver having a frame, a cylinder containing a single set of chambers, a hammer and a firing pin mounted in the frame rearwardly of the cylinder in alignment with the barrel the improvement which comprises a cylinder web containing a series of apertures located between the chambers into which the firing pin may be inserted when the cylinder has been rotated to place the firing pin in alignment with one of said apertures and when the hammer has been pressed forward thereby locking the cylinder such that the chambers are out of battery position.

4,228,608

CYLINDER LOCKING MECHANISM FOR SMALL REVOLVERS

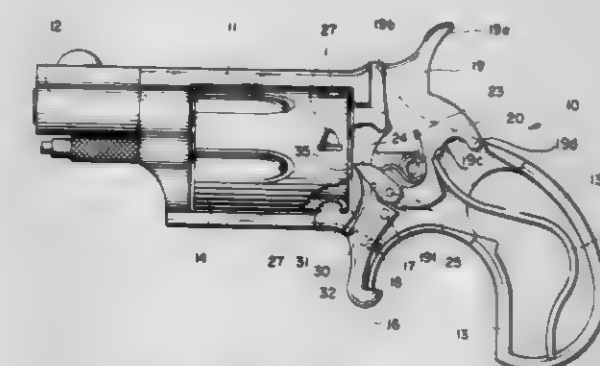
Richard J. Casull, P.O. Box 276, Freedom, Wyo. 83120

Filed Nov. 20, 1978, Ser. No. 961,980

Int. Cl.³ F41C 1/00

U.S. Cl. 42—67

8 Claims



1. In a small, single action revolver of the type comprising a frame including a handle and a barrel, a cylinder having a plurality of cartridge-receiving chambers, said cylinder being rotatably mounted in the frame and having spaced notches formed thereabout, a spring biased hammer mounted to the frame for reciprocal, pivotal movement between fired and cocked positions, means for rotating the cylinder to bring a subsequent chamber in the cylinder into alignment with the barrel when the hammer is pivoted from its fired position to its cocked position, cylinder locking means, which provides for releasably locking the cylinder in its proper aligned position each time the hammer is cocked, and a side cover plate which is attached to the frame and encloses the hammer, trigger, cylinder rotating means, and cylinder locking means in a recess in the frame of the revolver, an improved cylinder locking means comprising:

- a rocker latch member being pivotally connected at a position between its ends to the side cover plate, with one end portion of said latch member being positioned adjacent to the lower side of the cylinder and having a locking lug thereon adapted to make releasable, locking engagement

with the notches of said cylinder, and with the other end portion of said latch member being positioned close to one of the sides of the hammer;

first spring means acting upon said latch member biasing the locking lug thereon into engagement with said notches in said cylinder;

an actuating member projecting outwardly from the hammer and adapted to: (a) strike the underside of said other end portion of said latch member and pivot the latch member against said spring means to retract said locking lug from the corresponding notch in the cylinder as the hammer is moved from the fired position to a position between the fired and cocked positions, and (b) to escape beyond the free end of said other end portion of said latch member as the hammer attains its fully cocked position; whereby the latch member is biased by said first spring means to move into engagement with a subsequent notch in said cylinder as the hammer is moved to its fully cocked position; and

camming means in combination with said latch member and actuating member which is adapted to permit the actuating member, upon firing of the revolver, to slide past the free end of said other end portion of said latch member without pivoting the latch member or retracting the locking lug from the notch in said cylinder as the hammer moves from the cocked position to the fired position.

4,228,609

ICE FISHING DEVICE

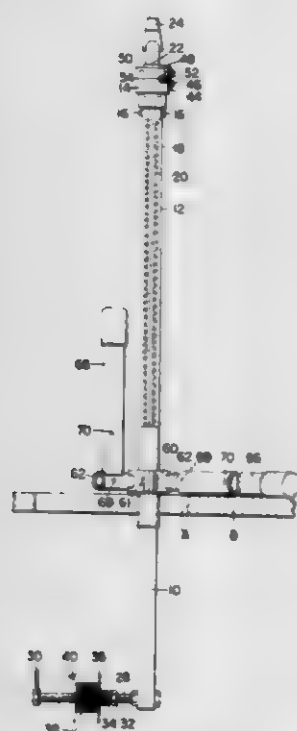
Lawrence J. Gonnello, 27 Lake Dr., Belchertown, Mass. 01007

Filed Jun. 21, 1979, Ser. No. 50,556

Int. Cl.³ A01K 91/06

U.S. Cl. 43—16

5 Claims



1. In a fishing device for ice fishing, the combination of: a vertically disposed reel support tube for extension into an ice hole, an adjustable bridging means for resting upon the ice surface and bridging the ice hole and supporting the upper portion of the reel support tube upwardly of the ice and the lower portion of the reel support tube downwardly of the ice, an outer tube sleeving the reel support tube and extending upwardly therefrom above the ice and having an open topped cap thereon, a combination handle and signal means operatively connected to the reel support tube, the combination handle and signal means being movable between a lower set position and an upper released position relative to the outer tube sleeving the reel support tube

spring means within the outer tube and extending between and fixed to the reel support tube and the cap, an abutment on the cap,

a stop on the handle selectively engageable with the abutment,

a guide projecting radially outwardly of the reel support tube at the lower end thereof,

a line carrying reel rotatably mounted upon the guide, spring means on the guide and bearing on the reel for moving the reel along the guide in an outboard direction as the line is paid out responsive to fish nibbling,

a stop means for precluding reel outboard movement and line pay out beyond a predetermined limit and for effecting horizontal rotative movement of the guide and reel and rod in a plane about the axis of the reel support tube for moving the stop on the handle out of engagement with the abutment on the cap,

whereby the combination handle and signal means and reel support tube are abruptly actuated upwardly from the lower set position to the upper released position.

4,228,610

WEEDLESS FISHING LURE

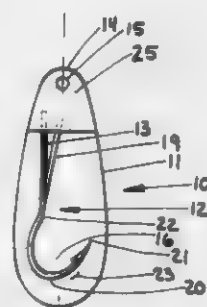
Edward M. Anderson, Plymouth, Minn., assignor to Henry C. Kovar, Anoka, Minn., a part interest

Filed Jun. 18, 1979, Ser. No. 49,294

Int. Cl.³ A01K 85/00

U.S. Cl. 43—42.41

23 Claims



1. A weedless fishing lure comprising:

(a) a body having a leading end, means for connecting the leading end to a fishing line, and a concavity in one side of the body and aft of the leading end;

(b) hook securing means mounted to the body for rotatably securing a fish hook to the body;

(c) a fish hook rotatably secured to the securing means and having

(1) an elongate shank,

(2) a curl of approximately 180 degrees in between the shank and a hook point, said curl being skewed from the shank, and

(3) an apex where the curl adjoins the shank; and

(d) a resilient spring reactively mounted in between the body and the rotatable hook, said spring rotatably positioning the hook with respect to the body in a normally weedless position in which the hook point is within the concavity and in which the hook apex projects outwardly of the body, said spring being operable for resiliently returning the hook to the normal weedless position from an alternate fish catching position in which the hook is rotated with respect to the body with the apex having been depressed toward the body and the hook point being exposed outside of the concavity and the body.

4,228,611

METHOD FOR FABRICATING FISHING LURES ETC.

Welbourne D. McGahee, Melbourne, Fla., assignor to Loop-A-Line, Inc., Melbourne, Fla.

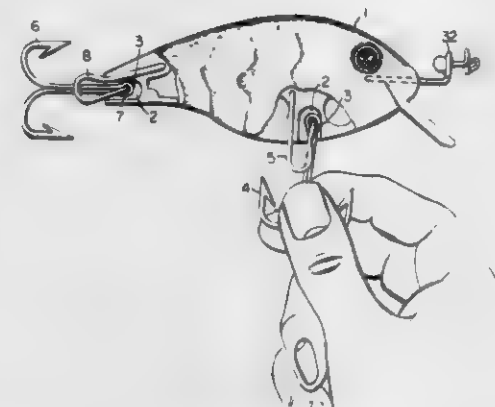
Division of Ser. No. 760,920, Jan. 21, 1977, Pat. No. 4,095,315.

This application May 16, 1978, Ser. No. 905,738

Int. Cl.³ A01K 85/00

U.S. Cl. 43—42.53

4 Claims



1. A method for fabricating a fishing lure comprising the steps of:

producing a molded lure body incorporating hook hangers with a secured end and a free end which engages a cooperating bore; and pressing the eye portion of a hook into said bore until it engages said hook hanger by forcing said free end out of engagement with said bore wall and then permitting said free end to pass through the hook eye to reengage said bore wall.

4. A method of assembling a fishing lure having biased hook retainers located in recessed cups, with a free end of said hook retainers engaging the side wall of said recessed cups, comprising:

pressing the eye of each hook into each of said cups until said hook retainer free end is forced away from said side wall and enters said hook eye and reengages said side wall.

4,228,612

FISHING EQUIPMENT

Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan

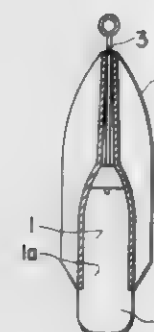
Filed Aug. 31, 1978, Ser. No. 938,472

Claims priority, application Japan, Oct. 18, 1977, 52-124902

Int. Cl.³ A01K 91/02

U.S. Cl. 43—43.13

2 Claims



1. A piece of fishing equipment comprising:

a hollow main body having a shell shape, an open rear end, and a tapered front end terminating in an opening aligned with an axis of the main body;

a hollow tapered member formed integral with the main body and extending axially forward therefrom, the tapered member having open front and rear ends cooperating with the main body to define an axially-extending bore;

a plurality of fins formed integral with and projecting radially outward from the integral main body and tapered member, said fins having substantially straight mid por-

tions, arcuate-shaped leading edge portions extending from the mid portions to portions of the tapered member adjacent the open front end, and trailing edge portions extending at an acute angle from the mid portions to portions of the main body adjacent the open rear end; a stop plug inserted into said main body; and a swivel connected to the leading end of the tapered member.

4,228,613

TAMPER PROOF RODENT BAITING STATION

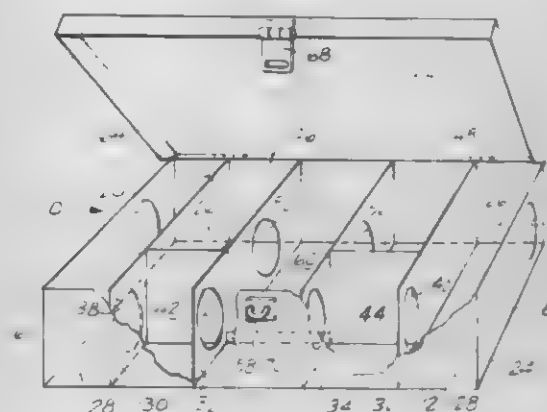
Kenneth A. Kalnasy, and Marcia Kalnasy, both of Madison Heights, Mich., assignors to Kaplan-Stern Environmental, Inc., Troy, Mich.

Filed Aug. 21, 1978, Ser. No. 935,659

Int. Cl.³ A01M 25/00

U.S. Cl. 43—131

10 Claims



1. A rodent baiting device comprising:

a substantially rectangular box having upright side and end walls, said end walls each having openings therein adjacent to a common first side of the box to permit rodents to enter the interior of the box;

a plurality of baffle members disposed parallel to the end walls and extending across the entire width of the box and the full height of the box, the outermost baffles nearest the end walls having openings therein spaced from the top and bottom of the box, disposed adjacent to a common second side of the box, opposite to said first side so as to prevent children or the like from gaining access to the section of the box between the outermost baffles;

at least one divider extending the full height of the box between adjacent baffle members for providing at least one rodent feeding station located between the openings in the end walls of the box and an entry section located between said openings in the baffles and accessible to rodents only therethrough, said divider having a central opening connecting the feeding station to the entry section;

a cover for the box; and means for securing the cover to the box to prevent unauthorized tampering.

4,228,614

FLOATING PESTICIDE DISPENSER

Nathan F. Cardarelli, Barberton, Ohio, assignor to Environmental Chemicals, Inc., Wauconda, Ill.

Continuation-in-part of Ser. No. 5,174, Jan. 22, 1979, which is a continuation-in-part of Ser. No. 916,570, Jun. 19, 1978, Pat. No. 4,166,111. This application Feb. 22, 1979, Ser. No. 14,118

Int. Cl.³ A01M 1/20, 25/00; A01N 55/04

U.S. Cl. 43—131

65 Claims

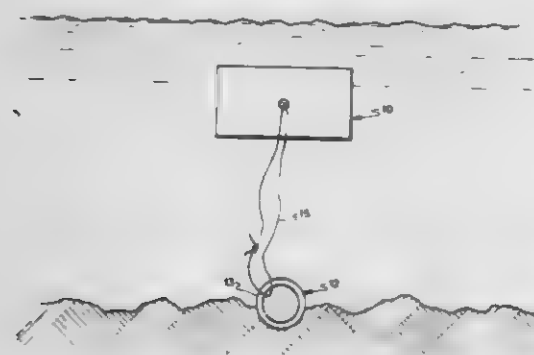
1. A floating pesticide dispenser, comprising:

a floating thermoplastic dispenser containing a pesticide and having a density less than 1.0 grams per cc.,

said thermoplastic dispenser containing a thermoplastic copolymer selected from the group consisting of a copolymer of ethylene-vinyl acetate, a copolymer of ethylene-

propylene, and combinations thereof, said ethylene-vinyl acetate copolymer having from about 60 to about 95 percent by weight of ethylene and a weight average molecular weight of from about 40,000 to about 400,000, said ethylene-propylene copolymer having from about 30 percent to about 80 percent by weight of ethylene, and a weight average molecular weight of about 50,000 to about 250,000,

said dispenser containing a pesticide for use in an aqueous environment for destroying aquatic pests,



said pesticide may be a compound having the formula R_3S_nX where R_3 is selected from the group consisting of an alkyl group having from 1 to 8 carbon atoms, an aryl group, and a substituted aryl group wherein said substituted group is an alkyl or an ester containing from 1 to 6 carbon atoms; X is selected from the group consisting of a halogen, an oxide, an alkoxy OR^1 where R^1 is an alkyl having from 1 to 12 carbon atoms, or an



group where R'' is an alkyl having from 1 to 12 carbon atoms, the amount of said pesticide ranging from about 2 parts to about 80 parts by weight per 100 parts of said thermoplastic copolymer when the pesticide is not of formula R_3S_nX and when said pesticide is said R_3S_nX compound, the amount of said R_3S_nX pesticide ranging from about 25 parts to about 75 parts per 100 parts of said copolymer, and

a weighted anchor, said weighted anchor connected to said dispenser and said pesticide being slowly released from said thermoplastic dispenser.

4,228,615

SMALL-SIZE TOY ANIMAL HAVING ARTICULATED LIMBS

Athos Melotti, Via Dello Spalto, 3, Bologna, Italy

Filed Sep. 5, 1978, Ser. No. 939,717

Claims priority, application Italy, Sep. 15, 1977, 4880/77[U]

Int. Cl.³ A63H 11/00, 33/00, 3/20, 3/46

U.S. Cl. 46-22

2 Claims

1. An articulated limb toy animal, comprising a pair of front limbs and a pair of hind limbs articulated to a trunk of the toy animal, in each said limb pairs said limbs being joined to each other by a horizontal axis cylindrical stem adapted for articulation with said trunk of the toy animal, said trunk having at the front and hind portions thereof seats for pivotal engagement with said stems, a suitable cutout for insertion of said stem into a respective one of said seats, the front limb stem further engaging a head piece for the toy animal, said head piece having at the bottom a similar engagement seat and wherein said trunk defines a front and a rear circular portions, suitably radiused, having a flattened shape in a vertical plane, and formed with a

respective central hole adapted to act as said pivotal engagement seat for said stems of the toy animal limbs, said stems



entering by press fit said holes through respective cutouts radially extending with respect to said portions.

4,228,616

FLYING SAUCER TOY

Donald C. Wilson, 18085 Birchcrest, Detroit, Mich. 48221

Continuation-in-part of Ser. No. 894,198, Apr. 5, 1978. This

application Dec. 26, 1978, Ser. No. 973,222

Int. Cl.³ A63H 33/26

U.S. Cl. 46-228

5 Claims



1. A flying saucer toy comprising:
a translucent circular plastic housing having a plurality of arcuate slits in an upper surface;
a colored transparent membrane covering the slits, and a blinking light source within the housing;
a cover of semi-rigid translucent plastic sheet having an outer rim extending horizontally outward around its periphery;
a lower housing integral with said outer rim curving upward and inward toward the center in an arcuate manner, terminating where the lower housing blends into an upper housing;
the upper housing integral with the lower housing curving upward and inward to form a hemisphere;
a first plurality of arcuate openings around the upper periphery of the lower housing spaced down a distance from the upper housing;
a second plurality of arcuate openings around the upper housing spaced up a distance from the lower housing;
a colored transparent membrane covering the first and second arcuate openings;
means for attaching the membrane to the space surrounding the openings;
a bottom member of semi-rigid plastic sheet having a shape complimentary to the outer rim, a circular slit at the center of the bottom member forming a cover, the slit ending

short of a full circle to form a hinge joining the cover to the bottom member;
means for holding the cover closed;
an electrical switch having an open and closed position;
means for producing electrical energy, a flasher light bulb socket, and a light bulb attached to the cover, electrical conductors interconnecting the electrical energy means to the switch, the socket, and the bulb to cause the bulb to glow intermittently when the switch is closed;
a plurality of rotatable wheels for supporting the flying saucer on a surface, a plurality of openings in the bottom member through which the wheels project, means for attaching the wheels to the bottom member; and
means for attaching the bottom member to the outer rim.

4,228,617

METHOD FOR GRINDING GLASS PLATES AND THE LIKE THROUGH NUMERICAL CONTROL AND BEVELING MACHINE THEREFOR

Shigeru Bando, Tokushima, Japan, assignor to Bando Kiko Co., Ltd, Tokushima, Japan

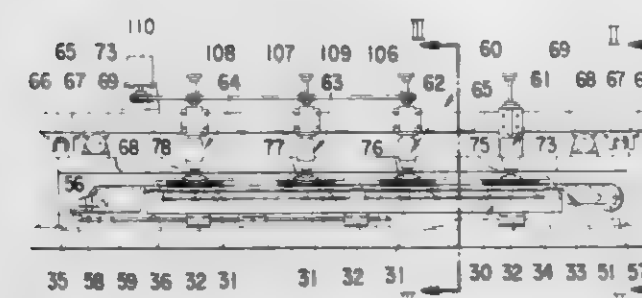
Filed Dec. 12, 1978, Ser. No. 968,774

Claims priority, application Japan, Dec. 31, 1977, 52/158164; Feb. 6, 1978, 53/012788; Mar. 5, 1978, 53/025109; Mar. 6, 1978, 53/025838; Sep. 9, 1978, 53/110850; Sep. 24, 1978, 53/116994

Int. Cl.³ B24B 9/10

U.S. Cl. 51-3

14 Claims



1. A method for grinding glass plates through numerical control comprising fixing the glass plates on a plurality of fixing stands mounted on a table, and relatively moving the glass plates and working wheels in biaxial directions in a horizontal plane while rotating each working wheel held on each of a plurality of working heads mounted opposing each fixing stand respectively as well as spinning each working wheel around a vertical axis going through a working point so that each working wheel works the glass plate to be worked at substantially the same portion of a working face, wherein the movement in the horizontal plane of the glass plates and the working wheels and the spinning movement of the working wheels are controlled by numerical control means, and after finishing one grinding process on one fixing stand, the glass plates are conveyed to the succeeding fixing stand for an additional grinding process.

4,228,618

ROTARY DISC SANDER WITH TILTABLE WORK SUPPORT TABLE AND SANDER DUST COLLECTION UNIT

Flemming E. Jensen, Portland, Oreg., assignor to Industrial Patterns & Molds, Inc., Portland, Oreg.

Filed Jan. 8, 1979, Ser. No. 1,954

Int. Cl.³ B24B 41/06

U.S. Cl. 51-125.5

8 Claims

1. In combination with a sander having a base and a motor driven sanding member mounted on the base for movement of its work sanding surface in a vertical plane, a work support table assembly comprising:

- (a) a carriage mounted on the base for movement vertically with respect to the sanding member,
- (b) a table having side, front and back margins,
- (c) a pair of interengageable table mounting pivot means on

the carriage and table located laterally outward of the opposite sides of the sanding member and adjacent the back ends of the side margins of the table for mounting the table for pivotal movement about an axis disposed substantially parallel to and closely adjacent the back margin of the table and the vertical sanding plane of the sanding member,



(d) an elongated table supporting and tilting screw secured pivotally at its upper end to the underside of the table adjacent the front margin and midway between the side margins thereof, and

(e) coupling means on the carriage engageable releasably with the screw for securing the table releasably in selected positions of angular adjustment of its work supporting surface relative to the work sanding plane of the sanding member.

4,228,619

VIBRATORY FINISHING MACHINE

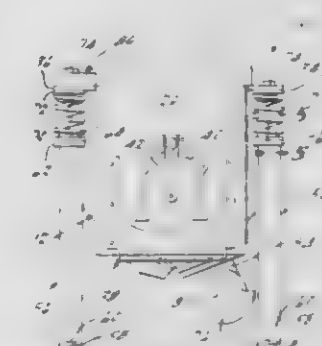
Gordon H. Anderson, Albert Lea, Minn., assignor to King-Seely Thermos Co., Prospect Heights, Ill.

Continuation of Ser. No. 833,001, Sep. 14, 1977, abandoned. This application Nov. 28, 1978, Ser. No. 964,187

Int. Cl.³ B24B 31/00

U.S. Cl. 51-163.1

5 Claims



1. A vibratory finishing machine comprising:

a tub-like container having a substantially open upper side and defining a peripheral rim portion, said container adapted to receive workpieces and a finishing media, means for imparting vibratory movement to said container and thereby causing said media to perform a finishing operation on said workpieces,

said last mentioned means including,
a support structure for said container and including a base adapted to rest upon a support surface,
said support structure also including a container support

section projecting upwardly from said base to a position subjacent said rim portion of said container, spring means connected between the uppermost part of said support section and said container rim for resiliently supporting said container thereon, a vibratory mechanism including, an eccentrically weighted vibratory shaft, said shaft extending substantially parallel to the longitudinal axis of said container at a position located below said container and offset asymmetrically from the center of said container, and weight means on said container and disposed asymmetrically of said centerline thereof in the direction opposite from said vibratory shaft.

4,228,620

ABRADING TOOL WITH WEAR PLATE

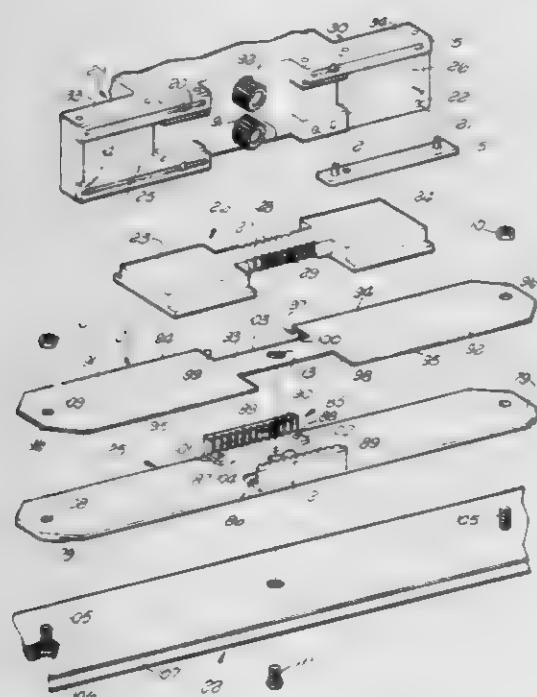
Donald H. Hutchins, Sierra Madre, Calif., assignor to Hutchins Manufacturing Company, Pasadena, Calif.

Filed Feb. 14, 1979, Ser. No. 12,157

Int. Cl.³ B24B 23/00

U.S. Cl. 51—170 TL

9 Claims



1. A portable abrading tool comprising:

- a body structure;
- a shoe plate carried at the underside of said body structure for reciprocation relative thereto and adapted to carry abrading means for abrading a work surface;
- motor means for reciprocating said shoe plate relative to said body structure;
- a pair of gears rotatively oscillated by said motor means at a location above said shoe plate;
- two racks attached to said shoe plate at opposite sides thereof and projecting upwardly above the shoe plate with said gears received between the racks;
- said two racks having teeth at inner sides thereof engaging said gears respectively to reciprocate the shoe plate;
- guide elements extending downwardly from said body structure at opposite sides thereof and having portions received beneath the shoe plate to retain and guide it for reciprocating movement;
- said body structure having a first pair of bearing structures facing downwardly toward the shoe plate near opposite edges thereof and at a location forwardly of said racks, and having a second pair of bearing structures facing downwardly toward the shoe plate near opposite edges thereof at a location rearwardly of said racks; and
- a wear plate removably attached to said shoe plate at the upper side thereof for reciprocating movement with the shoe plate relative to said body structure and movably engaging all four of said bearing structures in a relation

retaining said shoe plate against upward movement relative to the body structure as the shoe plate reciprocates; said wear plate having a relatively wide forward portion movably engaged near opposite edges thereof by both of said bearing structures of said first pair, and having a relatively wide rear portion movably engaged near opposite edges thereof by both of said bearing structures of said second pair, and having a longitudinally intermediate portion extending between and interconnecting said front and rear portions and narrower than said front and rear portions and received between said two racks.

4,228,621

VALVE SURFACING MACHINE WITH VARIABLE SPEED CHUCK

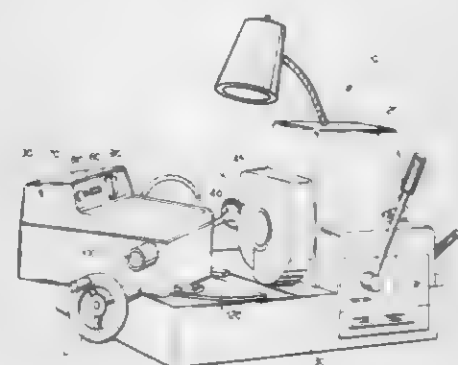
John C. Wagor, Cedar Rapids, Iowa, assignor to Kwik-Way Manufacturing Company, Marion, Iowa

Filed Feb. 22, 1979, Ser. No. 13,930

Int. Cl.³ B24B 19/00

U.S. Cl. 51—241 VS

1 Claim



1. In a valve surfacing machine with a motor driven grinding wheel, a variable speed motor attached to an adjustable means for mounting, and a chuck assembly attached to the adjustable means for mounting, the chuck assembly rotatably grips the stem of the valve to be surfaced and includes means for releasing the stem of the valve, an improvement comprising:

- a one-way clutch connected between an output shaft of the variable speed motor and the chuck assembly, and
 - a manually rotatable knob separate from the means for releasing and connected to the chuck assembly,
- whereby said one-way clutch connects rotation of the output shaft of the variable speed motor to the chuck assembly when the output shaft rotates in one direction so that the valve may be surfaced and disconnects the output shaft of the variable speed motor from the chuck assembly when the chuck assembly is manually rotated by means of said knob to permit an operator to optically inspect the valve surface without disturbing the axial position of the valve relative to the chuck assembly.

4,228,622

AUTOMOBILE SHELTER APPARATUS

Ilija Tisma, 4563 Polk St., Gary, Ind. 46408

Filed Aug. 11, 1978, Ser. No. 933,100

Int. Cl.³ E04H 6/04; E04B 1/343

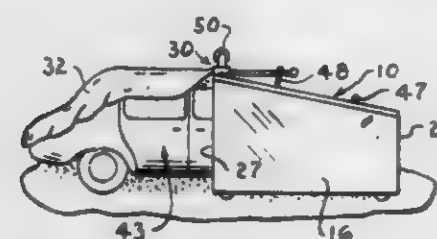
U.S. Cl. 52—3

1 Claim

- 1. An automobile shelter apparatus comprising:**
- spaced upright side walls, a top wall connecting said side walls and an upright end wall connecting said side walls and top wall to form an open ended housing;
 - said housing at said open end thereof having a vertical elevation to cover the windshield component of the automobile;
 - said upright end of said housing having a vertical elevation to cover the hood component of the automobile;
 - at least one of said upright sides having a hinged panel for

pivoting exterior of said housing to longitudinally extend the open end thereof;

- a shaft member horizontally supported across said top wall;
- a sheet member convolutely rolled on said shaft member;
- spaced longitudinal and lateral elongated members fixed to each other to form a rectangular frame supported on said top wall of said housing;
- spaced means on said top wall of said housing to guide said spaced longitudinal elongated members when extended over said automobile;



means on said top wall for restricting pivotal movement of said frame when said frame is extended over said automobile;

- said shaft member being rotatable to lay out said sheet member over said frame when said frame is extended over said automobile; and
- means for rotating said shaft to convolutely roll said sheet member on said shaft.

4,228,623

PREFABRICATED SELF-SUPPORTING MODULAR ROOM ELEMENTS

Ennio Menosso, via Papa Giovanni XXIII, Pradamano (Udine), Italy (33040)

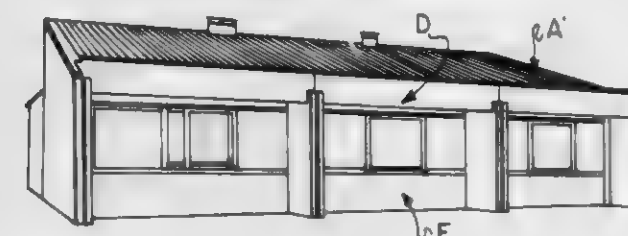
Filed May 15, 1978, Ser. No. 906,246

Claims priority, application Italy, Mar. 3, 1978, 83346 A/78

Int. Cl.³ E04H 9/06

U.S. Cl. 52—79.3

4 Claims



1. A building formed from plural precast, inter-connected elements in which said elements are adapted to be oriented into a plurality of configurations comprising: a first element having edges defined by a substantially inverted "U" shaped configuration including vertical legs and a planar top portion canted relative to a horizontal plane whereby a plan view of either of said vertical legs would define a trapezoid and means along the edges thereof to fasten said first element further including a second element having edges defined by a substantially inverted "L" shaped configuration including one vertical leg and one horizontal leg having means along the edges thereof to fasten said second element to another element including a third element having edges defined by a parallelepiped box shape, open along its top extent, having a door-type passageway on a first vertical wall, second and third opposed walls orthogonally fastened to said first wall, and a fourth wall facing said last named wall wherein said second and third walls extend beyond said first and fourth walls thereby providing an outwardly extending sheath, and means along the edges to fasten said third element to another element wherein said means along the edges to fasten said elements includes a recess along said edge, and an iron bar extending into said recess from one wall's edge of said element, said iron bar forming a loop in said recess and extending back into said one wall's edge and in

which a first set of two of said elements have their recesses in registry whereby their respective loops overlap further including a tying bar extending through said loops and said recesses are filled with cementitious material and wherein said first set of elements is fastened to a supporting base through stirrup means, in which said stirrup means is defined by a pair of U-shaped elements embedded in said base and extends upwardly therefrom facing each other such that an open area of each U stirrup faces away from each other and a wall of an element is affixed therebetween.

4,228,624

HEAT-SOUND INSULATING WALL

Patrick Renault, Garches, and Francis Ovaert, Paris, both of France, assignors to SMAC ACIEROID, Paris, France

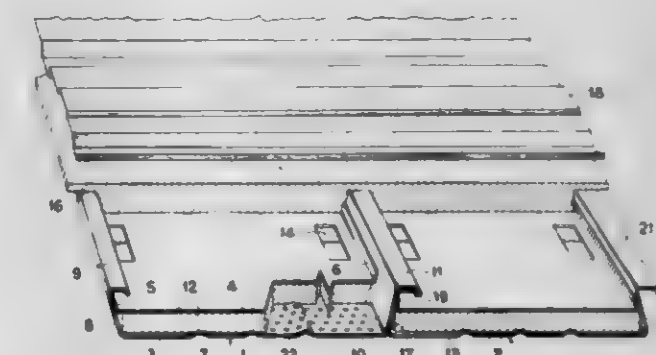
Filed Jan. 19, 1979, Ser. No. 5,017

Claims priority, application France, Jan. 26, 1978, 78 02128

Int. Cl.³ E04B 1/82

U.S. Cl. 52—145

8 Claims



1. A heat-sound insulating wall which is light and not intended to be used as a load-bearing wall but to be attached to a rigid support structure such as a frame of a building, said insulating wall comprising an acoustic box structure which comprises a substantially U-sectioned sheet which has a mid-portion which defines a first side of the box structure and is slightly ribbed and opposed flange portions which are spaced apart and extend from one side of the mid-portion, and a flat sheet which extends across the whole of the U-sectioned sheet and is wholly spaced from said mid-portion and fixed to the flange portions and defines a second side of the box structure, the flange portions extending beyond said flat sheet relative to said mid-portion and thereby forming rib structures on said second side of the box structure, a thin panel of sound insulating high-density mineral wool which extends across the whole of the box structure from one flange portion to the other opposed flange portion and is disposed in the space between said mid-portion and said flat sheet, a pad of flexible porous material affording a heat insulation and having a weight substantially similar to the heat insulation and weight of an insulating mineral wool felt structure, said pad adjoining the whole of said second side of the box structure and said rib structures and having a thickness which exceeds the thickness of said panel and exceeds the dimension of said rib structures measured from said flat sheet and laterally overlapping the rib structures and an outer panel which bears against and protects said pad and has ribs or corrugations which extend in a direction perpendicular to the ribs of said mid-portion.

4,228,625

CONSTRUCTION SYSTEM

Dittmar Ruffer, Danziger Strasse 47, and Edmund Wagner, Beethovenstrasse 10, both of D-6200 Wiesbaden, Fed. Rep. of Germany

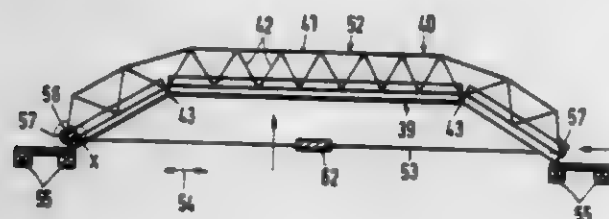
Filed Dec. 19, 1978, Ser. No. 971,017

Claims priority, application United Kingdom, Feb. 13, 1978, 90/78

Int. Cl.¹ E04C 2/06

U.S. Cl. 52—223 R

22 Claims



1. construction system with a girder reinforcement comprising bent diagonal strut and a bottom flange for a wholly or partially prefabricated ferroconcrete wall or slab containing at least one reinforcement mat the longitudinal bars of which are partially surrounded by the bent diagonal struts of the girder member, at least the bottom flange of which bears on transversely oriented mats, and formwork for producing double-skinned concrete components, more particularly of reinforced concrete, ceiling or wall slabs comprising two concrete skins situated at a distance from each other and connected to each other by means of the reinforcement, formwork surfaces associated with a formwork frame and having openings for the intermediate webs of the reinforcement or other connecting parts and supports for the formwork surfaces of the top formwork frame and with a double-skinned reinforced concrete slab for use as a vertical building wall exposed to bending stress, namely as an external wall exposed to soil pressure, in which the inner skin is shorter than the outer skin and serves to form a bearer for a horizontal ceiling slab and the reinforcement comprises steel mats disposed in both skins and girder members which interconnect the mats and the rising reinforcement of the inner skin projects above the top endface edge thereof approximately to the height of the top edge of the outer skin together with a reinforced, haunched concrete slab as well as with apparatus for aligning abutting prefabricated construction slabs with a transverse bar on one of whose ends there is mounted an internal longitudinal bar which bears upon the surfaces of two of the construction slabs and whose other end is provided with a longitudinal slot into which a wedge is driven approximately parallel with the internal longitudinal bar and bears on the other surfaces of the construction slabs and thus aligns them, together with a device for aligning prefabricated slab-shaped wall elements and a device for the thermal insulation of joints which exist between abutting double-skinned concrete slabs in which a thermal insulating mat bears on the inside of one of the concrete skins, characterized in that as regards reinforcement there is provided a lattice girder with only one top flange and one bottom flange (1,2) and at least one of the said flange bars is supported by a strut (11) extending transversely to the plane of the girder and extending to a longitudinal bar (7a) of the mat (8b) and that as regards the formwork two formwork frames (15,16) are separated from each other and are maintained at a distance by spacer feet (17) mounted on only one of the two formwork frames (15,16) and that as regards to double-skinned reinforced concrete slab the rising reinforcement (34) of the inner skin (33) is bent towards the outer skin (31) in the region of the horizontal top support edge (36) of the inner skin (33) so that the support edge (36) remains substantially undisturbed and extends approximately to the top edge (38) of the outer skin (31) and that as regards the reinforced haunched concrete slab each of its ends is provided with a slot (56) through which extends a tie bar (53) which interconnects both ends and at its own ends is anchored on the slab by means of an L-profile piece (57) one of whose members (58) bears on the top of the slab (39) and the tie bar

(53) is connected to the other member (59) of the profile piece which bears on the end edge of the slab, also that with respect to the device for aligning abutting prefabricated slabs the inner longitudinal bar (67) is inserted into a longitudinal slot (68) of the transverse bar (66) and that in the device for aligning prefabricated slab-shaped wall elements a connecting bar (76) is inserted into a joint between two abutting wall elements (72,73) and the front end of said bar has welded to it a transversely extending retaining bar (77) which bears on one of the surfaces of the wall elements, that a board (79) is provided with an open hole (80) by means of which it is slid on the rearward end of the connecting bar and bears on the other surface of the wall elements and that a turnbuckle (81), which bears on the free surface of the board, is slid on the rear end of the connecting bar and that furthermore as regards the device for the thermal insulation of the joints the edges of the thermal insulating mats (99, 102) which are adjacent to the relevant joints (103) are profiled so as to produce a continuous reception space along the longitudinal direction of the joint (103), the profile of the outside (110) of said space being broader than on the inside (111) and that a bar (104, 109) of thermally insulating material with a profile corresponding approximately to the profile of the reception space is inserted therein.

4,228,626

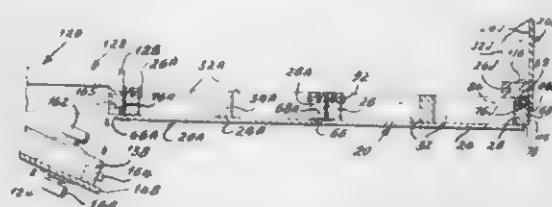
PREFABRICATED PANEL MODULE CONSTRUCTION
Stanley F. Trampe, 920 Greeley Ave., Webster Groves, Mo. 63119

Filed Dec. 27, 1977, Ser. No. 864,493

Int. Cl.¹ E04B 1/00; E04C 1/30

U.S. Cl. 52—275

34 Claims



1. A single-walled prefabricated panel module interconnectable with other panel modules in side-to-side right angular relationships without intermediate structural elements for use in constructing interior walls and enclosures comprising a substantially rectangular frame assembly, said frame assembly including oppositely disposed substantially similar third and fourth side framing portions positioned transverse to and connecting said first and second side frame portions, all of said framing portions having a rectangular cross-section and front, rear, and outer side surfaces, a substantially flat sheet of sheathing material having side edges defining a substantially rectangular shape attached to said frame assembly, each of said framing portions having a respective side edge of said sheathing material associated therewith, said sheathing material being so attached to said frame assembly to engage the front surface of each framing portion and to at least partially overlap the front surface of said first framing portion along its length, said sheathing material projecting beyond outer side surfaces of the remaining framing portions of said frame assembly to form overhangs therealong, said overhangs projecting beyond said frame assembly a distance less than the width of said first framing portion and less than the depth of said third framing portion, said subject panel module adapted to be interconnectable with a like module wherein the rear surface of said first framing portion of said subject panel module is placed in abutment with the outer side surface of the second framing portion of a like module and the overhang associated with the second framing portion of the like module abuts and at least partially overlaps said outer side surface of said first framing portion of said subject panel module along the length of said first framing portion, and means for connecting said first framing portion of said subject panel module to the second framing portion of a like module.

4,228,627

REINFORCED FOUNDATION STRUCTURE

Joseph C. O'Neill, 3101 E. Steger Rd., Chicago Heights, Ill. 60411

Filed Apr. 16, 1979, Ser. No. 30,343

Int. Cl.² E02D 27/42; E04B 1/41

U.S. Cl. 52—295

6 Claims



1. A reinforced foundation structure in the form of a concrete column adapted as a support for a relatively high standing light pole or the like, said foundation structure comprising one or more reinforcing rod assemblies embedded in concrete which forms the main body of the columnar structure, said rod assembly comprising a lowermost section of steel reinforcing rod material and constituting a substantial portion of the length of the rod assembly and an uppermost section of a rod material which has a tensile strength and resistance to shear stress substantially greater than the material of the lowermost rod section, said rod sections being joined by a coupling member which connects the rod sections in axial alignment.

4,228,628

BUILDING BLOCKS AND CONNECTOR MEANS THEREFOR

Kriemhild Schlomann, Seilerstr. 33, Soltau, Fed. Rep. of Germany (D-3040)

Continuation of Ser. No. 850,026, Nov. 9, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 939,132

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1976, 2651182

Int. Cl.² E04B 2/20

U.S. Cl. 52—438

24 Claims



1. In a masonry, a combination comprising a first and a superimposed second building block, said blocks having neighboring surfaces at least one of which has a recess, and registering sockets in said surfaces; a substantially spherical connector having first and second substantially hemispherical sections which are respectively complementary to and are received in the sockets of said first and second blocks, the weight of said second block being taken up by the surface of said first block; a substantially funnel-shaped inlet in the building block including said one surface for admission of bonding agent into said

recess, said inlet extending from said recess to that surface of the respective block which is located opposite said one surface; and hardenable bonding agent filling said recess.

4,228,629

VERTICAL SIDING SYSTEM

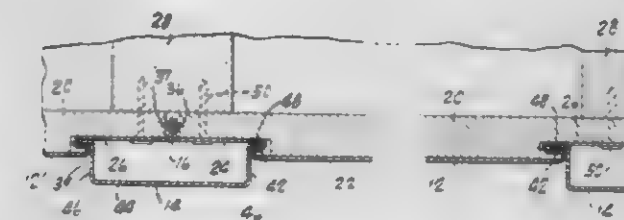
Alexander A. Chalmers, Warren; J. Lynn Gailey, Newton Falls; James A. Englund, and Stephen Popek, both of Warren, all of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed May 26, 1978, Ser. No. 909,937

Int. Cl.¹ E04C 1/34

U.S. Cl. 52—460

5 Claims



1. A vertical siding system mounted on a supporting wall, said system comprising:

- a plurality of vertically elongated siding panels having longitudinal edges, disposed in parallel, edge-abutting, side-by-side array outwardly of said wall;
- for each of said panels, a plurality of fastening elements for securing the panel to the wall; and
- a plurality of vertically elongated, resiliently deformable cover members respectively disposed outwardly of the abutting edges of adjacent panels of said array in covering relation to said abutting edges;
- each of said panels comprising a unitary, formed sheet metal strip and a substantially rigid insulating body disposed inwardly thereof, both the strip and the body extending over the full width of the panel, each said panel having
 - a broad central portion with a substantially flat outer surface, extending the length of the panel,
 - first and second fastening flanges respectively extending the length of the panel along said longitudinal edges on opposite sides of said central portion, said fastening flanges having outer surfaces offset inwardly with respect to the outer surface of said central portion, said fastening elements for each said panel extending through the fastening flanges thereof into the wall, and
 - portions defining first and second locking grooves formed in the sheet metal strip and respectively extending the length of the panel on opposite sides of said central portion between and central portion and said fastening flanges, said locking grooves respectively opening laterally of said panel in opposite directions away from said central portion such that locking grooves of adjacent panels face each other across the abutting edges of the panels;
- each of said cover members comprising a formed sheet metal strip having a pair of longitudinal locking flanges, respectively projecting laterally of the cover member in opposite directions and positioned and dimensioned such that they are re-respectively received in the facing locking grooves of adjacent panels mounted on the wall, thereby to retain the cover member in covering relation to the abutting edges and adjacent fastening flanges of the adjacent panels;
- each of said cover members being resiliently deformable and being shaped and dimensioned for snap-fitting interengagement of the cover member with facing groove-defining portions of adjacent panels such that the cover member is capable of being deformed for lateral insertion of its locking flanges into the facing grooves of the adjacent

panels and is held under compression between the last-mentioned groove-defining portions;
(g) said panel strip having longitudinal edges bent inwardly at right angles to said fastening flanges to cover the longitudinal edges of said insulating body.

4,228,630

WINDOW FRAME CONSTRUCTION

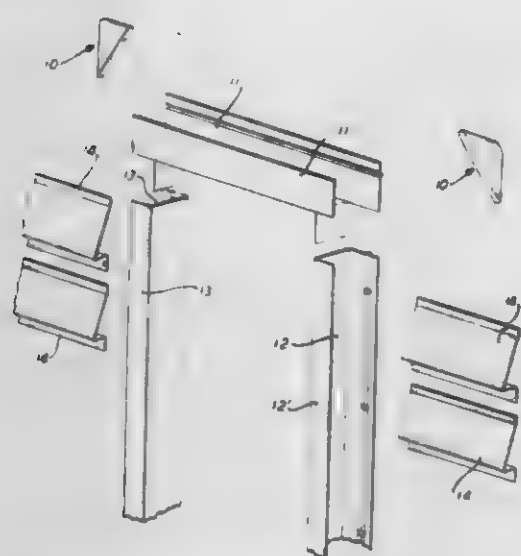
Herbert U. Englert, Deal, and Jack Demray, Atlantic Highlands, both of N.J., assignors to Englert Metals Corp., Perth Amboy, N.J.

Continuation of Ser. No. 704,179, Jul. 12, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,526

Int. Cl.² E04C 2/38; E06B 3/00

U.S. Cl. 52—656

1 Claim



1. A window frame, comprising:
 - (a) a top bar having opposite ends,
 - (b) a pair of side bars abutting the top bar ends, forming, therewith, two top window frame corners of an inverted U-shaped window frame configuration,
 - (c) a pair of plates,
 - (d) each plate including a triangular side wall portion telescopically registrable with and covering the abutting ends of the top and side bars,
 - (e) each plate further including a pair of flanged portions bent angularly from two adjacent edges of the side wall portion and each disposed at right angles thereto,
 - (f) each plate further including a pair of spaced trapezoidal gripping portions, bent angularly beyond the flanged portion and parallel to the side wall portion and defining therewith a Y-shaped slot receiving said abutting corner of the top bar and side bar,
 - (g) each plate further including a plurality of parallel spaced elongated indentations formed in each of said gripping portions, parallel with flanged portion of the plate from which such gripping portion depends, and spaced therefrom and frictionally engageable with and covering said abutting portions of the top and side bar,
 - (h) said indentations reinforcing said top and side bars.

4,228,631

HOLLOW RECTANGULAR JOIST

Bruce T. Geffe, 18517 NE 20th Pl., Redmond, Wash. 98052

Filed Sep. 12, 1978, Ser. No. 941,552

Int. Cl.³ E04C 3/08, 3/16

U.S. Cl. 52—690

8 Claims

1. A structural wooden joist-like member comprising:
 - (a) an elongated substantially rectangular tension chord;
 - (b) an elongated substantially rectangular compression chord in a spaced apart generally parallel opposed relation to said tension chord;
 - (c) a pair of elongated side members each including a number of planar dentations connecting both side edges of the tension chord to the respective side edges of the compression

sion chord, said dentations each having two non-parallel side edges resulting in each dentation having a broad end and a narrow end; said dentations being serially connected to provide a planar face connected with the side edge of the compression chord and thereby materially increasing its transverse cross-section; the narrow ends of the said dentations being connected with the side edge of the tension chord; and the connections of said dentated side members to the tension and compression chords creating a joist having a substantially hollow rectangular cross-sectional shape in which the compression chord has a greater cross-section than the tension chord; the said dentations forming one side of the said hollow joist being coordinately disposed with dentations forming the opposite side of the joist providing through passages permitting wiring.



pipes, conduit, ducts or other apparatus to extend transversely through the resulting joist openings;

- (d) end reinforcements connected face-to-face with said tension chord at each end thereof; said end reinforcements being between the tension chord and the compression chord; said end reinforcements being at each end of the joist extending inward from the end of the joist so that each side edge of each end reinforcement is connected to the said connected planar face of at least two of the dentations; and
- (e) upright spacers at each end of the joist, said spacers being connected to the adjoining faces of the said compression chord, said end reinforcements, and planar faces of both dentations located at the joist ends on opposite sides of the joist.

4,228,632

COIN GUIDE CHUTE DEVICE FOR COIN PACKING MACHINE

Kenkichi Watanabe, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Sep. 1, 1978, Ser. No. 938,781

Claims priority, application Japan, Sep. 6, 1977, 52-107131

Int. Cl.² B65B 29/00

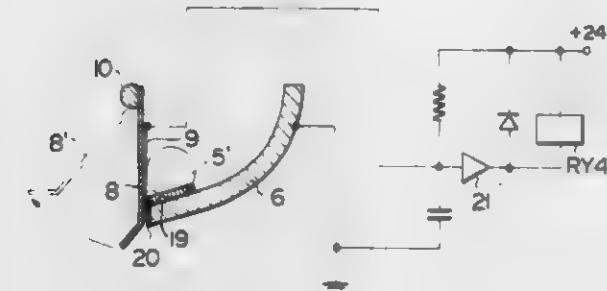
U.S. Cl. 53—54

2 Claims

1. In a coin packaging machine including means for winding packaging paper upon the circumferences of a preset number of accumulated coins, and fastening means for folding inwardly both ends of the wound packaging paper to fasten the same, whereby to prepare a coin package;

a coin guide chute device comprising:
guide chute means including a discharge opening for guiding the coin package from the coin packaging means,

said guide chute means including an electrically conductive portion,
gate means of an insulating material hinged to the discharge opening of said guide chute means and biased for closing said discharge opening so as to block said coin package



guided thereto, said gate means including an electrode portion; and
control means for detecting electric conduction between said guide chute means and said electrode portion of said gate means when a loose coin is blocked at the discharge opening of said guide chute means by said gate means.

4,228,633

METHOD FOR MANUFACTURING, FILLING AND CLOSING A RECEPTACLE MADE OF THERMOPLASTIC MATERIAL

Yves J. Corbic, Chatou, France, assignor to Gatrum Anstalt, Vaduz, Liechtenstein

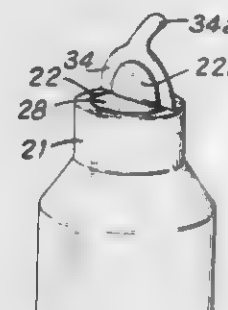
Continuation-in-part of Ser. No. 704,730, Jul. 12, 1976, Pat. No. 4,131,211. This application Mar. 13, 1978, Ser. No. 886,093

Claims priority, application France, Mar. 15, 1976, 77 07706

Int. Cl.³ B65B 61/18

U.S. Cl. 53—412

13 Claims



11. A method of manufacturing, filling and closing a receptacle comprising:

- (a) providing a receptacle having a side wall, an end wall integral with said side wall and made of thermoplastic material, said end wall having an inner face and an outer face and non-heat fusible cover means attached to at least a portion of the outer face of said end wall;
- (b) subsequently forming at least one curved or polygonal slot in said end wall by partially melting the thermoplastic material of said end wall through the entire thickness thereof, by applying on said inner face a heated electrode introduced into said receptacle through a filling opening opposite said end wall, said slot having edges in the form of flanges of substantially rounded section, at least a zone of said end wall surrounded by said slot and a part of said end wall surrounding said slot being hermetically fast with said cover means;
- (c) filling said receptacle through said filling opening opposite said end wall provided with said at least one slot; and
- (d) hermetically closing said filling opening.

4,228,634

ENVELOPE OPENING PROCESS AND COMPOSITION

Joseph Savit, Glencoe, Ill., assignor to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Aug. 13, 1979, Ser. No. 65,908

Int. Cl.³ B65B 43/26, 69/00

U.S. Cl. 53—492 8 Claims
1. In the process for opening envelopes made of cellulosic paper in which a chemical degradation agent for cellulose in aqueous solution is applied to at least one edge of said envelopes, said edge is thereafter heated and subjected to mild mechanical action, the improvement wherein said aqueous solution contains from about 2.5 to about 30 volume percent of a glycol ether of the formula



wherein R_1 is an alkyl group having from 1 to 4 carbon atoms, R_2 is an alkylene group having 2 to 3 carbon atoms and n is an integer from 1 to 2, said glycol ether being capable, when applied to one surface of a sheet of envelope paper in a solution of 80 volume percent of water and 20 volume percent of said glycol ether in a drop of 0.05 ml. size at ambient temperature, of penetrating to the opposite surface within one minute without spreading on said one surface to an area having a diameter in excess of 10 millimeters, said envelope paper being of White Wove starch-sized envelope stock having a moisture content of about 5%, having a basic weight of 22 ± 2 pounds per 3000 square feet and a caliper of 0.0045 ± 0.0005 inches.

7. A composition for the chemical degradation of paper comprising tartaric acid at a concentration between about 0.5 normal and 7 normal dissolved in a solvent comprising from about 15 to about 30 volume percent of ethylene glycol monoethyl ether and from about 70 to about 85 volume percent of water.

4,228,635

POULTRY BAGGING SYSTEM

William F. Altenpohl, and Paul J. Altenpohl, both of High Point, N.C., assignors to W. F. Altenpohl, Inc., High Point, N.C.

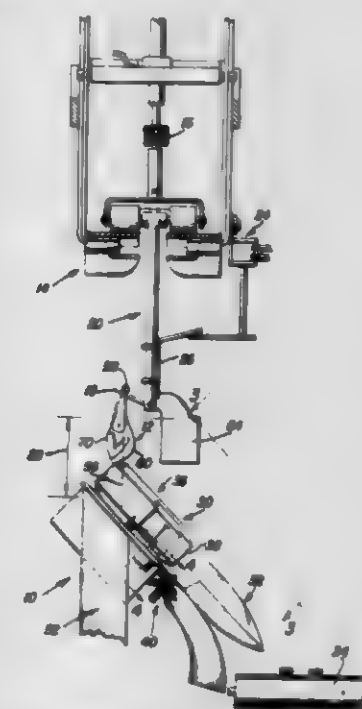
Continuation-in-part of Ser. No. 845,231, Oct. 25, 1977. This

application Jan. 10, 1979, Ser. No. 2,705

Int. Cl.³ B65B 43/36, 39/02

U.S. Cl. 53—572

16 Claims



1. In combination with a bagging device having a fixed slide surface adapted to guide movement of a product into an opened bag with a tight fit, and a carrier releasably suspending the product during travel along a conveyor path overlying the slide surface, the improvement residing in hook means for suspending the product on the carrier at two suspension points,

means mounting the hook means on the carrier for pivotal displacement, release means engageable with the hook means for effecting gravity induced displacement thereof to a release position causing free fall of the product along a vertical path to an impact position on said slide surface, and frame means mounting the bagging device in operative relative to the carrier with the slide surface positioned at an angle of incline to said vertical path substantially matching the impact position for terminating said free fall of the product and guiding continued descent thereof into the opened bag.

4,228,636

METHOD AND APPARATUS FOR THE MEASUREMENT OF PLANT DENSITY FOR THE CONTROL OF HARVEST MACHINES

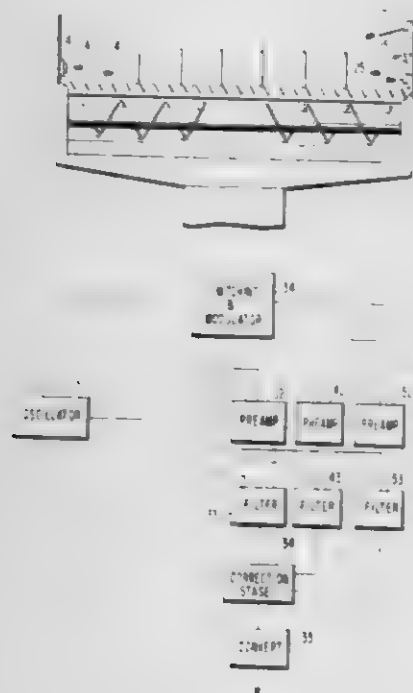
Helmut Homburg, Harzewinkel, Fed. Rep. of Germany, assignor to Firma Gebr. Class Maschinenfabrik GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 770,126, Feb. 18, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,592. Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608049

Int. Cl.³ A01D 45/00, 75/02

U.S. Cl. 56-10.2

9 Claims



1. In a harvest machine of a type having harvesting tools at the front end thereof for cutting plant growth as the harvest machine moves forward, the harvesting tools emitting ultrasonic noise signals, the improvement of noise insensitive apparatus for measuring the density of plant growth in a cutting area in front of said harvesting tools and for controlling the forward movement of the harvest machine is response to the measured density, the apparatus comprising:

transmitter means for transmitting an intermittent beam of frequency modulated ultrasonic pulses through said cutting area in a direction transverse to the forward direction of travel of said harvest machine, the transmitted ultrasonic pulses being deflected and absorbed by plant growth in said cutting area;

absorption receiver means disposed opposite said transmitter means and operable to receive signals for a particular period following an acoustic time delay after each of said ultrasonic pulses is transmitted, the acoustic time delay and particular period defined to allow said receiver to receive the ultrasonic signal pulses of said transmitter means that pass through the plant growth in the cutting area;

means for subtracting the noise signals generated during each particular period from the signals received by said receiver means during the particular period;

reflection receiver means disposed forwardly and in a lateral

spaced relation with respect to said absorption receiver means for receiving the ultrasonic pulses of said transmitter means that are reflected by the plant growth in said cutting area out of a transverse line between the transmitter means and the absorption receiver means; and means for evaluating the intensity, time delay and/or phase position of the ultrasonic pulses received by said absorption receiver means and said reflection receiver means to generate a harvest machine control signal for controlling the forward movement of the harvest machine.

4,228,637

COMPRESSIBLE MATERIAL TREATING DEVICE

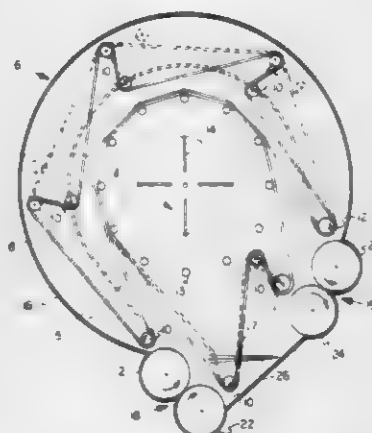
Clarence B. Richey, West Lafayette; Samuel D. Parsons, Lafayette; Victor L. Lechtenberg, and Donald A. Holt, both of West Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed May 15, 1978, Ser. No. 905,862

Int. Cl.³ A01D 39/00; A23K 1/00

U.S. Cl. 56-341

27 Claims



1. A device for treating fibrous plant materials, said device comprising:

housing means providing a treating space that is closed except for an inlet and an outlet;

means to supply a preservative as a treating substance to said treating space;

propelling means for creating a continuously moving flow of said treating substance through said treating area;

first roller means positioned at said inlet of said housing means for receiving fibrous plant materials to be treated, said first roller means being movable and closing said inlet except to permit introduction of said received fibrous plant materials into said treating space;

means establishing a path for conveying fibrous plant material from said inlet through said treating space and into contact with said treating substance within said treating space whereby said fibrous plant material is substantially treated by contact with said treating substance while in said treating space; and

second roller means positioned at said outlet of said housing means for receiving treated fibrous plant material, said second roller means being movable and closing said outlet except to permit discharge of received treated fibrous plant material from said treating space.

4,228,638

PRESERVATIVE APPLICATOR FOR A ROUND BALER

David L. Rabe, Ottumwa, Iowa; Colin M. Hudson, Moline, Ill., and Gust Soteropoulos, Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 26, 1978, Ser. No. 955,021

Int. Cl.³ A01D 39/00, 75/00

U.S. Cl. 56-341

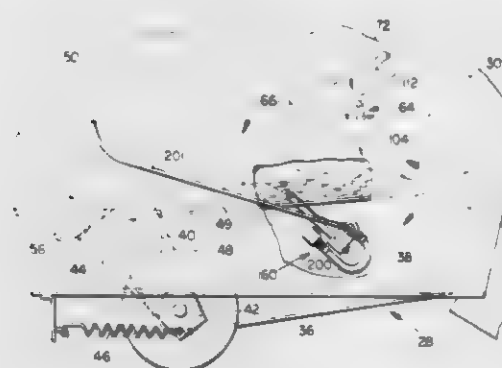
31 Claims

1. In a mobile machine for forming large cylindrical bales, having a conveying system including a generally fore-and-aft

extending conveyor with an upper surface and a bale-forming mechanism for forming cylindrical bales with an axis transverse the conveyor and a forward pickup for lifting crop material from a field and transferring it to the upper surface of the conveyor as a transversely extending mat for rearward movement and delivery to the bale-forming mechanism so that the mat is rolled into a bale by the bale-forming mechanism, the improvement comprising:

a source of crop treating fluid operatively associated with the machine;

fluid dispensing means on the machine, including a plurality of dispenser units independently responsive to the pres-



ence of crop material in the mat immediately adjacent the respective dispenser unit for dispensing fluid upwards through the conveyor upper surface over substantially the transverse extent of the mat while it is being carried by the conveyor and immediately before delivery to the bale-forming mechanism;

means for conducting the crop-treating fluid from the source to the dispensing means; and

control means operatively associated with the dispenser units for sensing the presence of crop material on the upper surface of the conveyor and controlling the dispenser units so that fluid is dispensed only when material is present on the conveyor.

4,228,639

PRODUCTION OF YARN

Robert J. Hunt, Lisburn, and Norman A. Hill, Belfast, both of Ireland, assignors to James Mackie & Sons Limited, Belfast, Northern Ireland

Filed Jul. 9, 1979, Ser. No. 55,810

Claims priority, application United Kingdom, Jul. 19, 1978, 30288/78

Int. Cl.³ D01H 7/88, 7/92; D02G 3/38

U.S. Cl. 57-16

16 Claims



1. A method of producing core yarn wrapped with at least two separate wrapper yarns, comprising the steps of passing core material along a path passing in succession through a

4,228,640

SIMULATED SPUN-LIKE INGRAIN YARN

James R. Talbot, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Division of Ser. No. 839,955, Oct. 6, 1977, Pat. No. 4,164,117, which is a continuation-in-part of Ser. No. 674,350, Apr. 7, 1976, Pat. No. 4,060,970. This application Feb. 1, 1979, Ser. No. 8,640

Int. Cl.³ D02G 3/34, 1/20

U.S. Cl. 57-208

8 Claims



1. A continuous filament spun-like ingrain yarn comprising at least two differently dyeable multifilament synthetic yarns intimately mixed together into a single composite yarn wherein individual filaments are longitudinally in a helical configuration with periodic reversals of extended helix direction along their length, said individual filaments additionally having torque induced kinks and twisted loops in random distribution along the length of said yarn, said yarn being held together as an integral bundle by the intermingling of the respective individual filaments.

4,228,641

THERMOPLASTIC TWINES

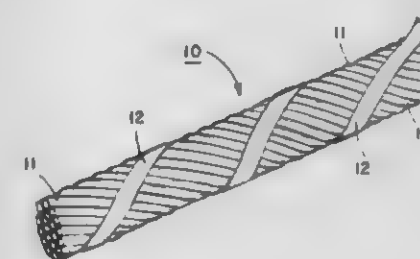
John B. O'Neil, Summerville, S.C., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 28, 1978, Ser. No. 946,888

Int. Cl.³ D02G 3/36

U.S. Cl. 57-234

17 Claims



1. A twine comprising a core bundle of continuous synthetic oriented monofilaments extending lengthwise of the twine and twisted so as to contain from 0.3 to about 3.0 turns per linear inch of monofilament twine and a synthetic binder in thin band form made from a material compatible with the monofilaments material, spirally wound in a direction reverse to the core bundle twist, and containing from about 8 to 30 spirals per linear foot of twisted monofilaments, the spirally wound band being adhered to the outer monofilaments along the length of the twisted core bundle.

4,228,642

METHOD AND APPARATUS FOR STOPPING AN OPEN-END SPINNING MACHINE

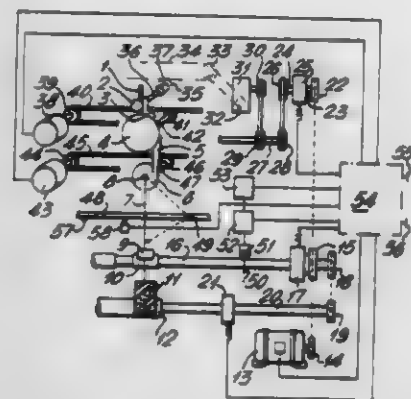
John Dakin, Rosendale; Dennis O'Donnell, Oldham, and Christopher J. Copple, Billington, nr. Whalley, all of England, assignors to Platt Saco Lowell Limited, Lancashire, England
Filed Nov. 15, 1978, Ser. No. 961,076

Claims priority, application United Kingdom, Nov. 17, 1977, 47802/77

Int. Cl.³ D01H 1/20, 7/882

U.S. Cl. 57-263

11 Claims



1. A method of stopping an open-end spinning machine of the type comprising fibre feed means including a fibre feed roller, spinning means for forming a spun yarn from fibres fed thereto from the fibre feed means, and yarn delivery rollers for delivering a yarn formed by the spinning means, including the step of starting to decelerate the fibre feed roller and yarn delivery rollers so that they decelerate in synchronism, wherein the improvement comprises the step of stopping the fibre feed roller after a period of time from the start of the deceleration of the fibre feed roller and yarn delivery rollers and whilst continuing deceleration of the yarn delivery rollers, and then stopping the decelerating yarn delivery rollers at a predetermined time after the fibre feed roller.

4,228,643

METHOD FOR THE MANUFACTURE OF TWISTLESS OR SUBSTANTIALLY TWISTLESS YARN

Jan Nijhuis, Hengelo, and Thomas H. M. Terwee, Enschede, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Nov. 24, 1978, Ser. No. 963,544

Claims priority, application Netherlands, Dec. 1, 1977, 7713263; Apr. 7, 1978, 7903705

Int. Cl.³ D02G 3/40, 3/04; D01H 13/30

U.S. Cl. 57-297

6 Claims

1. Method for the manufacture of twistless or substantially twistless yarn from a sliver of staple fibre material, including the sequential steps of:

dry-drafting the sliver in a first drafting zone, false twisting and wetting the drafted sliver by means of a first false twister to which a liquid is supplied, whereby the liquid content of the sliver is brought to at least 80% by weight,

drafting the wetted sliver in a second drafting zone to form a thinner fibre strand, false twisting the fibre strand by means of a second false twister, and bonding the fibres of the fibre strand.

2. Method for the manufacture of twistless or substantially twistless yarn from a sliver of staple fibre material, including the sequential steps of:

drafting the sliver in a first drafting zone in a dry condition, false twisting and wetting the drafted sliver by means of a first false twister to which a liquid is supplied sufficient that free liquid remains adhering to the surface of the fibres,

wet drafting the wetted sliver in a second drafting zone to form a thinner fibre strand, false twisting the fibre strand by means of a second false twister, and bonding the fibres of the fibre strand.

4,228,644

DISPLAY DEVICE FOR CALENDAR TIMEPIECES

Minoru Watanabe, Tokorozawa, and Munetaka Tamaru, Tokyo, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

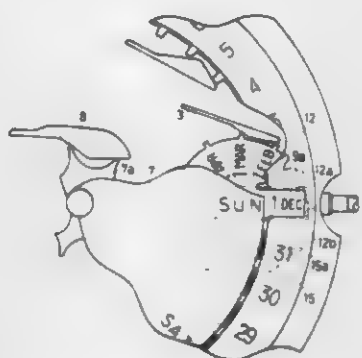
Filed Nov. 8, 1978, Ser. No. 958,668

Claims priority, application Japan, Nov. 16, 1977, 52/136732; Nov. 24, 1977, 52-141034

Int. Cl.³ G04B 19/24

U.S. Cl. 368-28

16 Claims



6. A display device for calendar timepieces comprising: calendar indicating dials including a date dial having date indications and adapted to be rotated one step every 24 hours and a month dial having month indications and adapted to be rotated one step during the rotation of said date dial between the dial indications "31" and "1"; window means for displaying indications on said date dial and said month dial; means for disclosing the month indication through said window means at a predetermined time, said date dial being positioned above the month dial, said means for disclosing the month indication including an opening provided in said date dial for revealing the month indication at a predetermined time.

4,228,645

ELECTRONIC TIMEPIECE EQUIPPED WITH ALARM SYSTEM

Yasushi Nomura, Tokorozawa, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

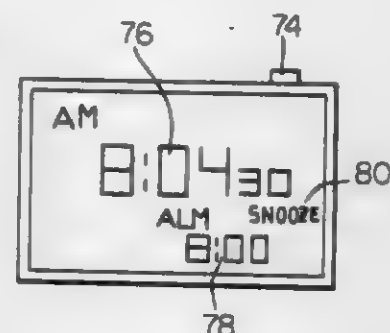
Filed May 8, 1978, Ser. No. 903,475

Claims priority, application Japan, May 10, 1977, 52/53462; Nov. 4, 1977, 52/131474; Jan. 11, 1978, 53/1752

Int. Cl.³ G04C 21/28; G04B 23/12

U.S. Cl. 368-75

11 Claims



1. An electronic timepiece comprising: a frequency standard providing a relatively high frequency signal;

a frequency divider providing a relatively low frequency signal in response to the relatively high frequency signal; timekeeping means responsive to said relatively low frequency signal to provide a time information signal; display means for providing a display of current time in response to said time information signal; alarm memory means for storing alarm time; coincidence detection means for detecting a coincidence between the alarm time and the current time to provide a coincidence signal in response thereto; a coincidence memory circuit for storing said coincidence signal and producing an alarm enabling signal in response thereto; a snooze control circuit normally operative to pass said alarm enabling signal therethrough; means for generating an alarm in response to said alarm enabling signal; a single external control member serving as a snooze switch and an alarm stopping switch and adapted to generate first and second switching signals when said external control member is actuated in first and second predetermined actuation modes, respectively; a snooze switching circuit responsive to said first switching signal to provide a snooze signal by which said snooze control circuit is inhibited to stop the operation of said alarm generating means; a timer circuit responsive to said snooze signal and said relatively low frequency signal to provide an output when a predetermined time interval has passed after receiving said snooze signal; said snooze switching circuit being responsive to said output to temporarily inhibit the supply of said snooze signal; and an alarm stop switching circuit responsive to said second switching signal to provide an alarm stop signal by which said coincidence memory circuit is rendered inoperative to stop the operation said alarm generating means.

4,228,646

ELECTRONIC TIMEPIECE WITH INDICATION DISK FOR INTERNAL STATE OF TIMEPIECE

Yoshiaki Kato, Higashimurayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

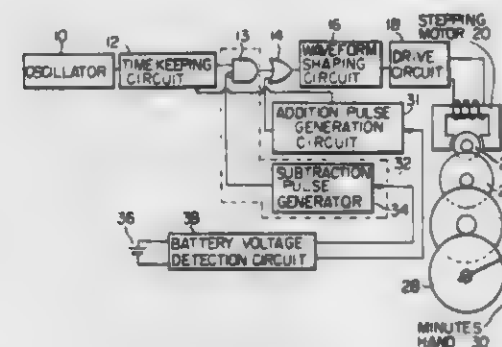
Filed Aug. 22, 1978, Ser. No. 935,977

Claims priority, application Japan, Aug. 22, 1977, 52/100328

Int. Cl.³ G04C 3/00

U.S. Cl. 368-66

18 Claims



1. An electronic timepiece powered by a battery, comprising: a standard frequency signal source for providing a standard frequency signal; timekeeping circuit means responsive to said standard frequency signal for providing a time unit signal; drive circuit means responsive to said time unit signal for providing first drive pulses; a stepping motor having a drive coil coupled to said drive circuit means with a rotor of said stepping motor being rotated through a fixed angle by each of said first drive pulses; time indicating hands driven by said stepping motor for providing a display of time information; a rotatable display indicia normally driven by said stepping

motor in a first operating mode to provide an indication of an internal state of the timepiece; detection means for detecting a change of said internal state of the timepiece to provide a detection signal in response thereto; and circuit means for providing an input signal in response to said detection signal and said time unit signal; said drive circuit means being responsive to said input signal for providing modulated drive pulses by which said stepping motor changes said display indicia to a second operating mode to cause said display indicia to provide an indication of said change of said internal state of the timepiece; said rotatable display indicia being alternately rotated through a first predetermined angle and held stationary in each of a first set of angular positions when said stepping motor is driven in response to said drive pulses and rotated through a second predetermined angle due to said modulated drive pulses being applied to said stepping motor; said display indicia comprising an indication member having a plurality of indication patterns on a surface thereof and with each of said indication patterns being situated relative to adjacent indication patterns at angular intervals corresponding to said first predetermined angle.

4,228,647

CLICK MECHANISM OF A TIMEPIECE

Kenji Yajima, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

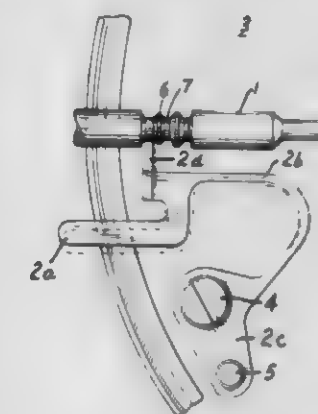
Filed May 25, 1978, Ser. No. 909,641

Claims priority, application Japan, Jun. 7, 1977, 52-73755[U]

Int. Cl.³ G04B 27/00, 37/08

U.S. Cl. 368-185

2 Claims



1. In a timepiece having a winding stem mounted for manual axial movement to a plurality of axial operating positions; a click mechanism for said winding stem comprising a plurality of circumferential grooves axially spaced apart along a section of the length of said winding stem; and a detent spring coacting with said winding stem to releasably retain said stem in a manually selected one of said operating positions and enabling manual axial movement of said stem between said operating positions with a click action, said detent spring having an elongate portion extending lengthwise alongside said winding stem in side-by-side relationship therewith as viewed from the front of the timepiece, a detent portion connected to said elongate portion and extending transversely thereof in the sideways direction towards said winding stem to resiliently engage within respective ones of said grooves in dependence upon the axial position of said winding stem to thereby releasably retain said stem in the manually selected operating position and being movable in the sideways direction to disengage from and slide along said grooves due to resilient flexing of said detent spring caused by manual axial movement of said winding stem to thereby enable axial movement of said stem with click action between said operating positions, and an operating portion connected to and extending parallel to said elongate portion and being constrained to move in a predetermined

direction by sliding contact with a part of the timepiece thereby constraining said detent portion to move in said side-ways direction during flexing of said detent spring caused by axial movement of said winding stem.

4,228,648

HOUR HAND CORRECTOR FOR DUAL DISPLAY TIMEPIECE

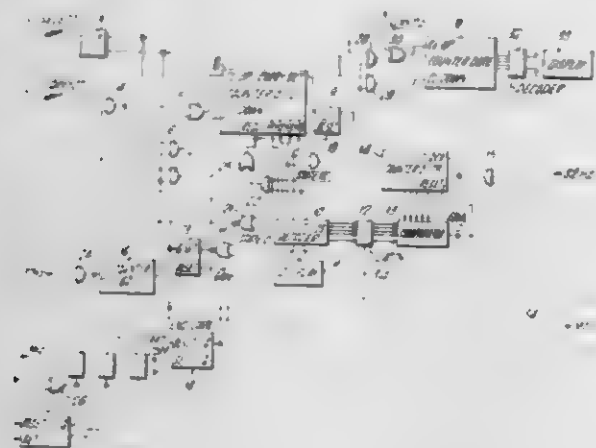
Jean-Pierre Jaumin, La Neuveville, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Oct. 11, 1978, Ser. No. 950,354

Int. Cl.² G04C 3/00; G04B 27/00

U.S. Cl. 368-185

12 Claims



1. An hour hand corrector for use with a timepiece of the type having a first analogue type display including time-indicating hands to display hours and minutes and a second digital type display employing numbers to display further information, both displays being electronically controlled and the analogue display being normally advanced in accordance with elapsed time, said hour hand corrector comprising means including user accessible switch means adapted to enter information into the digital display, representative of the nature and amount of hour hand correction required, means adapted to generate a correction signal after all information has been entered, a switch and a modulo N counter both responsive to said correction signal to direct higher than normal frequency signals to said analogue display, N being an integer which is a submultiple of the number of said higher frequency signals required to effect correction of the hour-indicating hand of the analogue display according to the information entered by said user accessible switch means.

4,228,649

TIMING DEVICE

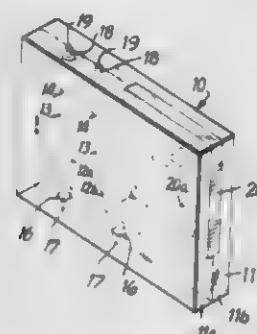
Gerhart Weiss, 76-70 172nd St., Flushing, N.Y. 11366

Filed Dec. 13, 1978, Ser. No. 969,035

Int. Cl.² B04F 1/06

U.S. Cl. 368-93

32 Claims



1. A timer, comprising a container having an elongated channel therein, said channel having two closed ends and an axis, a float in said channel, said float being sized to move with clearance from one end of said channel to the other, and a flotation liquid essentially filling said channel with said float

therein, said flotation liquid comprising a polydimethylsiloxane oil, having a viscosity between about 5 and 25 centistokes (cs) at room temperature, a mineral oil and a sufficient quantity of a halocarbon having a density of at least 1.5 to yield a selected transit time of said float from one end of said channel to the other when the axis of said channel is in a selected non-horizontal orientation, the relative quantities of said siloxane oil and said mineral oil being such that said transit time is substantially independent of temperature.

4,228,650

SIMULATED PARAMETER CONTROL FOR GAS TURBINE ENGINE

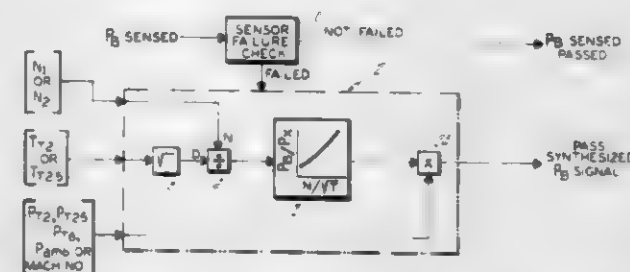
Vann T. Camp, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 1, 1978, Ser. No. 901,898

Int. Cl.³ F02C 9/00

U.S. Cl. 60-39.09 R

4 Claims



1. For a fuel control that meters fuel to a gas turbine engine having multiple compressor stages, means for providing a synthesized burner pressure signal to be substituted for a measured parameter indicative of the actual burner pressure in the event of failure of the signal indicative of said measured parameter whenever said signal falls outside the range of its normal operating limits comprising, a function generator responding to a signal indicative of the pressure intermediate said compressor stages which has a relationship to the thermodynamic cycle of said gas turbine engine for generating a first signal indicative of a ratio of two parameters where one of said two parameters is a function of burner pressure to be synthesized, means measuring still a different engine operating parameter which is mutually dependent on the measured parameter processed by said function generator for providing a second signal and means for combining said first signal and said second signal for producing an output signal whose value is approximate the signal indicative of actual burner pressure.

4,228,651

DUCTED FAN GAS TURBINE ENGINE

John A. Mullins, Chellaston, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 24, 1978, Ser. No. 954,082

Claims priority, application United Kingdom, Nov. 29, 1977, 49535/77

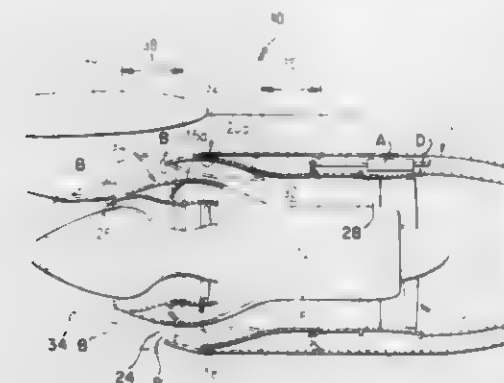
Int. Cl.³ F02K 3/02

U.S. Cl. 60-226 A

3 Claims

1. A ducted fan gas turbine engine, comprising a core gas generator enclosed in a streamlined casing, a fan at the upstream end thereof, a cowl surrounding the core gas generator and fan in spaced relationship, so as to form an annular fan duct therewith, the fan duct exit nozzle plane being further upstream than the core gas generator exit nozzle plane, the downstream end portions of both the cowl and the casing being adapted for simultaneous translation to open respective gaps therein, the gap so formed in the casing being within the translatable portion of the cowl, the inner wall of the translatable portion of the cowl and the fixed casing portion being shaped so that on translation of said cowl and casing portions in a downstream direction during operation of said engine, said inner wall of the cowl portion and fixed casing portion cooperate to substantially reduce the fan duct annulus downstream of

the gap in the cowl and, hot gases passing from the core gas generator via the gap in the casing complete the closure



thereof, to prevent fan air from passing therethrough and means for effecting said translation.

4,228,652

EXHAUST NOZZLE FOR JET ENGINES

Allen E. Short, Frankton Rd., No. 1 R.D., Cromwell, New Zealand

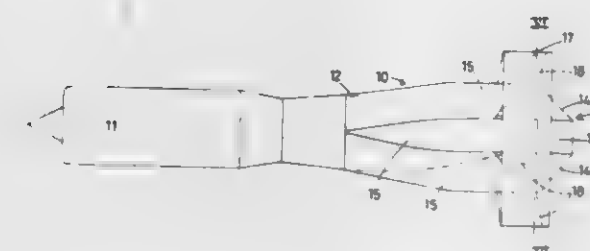
Filed May 5, 1978, Ser. No. 903,337

Claims priority, application New Zealand, May 6, 1977, 184028

Int. Cl.³ F02K 3/10

U.S. Cl. 60-263

9 Claims



1. An exhaust nozzle for a jet engine having an exposed external peripheral surface and comprising an outlet section to discharge exhaust gas to the atmosphere; an inlet section of substantially circular cross section to receive the exhaust gas from the jet engine; partitioning in the nozzle which divides the inlet section into a plurality of sectors and forms a plurality of exhaust ducts having a sectorial cross section and flat inwardly projecting side walls, which ducts extend rearwardly from a contiguous position proximate the inlet section such that adjacent ducts have a contiguous common radial wall, to a position at the outlet section such that the ducts diverge outwardly with respect to one another and to the central longitudinal axis of the nozzle; a free air channel formed in the outer surface of the nozzle between each adjacent pair of exhaust ducts, each channel having inwardly projecting side walls formed in part by the opposing flat side walls of an adjacent pair of exhaust ducts, each channel extending to the nozzle outlet and being open ended thereat, and each channel beginning as a shallow groove at a point proximate the inlet section and gradually increasing in width and depth in the direction of the outlet section so as to form a plurality of paths of air flowing over the outer surface of the nozzle.

4,228,653

ENGINE CYLINDER EXHAUST PORT

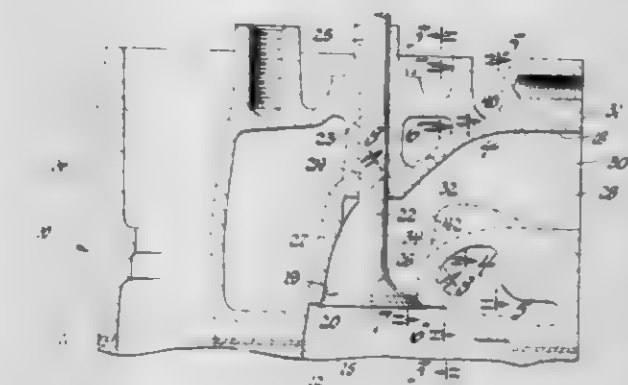
Kenneth D. Sperry, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1979, Ser. No. 21,840

Int. Cl.³ F02F 1/42

U.S. Cl. 60-272

2 Claims



1. An internal combustion engine including means defining a cylinder closed at one end, an exhaust port communicating with the cylinder through said closed end and a poppet exhaust valve disposed in the port and having head and stem portions reciprocable on an axis for controlling communication of the exhaust port with the cylinder, said exhaust port being characterized by

a throat portion of generally circular cross section aligned with said axis, said throat portion opening into the cylinder and adapted to be closed by the exhaust valve at the cylinder closed end, an exit portion having a floor spaced closely to the throat portion and extending at a sharp angle to the direction of the axis, and a connecting portion smoothly joining the throat and exit portions and including a convexly curved wall portion smoothly connecting said floor with the adjacent part of the throat portion, said connecting and exit portions having a flow guide comprising a free standing bump laterally centered in and narrower than the floor and adjacent curved wall portion, said bump rising in the direction of airflow away from the cylinder smoothly upward from the curved wall portion to a maximum height near its leading edge at the throat and then curving downward in an extended portion smoothly blended with the port floor whereby the central portion of the gas flow in the sharply curved portion of the port is aided in rounding the curve without turbulence, thereby increasing the capacity for flow of exhaust gas through the port.

4,228,654

HEAT RECUPERATIVE ENGINE WITH IMPROVED RECUPERATOR

Craig C. Hill, Winter St., Lincoln, Mass. 01773

Filed Dec. 7, 1978, Ser. No. 967,384

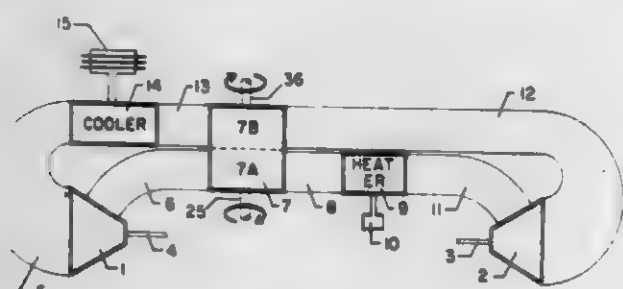
Int. Cl.³ F02G 1/04

U.S. Cl. 60-508

3 Claims

1. In an engine of the type having (1) compression means for compressing a fluid working medium, (2) means for heating the compressed fluid working medium, and (3) work producing means for inducting the compressed heated fluid working medium and producing work by expansion of the working medium, the improvement of a rotary positive displacement mechanism utilizing the expanded working medium exhausted from the work producing means to heat compressed working medium prior to its induction into the work producing means, the rotary positive displacement mechanism comprising

- (a) a housing having a first chamber with an inlet port for admitting compressed fluid working medium and an outlet port,
- (b) a pair of external spur rotors disposed for rotation in the first chamber, the external spurs being meshed and the rotors extending across the chamber to form a blockage between the inlet and outlet ports,
- (c) each of the spur rotors having its external spurs fitting closely with a segment of the chamber wall having embedded heat pipes forming an array around an appreciable extent of the chamber wall, the spaces between adjacent external spurs on a spur rotor providing constant volume enclosures as the external spurs sweep around the closely fitting chamber wall segment,
- (d) the housing having a second chamber adjacent to the first chamber, the second chamber having an inlet port for admitting expanded working medium exhausted from the work producing means and having an outlet port,
- (e) a second pair of external spur rotors disposed for rotation



in the second chamber, the external spurs of the second pair being meshed and the rotors extending across the second chamber to form a blockage between the inlet and outlet ports,

- (f) means for driving the first and second pairs of rotors to cause the first pair of rotors to rotate in directions counter to those of the corresponding rotors of the second pair,
- (g) each of the rotors of the second pair having its external spurs fitting closely with a segment of the chamber wall having embedded in it extensions of the heat pipes embedded in the corresponding wall segment of the first chamber, the spaces between adjacent external spurs on a rotor providing constant volume enclosures as the external spurs sweep around the closely fitting wall segment whereby the heat pipes effect recuperative heat exchange between compressed working medium confined in the constant volume enclosures of the rotors in the first chamber and the expanded working medium confined in the constant volume enclosures of the rotors in the second chamber.

4,228,655

INTERNAL COMBUSTION ENGINE AND A METHOD OF OPERATION THEREOF

Otto Herschmann, Bergisch Gladbach; Norbert Zernig, Cologne; Dieter Holthausen, Solingen; Hugo Stock, and Paul Tholen, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 716,635, Aug. 23, 1976, abandoned. This application Mar. 27, 1978, Ser. No. 890,185
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1975, 2537863

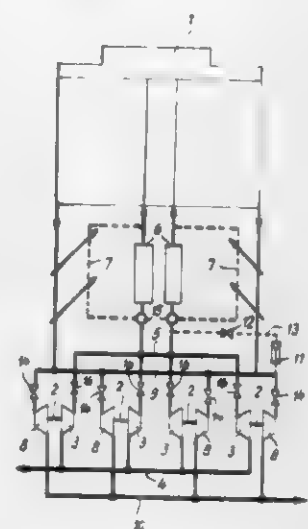
Int. Cl.³ F02B 37/00

U.S. Cl. 60—602

5 Claims

1. The method of operating an internal combustion engine having working chambers to which fuel and combustion air are supplied and from which exhaust gases are discharged which comprises the steps of: supplying the exhaust gases from said chambers to the inlet sides of a plurality of turbines having blades with each turbine connected to drive a respective compressor, connecting the outlet sides of the compressors with said chambers, interposing gas flow control elements for open-

ing faster than closing in the connections which supply exhaust gases to the inlet sides of said turbines, opening rapidly the control element on the inlet side of a said turbine to start the



turbine, and closing the control element at a rate substantially slower than the opening rate thereof when stopping the turbine so that the turbine blades will not be damaged by underpressure vibrations.

4,228,656

POWER CONTROL FOR HOT GAS ENGINES

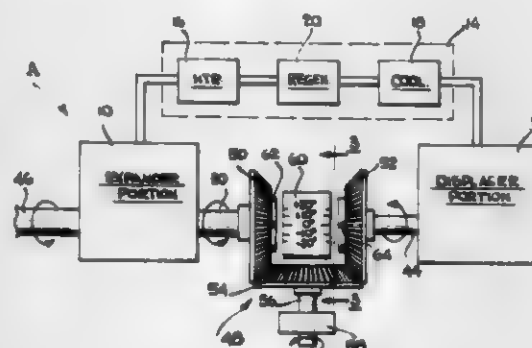
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and William F. MacGlashan, Jr., Arcadia, Calif.

Filed May 19, 1978, Ser. No. 907,421

Int. Cl.³ F02G 1/06

U.S. Cl. 60—518

25 Claims



1. In a hot gas engine having a displacer member and an expander member with a displacer shaft section operatively connected to said displacer member and an expander shaft section operatively connected to said expander member, an improved means to control the phase angle between the displacer shaft section and the expander shaft section, said improved means comprising:

- (a) a first gear on said displacer shaft section,
- (b) a second gear on said expander shaft section,
- (c) shiftable gear means including at least one gear in mating engagement with said first gear and mating engagement with said second gear permitting angular changing of the phase angle between said shaft section when said shiftable gear means is moved causing movement of said first and second gears, and
- (d) means operatively connected to said shiftable gear means which is manually operable to cause movement of said gear means in an arcuate path having a center point substantially coincident with the axis of each of said crankshafts for changing the phase angle between the shaft sections and the resultant power output of said engine, the amount of arcuate movement of said gear means being selectively determined by the operator of the engine to

obtain the desired resultant power output so that said last named means can be moved for the selected amount through manual operation by the operator, and where said phase angle can be changed during operation of said engine and rotation of said crankshafts.

4,228,657

REGENERATIVE SCREW EXPANDER

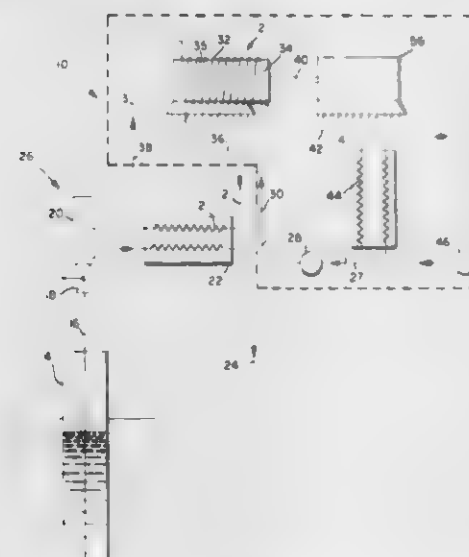
Bruno S. Leo, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 4, 1978, Ser. No. 931,213

Int. Cl.³ F03G 7/00

U.S. Cl. 60—641

11 Claims



1. A regenerative screw expander for use in expanding a thermodynamic fluid stream for extracting work therefrom, said expander comprising:

- a housing, intermeshing rotors in said housing for defining space in a fluid path through said housing which expands as said rotors turn within said housing for the expansion of a thermodynamic fluid passing along said path; and
- a heat exchanger on said housing for extracting heat from said housing as thermodynamic fluid is expanded as it passes along said path through said housing and for returning the extracted heat to the thermodynamic fluid stream.

4,228,658

METHOD AND APPARATUS FOR CONVERTING PRESSURE INTO ROTATIVE MOTION

Alan E. Belcher, 7 Lakeside Dr., Andover, Conn. 06232

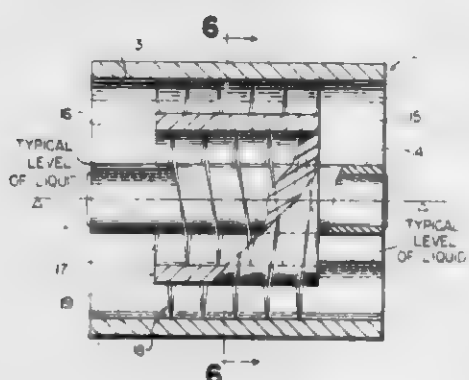
Filed Apr. 24, 1978, Ser. No. 898,703

Claims priority, application United Kingdom, Apr. 29, 1977, 17975/77

Int. Cl.³ F01K 25/06

U.S. Cl. 60—649

23 Claims



1. A fluid engine comprising at least one coiled conduit having a fluid inlet and a fluid outlet, means supporting said conduit for rotation in one direction about its axis and in a partially immersed condition within a first fluid having an interface with a second fluid of a different fluid density than

said first fluid to alternately immerse said fluid inlet in said first and second fluids, and means for maintaining the pressure of the fluid at said fluid outlet below the pressure of the fluid at said inlet whereby to maintain an unbalanced fluid condition within said conduit resulting in a gravitational turning moment about said axis.

4,228,659

GAS TURBINE SYSTEM

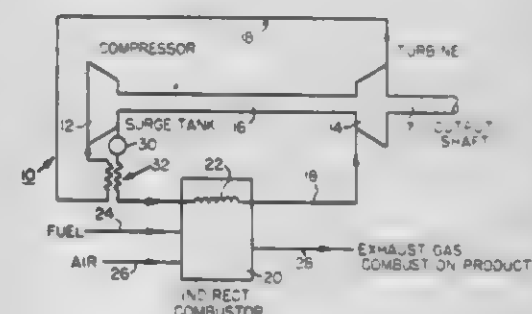
Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences Inc., Geneva, N.Y.

Continuation-in-part of Ser. No. 879,969, Feb. 21, 1978, and a continuation-in-part of Ser. No. 890,465, Mar. 27, 1978. This application May 22, 1978, Ser. No. 908,155

Int. Cl.³ F01K 25/00

U.S. Cl. 60—68 Z

5 Claims



1. A gas turbine engine including a gas compressor, a gas heater, and a gas turbine, all operating in a continuous closed operating gas cycle,

said gas heater being a heat exchanger and having a combustion chamber for burning fuel and generating heat, and a gas conduit to convey said operating gas in heat exchange relationship through said combustion chamber to absorb heat therefrom,

means to cycle the operation of said gas heater in an alternate and regular burn and non-burn operation cycle whereby said operating gas absorbs heat from said combustion chamber during the burn phase of said cycle and said operating gas absorbs heat from said gas turbine during the non-burn phase of said cycle, said operating cycle being so proportioned as to the relative lengths of said burn phase and said non-burn phase that the blades of said gas turbine do not soak to the temperature of said operating gas during said burn phase.

4,228,660

HEAT EXCHANGERS

Maurice Grenier, Paris, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude, Paris, France

Division of Ser. No. 885,112, Mar. 10, 1978, Pat. No. 4,181,174. This application May 1, 1979, Ser. No. 34,942

Claims priority, application France, Mar. 16, 1977, 77 07777

Int. Cl.³ F25B 7/00

U.S. Cl. 62—79

3 Claims

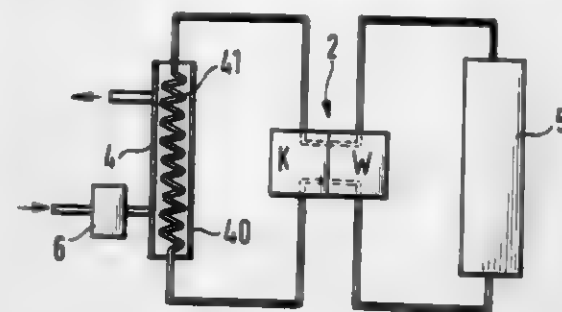
1. In a method of cooling a gas, consisting of a sequence of at least two cooling cycles which are associated with one another in cascade, of the kind in which:

- (a) in the first cycle, cyclically and successively, an auxiliary

refrigerant is compressed to a high pressure, the compressed auxiliary refrigerant is condensed by heat exchange with an external refrigerant, at least a part of the condensed auxiliary refrigerant is expanded to a pressure lower than the said high pressure, at least a portion of the auxiliary refrigerant so expanded is evaporated at the said lower pressure by heat exchange with the refrigerant mixture in the second cycle and the gas to be cooled, in course of cooling, and at least the said evaporated portion of the auxiliary refrigerant is re-compressed to the high pressure.

(b) in the second cycle, cyclically and successively, the refrigerant mixture, comprising at least two C₁ and C₂ hydrocarbons, and possibly nitrogen, is compressed to an upper pressure, the compressed refrigerant mixture is cooled by heat exchange with at least the said portion of auxiliary mixture in course of evaporation at the said

room, and removing heat exclusively from the recirculating air of the room with said heat pump and simultaneously delivering it back to the room by said radiation members.



neously delivering it back to the room by said radiation members.

4,228,662

CRYOGENIC APPARATUS

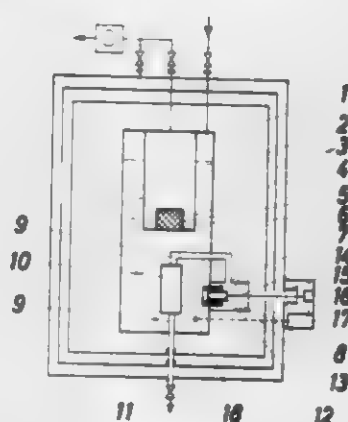
Gustav Klipping, Berlin, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt für Luft und Raumfahrt e.V., Cologne, Fed. Rep. of Germany
Filed Feb. 6, 1979, Ser. No. 10,677

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806829

Int. Cl.³ F25B 41/04

U.S. Cl. 62-216

12 Claims



1. A cryogenic apparatus for cooling objects to and maintaining them at very low temperatures by the evaporation of superfluid helium II using confinement produced by the thermomechanical effect, said apparatus comprising:

a supply container containing therein a supply of superfluid helium II;

an evacuable exhaust system;

a throttle element extending through said supply container and opening into said exhaust system, such that said superfluid helium II is evaporated through said throttle element into said exhaust system;

said throttle element being in the form of a valve comprising a valve sleeve and a valve element mounted for axial displacement relative to said valve sleeve;

said valve sleeve and said valve element defining therebetween in a normal control range a passage gap having a width of less than 10 μm and a length which is variable by relative axial displacement between said valve sleeve and said valve element; and

control means, connected to said valve element, for controlling the relative axial position of said valve element with respect to said valve sleeve and for thereby controlling the evaporation of said superfluid helium II through said throttle element into said exhaust system.

4,228,661

METHOD AND APPARATUS FOR REDISTRIBUTING HEAT WITHIN A ROOM

Siegfried Vinz, Neuwiesenrebenstr. 44, D-7505 Ettlingen, Fed. Rep. of Germany

Filed Sep. 27, 1977, Ser. No. 836,962

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644372

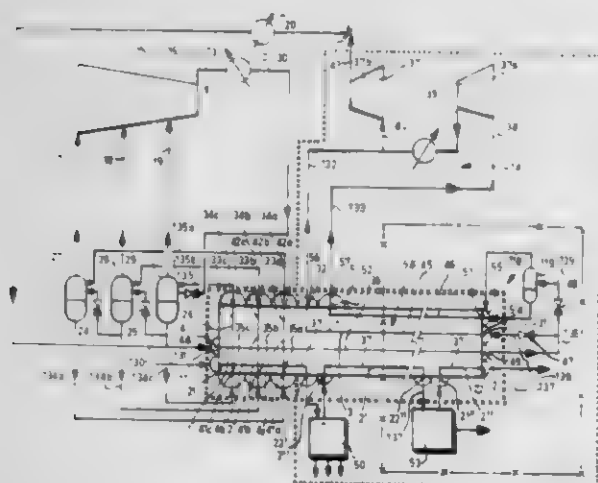
Int. Cl.³ F24B 13/00

U.S. Cl. 62-89

15 Claims

1. A method of redistributing heat within a room by employing at least one heat pump which is adapted to obtain heat on an expansion side from a supply of heat and to deliver such heat on its compression side to a medium to be heated, comprising the steps of:

recirculating the air of the room through channels between boundary surfaces of the room and radiation members disposed adjacent said boundary surfaces back into the



4,228,663

APPARATUS FOR REDUCING ICE BUILD-UP ON A DISCHARGE GRILL OF A HEAT PUMP OUTDOOR UNIT

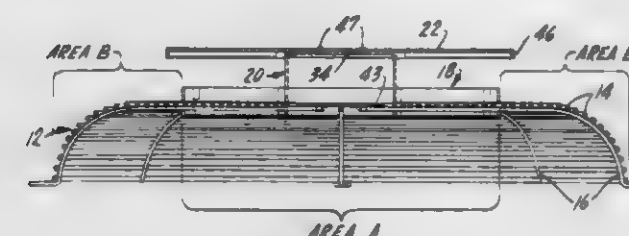
Joseph F. Picarello, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 13, 1979, Ser. No. 57,487

Int. Cl.³ F25B 39/04

U.S. Cl. 62-507

10 Claims



1. An apparatus for reducing the amount of ice build-up on a discharge grill of a heat pump outdoor unit and the like, said apparatus comprising:

body means surrounding a central part of the discharge grill for preventing the formation of ice thereon;

support means disposed within said body means over a central disc of the grill for supporting cover means; and cover means mounted upon said support means for preventing the entrance of rain, sleet or the like onto the central area of the grill so as to minimize the formation of ice.

4,228,664

FLEXIBLE DRIVE COUPLING

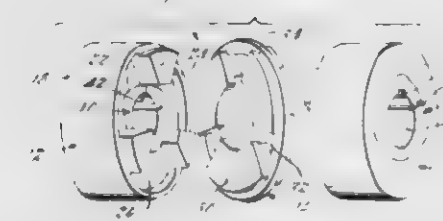
Christopher B. McCoy, Alpena, Mich., assignor to Dowville-Johnston Corporation, Alpena, Mich.

Filed Nov. 8, 1978, Ser. No. 959,089

Int. Cl.³ F16D 3/64

U.S. Cl. 64-14

12 Claims



1. In a drive coupling for transmitting rotational energy from a driving shaft to a driven shaft including a pair of coupling members each having a plurality of drive lugs and a coupling element disposed intermediate said coupling members for transmitting rotational energy from the coupling member disposed on said driving shaft to the coupling member disposed on said driven shaft; an improved means of securing a coupling member to a shaft comprising a substantially epitrochoidal-shaped insert disposed within a similarly shaped bore formed in said coupling member, said insert having a shaft bore formed therein including means for preventing rotation of said insert relative to said shaft, and a narrow gap formed in one wall of said insert for permitting said insert to conform to the size of said shaft upon the application of torque from the driving shaft to said insert, thereby preventing axial movement of said coupling member relative to said shaft.

4,228,665

APPARATUS FOR TERRYING YARN

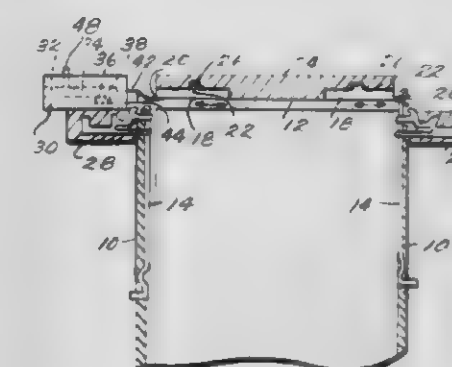
Marius Langlois, Waterloo, Canada, assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 878,724, Feb. 17, 1978, abandoned. This application Dec. 7, 1978, Ser. No. 967,496

Int. Cl.³ D04B 9/12, 15/02

U.S. Cl. 66-93

3 Claims



1. An apparatus for terrying yarn comprising:

a circular ladies hosiery knitting machine including:

(a) a latch needle cylinder and a dial rotatable about a common axis;

(b) a plurality of latch needles supported by said cylinder and movable therewith as the cylinder rotates, said needles being adapted to be reciprocated in a direction parallel to said axis to knit yarn into a fabric; and

(c) a plurality of transfer jacks radially oriented with respect to said dial and movable therewith as the dial rotates, said jacks being adapted to be extended and retracted with respect to the dial in a plane normal to the direction of reciprocation of said needles, said jacks, when extended, cooperating with the needles to form loops of yarn on the jacks, said loops being movable in a circular path as the jacks rotate with the dial; and

a de-looping arrangement adapted to be moved between operative and inoperative positions, said arrangement in the operative position being located in the path of movement of the loops carried by said extended jacks thereby engaging said loops to separate them from the jacks and said arrangement in the inoperative position being located out of the path of movement of the loops carried by said extended jacks thereby permitting said loops to be knitted into the fabric.

4,228,666

SAFETY LATCHES FOR PORTFOLIOS, BAGS, SUITCASES AND THE LIKE

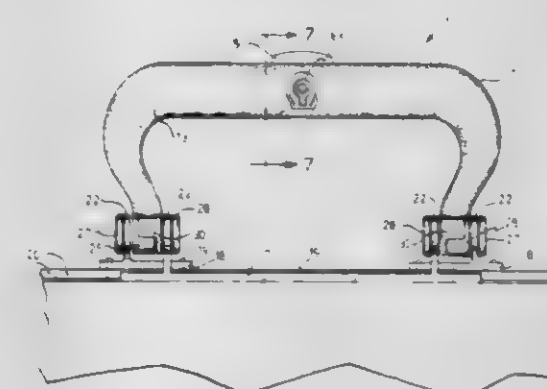
Domingo Perez-Alonso, Avenida de las Torres No. 178, Zona Industrial Tlatilco, Edo. Mexico

Filed Apr. 2, 1979, Ser. No. 26,395

Int. Cl.³ E05B 65/52

U.S. Cl. 70-67

4 Claims



1. Improvements in safety closures for cases, bags, valises

and the like, of the kind incorporating a male latch pin which is inserted into a female receptacle under pressure and which can be retained in the closed position by the action of a ratchet mechanism which is incorporated into a joined handle by means of a hinge mechanism on the lid portion of a container such as a suitcase, wherein the handle is divided lengthwise down its middle and each of the handle halves is joined to one of the confronting cover portions of the container by means of a hinge structure comprising a plate secured as with pins to each of the confronting portions of the container and having a perpendicular support brace, on one of the handle halves a pin passing through said brace and on the other handle half another pin passing through the corresponding brace and securing thereto a hollow slotted cylinder into which cylinder the pin of the opposite handle half can be inserted and housed therein, the latter pin also passing through a portion of the handle on the opposite side of said brace, said portion of the handle having a cover such that when closed it rests upon the cylinder of the other handle half, thereby forming between them a single hinge device for the two handle halves; and in which from one of the handle halves there protrudes a slotted latch pin which is inserted into an elongated perforation of the other handle half and locks upon the upper edge thereof so long as a button projecting from a slot in the first handle half referred to is not depressed; and in that it likewise includes a pin which extends outward from a perforation in the first handle half and yieldingly presses upon the other handle half when the handle halves are in the closed position, thus taking up any clearance or space between the handle halves in their closed position, and yieldingly pressing one handle half out of contact with the other handle half to facilitate the opening of the suitcase; and in that one of the handle halves includes a keyhole and lock which by means of a key actuates a bar which prevents the button on the handle half from being pressed down and thus maintains the safety closure in closed position locked with the key.

4,228,667

MAGNETICALLY ACTING LOCK AND KEY

Leslie V. Herriott, Wolverhampton, England, assignor to Lowe and Fletcher Limited, West Midlands, England

Continuation of Ser. No. 778,333, Mar. 16, 1977, abandoned.

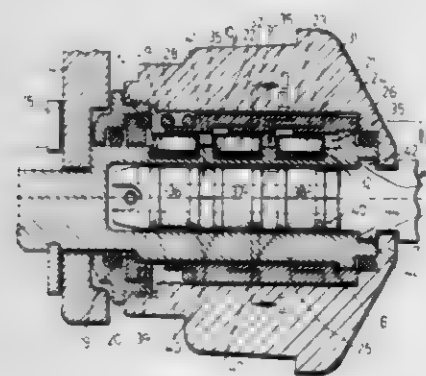
This application Dec. 18, 1978, Ser. No. 970,175

Claims priority, application United Kingdom, Mar. 16, 1976, 10416/76; Oct. 6, 1976, 41429/76

Int. Cl. E05B 19/26, 27/00, 47/00

U.S. Cl. 70—276

9 Claims



1. In a lock comprising a barrel which is adapted to receive a key and, when the proper key is applied to the barrel, is rotatable about an axis of the barrel, an obstructing member which is movable longitudinally of the axis of rotation of the barrel between a first position in which the obstructing member obstructs movement of the barrel to operate the lock and a second position in which the obstructing member does not obstruct said movement of the barrel and a plurality of magnetic elements which, at least in the absence of the key, engage between the barrel and the obstructing member to prevent movement of the obstructing member relative to the barrel from its first position to its second position, the improvement wherein the magnetic elements are in the form of rolling elements, the barrel has an elongate keyway to receive the key, the obstructing member is in the form of a sleeve and surrounds the barrel, the barrel and the obstructing member collectively define a plurality of channels in which the magnetic elements are disposed and along which the magnetic elements are movable by a magnetic field of the proper key to releasing positions where they permit movement of the obstructing member from its first position to its second position, each of said channels is formed partly in the obstructing member and partly in the barrel and the formations in the barrel which constitute part of each channel are longer than the corresponding formations in the obstructing member.

ments, the barrel has an elongate keyway to receive the key, the obstructing member is in the form of a sleeve and surrounds the barrel, the barrel and the obstructing member collectively define a plurality of channels in which the magnetic elements are disposed and along which the magnetic elements are movable by a magnetic field of the proper key to releasing positions where they permit movement of the obstructing member from its first position to its second position, each of said channels is formed partly in the obstructing member and partly in the barrel and the formations in the barrel which constitute part of each channel are longer than the corresponding formations in the obstructing member.

4,228,668

AXIAL SPLIT-PIN TUMBLER-TYPE LOCK MECHANISM

Frank J. Scherbing, Chicago, Ill., assignor to Chicago Lock Co., Chicago, Ill.

Filed Apr. 19, 1979, Ser. No. 31,435

Int. Cl. E05B 27/08

U.S. Cl. 70—363

3 Claims



1. In an axial split-pin tumbler-type lock mechanism including a lock cylinder having front and rear ends and a substantially smooth cylindrical inner wall surface, said inner wall surface having a longitudinal axis extending in a direction from front to rear in the cylinder, a barrel assembly secured within said cylinder and including a forwardly disposed operating part rotatable about said axis and a rearwardly disposed stationary part, said operating and stationary parts each including a portion having an outer surface adjacent to said inner wall surface and said portions adjoining each other at a transverse interfacial plane, a plurality of tumblers each having a forwardly disposed driver element carried by said operating part and a separate rearwardly disposed follower element carried by said stationary part, said driver and follower elements of respective tumblers being disposed in aligned adjoining relation and each tumbler being longitudinally reciprocally movable relative to said barrel assembly between positions wherein the joint between said elements is disposed respectively on opposite sides of said interfacial plane when the operating part is in a selected rotational position relative to the stationary part, said operating part being free to rotate when said joints coincide with said interfacial plane, said driver elements having front ends engageable with a key which when moved rearwardly moves said tumblers into positions wherein said joints coincide with said interfacial plane, and spring means disposed rearwardly of said follower elements to yieldingly urge said tumblers forwardly to positions wherein said interfacial plane is bridged by the follower elements to secure the operating and stationary parts against relative rotation, the improvement wherein said portions of said operating and stationary parts each include means providing a plurality of longitudinal grooves each extending for the full length of the portion in the outer surface thereof and having open opposite ends, said grooves in one portion being aligned respectively with said grooves in the other portion when the operating part is in said selected rotational position, said driver and follower elements being carried

in said grooves, and the lock mechanism also includes discrete means disposed rearwardly of said portion of the stationary part for seating said spring means.

strengthening and compressively stressing said tool surface.

4,228,669

DOUBLE CYLINDER LOCK WITH KEY RETENTION

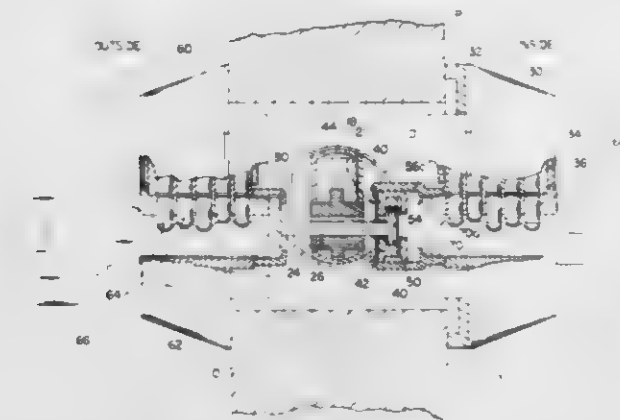
Daniel R. Bischoff, Grand Rapids, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed Jul. 3, 1978, Ser. No. 921,442

Int. Cl. E05B 9/10, 11/00, 17/04

U.S. Cl. 70—379 R

6 Claims



6. A double cylinder lock assembly having swivel means for extending and retracting a lock bolt, and interior and exterior rotary key cylinders on opposite sides of said swivel means to extend and retract said lock bolt, said interior key cylinder having key retraction capacity in a particular rotary position with said lock bolt retracted, comprising:

a rotary driver extending from said exterior key cylinder into operative engagement with said swivel means and toward said interior key cylinder; an axially shiftable, rotary clutch between said rotary driver and said interior key cylinder, having a pair of engageable members, and shiftable by a key in said interior key cylinder to engaged condition from a normally disengaged condition; and said clutch being engageable in only one rotational relationship between said members to assure retractability of the key from said interior key cylinder at said particular rotary position with said lock bolt retracted, and prevent retractability of such key at other rotary positions thereof, one of said clutch members comprising a disc engaged by said rotary driver and having a radially offset recess straddled by a pair of abutment surfaces, and the other of said clutch members having a lug which is axially shiftable by a key in said interior key cylinder into drive engagement with said recess, said abutment surfaces being portions of a pair of resilient ears protruding axially from said disc and depressable by said lug against inherent bias for alignment of said lug and said recess.

4,228,670

PROCESS FOR THE ISOTHERMAL FORGING OF A WORK PIECE

Christopher W. Corti, Reading, England; Rolf Lüthi, Fislisbach, and Ernst Vogt, Remigen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Oct. 26, 1978, Ser. No. 954,735

Claims priority, application Switzerland, Oct. 26, 1977, 13050/77

Int. Cl. B21J 3/00

U.S. Cl. 72—42

13 Claims

1. A process for the lubrication of a tool surface which comprises:

high pressure blast spraying a powder lubricant comprising boron nitride having a particle size of 0.6 to 1.5 μ at a spray pressure of 4 to 5 bar, onto said tool surface thereby producing a high temperature compacted coherent lubricant film on said surface while simultaneously smoothing,

4,228,671

PROCESS FOR MAKING A VEHICLE WHEEL

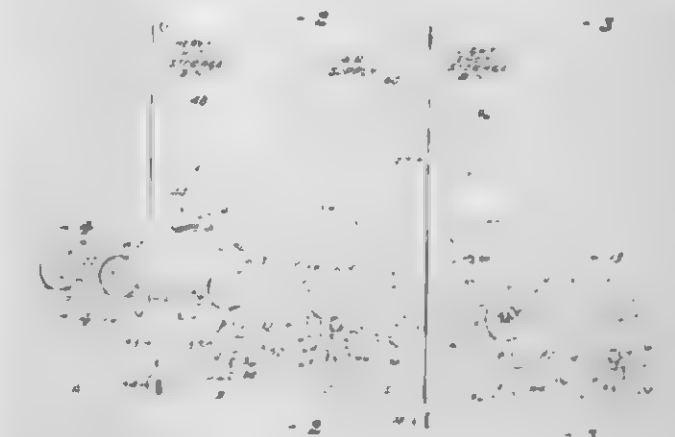
James E. Skeen, Pacific Palisades, Calif., assignor to Superior Industries International, Inc., Van Nuys, Calif.

Filed Apr. 2, 1979, Ser. No. 25,788

Int. Cl. C21D 7/06

U.S. Cl. 72—53

12 Claims



1. A process for making a vehicle wheel from a casting, having a drop center area and a face area, said process including the steps of:

shot peening the wheel's drop center area to seal any air-transfer holes therein and to also increase the fatigue strength thereof; and

thereafter shot peening both said drop center area and the face area of said wheel with finer shot to thereby reduce the surface roughness of said drop center area and said face area.

4,228,672

ROTARY NOTCHER AND FORMER

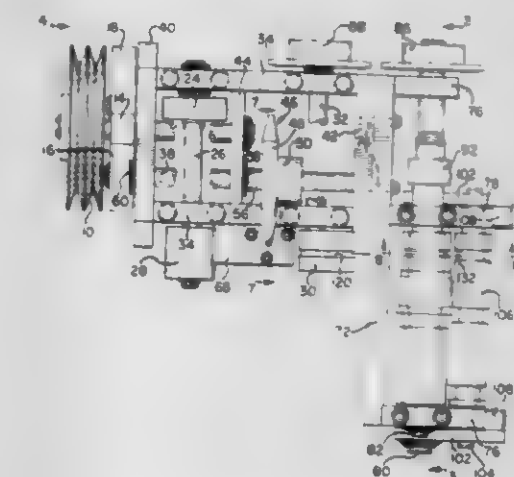
Leo R. Gale, Morton Grove, and Robert R. Heilman, Elburn, both of Ill., assignors to The Lockformer Company, Lisle, Ill.

Filed Jun. 5, 1978, Ser. No. 912,509

Int. Cl. B21D 5/14

U.S. Cl. 72—130

5 Claims



1. In an apparatus for forming collars from sheet metal, the apparatus having means for producing a plurality of spaced apart notches in the edge of a sheet, and wherein means are provided for advancing the sheet through the apparatus, the improvement in means for forming the notches comprising a rotary tool having at least one end engageable with said sheet, a shaft supporting said tool, and drive means connected to said shaft for rotating the shaft and tool whereby said end is engaged with said sheet, the means for advancing the sheet operating to continually expose unnotched sheet edge portions to said tool whereby new notches are formed as the tool revolves,

and tool stabilizing means engaging said tool during rotation, said stabilizing means comprising a fitting attached to said tool, said fitting being fastened to said tool for rotation therewith, said fitting extending around and along said shaft on at least one side of said tool, a stationary frame portion in spaced relationship with said tool, spring means extending between said frame portion and said tool, securing means holding said tool and associated fitting against axial movement relative to the shaft, said spring means comprising a compression spring positioned around said shaft and having one end bearing against said frame portion and the other end bearing against said tool, said spring means therefore forcing said shaft in a direction away from said frame portion, and including a thrust bearing associated with said shaft at one end of the shaft, said one end being located on the side of the frame portion opposite the location of said spring whereby the force generated by said spring is transmitted to said thrust bearing.

4,228,673

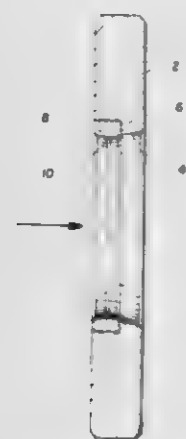
DIE ASSEMBLY AND METHOD OF MAKING THE SAME
Frank R. Scheel, Hendersonville, Tenn., assignor to Carmet Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 808,220, Jun. 20, 1977, Pat. No. 4,145,910. This application Oct. 6, 1978, Ser. No. 948,938

Int. Cl. B21C 3/04

U.S. Cl. 72-467

5 Claims



1. A drawing and ironing die assembly comprising a housing having an axial hole therethrough, and a radial shoulder on the exit side of said housing, provided by means of a counterbore on the entry side of said axial hole, and
- a die wear ring in said axial hole bearing against said shoulder having a shrink fit with said housing with an interference fit of from 0.0006 to 0.0008 inch, said housing made of a material having a minimum modulus of elasticity of approximately 50,000,000 pounds per square inch, and said wear ring having a higher modulus of elasticity than said housing, and an outer diameter of the wear ring greater than an inner diameter of the counterbore.

4,228,674

APPARATUS FOR MEASURING ANTI-WEAR PROPERTIES OF PRESSURIZED LIQUIDS

Abraham Mertwoy, Dresher, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 4, 1979, Ser. No. 44,898

Int. Cl. G01N 3/56, 19/02

U.S. Cl. 73-10

9 Claims

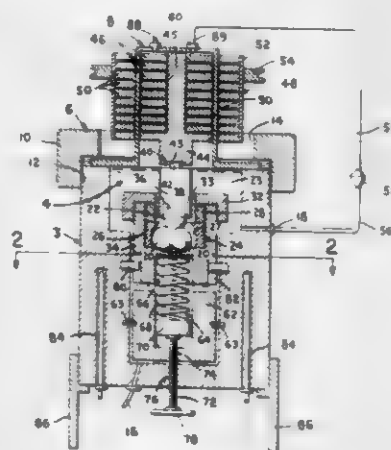
1. A testing device for determining the lubricity or anti-wear resistance characteristics of hydraulic fluids under elevated fluid pressures and temperatures, comprising:
 - a housing having an open end and a cavity therein including a continuous passageway for said fluids;
 - a cover removably mounted on said housing in pressure-tight engagement with said open end;
 - a fluid inlet and a fluid outlet, said fluid inlet connected with

said continuous passageway to permit the flow of pressurized fluids in said housing;

a plurality of test balls held stationary within said housing; an upper ball rotatably mounted in contact with each of said test balls;

a chuck assembly disposed within said cavity adapted to fixedly retain said test balls and to axially reciprocate toward said upper ball;

means for rotatably supporting said upper ball in axial alignment within said test balls;



means associated with said chuck assembly for applying pressure between said test balls and said upper ball which includes;

and adjustable calibrated spring assembly communicating with said chuck assembly and adapted to urge said test balls into pressured contact with said upper ball; and means associated with said upper ball supporting means for rotating said upper ball in contact with said test balls.

4,228,675

EXHAUST GAS SENSOR ELECTRICAL CIRCUIT IMPROVEMENT

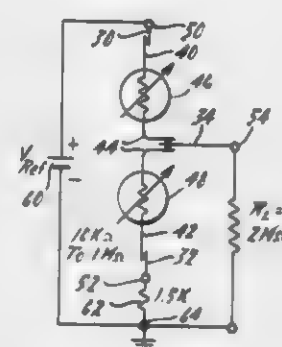
Elmer T. Heiney, III, Huntington Woods, and Stanley R. Merchant, Garden City, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 22, 1979, Ser. No. 5,422

Int. Cl. G01N 27/12

U.S. Cl. 73-23

10 Claims



1. An improved exhaust gas sensor electrical circuit employing a sensor of the type having a first negative-temperature-coefficient variably resistive element adapted to produce an electrical resistance change, as a function of the composition of the exhaust gases produced by the combustion of a rich or lean (with respect to stoichiometry) air/fuel mixture supplied to an internal combustion engine, in a circuit including a second negative-temperature-coefficient variably resistive element that is connected in series with the first variably resistive element, the improved exhaust gas sensor electrical circuit comprising:

the first element being formed from metal oxide ceramic material having spaced first and second electrical leads connected thereto, the metal oxide material having be-

tween the leads connected thereto an electrical resistance that varies both as a function of the temperature of the metal oxide material and as a function of the partial pressure of oxygen in the exhaust gases to which the metal oxide material is exposed;

the second element being formed from metal oxide ceramic material having, as compared to the metal oxide material of the first element, a longer time rate of response to variations in the partial pressure of oxygen in the exhaust gases from an internal combustion engine supplied with an air/fuel mixture changed from rich to lean and vice versa, the second element having spaced first and second electrical leads connected thereto, the second electrical lead of the first element having a junction formed with the first electrical lead of the second element;

a source of electrical energy having first and second electrical leads;

circuit means for connecting the first and second elements in a series-circuit between the first and second electrical leads of the source of electrical energy; and

circuit means for inhibiting reduction in the magnitude of the change in voltage, measured between one of the leads of the source of electrical energy and the junction between the first and second elements, which magnitude change would otherwise result from prolonged exposure of at least the second element to exhaust gases produced by combustion of a rich air/fuel mixture prior to change to a lean air/fuel mixture or vice versa.

4,228,676

ASH SAMPLING PROBE

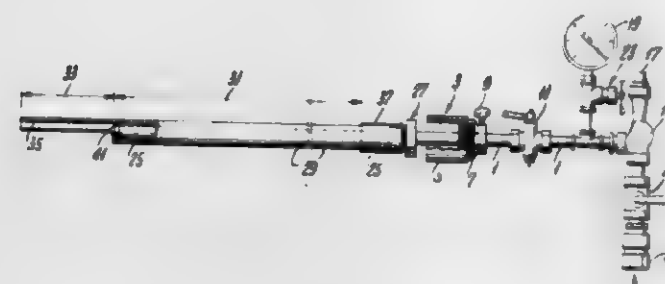
John G. Myers, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed May 23, 1979, Ser. No. 41,840

Int. Cl. G01N 1/04, 1/22

U.S. Cl. 73-28

10 Claims



1. In a probe for sampling ash contained in an ash bearing gas stream located in a wall confined region, said probe comprising:
 - (a) a gas stream withdrawing tube having a first end through which the gas stream bearing ash to be sampled is withdrawn;
 - (b) a port engaging coupling adjustably mounted around the gas stream withdrawing tube whereby the latter may be moved into a wall confined region containing the ash bearing gas stream through a port in said wall, while maintaining a gastight association between said withdrawing tube and the wall confined region;
 - (c) means for applying reduced pressure to a second end of the gas stream withdrawing tube, whereby the ash bearing gas stream is caused to move through said tube, and associated with said means, valving means connecting said means for applying reduced pressure to said second end of said withdrawing tube;
 - (d) attached to said first end of said gas stream withdrawing tube, a porous closed end tube which permits the ash bearing gas stream to pass therethrough and into said

withdrawing tube, while retaining on the outer surface thereof, ash contained in said ash bearing gas stream; and (e) associated with the porous closed end tube, a collecting baffle which directs particles of ash contained in the ash bearing gas stream toward the porous closed end tube.

4,228,677

METHOD AND MEANS FOR MEASURING SURFACE TENSION

Kjell I. Olsson, Eskilstorpsgratan 7, 235 00 Vellinge; Anders E. B. Aberg, Nyckelkroken 3, 222 47 Lund, and Lars O. S. Gislen, Dala, 240 50 Ostraby, all of Sweden

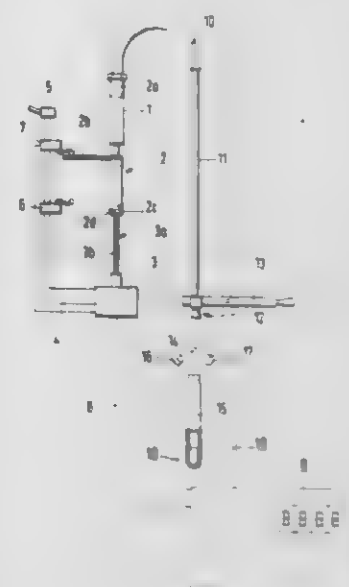
Filed Mar. 22, 1979, Ser. No. 22,903

Claims priority, application Sweden, Mar. 23, 1978, 7803385

Int. Cl. G01N 13/02

U.S. Cl. 73-64.4

9 Claims



1. A method of measuring the surface tension of a liquid comprising the steps of:
 - (a) discharging the liquid from a liquid container by a pump;
 - (b) forming a drop from the discharged liquid; and
 - (c) measuring the pump displacement necessary to provide the amount of liquid required for forming the drop.

4,228,678

SURFACTANT CONCENTRATION DETECTOR

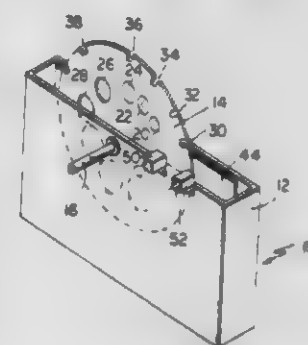
Clifton F. Slaton, Louisville, Ky., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 8, 1979, Ser. No. 64,690

Int. Cl. G01N 13/02

U.S. Cl. 73-64.4

6 Claims



1. An apparatus for detecting the concentration of a surfactant liquid solution comprising a tank, means for delivering the liquid solution to said tank, a wheel rotatable in said tank, said wheel having a series of progressively larger holes therethrough, said holes being centered on a circle concentric with the axis of rotation of said wheel, said wheel having notches in the periphery thereof corresponding to each of said holes, a portion of said wheel rising out of said tank, first photocell means directed at said wheel for detecting films formed across any of said holes, second photocell means for counting said

notches to time said wheel, and means for slowly rotating said wheel.

4,228,679

APPARATUS FOR MEASURING PARAMETERS OF WORK DIAGRAM OF PISTON MACHINES

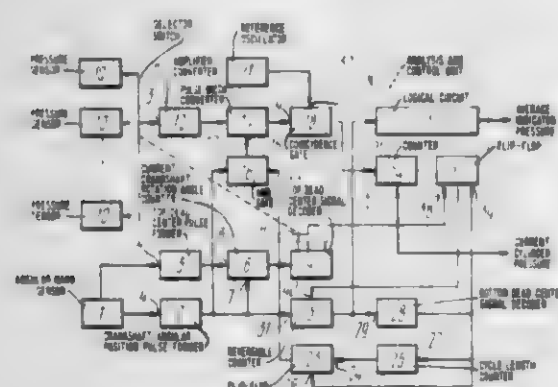
Viktor V. Alt, 3, kv. 13; Alexandr A. Mischenkov, 3, kv. 24; Viktor A. Pomomarev, 6, kv. 192, all of rabochy poselok Krasnoobsk Novosibirskoi oblasti; Eduard L. Avdjushev, ulitsa Petukhova, 80, kv. 12, Novosibirsk; Jury S. Kamynin, 7, kv. 68; Vladimir P. Baryshnikov, 3, kv. 123, both of rabochy poselok Krasnoobsk Novosibirskoi oblasti; Grigory K. Levin, ulitsa Podvolokogo, 14, korpus 1, kv. 852, and Alexei A. Orlov, ulitsa 3 Internatsionala, 55, kv. 50, both of Leningrad, all of U.S.S.R.

Filed Apr. 10, 1979, Ser. No. 28,899

Int. Cl.³ G01M 15/00

U.S. Cl. 73-117.3

8 Claims



1. Apparatus for measuring parameters of work diagram of piston machines, said apparatus comprising

an angular mark sensor having uniformly distributed crankshaft rotation angle marks for one of the piston machines, a top dead center mark, a first output and a second output, the crankshaft rotation angle marks being used for determining top dead center signals and bottom dead center signals;

a crankshaft angular position pulse former having an input electrically connected to the first output of said angular mark sensor and an output;

a top dead center pulse former having an input electrically connected to the second output of said angular mark sensor and an output;

a current crankshaft rotation angle counter having a first input electrically connected to the output of said crankshaft angular position pulse former, a second input electrically connected to the output of said top dead center pulse former and an output;

a reversible counter having a first input electrically connected to the output of said crankshaft angular position pulse former, a second input and an output;

a bottom dead center signal decoder for decoding bottom dead center signals, said bottom dead center signal decoder having an input electrically connected to the output of said reversible counter and an output;

a cycle length counter having an input electrically connected to the output of said bottom dead center signal decoder and an output;

a main flip-flop having a first input electrically connected to the output of said cycle length counter, a second input electrically connected to the output of said bottom dead center signal decoder and an output;

a top dead center signal decoder for decoding top dead center signals, said top dead center signal decoder having an input electrically connected to the output of said current crankshaft rotation angle counter and n outputs;

a selector switch having a first group of inputs among n inputs, a second group of inputs among n inputs, a first output and a second output, one of the inputs of the first

group of inputs being coupled to a corresponding one of the n outputs of said top dead center signal decoder;

n pressure sensors in cylinders of piston machines, each having an output coupled to a corresponding one of the n inputs of the second group of inputs of said selector switch;

an amplifier converter for handling a pressure signal of the cylinder of a piston machine, said amplifier converter having an input electrically connected to the second output of said selector switch and an output;

a pulse width converter having a first input electrically connected to the output of said amplifier converter, a second input and an output;

an AND gate having a first input electrically connected to the output of said crankshaft angular position pulse former, a second input, and an output electrically connected to the second input of said pulse width converter;

a main coincidence gate having a first input electrically connected to the output of said pulse width converter, a second input and an output;

a reference oscillator having an output electrically connected to the second input of said main coincidence gate; and

an analysis and control unit having a first input electrically connected to the output of said main coincidence gate, a second input electrically connected to the first output of said selector switch, a third input electrically connected to the output of said reversible counter, a fourth input electrically connected to the output of said bottom dead center signal decoder, and an output electrically connected to the second input of said reversible counter, said analysis and control unit including a logical circuit having a first input which is the third input of said analysis and control unit, a counter having an input which is the first input of said analysis and control unit and a flip-flop having a first input which is the second input of said analysis and control unit, a second input which is the fourth input of said analysis and control unit, and an output which is the output of said analysis and control unit.

4,228,680

DEVICE FOR DETECTING THE ONSET OF FUEL INJECTION

Gerhard Engel, Stuttgart, and Wessel, Wolf, Oberriexingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

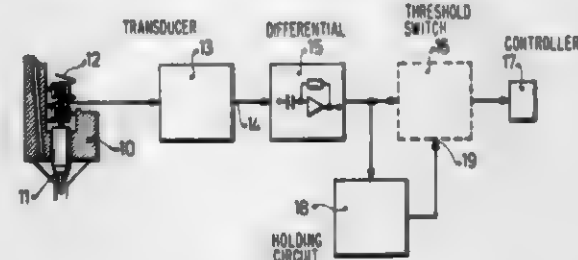
Filed Nov. 29, 1978, Ser. No. 964,846

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1978, 2805175

Int. Cl.³ G01M 19/00

U.S. Cl. 73-119 A

9 Claims



1. A device for detecting the onset of fuel injection in a fuel injection valve of an internal combustion engine including:

a mechanical-electrical transducer associated with said fuel injection valve for generating a first output signal related to the position of the movable valve member in said fuel injection valve, and an electronic processing circuit for processing said signal generated by said transducer, and wherein the improvement comprises a differential circuit connected to said transducer for directly receiving the signal from said transducer and generating therefrom a

differentiated signal to be applied to said processing circuit.

4,228,681

CRANE LOAD COMPUTER

Roger Pruex, 70, rue Philippe Dartis, 93031 Epinay sur Seine, France

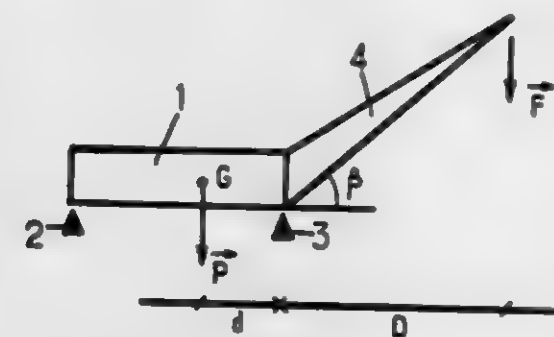
Filed May 8, 1978, Ser. No. 903,745

Claims priority, application France, May 13, 1977, 77 14779

Int. Cl.³ G01L 5/16

U.S. Cl. 73-133 R

6 Claims



1. Device for checking the loading state of a lifting appliance including a crane having a telescopic jib provided with a hook from which a load is adapted to be suspended, comprising:

a calculation member for determining the weight of the suspended load on the hook of the crane;

memory means including memories storing information derived from diagrams previously prepared, the diagrams providing values of various admissible loads which depend on various values of at least one parameter defining the geometric state of said appliance;

a central unit coupled with said calculation member and said memory means for receiving information relating to the parameters of said crane for determining the maximum admissible load for each of the values stored in said memory means;

said unit producing as an output a value desired for the load by a process of incrementation which consists of dividing the intervals between two maximum admissible load values corresponding to two values of a parameter defining the geometric state of the crane, in which:

C₁ is a lower value for one of said maximum admissible load values from the previously prepared diagrams,

C₂ is a higher value for another of said maximum admissible load values from the previously prepared diagrams, N is the number of increments in which the values C₂-C₁ is divided.

C_i is a maximum admissible load value falling between said load values C₁ and C₂ for which there is no previously prepared diagram and information stored in said memory,

the value of the maximum admissible load C_i is determined according to the expression:

$$C_i = C_1 + k \frac{C_2 - C_1}{N}$$

in which K is the grade of the increment corresponding to the parameter and whose expression is

$$k = \left(\frac{N(l_2 - l_1)}{l_2 - l_1} \right)$$

in which:

l₁ is the length of said jib for the load C₁,

l₂ is the length of said jib for the load C₂;

said central unit including a comparison means to compare

the value of the maximum admissible load of said lifting appliance with the value of the actual suspended load as determined by said calculation member; and,

a testing device for checking that the loading state is operating correctly, said testing device comprising a member for introducing into the calculation chain a perfectly calibrated voltage of a load raised of greater value than any value inserted into said memory from the previously prepared diagrams and being easily identifiable, whereby to enable the checking of the correct operation of the checking device before it is used.

4,228,682

VARIABLE CABLE HOISTING SYSTEM HAVING QUICK DISCONNECT DEADLINE LOAD INDICATING APPARATUS

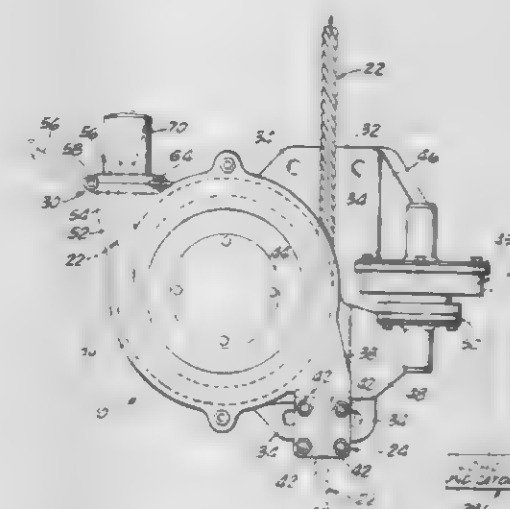
Elmer L. Decker, Long Beach; James Moon, Santa Ana, and Paul R. Maxwell, Bakersfield, all of Calif., assignors to Decker Engineering Corporation, Long Beach, Calif.

Filed Dec. 4, 1978, Ser. No. 966,381

Int. Cl.³ G01L 5/04

U.S. Cl. 73-143

11 Claims



an anchoring means fixed on the end of said deadline portion;

a base structure;

a snubbing drum rotatably supported on said base structure and adapted to receive a plurality of loops of the deadline thereon;

said base and snubbing drum respectively having adjacently spaced arm extensions relatively movable in response to tension forces on said deadline;

force sensing and indicating means interconnecting said arm extensions; and

means on said snubbing drum for releasably engaging and securing the said anchoring means on the end of said deadline to said snubbing drum and in its released position enabling detachment of the end of the deadline from the snubbing drum and its reattachment to the main hoist drum to effect the double fastline system.

electrical pulses representative of pulse echoes returned from equal sized discontinuities in said testpiece; and means for selectively applying said control signal to said receiver for varying the gain of said receiver, whereby the attenuated amplitudes of reflected electrical pulses representative of pulse echoes from workpiece subsequently tested are proportional to the size of corresponding reflecting discontinuities within said workpieces, and are substantially independent of the depth of said discontinuities within said workpieces.

4,228,689

PRESSURE RELIEF MANOMETER

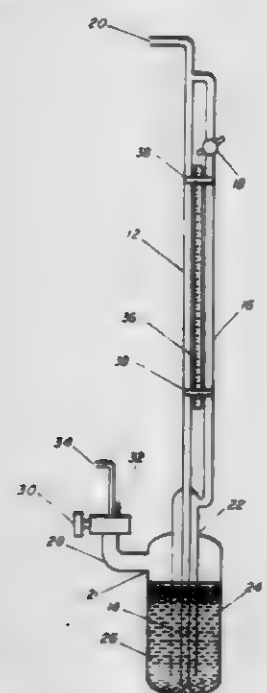
Tetsuyuki Hirata, Morris County, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 2, 1979, Ser. No. 26,371

Int. Cl.³ G01L 7/18

U.S. Cl. 73-747

4 Claims



1. A pressure relief manometer comprising:
 - a container for liquid;
 - a liquid mass in said container;
 - first generally upright tube means for containing a first column of said liquid responsive to barometric pressure;
 - second generally upright tube means substantially parallel to said first tube means, said second tube means containing a second column of said liquid responsive to pressure variations in a test area;
 - said first upright tube means extending into said container below the surface of said liquid and terminating at a terminal opening of said first tube means;
 - a portion of said second tube means extending into said container concentrically within said first tube means to a location below said liquid;
 - said second tube means terminating at a terminal opening below said terminal opening of said first tube means, and selectively openable and closeable vent means communicating with the interior of said container for venting gas pressure within said container.

4,228,690

DRIVE AND CLUTCH FOR A TIMING MECHANISM
Thomas F. Ring, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Aug. 6, 1979, Ser. No. 64,029

Int. Cl.³ F16H 27/04

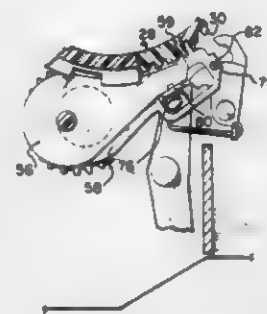
U.S. Cl. 74-122

8 Claims

1. In a timing mechanism wherein a cam means is rotatably driven by power drive means through an intermittent drive

means, an improvement characterized by said intermittent drive means comprising:

- (a) first and second ratchet means coupled to said cam means;
- (b) first and second drive pawls coupled to said power drive means engaging said first and second ratchet means respectively;



- (c) a no-back clutch operably associated with said cam means preventing reversal thereof during its advancement; and
- (d) disengaging means to disengage one of said drive pawls from said cam means and to hold said one drive pawl in disengagement for at least a portion of a program of said timing mechanism.

4,228,691

VARIABLE PULLEY TRANSMISSION

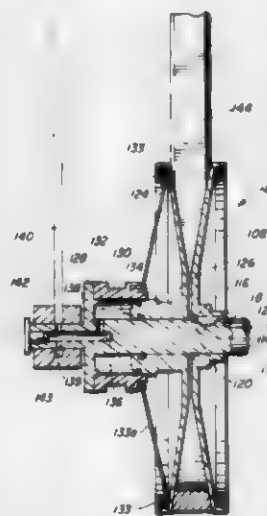
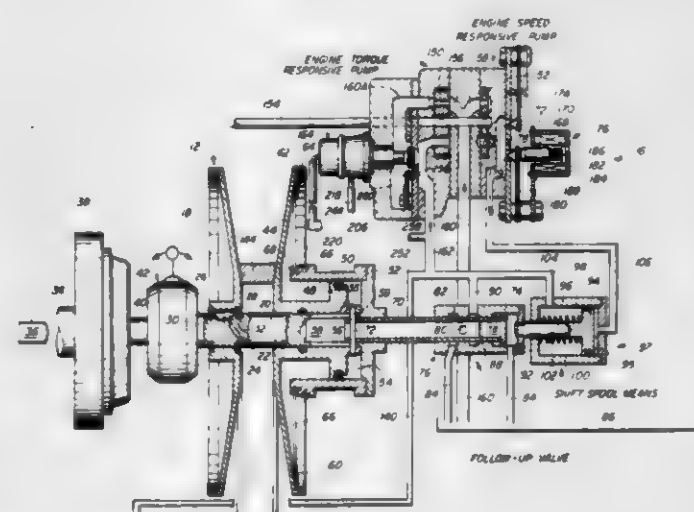
Richard L. Smirl, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 1, 1977, Ser. No. 773,358

Int. Cl.³ F16H 55/52

U.S. Cl. 474-12

11 Claims



1. A variable pulley transmission for a vehicle comprising: a driver shaft;

- a driven shaft;
- a rotatable driver pulley connected to said driver shaft;
- driving means for rotating said driver shaft;
- said driver and driven pulleys each comprising an axially fixed flange and an axially movable flange;
- belt means drivingly connecting said pulleys;
- spring means operatively associated with said driver and driven axially movable flanges normally urging said movable flanges axially toward said driver and driven fixed flanges;
- hydraulic control means operatively associated with said pulleys to provide an additional load to the load of said spring means to thereby change the relative positions of the flanges of said pulleys and thus change the speed ratio therebetween;
- said hydraulic control means comprising:
 - a pair of fixed displacement pumps, one of which provides pressure responsive to the speed of said driving means and the other of which provides pressure responsive to the torque of said driving means;
 - a hydraulic cylinder and a piston in said cylinder;
 - said driver pulley movable flange being connected to said piston;
 - said cylinder being connected to said pump providing torque responsive pressure; and
 - a speed and torque responsive valve in the connection between said pump providing said torque responsive pressure in said cylinder.

4,228,692

ENDLESS POWER TRANSMISSION BELT AND METHOD OF MANUFACTURE

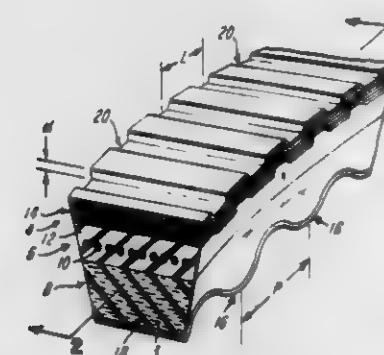
Richard J. Jacob, Dayton, and Dale L. Waugh, Springfield, both of Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Aug. 15, 1977, Ser. No. 824,579

Int. Cl.³ F16G 1/00

U.S. Cl. 474-251

20 Claims



1. A method for manufacturing an endless V-type transmission belt having an inner compression section, an outer tension section and a load-carrying section positioned between said compression section and said tension section which comprises the steps of: placing a layer of uncured rubber around a first forming member to form a compression section, applying a load-carrying section around said uncured rubber layer, applying a plurality of layers of fabric around said load-carrying member to form a tension section, placing a second forming member around said fabric layers, said second forming member having corrugations in its inner surface and forming corresponding corrugations in at least two of said layers of said fabric in said tension section at approximately right angles to said load-carrying member, vulcanizing the resulting assembly to complete the corrugations, and cutting the vulcanized assembly into a plurality of finished belts.

4,228,693

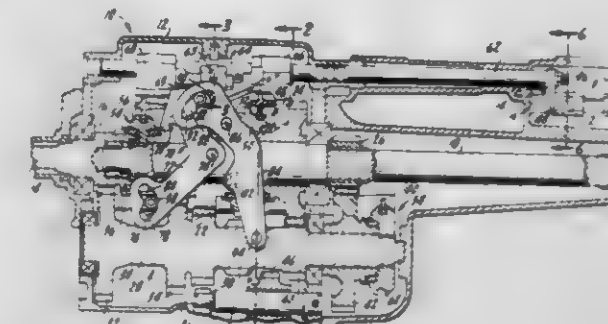
TRANSMISSION SHIFT CONTROL APPARATUS
Donald W. Kelbel, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,058

Int. Cl.³ F16H 3/38; G05G 5/10, 9/12

U.S. Cl. 74-339

14 Claims



1. In a multiple speed ratio power transmission having gear ratios selectively engageable for defining torque delivery paths between an input member and an output member, and shift control means for selectively engaging gear ratios; the improvement wherein said shift control means comprises first engaging means slidable in one direction for engaging one gear ratio, second engaging means slidable in said one direction for engaging another gear ratio, and linkage means, said linkage means including a first lever pivotal about a first fulcrum between an intermediate position and first and second extreme positions, a second lever pivotal about a second fulcrum between third and fourth extreme positions, said levers being constructed and arranged such that said second lever is in said third extreme position when said first lever is in said intermediate and first extreme positions, said first lever and said first engaging means defining first camming means for sliding said first engaging means in said one direction in response to pivoting of said first lever from said intermediate position to said first extreme position, and said first and second levers defining second camming means for sliding said second engaging means in said one direction in response to pivoting of said first lever from said intermediate position to said second extreme position.

4,228,694

SHIFT MEANS FOR A MULTI-SHAFT SLIDING GEAR
Hans H. Adam, Vaterstetten, Fed. Rep. of Germany, assignor to Friedrich Deckel Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,516

*Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806904

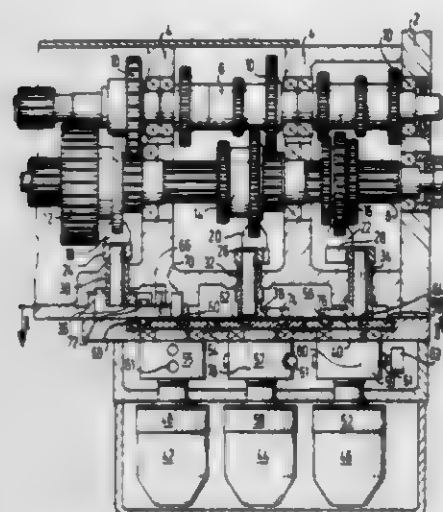
Int. Cl.³ F16H 3/22

U.S. Cl. 74-342

13 Claims

1. In a shift means for a multi-shaft sliding gear having a plurality of sliding gear blocks displaceable in the axial direction, each one of which is connected, by way of a mechanical transmission means, to a separate electric servo-drive, the improvement comprising wherein each servo-drive comprises an electric servo-motor equipped with a gear reduction unit,

and a planar cam drive which is arranged between said servo-motor and the transmission means and has a swinging output



lever, the two end positions of the output lever corresponding to the end positions of the sliding gear block.

4,228,695

COLLAPSIBLE-STEERING UNIT FOR MOTOR VEHICLES

Renato Trevisan, Arese, and Guido Pizzocri, Gerenzano, both of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

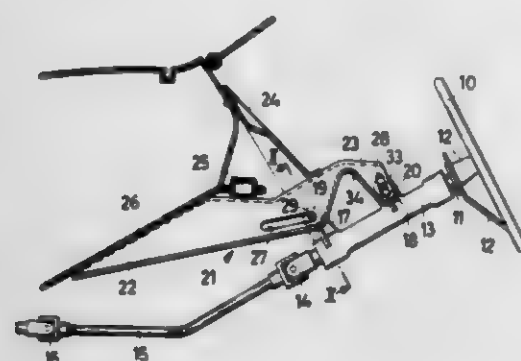
Filed Jun. 2, 1978, Ser. No. 911,915

Claims priority, application Italy, Jun. 2, 1977, 24319 A/77

Int. Cl.² B62D 1/18

U.S. Cl. 74-492

4 Claims



1. A collapsible-steering unit for a motor vehicle comprising a steering column having a deformable section, a steering wheel connected to said column, column support means for rotatably supporting said column, anchoring means for attaching said column support means to a vehicle body said anchoring means including a first relatively rigid part and a second part yieldingly connected to said relatively rigid part for movement in a preselected direction upon driver impact with the steering wheel, first connection means between said column support means and said first part of said anchoring means, said first connection means being independent of said second part of said anchoring means and permitting movement of said column supporting means relative to said first part of said anchoring means in said preselected direction upon driver impact with the steering wheel, friction means between said first connection means and said first part of said anchoring means and second connection means between said column support means and said second part of said anchoring means.

STEERING GEAR FOR MOTOR VEHICLES Erich Jablonsky, Boeblingen, Rems, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, A.G., Friedrichshafen, Fed. Rep. of Germany

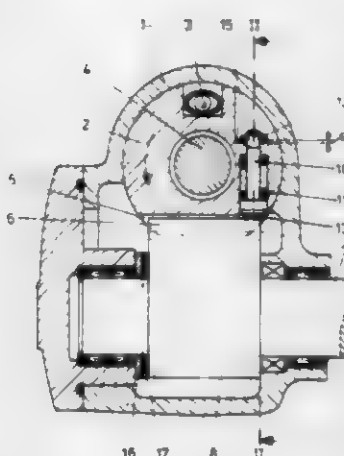
Filed Aug. 10, 1978, Ser. No. 932,639

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2635958

Int. Cl.² B62D 3/06; F16H 25/22, 55/28

U.S. Cl. 74-499

9 Claims



1. The combination in a steering mechanism of a worm gear steering nut member having a gear rack, and a gear section member engaged therewith including a steering shaft carrying said steering nut member and on which the said steering nut member has relative rotation;

resilient bias means carried intermediate said steering nut member and said gear sector member to adjust for backlash disposed to exert a torque force on said steering nut member effecting said relative rotation whereby the teeth of said steering nut rack and said gear sector member are maintained in flank engagement.

4,228,697

VEHICLE TRANSMISSIONS

Albert A. Miller, Galashiels, Scotland, assignor to AB Volvo, Gothenburg, Sweden

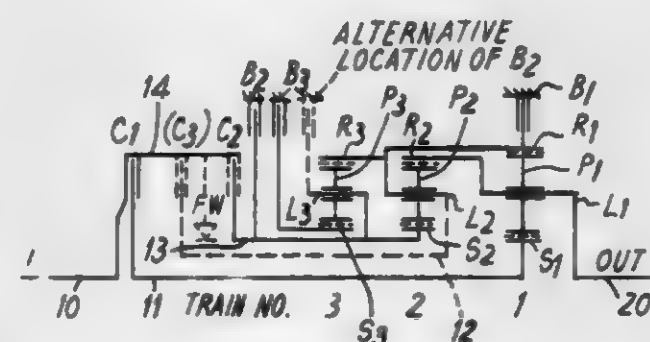
Filed Nov. 4, 1977, Ser. No. 848,688

Claims priority, application United Kingdom, Nov. 5, 1976, 46221/76

Int. Cl.² F16H 57/10

U.S. Cl. 74-758

6 Claims



1. In an epicyclic change-speed gearing comprising at least three epicyclic gear sets drivingly connectable between an input and an output, each gear set comprising a sun gear, a planet carrier, an internally toothed ring gear and at least one planet pinion which meshes with both the sun gear and the ring gear of its respective gear set and is itself mounted for rotation about its axis in said planet carrier which is mounted for rotation about the common axis of the sun gear and ring gear of its respective gear set, in which the planet carrier of the first gear set is rotationally secured to the ring gear of the second gear set, the input is connected to the sun gear of the first gear set, the output being taken from the planet carrier of the first gear

set, and means are provided for holding at least one of the ring gear of the first gear set and the sun gear of the second gear set against driving reactions, the improvements in which the ring gear of the third gear set is rotationally secured to the planet carrier of the second gear set, the planet carrier of the third gear set is rotationally secured to the sun gear of the second gear set, and further holding means are provided for holding the sun gear of the third gear set.

4,228,698

SPEED REDUCER

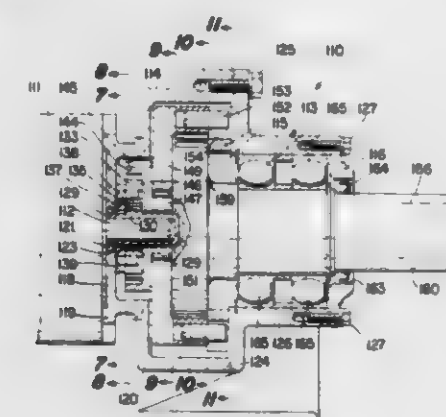
Michael E. Winiasz, 4009 Washington Ave., Lorain, Ohio 44052

Filed May 8, 1978, Ser. No. 903,856

Int. Cl.² F16H 1/28

U.S. Cl. 74-805

1 Claim



1. A speed reducer which comprises:
a housing including a back portion having a first pair of projecting separator pins each of which is generally square in cross section and including a front portion having a second pair of projecting separator pins each of which is generally square in cross section;
a rotatable input shaft extending through the back portion of the housing;
a first eccentric bushing fixedly mounted on the input shaft to rotate therewith;
a driving spur gear mounted on the first bushing and having a third pair of separator pins each of which is generally square in cross section projecting therefrom toward the back portion of the housing;
a first eccentric separator plate located between the back housing portion and the driving spur gear, the first separator plate having two opposed pairs of slots, one of the pairs of slots adapted to receive the first pair of separator pins from the back housing portion and the other pair of slots adapted to receive the third pair of separator pins from the driving spur gear, both pairs of pins being movable within the slots to maintain the driving spur gear nonrotating with respect to the housing;
a driven internal gear which engages the nonrotating driving spur gear and which is rotated thereby;
a second eccentric bushing fixedly mounted on the driven internal gear to rotate therewith;
a driving internal gear mounted on the second bushing and having a fourth pair of separator pins each of which is generally square in cross section projecting therefrom toward the front portion of the housing;
a second eccentric separator plate located between the front portion of the housing and the driving internal gear, the second separator plate having two opposed pairs of slots, one of the pairs of slots adapted to receive the second pair of separator pins from the front housing portion and the other pair of slots adapted to receive the fourth pair of separator pins from the driving internal gear, both pairs of pins being movable within the slots to maintain the driving internal gear nonrotating with respect to the housing;
a driven spur gear which engages the orbiting nonrotating driving internal gear and is rotated thereby; and
a rotatable output shaft extending from the front portion of the housing and coaxial with the input shaft, the driven

spur gear being fixedly mounted on the output shaft to rotate the output shaft therewith.

4,228,699

GEAR ASSEMBLIES AND TRANSMISSION

Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hertfordshire, England

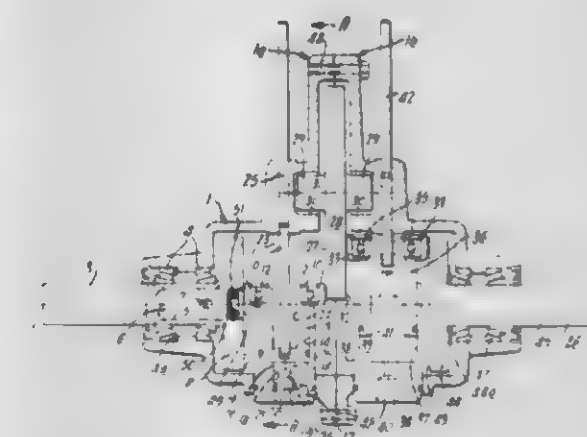
Filed Mar. 21, 1979, Ser. No. 22,635

Claims priority, application United Kingdom, Mar. 22, 1978, 11384/78

Int. Cl.² B60K 41/04

U.S. Cl. 74-853

34 Claims



1. A variable ratio gear assembly comprising:
a first member having a first axis about which the first member is intended to be rotatably driven, said member having a drive face which extends laterally relative to said first axis;
a second member having a second axis which extends laterally relative to the first axis and about which second axis the second member is intended to be rotatably driven, said second member engaging or being capable of engaging said drive face so that, when one of said members is rotatably driven about its axis, rotation is imparted to the other member by oil film or traction drive; and
control means for displacing one of the members relative to the other and substantially in the direction of the second axis while the second member is maintained in engagement with the drive face to vary the ratio of drive which is transmitted between the members.

4,228,700

AUTOMATIC TRANSMISSION WITH ELECTRONICALLY CONTROLLED TORQUE TRANSMISSION DURING GEAR SHIFT

Helmut Espenschied; Uwe Kiencke, both of Ludwigsburg, and Alfred Schulz, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,324

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742031

Int. Cl.² B60K 41/06

U.S. Cl. 74-866

23 Claims

1. In a system having a transmission for transmitting torque from an engine to an output, said transmission having a plurality of gears, a plurality of valves one associated with each of said gears, gear control means (10) for furnishing a shift signal indicative of initiation of a gear shift from a then-present gear to a selected gear and a direction signal (RH) indicative of the direction of said shift, engine speed sensor means (14) coupled to said engine for furnishing an engine speed signal indicative of the speed thereof, transmission output speed sensor means (13) coupled to said transmission for furnishing a transmission speed signal indicative of the output speed of said transmission,

4,228,707

CUTTER FOR CUTTING MATCH SPLINTS

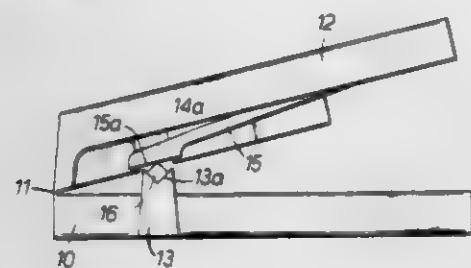
John Arlett, Camberley, England, assignor to Bryant & May Limited, London, England

Filed Feb. 12, 1979, Ser. No. 11,545

Int. Cl. B27L 9/00; B26D 5/10

U.S. Cl. 83—387

3 Claims



1. A cutter for cutting elongate articles and comprising: a base; means defining a shaped recess in the base for holding the elongate article against movement transverse to the length thereof; means defining a slot in the base, said slot intersecting the means defining the shaped recess to divide said means defining a shaped recess into two parts; an arm overlying the base; a hinge connecting the arm to the base to allow pivotal movement of the arm towards or away from the base; a blade held in the arm in register with the means defining the slot in the base; and resilient means mounted on the arm on opposite sides of the blade for engaging the elongate article in the means defining the recess, whereby, on pivotal movement of the arm towards the base, firstly the resilient means engage the elongate article to hold the elongate article in the means defining a recess, the blade then cutting the held article along the line of the means defining a slot, pivotal movement of the arm away from the base leaving the severed parts of the elongate article in the means defining a recess.

4,228,708

PORTABLE SAWMILL

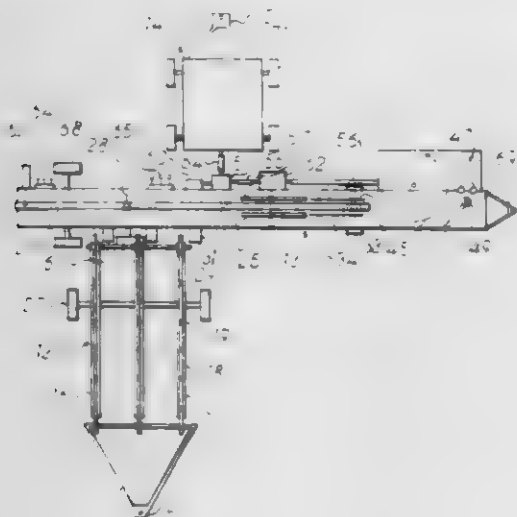
Peter B. Martin, P.O. Box 194, Superior, Mont. 59872

Filed Aug. 7, 1978, Ser. No. 931,308

Int. Cl. B27B 7/02, 7/04

U.S. Cl. 83—404.1

10 Claims



1. A portable sawmill including a log positioning section, a log sawing section and drive means for said log positioning section and said log sawing section; said log positioning section including a supporting frame with an inclined face and a conveyor means disposed along said inclined face of said supporting frame with means to engage and move logs transversely of

their lengths up the inclined face, said log sawing section including an elongated substantially horizontal log bed adjacent the upper end of the inclined face of said supporting frame, first conveyor means for moving logs along said bed, a first saw assembly including at least two substantially vertical saw blades rotatably mounted on a common horizontal drive shaft disposed adjacent said log bed, means for adjusting the spacing between said substantially vertical saw blades, at least two vertically disposed guide means positioned adjacent the delivery area of said substantially vertical and aligned therewith saw blades, means for adjusting the spacing between said guide means, a second saw assembly including a plurality of substantially horizontal saw blades rotatably mounted on a common vertical drive shaft disposed adjacent to said log bed, second conveyor means for moving along said bed located adjacent the delivery area of said plurality of saw blades, and said drive means including controls for independently actuating said conveyor means of said log positioning section and said first and second conveyor means of said log sawing section; said means for adjusting the spacing between said substantially vertical saw blades including means for rotatably supporting one of said substantially vertical saw blades, said saw support means being associated with another of said substantially vertical saw blades and movable toward and away therefrom, and means for effecting movement of said saw support means.

4,228,709

FLAT CABLE PREPARATION TOOL ASSEMBLY

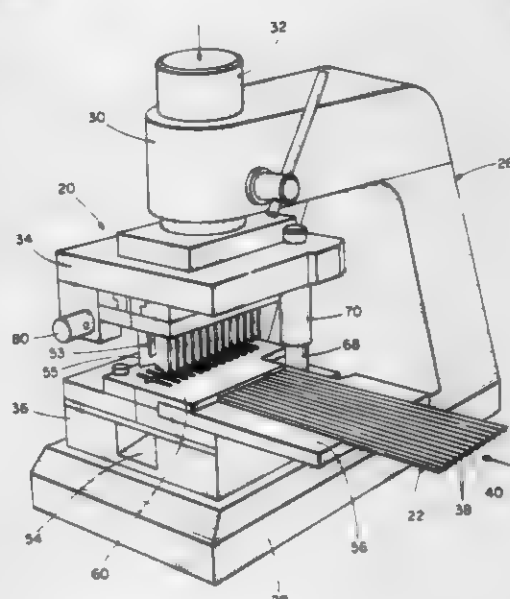
Casimer M. Guzay, Jr., Hoffman Estates, and Jack E. Caveney, Hinsdale, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Jun. 4, 1979, Ser. No. 45,497

Int. Cl. B26D 9/00

U.S. Cl. 83—620

17 Claims



1. A tool assembly for use with a prime mover, such as a bench press, to prepare a flat cable for its termination in a mass termination connector, said assembly comprising: upper and lower supports, at least one of which is adapted for attachment to said prime mover, for reciprocal movement relative to one another; punch means carried by one of said supports for forming a series of windows in the flat cable insulation between adjacent conductors of the flat cable, said windows being aligned in a row extending transversely of the longitudinal direction of said cable; cutter means carried by one of said supports for severing the conductors of said flat cable adjacent said windows, said punch means extending further toward the support which does not carry the punch means than the cutter means extends toward the support which does not carry the cutter means, said supports being movable relative to one another between an open position wherein a flat cable

disposed between said supports is not punched or cut and a closed position wherein said windows are punched and said conductors severed, through an intermediate position wherein said cable is punched but the conductors are not cut;

said assembly further comprising selectively operable stop means for limiting relative movement of said supports to said intermediate position whereby a single tool assembly selectively prepares flat cables for either daisy chain connection or dead end connection.

4,228,710

CUT-OFF SAW ATTACHMENT FOR MACHINE TOOL

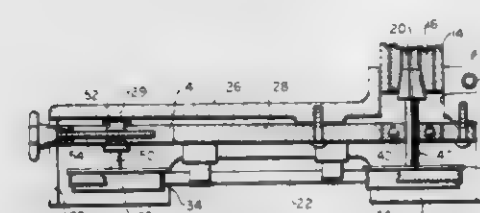
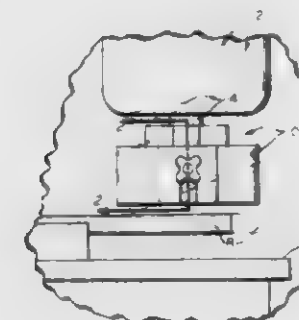
Sylvester G. Karbowski, New Haven, Conn., assignor to Louis W. Palmieri and Marcia K. Palmieri, both of Hamden, Conn.

Filed May 23, 1979, Ser. No. 41,701

Int. Cl. B23D 53/10; B27B 13/00

U.S. Cl. 83—794

12 Claims



1. A cut-off saw attachment for a machine tool having means defining a work-support surface, a spindle support member movable generally toward and away from the work-support surface, a spindle journaled for rotation in said support member, and a coupling member carried by said spindle, said cut-off saw attachment comprising a frame, means for securing said frame in fixed position relative to said spindle support member for movement therewith, a drive wheel journaled for rotation relative to said frame, drive means connected to said drive wheel and coupled to said spindle by said coupling member for rotating said drive wheel in response to rotation of said spindle, and idler wheel supported for rotation on said frame in axially parallel relation to said drive wheel, said drive wheel and said idler wheel defining a throat region therebetween, and an endless band saw blade mounted on said drive wheel and said idler wheel in engagement with peripheral portions thereof and extending therebetween, said saw blade having a generally rectilinear portion extending through said throat region.

4,228,711

SELF-CASTING GLASS CUTTER AND COMPENSATING BI-DIRECTIONAL HEAD

Thomas A. Insolio, Bristol, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.

Filed May 17, 1979, Ser. No. 39,861

Int. Cl. B26D 3/08; C03B 33/10

U.S. Cl. 83—881

6 Claims

1. Apparatus for scoring sheet glass, comprising a support body adapted for relative movement in a plane generally parallel to the glass to be scored, piston means in said support body and adapted for limited reciprocating movement on a line oriented perpendicular to said plane, biasing means to urge the piston means toward the glass, and glass engaging rollers on said piston means, glass scoring wheel support means reciprocally mounted in said piston means for limited movement on

the same line of action as that of said piston means, biasing means acting between said piston means and said wheel support means, said glass scoring wheel support means including a holder means rotatable on said line of action and defining a downwardly open slot with spaced inner stop surface segments, a pendulum member pivotally supported in said slot on an axis intersecting said line of action at right angles and



adapted for pendulous movement in said slot between limit positions determined by abutment with said stop surfaces, a glass scoring wheel provided in said pendulum member for rotation on an axis which is spaced rearwardly of said line of action to provide a casting action in one and an opposite direction, as a result of rolling contact between said wheel and the glass.

4,228,712

KEY CODE DATA GENERATOR

Yasuji Uchiyama, Akira Nakada, Takatoshi Okumura, Eiichi Aoki, Eiichi Yamaga, and Akiyoshi Oya, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

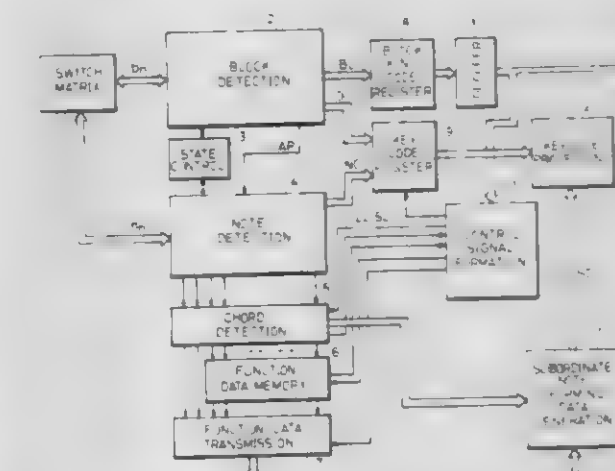
Filed Sep. 7, 1978, Ser. No. 940,381

Claims priority, application Japan, Sep. 12, 1977, 52-109750

Int. Cl. G10H 1/00

U.S. Cl. 84—1.01

8 Claims



1. A key code data generator comprising: a switch matrix circuit including a plurality of key switches assigned to respective notes and connected between row lines and column lines, said row lines defining respective blocks of the key switches and said column lines defining respective notes of the key switches in each said block;

- a block detection circuit connected to said switch matrix circuit for detecting all row lines to which key switches in operation are connected;
- a note detection circuit connected to said switch matrix circuit for detecting all column lines connected with a single one of said detected row lines via the key switches in operation, and delivering note codes representing said detected row lines one after another in a time shared fashion, the column line detection being carried out for one row line after another for each of said row lines detected;
- a control circuit connected to said block detection circuit and said note detection circuit for causing said row line detection in a first period of time and said column line detection in a second period of time;
- a circuit connection for causing said note detection circuit to deliver in a third period of time all the note codes available one after another;
- a chord detection circuit including a shift register connected to said note detection circuit and having stages for storing the state of said column lines detected with respect to predetermined row lines in said second period, contents of said stages being circulatingly shifted in synchronism with said time shared delivery of the note codes from said note detection circuit in said third period, and a chord type detecting logic connected to said stages for detecting establishment of one of predetermined types of chord; and
- a code register for storing the note code delivered from said note detection circuit at the moment said chord type detecting logic detects said establishment, the registered note code representing the root note of the detected chord.

4,228,713

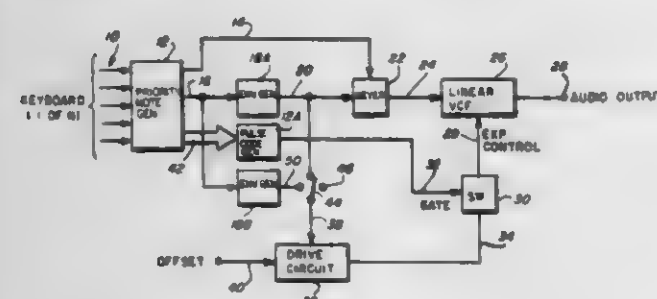
PROGRAMMABLE CURRENT SOURCE FOR FILTER OR OSCILLATOR

Glenn Gross, Chicago, Ill., assignor to Norlin Industries, Inc., Lincolnwood, Ill.

Continuation-in-part of Ser. No. 835,695, Sep. 22, 1977, Pat. No. 4,186,642. This application Jul. 3, 1978, Ser. No. 921,195
Int. Cl. G10H 1/02

U.S. Cl. 84-1.19

23 Claims



1. An electronic music circuit comprising:
 - means for selecting a note on a musical scale;
 - means responsive to said musical note selection means to produce a musical tone signal at the frequency of the note selected thereby;
 - at least one frequency-dependent circuit having an input connected to receive said musical tone signal and a separate frequency response control input, the frequency response of said frequency-dependent circuit varying as a substantially linear function of a current delivered to said frequency response control input;
 - an on-off switch having a signal input, a signal output, and an on-off control;
 - means for delivering to said signal input of said on-off switch an unchopped tuning signal which is separate from said musical tone signal;
 - a pulse source responsive to said musical note selection means to generate a series of control pulses having a duty cycle which is an exponential function of the musical scale position of said selected musical note, and connected to

apply said control pulses to said on-off switch control so as to turn said switch on during each control pulse and off between control pulses for chopping said tuning signal at an exponential rate; and

means responsive to said signal output of said on-off switch to deliver to said frequency response control input a current proportional to the duty cycle of said chopped tuning signal, whereby the frequency response of said frequency-dependent circuit varies as an exponential function of the unchopped tuning signal.

4,228,714

MULTIPLEX CHIME GENERATOR

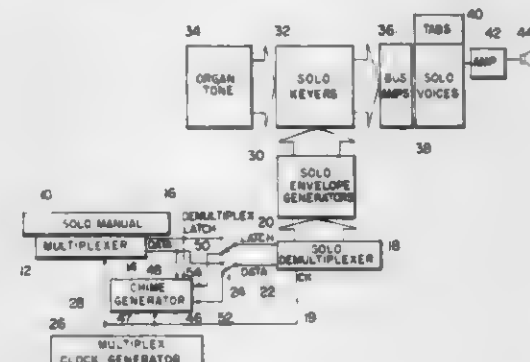
Stephen L. Howell, Jasper, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Jan. 2, 1979, Ser. No. 158

Int. Cl. G10H 1/26, 5/10

U.S. Cl. 84-1.01

13 Claims



1. In an electronic musical instrument including a keyboard having playing keys, multiplex means for scanning said keys and producing a cyclically recurring binary serial format data word having time slots corresponding to respective keys of the keyboard and a keydown pulse in a time slot corresponding to an actuated key of the keyboard, demultiplex means synchronized with said multiplex means and connected to receive said serial format word for converting said serial format word to a parallel format signal, and tone generating and keying means controlled by said demultiplex means for producing tones associated with the keys corresponding to time slots in said serial format data word in which keydown signals appear, the improvement being a pitch generator comprising means connected between said multiplex and demultiplex means for inserting in said serial format word a keydown pulse in an advance time slot located ahead of said time slot corresponding to said actuated key whereby tones associated with said actuated key and the key corresponding to said advance time slot will be produced, the keydown pulse in said advance time slot being a predetermined number of time slots ahead of said time slot corresponding to said actuated key and being independent of the actuation of any other key of the keyboard.

4,228,715

STRAIN-GAUGE SOUND PICKUP FOR STRING INSTRUMENT

Carl-Ernst Nourney, Am Wagenrast 6, D-4000 Düsseldorf 12, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 935,916

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738256

Int. Cl. G10H 3/18

U.S. Cl. 84-1.16

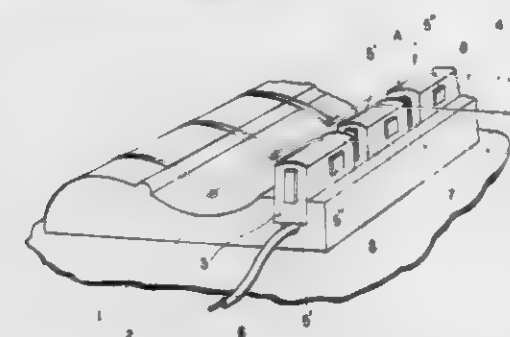
8 Claims

1. In a musical instrument having a bridge, a plurality of electrical tone pickups, a sounding element, and a plurality of elongated strings maintained under longitudinal tension and bearing through said bridge on said sounding element, the improvement wherein:

said electrical tone pickups are strain gauges fixed to said bridge,

said strings are arranged in groups each having at least one string and at least one such strain gauge is secured to said bridge between each group and said sounding element,

said strain gauges each have a predetermined respective direction of maximum sensitivity arranged substantially perpendicular to the respective group of strings, each strain gauge extending between the respective group and said sounding element,



said bridge is elongated transversely of said strings and is formed with slots extending generally parallel to said strings and subdividing said bridge into a plurality of sections which each engage a single respective group of said strings and which each have at least one such strain gauge, and

said bridge is formed with a groove extending generally perpendicular to said slots and subdividing each of said sections into a pair of subsections.

4,228,716

DEVICE AND METHOD FOR OPTICAL TONE GENERATION

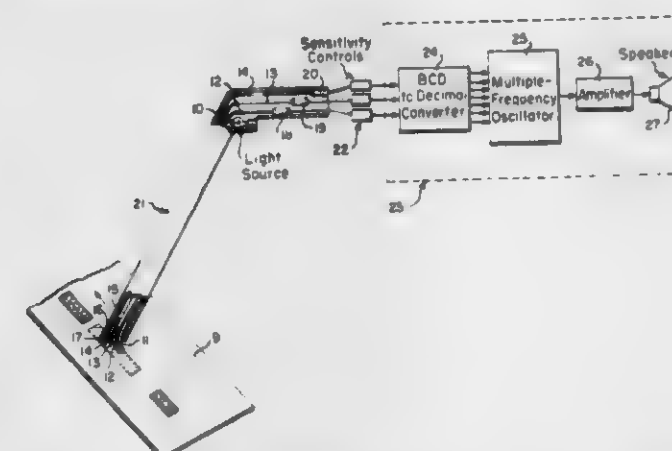
James Linford, Livingston Manor, N.Y., assignor to I-Production Establishment, Vaduz, Liechtenstein

Continuation of Ser. No. 820,348, Jul. 29, 1977, abandoned. This application Nov. 16, 1978, Ser. No. 961,267

Int. Cl. G10H 3/06

U.S. Cl. 84-1.18

10 Claims



1. An optical generating device for use as a teaching or musical aid for generating a tone coded in pitch to the color of a colored control surface, comprising:
 - a generally elongated member configured to be hand-held at least at a first end portion as a baton or wand;
 - a light source attached to said generally elongated member and adapted to direct light onto such colored control surface when said generally elongated member is guided thereover;
 - a plurality of color-selective light pick-up and transmitting means attached to said generally elongated member, said light pick-up and transmitting means being responsive to light of different respective colors reflected from such colored control surface and adapted to direct said light onto a respective plurality of photosensors when said

generally elongated member is guided thereover and light is directed thereon from said light source;

a plurality of light responsive photosensors positioned and adapted to receive light from said respective color-selective light pick-up and transmitting means and capable of producing respective electrical output signals indicative of the presence or absence of light of said respective colors;

multiple-frequency tone generation means positioned and adapted to receive the output signals of said photosensors for selectively generating one of a plurality of different frequency tones dependent upon the specific combination of photosensors activated by such control surface when said generally elongated member is manually directed over such colored control surface.

4,228,717

ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF GENERATING A CHORUS SOUND

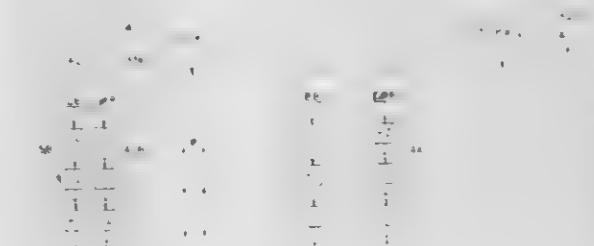
David A. Luce, Clarence Center, N.Y., assignor to Norlin Industries, Inc., Lincolnwood, Ill.

Continuation-in-part of Ser. No. 696,195, Jun. 15, 1976, Pat. No. 4,145,943, and a continuation-in-part of Ser. No. 588,508, Jun. 19, 1975, Pat. No. 4,099,439. This application Jun. 2, 1978, Ser. No. 911,716

Int. Cl. G10H 1/02, 5/06

U.S. Cl. 84-1.24

4 Claims



1. For use in an electronic musical instrument having a keyboard with a plurality of keys and an output system adapted to receive tone signals and convert them into sound waves, a tone signal generator for generating a plurality of tone signals comprising:

first and second sources of clock pulses differing in frequency by an integral number of semitones;

first and second top octave synthesizer means connected respectively to said first and second clock pulse sources for producing, respectively, first and second series of tone pulse signals, each of said series corresponding to a different tempered scale; and

means responsive to the operation of said keys for simultaneously supplying said output system with two tone pulse signals of approximately the same frequency derived individually from non-corresponding outputs of said first and second top octave synthesizer means, whereby the sound of a chorus is simulated.

4,228,718

MAGIC CHORDER

Robert L. Smith, 1037 E. Beddell St., Fort Worth, Tex. 76115

Continuation-in-part of Ser. No. 828,415, Aug. 29, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 943,197

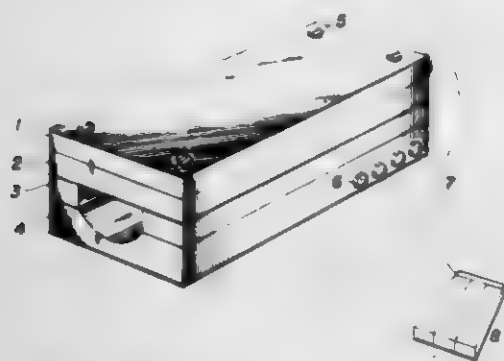
Int. Cl. G10D 3/00

U.S. Cl. 84-317

6 Claims

1. A stringed instrument fretting device, comprising: body means adapted to be secured to the neck of said instrument;
- a plurality of fretting rods located within said body means in string fretting locations;
- electromagnetic means for actuating said rods;
- circuit means for selectively activating said electromagnetic means;
- finger-operated switches mounted on said body means and

electrically connected with said circuit means for actuating a single rod to fret a single selected note; and



foot-operated switches spaced from said body means but electrically connected with said circuit means for actuating a plurality of said rods to fret selected chords.

4,228,719

PLECTRUM FOR STRINGED MUSICAL INSTRUMENTS

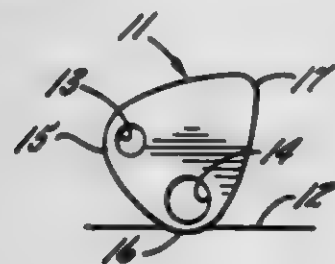
George W. Keene, P.O. Box 333, Rochelle, Ill.

Filed Jul. 25, 1979, Ser. No. 60,399

Int. Cl. G10D 3/16

U.S. Cl. 84—322

4 Claims



1. A plectrum for a stringed musical instrument comprising a single piece of resilient molded plastic material, said piece including at least two rounded corners each adapted to be used selectively for engaging the strings of the instrument while a portion of the piece other than the corner being used is held by hand, and a plurality of holes formed in said piece, one adjacent each of said corners, said holes being of different sizes whereby the flexibility of the portions of the piece adjacent each of said corners is individually different.

4,228,720

HARMONICA PLAYING MEANS

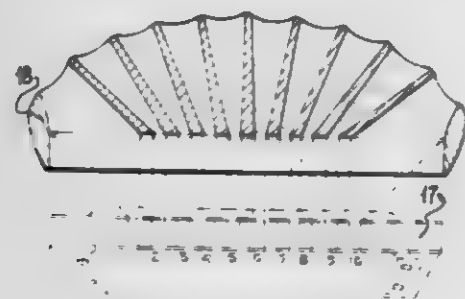
James W. Vidler, 38 High St., Waratah, N.S.W., 2298, Australia

Filed Apr. 24, 1979, Ser. No. 32,959

Int. Cl. G10D 7/12

U.S. Cl. 84—377

4 Claims



1. In a mouth-blown harmonica, the improvement wherein the wind-entrance apertures thereof are in communication with a trumpet, said trumpet having therein a plurality of discrete flaired channels, each wider at the respective inlet end thereof than at the respective outlet end thereof, each outlet end of said plurality of channels terminating in registration with a single wind-entrance aperture of said harmonica, and each respective inlet end of said channels terminating in an

embouchure aperture of mouth-conforming size, all said embouchure apertures lying in longitudinal juxtaposition along the outer periphery of said trumpet, allowing each separate note of said harmonica to be sounded by the entire mouth of a player applied selectively to an appropriate one of said embouchure apertures which is in communication, via its associates channel, with the wind-entrance aperture corresponding to said note.

4,228,721

DRUM TUNING MECHANISM

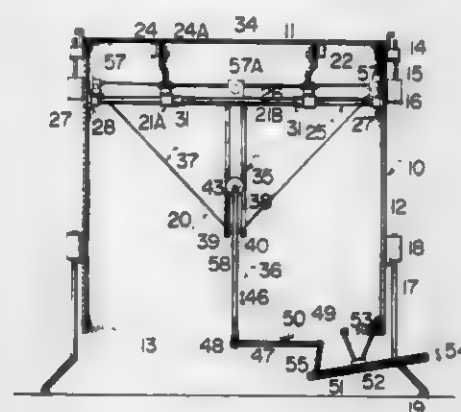
Elwyn J. Hancox, 651 Muriel St., Winnipeg, Manitoba, Canada

Filed Jan. 15, 1979, Ser. No. 3,354

Int. Cl. G10D 13/02

U.S. Cl. 84—411 R

19 Claims



1. A tuning mechanism for musical drums which include a substantially cylindrical body and a skin stretched over one end of the body and constituting a drum head; said tuning mechanism comprising in combination:

(a) at least one deadening element in contact with the underside of the drum head,

(b) means mounting said deadening element within said body,

(c) and means within said body operatively connected to said deadening element to move same across said drum head thereby varying the effective resonating area of said drum head, said deadening element including a pair of opposed strips each having one longitudinally extending surface contacting the underside of said drum head, at least one of said strips being movable towards and away from the other of said strips and defining the effective resonating area therebetween.

4,228,722

UPSET BOLT

Hiroshi Kazino, Komaki, Japan, assignor to Kabushiki Kaisha Aoyama Seisakusho, Nagoya, Japan

Filed Jun. 16, 1978, Ser. No. 916,257

Claims priority, application Japan, Apr. 4, 1978, 53-44076[U]

Int. Cl. F16B 23/00

U.S. Cl. 85—9 R

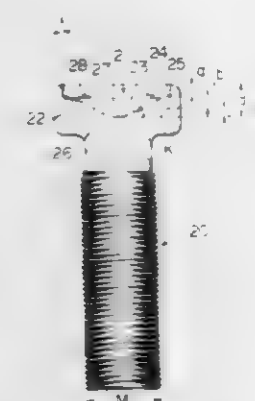
1 Claim

1. A hexagonal bolt having a threaded body and a bolt head provided with a pressure formed recess, the recess being formed by a combined surface comprising:

a lower concave surface, the radius of curvature of the concave surface being about $\frac{1}{2}$ the nominal diameter M of the threaded body of the bolt,

a middle convex surface oppositely curved to said concave surface, a lower end of the convex surface being smoothly conjugated with a top end of said concave surface and the radius of curvature of the convex surface being about 1.7 to 2 times the nominal diameter M of the threaded body of the bolt, and

a plurality of upper flat standing hexagonal surfaces spaced from the outer periphery of the hexagonal bolt head, each



of the flat standing surfaces having a height of approximately $\frac{1}{4}$ the height of the bolt head.

4,228,723

FASTENER RECESS

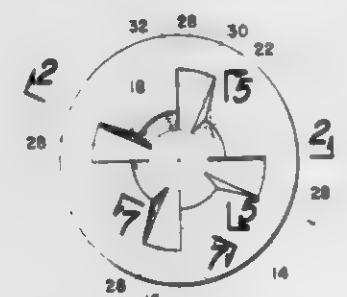
Hilary H. Cunningham, 9132 E. 37th Ct., Tulsa, Okla. 74145

Filed Sep. 16, 1977, Ser. No. 833,732

Int. Cl. F16B 23/00

U.S. Cl. 81—460

7 Claims



1. A rotational fastener having a recess and associated driver tool comprising:

(a) centrally disposed frusto-conical recess carrier by the fastener surrounding the rotational axis thereof, a plurality of equally spaced wrenching element recesses extending radially outwardly from the frusto-conical recess, each wrenching element recess comprising a first force application face lying in a plane containing the fastener rotational axis and an oppositely disposed second force application face, means carried by the second face to limit the force that can be applied thereto; and

(b) the driver tool comprising a shank, driver head at one end of the shank, said driver head having a convex shape to conform to the fastener recess.

4,228,724

AMMUNITION LOADER

Robert A. Leich, 4208 Chimney Pointe Dr., Bloomfield Hills, Mich. 48013

Filed May 29, 1979, Ser. No. 42,758

Int. Cl. F42B 33/02

U.S. Cl. 86—26

25 Claims

1. A press type ammunition loader for performing successive loading steps on shell casings to produce loaded cartridges therefrom, said loader including:

an upper platen assembly and a lower platen assembly and means mounting said upper platen assembly over said lower platen assembly for guided up and down movement with respect thereto;

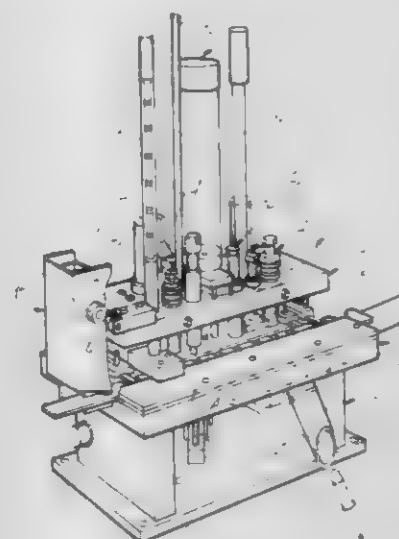
drive means for causing cyclical movement of said upper platen assembly relative to said lower platen assembly to cause a movement of said upper platen assembly towards

said lower platen assembly and back to an elevated position with respect thereto;

a linear array of work stations extending across said lower platen assembly;

a corresponding number of loading process components carried by said upper platen assembly at points thereof in vertical alignment with said work station locations on said lower platen assembly;

an elongated shuttle bar slidably mounted on said lower platen assembly for movement relative to said linear array of work stations, said shuttle bar having a series of casing engaging notches formed along one edge thereof adjacent said linear array of work stations;



means for operating said shuttle bar to undergo advancing movement in a position in engagement with shell casings disposed in said work stations to advance each of said shell casings from preceding station to the next station in said array of work stations and thence to be moved outwardly out of engagement with said shell casings and thence to a return position retracted one station a distance corresponding to the distance between stations and thence inwardly into engagement into said shell casings;

means being operated in response to said relative movement of said lower and upper platen assemblies to produce said movement of said shuttle bar with each cycle of descending and ascending movement of said upper platen assembly with said lower platen assembly.

4,228,725

ROTARY PISTON

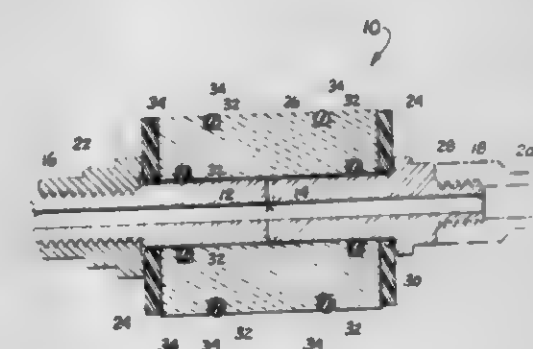
Kenneth Jai, 3425 Durwood Dr., Beaumont, Tex. 77704

Filed Jun. 13, 1978, Ser. No. 915,159

Int. Cl. F16J 1/02, 1/08

U.S. Cl. 92—159

1 Claim



1. A rotary piston having an elongated, cylindrical, tubular center member, a piston body having a cylindrical interior fitting around the exterior of said center member between the ends of said center member, and holding means mounted on the ends of said center member for retaining said piston body

intermediate the ends of said center member against longitudinal movement, hole means leading from the interior of said center member to the interior of said piston in which the improvement comprises:

said piston body comprising a solid, cylindrical body of a material selected from the group consisting of structural carbon and graphite, said piston body including groove means for holding sealing rings located on its interior and on its exterior, and

an elastomeric, fluorocarbon sealing ring located within each of said groove means,

nylon washer means located at each of the ends of said piston body between said piston body and said holding means, and

said piston body and said washer means fitting relative to said center member and said holding means so as to be rotatable about said center member and with respect to said holding means.

4,228,726

HYDRAULIC DISC BRAKE PISTON SEAL

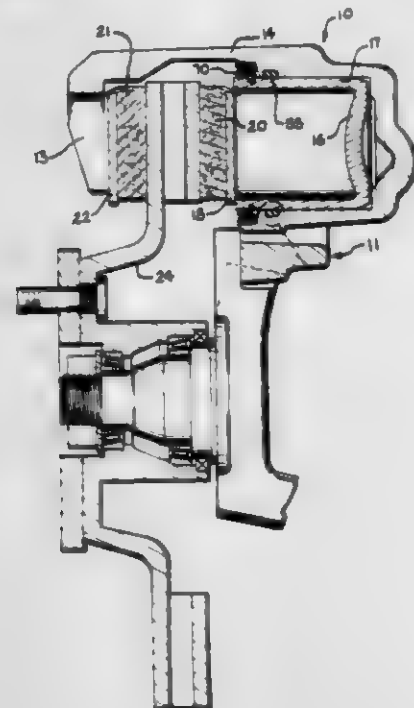
Kurt H. Rinker, Ann Arbor, and Anthony C. Evans, Westland, both of Mich., assignors to Kelsey Hayes Co., Romulus, Mich.

Filed Aug. 1, 1978, Ser. No. 928,474

Int. Cl.¹ F16J 15/18

U.S. Cl. 92-168

5 Claims



1. In a hydraulic piston activated vehicle brake wherein a piston moves in a forward brake-activating direction and in a rearward brake-releasing direction, said piston being hydraulically sealed within a cylinder by an elastomeric annular ring

4,228,727
PISTONS

David C. Speaight, and Gerald Longfoot, Lymington, England, assignors to Wellworthy Limited, Lymington, England

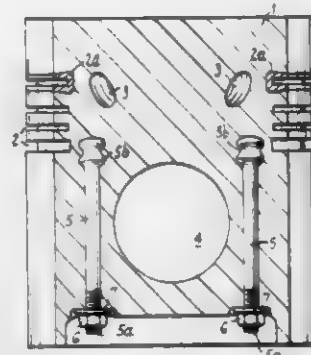
Filed Mar. 2, 1978, Ser. No. 882,778

Claims priority, application United Kingdom, Mar. 21, 1977, 11873/77

Int. Cl.¹ F16J 1/00

U.S. Cl. 92-228

1 Claim



1. A cast light metal piston comprising:

a crown;

a skirt cast integral with and depending from said crown;

two gudgeon pin bosses integral with and provided in said skirt and defining respective gudgeon pin holes;

a plurality of rod-like reinforcing members respectively located adjacent the opposite sides of each of said gudgeon pin holes, and which extend longitudinally relative to the piston axis through the cast material of the piston forming said gudgeon pin bosses;

said reinforcing members being each in the form of a bolt embedded in the cast material of the piston and having an enlarged head at one end and a threaded portion at the other end, said bolt heads being located towards the crown of the piston and embedded in the cast material and said threaded end portions projecting from the cast material at the bottom of the piston, and having nuts fitted onto the said threaded end portions of the bolts, whereby tightening of the nuts imparts a compressive stress in the axial direction to the cast material of the piston on the opposite side regions of said gudgeon pin bosses.

4,228,728

METHOD AND APPARATUS FOR REMOVING GUSSETS FROM FLAT TUBES

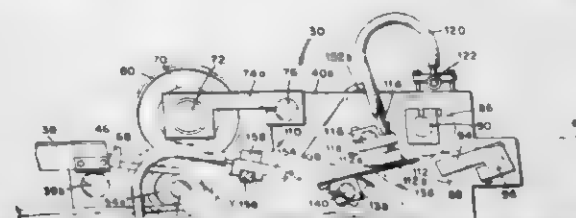
Alberta M. Hollis, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,722

Int. Cl.¹ B31B 1/26

U.S. Cl. 93-84 TW

29 Claims



connected to each other along a longitudinal fold line and connected to respective ones of the side panels along fold lines so that the gusset panels are foldable to lie in juxtaposed relation between said side panels, said method comprising the steps of:

- (a) moving the substantially flat tube along a guide path in a direction generally transverse to the longitudinal axis of the tube so as to establish leading and trailing edges,
- (b) separating the opposite side panels from each other at their leading edges while continuing to move the tube along said guide path while disposed generally transverse thereto, and
- (c) simultaneously restricting forward movement of one of said side panels while continuing to advance the other of said side panels so as to cause said gusset panels to be withdrawn from their folded positions between said side panels and lie in substantially coplanar relation with said side panels.

4,228,729

BUILDING ROOF STRUCTURE

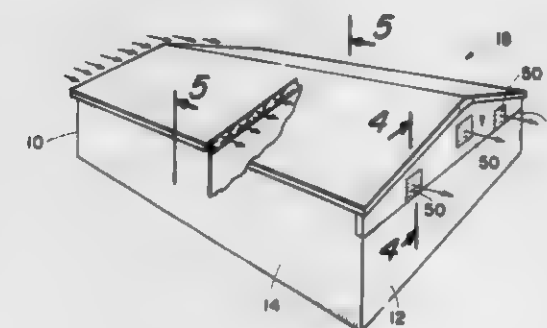
Paul W. Messick, 1320 E. 58th St., Tulsa, Okla. 74105

Filed Jun. 19, 1978, Ser. No. 916,843

Int. Cl.¹ F24F 13/00

U.S. Cl. 98-32

4 Claims



1. A roof structure for a building having first and second end walls and opposed side walls, the roof structure providing reduced air conditioning load for the building, comprising:

spaced apart horizontal purlins supported at their ends by building exterior end walls, each purlin having a top edge and a bottom edge;

roof sheathing affixed to the top edges of said purlins; ceiling sheathing affixed to the bottom edges of said purlins providing horizontal plenums between the roof and ceiling sheathing and between adjacent purlins, the horizontal plenums thereby extending the length and width of the building roof, the maximum height of the plenums being equal the height of the purlins;

means at the first end wall for providing ventilation into each of the plenums formed between said purlins;

a fan means includes;

a fan housing mounted on the second end wall having an intake communication with said plenums at the second end wall;

an exhaust opening in said fan housing; and

a fan supported in the fan housing which, when energized, withdraws air from the fan housing and thereby from the plenums and discharges air out said end wall exhaust opening

pieces of potato in the liquid, and for discharging cooked pieces of potato from the liquid automatically, said apparatus comprising:

a frame;

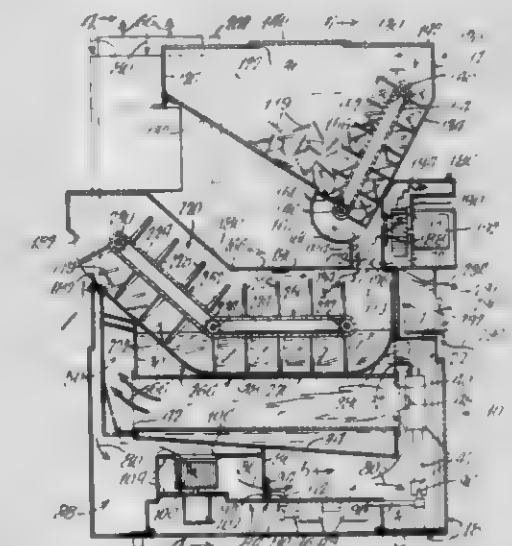
a reservoir mounted on said frame for holding a predetermined amount of cooking liquid;

means for heating said cooking liquid in said reservoir;

hopper means mounted on said frame above said reservoir for holding a supply of said pieces of potato, said hopper means having at least one downwardly slanted bottom wall, said hopper means defining an inlet aperture through which said supply of potato pieces can be loaded into said hopper means and further defining a hopper discharge aperture spaced from said cooking liquid through which said potato pieces are passed;

an endless loop first conveyor means in said hopper means defining a conveying path at an angle relative to said one slanted bottom wall for removing said potato pieces from the bottom of said supply of said potato pieces in said hopper means and for delivering said potato pieces to said hopper discharge aperture for discharge of said pieces through the hopper discharge aperture into said cooking liquid; and

second conveyor means in said reservoir for transporting said potato pieces through said hot cooking liquid, said second conveyor means adapted for moving generally equal amounts of potato pieces per unit length of said conveyor means through said cooking liquid and for moving said potato pieces out of said cooking liquid after the pieces have been cooked.



a plurality of upper flat standing hexagonal surfaces spaced from the outer periphery of the hexagonal bolt head, each



of the flat standing surfaces having a height of approximately $\frac{1}{4}$ the height of the bolt head.

4,228,723

FASTENER RECESS

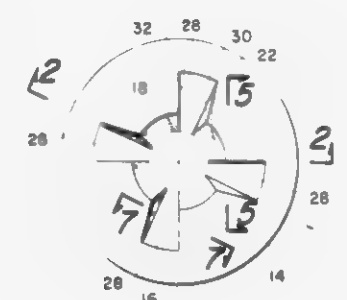
Hilary H. Cunningham, 9132 E. 37th Ct., Tulsa, Okla. 74145

Filed Sep. 16, 1977, Ser. No. 833,732

Int. Cl.² F16B 23/00

U.S. Cl. 81-460

7 Claims



1. A rotational fastener having a recess and associated driver tool comprising:

- (a) centrally disposed frusto-conical recess carrier by the fastener surrounding the rotational axis thereof, a plurality of equally spaced wrenching element recesses extending radially outwardly from the frusto-conical recess, each wrenching element recess comprising a first force application face lying in a plane containing the fastener rotational axis and an oppositely disposed second force application face, means carried by the second face to limit the force that can be applied thereto; and
- (b) the driver tool comprising a shank, driver head at one end of the shank, said driver head having a convex shape to conform to the fastener recess.

4,228,724

AMMUNITION LOADER

Robert A. Leich, 4208 Chimney Pointe Dr., Bloomfield Hills, Mich. 48013

Filed May 29, 1979, Ser. No. 42,758

Int. Cl.³ F42B 33/02

U.S. Cl. 86-26

25 Claims

1. A press type ammunition loader for performing successive loading steps on shell casings to produce loaded cartridges therefrom, said loader including:

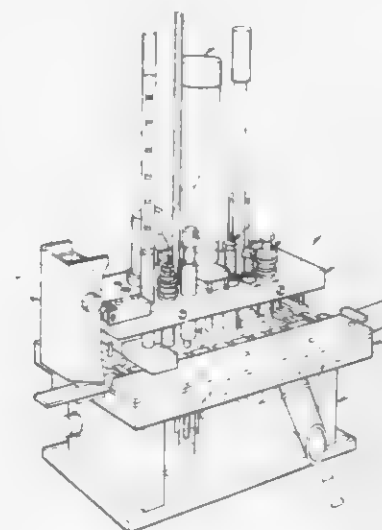
- an upper platen assembly and a lower platen assembly and means mounting said upper platen assembly over said lower platen assembly for guided up and down movement with respect thereto;
- drive means for causing cyclical movement of said upper platen assembly relative to said lower platen assembly to cause a movement of said upper platen assembly towards

said lower platen assembly and back to an elevated position with respect thereto;

a linear array of work stations extending across said lower platen assembly;

a corresponding number of loading process components carried by said upper platen assembly at points thereof in vertical alignment with said work station locations on said lower platen assembly;

an elongated shuttle bar slidably mounted on said lower platen assembly for movement relative to said linear array of work stations, said shuttle bar having a series of casing engaging notches formed along one edge thereof adjacent said linear array of work stations;



means for operating said shuttle bar to undergo advancing movement in a position in engagement with shell casings disposed in said work stations to advance each of said shell casings from preceding station to the next station in said array of work stations and thence to be moved outwardly out of engagement with said shell casings and thence to a return position retracted one station a distance corresponding to the distance between stations and thence inwardly into engagement into said shell casings;

means being operated in response to said relative movement of said lower and upper platen assemblies to produce said movement of said shuttle bar with each cycle of descending and ascending movement of said upper platen assembly with said lower platen assembly.

4,228,725

ROTARY PISTON

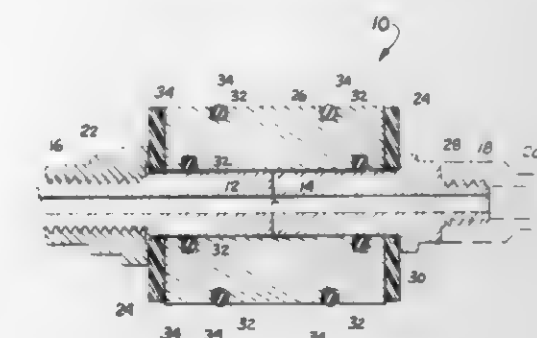
Kenneth Jai, 3425 Durwood Dr., Beaumont, Tex. 77704

Filed Jun. 13, 1978, Ser. No. 915,159

Int. Cl.³ F16J 1/02, 1/08

U.S. Cl. 92-159

1 Claim



1. A rotary piston having an elongated, cylindrical, tubular center member, a piston body having a cylindrical interior fitting around the exterior of said center member between the ends of said center member, and holding means mounted on the ends of said center member for retaining said piston body

intermediate the ends of said center member against longitudinal movement, hole means leading from the interior of said center member to the interior of said piston in which the improvement comprises:

- said piston body comprising a solid, cylindrical body of a material selected from the group consisting of structural carbon and graphite, said piston body including groove means for holding sealing rings located on its interior and on its exterior, and
- an elastomeric, fluorocarbon sealing ring located within each of said groove means,
- nylon washer means located at each of the ends of said piston body between said piston body and said holding means, and
- said piston body and said washer means fitting relative to said center member and said holding means so as to be rotatable about said center member and with respect to said holding means.

4,228,726

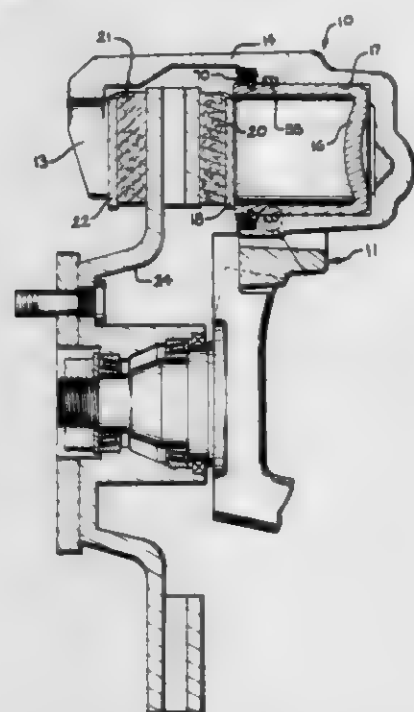
HYDRAULIC DISC BRAKE PISTON SEAL

Kurt H. Rinker, Ann Arbor, and Anthony C. Evans, Westland, both of Mich., assignors to Kelsey Hayes Co., Romulus, Mich.
Filed Aug. 1, 1978, Ser. No. 928,474

Int. Cl.¹ F16J 15/18

U.S. Cl. 92-168

5 Claims



1. In a hydraulic piston activated vehicle brake wherein a piston moves in a forward brake-activating direction and in a rearward brake-releasing direction, said piston being hydraulically sealed within a cylinder by an elastomeric annular ring seated in an annular groove within a cylinder wall, said annular groove having two groove walls generally perpendicular to said cylinder wall and a groove floor connecting said groove walls, said ring being compressed between said piston and the groove floor, thereby hydraulically sealing said piston in said cylinder, the improvement wherein said groove floor comprises a flat portion generally parallel to said cylinder wall and an inclined portion, said flat portion being located at the forward end of the groove floor and said inclined portion being located at the rearward end of the groove floor and being sloped toward said cylinder wall.

4,228,727
PISTONS

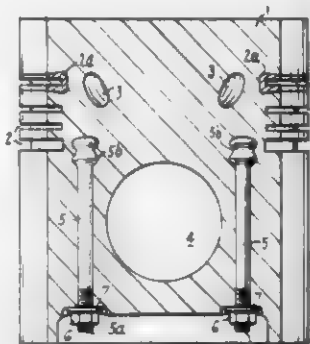
David C. Speaight, and Gerald Longfoot, Lymington, England, assignors to Wellworthy Limited, Lymington, England
Filed Mar. 2, 1978, Ser. No. 882,778

Claims priority, application United Kingdom, Mar. 21, 1977, 11873/77

Int. Cl.¹ F16J 1/00

U.S. Cl. 92-228

1 Claim



1. A cast light metal piston comprising:

- a crown;
- a skirt cast integral with and depending from said crown;
- two gudgeon pin bosses integral with and provided in said skirt and defining respective gudgeon pin holes;
- a plurality of rod-like reinforcing members respectively located adjacent the opposite sides of each of said gudgeon pin holes, and which extend longitudinally relative to the piston axis through the cast material of the piston forming said gudgeon pin bosses;
- said reinforcing members being each in the form of a bolt embedded in the cast material of the piston and having an enlarged head at one end and a threaded portion at the other end, said bolt heads being located towards the crown of the piston and embedded in the cast material and said threaded end portions projecting from the cast material at the bottom of the piston, and having nuts fitted onto the said threaded end portions of the bolts, whereby tightening of the nuts imparts a compressive stress in the axial direction to the cast material of the piston on the opposite side regions of said gudgeon pin bosses.

4,228,728

METHOD AND APPARATUS FOR REMOVING GUSSETS FROM FLAT TUBES

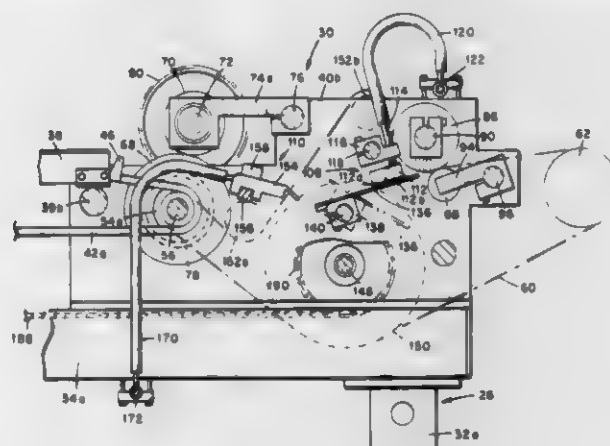
Alberta M. Hollis, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,722

Int. Cl.¹ B31B 1/26

U.S. Cl. 93-84 TW

29 Claims



24. A method for removing longitudinal gussets from a substantially flat tube of flexible material having opposite side panels and wherein each gusset includes a pair of gusset panels

connected to each other along a longitudinal fold line and connected to respective ones of the side panels along fold lines so that the gusset panels are foldable to lie in juxtaposed relation between said side panels, said method comprising the steps of:

- (a) moving the substantially flat tube along a guide path in a direction generally transverse to the longitudinal axis of the tube so as to establish leading and trailing edges,
- (b) separating the opposite side panels from each other at their leading edges while continuing to move the tube along said guide path while disposed generally transverse thereto, and
- (c) simultaneously restricting forward movement of one of said side panels while continuing to advance the other of said side panels so as to cause said gusset panels to be withdrawn from their folded positions between said side panels and lie in substantially coplanar relation with said side panels.

4,228,729

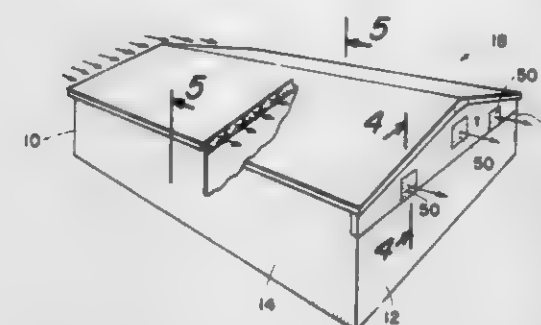
BUILDING ROOF STRUCTURE

Paul W. Messick, 1320 E. 58th St., Tulsa, Okla. 74105
Filed Jun. 19, 1978, Ser. No. 916,843

Int. Cl.¹ F24F 13/00

U.S. Cl. 98-32

4 Claims



1. A roof structure for a building having first and second end walls and opposed side walls, the roof structure providing reduced air conditioning load for the building, comprising: spaced apart horizontal purlins supported at their ends by building exterior end walls, each purlin having a top edge and a bottom edge; roof sheathing affixed to the top edges of said purlins; ceiling sheathing affixed to the bottom edges of said purlins providing horizontal plenums between the roof and ceiling sheathing and between adjacent purlins, the horizontal plenums thereby extending the length and width of the building roof, the maximum height of the plenums being equal the height of the purlins; means at the first end wall for providing ventilation into each of the plenums formed between said purlins; a fan means includes: a fan housing mounted on the second end wall having an intake communication with said plenums at the second end wall; an exhaust opening in said fan housing; and a fan supported in the fan housing which, when energized, withdraws air from the fan housing and thereby from the plenums and discharges air out said end wall exhaust opening.

4,228,730

AUTOMATIC FRENCH FRYER

James C. Schindler, Naperville, and Steve Kroll, Schaumburg, both of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Mar. 30, 1979, Ser. No. 25,379

Int. Cl.¹ A47J 37/12

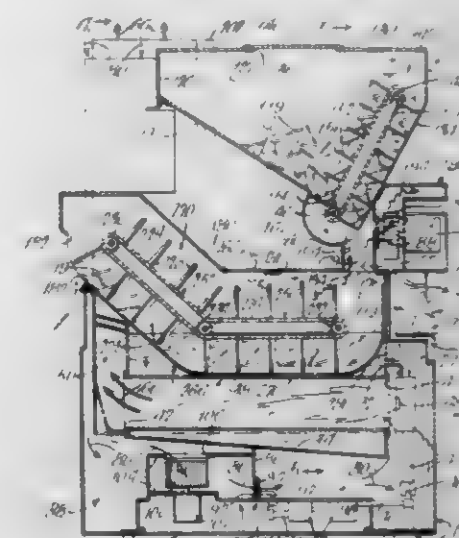
U.S. Cl. 99-329 R

34 Claims

1. An apparatus for continuously feeding pieces of potato into hot cooking liquid at a predetermined rate, for frying

pieces of potato in the liquid, and for discharging cooked pieces of potato from the liquid automatically, said apparatus comprising:

- a frame;
- a reservoir mounted on said frame for holding a predetermined amount of cooking liquid;
- means for heating said cooking liquid in said reservoir;
- hopper means mounted on said frame above said reservoir for holding a supply of said pieces of potato, said hopper means having at least one downwardly slanted bottom wall, said hopper means defining an inlet aperture through which said supply of potato pieces can be loaded into said hopper means and further defining a hopper discharge aperture spaced from said cooking liquid through which said potato pieces are passed;



an endless loop first conveyor means in said hopper means defining a conveying path at an angle relative to said one slanted bottom wall for removing said potato pieces from the bottom of said supply of said potato pieces in said hopper means and for delivering said potato pieces to said hopper discharge aperture for discharge of said pieces through the hopper discharge aperture into said cooking liquid; and second conveyor means in said reservoir for transporting said potato pieces through said hot cooking liquid, said second conveyor means adapted for moving generally equal amounts of potato pieces per unit length of said conveyor means through said cooking liquid and for moving said potato pieces out of said cooking liquid after the pieces have been cooked.

4,228,731

PIE CRUST SHAPER

Irene Butler, 5652 Serene Dr., Huntington Beach, Calif. 92649
Filed Feb. 26, 1979, Ser. No. 15,189

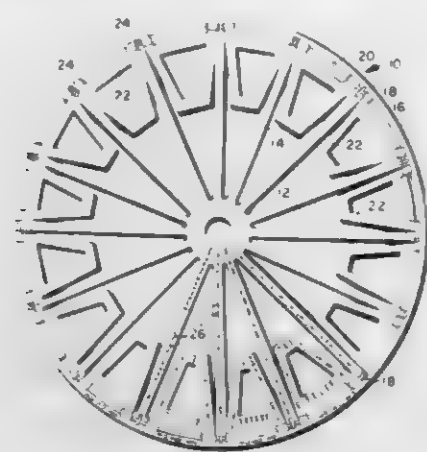
Int. Cl.² A47J 37/00

U.S. Cl. 99-433

11 Claims

1. A pie crust shaper for a bottom pie crust comprising: a flat integrally formed open work bottom section having an outlying surrounding member conforming to the bottom of a pie pan;

a plurality of flaps movably fastened to said surrounding member; and,



wherein said bottom section and said flaps have a plurality of pricking elements to prick a pie crust upon contact.

4,228,732

DEVICE FOR THE EXTRACTION OF JUICES AND ESSENTIAL OILS FROM WHOLE FRUITS, IN PARTICULAR FROM CITRUS FRUITS

Mario D. Canton, and Andrea Bonfiglio, both of Tremestieri, Italy, assignors to W. Sanderson & Sons S.p.A., Valeria, Italy
Filed Oct. 12, 1978, Ser. No. 950,648

Claims priority, application Italy, Dec. 6, 1977, 52101 A/77;
Jun. 1, 1978, 49659 A/78

Int. Cl. A23N 1/00; B30B 9/02

U.S. Cl. 99—509

13 Claims



1. An apparatus for extracting juices and essential oils from whole fruits, comprising a first series of vertical cylinders having fruit-contacting edges, said cylinders being fitted with each other with slight radial clearances therebetween, a second series of cylinders axially aligned with the first series and spaced therefrom to allow for the insertion of a fruit between the first and second series of cylinders, and means for moving said cylinders in each series relative to each other to exert a progressive compressive action, substantially distributed all over the fruit surface.

PACKAGE STRAPPING DEVICE WITH PALLET SENSING MEANS

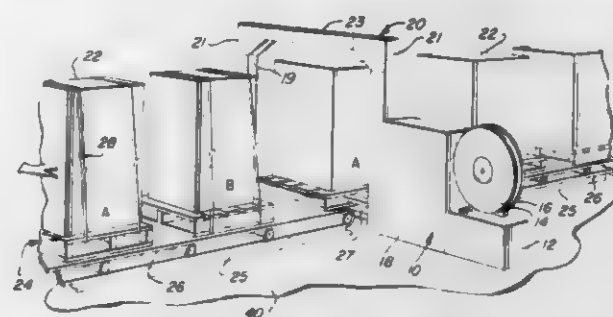
James P. Davis, Crawfordsville, and Robert W. Smith, Darlington, both of Ind., assignors to Keystone Consolidated Industries, Inc., Crawfordsville, Ind.

Filed Apr. 30, 1979, Ser. No. 34,612

Int. Cl. B65B 13/04

U.S. Cl. 100—4

14 Claims



1. In a strapping machine for strapping an article to a pallet at a strapping station, said machine including means for guiding the strap around the article and the pallet at the strapping station, said means including an arch having substantially continuous top and downwardly extending connecting side portions, said pallet including horizontal article supporting surfaces and vertical substantially imperforate stringers connected to said supporting surfaces, whereby at least one open ended passage extends in one direction between said stringers when the pallet is placed in one position at the strapping station, but which passage extends at an angle of 90° to the first position when the pallet is placed in another at the strapping station; said means for guiding the strap also including,

first strap carrying means,

means for moving said first strap carrying means to a position under the supporting surfaces of the pallet through the passage in the pallet and between the stringers if the pallet is in said one position, to permit the article and the pallet to be tied together by said strap at said strapping station,

second strap carrying means, and

means for moving said second strap carrying means to a position under the stringers beneath said passage in said pallet if the stringers are in said other position to also permit the article and the pallet to be tied together by the strap at said strapping station,

means for detecting the position of the stringers of said pallet when it is positioned at said strapping station,

said means for moving the first strap carrying means to a position to carry the strap between said stringers of the pallet being actuated when said detecting means determines that it may do so,

said means for moving the second strap carrying means to a position to carry said strap beneath the stringers being actuated when said detecting means determines that the strap cannot be passed between the stringers of the pallet.

4,228,734

METAL CAN CRUSHER

Ernest H. Parrish, 313 Coral Hills, El Paso, Tex. 79912

Filed Apr. 5, 1979, Ser. No. 27,902

Int. Cl. B30B 9/32

U.S. Cl. 100—245

6 Claims

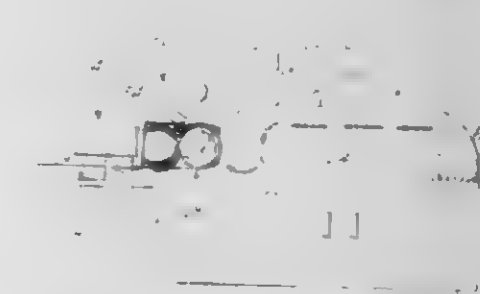
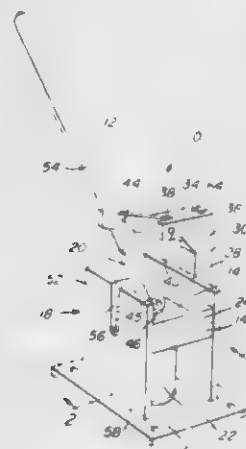
1. A metal can crusher for deformably axially compressing a cylindrical metal can to a small fraction of its length comprising mounting means mounting the crusher and fixedly supporting an end of the cylindrical can and crushing means attached to the mounting means, said crushing means comprising a box assembly attached to the mounting means and box assembly, and movable handle means, the box assembly holding the metal can while the handle means exerts axial compressive force on the

end of the can opposite the end of the can supported by the mounting means, anvil means for delivering said axial compressive force to the can, said handle means having a post pivot at one end thereof for pivotal connection to said post assembly, said post pivot being disposed above said anvil means, said handle further having a center post medially disposed between the ends of said handle, linking means comprising a substantially linear toggle pivotally connected at its upper end to said center post and pivotally connected at its lower end to said anvil means at an anvil pivot for converting manual rotational movement of said handle means to linear compressive movement of said anvil means, said center post describing a segment of a circular arc during axial compression of the cylindrical metal can, the arc being centered on the post pivot, said post pivot, center post, and anvil pivot forming an angle in a substantially vertical plane which includes said handle and said toggle defining the sides of an angle with the center post con-

ing a sheet marking edge extending lengthwise of said impression cylinder;

rotatable counter-roller mounted adjacent said impression cylinder and having a rotational axis of skew inclination relative to the rotational axis of said impression cylinder, said counter-roller having an outer surface of hyperboloidal shape lying adjacent to the outer surface of said impression cylinder and contacting said marking edge travel progressively along the length thereof as said sheets travel successively between said impression cylinder and said counter-roller whereby said sheets are marked transversely;

second marking means mounted on said impression cylinder in a plane coincident with the line of travel of said sheets, said second marking means defining a marking edge whereby said sheets may be marked lengthwise;



said first and second marking means consisting of elongated metallic strips having a base adhesively secured to the outer surface of said impression cylinder and teeth integral with said base, said teeth of said first-mentioned marking means being higher than that of said second marking means;

pressure roller having a rotational axis parallel to the rotational axis of said impression cylinder; said pressure roller being mounted circumferentially spaced from said counter-roller in the direction of the transferring means and extending over said second marking means whereby lengthwise perforation of said sheets is effected as said sheets pass between said pressure roller and said impression cylinder toward said first marking means, and a delivery station for receiving said printed and marked sheets.

4,228,736

PRINTING APPARATUS

John B. Griffiths, 38, Charleville Rd., London, England (W14 9JH)

Filed Jul. 28, 1978, Ser. No. 929,016

Int. Cl. B41K 1/08

U.S. Cl. 101—382 MV

3 Claims



4,228,735
OFFSET DUPLICATING MACHINE
Laurent Doucet, 4200 rue Majeau, Montreal Nord Quebec, Canada

Filed Jun. 19, 1978, Ser. No. 916,548

Claims priority, application Canada, Jan. 19, 1978, 295329

Int. Cl. B41F 13/54

U.S. Cl. 101—227

6 Claims

1. An offset duplicating machine comprising, in combination:

a loading station for stacking sheets to be printed; means for successively conveying separate sheets from said loading station; a printing station for printing sheets conveyed from said loading station; means for transferring printed sheets from said printing station; an impression cylinder receiving said printed sheets from said transferring means and having a rotational axis perpendicular to the axis of travel of said printed axis; first marking means on said impression cylinder and includ-

1. Printing apparatus comprising, a set of printing elements, each printing element bearing a printing surface and containing magnetically soft material, each printing element of the said set having substantially the same height and thickness as each other, each printing element having on the surface opposite the printing surface a depiction of the design to be printed, a holder including a permanently magnetised portion with

poles and a relatively moveable positioning portion, said positioning portion bearing an integral number of channels and covering at least one pole of the permanently magnetized portion, a said channel being shaped such that printing elements arranged side by side fit against the channel with their printing surfaces proud of positioning portion, the positioning portion being movable between two positions, a first printing element holding position in which said permanently magnetized portion is positioned adjacent said channels of said channels of said positioning portion to magnetically hold said printing elements, and a second printing element releasing position in which the permanently magnetized portion is moved a distance from the channel of said positioning portion sufficient to release the printing elements from the hold of the permanently magnetized portion.

and an aligning means, comprising a number of aligning channels along which printing elements locate slideably, side by side, with said depictions exposed,

the printing apparatus being such that printing elements are set in the holder by placing printing elements on the aligning means, fitting the positioning portion over the printing elements and moving the permanently magnetized portion relative to the positioning portion to said first position in which printing elements are held magnetically against the positioning portion,

printing elements being released from the holder back to the aligning means by locating the holder with attached printing elements on the aligning means and moving the permanently magnetized portion relative to the positioning portion to a second position in which the printing elements are not held magnetically against the positioning portion.

4,228,737

GLIDE BOMB

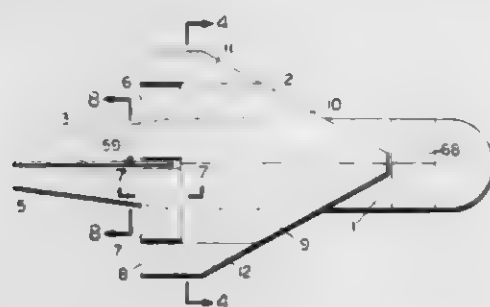
Marvin J. Kahn; Robert J. Malchodi; Joseph P. Paine; Milton J. Rogers, all of Baltimore, and Robert L. Zouck, Pikesville, all of Md., assignors to AAI Corporation, Cockeysville, Md.

Filed Oct. 27, 1954, Ser. No. 465,015

Int. Cl.¹ F42B 25/06

U.S. Cl. 102-3

7 Claims



1. A glide bomb adapted to be carried in the bomb bay of an aircraft and released to glide along a predetermined path to a selected target for scattering units of destructive material over a relatively large area comprising, an elongated fuselage, a sustaining wing carried by said fuselage, said sustaining wing comprising a plurality of hinged panels foldable about said fuselage, means responsive to releasing said bomb for moving said panels into alignment for sustaining said bomb, control members carried by said wing, gyro controlled means carried by said bomb and connecting with said control members for actuating the latter whereby to cause said bomb to glide along said predetermined path, tail fins carried by said fuselage for stabilizing the bomb, means for releasing the sustaining wing at the end of the glide path, and means for canting said tail fins to cause said fuselage to spin about its longitudinal axis and impart a radial velocity to the units of destructive material when said fuselage is released from said wing.

4,228,738

CONVEYOR TROLLEY CONSTRUCTION

David J. Forshee, 350 Lakes Edge Dr., Oxford, Mich. 48051

Filed Sep. 22, 1978, Ser. No. 944,806

Int. Cl.¹ B61B 3/00

U.S. Cl. 104-95

19 Claims



1. In a trolley assembly for operation in an I-beam monorail conveyor system, the combination comprising
a pair of spaced apart unitary integrally formed molded plastic trolley arms, each trolley arm having an upper portion, a lower portion and an intermediate web portion,
a pair of unitary integrally formed molded plastic stub axles, each stub axle being easily removably attached to one said trolley arm, upon and adjacent the inward face of said upper portion,
a pair of unitary integrally formed molded plastic trolley wheels, each wheel being removably supported for rotation on and retained by said stub axle on the inward side of said trolley arm upper portion,
removable fastening means extending through said upper portion from its outer side and into said stub axle fixedly securing said stub axle against rotation to said upper portion inward face,
and a parts carrying pendant member removably secured to and between the lower portions of said trolley arms.

4,228,739

MOTORIZED RAILWAY TRUCK ARTICULATED SHAFT HOUSING

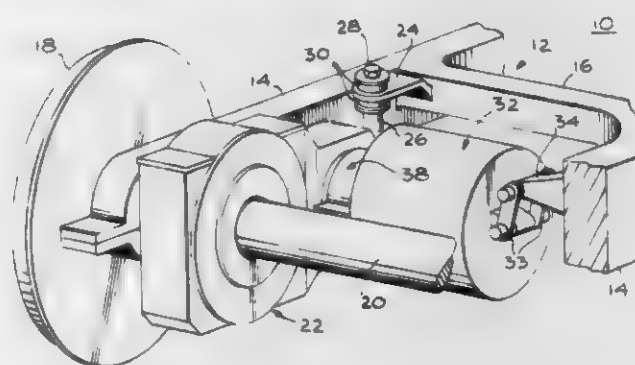
Thomas F. Fitzgibbon, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 1, 1977, Ser. No. 812,046

Int. Cl.¹ B61C 3/00, 9/50; F16C 1/06; F16F 15/10

U.S. Cl. 105-136

23 Claims



1. A railway motor mounting system comprising:
a truck frame supported on a wheel and axle set;
a gear box comprising a plurality of gears in a drive train coupled to directly drive the axle, said plurality including a pinion gear having an input shaft positioned adjacent one end of the gear box and connected to a drive gear attached to the axle;
means supporting said one end of the gear box from the

truck frame, the other end being supported on the axle by anti-friction bearings;
a traction motor having a housing and an output shaft parallel to the axle and flexibly coupled to drive the pinion gear shaft;

first motor support means mounting the rearward end of the motor housing remote from said output shaft to the truck frame; and

second motor support means mounting the forward end of the motor housing adjacent the output shaft to the gear box, said second support means comprising a flexible joint surrounding said shafts and extending between the gear box and the housing of the traction motor.

4,228,740

TRANSVERSELY INTERCONNECTED TRUCKS

Hans H. Vogel, Tuttwil, Switzerland, assignor to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland

Filed Jul. 10, 1978, Ser. No. 923,297

Claims priority, application Switzerland, May 12, 1978, 5179/78

Int. Cl.² B61F 3/08, 5/22, 5/44

U.S. Cl. 105-168

5 Claims



1. In combination with a rail vehicle having at least two trucks each having at least two wheel set axles therein, a vehicle body and a pair of guide members, each said guide member connecting a respective one of said trucks to said vehicle body about a vertical axis for the transmission of lateral forces; a transverse coupling arrangement comprising
a shaft extending longitudinally of said vehicle body;
means supporting said shaft on said body; and
a linkage connecting said trucks to said shaft, said linkage including a pair of pivotal levers connected to said shaft in fixed relation and a pair of transverse steering rods, each said rod being linked to a respective lever and articulated to an end of a respective truck facing the other truck at a predetermined connection point, said connection point lying in an inclined plane passing through said vertical axis of said guide member connecting said respective truck to said body and through a transverse center plane of said body with said inclined planes intersecting at a point coincident with the plane of the upper surfaces of a pair of track rails.

4,228,741

AUTOMATICALLY RELEASING STABILIZER

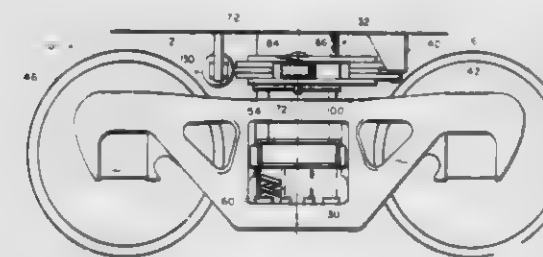
Frank D. Bruner, Omaha, Nebr., assignor to Paxton & Vierling Steel Co., Omaha, Nebr.

Filed Dec. 22, 1977, Ser. No. 863,395

Int. Cl.² B61F 3/08, 5/06, 5/14, 5/24

U.S. Cl. 105-197 D

15 Claims



1. An oscillation restraint device for a railway vehicle in-

cluding a vehicle body and a wheel truck rotatable with the body, said device comprising:

means for automatically hydraulically locking the wheel truck so as to prevent substantially all oscillations of the wheel truck when the wheel truck is positioned in a first range of orientations;

means for automatically disengaging the locking means and thereby permitting wheel truck rotation when the wheel truck is positioned in a second range of orientations, distinct from the first range of orientations; and

means for overriding the locking means and thereby permitting wheel truck rotation when forces tending to rotate the wheel truck exceed a predetermined value

4,228,742

RAILWAY CAR INTEGRAL HOPPER STRUCTURE

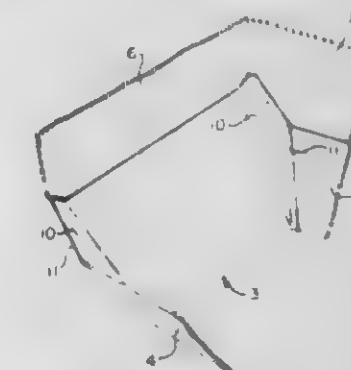
Phillip G. Przybylinski, Schererville, and Terry B. Morgan, Hammond, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Dec. 29, 1977, Ser. No. 865,654

Int. Cl.² B61D 7/02, 7/14, 49/00

U.S. Cl. 105-248

5 Claims



1. For a hopper vehicle having a generally vertically disposed hopper including a hopper chute, a hopper chute construction including

longitudinally spaced, downwardly and inwardly extending hopper chute slope sheets,

vertical partition sheets connected to said spaced hopper chute slope sheets,

transversely spaced, downwardly and inwardly extending hopper chute side sheets connected to said slope sheets, and

transversely spaced side walls connected to and extending upwardly from said side sheets and connected to opposite sides of said slope sheets and said partition sheets, the improvement comprising:

each of said slope sheets including transversely spaced corner plate portions and an intermediate portion connected with said corner plate portions,

said corner plate portions extending angularly upwardly and outwardly relative to said intermediate portion and being integrally formed therewith and thereby providing said slope sheets with a continuous channel surface, and means connecting said corner plate portions to said side sheets, said corner plate portions forming generally planar surfaces extending between said intermediate portion and said side sheets to promote the flow of lading through the hopper chute.

4,228,743

BEHIND DOOR SHELF ASSEMBLY

Douglas H. Crook, 5849 32nd Ave. North, St. Petersburg, Fla. 33710

Filed Mar. 1, 1978, Ser. No. 882,380

Int. Cl.² A47B 4/04

U.S. Cl. 108-31

7 Claims

1. A shelving assembly comprising:

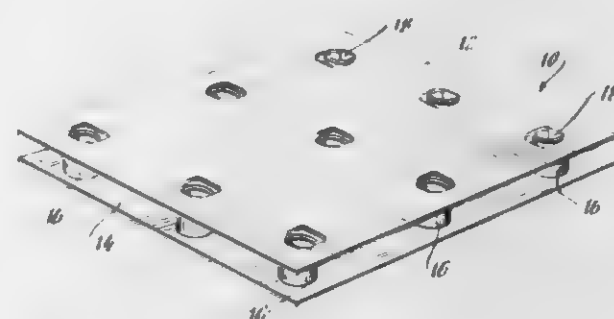
(a) a plurality of side panels of rectangular shape having

attached at their linear ends either element of a dowel-tube arrangement, the outer configuration of said dowel conforming in size and shape to fit closely inside the opening in said tube, said side panels comprising two sets of a top panel, a bottom panel and at least one intermediate panel, the top and bottom side panels of said assembly having only one of said elements and the intermediate said panels having two of said elements so arranged as to be fitted to and interlocked with its opposite element in the adjacent side panel, said side panel also having a slit running perpendicular to the length of said side panel and extending from the rear edge of said side panel to at least half but not more than 0.9 of the width of said panel, and each said side panel having a flange affixed to the back linear edge of said side panel and extending perpendicularly therefrom and adapted to be fastened to a vertical door or wall area, said flange having an opening positioned at and communicating with the said slot extending part way through the width of said side panel, said opening being enlarged with respect to the width of said slot

4,228,744
PALLET FORMED FROM TWO SPACED, INTERLOCKING SHEETS OF CORRUGATED PAPERBOARD AND RIGID SLEEVES
 Robert L. Moore, Nagog Woods, Mass., assignor to Champion International Corporation, Stamford, Conn.
 Filed May 24, 1979, Ser. No. 42,138
 Int. Cl.² B65D 19/34

U.S. Cl. 108—51.3

14 Claims

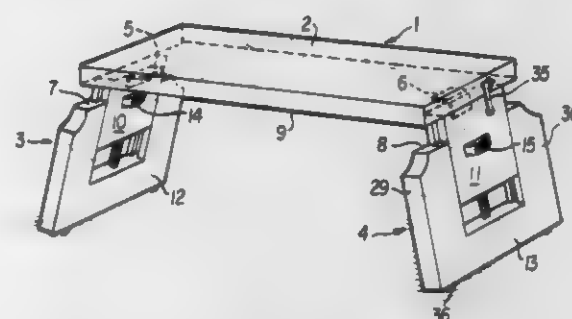


1. A pallet comprising:
 - (a) a first sheet of corrugated paperboard which is cut to define a first set of tabs hinged to said first sheet about fold lines, each tab having a slot which extends from a cut end toward the fold line;
 - (b) a second sheet of corrugated paperboard placed in parallel, spaced relation to said first sheet, said second sheet being cut to define a second set of tabs hinged to said second sheet along fold lines perpendicular to the fold lines in said first sheet, each tab in said second set having a slot which extends from a cut end toward the fold line, wherein the slots in the tabs in said first set are aligned and engaged with the slots in opposed tabs in said second set; and
 - (c) a plurality of rigid sleeves, positioned between said first and second sheets and surrounding engaged pairs of opposed tabs, with the opposed ends of said sleeves functioning as load bearing surfaces, and wherein the width of each said first and second set of tabs adjacent its respective fold line is less than the width of the tab adjacent the cut ends thereof, such that more than one half of each said load bearing ends of said rigid sleeve is disposed contiguous with a sheet whereby the bearing capacity of said pallet is increased.

4,228,745
VARIABLY-ORIENTED FOOTSTOOL
 Vernon M. Gale, 2021 N. Rockingham St., McLean, Va. 22101
 Filed Aug. 23, 1978, Ser. No. 935,996
 Int. Cl.² A47B 9/04, 3/08; A47C 3/24

U.S. Cl. 108—116

10 Claims



1. A variable footstool comprising:
 - (a) a main body position,
 - (b) a leg at each end of said main body portion, each leg including,
 - (c) a first leg portion secured to said main body portion and having a longitudinal bore therein and a slot therethrough, the slot being perpendicular to the bore; and

and adapted to receive a dowel element, and said flange being of appropriate length and positioned close to the adjacent end of any said doweled element attached to the corresponding side panel that it would extend over a portion of the tube element thereby preventing the dowel of the doweled element from sliding any further into the opening of said tube element and also thereby requiring the doweled member to be introduced from the opposite end into the opening of the tube member; and

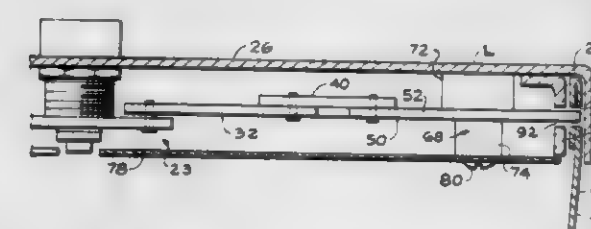
(b) a plurality of shelf elements comprising a rigid rectangular sheet or platform having a doweled element attached along the edge of each of the linear ends thereof, said doweled element being adapted to fit through the said opening in said flange and the end of said sheet to which said doweled element is attached being of an appropriate thickness to fit into one of said slots in said side panels, the width of the said rectangular sheet at the edge to which said doweled element is attached being only of appropriate dimension to extend the full length of the slot into which it is inserted.

- (d) a second leg portion longitudinally movably mounted with respect to said first leg portion, with
- (e) adjusting means for infinite variation of the relative positions of said first and second leg portions, and
- (f) at least one longitudinal guide means on said first and second leg portions parallel to the longitudinal bore,
- (g) said adjusting means comprising a member slidably located within the bore and having one end secured to said second portion, and a means for engaging the member located within the slot and engaging the member.

4,228,746
CONVENIENCE LOCKBOX
 Myron A. Caton, Mission Hills, Calif., assignor to Coxwells, Incorporated, Los Angeles, Calif.
 Filed Aug. 23, 1978, Ser. No. 936,313
 Int. Cl.² E05G 1/04

U.S. Cl. 109—59 T

1 Claim



1. A lock box comprising:
 - a container of four walls defining pairs of opposed horizontal edges in a rectangular configuration, said walls further defining horizontal slots at central locations contiguous the horizontal edges of said walls;
 - a cover defining an external ridge and further including lengths of angle stock to define an internal ridge aligned with said external ridge whereby said ridges mutually define a rectangular channel for receiving said container edges at the interior of said cover whereby said ridges cover said horizontal slots on either side of said walls;
 - a lock movement, centrally affixed in said cover to accommodate a rotary motion pattern;
 - pairs of cam members each including a stub shaft welded to said cover and a cam rotatively supported on said stub shaft and pivotally mounted contiguous to said internal ridge of said cover and unexposed at the exterior of said cover, for engaging said edges of said container by mating in said slots;
 - a linkage mechanism connecting said cam members to said lock movement for rotating said cam members to engage and disengage said container and including a first pair of arms each interconnecting one pair of said cam members and a second pair of arms interconnecting said lock movement to said first pair of arms whereby rotation of said lock movement rotates said cam members; and
 - a shield extending parallel to said cover whereby said linkage mechanism is sandwiched therebetween.

4,228,747
HIGH ENERGY ARC IGNITION OF PULVERIZED COAL
 Martin E. Smirlock, Brimfield, Mass., and Donald A. Smith, Haddam, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 22, 1979, Ser. No. 13,836
 Int. Cl.² F23D 1/00

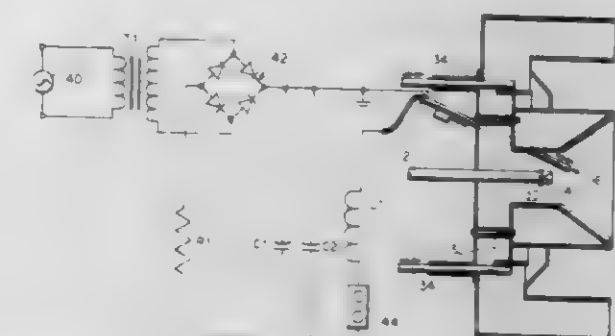
U.S. Cl. 110—347

10 Claims

1. A method for igniting a fuel stream comprising pulverized coal in the absence of any sources of ignition energy other than an electric arc ignitor disposed in the stream, said method comprising the steps of:

establishing a fuel stream having a transport air-to-coal weight ratio of less than unity and having a velocity not exceeding 150 feet per second;

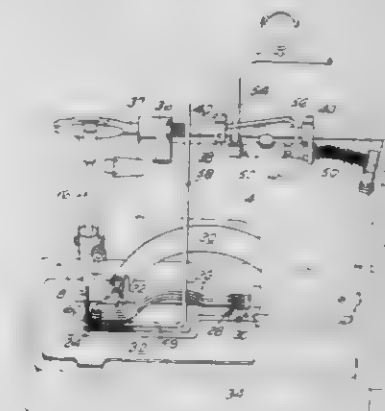
directing the fuel stream to an ignition zone, an electric arc ignitor projecting into the ignition zone; and creating an intermittent electric arc in the fuel stream at the ignitor tip, said arc being established at a frequency in the



4,228,748
THREAD CONTROL FOR BUTTONHOLE SEWING MACHINE
 Armand A. Dufault, P.O. Box 92, Somerset, Mass. 02726
 Filed Oct. 29, 1979, Ser. No. 89,566
 Int. Cl.² D05B 3/00, 33/00

U.S. Cl. 112—65

6 Claims



1. In combination with a sewing machine having an elongated frame with a bed plate mounted on a support table so that the elongated frame faces the operator, a reciprocable needle having an eye and a presser foot, a source of thread and means guiding the thread to and through said eye of the needle, means holding the thread out of the path of the presser foot comprising a source of air located adjacent the needle above the bed plate to direct the air away from the operator and toward the thread to cause the thread to project above the presser foot when the foot is above the bed plate and means to control the air supply only when the presser foot is above the bed plate.

4,228,749
NEEDLE POSITIONING ATTACHMENT FOR SEWING MACHINE
 Antonio Pugliese, Miami, Fla., assignor to Industrial Pugliese, Inc., Miami, Fla.

Filed Apr. 24, 1978, Ser. No. 898,899
 Int. Cl.² B65M 63/00; D05B 69/36

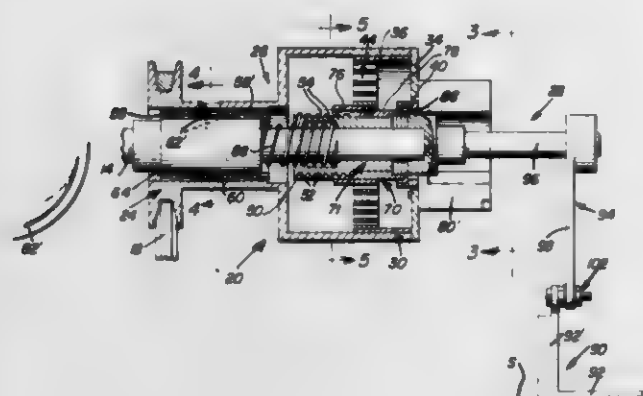
U.S. Cl. 112—274

7 Claims

1. In a sewing machine comprising a head, a main drive shaft extending through the head and rotatably journaled thereon, a motor connected to the shaft for rotating same, and a needle positioning attachment, the improvement wherein the needle positioning attachment is connected to the shaft and arranged

for accumulating energy from the rotation of the shaft for actuation when the shaft ceases rotation in order to turn the shaft a predetermined amount, said needle positioning attachment comprising, in combination:

- (a) pulley means affixed to the shaft and connected to the motor for rotation thereby;
- (b) a stationary abutment; and
- (c) resilient means connected to the pulley means and releasably engageable by the stationary abutment for being restrained against rotation in one direction thereof by the stationary abutment so as to permit the resilient means to accumulate energy by rotation of the pulley means relative to the resilient means, said resilient means including a cup affixed to the pulley means, a stem arranged extending through the cup and disposed substantially coaxial with



the main drive shaft of the sewing machine, and a spiral torsion spring disposed within the cup, the spring having an inner end and an outer end, the latter being affixed to the cup and the inner end being connected to the stem for winding tight the spiral torsion spring as the cup, and pulley means to which the cup is affixed, rotate relative to the stem, a nut disposed in the pulley means and provided with internal screw threads, with external screw threads being provided on the stem at a portion thereof disposed adjacent the nut, the threads of the stem being engageable with the threads of the nut for advancing the stem axially relative to the pulley means as the stem is threaded into the nut and connected to the main drive shaft of the sewing machine by means of the pulley means for coupling the stem to the drive shaft.

4,228,750

HYDROFOIL SAILBOAT WITH CONTROL TILLER

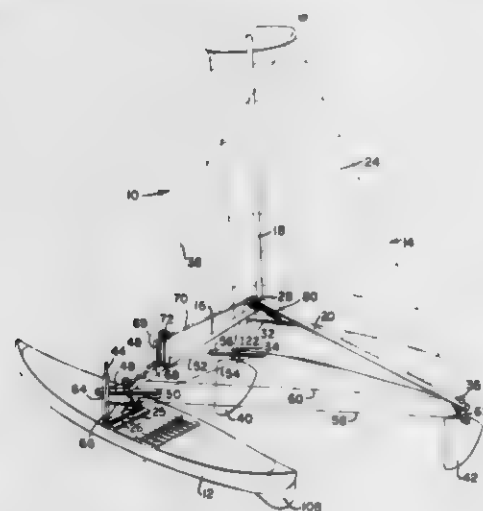
Bernard Smith, Rte. 1, Box 228A, King George, Va. 22485, and
Frank P. Delano, P.O. Box 17, Oldhams, Va. 22529

Filed Jan. 12, 1978, Ser. No. 868,920

Int. Cl.² B63H 9/00

U.S. Cl. 114—39

14 Claims



1. A hydrofoil sailboat comprising:

- (a) a hull,
- (b) a sailing frame including a sail, a plurality of interconnected spars, a pair of hydrofoils, one hydrofoil supporting each lower corner of the sail,
- (c) means for securing one of said spars to said hull so that said sailing frame can pivot relative thereto,
- (d) spreader mechanisms extending between said hull and said pair of hydrofoils for adjusting and maintaining said hydrofoils in a cooperative relation,
- (e) each spreader mechanism including a separate control spreader situated at the hull and a hydrofoil spreader situated proximate to the hydrofoil, and control means extending between the control spreader and the hydrofoil spreader so that the movement of the control spreader controls the movement of the hydrofoil spreader, and
- (f) manually operable means situated at the hull for simultaneously moving said spreader mechanisms to alter the position of both of said hydrofoils for steering said sail frame so that said sail frame tows said hull therebehind.

4,228,751

UNDERWATER VIEWING APPARATUS

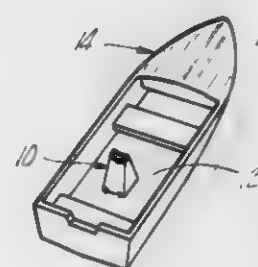
Larry M. Robertson, and Calvin A. Robertson, both of 2860
Lenox, Troy, Mich. 48098

Filed Aug. 21, 1978, Ser. No. 935,658

Int. Cl.³ A63C 5/00

U.S. Cl. 114—66

4 Claims



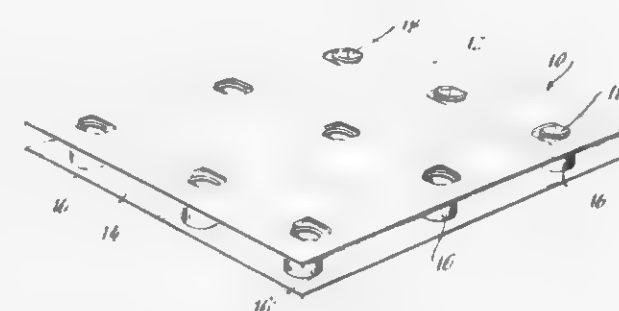
1. An underwater viewing apparatus for use with a boat having a hull and an opening formed through the hull, said viewing apparatus comprising:

- a transparent plate disposed above said opening;
- a flat gasket disposed between said plate and the boat hull around said opening, said gasket having a portion which extends outwardly from said opening and along said hull;
- means for fastening said plate to said hull around said opening so that said gasket is sandwiched between said plate and said hull thereby fluidly sealing said plate to said hull;
- a housing having an open top, an open bottom and closed side walls, said bottom of the housing being positioned on said outwardly extending portion of said gasket, said housing being vertically dimensioned so that the top of the housing extends above the normal water line of said boat; and
- means for detachably securing said housing to said boat hull, said securing means further comprising means for variably compressibly clamping the open bottom of the housing to the hull so that the outwardly extending portion of the gasket is sandwiched between the housing and the hull to thereby form a fluid seal between said housing and said hull such that water will rise only within the interior of said housing in the event said plate ruptures.

panel, the top and bottom side panels of said assembly having only one of said elements and the intermediate said panels having two of said elements so arranged as to be fitted to and interlocked with its opposite element in the adjacent side panel, said side panel also having a slit running perpendicular to the length of said side panel and extending from the rear edge of said side panel to at least half but not more than 0.9 of the width of said panel, and each said side panel having a flange affixed to the back linear edge of said side panel and extending perpendicularly therefrom and adapted to be fastened to a vertical door or wall area, said flange having an opening positioned at and communicating with the said slot extending part way through the width of said side panel, said opening being enlarged with respect to the width of said slot

U.S. Cl. 108—51.3

14 Claims



1. A pallet comprising:
 - (a) a first sheet of corrugated paperboard which is cut to define a first set of tabs hinged to said first sheet about fold lines, each tab having a slot which extends from a cut end toward the fold line;
 - (b) a second sheet of corrugated paperboard placed in parallel, spaced relation to said first sheet, said second sheet being cut to define a second set of tabs hinged to said second sheet along fold lines perpendicular to the fold lines in said first sheet, each tab in said second set having a slot which extends from a cut end toward the fold line, wherein the slots in the tabs in said first set are aligned and engaged with the slots in opposed tabs in said second set; and
 - (c) a plurality of rigid sleeves, positioned between said first and second sheets and surrounding engaged pairs of opposed tabs, with the opposed ends of said sleeves functioning as load bearing surfaces, and wherein the width of each said first and second set of tabs adjacent its respective fold line is less than the width of the tab adjacent the cut ends thereof, such that more than one half of each said load bearing ends of said rigid sleeve is disposed contiguous with a sheet whereby the bearing capacity of said pallet is increased.

4,228,745

VARIABLELY-ORIENTED FOOTSTOOL

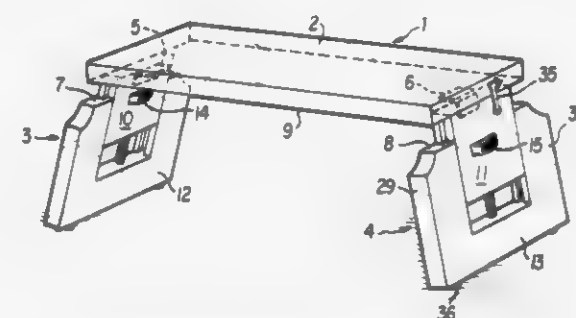
Vernon M. Gale, 2021 N. Rockingham St., McLean, Va. 22101

Filed Aug. 23, 1978, Ser. No. 935,996

Int. Cl.² A47B 9/04, 3/08; A47C 3/24

U.S. Cl. 108—116

10 Claims



1. A variable footstool comprising:
 - (a) a main body position,
 - (b) a leg at each end of said main body portion, each leg including,
 - (c) a first leg portion secured to said main body portion and having a longitudinal bore therein and a slot therethrough, the slot being perpendicular to the bore; and

and adapted to receive a dowel element, and said flange being of appropriate length and positioned close to the adjacent end of any said doweled element attached to the corresponding side panel that it would extend over a portion of the tube element thereby preventing the dowel of the doweled element from sliding any further into the opening of said tube element and also thereby requiring the doweled member to be introduced from the opposite end into the opening of the tube member; and

(b) a plurality of shelf elements comprising a rigid rectangular sheet or platform having a doweled element attached along the edge of each of the linear ends thereof, said doweled element being adapted to fit through the said opening in said flange and the end of said sheet to which said doweled element is attached being of an appropriate thickness to fit into one of said slots in said side panels, the width of the said rectangular sheet at the edge to which said doweled element is attached being only of appropriate dimension to extend the full length of the slot into which it is inserted.

second leg portions parallel to the longitudinal bore, (g) said adjusting means comprising a member slidably located within the bore and having one end secured to said second portion, and a means for engaging the member located within the slot and engaging the member

4,228,746

CONVENIENCE LOCKBOX

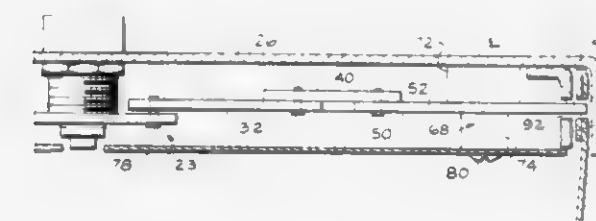
Myron A. Caton, Mission Hills, Calif., assignor to Coxwells, Incorporated, Los Angeles, Calif.

Filed Aug. 23, 1978, Ser. No. 936,313

Int. Cl.¹ E05G 1/04

U.S. Cl. 109—59 T

1 Claim



1. A lock box comprising:
 - a container of four walls defining pairs of opposed horizontal edges in a rectangular configuration, said walls further defining horizontal slots at central locations contiguous the horizontal edges of said walls;
 - a cover defining an external ridge and further including lengths of angle stock to define an internal ridge aligned with said external ridge whereby said ridges mutually define a rectangular channel for receiving said container edges at the interior of said cover whereby said ridges cover said horizontal slots on either side of said walls;
 - a lock movement, centrally affixed in said cover to accommodate a rotary motion pattern;
 - pairs of cam members each including a stub shaft welded to said cover and a cam rotatively supported on said stub shaft and pivotally mounted contiguous to said internal ridge of said cover and unexposed at the exterior of said cover, for engaging said edges of said container by mating in said slots;
 - a linkage mechanism connecting said cam members to said lock movement for rotating said cam members to engage and disengage said container and including a first pair of arms each interconnecting one pair of said cam members and a second pair of arms interconnecting said lock movement to said first pair of arms whereby rotation of said lock movement rotates said cam members; and
 - a shield extending parallel to said cover whereby said linkage mechanism is sandwiched therebetween.

4,228,747

HIGH ENERGY ARC IGNITION OF PULVERIZED COAL
Martin E. Smirlock, Brimfield, Mass., and Donald A. Smith, Haddam, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

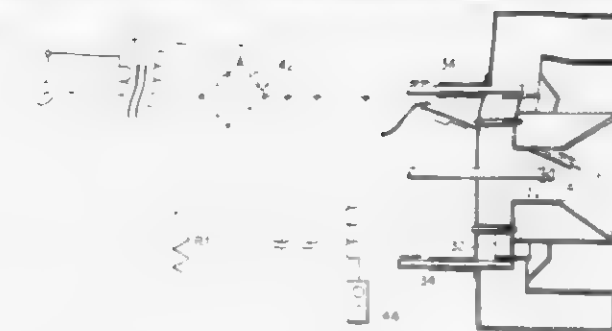
Filed Feb. 22, 1979, Ser. No. 13,836

Int. Cl.¹ F23D 1/00

U.S. Cl. 110—347

10 Claims

1. A method for igniting a fuel stream comprising pulverized coal in the absence of any sources of ignition energy other than an electric arc ignitor disposed in the stream, said method comprising the steps of:
 - establishing a fuel stream having a transport air-to-coal weight ratio of less than unity and having a velocity not exceeding 150 feet per second;



4,228,748

THREAD CONTROL FOR BUTTONHOLE SEWING MACHINE

Armand A. Dufault, P.O. Box 92, Somerset, Mass. 02726

Filed Oct. 29, 1979, Ser. No. 89,566

Int. Cl.¹ D05B 3/00, 53/00

U.S. Cl. 112—65

6 Claims



1. In combination with a sewing machine having an elongated frame with a bed plate mounted on a support table so that the elongated frame faces the operator, a reciprocable needle having an eye and a presser foot, a source of thread and means guiding the thread to and through said eye of the needle, means holding the thread out of the path of the presser foot comprising a source of air located adjacent the needle above the bed plate to direct the air away from the operator and toward the thread to cause the thread to project above the presser foot when the foot is above the bed plate and means to control the air supply only when the presser foot is above the bed plate.

4,228,749

NEEDLE POSITIONING ATTACHMENT FOR SEWING MACHINE

Antonio Pugliese, Miami, Fla., assignor to Industrial Pugliese, Inc., Miami, Fla.

Filed Apr. 24, 1978, Ser. No. 898,899

Int. Cl.¹ B65M 63/00; D05B 69/36

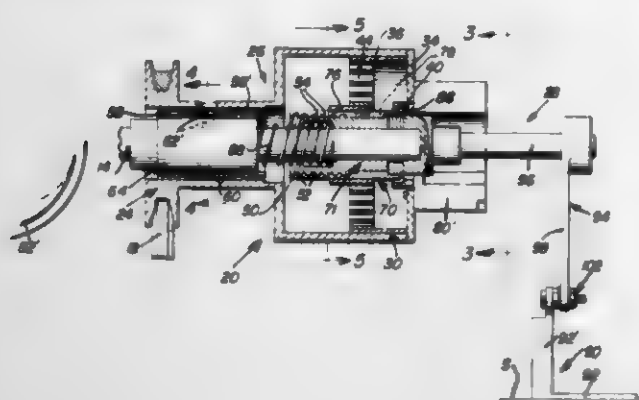
U.S. Cl. 112—274

7 Claims

1. In a sewing machine comprising a head, a main drive shaft extending through the head and rotatably journaled thereon, a motor connected to the shaft for rotating same, and a needle positioning attachment, the improvement wherein the needle positioning attachment is connected to the shaft and arranged

for accumulating energy from the rotation of the shaft for actuation when the shaft ceases rotation in order to turn the shaft a predetermined amount, said needle positioning attachment comprising, in combination:

- (a) pulley means affixed to the shaft and connected to the motor for rotation thereby;
- (b) a stationary abutment; and
- (c) resilient means connected to the pulley means and releasably engageable by the stationary abutment for being restrained against rotation in one direction thereof by the stationary abutment so as to permit the resilient means to accumulate energy by rotation of the pulley means relative to the resilient means, said resilient means including a cup affixed to the pulley means, a stem arranged extending through the cup and disposed substantially coaxial with



the main drive shaft of the sewing machine, and a spiral torsion spring disposed within the cup, the spring having an inner end and an outer end, the latter being affixed to the cup and the inner end being connected to the stem for winding tight the spiral torsion spring as the cup, and pulley means to which the cup is affixed, rotate relative to the stem, a nut disposed in the pulley means and provided with internal screw threads, with external screw threads being provided on the stem at a portion thereof disposed adjacent the nut, the threads of the stem being engageable with the threads of the nut for advancing the stem axially relative to the pulley means as the stem is threaded into the nut and connected to the main drive shaft of the sewing machine by means of the pulley means for coupling the stem to the drive shaft.

4,228,750

HYDROFOIL SAILBOAT WITH CONTROL TILLER

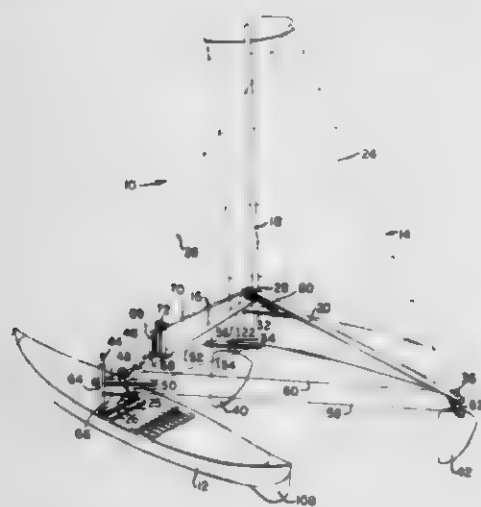
Bernard Smith, Rte. 1, Box 228A, King George, Va. 22485, and Frank P. Delano, P.O. Box 17, Oldhams, Va. 22529

Filed Jan. 12, 1978, Ser. No. 868,920

Int. Cl. B63H 9/04

U.S. Cl. 114—39

14 Claims



1. A hydrofoil sailboat comprising:

- (a) a hull,
- (b) a sailing frame including a sail, a plurality of interconnected spars, a pair of hydrofoils, one hydrofoil supporting each lower corner of the sail,
- (c) means for securing one of said spars to said hull so that said sailing frame can pivot relative thereto,
- (d) spreader mechanisms extending between said hull and said pair of hydrofoils for adjusting and maintaining said hydrofoils in a cooperative relation,
- (e) each spreader mechanism including a separate control spreader situated at the hull and a hydrofoil spreader situated proximate to the hydrofoil, and control means extending between the control spreader and the hydrofoil spreader so that the movement of the control spreader controls the movement of the hydrofoil spreader, and
- (f) manually operable means situated at the hull for simultaneously moving said spreader mechanisms to alter the position of both of said hydrofoils for steering said sail frame so that said sail frame tows said hull therebehind.

4,228,751

UNDERWATER VIEWING APPARATUS

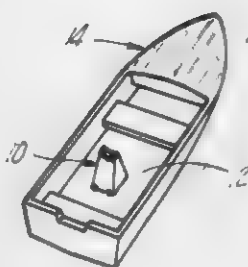
Larry M. Robertson, and Calvin A. Robertson, both of 2860 Lenox, Troy, Mich. 48098

Filed Aug. 21, 1978, Ser. No. 935,658

Int. Cl. A63C 5/00

U.S. Cl. 114—66

4 Claims



1. An underwater viewing apparatus for use with a boat having a hull and an opening formed through the hull, said viewing apparatus comprising:
 - a transparent plate disposed above said opening;
 - a flat gasket disposed between said plate and the boat hull around said opening, said gasket having a portion which extends outwardly from said opening and along said hull; means for fastening said plate to said hull around said opening so that said gasket is sandwiched between said plate and said hull thereby fluidly sealing said plate to said hull;
 - a housing having an open top, an open bottom and closed side walls, said bottom of the housing being positioned on said outwardly extending portion of said gasket, said housing being vertically dimensioned so that the top of the housing extends above the normal water line of said boat; and
 - means for detachably securing said housing to said boat hull, said securing means further comprising means for variably compressibly clamping the open bottom of the housing to the hull so that the outwardly extending portion of the gasket is sandwiched between the housing and the hull to thereby form a fluid seal between said housing and said hull such that water will rise only within the interior of said housing in the event said plate ruptures.

4,228,752

SURFACE EFFECT BOAT

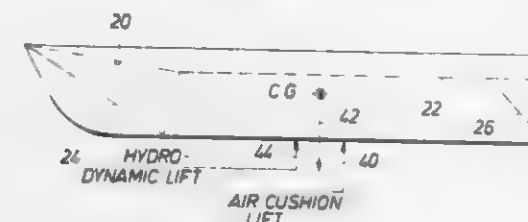
Theodore E. Sladek, and Donald E. Maynard, both of P.O. Box 204, New Iberia, La. 70560

Continuation-in-part of Ser. No. 531,904, Dec. 12, 1974, abandoned. This application Jan. 2, 1976, Ser. No. 646,142

Int. Cl. B63B 1/38

U.S. Cl. 114—67 A

1 Claim



1. A surface effect boat of the captured air bubble type for transporting loads over water and comprising:

- (a) a pair of hull means having in use hydrodynamic supporting forces responsive to hull means motion and displacement in water for supporting said surface effect boat and a load upon the water;
- (b) platform means for connecting said pair of hull means in a specific ratio of over-all boat length to boat width to define an air space therebetween in a specific ratio of widths of said platform means and said air space bounded by said platform means and depending hull means at the top and sides respectively;
- (c) flexible curtain means fixed to and depending from said platform means and adapted for closing the ends of said air space; and
- (d) air pressure means mounted on said surface effect boat and adapted to pressurize said air space for jointly supporting said boat and load in combination with said hull hydrodynamic supporting forces in a dual air-water spring mass system having respective spring rates with complementary dampening characteristics for stabilizing progress of said surface effect boat through water, and wherein said hull means has a center of gravity centered aft of said hydrodynamic supporting forces and forward of a center of said pressurized air space supporting force, whereby said surface effect boat is displaced in trim upwardly forward when said air space is depressurized.

4,228,753

FLUIDIC CONTROLLED DIFFUSERS FOR TURBOPUMPS

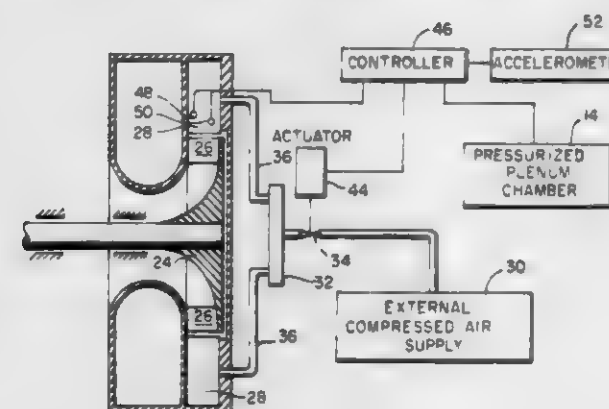
Sydney Davis, Silver Spring, Md., and John M. Durkin, Vienna, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1979, Ser. No. 15,675

Int. Cl. B63B 1/38; F03B 3/18; F04D 29/68

U.S. Cl. 114—67 A

4 Claims



4. The method of improving efficiency of a centrifugal fan having a rotor which discharges air through a cascade of fixed curved diffuser vanes for converting velocity head to static

pressure in air supplied downstream over a wide range of varying rates to meet flow demands comprising the steps of: sensing pressure variations on opposite sides of the diffuser vanes; and responding to the sensed pressure by selectively permitting the ejection of pressurized fluid of an independent source from the surface of diffuser vanes at a rate for effecting an apparent curvature on the diffuser vane surfaces sufficient to most efficiently handle the flow rate to meet the demand.

4,228,754

OIL/WATER STORAGE TANK HAVING FLEXIBLE PARTITION MEMBRANE AND CHAMFERED INTERNAL EDGES AND CORNERS

Yutaka Shibata; Nobuyuki Tanaka, and Ichiro Maruyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 13, 1978, Ser. No. 886,013

Int. Cl. B63B 25/12

U.S. Cl. 114—74 R

4 Claims



1. In a tank for the storage and/or transportation of two different fluids, such as crude oil and ballast water, having walls and including a flexible partition membrane disposed within the tank for separating it into two different, variable volume compartments for the respective fluids to thereby prevent their mutual mixing and contamination, and ports provided in the walls of the tank communicating with each compartment for the intake/discharge of said fluids the improvement characterized by:

perforated plate means disposed on the interior of said tank to chamfer the edges and corners of the walls of the tank and to shield said ports from said membrane, thereby preventing said membrane from blocking any of said ports during the final stages of a fluid supply or discharge operation, said ports for the intake and/or discharge of the fluids communicating with respective compartments through spaces defined between said perforated plate means and the walls of the tank.

4,228,755

SAIL SUPPORTS

Robert G. Graham, 12 Half Moon Rise, Bucklands Beach, Auckland, New Zealand

Filed Dec. 13, 1978, Ser. No. 969,171

Claims priority, application New Zealand, Dec. 14, 1977, 185968; Apr. 28, 1978, 187110

Int. Cl. B63H 9/10

U.S. Cl. 114—111

7 Claims

1. A stay rigged sail change-over magazine comprising: an elongate magazine body incorporating at least two parallel and longitudinally extending sail slide tracks thereon, the tracks terminating coterminously with one end of the magazine body, said one end being formed with magazine-to-sail support alignment means; a pair of longitudinally spaced apart stops mounted to each

track of the magazine which prevent passage of sail slides along the track beyond the stops, with the stop nearest the alignment means on each track being detachable; and a magazine body mounting means clampable to a stay, said mounting means incorporating a spring loaded magazine-body-end receiving element whereby the magazine body can be detachably mounted between the magazine body mounting means and a lower end of a sail support



mounted to the stay, the sail support incorporating parallel sail slide tracks and alignment means complementary to said tracks and said magazine-to-sail support alignment means of said magazine body, whereby the spring loaded element of the magazine mounting means resiliently biases said one end into end-to-end abutting relationship with the sail support, with the tracks of said magazine body in aligned register with the tracks of the sail support.

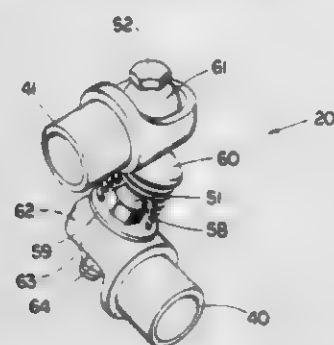
4,228,756

CATAMARAN TILLER-CROSSBAR CONNECTOR
John E. Storer, Jr., Indianapolis, Ind., assignor to Sailing Systems, Inc., Lexington, Tenn.

Filed Feb. 1, 1979, Ser. No. 8,695
Int. Cl. B63H 25/00

U.S. Cl. 114-144 R

14 Claims



1. A tiller-crossbar connector for connecting together a tiller arm and an adjacent crossbar end cap for catamaran rudder control which comprises:

- a recess in said end cap;
- a central shaft member extending through said crossbar end cap;
- a part-spherical pivot member slidably received by said central shaft member and positioned between one end of said central shaft member and said crossbar end cap;
- means for anchoring said central shaft member to said tiller arm;
- spring means disposed about said central shaft member and acting between said end cap and said tiller arm to urge said pivot member into said end cap recess; and
- said central shaft member having a first portion of a smooth cylindrical surface and a second portion externally threaded, said first portion extending through said part-

spherical pivot member, and said first and second portions having axes which are arranged at an angle to one another.

4,228,757

BOAT STEERING ASSEMBLY

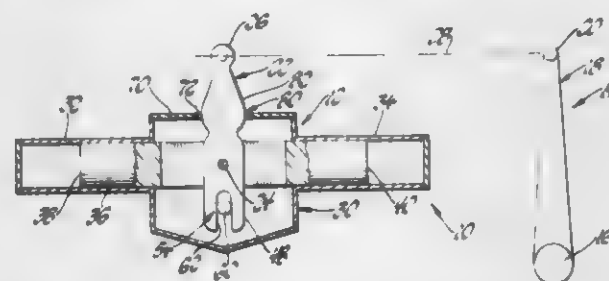
Robert A. R. Wood, West Vancouver, Canada, assignor to Teleflex Incorporated, Limerick, Pa.

Filed Jul. 21, 1978, Ser. No. 926,662

Int. Cl. B63H 25/22

U.S. Cl. 114-150

19 Claims



1. A boat steering assembly comprising: boat steering means including a tiller lever having a first end and a second end for providing a steering input upon being pivoted about a first pivot axis; said tiller lever extending from said first axis to said second end, actuator means including an actuating lever, having a first end and a second end supported for pivotal movement about a second pivot axis, said actuating lever extending from said second pivot axis to said second end, linkage means interconnecting said second ends of said levers for pivoting said tiller lever upon pivoting movement of said actuating lever and for positioning said levers in parallel relationship with one another in a neutral position, said tiller lever being longer in length between said first pivot and said second end thereof than the length of said actuating lever between said second pivot and said second end thereof so that said tiller lever rotates a smaller angle than said actuating lever in response to rotation thereof from said neutral position by said actuating lever.

4,228,758

LABELLED BOTTLE-BOAT FENDER

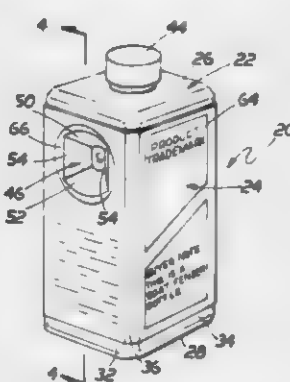
Peter G. Dornau, 9290 SW. 117th Ter., Miami, Fla. 33156, and Arthur Spector, 254 Seaview Dr., Key Biscayne, Fla. 33149

Filed Mar. 23, 1979, Ser. No. 23,124

Int. Cl. B63B 59/02

U.S. Cl. 114-219

2 Claims



1. A bottle-boat fender formed of plastic and comprising a hollow body for holding a flowable material therein and including a top wall portion, having an opening communicating with the interior of the body, closure means releasably secured to the opening, a bottom wall portion and a sidewall disposed between the top wall and bottom wall and forming the periphery of the body, said sidewall being relatively thin and including a first pair of opposed wall portions, and a second pair of opposed wall portions, each of the wall portions of said first

and second pairs merging together at respective corners, each of the opposed wall portions of said first pair including at least one tapered depression therein, each depression including an upper and a lower conically shaped surface and a pair of planar surfaces extending between corresponding ends of said conical surfaces, said planar surfaces being spaced from said corners to reduce stress concentrations thereat, each of said depressions tapering downward in cross-section towards its bottom, with the depression in one wall portion being aligned with a similarly constructed depression in the opposed wall portion, the bottom of the opposed aligned depressions forming a common wall having an aperture therein of sufficient size to accommodate a section of nautical rope therethrough, said aligned depressions being located below the top wall and above the bottom wall of said body, and removable label means in the form of a heat-shrunk plastic band frictionally engaged on the periphery of said sidewall and disposed over said depressions to give the bottle-boat fender a conventional merchandising bottle-like appearance, said label comprising an opaque portion bearing printed indicia and a transparent panel window portion located only over said first pair of opposed wall portions for exposing to view at least one of said depressions.

4,228,759

PRESSURE-SUSTAINING VESSEL

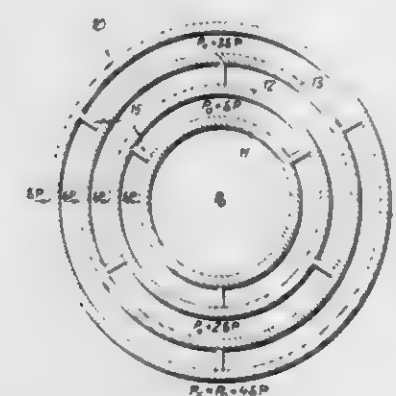
Masanobu Shinozuka, 229 Oak St., Ridgewood, N.J. 07450

Filed May 5, 1978, Ser. No. 903,061

Int. Cl. B63G 8/00

U.S. Cl. 114-342

6 Claims



1. A vessel for deep-sea diving designed to sustain a pressure differential between its interior and its surroundings, comprising:

- a hull formed from a multiplicity of concentrically nested shells including an innermost shell and several outer shells separated by intervening fluid-filled clearances;
- sensing means in said hull for determining the pressure prevailing in each of said clearances; and
- pressure-control means responsive to said sensing means for admitting sea water from outside said hull into said clearances under pressures corresponding to a fractional value of the overall pressure differential between the interior of the innermost shell and the outside, the sum of the water pressures in said clearances equaling said overall pressure differential.

4,228,760

REMOTE CONTROLS FOR MARINE ENGINE EMPLOYING ROTATABLE FLEXIBLE SHAFTS

Walter Kulischenko, East Brunswick, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 28, 1979, Ser. No. 15,829

Int. Cl. B63H 1/14, 5/06

U.S. Cl. 440-86

5 Claims

1. In a marine engine having a throttle for controlling speed of said engine and a shift actuator for controlling direction of rotation of propeller shaft of said engine, the combination therewith of the improvement for remotely controlling said throttle and shift actuator from the helm of a marine vessel by

application of opposed manipulatively distinguishable arcuate motions to respective controls for said throttle and shift actuator, comprising

- a throttle control knob and a shift actuator control knob supported for individual opposed arcuate co-planar movement at said helm;
- a driver pulley associated with each of said knobs and turned at its periphery by its associated control knob upon arcuate movement thereof;
- a driven pulley rotating in stepped-up response to rotation of each of said driver pulleys;
- a housing including a control panel front plate having opposed arcuate guideway slots therethrough defining range of movement of respective knobs and an interior partition having an arcuate guideway slot optically aligned with one of said front plate guideway slots, said partition dividing said housing into two compartments, a driver-driven pulley pair in each compartment, mounted at said helm for



rotatably mounting said driver pulleys and said driven pulleys,

control rods connecting the peripheries of respective driver pulleys with respective control knobs, one rod passing through said optically aligned guideway slots in said front plate and said partition and a second rod passing through said remaining guideway slot in said front plate, respective control rods being movable transversely to said front plate within their respective slots unitarily with respective control knobs in response to operator applied movement thereof.

thrust bearing means separating respective driver pulleys from said interior partition and a rear panel of said housing.

a rotatable flexible shaft connected co-axially to each of said driven pulleys for unitary rotation therewith, and means converting rotary motion of each of said flexible shafts into linear motion for control of said throttle and shift actuator.

4,228,761

METHOD FOR COATING A POLYMERIC ARTICLE WITH A THERMOCHROMIC PAINT

Leon C. Glover, Los Altos, and Eugene F. Lopez, Sunayvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 805,007, Jun. 9, 1977, Pat. No. 4,121,011, which is a division of Ser. No. 635,951, Nov. 28, 1975, Pat. No. 4,105,583, which is a continuation-in-part of Ser. No. 460,124, Apr. 11, 1974, abandoned. This application Sep. 14, 1978, Ser. No. 942,295

The portion of the term of this patent subsequent to Aug. 8, 1995, has been disclaimed.

Int. Cl.¹ C09K 3/00; C09D 5/26; G01K 11/14

U.S. Cl. 116—201

11 Claims

1. In a method for indicating the temperature to which a heat-deformable polymeric material subject to oxidative degradation is heated comprising the step of applying a thermochromic paint thereon, the thermochromic paint containing a thermochromic pigment comprising a metallic compound, the improvement comprising the step of inhibiting degradation of the polymeric material by adding to the paint a non-thermochromic compound in amounts effective to inhibit degradation of said polymeric material by the thermochromic pigment, said non-thermochromic compound selected from the group consisting of the sulfates, hydrated sulfates and nitrides of boron, aluminum, tin, lead, arsenic, antimony, bismuth, zinc and phosphorus; the sulfides and hydrated sulfides of boron, aluminum, bismuth and phosphorus; antimony; the salts, organic derivatives and free acids of the oxyanions of boron, arsenic, and antimony; and the oxides, salts and organic derivatives of the oxyanions of phosphorus.

4,228,762

GROWTH SYSTEM FOR CRUSTACEANS AND FISH

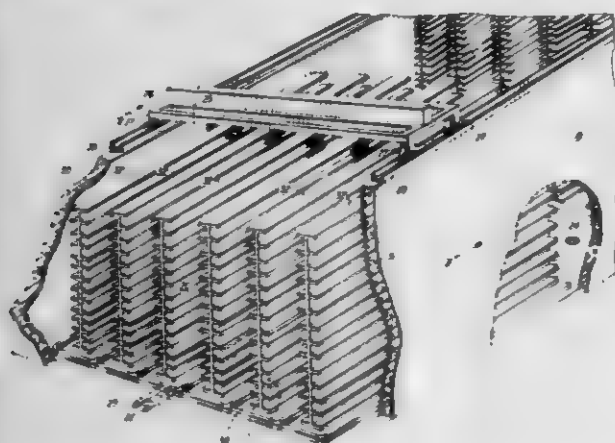
James M. Kemp, P.O. Box 5623, Phoenix, Ariz. 85010

Filed Jun. 18, 1979, Ser. No. 49,172

Int. Cl.¹ A01K 61/00, 80/00

U.S. Cl. 119—2

6 Claims



1. An apparatus for growing and processing crustaceans and fish comprising:
an elongated tank arranged in a substantially horizontal position,
a plurality of reeds spacedly arranged in said tank longitudinally thereof,
each of said reeds comprising a plurality of tiers spacedly arranged laterally of the longitudinal axis of said tank in a substantially vertical array,
said reeds providing a plurality of spaced habitats for the crustaceans and fish,
means mounted along the base of said tank longitudinally thereof for aerating the water in said tank,
each of said reeds comprising a vertically arranged member extending from the base of the tank toward its top and having a plurality of pairs of shelves extending laterally thereof in a common plane with each pair of shelves forming a substantially horizontally arranged tier, and
harvesting means mounted for movement on the top of said

tank and along its length for accumulating crustaceans and fish of a predetermined size residing along said tiers at a point in said tank.

said harvesting means comprises a boom extending laterally across the width of said tank and having a plurality of brush structures spacedly arranged along its length for extending vertically into said tank toward its bottom one adjacent each of said tiers.

4,228,763

MILKING UNIT SUPPORT AND DETACHER MECHANISM

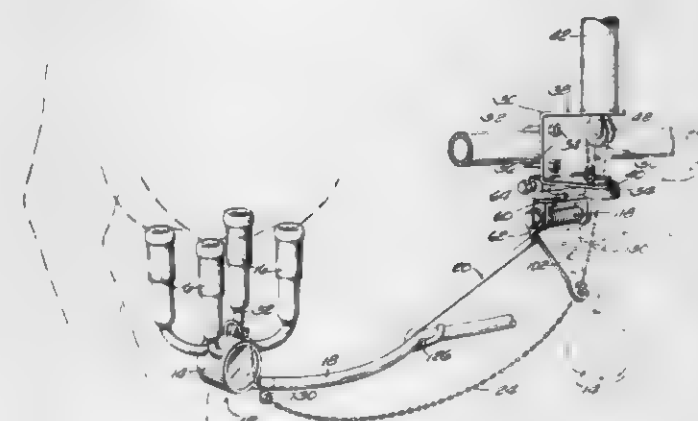
Robert F. Heidecker, and Edward D. Harwood, both of Longmont, Colo., assignors to Dairy Systems, Inc., Longmont, Colo.

Filed May 3, 1978, Ser. No. 902,354

Int. Cl.¹ A01J 5/04, 7/00

U.S. Cl. 119—14.08

18 Claims



1. A milking unit support and detacher mechanism for supporting a milking unit when the milking unit is attached to a cow for milking, said milking unit having a teat cup assembly and at least one hose member extending from said assembly, the milking unit support and detacher mechanism comprising:
a milking unit support arm movable between a first position wherein said arm extends downwardly and a second position wherein said arm extends outwardly, said milking unit support arm having a free end engageable with said hose member in spaced relation to said teat cup assembly for supporting said milking unit when the milking unit is attached to a cow for milking and when said arm is in said second position; and
support means for said milking unit support arm including first means disposed for rotation about a vertical axis and second means disposed for pivotal movement about a generally horizontal axis, and said milking unit support arm attached to one of said first and second means for movement about said vertical axis and said horizontal axis.

4,228,764

MILKING UNIT SUPPORT AND DETACHER MECHANISM

Carl E. Plett, Chino, Calif., assignor to Dairy Systems, Inc., Longmont, Colo.

Filed May 3, 1978, Ser. No. 902,355

Int. Cl.¹ A01J 7/00

U.S. Cl. 119—14.08

7 Claims

1. A milking unit support mechanism for supporting a milking unit when the milking unit is attached to a cow for milking and comprising:
a milking unit support arm having an end for supporting a milking unit; and
means for supporting said milking unit support arm such that said end for supporting said milking unit is releasably held beneath the cow in a first position, said supporting means including means for supporting said support arm for pivotal movement about a generally vertical axis, said sup-

4,228,766

TRUCK MOUNTED CATTLE CONTROL BOX

Martin Wedman, Gen. Del., New Fish Creek, Alberta, Canada

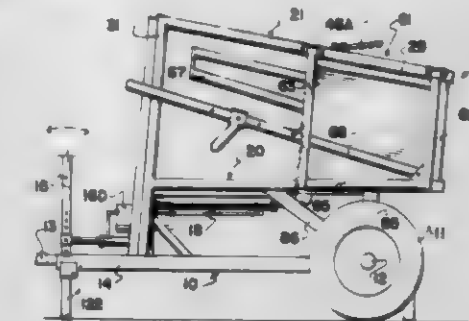
Filed Feb. 16, 1979, Ser. No. 12,608

Claims priority, application Canada, Feb. 17, 1978, 297353

Int. Cl.¹ A61D 3/00

U.S. Cl. 119—103

8 Claims



1. An animal control box assembly comprising in combination a wheeled trailer, including a frame, a hitch on the front end of said frame, and a control box pivotally mounted upon said frame for movement from a vertical, animal entering and leaving position, to a substantially horizontal animal treatment position and vice-versa, and means on said frame to move said control box from one position to the other, said control box assembly including a pair of side frames and a head squeeze gate at one end of said side frames, said head squeeze gate being hinged to one of said side frames and detachably latchable to the other of said side frames, one of said side frames including an upper gate section hingedly secured by the upper side thereof to the upper edge of said one side frames and a lower gate section detachably secured by the lower side thereof to the lower edge of said one side frames, and detachable latch means securing said upper gate section to said lower gate section.

4,228,765

RABBIT RESTRAINING BOX

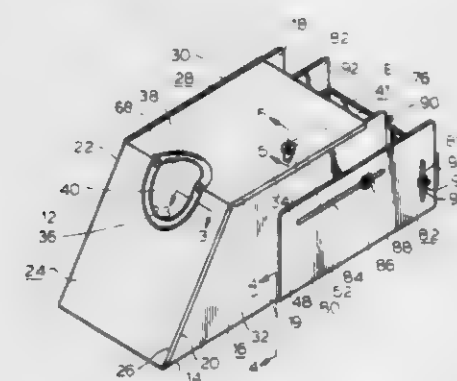
Carter H. Berlin, Alta Loma, Calif., assignor to Joseph B. Michaelson, Glendale, Calif.

Filed Oct. 23, 1978, Ser. No. 953,787

Int. Cl.¹ A61D 3/00; A01K 15/04

U.S. Cl. 119—98

16 Claims



1. Rabbit box apparatus for laboratory rabbits, comprising a box having: a bottom wall; a pair of opposed side walls; and a front wall having a rabbit neck-receiving opening, said front wall being connected to said bottom and side walls to define a rabbit enclosure; a top wall hinged to one of said side walls to open or close said enclosure in rabbit receiving and restraining relation respectively; and box back plate means for engaging the hind leg feet of a rabbit restrained in said box, said back plate means including a bar extending transversely of said enclosure opposite said front wall, said box back plate means further comprising a three-sided frame longitudinally interfitting said box bottom and side walls, and including also fasteners securing said frame to said box walls in back plate bar positioning and enclosure extension-delimiting relation.

4,228,767

SELF CONTAINED BOILER PACKAGE UTILIZING ATMOSPHERIC FLUIDIZED BED COMBUSTION

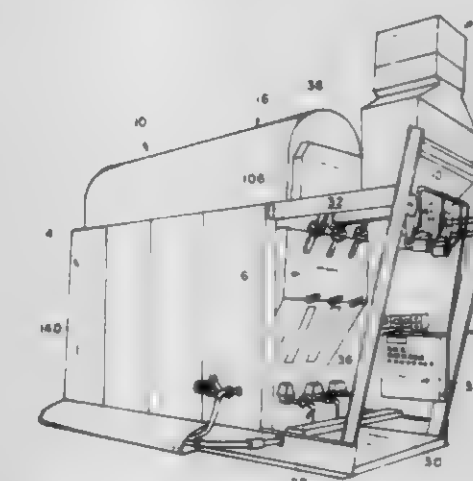
Willard P. Smith; Harry J. Michaels, both of Spring Lake, and Robert W. Shedd, Grand Rapids, all of Mich., assignors to Johnston Boiler Company, Ferrysburg, Mich.

Filed Jan. 22, 1979, Ser. No. 5,072

Int. Cl.¹ F22B 1/02

U.S. Cl. 122—4 D

9 Claims



1. A unitized fluidized bed combustion fire tube boiler assembly comprising:
a supporting frame having a platform base and skeletal structure thereon;
a pressure vessel on said frame, having a lower upright portion with upright walls, and an upper horizontal portion, both portions collectively defining a water and steam chamber;

a fluidized bed combustion housing in said lower upright portion, spaced inwardly from said pressure vessel upright walls; a distributor in said housing, having fuel inlets and combustion and suspension air inlets;

a plurality of sets of horizontal, spaced, elongated, combustion-gas tubes in said pressure vessel upper portion, in flow communication with said fluidized bed combustion housing to conduct hot combustion gases, flow reversing chambers on opposite ends of said upper portion, in communication with adjacent sets of said combustion-gas tubes to receive gases from one set of tubes, reverse the flow thereof, and discharge the gases in the adjacent set of tubes;

means on said supporting frame for supplying combustion air and bed fluidizing air to said fluidized bed combustion housing; and an enclosure on said frame about and spaced from said pressure vessel forming air flow ducting around said pressure vessel to said means for supplying combustion air and fluidizing air, thereby preheating the air thereto.

4,228,768

AIR INDUCTION APPARATUS FOR USE WITH KARMAN VORTEX SHEDDING FLOW METER

Toru Kita, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

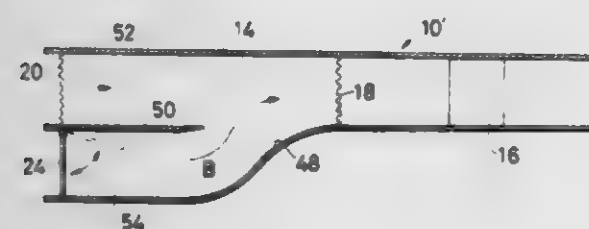
Filed Jul. 14, 1978, Ser. No. 924,681

Claims priority, application Japan, Jul. 25, 1977, 52-99302[U]

Int. Cl.¹ F02B 3/00; G01F 1/32

U.S. Cl. 123-494

12 Claims



1. An air induction apparatus for feeding a combustion engine with air which is metered by using a Karman vortex shedding flow meter to control as a result of this meterage the amount of fuel fed to the engine, comprising:

- an inlet tube of an air cleaner which is arranged upstream of the engine proper;
- a cylindrical vortex generator of said flow meter, said generator being disposed in said inlet tube in a manner to be perpendicular to the longitudinal axis of said inlet tube;
- a first wire netting disposed in said inlet tube at a position upstream of said vortex generator in a manner to be perpendicular to the longitudinal axis of said inlet tube;
- a second wire netting disposed in said inlet tube at a position upstream of said first wire netting in a manner to be perpendicular to the longitudinal axis of said inlet tube, said second wire netting producing a turbulent but uniform air flow directed toward said vortex generator upon flowing of the air in said inlet tube;

means for defining an opening in said inlet tube at a position upstream of said first wire netting;

a damper door swingably connected to said inlet tube to selectively open and close said opening; and

damper door operator for operating said damper door in such a manner that under low speed operation of the engine, the damper door closes said opening, and under high speed operation of the engine, the damper door opens said opening.

4,228,769 INTAKE-PIPE ARRANGEMENT FOR IN-LINE INTERNAL COMBUSTION ENGINES

Jurij Gartner, Germaring; Helmut Hengl; Karl Sixt, both of Munich, and Reinhard Woltmann, Puchheim, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

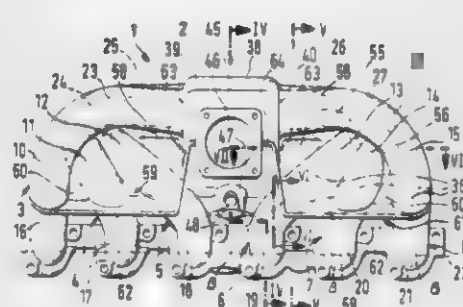
Filed Mar. 13, 1978, Ser. No. 885,977

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1977, 2711195

Int. Cl.¹ F02B 75/18

U.S. Cl. 123-52 M

22 Claims



1. Intake-pipe assembly, for internal combustion engines of the type including four to six cylinders arranged in a line or the like, comprising:

- an intake manifold;
- and a plurality of intake pipes of substantially similar total lengths extending from said intake manifold in approximately one plane, pairwise and opposite one another, each of said intake pipes including a manifold end segment, a connecting end segment having an extreme end portion attachable to inlet channel means of an engine and a curved intermediate segment interconnecting the respective manifold end segments and connecting end segments, the connecting end segments being arranged approximately parallel to one another and approximately at right angles to the manifold segments emerging from the intake manifold,

wherein said intermediate segments overlap one another and extend pairwise in respective intermediate segment planes intersecting said one plane at different angles, said intermediate segment planes being angularly inclined with respect to one another and intersecting with one another in the vicinity of the connecting end segments in a common intersection area which runs at right angles to the connecting end segments.

4,228,770

INTERNAL COMBUSTION ENGINE FUEL SUPPLY SYSTEM

Eyvind Boyesen, Kempton, Pa., assignor to Performance Industries, Inc., Kempton, Pa.

Filed May 29, 1979, Ser. No. 42,803

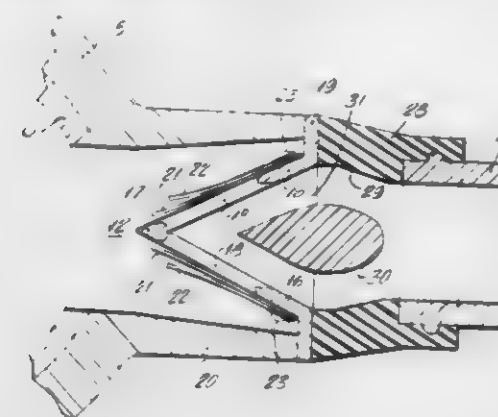
Int. Cl.¹ F02B 33/04

U.S. Cl. 123-73 V

16 Claims

1. An internal combustion engine having a fuel inlet port and having fuel supply means, the fuel supply means including passage walls defining a fuel passage communicating with the inlet port and having reed valve means in the passage to control the flow of fuel through the passage, the valve means comprising a ported valve seat and a cooperating reed valve, the cross-sectional area within the passage walls being relatively large in a first region at the upstream side of the valve means as compared with a second region farther upstream, and an element positioned in said relatively large region, said ele-

ment having a cross-sectional area in a plane transverse to the fuel passage sufficient to substantially reduce the effective



cross-sectional flow area in said region of relatively large cross-sectional area.

4,228,771

LASH ADJUSTMENT MEANS FOR VALVE GEAR OF AN INTERNAL COMBUSTION ENGINE

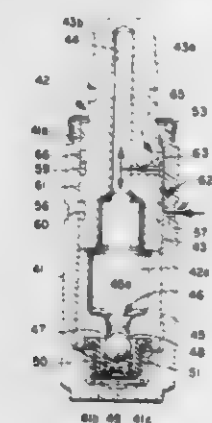
John J. Krieg, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 779,219, Mar. 18, 1977, abandoned, which is a continuation of Ser. No. 606,632, Aug. 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 550,785, Feb. 18, 1975, abandoned. This application Feb. 28, 1978, Ser. No. 882,305

Int. Cl.¹ F01L 1/24

U.S. Cl. 123-90.55

24 Claims



1. Hydraulic lash adjusting means for valve gear of an internal combustion engine comprising:

- (a) a body having a blind bore formed therein;
- (b) plunger means slidably received in said body bore and defining, in cooperation with the blind end of said bore, a cavity, said plunger means including,
 - (i) means defining a pivot surface adapted to contact associated engine valve gear components,
 - (ii) means defining a fluid reservoir, and
 - (iii) one-way valve means permitting fluid flow from said reservoir to said cavity;
- (c) said body including inlet port means communicating with said bore and adapted for receiving fluid under pressure therein;
- (d) means defining a fluid passage communicating with said port means and exclusively providing fluid communication therefrom with said reservoir, said passage defining means including primary fluid metering means continuously metering all fluid to said reservoir, said primary metering means including a first annular collector groove and a first annular metering land fluidically downstream of said collector groove;
- (e) pressure relief means communicating with said fluid passage, said pressure relief means including secondary metering means including a second annular collector groove and a second annular metering land downstream

of said second collector groove for metering fluid flow from said passage to the atmosphere wherein said first metering land is intermediate said first and second collector groove; and,

(f) means biasing said plunger means outwardly of said cavity.

4,228,772

LOW THROTTLED VOLUME ENGINE

Stephen M. Bakonyi, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 1, 1979, Ser. No. 8,237

Int. Cl.¹ F02D 9/02; F02M 39/00; F01L 3/06

U.S. Cl. 123-403

3 Claims



1. In an internal combustion engine, a combustion chamber having an intake port, an intake valve operable to open and close said intake port, and a single-throttle air-fuel delivery system for delivering a throttled air-fuel mixture to said intake port comprising an intake passage having an inlet end open to an air supply and an outlet end connected to said intake port, dividing means separating said intake passage into separate small and large flow area passages forming a throttled portion extending from said intake port having a short length as compared to the remaining unthrottled length of said intake passage, fuel supply means for supplying fuel to said intake passage a location upstream of its division, and a single throttle valve in said intake passage adjacent said intake port and upstream of said dividing means for throttling both said small and large flow area passages so that at small throttle valve openings at least substantially all the air-fuel mixture is caused to flow through said small flow area passage to said intake port at a substantially increased velocity relative to that upstream of said throttle valve and without substantial dissipation and at large throttle valve openings the air-fuel mixture is caused to flow through both of said small and large flow area passages to said intake port whereby air-fuel mixture is delivered to said intake port throughout the range of throttle valve openings by the cooperation between said throttle valve and said small and large flow area passages while the pressure upstream of said throttle valve and adjacent said intake port is maintained substantially atmospheric by virtue of said short throttled portion to minimize engine pumping loss.

4,228,773

DEVICE TO ACTIVATE AN ADJUSTING MEMBER IN DEPENDENCE ON LOAD

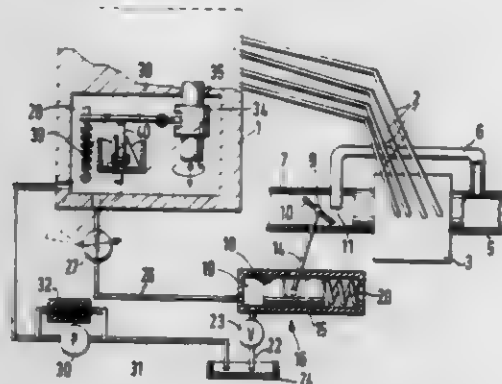
Gerhard Stumpp, Stuttgart, and Gerhard Schiellinsky, Schwaikheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 16, 1977, Ser. No. 861,378

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2638052

Int. Cl.¹ F02M 25/06, 63/00

U.S. Cl. 123—805

21 Claims



1. In a fuel injection system for an internal combustion engine, comprising in combination:

- an intake manifold through which an air flow is established;
- an exhaust gas line through which an exhaust gas flow is established;
- an exhaust gas recycling line connected to the exhaust gas line and to the intake manifold; the intake manifold connection defining therein a discharge outlet of the recycling line;
- a first throttle valve controlling the flow of the exhaust gas in the recycling line;
- fuel injection pump having a fuel rate adjusting structure which is adjustable according to engine rpm;
- a servomotor including an adjusting element, an operating pressure chamber, a return means to provide a biasing force and means connecting the adjusting element to the first throttle valve for controlling the opening thereof;
- a fuel line connecting the fuel injection pump and the servomotor through which a flow rate is established where the flow rate determines the actuation of the servomotor;
- a second throttle valve located in the fuel line having an actuating means wherein the second throttle valve is connected to the fuel rate adjusting structure by the actuating means, such that the second throttle is controlled according to engine rpm by the fuel rate adjusting structure to determine the flow rate in the fuel line.

4,228,774

CONTROL APPARATUS FOR SUPERCHARGED FUEL INJECTION ENGINES

Ernst Ritter, Stuttgart; Josef Trui, Bietighelm-Bissingen, and Manfred Krämer, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,403

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731107

Int. Cl.¹ F02D 1/06

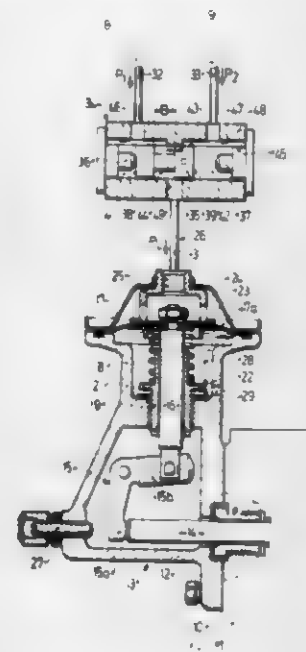
U.S. Cl. 123—562

9 Claims

1. A control apparatus for supercharged fuel injection internal combustion engines such as diesel engines having two induction tubes and a fuel measurement apparatus having a delivery-amount adjustment member and provided with adjustable means for varying the range of the full-load position of said delivery-amount adjustment member of said fuel measurement apparatus, return means and charge-air pressure respon-

sive means movable against the force of said return means connected to the adjustable means comprising,

- a pair of intake pressure lines each connected to one of the induction tubes of the engine,
- a switch valve having an interior defining a pair of separately disposed control chambers each of said control chambers connected to one of said intake pressure lines,
- a control line for connecting said switch valve to a pressure



chamber to which said charge-air pressure responsive means is exposed,

- a valve member disposed in said switch valve interior for movement by the higher of the charge-air pressures in one of the control chambers into a position for communication of the intake pressure line having the lower charge-air pressure through the control line with the pressure chamber to which the charge-air pressure responsive means is exposed.

4,228,775

CLOSED LOOP AIR/FUEL RATIO CONTROLLER WITH ASYMMETRICAL PROPORTIONAL TERM

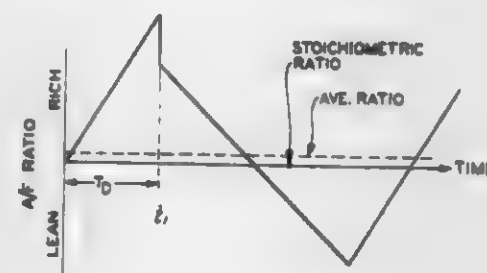
John F. Schweikert, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1978, Ser. No. 961,645

Int. Cl.¹ F02M 7/00; F02B 3/00

U.S. Cl. 123—440

1 Claim



1. An air/fuel mixture control system for an internal combustion engine having combustion space into which an air/fuel mixture is supplied to undergo combustion and having means defining an exhaust passage from the combustion space into which spent combustion gases are discharged and directed to the atmosphere comprising, in combination:

- an air/fuel mixture supply means effective to supply a mixture of fuel and air to the combustion space;
- sensor means effective to sense the oxidizing/reducing conditions at a predetermined point in the exhaust passage and hence, after a transport delay period dependent upon engine operating conditions, to the mixture supplied to the

combustion space, the sensor means providing a sensor signal indicative of the sense of deviation of the air/fuel ratio of the mixture supplied to the combustion space from a predetermined ratio;

a control circuit responsive to the sensor signal effective to generate a control signal; and

means effective to control the air/fuel ratio of the mixture supplied by the air/fuel mixture supply means in accord with the instantaneous value of the control signal,

the control circuit including an integrator responsive to the sensor signal effective to provide an asymmetrical integral term portion of the control signal to effect a shift in the average value of the control signal in one direction from the value producing the predetermined ratio by an amount dependent in part by the value of the transport delay and a proportional circuit effective to provide an asymmetrical proportional term portion of the control signal to effect a shift in the average value of the control signal in the direction opposite said one direction by an amount dependent in part upon the value of transport delay, the shift in the average value of the control signal being dominated by the asymmetrical integral term portion of the control signal at large values of the transport delay and the shift in the average value of the control signal being dominated by the asymmetrical proportional term portion of the control signal at small values of the transport delay so that the average value of the air/fuel ratio of the mixture supplied to the engine varies from the predetermined ratio in one sense changing to the opposite sense as the engine operating conditions change thereby varying the transport delay through the engine between high and low values to thereby effect a scheduled offset in the air/fuel ratio in accord with engine operating conditions.

4,228,776

FUEL FEED SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Bruno Gallione, Rivaia, and Carlo Frascisco, Turin, both of Italy, assignors to Fiat Veicoli Industriali S.p.A., Turin, Italy

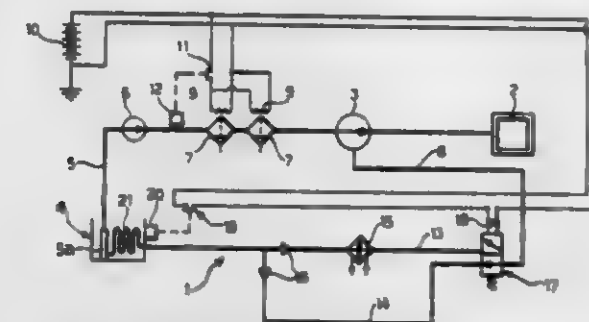
Filed Mar. 23, 1979, Ser. No. 23,503

Claims priority, application Italy, Apr. 17, 1978, 67855 A/78

Int. Cl.¹ F02M 31/00

U.S. Cl. 123—549

4 Claims



1. In a fuel feed system for an internal combustion engine, of the type comprising:

- a fuel tank,
 - an injection pump,
 - a fuel feed duct leading from said fuel tank to said injection pump for feeding fuel to said internal combustion engine,
 - a fuel feed pump in said fuel feed duct for feeding fuel from said fuel tank to said injection pump,
 - at least one fuel filter in said fuel feed duct upstream of said injection pump, and
 - a return duct leading back to said fuel tank for excess fuel fed by said fuel feed pump to said injection pump,
- the improvement wherein
- said fuel filter is provided with an electrical resistance,
 - a first electrical switch,
 - a first temperature sensor positioned to sense the temperature of the fuel in said fuel feed duct at a point upstream of said filter,
 - said electrical resistance operating, when energized, to heat

4,228,777

FUEL CONTROL

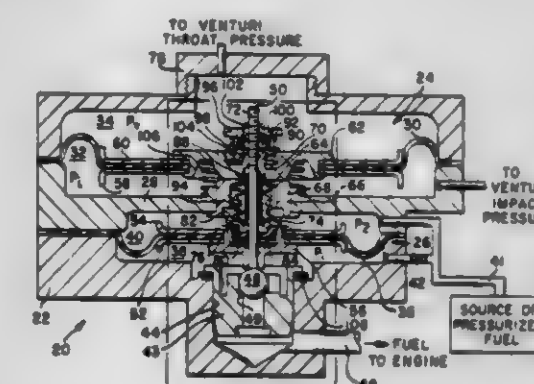
Elmer A. Haase, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 1, 1979, Ser. No. 8,625

Int. Cl.¹ F02D 1/04; F02M 39/00; F16K 31/126

U.S. Cl. 123—454

12 Claims



1. In a fuel control apparatus having a valve fixed to a first diaphragm and connected to a second diaphragm by a linkage arrangement, said first diaphragm separating a fuel section into a fuel flow chamber and a fuel supply chamber, said second diaphragm separating an air section into an airflow chamber and a static air chamber, said second diaphragm responding to mass airflow to an engine that creates an airflow pressure differential between the airflow chamber and the static chamber to provide the linkage arrangement with an air input force for moving the valve with respect to a seat and allow fuel to flow from the fuel flow chamber, the fuel flow from the fuel flow chamber creating a fuel flow pressure differential between the fuel flow chamber and the fuel supply chamber to develop a fuel input force that acts on the first diaphragm to oppose the air input force and thereby match the fuel flow from the fuel flow chamber with the mass air flow to establish a fuel to air ratio corresponding to the optimum operational parameter of the engine, the improvement comprising:

- adjustment means connected to the linkage members for balancing internal spring forces associated with first and

second diaphragms to assure that the fuel flow from the fuel chamber is zero when the mass airflow to the engine is zero.

4,228,778

EXTENDED SPARK CAPACITOR DISCHARGE IGNITION SYSTEM

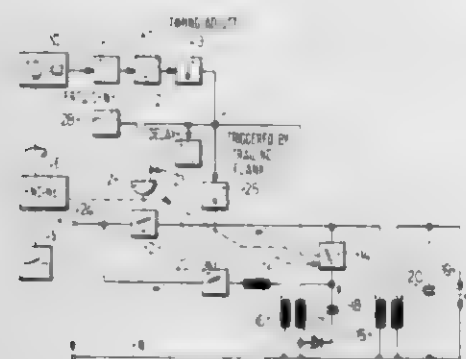
Friedrich Rabus, Schwieberdingen, and Günter Gräther, Pinache, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Aug. 11, 1978, Ser. No. 932,802

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742641

Int. Cl.¹ F02P 3/00

U.S. Cl. 123—605

10 Claims



1. Extended spark composite capacitor discharge and ignition coil electromagnetic storage ignition system for an internal combustion engine (E) having

ignition signal generating means (10—13) coupled to the engine (E) and providing an ignition event signal at a predetermined angular position of the crankshaft of the engine;

an ignition coil (15) having a primary and secondary, and at least one spark gap (19) connected to the secondary of the ignition coil;

and a source (24) of electrical power;

and comprising, in accordance with the invention, the combination of

a high-voltage capacitor discharge ignition system including a capacitor (18);

capacitor charge control circuit means (16, 17, 26, 27) connected to said source (24) and controlling charging of the capacitor;

and a capacitor discharge switch (14) connected to and controlled by said ignition signal generating means, said ignition event signal controlling the capacitor discharge switch (14) to connect the capacitor to the ignition coil to discharge the capacitor through said coil and initiate an ignition event;

with an extended spark electromagnetic storage discharge system including

a coil current control switch (23) connected to said source (24) controlling current flow to the ignition coil (15);

and a pulse control generation means (28) controlling generation of a plurality of extended spark discharge signals, and controlling closing of said current control switch (23) to close repetitively to permit current flow through the primary of the ignition coil from said source independently of current flow therethrough upon discharge of the capacitor, and under command of said pulse control generation means;

said ignition signal generating means further being connected to control the first closing of said coil current control switch (23) to occur under control of said ignition signal generating means and as a function of said ignition event signal;

and further comprising a delay circuit (21) coupled to and controlled by the ignition signal generating means and controlling said coil current control switch (23) to delay

closing thereof until the capacitor (18) has discharged upon operation of the capacitor discharge switch (14) to provide for an initial spark of the spark gap generated by energy derived from the capacitor (18) and subsequent sparks at the spark gap (19) under control of said pulse control generation means.

4,228,779

PROCESS AND A CIRCUIT ARRANGEMENT FOR THE CONTROL OF THE PRIMARY CURRENT IN COIL IGNITION SYSTEMS OF MOTOR VEHICLES

Klaus Wetzel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

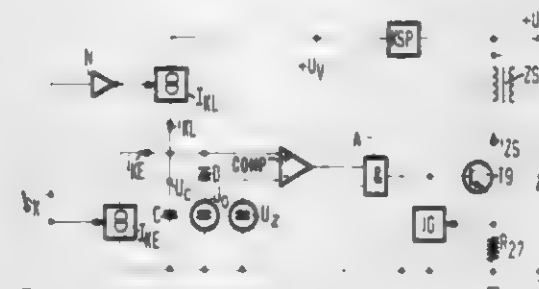
Filed Oct. 10, 1978, Ser. No. 949,791

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1977, 2747819

Int. Cl.² F02P 1/08; H05B 41/14

U.S. Cl. 123—652

10 Claims



1. A circuit arrangement for controlling the current through the primary winding of an ignition coil of a motor vehicle in response to the open and closed time intervals of a cyclically operating points circuit and substantially independent of engine speed, supply voltage and the internal resistance of the ignition coil, comprising:

a capacitor;

a first constant current source connected to said capacitor and for connection to the points circuit and operable to charge said capacitor in response to the open time interval condition of the points circuit;

a second constant current source connected to said capacitor and for connection to the points circuit and operable to discharge said capacitor in response to the closed time interval condition of the points circuit;

a comparator connected to said capacitor and operable to produce a first signal in response to the voltage across said capacitor falling below a predetermined value;

an AND gate connected to said comparator and for connection to the points circuit and operable to produce a second signal in response to said first signal in conjunction with the closed time interval condition of the points circuit;

a resistor;

transistor means including an emitter circuit connected to a reference potential by way of said resistor, a collector circuit for connection to the supply voltage by way of the primary winding, and a base circuit connected to said AND gate, said transistor activated in response to said second signal to cause current to flow in series through said resistor and the primary winding; and

a current limiting circuit connected to said resistor and said base circuit to hold said second signal constant in response to the voltage across said resistor reaching a predetermined value.

said current limiting circuit comprising a transistor including a base-emitter circuit connected in parallel with said resistor, and a collector connected to said base circuit of said transistor means.

4,228,780

CAPACITOR DISCHARGE IGNITION SYSTEM WITH TIMING CONTROL ARRANGEMENT

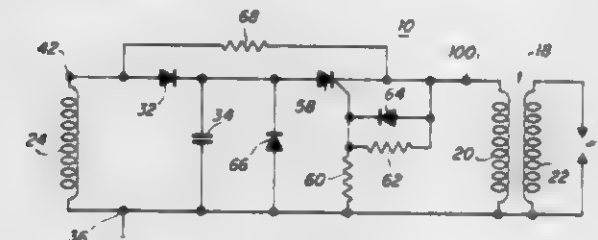
Ronald J. Kiess, Decatur, Ind., assignor to Wabash, Inc., Wabash, Ind.

Filed Feb. 22, 1979, Ser. No. 14,141

Int. Cl.³ F02P 3/08, 3/06

U.S. Cl. 123—596

16 Claims



1. In a capacitor discharge ignition system for use with a rotating permanent magnet including two poles that is rotated over a path in synchronism with the operation of an engine, the combination of:

means positioned adjacent the path of the permanent magnet for generating a charging supply and for generating a triggering signal in response to induced voltages and currents resulting from the rotating permanent magnet, said generating means comprising a core of ferromagnetic material, and a control winding disposed on said core and having induced therein a voltage and current of a first polarity to generate said charging supply in response to the passage of a first pole of the magnet and having induced therein a voltage and current of opposite polarity to said first polarity to generate said triggering signal in response to passage of the second pole of said magnet;

storage means connected to said generating means and being charged in response to said charging supply for storing said energy delivered from said charging supply;

ignition coil means disposed on said core for receiving energy and for generating an ignition voltage in response to said received energy; and

means independent of said storage means and said generating means responsive to said triggering signal for controlling the discharge of said storage means into said ignition coil means, said controlling means comprising circuit means and electronic switch semiconductor means having anode, cathode and control connections, said anode being connected to said storage means and said cathode being connected to said ignition coil, said circuit means providing a first resistive circuit path between one end of said control winding and said control connection of said electronic switch semiconductor means and a second resistive circuit path between the second end of said control winding and said cathode of said electronic switch semiconductor means.

10. In a capacitor discharge ignition system for use with a rotating permanent magnet including two poles that is rotated over a path in synchronism with the operation of an engine, the combination of:

means positioned adjacent the path of the permanent magnet for generating a charging supply and for generating a triggering signal in response to induced voltages and currents resulting from the rotating permanent magnet, said generating means comprising a core of ferromagnetic material, and a control winding disposed on said core and having induced therein a voltage and current of a first polarity to generate said charging supply in response to the passage of a first pole of the magnet and having induced therein a voltage and current of opposite polarity to said first polarity to generate said triggering signal in response to passage of the second pole of said magnet;

storage means connected to said generating means and being charged in response to said charging supply for storing said energy delivered from said charging supply;

ignition coil means disposed on said core for receiving en-

ergy and for generating an ignition voltage in response to said received energy; and

means responsive to said triggering signal for controlling the discharge of said storage means into said ignition coil means, said capacitor discharge ignition system providing a predetermined ignition timing characteristic to said generated ignition voltage, said predetermined ignition timing characteristic including a predetermined ignition retard of at least 10 degrees at engine speeds in excess of desired operating speeds with respect to the ignition timing at a reference speed in the normal operating speed range of the engine, said predetermined ignition retard corresponding to a predetermined inductance value of said control winding.

4,228,781

TRAMMING FIXTURE FOR POSITIONING A DRESSING WHEEL

Edward W. Haug, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Feb. 9, 1979, Ser. No. 10,766

Int. Cl.¹ B24B 53/06

U.S. Cl. 125—11 CD

14 Claims



1. A tramping fixture for use in accurately positioning a dressing wheel in a dressing wheel fixture of a grinding wheel dressing machine such that the center of the transverse radius of the circumferential apex of the dressing wheel at the point of dressing contact lies on a dressing axis about which the dressing wheel may be rotated by the dressing wheel fixture, said dressing axis being maintained a predetermined distance from the grinding wheel surface being dressed, said tramping fixture comprising: a fixed support base; a lever mounted on said base by rotation about an axis of said lever, said axis being fixed with respect to said base; means for selectively adjusting the position of said lever through rotational movement of the lever; means for indicating the rotational movement of said lever; and a contact surface means associated with said lever and displaced from said lever axis to contact said dressing wheel at a point on said apex when moved towards said dressing wheel through movement of said lever by said adjusting means, whereby said indicating means provides a reading indicative of relative dressing wheel position.

4,228,782

SYSTEM FOR REGULATING THE APPLIED BLADE-TO-BOULE FORCE DURING THE SLICING OF WAFERS

Robert R. Demers, Lawrenceville, and Marvin A. Leedom, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 8, 1978, Ser. No. 940,751

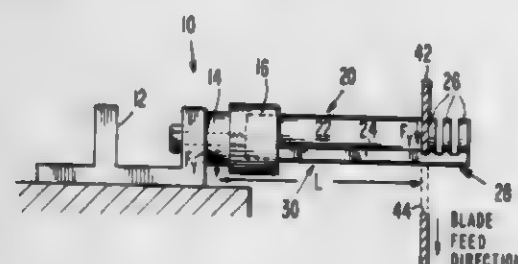
Int. Cl.¹ B28D 1/04

U.S. Cl. 125—14

16 Claims

1. In a wafer saw for slicing thin wafers from a boule of

source material in which said saw has a saw blade which revolves at high speed for slicing wafers from said boule; said saw holds said boule stationary during the slicing of each wafer; said saw translates said revolving saw blade to cause the cutting surface of said blade to penetrate said stationary boule to slice a wafer from said boule by removing boule material which attaches said wafer to the remainder of said boule and said boule and said saw has a control system for controlling the rate of translation of said blade, the improvement comprising: means for regulating the blade-to-boule force urging said blade of said saw into said boule during the slicing of wafers to improve the as-sawn quality of the wafers, said means for regulating comprising: force sensing means for sensing the blade-to-boule force urging said blade of said saw into said boule; said force sensing means comprising a transducer fixed to said stationary boule for sensing said blade-to-boule force;



force reference means for establishing a desired pattern of blade-to-boule force;

force comparator means for determining whether said sensed blade-to-boule force exceeds said desired blade-to-boule force and for determining whether such sensed blade-to-boule force is less than said desired blade-to-boule force by more than a desired force-hysteresis amount;

control means for decreasing the feedrate of said saw blade into said boule when said force comparator means produces an output indicating that said sensed blade-to-boule force is greater than said desired blade-to-boule force and for increasing said feedrate when said comparator means produces an output indicating that said sensed blade-to-boule force is less than said desired blade-to-boule force by an amount which is greater than said desired force hysteresis amount.

4,228,783

COMBUSTION HEATER

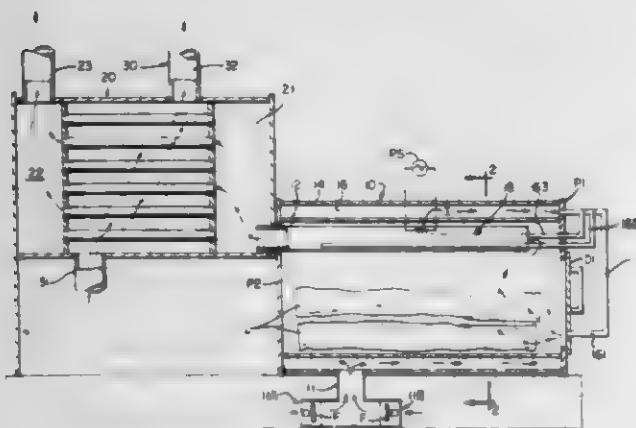
Paul A. Kalenian, 73 Otis St., Northboro, Mass. 01532

Filed Oct. 21, 1977, Ser. No. 844,272

Int. Cl. F24H 3/06

U.S. Cl. 126-112

4 Claims



1. Combustion heater comprising

first means defining a combustion chamber with inner and outer walls and an annulus therebetween and with a lower space within the inner wall having a forward end and rear end for holding an elongated solid fuel charge and means

for feeding primary air thereto and combustion gas products therefrom both at said forward end so that the charge burns from said forward towards said rear end of said chamber,

second means defining an elongated combustion gas products conduit running above and substantially parallel to the fuel charge space and within the flame produced thereby and having an entrance for combustion gas products of said first means,

said first and second means being arranged to define an S-draft gas flow path,

means defining a principal heat exchanger for receiving the exhaust of said conduit and extracting heat therefrom, and means for injecting secondary air into the combustion chamber outside of and adjacent to the exhaust conduit at multiple points along the length thereof to enhance flame coverage thereof,

means for producing after-burning in said conduit by injecting secondary air therein at a point downstream of the conduit entrance, and

means for preheating the primary air and secondary air and after-burner air in counter-current heat exchange in said combustion chamber annulus by injection to said annulus at the combustion chamber rear end and movement to said forward end.

4,228,784

FIREPLACE FORCED AIR HEATING APPARATUS

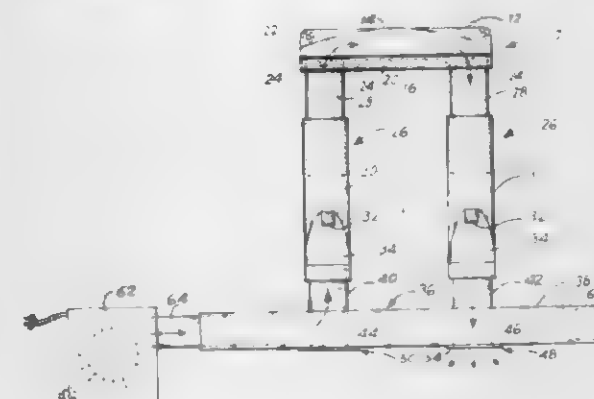
Dannie O. Malafouris, P.O. Box 13637, Portland, Oreg. 97303

Filed Sep. 22, 1978, Ser. No. 945,135

Int. Cl. F24B 7/00

U.S. Cl. 126-121

5 Claims



1. Fireplace forced air heating apparatus, comprising:

(a) an upstanding, vertically and laterally elongated heat exchanger contoured and dimensioned for placement adjacent the rear wall of a fireplace and enclosing a plenum,

(b) a pair of tubes connected to the heat exchanger adjacent the bottom and lateral sides thereof and communicating at their inner ends with the plenum, the tubes extending horizontally forward from the heat exchanger toward the front of the fireplace,

(c) an elongated main duct disposed horizontally across and forwardly of the pair of tubes and extending laterally beyond said tubes, the ends of the main duct being open,

(d) a pair of duct segments secured at their forward ends to the rear side and intermediate the ends of the main duct for communication therewith and extending rearwardly for communication of their rearward ends with the forward ends of the pair of tubes,

(e) a pair of ports in the front side of the main duct substantially opposite the pair of duct segments,

(f) a baffle member comprising a hollow plug receivable interchangeably in either of the pair of ports for communicating the associated duct segment with the adjacent open end of the main duct, whereby to deliver cool air from said open end to the heat exchanger for heating, the baffle

member substantially closing the associated port and the main duct inwardly of said baffle member,

(g) a fan assembly having an air inlet and an air outlet, the outlet being connectable interchangeably to either open end of the main duct for coupling said air outlet to the open end of the main duct adjacent the baffle member, for delivering cool air to the heat exchanger, and

(h) a hot air outlet member comprising a hollow plug receivable interchangeably in either of the pair of ports for communicating the associated duct segment with the atmosphere through said plug and port, whereby to discharge hot air from the heat exchanger through the outlet member into the atmosphere.

4,228,785

SOLAR HEATING SYSTEM

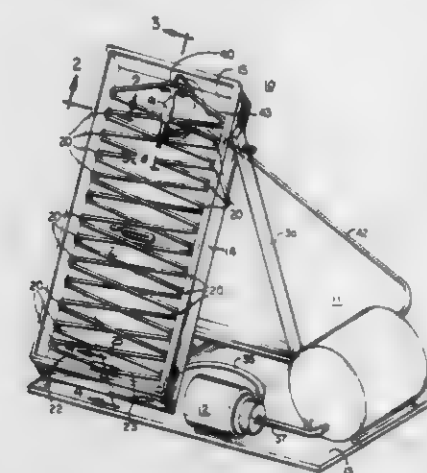
George L. Wagenseller, 33 Inwood Rd., Levittown, Pa. 19057

Filed Jan. 29, 1979, Ser. No. 7,251

Int. Cl. F24J 3/02

U.S. Cl. 126-422

5 Claims



1. A solar heating system which comprises

a solar panel open at one side,

a transparent cover closing said open side,

a pipe system in said panel for liquid circulation therethrough and having inlet and discharge ends,

a temperature responsive control valve in said panel connected to said pipes and controlling liquid delivery from said pipe system at a predetermined temperature level,

a storage tank for receiving liquid from said valve,

a circulating pump interposed between said tank and said pipes for return of liquid thereto,

a check valve between said pump and said pipes,

a pipe connecting said check valve to said pump, and

temperature responsive control means responsive to the temperature in said panel for controlling the operation of said pump.

4,228,786

FLOW DIRECTOR

Fred I. Frankenfield, Noblesville, Ind., assignor to Hedback Corp., Indianapolis, Ind.

Filed Feb. 5, 1979, Ser. No. 9,411

Int. Cl. F24D 5/04

U.S. Cl. 126-427

2 Claims

1. The combination comprising:

a furnace including a blower for moving air therethrough from an inlet to an outlet;

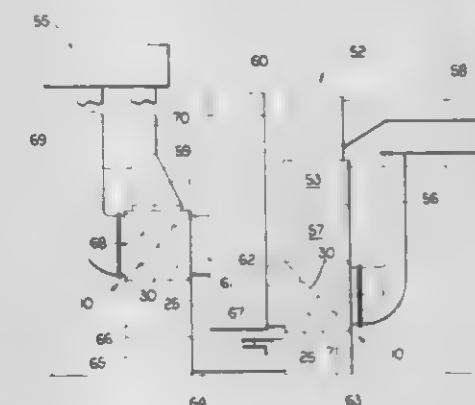
a diverting box having at least first and second opposed sides, said diverting box including wall portions defining first, second, third and fourth openings arranged consecutively between the first and second sides;

a first baffle mounted within said diverting box and extending inwardly from a wall portion between the first and second openings, said first baffle spanning between the first and second opposed sides of said diverting box;

second, third and fourth baffles mounted within said divert-

ing box and extending inwardly from wall portions between the second and third, third and fourth, and fourth and first openings, respectively, each of said baffles spanning between the first and second opposed sides of said diverting box;

a damper rotatably mounted within said diverting box, said damper being rotatable about an axis extending normal to the first and second opposed sides, said first baffle extending inwardly to said damper, said damper having first and second portions extending in differing directions from said axis, said damper having a first position in which the first and second portions are adjacent said second and fourth baffles respectively, thereby permitting flow between the third and fourth openings and blocking flow between the first and second openings, said damper further having a second position in which one of the first and second portions of said damper is adjacent said third baffle, thereby



permitting flow between the first and fourth openings and between the second and third openings;

said diverting box being connected to said furnace with the inlet of said furnace communicating with the third opening of said diverting box;

a supply air duct connected to said furnace with the outlet of said furnace communicating with said supply air duct;

a return air duct connected to said diverting box with said return air duct communicating with the fourth opening of said diverting box;

means for treating air, said air treating means including an inlet and an outlet;

first connecting means for connecting the first opening of said diverting box with the inlet of said air treating means; and

second connecting means for connecting the second opening of said diverting box with the outlet of said air treating means.

4,228,787

SOLAR HEATER, BUILDING CLADDING UNIT

Hans Steinemann, Grossbuch, Switzerland, assignor to Micafil, AG, Zurich, Switzerland

Filed Sep. 9, 1977, Ser. No. 832,024

Claims priority, application Switzerland, Sep. 10, 1976, 11504/76

Int. Cl. F24J 3/02

U.S. Cl. 126-433

13 Claims

1. A solar heated, thermally protective building cladding comprising:

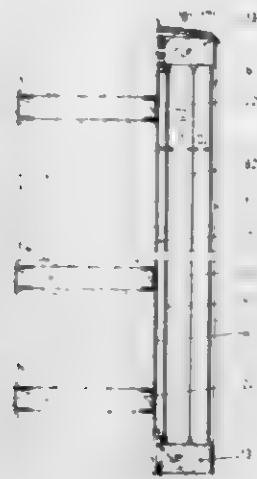
a building having an outer wall;

a portion of an outer surface of the wall being covered by a selective absorbing layer;

a plurality of heat pipes disposed in the wall in thermal communication with the selective absorbing layer, the pipes extending between the layer and the interior of the building;

a frame carrying two spaced-apart transparent sheets having in the space therebetween one or more movable members

arranged for movement to selectively permit or prevent solar radiation from passing between said sheets; and



the frame being mounted upon the outer wall of the building enclosing the layer so as to form an air space between the layer and the innermost of said transparent sheets.

4,228,788

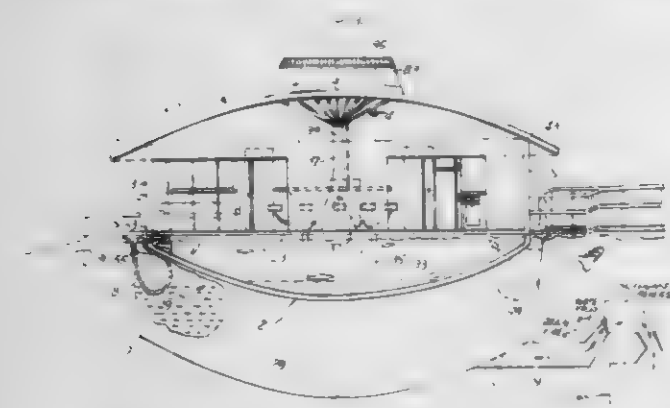
SELF-CONTAINED ALL-TERRAIN LIVING APPARATUS
John Moeser, 14460 Promenade, Detroit, Mich. 48213

Filed Jan. 8, 1979, Ser. No. 1,689

Int. Cl. F24V 3/02; B63B 39/03

U.S. Cl. 126-437

25 Claims



1. A self-contained all terrain living apparatus comprising a first reservoir within the ground surface having side walls of circular form, of a predetermined diameter and having a quantity of water therein;

a building having a roof and a peripheral side wall of circular form of less diameter than said reservoir wall, concentrically nested and spaced within said reservoir;

a convex hull peripherally nested and sealed to the bottom of said building wall, and immersed within the water and floatingly projected into said reservoir; with a substantial portion of said building wall extending above said ground surface;

flexible and yieldable spacer means upon and within the upper portion of said first reservoir spacing and enaging and yieldably adapted to guide the building side walls;

a second reservoir within said ground surface spaced from and below said first reservoir;

a drain outlet spaced above the bottom of said first reservoir; a valve on and controlling said outlet;

and a conduit interconnecting said outlet and said second reservoir, whereby controlled opening of said valve drains controlled quantities of water from said first to second reservoir, said building controllably descending within said first reservoir throughout any desired distance up to said roof yet buoyantly immersed within the remaining water in said first reservoir, for protectively enclosing the building within said first reservoir against storms, tornados, earthquakes, extreme temperature, or other conditions endangering the integrity of said building.

4,228,789

SOLAR ENERGY COLLECTOR

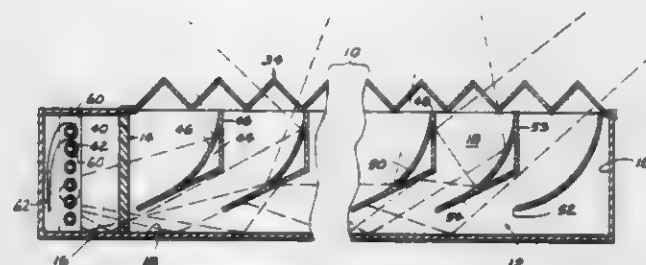
James C. Kay, R.F.D. #6, Rome, Ga. 30161

Filed Sep. 19, 1978, Ser. No. 943,817

Int. Cl. F24J 3/02

U.S. Cl. 126-439

6 Claims



1. A solar energy collector, comprising: a floor and upstanding perimetrical wall means providing a primary housing, including one transparent sidewall portion;

a transparent panel covering said primary housing;

a longitudinally extending, series of transversally extending, curved light-reflecting baffles mounted within said primary housing for focusing towards said one transparent sidewall portion the sunlight which enters the primary housing through said transparent panel when sunlight is incident upon said solar energy collector;

the curved light-reflecting baffles each comprising a generally cylindrically curved arcuate body of approximately 60° in arcuate extent and each being oriented in the primary housing so as to have a concave upper surface with an upper edge that is nearly vertical and a lower edge that is forwardly and downwardly slanted but nearly horizontal, the upper edge of each baffle being generally in vertical alignment with the lower edge of its respectively upstream neighbor;

roof, floor and upstanding perimetrical wall means providing a secondary housing located downstream of said series of baffles, said secondary housing including said transparent sidewall portion, the remainder of these wall means being of thermally insulating material; and collector plate means housed within the secondary housing and including means for leading collected energy from the solar energy collector secondary housing.

4,228,790

SOLAR HEATER

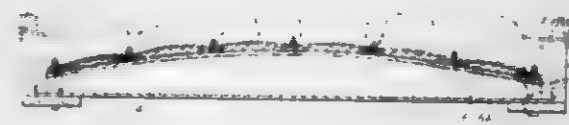
Richard R. Davison, 303 Crescent; William B. Harris, Rte. 3, Box 293 A, both of Bryan, Tex. 77801, and Salomon Maldonado, 2314 Louis Pl., Harlingen, Tex. 78550

Filed Jan. 10, 1977, Ser. No. 757,956

Int. Cl. F24J 3/02

U.S. Cl. 126-444

10 Claims



1. A solar heater for collecting solar radiation in a fluid comprising:

(a) a base

(b) a 1st flexible fluid retaining means connected adjacent said base for collecting solar radiation

(c) a 2nd flexible fluid retaining means for retaining fluid

(d) Fixed spacer means connected to said base through said 1st and 2nd flexible fluid retaining means at spaced intervals for forming a seal and for limiting the expansion of said 1st and 2nd flexible fluid retaining means connected adjacent said base for collecting solar radiation

(e) a first flow way means connected in fluid communication

with said 1st and 2nd flexible fluid retaining means for flowing fluid therein; and
(f) a second flow way means connected in fluid communication with said 1st and 2nd flexible fluid retaining means for flowing fluid therefrom.

4,228,791

SOLAR ENERGY COLLECTING ROOF

Takashi Hirai, and Tadahiro Hino, both of Tokyo, Japan, assignors to Showa Aluminium K.K., Osaka and Kabushiki Kaisha Hirai Giken, Tokyo, both of Japan

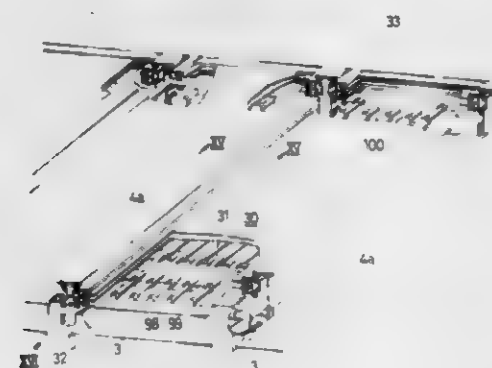
Filed Jul. 3, 1978, Ser. No. 921,238

Claims priority, application Japan, Jul. 6, 1977, 52-80596; Nov. 24, 1977, 52-139904

Int. Cl. F24J 3/02

U.S. Cl. 126-450

9 Claims



1. A solar energy collecting roof comprising metal roof units capable of heat insulating, extrusion-molded joint members for joining said metal roof units, cover glass frames fitted between each adjacent pair of said joint members, and heat collecting piping provided in box-shaped spaces defined by the metal roof units, the joint members and the cover glass frames, said solar energy collecting roof being characterized in that each of said cover glass frames comprises an upper rail which has an upper surface provided with a drip projection and also has an outwardly extending lowermost portion comprising a flange formed with an upward drip projection; a lower rail which has an upper portion comprising a flange formed with a downward projection; a pair of longitudinal rails each of which has an upper portion including a drip projection and also has a lower portion including both a downwardly extending leg and an outside leg; and glass framed by said upper, lower and longitudinal rails.

4,228,792

EXSANGUINATING DEVICE FOR DISPLACING BLOOD FROM A LIMB BY COMPRESSION

Noel C. Rhys-Davies, Yeovil District Hospital, Higher Kingston, Yeovil, Somerset, England

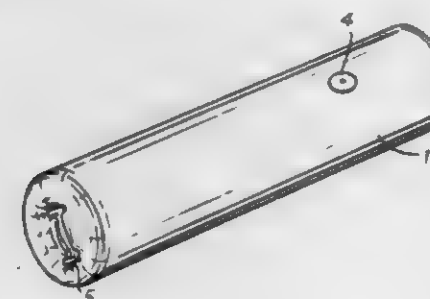
Filed Sep. 20, 1978, Ser. No. 943,774

Claims priority, application United Kingdom, Sep. 23, 1977, 39781/77

Int. Cl. A61H 9/00, 15/00

U.S. Cl. 128-24.3

6 Claims



1. A device for exsanguinating a limb comprising a double-walled elongated cylindrical tubular body of elastomeric mate-

rial of which the inner and outer walls have substantially the same unstressed dimensions and are interconnected solely at their ends to form a continuous envelope which is filled with a fluid under pressure so that the fluid pressure distends the outer wall and partially collapses and expands the inner wall inwardly to substantially fill the inner space, wherein the outer surface of the envelope is free of protrusions such that as a limb is inserted in either end of the tubular body the inner and outer walls constantly exchange positions and the inner wall will progressively compress the limb by virtue of the pressure of the contained fluid.

4,228,793

PRESSURE-SWITCH OPERATED VIBRATING UNIT

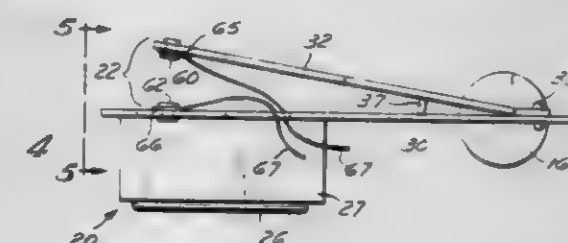
Carol a.k.a. Carali Ramey, 1613-1/2 Ocean Front Walk, Playa del Rey, Calif. 90291

Continuation-in-part of Ser. No. 737,797, Nov. 6, 1976, Pat. No. 4,136,685. This application Dec. 22, 1978, Ser. No. 972,284

Int. Cl. A61H 1/00

U.S. Cl. 128-33

13 Claims



1. A vibratory unit which comprises:
a vibratory motor means;
a portable power source;
a support member for supporting said motor means and power source;
a first electrically conductive member affixed to said support member;
a pressure plate means having a second electrically conductive member affixed thereto, said pressure plate means being enlarged with respect to both said first and second conductive members;
means for electrically interconnecting said power source and vibratory means to said first and second conductive members for energization of said vibratory motor means upon electrical interconnection of said first and second conductive members; and
spacer means for maintaining said conductive element of said pressure plate means in normally spaced, overlying alignment with respect to said first conductive member whereby upon application of inwardly directed force onto said pressure plate means, said first and second conductive members are electrically interconnected to energize said vibratory motor means and upon release of said inwardly directed force said vibratory motor means is de-energized.

4,228,794

MASSAGER WITH DUMBBELL-SHAPED HOUSING
Hans Boller, Steineggerstrasse, CH 8503 Hüttwilen, Switzerland

Filed Sep. 28, 1978, Ser. No. 946,601

Claims priority, application Switzerland, Oct. 3, 1977, 12085/77

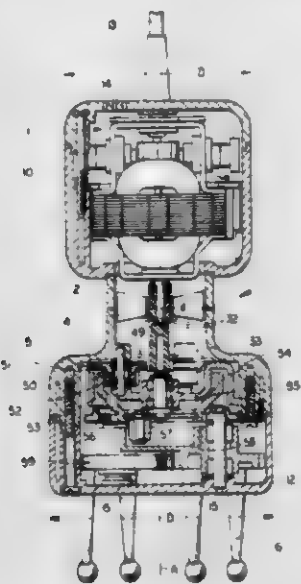
Int. Cl. A61H 7/00

U.S. Cl. 128-49

9 Claims

1. A massager comprising:
a housing elongated along a housing axis and having an upper end, a lower end, and an intermediate portion between and of smaller dimension than said ends transverse to said housing axis, said upper and lower ends being of outer diameters at least one-half greater than the outer diameter of said intermediate portion;

a shaft in said housing extending generally axially between said ends thereof;
 a plurality of fingers projecting generally axially from said lower end and vibratory in a direction generally perpendicular to said housing axis;
 a transmission in said lower end between said shaft and said fingers;



a fan on said shaft generally between said ends of said housing and having an outer diameter equal substantially to the inner diameter of said intermediate portion; and
 drive means including an electric motor in said upper end for rotating said shaft and thereby vibrating said fingers and operating said shaft to force air axially through said housing.

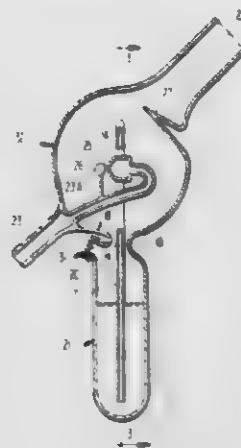
4,228,795

APPARATUS FOR PRODUCING FINELY DIVIDED LIQUID SPRAY

Robert S. Babington, 1113 Ingleside Ave., McLean, Va. 22101
 Filed Mar. 8, 1977, Ser. No. 775,494
 Int. Cl.² B05B 11/04, 11/06

U.S. Cl. 128-200,22

54 Claims



1. Apparatus for producing a finely divided liquid spray comprising:

a first chamber for holding a supply of liquid;
 a second chamber;
 first means for conveying liquid from the first chamber to the second chamber;
 second means distinct from the first means for conveying the liquid from the second chamber back to the first chamber;
 means for producing alternately and repetitively a first pressure differential and either a second different opposite pressure differential or pressure balance between said first and second chambers, said first pressure differential causing the flow of liquid from said first chamber to said second chamber and said second pressure differential or

pressure balance causing the flow of said liquid from said second chamber back to said first chamber;
 a hollow plenum chamber having a smooth outer surface over at least a portion thereof and so disposed in the flow path of said liquid as it moves from said first chamber to said second chamber and back to said first chamber as to have at least a portion of the liquid impinge upon its outer surface;
 said plenum chamber defining therein at least one through aperture;
 means for supplying gas under pressure to the interior of the plenum chamber to exit through said aperture; and
 outlet means for exiting of the finely divided liquid particles from the apparatus.

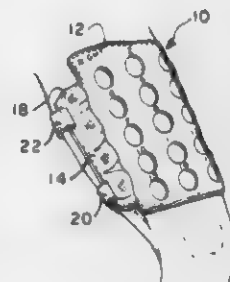
4,228,796

INSULIN INJECTION GUIDE

Marie A. Gardiner, 1 Holly Rd., Stratford, N.J. 08084
 Filed Mar. 19, 1979, Ser. No. 22,086
 Int. Cl.³ A61M 5/00

U.S. Cl. 128-215

9 Claims



1. An injection guide comprising:
 a substantially flexible sheet-like material of predetermined shape, said material having a plurality of holes passing therethrough;
 means attached to said material for securing the same to a person's thigh; and
 means associated with each of said holes for identifying each hole and for distinguishing each hole from each of the other holes, said means associated with each of said holes being indicia means identifying the days of the week.

4,228,797

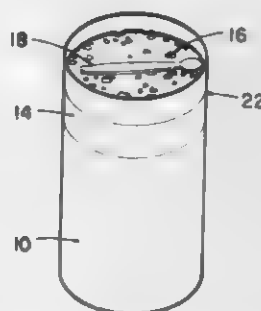
INTRAVAGINAL CONTRACEPTION METHOD
 Richard P. Dickey, 5640 Read Blvd., Ste. 640, New Orleans, La. 70127

Filed Sep. 25, 1978, Ser. No. 945,529

Int. Cl.³ A61F 13/20

U.S. Cl. 128-270

6 Claims



1. A method of intravaginal contraception comprising the following steps:

(a) providing to the user in powdered or tablet, packaged form a spermicidal chemical to be kept by the user in its packaged form until needed;
 (b) removing the spermicidal from its packaging just prior to use and dissolving it in water;
 (c) just prior to use impregnating a suitable shaped matrix of

either organic or inorganic material with the solvent solution;
 (d) placing the solution impregnated matrix into the vagina prior to coitus; and
 (e) removing the matrix following coitus.

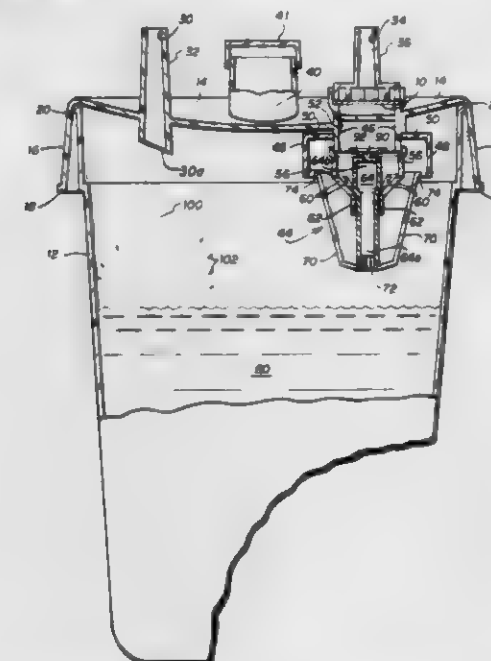
4,228,798

SUCTION RECEPTACLE WITH HYGROSCOPIC FILTER

David W. Deaton, 1009 Russwood, Abilene, Tex. 79601
 Filed May 1, 1979, Ser. No. 34,992
 Int. Cl.³ A61M 1/00

U.S. Cl. 128-276

19 Claims



1. A medical suction system for connection to a conventional hospital vacuum source having a vacuum pressure sufficient to create a suitable flow rate for draining fluid from a patient area comprising:

a fluid collection receptacle including a suction port for being connected to the vacuum source and also including a fluid receiving port, said vacuum source creating a vacuum within said receptacle sufficient to withdraw fluid from the patient area at a desired flow rate for collection within said fluid collection receptacle;

a shutoff valve mounted in association with said fluid collection receptacle and responsive to a predetermined height of fluid within said fluid collection receptacle for closing said suction port to prevent application of vacuum pressure from the vacuum source through said suction port to said fluid collection receptacle; and

hygroscopic filter means for filtering aerosol droplets formed from bacteria encapsulated by liquid, said filter means mounted between said shutoff valve of said fluid collection receptacle and the vacuum source and having fibers for absorbing and collecting within the interior of said fibers liquid from said aerosol droplets entrained in the air withdrawn from said fluid collection receptacle to prevent entry of the entrained aerosol droplets into the vacuum source while continuously permitting the passage of air from the interior of said fluid collection receptacle through said suction port to the vacuum source prior to actuation of said shutoff valve, said filter having pores sized greater than the dimensions of the bacteria but generally equal to or less than the dimensions of the aerosol droplets encapsulating the bacteria in order to filter bacteria having dimensions less than about 5 microns from the air stream while allowing continuous passage of the air stream through said filter means.

4,228,799

METHOD OF GUIDING A STEREOTAXIC INSTRUMENT AT AN INTRACEREBRAL SPACE TARGET POINT

Andrei D. Anichkov, ulitsa Blokhina, 6/3, kv. 4; Jury Z. Polonsky, ulitsa Komsomola, 16, kv. 24, and Vladimir V. Ussov, Degtyarny pereulok, 26, kv. 3, all of Leningrad, U.S.S.R.

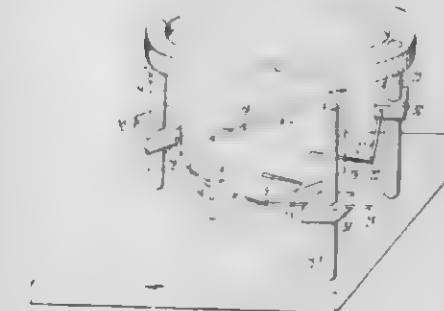
Filed Sep. 22, 1978, Ser. No. 945,209

Claims priority, application U.S.S.R., Sep. 28, 1977, 2528446

Int. Cl.³ A61B 6/02

U.S. Cl. 128-303 B

6 Claims



1. A method of guiding a stereotaxic instrument at an intracerebral space target point, comprising the steps of:

injecting a roentgenocontrast medium into the cerebral cavity of a patient to produce contrast of the intracerebral points thereof;

securing to the patient's cranium at least four detachable roentgenocontrast markers having known distances therebetween, with one of said detachable roentgenocontrast markers being offset from a straight line joining any two of other said detachable roentgenocontrast markers;

effecting a first roentgenography of the patient's head;

effecting a second roentgenography of the patient's head with said second roentgenography being effected under projection conditions differing from projection conditions of said first roentgenography;

removing said detachable roentgenocontrast markers from the patient's head;

identifying a position of said detachable roentgenocontrast markers relative to said intracerebral points as references by using the roentgenograms available from said first and second roentgenographies, the distances between said detachable roentgenocontrast markers and the positions of the roentgen radiation source relative to the roentgen films in the course of said first and second roentgenographies;

identifying a position of the intracerebral space target point relative to said intracerebral reference points;

constructing an intracerebral space physical model presenting the relative position of said intracerebral reference points, said detachable roentgenocontrast markers and said target point, said intracerebral space physical model including at least three points, each of which is adapted to simulate one of said detachable roentgenocontrast markers, and a point adapted to simulate said target point;

placing a stereotaxic apparatus on the patient's head;

recurrently securing to the patient's cranium said detachable roentgenocontrast markers in exactly the same position as they had relative to the patient's cranium in the course of said first and second roentgenographies;

identifying the positions of said detachable roentgenocontrast markers, simulated in said intracerebral space physical model, relative to said stereotaxic apparatus and fixing in a stereotaxic apparatus model these indicated positions of said detachable roentgenocontrast markers relative to said stereotaxic apparatus;

orienting said intracerebral space physical model relative to said stereotaxic apparatus model by placing said three points of said intracerebral space physical model adapted to simulate said detachable roentgenocontrast markers in the specified positions of said detachable roentgenocontrast

trast markers relative to said stereotaxic apparatus set forth in said stereotaxic apparatus model;
mounting a guiding arrangement with a stereotaxic instrument upon said stereotaxic apparatus model and adjusting an operative end of said stereotaxic instrument to the specified point of said intracerebral space physical model adapted to simulate the specified target point, with the position of said stereotaxic apparatus being rigidly secured at said guiding arrangement;
drilling a trepanation aperture; and
mounting said guiding arrangement with said stereotaxic instrument upon said stereotaxic apparatus and introducing said stereotaxic instrument into said trepanation aperture.

4,228,800

BIPOLAR ELECTROSURGICAL KNIFE

Howard E. Degler, Jr., St. Petersburg; David E. Clark, Gainesville; John J. Hren, Gainesville; David A. Jenkins, Gainesville, and Paul F. Johnson, III, Gainesville, all of Fla., assignors to Concept, Inc., Clearwater, Fla.

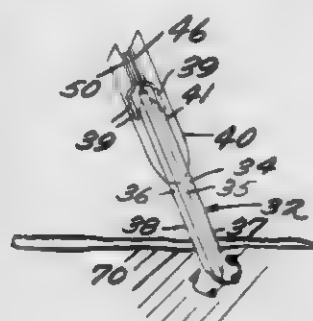
Continuation of Ser. No. 695,649, Jun. 14, 1976, abandoned.

This application Apr. 4, 1978, Ser. No. 893,422

Int. Cl.¹ A61B 17/39

U.S. Cl. 128—303.14

17 Claims



1. A bipolar electrosurgical instrument comprising an electrically insulated housing, constructed of a nonconductive material and having a substantially pencil shaped configuration, a blade assembly mounted in said housing and projecting from said housing, said blade assembly comprising a center electrode, insulation means on opposite sides of said electrode and side electrodes ranging in width from 0.047 inches to 0.100 inches secured to said insulation means so that they are symmetrically disposed with respect to said center electrode and separated from said center electrode by said insulation means, said blade assembly center electrode being formed with a substantially rectangular linear shape with linearly oriented beveled edges and connected to said insulation means, said insulation means comprising two insulator members of substantially rectangular linear shape positioned on each side of said center electrode with aligned beveled edges, said two insulator members being composed of at least 99% pure Al_2O_3 , a source of energy, means for connecting said electrodes to said source of energy so that an output circuit of the source of energy comprising a high frequency electrical current is completed through tissue intervening between and in contact with said electrodes, said side electrodes being shorted together within said housing and acting as return electrodes during operation of this instrument and switch means connected to said source of energy for selectively energizing said electrodes.

4,228,801
DILATOR FOR APPLICATION IN MEDICAL FIELD
Dante Magnasco, Bergamo, and Livio Marinoni, Milan, both of Italy, assignors to Elektromedical Company S.r.l., Milan, Italy

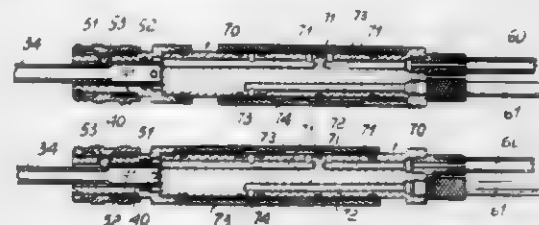
Filed Nov. 21, 1978, Ser. No. 962,834

Claims priority, application Italy, Nov. 29, 1977, 30190 A/77

Int. Cl.¹ A61M 29/02, 25/00

U.S. Cl. 128—344

4 Claims



1. A dilator for the application in medical field, comprising an at least partially hollow body made of an elastically deformable material and defining a cavity and having a distal and a proximal end thereof, duct means for hydropneumatically connecting the cavity of said body to a source of pressurized fluid, valve means for controlling the hydropneumatically communication between said cavity and said source and the outside, said body expanding when positioned in situ and when in hydropneumatic communication with said source of pressurized fluid and being thereby effective to dilate the corporeal application field and wherein said hollow body is an elongated body, said duct means include a substantially rigid tubular duct sealingly connected with one end thereof to said proximal end of said body, a control body connected to the other end of said substantially rigid tubular duct, quick release latching means for maintaining the connection between said control body and said substantially rigid tubular duct, said control body having connected therewith an inlet duct for the fluid under pressure and an outlet duct therefor and a slide distributor controlling the flow of pressurized liquid therethrough.

4,228,802
SELF-INFLATING AND SELF-CLEANING CATHETER ASSEMBLY

William A. Trott, Winnipeg, Canada, assignor to Medical Products Institute Incorporated, Winnipeg, Canada

Filed Jun. 7, 1978, Ser. No. 913,516

Claims priority, application United Kingdom, Jun. 15, 1977, 24960/77

Int. Cl.¹ A61M 25/00

U.S. Cl. 128—349 R

18 Claims



1. A catheter assembly for use as a urinary drainage device through the urethra; comprising in combination a flexible, longitudinally extending outer envelope, an inner drainage

tube slidably engaging within said envelope, and means to detachably retain said catheter in position within the urethra, said means including an expanding portion formed along the length of said outer envelope adjacent the distal end thereof and extending uninterruptedly around the periphery thereof, mechanical means adjacent the proximal end of said outer envelope operatively connected to said expanding portion, to expand and retract said expanding portion, said expanding portion including means to facilitate the expansion of said expanding portion, said last mentioned means including a plurality of transversely notched splines formed on the inner wall of said expanding portion, means to detachably retain said inner drainage tube in position within said outer envelope, means to position said inner drainage tube within said outer envelope to define an annular longitudinally extending lumen between said drainage tube and said outer envelope, means communicating between the outside of said outer envelope and the interior of said drainage tube adjacent the distal ends thereof to convey fluids from outside of said outer envelope to the interior of said drainage tube and further means communicating between said lumen and the exterior of said outer envelope.

4,228,803

PHYSIOLOGICALLY ADAPTIVE CARDIAC PACEMAKER

Anthony F. Rickards, London, England, assignor to Credit du Nord International N.V., Willemstad, Netherlands Antilles

Filed Oct. 6, 1978, Ser. No. 949,044

Claims priority, application United Kingdom, Jun. 23, 1978, 27693/78

Int. Cl.¹ A61N 1/30

U.S. Cl. 128—419 PG

37 Claims



1. A demand cardiac pacemaker having circuitry for carrying out demand pacer functions, adapted to be utilized in combination with an electrode for delivering stimulus signals to a patient's heart and for receiving from said patient's heart signals representative of heart activity, comprising:

- stimulus signal generator means for delivering stimulus signals, having modifiable means for setting its escape interval;
- T wave means for sensing a T wave of an evoked heart response following a delivered stimulus signal, and for determining the time relationship of said T wave relative to said delivered stimulus signal; and
- modifying means connected to said T wave means and said modifiable means for modifying said escape interval as a function of said time relationship.

4,228,804
DIAGNOSTIC ULTRASONOGRAPHY UTILIZING FREQUENCY SPECTRUM ANALYSIS PRESENTED IN TERMS OF B-SCAN COLOR PATTERNS OR X-Y GRAPH DISPLAYS

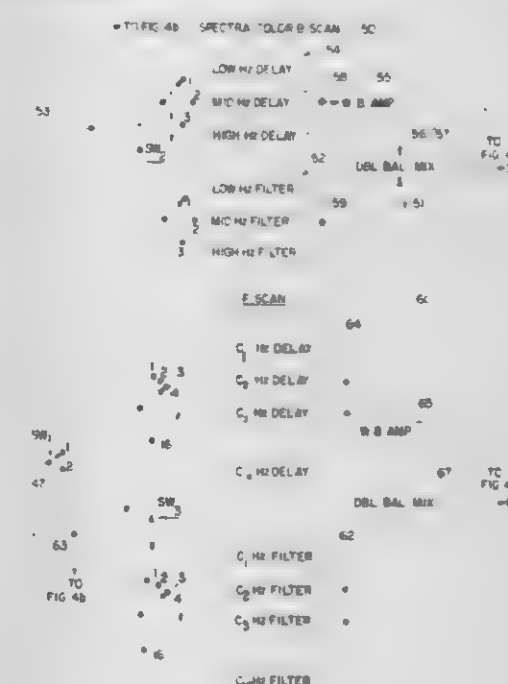
Edward Holasek, and Wayne D. Jennings, both of Cleveland, Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Continuation-in-part of Ser. No. 690,605, May 27, 1976, abandoned. This application Feb. 28, 1978, Ser. No. 882,149

Int. Cl.¹ A61B 10/00

U.S. Cl. 128—660

16 Claims



1. A method for characterizing a soft tissue specimen as a function of its effect on the frequency spectrum of an applied signal comprising the steps of:

- applying a first ultrasonic frequency band complex wave signal to a soft tissue specimen, said applied signal having a first bandwidth and center frequency;
- detecting at least a portion of said applied signal as affected by said specimen;
- filtering said detected signal portion to provide a plurality of frequency spectrum signals indicative of the frequency content of said detected signal portion, said spectrum signals representing a respective plurality of frequency bands extending over at least a portion of said first frequency band, said frequency bands having bandwidths substantially less than said first bandwidth;
- processing said spectrum signals to represent the approximate instantaneous power spectrum of said detected portion; and
- simultaneously displaying said processed spectrum signals in a visual format for comparison of the frequency and energy magnitude of said spectrum signals relative to each other, said visual format being spatially related to the structure of said specimen as a function of the time between said applying and said detecting.

4,228,805

METHOD OF MEASURING BLOOD PERFUSION

Arye Rosen, Cherry Hill, and William P. Santamore, Medford, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,605

Int. Cl.¹ A61B 5/02

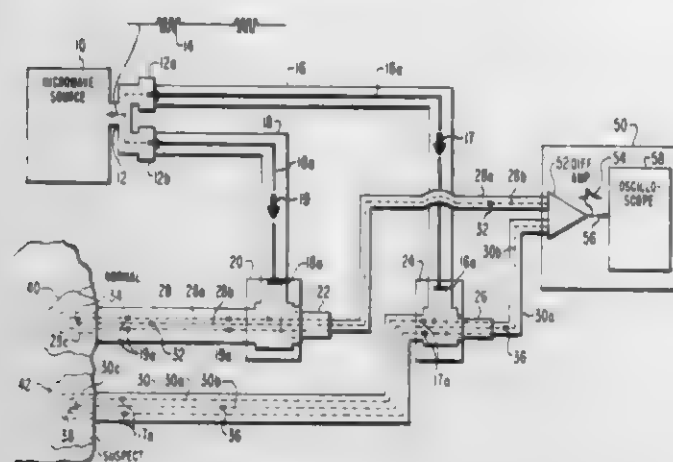
U.S. Cl. 128—691

4 Claims

1. A method of determining the fluid perfusion of tissue comprising the steps of:

- irradiating said tissue with microwave frequency signals to elevate a given volume of said tissue uniformly to a predetermined temperature, said signals having a predetermined

rate, amplitude and frequency to uniformly heat said given volume;
interrupting said irradiating signals; and



measuring the rate of temperature decay of said volume of tissue from said predetermined temperature, said rate of temperature decay being indicative of the thermal conductivity of said volume of tissue and thus the fluid perfusion of said volume of tissue.

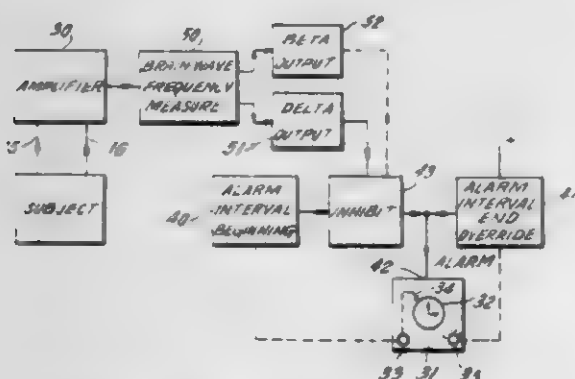
4,228,806

SLEEP STATE INHIBITED WAKE-UP ALARM
Derek Lidow, Beverly Hills, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed May 25, 1978, Ser. No. 909,580
Int. Cl.³ A61B 5/04

U.S. Cl. 128-731

15 Claims



1. A wake-up alarm comprising, in combination: sensor means associated with a subject and monitoring at least one characteristic of said subject related to the depth of sleep of said subject and delivering an output related to the depth of sleep of said subject; wake-up alarm means; adjustment means connected to said wake-up alarm means to enable said alarm means to sound an alarm at any time within a given time range; inhibit means connected to said wake-up alarm means for inhibiting the operation of said alarm within said given time range when said inhibit means is in a given energization state; signal-processing means connected to said sensor means and producing a first output signal when said sensor's output indicates that said subject is in a deep-sleep or REM state, and producing a second output signal when said sensor output indicates that said subject is in a sleep state shallower than said deep-sleep state; said output signals of said signal-processing means being connected to said inhibit means and causing said inhibit means to inhibit said alarm means when said subject is in said deep-sleep or REM state.

4,228,807

BIOFEEDBACK DEVICE FOR RECOGNITION OF α WAVE COMPONENT AND MUSCLE POTENTIAL COMPONENT

Akihiro Yagi, Tokyo; Yasuo Kuchinomachi, Yokohama, and Hiroyuki Kodama, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation of Ser. No. 781,362, Mar. 25, 1977, abandoned.

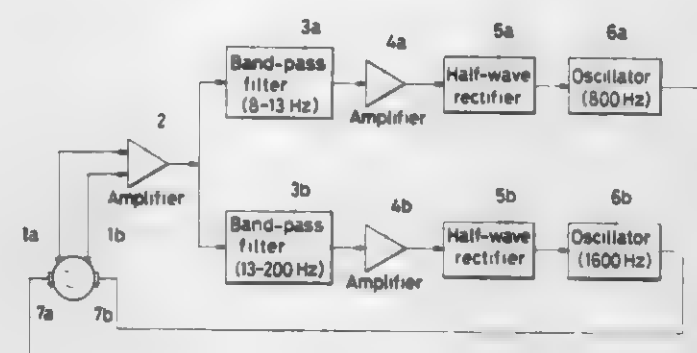
This application Dec. 11, 1978, Ser. No. 968,263

Claims priority, application Japan, May 27, 1976, 51-61528

Int. Cl.³ A61B 5/04

U.S. Cl. 128-732

1 Claim



1. A biofeedback device comprising
 - (a) a pair of electrodes on the head skin of a subject for detecting a brain wave potential of a frequency of 8 to 13 Hz including an alpha-wave potential and a brain wave potential of a frequency of more than 13 Hz including a muscle potential,
 - (b) a first band-pass filter for extracting from the detected potentials a wave component of the frequency of 8 to 13 Hz,
 - (c) a second band-pass filter for extracting from the detected potentials a wave component of the frequency of more than 13 Hz,
 - (d) a first half-wave rectifier for cutting off the negative component of the wave component extracted by the first band-pass filter,
 - (e) a second half-wave rectifier for cutting off the negative component of the wave component extracted by the second band-pass filter,
 - (f) a first oscillator for producing a sound of the frequency of 800 Hz and a strength proportional to that of the wave component from the first rectifier,
 - (g) a second oscillator for producing a sound of the frequency of 1,600 Hz and a strength proportional to that of the wave component from the second rectifier, and
 - (h) a pair of earphones guiding the oscillated sounds simultaneously to the ears of the subject, one of the earphones guiding the sound of the frequency of 800 Hz produced by the first oscillator to one of the ears and another one of the earphones guiding the sound of the frequency of 1600 Hz produced by the second oscillator to the other ear, thereby to permit the subject to discern his own mental state from the strength of the sounds of the frequencies of 800 and 1600 Hz.

4,228,808

DEVICE FOR THE WITHDRAWAL OF BLOOD

Hermann J. Marsoner, Graz, Austria, assignor to AVL AG, Schaffhausen, Switzerland

Filed Aug. 29, 1978, Ser. No. 937,887

Claims priority, application Switzerland, Sep. 8, 1977, 11029/77

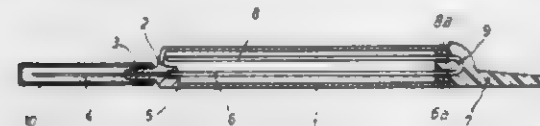
Int. Cl.³ A61B 5/14

U.S. Cl. 128-762

3 Claims

1. A device for removing blood from blood vessels comprising a substantially sleeve-shaped jacket having a closed front end and at least partially formed from transparent material; a puncture needle permanently mounted on said front end;

an opening in the interior of said front end communicating with said puncture needle; and
at least one capillary located in said sleeve-shaped jacket and removably inserted in the opening in said front end, the sleeve-shaped jacket at its rear end being closed by a closure element and the rear end of the capillary being



inserted in said closure element, the capillary fitting more tightly in the closure element at the rear of the jacket than in the opening in said front end so that upon detachment of the closure element from the sleeve-shaped jacket the capillary becomes separated from the puncture needle and remains stuck in the closure element.

4,228,809

TEMPERATURE CONTROLLER FOR A MICROWAVE HEATING SYSTEM

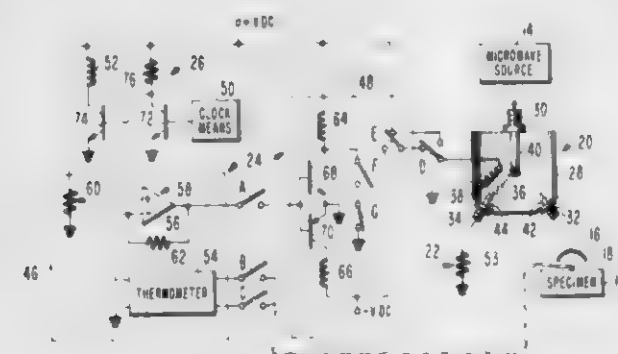
Robert W. Paglione, Robbinsville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 6, 1977, Ser. No. 840,036

Int. Cl.³ A61N 5/02

U.S. Cl. 128-804

4 Claims



1. In a microwave system of the type wherein a specimen is heated to a controlled temperature level by directing energy through an applicator and detecting the specimen temperature, the improvement comprising:
 - a dummy load;

a temperature sensing device responsive to the temperature of the specimen for providing a temperature signal indicative of specimen temperature;

switch means for directing the microwave energy through either said applicator or said dummy load, said switch means including an input coaxial connector and two output coaxial connectors along with a flexible magnetic reed contact and a winding disposed to be magnetically coupled thereto, each of said coaxial connectors having a center conductor, said reed contact being connected at one end to the center conductor of said input connector while having the other end thereof positionable to electrically connect with either center conductor of said output connectors in response to signals passing through said winding;

control means responsive to the temperature signal for actuating said switch means to direct the microwave energy through said applicator when the specimen temperature is below a set point and through said dummy load when the specimen temperature is at or above said set point, said control means being connected to receive the temperature signal from the temperature sensing device, said control means including threshold means for comparing the temperature signal from the temperature sensing device with said set point to produce an output having a first polarity when the specimen temperature is below said set point and

a second polarity when the specimen temperature is above said set point and latching means for holding said switch means winding across sources of opposite polarity respectively in response to said first or second polarity of said threshold means output, said switch means directing the microwave energy through either the applicator or said dummy load respectively in response to each source of polarity; and

duty cycle means for synchronizing said switch means and said control means to apply the temperature signal to the threshold means only when the microwave energy is directed through said dummy load;

said duty cycle means including clock means for generating a periodic pulse and a relay having a plurality of switch contacts magnetically activated by a winding, said clock means being connected across said relay winding and said switch contacts being disposed to disable said switch means winding relative to said latching means while independently enabling it relative to said source polarity that energizes said switch means winding to direct the microwave energy through said dummy load and to connect the input and output of said threshold means to the temperature sensing device output and said latching means input respectively, when said clock pulse occurs.

4,228,810

CARE AND TREATMENT OF CURLY HUMAN HAIR
Edward R. Moore, Princeton, and Eldred O. Riddle, Brooklyn Park, both of Minn., assignors to La Maur Inc., Minneapolis, Minn.

Filed Nov. 20, 1978, Ser. No. 961,917

Int. Cl.³ A45D 7/00

U.S. Cl. 132-7

9 Claims

1. A method of permanently relaxing natural curls from hair on a human head, comprising:
 - (a) applying to said hair, including the root scalp portions of the hair, a curl relaxing composition comprising a blend of water and a salt of an acid having a pH less than 7, but more than 5, and having the capacity of reducing the disulfide linkages of the hair keratin, while manipulating the treated hair by hand action and combing into a relatively straightened condition;

(b) submitting said treated hair to a heat treatment at a temperature above human body temperature while simultaneously maintaining the moisture content of the treated hair substantially constant until said hair exhibits a relaxed condition;

(c) water rinsing said relaxing composition from the hair and scalp and subsequently removing said water to at least a towel blotted state;

(d) applying to the relaxed hair a fixative composition, comprising a blend of water and a weak alkaline substance, having a pH not greater than about 9, and having the capacity of chemically neutralizing the relaxing composition;

(e) water rinsing the fixative composition from the hair and subsequently removing said water to at least a towel blotted state; and

(f) stabilizing the condition of the treated hair by applying thereto a bonding composition comprising a water solution of a cationic thermosetting aminopolyamide-epichlorohydrin resin.

4,228,811

APPARATUS FOR CONTROLLING A COIN SORTING MACHINE

Akio Tanaka; Yoshihisa Nakajima, and Shinji Yokomori, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

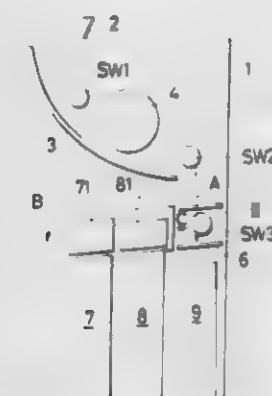
Filed Jun. 7, 1978, Ser. No. 913,275

Claims priority, application Japan, Jun. 7, 1977, 52-66972

Int. Cl. G07F 3/00

U.S. Cl. 133-3 R

2 Claims



1. A coin sorting machine of the type having a sorting means in a coin passageway for discriminating between true and false inserted coins and for providing corresponding true and false coin sorting signals, and a controllable segregating member for segregating a coin in a true coin direction or a false coin direction in response to said true and false sorting signals, respectively, the improvement comprising:

first coin detector means upstream of said segregating member for providing a first coin detection signal indicating the passage of a coin;

second coin detector means upstream of said segregating member and downstream of said first detector for providing a second coin detection signal indicative of the passage of a coin; and

logic circuit means for receiving said first and second detection signals and controlling said segregating member to segregate coins in a false coin direction when two first detection signals are received in succession without an intervening second coin detection signal;

said logic circuit means comprising:

first flip-flop means switched to a set condition by said first coin detection signal to provide a first set signal, and switched to a reset condition by said second coin detection signal to provide a first reset signal;

first AND circuit means responsive to the simultaneous appearance of said first set signal and a following first coin detection signal to produce a first AND signal;

second flip-flop means switched to a set condition by said first AND signal to produce a second set signal, and switched to a reset condition by said second coin detection signal to produce a second reset signal;

third flip-flop means switched to a set condition by a true coin sorting signal to produce a third set signal, and switched to a reset condition by said first reset signal to produce a third reset signal;

second AND circuit means responsive to the simultaneous occurrence of said second reset signal, said third set signal and said second coin detection signal to produce a second AND signal;

fourth flip-flop means switched to a set condition by said second AND signal to produce a control signal indicative of the detection of an inserted true coin spaced at least a predetermined minimum time from a following inserted coin, said segregating member being controlled by said control signal to segregate the true coin in said true coin direction;

third AND circuit means responsive to the simultaneous

occurrence of said second set signal and said second coin detecting signal to produce a third AND signal;

said fourth flip-flop means being switched to a reset condition by said third AND signal thereby to inhibit the production of said control signal so that said true coin is segregated in said false coin direction when the time between two successively inserted coins is less than said predetermined time; and

fourth AND circuit means responsive to said third reset signal and said second coin detection signal to provide a fourth AND signal;

said fourth flip-flop means being switched to the reset condition by said fourth AND signal thereby also to inhibit the production of said control signal so that said segregating member segregates a false coin in said false coin direction.

4,228,812

COIN SORTER WITH STRIKER MEANS TO PROPEL NON-STANDARD SIZE COINS

Karl Marti, Zofingen, Switzerland, assignor to PREMA GmbH, Zofingen, Switzerland

Filed Dec. 13, 1978, Ser. No. 969,168

Claims priority, application Switzerland, Dec. 22, 1977, 15912/77

Int. Cl. G07D 3/12

U.S. Cl. 133-3 F

4 Claims



1. In a coin sorter of the type wherein coins lying against an inclined plate travel on a track past a plurality of sorting stations, each of which includes a detector having an actuating surface and an ejector associated with and following said detector along the route travelled by said coins, each said ejector being controlled by the associated said detector and including a deflector surface facing said detector, whereby when said ejector is moved to operative position by its associated detector, the coin located at said station is caused to ride along said deflector surface off of said track whereby it drops by gravity into collecting means located beneath the associated station, the improvement which comprises:

A pivotable feeler lever disposed after each said detector along said route and including a feeler-surface and

a thrust member associated with and following each said feeler lever along said route and controlled by the associated said feeler lever for assuming either a rest position wherein said thrust member is situated behind said plate or an operative position wherein said thrust member protrudes into the path of travel of said coins,

each successive said feeler-surface being situated at a lower level with respect to said track than that of the preceding said feeler-surface, and each said thrust member being situated at a predetermined distance from the associated said feeler lever as a function of the rate of travel of said

coins, whereby a movement of a said thrust member from said rest position into said operative position as controlled by the associated said feeler lever causes said thrust member to sharply strike one of said coins substantially in the center thereof to propel said coin over the top of said collection means for receipt by a separate receptacle.

4,228,813

LOW TEMPERATURE CONVEYOR, RACK-TYPE DISHWASHER

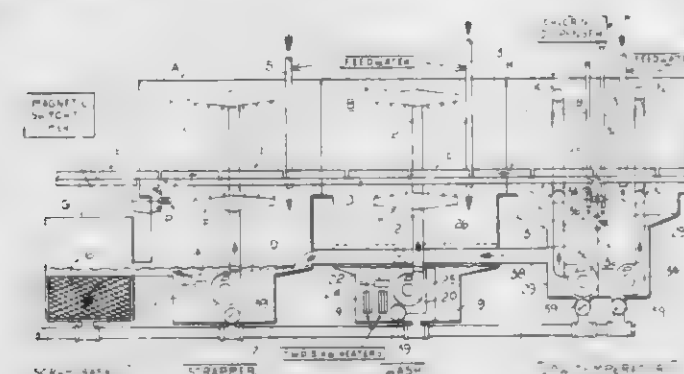
Tore H. Noren, 3200 Lakeville Hwy., Petaluma, Calif. 94952

Filed Apr. 2, 1979, Ser. No. 26,016

Int. Cl. B08B 3/02

U.S. Cl. 134-47

3 Claims



1. In a dishwashing machine, a two compartment ware rinsing and sterilizing module wherein the first compartment is for rinsing the wash water and detergent from the ware and the second compartment is for secondary rinsing with a sterilizing agent added for permitting hot water 140° F., to be used to sterilize the ware;

(a) means for moving the ware successively through the first and second compartments;

(b) a first water receiving tank underlying the first compartment for receiving hot rinse water therefrom;

(c) a first water circulating means in the first tank for removing water therefrom and spraying it onto the ware in the first compartment for removing the washwater and detergent from the ware;

(d) means for feeding fresh hot water at 140° F. and for metering a sterilizing agent into a second tank underlying said second compartment;

(e) a second water and sterilizing circulating means in the second tank for drawing sterilizing water therefrom and spraying it onto the ware in the second compartment for rinsing and sterilizing the ware; and

(f) means for receiving overflow water from the second tank and delivering it to said first tank for maintaining the level of water in said first tank.

4,228,814

CLEANING APPARATUS FOR TEST ELECTRODES

Peter Luethi, Uster, and Werner Steinmetz, Wetzikon, both of Switzerland, assignors to Zellweger Ltd., Switzerland

Filed Sep. 25, 1978, Ser. No. 945,395

Claims priority, application Switzerland, Sep. 23, 1977, 11624/77

Int. Cl. B08B 3/02

U.S. Cl. 134-58 R

7 Claims

1. A cleaning apparatus for test electrodes disposed in a vessel containing a solution to be analyzed by the test electrodes in which the test electrodes are adapted to be sprayed by a jet of cleaning solution issuing from a nozzle in accordance with a predetermined program, the cleaning apparatus comprising:

a pneumatically operating peristaltic pump means operatively connected with the nozzle for intermittently draw-

ing the cleaning solution from a storage container and for ejecting the cleaning solution through the nozzle against



the test electrodes so as to remove deposits of solids therefrom while the test electrodes remain in the solution.

4,228,815

MEASUREMENT AND CONTROL OF MULTICOMPONENT LIQUID SYSTEMS

Richard Juffa, Cologne; Georg Wawra, Leverkusen, and Walter Uerdingen, Schildgen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 696,153, Jun. 14, 1976, abandoned.

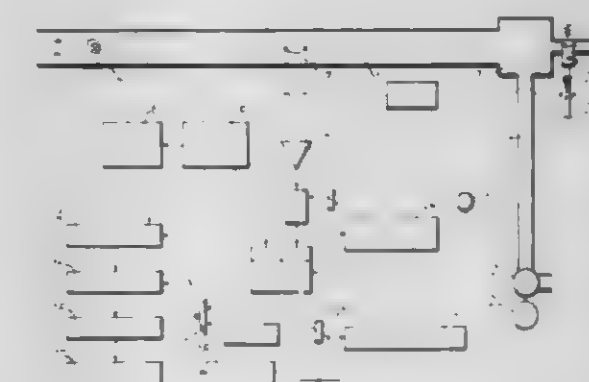
This application Jan. 11, 1978, Ser. No. 868,648

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1975, 2527378

Int. Cl. G05D 11/13

U.S. Cl. 137-10

11 Claims



11. A method for dosing multicomponent liquid systems in which the liquids have viscosities between about 50 and 2000 cP; the flowrate is between about 50 and 100 cm³/minute; and the components are conveyed by separate conduits into a mixing chamber comprising:

(A) injecting a thermopulse of between about 5 and 100 ms in duration into the liquid flowing in one of said conduits by means of a heater centrally mounted in the conduit carrying said liquid,

(B) simultaneously adjusting a bistable multivibrator to its set mode so that it allows pulses from a pulse generator to pass through a gate to a pulse counter,

(C) activating said pulse generator for at least one measurement cycle,

(D) detecting the arrival of the ascending flank of said pulse with a thermoelectric sensor mounted in said conduit between about 5 and 500 mm downstream of said heater.

- (E) amplifying the detection signal of said sensor and passing it to a comparator,
- (F) using said amplified signal to activate said comparator and using the output of said comparator to activate the reset mode of said bistable multivibrator thereby closing said gate to further pulses of said pulse generator,
- (G) converting the value accumulated in said pulse counter during the set/reset cycle of the multivibrator to a value equivalent to the velocity of said liquid by means of a permanently programmed ROM-code converter, and
- (H) storing the value accumulated in said impulse counter until the next set/reset cycle of the multivibrator is completed,
- (I) using the value equivalent to the velocity of said liquid to generate a voltage which is used to control the flowrates in the other conduits.

4,228,816

FIRE SAFE BUTTERFLY VALVE

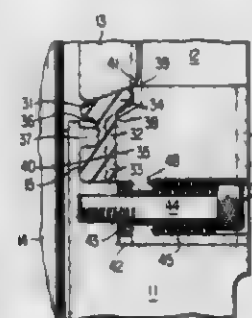
Tadashi Aoki, Ohmiya, Japan, assignor to Jamesbury Corporation, Worcester, Mass.

Filed Jan. 4, 1978, Ser. No. 866,870

Int. Cl.³ F16K 5/06, 17/40

U.S. Cl. 137-72

6 Claims



1. A butterfly valve comprising a housing defining a fluid flow channel, a shaft, a butterfly valve disc mounted on said shaft for rotation within said channel to control fluid flow therethrough, an annular resilient seat member circumscribing said channel to sealingly cooperate with the edge of said disc when said disc is perpendicular to said channel, a metal insert ring abutting said resilient seat and configured to provide a fulcrum against one side of said resilient seat, means for biasing said insert ring in sealing contact with said resilient seat, and fusible means positioned relative to said insert ring and spaced from said resilient seat to resist said biasing and hold the insert ring away from the valve disc to normally prevent metal-to-metal wear therebetween until exposure of the valve to fire destroys said fusible means, thereby permitting said insert ring to be biased toward said edge of said disc and contact same with secondary sealing means thereon to establish a metal-to-metal fire resistant seal.

4,228,817

VALVE CONSTRUCTION HAVING MULTIPLE PISTON MEANS

Marvin P. Weaver, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jun. 1, 1978, Ser. No. 911,403

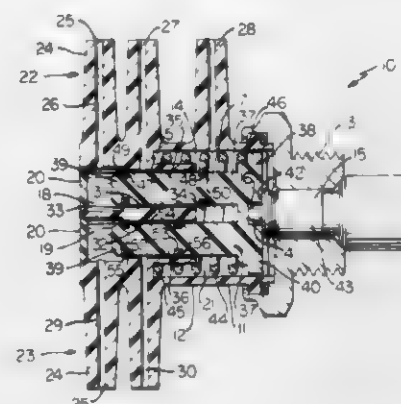
Int. Cl.³ F16K 27/04, 11/06

U.S. Cl. 137-79

14 Claims

1. In a valve construction having a housing means provided with a chamber and port means leading to said chamber and having an axially movable piston means disposed in said chamber to interconnect certain of said port means together in relation to the axial position of said piston means that is caused by a condition responsive device and a spring means operatively associated with said piston means, the improvement wherein said piston means comprises a plurality of pistons disposed in spaced substantially parallel relation and being

secured together to be axially moved in unison in said chamber under the influence of said condition responsive device, said



spring means comprising a single coiled compression spring telescopically receiving said pistons therein.

4,228,818

CROSSOVER RELIEF VALVE

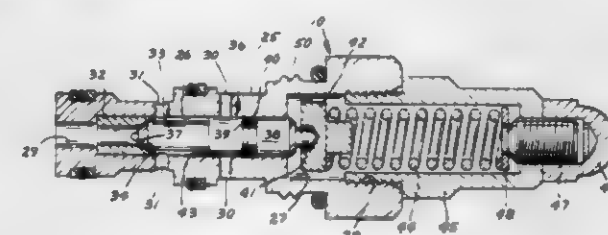
David J. Nelson, Bloomington, Minn., assignor to Victor Fluid Power, Eden Prairie, Minn.

Filed May 1, 1978, Ser. No. 901,597

Int. Cl.³ F15B 11/16

U.S. Cl. 137-115

4 Claims



1. A crossover relief valve for use in a hydraulic system having a pair of single acting hydraulic jacks and a reservoir which comprises,

- an elongated tubular valve body having a passageway extending axially therethrough, the body forming a first port at one end of the passageway adapted to be connected for fluid communication with one of said jacks,
- a closure means connected to the body closing the other end of the passageway,
- a piston disposed for axial sliding movement in the passageway between closed, partially open and fully open positions,
- a coil spring disposed within the passageway in compressed condition between the closure means and piston to yieldably retain the piston in a closed position over said first port,
- the body having second and third ports in its tubular wall spaced different distances from the first port and both communicating with the passageway, said ports respectively adapted to be connected for fluid communication with the other jack and the reservoir,
- the piston having a reduced portion between the first and second ports whereby, as the piston is displaced to a partially open position from a closed position, the first and second ports will have open communication through the passageway, and
- said piston having a shoulder located between the second and third port when the piston is in closed position or in said partially open position providing a closure between the passageway and the third port but adapted to move past and open the third port to the passageway when the piston is moved to its open position, said shoulder having a surface facing away from the spring means which is exposed to fluid pressure in both the first and second ports when the piston is in partially open position.

4,228,819

AXIAL FLOW THROTTLING VALVE

John M. Kruse, and Leland E. Gelnett, both of DuBois, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

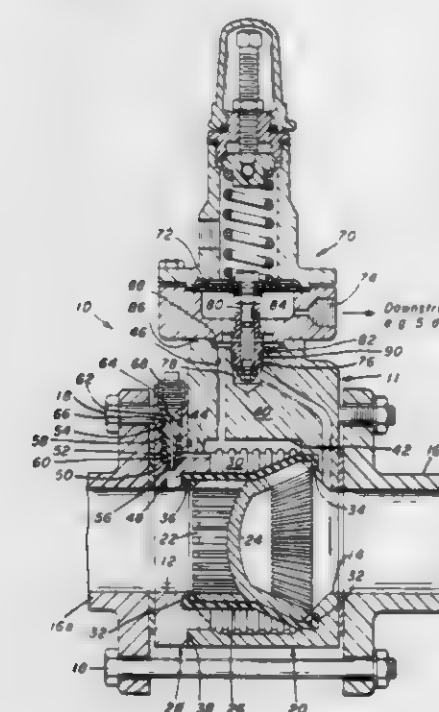
Continuation of Ser. No. 697,492, Jun. 18, 1976, abandoned.

This application Jul. 17, 1978, Ser. No. 925,069

Int. Cl.³ G05D 16/16

U.S. Cl. 137-489

3 Claims



1. A self-contained valve assembly for controlling the flow of gaseous fluid in a pipeline to maintain uniform downstream pressure with varying downstream load, comprising a housing having a main fluid passage therethrough, cage means and a resilient boot member in said main passage for controlling the flow of fluid therethrough, a chamber formed in the housing around at least a portion of said boot means, upstream passage means wholly contained in said housing connecting said chamber with said main passage at a point upstream of said cage, a variable restriction in said upstream passage means to control the rate of entry of upstream control fluid into said chamber, downstream passage means wholly contained in said housing connecting said chamber with said fluid passage at a point downstream of said cage, diaphragm controlled pilot valve means mounted on said housing having a control valve projecting into said downstream passage means to control the flow of control fluid out of said chamber through said downstream passage means, and means on said pilot valve means to facilitate a fluid connection between the diaphragm of said valve means and said pipeline downstream of said valve.

4,228,820

SEAT GUIDED POPPET VALVE HAVING FLOW AND DAMPENING CONTROL MEANS

Richard M. Deminski, Mount Vernon, Ohio, assignor to The Yorde Machine Products Company, Nelsonville, Ohio

Filed Dec. 30, 1977, Ser. No. 866,033

Int. Cl.³ F16K 15/02

U.S. Cl. 137-514.3

23 Claims

1. A seated guided poppet valve comprising a seat, a guard mated with said seat and a poppet element movable longitudinally within said guard and seat, said seat having a bore extending therethrough with an inlet port and an outlet port, said inlet port adapted to communicate with a source or sink of fluid, said guard having a first bore therein coaxially communicating with said seat bore and a second bore coaxial with and of lesser diameter than said first bore, said first bore being connected to at least one fluid channel, said poppet element comprising a substantially mushroom-shaped body having a cylindrical stem terminating at one end in a cap-like head, said head having seat-engaging means for forming a substantially fluid-tight seal

against said seat, said head terminating in a plurality of elongated vane-like flutes slidingly received within said seat bore and extending radially outward from the longitudinal axis of said poppet element, each of said flutes having a seat abutting surface along the longitudinal edge of the flute for guiding said poppet element solely within said seat bore, said poppet element being guided exclusively by said seat bore as said element reciprocates longitudinally, the junction of said flutes and said head forming concave surfaces extending in a smooth surface between said flutes and said seat engaging means for directing



the flow of fluid thereacross to reduce turbulence, said stem being received for longitudinal reciprocating movement within said second guard bore and containing a coaxial bore, said valve further including a compression spring contained within said stem bore and cooperating with said second guard bore for urging said poppet head toward said seat, whereby said seat engaging surface of said poppet head abuts said seat when said valve is closed to prevent fluid flow through said valve and is spaced from said seat when said valve is open to permit fluid flow through said valve.

4,228,821

GAS-TIGHT BALL VALVE

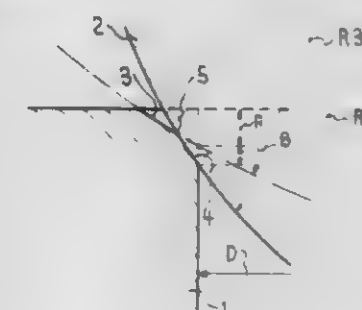
Karl Stark, Täuffelen, Switzerland, assignor to Saphirwerk Industrieprodukte AG, Nidau, Switzerland

Filed Jun. 7, 1978, Ser. No. 913,575

Int. Cl.³ F16K 15/04

U.S. Cl. 137-533.11

6 Claims



1. A gas-tight ball valve having a ball loosely resting on a valve seat made each of hard material, said valve seat being formed on a seat body having a bore and a face extending substantially radially outwardly from said bore, said valve seat being formed at the boundary between said bore and said face and having a broken edge between an inner spheric annular surface adjacent said bore and an outer spheric annular surface adjacent said face, each of said spheric annular surfaces having a radial width, the diameter of said valve bore, the radius of the ball, the radial width of said inner annular surface and the radial width of said outer annular surface being in a proportion of substantially 120:75:3:5.

4,228,822

STREAM THROTTLE

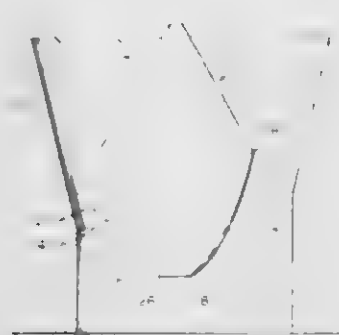
Glen W. Fisher, Bellevue, Wash., assignor to Technovators, Inc., Seattle, Wash.

Continuation of Ser. No. 795,419, May 9, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 940,989

Int. Cl. D03D 39/20

U.S. Cl. 138-46

7 Claims



1. Apparatus for controlling flow of particulate material through an orifice, which apparatus comprises means for forming a hopper surface extending upstream from said orifice, and a flow control assembly located adjacent said orifice, said flow control assembly including an upstream surface, said upstream surface having means for directing particulate material toward said hopper surface upstream from said orifice and control zone forming means for forming a flow control zone immediately above said orifice in which the rate of increase in velocity of particulate material flow is minimized as the particulate material approaches said orifice, said control zone forming means including a downstream surface connected to said upstream surface, said downstream surface formed as a surface of revolution having a parabolic vertical cross-section, said downstream surface curving away from said hopper surface in vertical cross-section while being spaced from said hopper surface and means mounting said flow control assembly relative to said hopper surface to cause said downstream surface to extend partially through said orifice for maintaining uniform flow of particulate material from said hopper surface toward said orifice with the particulate material making essentially continuous contact with said downstream surface to minimize the rate of increase in velocity of particulate material as the particulate material flows toward said orifice.

4,228,823

GARDEN HOSE THREAD PROTECTOR

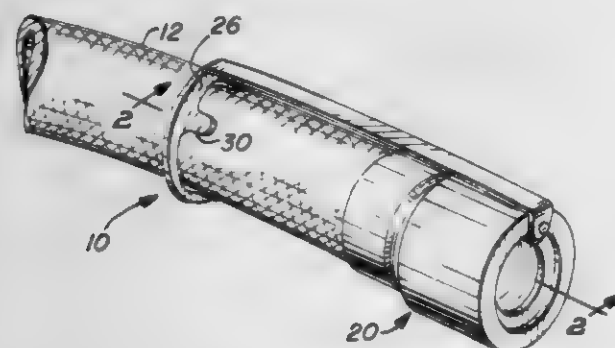
Lamberto C. Zepeda, 492 Santa Rita, Superior, Ariz. 85273

Continuation of Ser. No. 894,571, Apr. 7, 1978, abandoned. This application Jul. 10, 1979, Ser. No. 56,339

Int. Cl. B65D 59/06

U.S. Cl. 138-96 R

7 Claims



1. A garden hose comprising:
a. a flexible tubular body portion including,
i. an outer surface, and
ii. a free end; and

b. a nipple secured to the free end of said body portion and including,
i. external threads, and
ii. an end;

in combination with a protector for said nipple, comprising:
c. a protective cap including,
i. a cylindrical wall engaged with the external threads of said nipple, and
ii. an intumed flange integral with said wall and overlying the end of said nipple, and
d. a tether for securing said cap to said hose and including,
i. an anchor ring formed with means for frictionally engaging the outer surface of said body portion,
ii. a strap having one end integrally joined to said anchor ring and having another end, and
iii. means at the other end of said strap for detachable securement to said cap.

4,228,824

HOSE

Brian Evans, and Maurice Calverley, both of Lancaster, England, assignors to Dunlop Limited, London, England

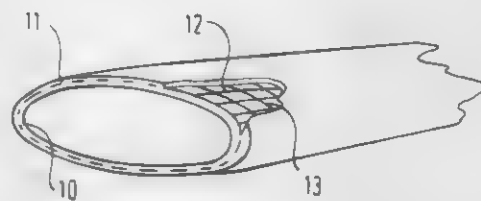
Filed Aug. 22, 1978, Ser. No. 935,755

Claims priority, application United Kingdom, Aug. 25, 1977, 35661/77

Int. Cl. F16L 11/08

U.S. Cl. 138-119

14 Claims



1. A hose of the layflat type comprising a reinforcement structure having warp elements extending along the length of the hose in a direction generally parallel to the direction of the length of the hose, the warp elements comprising plied yarns formed of filaments of a material having a modulus greater than 1.2 g/decitex which resist longitudinal extension of the hose, and said warp elements having a twist greater than 160 turns per meter to assist in providing stability to the hose wall when compressed during curving of the hose under hydraulic pressure.

4,228,825

TRANSMISSION LINE CARRIER

Werner Moritz, Siegen; Kurt Loos, Netphen, and Friedrich Haschek, Siegen, all of Fed. Rep. of Germany, assignors to Kabelschlepp Gesellschaft mit beschränkter Haftung, Siegen, Fed. Rep. of Germany

Filed Jan. 9, 1979, Ser. No. 2,194

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805832

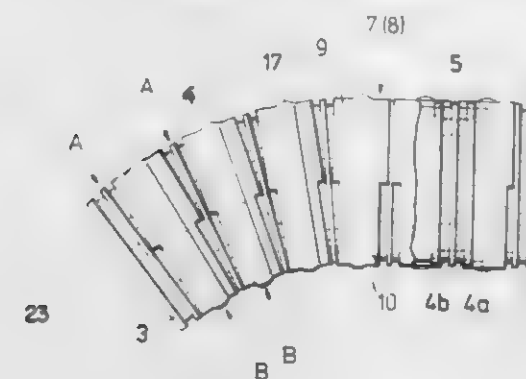
Int. Cl. F16L 11/18

U.S. Cl. 138-120

23 Claims

1. A self-supporting transmission line carrier between a moveable consumer and a stationary connection comprising a row of a plurality of two adjacent tubular members articulated only in one direction with respect to one another and engaged in one another including, wide tubular members each with inwardly directed abutments and narrow tubular members each with outwardly directed abutments alternately arranged slidably engaged in each other, said tubular members having a non-circular cross-section thereby being axially non-rotatable relative to each other, the narrow tubular members each forming a channel therearound by and between said outwardly directed abutments thereof, each of said wide tubular members is shortened on both sides thereof viewed in a longitudinal direction of the transmis-

sion line carrier in the vicinity of a longitudinal cross-section half of the transmission line carrier, a bottom end portion of each said wide tubular members relative to a top end portion of each said wide tubular members is shorter in said longitudinal direction approximately by the width of said channel in the longitudinal directions.



each of said wide tubular members comprises two tubular member halves each with a U-shaped cross-sectional form, said tubular member halves are pushed together on said narrow tubular members with respect of said inwardly and outwardly directed abutments interengaging so as to be joined to form said transmission line carrier.

4,228,826

INTERLOCKING, LAMINATED REFRACTORY FOR COVERING A PIPE

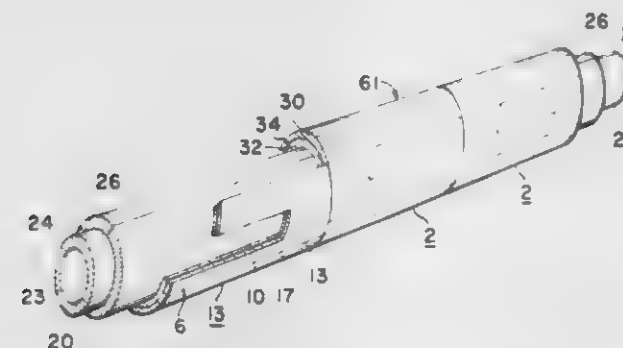
Frank Campbell, Jr., 2274 Broadlawn Dr., Houston, Harris County, Tex. 77058

Filed Oct. 12, 1978, Ser. No. 950,633

Int. Cl. F27D 9/00, 3/02

U.S. Cl. 138-149

3 Claims



1. A laminated cylindrical refractory produced by forming a first slurry of ceramic fibers, water and a binder, submerging a perforated cylindrical mold into the slurry, the perforations of said mold in communication with a partial vacuum source which tends to draw the slurry toward the perforated vacuum mold; permitting the ceramic fibers of the first slurry to be deposited as a substantially cylindrical inner ceramic fiber layer upon the exterior of the perforated mold; withdrawing the perforated mold and the deposited inner layer from the slurry when a desired thickness of the inner layer has been deposited upon the perforated mold; superimposing a mesh reinforcement around the inner layer; forming a second slurry of ceramic fibers, water and a binder, the fibers in said slurry being more resistant to slag attack, high temperature and corrosive gases than the fibers in the first slurry; submerging the perforated mold, inner layer and superimposed mesh into the second slurry and communicating a partial vacuum through the mold perforations and through the inner layer such that an amount of the second slurry is drawn toward the inner layer and the metal mesh; permitting an amount of the ceramic fibers in the second

slurry to be deposited on the mesh and the inner layer as outer ceramic fiber layer; withdrawing the perforated mold, inner layer, mesh and outer layer from the second slurry; removing the perforated mold from the inner layer, mesh and outer layer, thereby leaving a substantially cylindrical, laminated refractory; curing the laminated refractory until the desired rigidity is achieved;

forming substantially radial edge surfaces at each end of the cylindrical laminated refractory;

severing the cylinder along substantially radial surfaces into two substantially identical first and second main segments, whereby each main segment forms:

(a) a body segment partially defined by first and second radially aligned surfaces extending longitudinally less than the length of the cylindrical, laminated refractory.
(b) first and second protuberances in proximity to and spaced apart angularly from the first and second radially aligned surfaces respectively, said protuberances extending longitudinally less than the body segment and angularly spaced apart from each other by a void, and
(c) first and second recesses bounded longitudinally by the first radially aligned surface and the first protuberance and the second radially aligned surface and the second protuberance respectively, wherein the body segment, first and second protuberances and the first and second recesses for each main segment are positioned on a common cylindrical radius such that when the first and second main segments are axially aligned and urged longitudinally together, the first body segment and the second body segment occupy the void of the second main segment and the first main segment respectively, the first and the second protuberances on the first main segment are closely received by the first and second recesses respectively of the second main segment, and the first and second protuberances of the second main segment are closely received by the first and second recesses respectively of the first main segment, thereby forming an interlocking, laminated refractory of substantially the same cylindrical shape of the refractory as removed from the perforated mold

4,228,827

HEDDLE FOR A WEAVING MACHINE FOR MAKING TRIAXIAL FABRICS

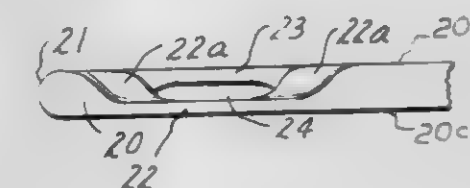
Wayne C. Trost, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Jan. 30, 1979, Ser. No. 7,760

Int. Cl. D03C 13/00

U.S. Cl. 139-93

12 Claims



1. An elongate heddle for a weaving machine for making

triaxial fabrics wherein the heddle is adapted to be moved longitudinally during a warp shed forming operation and also is adapted to be shifted weftwise of the weaving machine, said heddle being an elongate strip material and comprising a frontal portion terminating in a nose portion comprising a rounded free end and a warp strand guide portion having a warp strand guide opening extending therethrough wherein the improvement comprises said nose portion being of substantially the same thickness as the major portion of said frontal portion and said warp strand guide portion is formed to provide a warp strand path which is at least partially within the thickness dimension of the nose portion.

4,228,828

ELECTRONIC THREAD MONITORING DEVICE FOR GRIPPER SHUTTLE WEAVING MACHINES

Erich Loeffe, Pfaffhausen, and Erich Weidmann, Wetzikon, both of Switzerland, assignors to Gebrüder Loeffe AG, Zürich, Switzerland

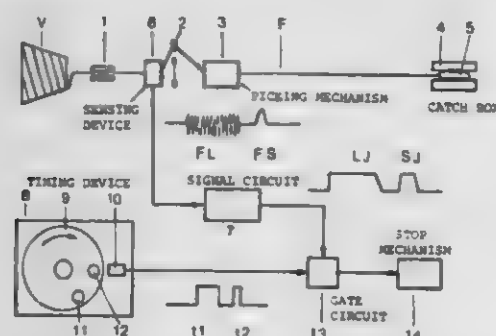
Filed Oct. 30, 1978, Ser. No. 956,277

Claims priority, application Switzerland, Nov. 1, 1977, 13374/77

Int. Cl.² D03D 51/34

U.S. Cl. 139—370.2

6 Claims



1. In a gripper shuttle weaving machine provided with means for picking the gripper shuttle, means for receiving and stopping the gripper shuttle at the end of each filling thread insertion, means for returning the gripper shuttle from a stop position into a defined thread releasing position, and means for tensioning the filling thread during the returning interval of the gripper shuttle, the improvement which comprises:

an electronic thread monitoring device comprising means arranged at the picking side of the weaving machine for sensing the filling thread and producing a first signal indicative of thread travel and a second signal indicative of thread tensioning;

sensing means comprising at least one transducer system generating a first high frequency signal indicative of thread travel and a second low frequency signal indicative of thread tensioning during said returning interval;

means actuated by the weaving machine for generating a first timing pulse within the filling thread insertion interval, and a second timing pulse within said returning interval; and

gating means controlled by said first and second signals and first and second timing pulses, for generating a stop signal when no first or second signal exists during the first and second timing pulses, respectively.

4,228,829

WEBBING FOR SEAT BELT

Kouichi Kikuchi, Sizuoka, Japan, assignor to NSK-Warner K.K. and Kikuchi Kogyo K.K., both of Tokyo, Japan
Division of Ser. No. 917,587, Jun. 21, 1978, which is a division of Ser. No. 781,433, Mar. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 652,771, Jan. 27, 1976, abandoned. This application Mar. 30, 1979, Ser. No. 25,573

Int. Cl.² D03D 11/00

U.S. Cl. 139—408

2 Claims

1. An energy-absorbing webbing for seat belts of at least double weave structure comprising first wefts of high extensibility, second wefts of water-soluble threads to be removed after weaving the webbing, the first and second wefts being alternately arranged, first warps of high extensibility interlaced with the first wefts, and second warps selected from threads of

bility, second wefts of water-soluble threads to be removed after weaving the webbing, the first and second wefts being alternately arranged, first warps of high extensibility interlaced with the first wefts, and second warps selected from threads of



low and medium extensibility and woven to be interlaced with only the second wefts, whereby after removal of said second wefts said second warps are in undulated structure in the direction of the thickness of the webbing.

4,228,830

METHOD AND DEVICE FOR MANUFACTURING A SINGLE-PIECE BINDER WITH A HANGER FOR SHEET PACKS

Hratch Boyadjian, Seestrasse 19, CH-8703 Erlenbach, Switzerland

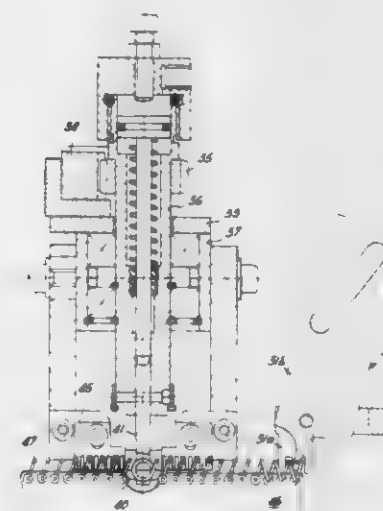
Filed Mar. 29, 1979, Ser. No. 25,086

Claims priority, application Switzerland, Apr. 5, 1978, 3634/78

Int. Cl.³ B21F 35/02

U.S. Cl. 140—102

17 Claims



1. A method of forming a hanger eye in a wire binding comprising the steps of: forming a plurality of parallel loops in a continuous wire, each extending through a stack of sheets adjacent one edge thereof to bind the stack of sheets together; forming a recess in the one edge of the stack of sheets having at least one loop therein which does not extend through the stack of sheets; supporting the bound stack with the recess exposed; providing a pair of tongs forming a loop-clamping jaw which can be closed to grasp a loop; moving the tongs into the recess in a direction perpendicular to the edge of the stack and around at least one loop within the recess; closing the jaw to grasp the at least one loop in the recess; rotating the jaw with grasped loop to rotate the loop approximately 90° in the recess and form a hanger eye; opening the jaw to release the loop now in the form of a hanger eye; and moving the tongs away from the recess in a direction perpendicular to the stack eye.

4,228,831

PROBE AND SYRINGE DRIVE APPARATUS

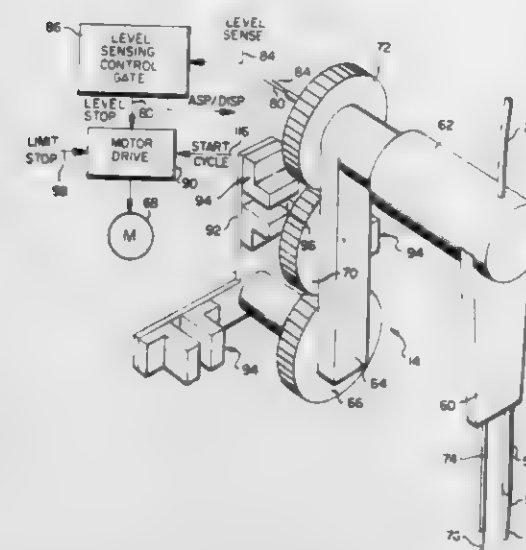
Ralph M. Kerns, Dallas, Tex., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,151

Int. Cl.³ B65B 3/32

U.S. Cl. 141—27

3 Claims



1. In automatic dispensing apparatus for sequentially transferring liquids from a plurality of sample containers having different sample levels to respective analysis containers, including a pipet probe assembly having an elongated pipet probe, probe drive means for inserting said pipet probe into said sample and moving said pipet probe assembly between said sample containers and said analysis containers, aspirating means for aspirating a respective sample into said probe, and dispensing means for dispensing the aspirated sample into said respective analysis containers, the improvement comprising: said pipet probe having a beveled tip with the angle of said bevel being about 25°-35° with respect to the longitudinal axis of said tip;

an elongated level sensing probe mounted to and extending downwardly from said pipet probe assembly, said level sensing probe including a needle-like tip extending adjacent said pipet probe;

said pipet probe tip extending slightly below said needle-like tip a distance defining the amount of minimal penetration of said pipet probe tip below a respective sample level;

syringe means including a syringe fluidly coupled to said pipet probe,

said syringe means including for aspirating a small amount of air into said pipet probe upon signalled movement of said probe assembly towards said sample containers said immediately prior to said pipet probe tip entering said sample to prevent dilution of said sample;

and control means coupled intermediate said syringe means, said level sensing probe and said probe drive means, for signalling said movement of said probe assembly towards said sample container and responding to said needle-like tip contacting the level of a respective sample to stop said probe drive means to minimize the penetration of said pipet probe tip below the level of said respective sample.

4,228,832

VACUUM ENCAPSULATING APPARATUS

Frank R. Brown, 84 Stony Hill Rd., Brookfield Ctr., Conn. 06805

Filed Feb. 13, 1978, Ser. No. 877,268

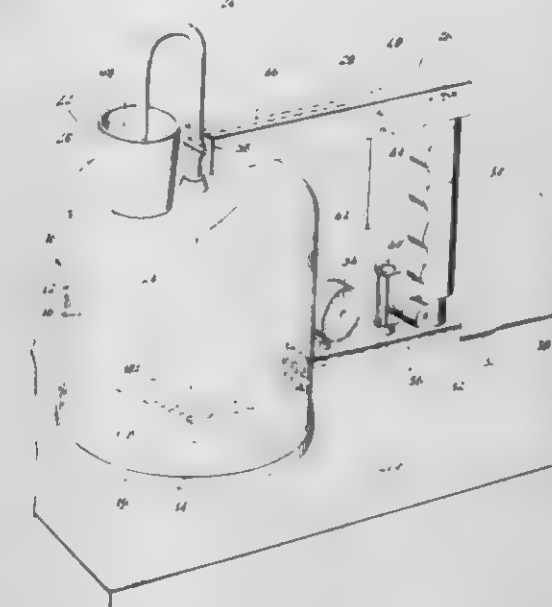
Int. Cl.³ B65B 31/02

U.S. Cl. 141—51

17 Claims

1. Portable vacuum potting apparatus comprising a bell having an interior chamber that has a bottom opening, the edge region of which is adapted for juxtapositioning to an associated surface in vacuum tight relationship thereto, and an associated carrying handle, said apparatus including means for interconnecting the inte-

rior of said bell with a vacuum source and fluid conduit means describing a flow-path to the interior of said bell through which fluid may pass from an associated container.



and said handle including regulating means for regulating the flow of fluid through said fluid conduit.

4,228,833

ECOLARIUM AQUARIUM FILLER

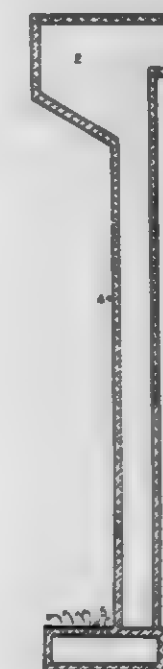
Otto A. Roehrick, 1333 Elkhorn Blvd., Rio Linda, Calif. 95673

Filed Oct. 4, 1976, Ser. No. 729,307

Int. Cl.³ B65B 39/00; B67C 11/02

U.S. Cl. 141—340

2 Claims



1. An ecolarium filler comprising an output container member having a solid bottom wall, solid side walls and a top wall having a portion thereof containing a plurality of small apertures of uniform size and shape, an upper input container member being substantially co-extensive with said output container member and having an opening in the top thereof, and a conduit providing a fluid passage way extending from the bottom of said input container member through the top of the said output container member, said input container member having a wall extending beyond a portion of the bottom wall thereof and being parallel to and spaced from the said conduit, the said extended wall, the said bottom portion and the said conduit combined forming a C-shaped channel anchoring means for

securing the filler and aligning the same to a vertical wall of a ecolarium.

4,228,834 SOAP BAG

Shirley Desnick, 2540 Monterey Ave., Minneapolis, Minn. 55426

Filed Aug. 30, 1979, Ser. No. 71,745

Int. Cl. A47K 7/03

U.S. Cl. 150—3

5 Claims



1. A bag for hand soap comprising a strip of plastic mesh fabric folded together to provide front and rear sections, the sides having inwardly extending flap portions, and the upper edge having inwardly and downwardly extending flap portions,
- a pair of narrow strips disposed between the inwardly extending flap portions of the front and rear sections, and stitched to such inwardly extending portions to provide a bag having a bottom and closed sides, one of the strips having a loop segment extending above the mouth of the bag,
- a band of fabric running around the mouth of the bag at a point down from the top thereof, the band being stitched to the front and rear sections of the mesh fabric and also to the inwardly and downwardly extending flap thereof,
- a Velcro fastener stitched to the fabric band within the mouth of the bag to allow temporary closing of the bag, and
- a strap secured to the loop segment of the narrow strip stitched to one side of the bag.

4,228,835

BREAKAWAY CAP FOR SOLUTION CONTAINERS
Carleton D. Robinson, Des Plaines, Ill., and Jack J. A. Debrauwere, Roosdaal, Belgium, assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 23, 1979, Ser. No. 14,443

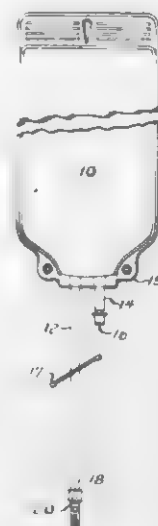
Int. Cl. B65D 41/32

U.S. Cl. 150—8

9 Claims

1. In a container of the type having a flexible tube extending therefrom and having a first connector at the distal end of the flexible tube for connecting to a second connector, the improvement comprising: a breakaway cap connected to said first connector which normally closes the first connector to fluid flow but which opens the fluid flow path when the cap is broken away, said breakaway cap having a frangible annular section of reduced thickness, and handle means extending longitudinally outwardly from said breakaway cap and first connector along the axis of said breakaway cap, said break-

away cap comprising a molded member made of a flexible plastic similar in physical properties to polyvinyl chloride and



having a hardness of essentially 85 to 100 on the Shore A Durometer scale.

4,228,836 KEY CASE

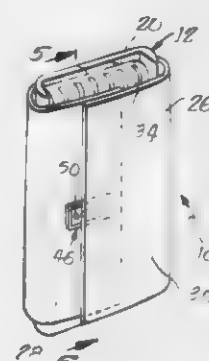
Donald McFarland, Santa Barbara, Calif., assignor to Amity Leather Products Company, West Bend, Wis.

Filed Aug. 15, 1979, Ser. No. 66,650

Int. Cl. A45C 11/32

U.S. Cl. 150—40

3 Claims



1. A key case comprising a rigid rectangular open-top box member for providing shape and rigidity to the key case; a plurality of key retaining members operably fixed to the interior of said rectangular box member; a flexible flap member received through slots extending along the edges of the rectangular member for folding over the open top of said rectangular box member; and means for releasably fastening the ends of said flap to each other.

4,228,837

LOCKING WASHERS

Keith Lyons, 37 Heswall Mount, Thingwall, Wirral, Cheshire, England

Filed Apr. 25, 1978, Ser. No. 899,779

Claims priority, application United Kingdom, Apr. 28, 1977, 17740/77

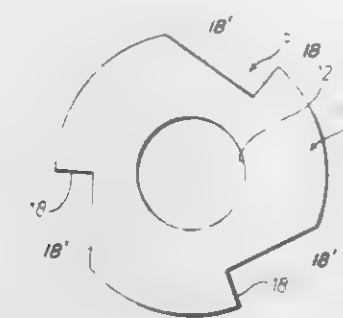
Int. Cl. F16B 39/14, 39/02

U.S. Cl. 151—35

2 Claims

1. A washer having a screw-thread formed in a central bore thereof to enable the washer to be screwed onto a screw-threaded bolt member the washer being adapted for tensioning itself against a surface when screwed up against the surface for increasing friction between the washer and the screw-threaded member; wherein the washer is resilient and substantially dish-shaped for tensioning itself against said surface, and is formed with at least one peripheral recess therein defined by two edges one of which passes substantially radially inwardly from the

periphery of the washer and the other of which passes along a line such that said one edge is not faced by said other edge of the recess, such that when said washer is screwed up and



tensioned against said surface and in flattened condition, there is exerted a constant locking force by said washer regardless of the position to which the bolt member is thereafter screwed.

4,228,838

DEVICE FOR PREVENTING SKIDDING AND FOR INCREASING THE GRIP OF VEHICLE WHEELS ON ICE AND SNOW

Hellmuth Zerlauth, Innsbruck, Austria, assignor to Niveau AG, Basel, Switzerland

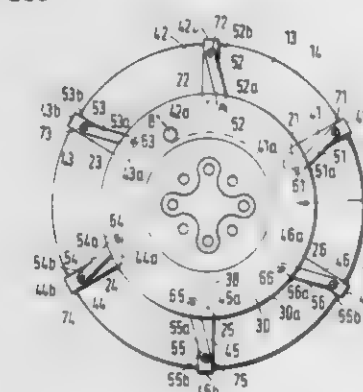
Filed Nov. 3, 1978, Ser. No. 957,099

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750111

Int. Cl. B60C 27/00

U.S. Cl. 152—216

24 Claims



1. An anti-skid mechanism for a vehicle wheel which includes a wheel rim having an axis of rotation comprising: a first member affixed to said wheel and extending generally transversely relative to said wheel axis; a second member axially spaced from said first member on a side thereof opposite said wheel and also extending generally transversely relative to said axis; means for rotating said second member relative to said first member about said axis; a plurality of anti-skid arms pivotally mounted on said first member; and lever means pivotally mounted between each of said anti-skid arms and said second member to drive said anti-skid arms between an operative position and an inoperative position by rotation of said second member relative to said first member.

4,228,839

SELF-SEALING PNEUMATIC TIRE

Georg G. A. Böhm, Akron, and Mario DeTrano, Massillon, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 3, 1978, Ser. No. 930,769

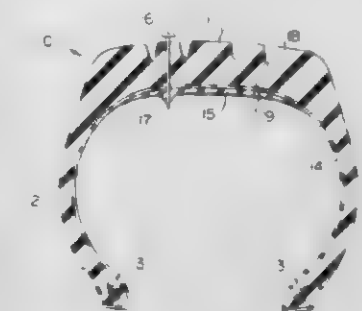
Int. Cl. B60C 5/14, 17/00

U.S. Cl. 152—347

8 Claims

6. A self-sealing pneumatic tire comprising an annular road-engaging tread surface, two sidewalls each connecting a side of said tread surface to an annular bead, reinforcing body plies extending from one bead to the other through the sidewalls

and tread and a puncture-sealant layer located in the crown area of said tire radially inward of said reinforcing body plies, said puncture-sealant layer comprising a blend of a first polymeric material that degrades on exposure to irradiation and a second polymeric material that crosslinks on exposure to irradiation; vulcanization temperatures or both to form an elastic matrix for said first polymeric material, said tire manufactured by the steps comprising providing a layer comprised of blended rubber compound with said blend of said first and



4,228,840

SAFETY WHEEL

Motohiro Okada, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

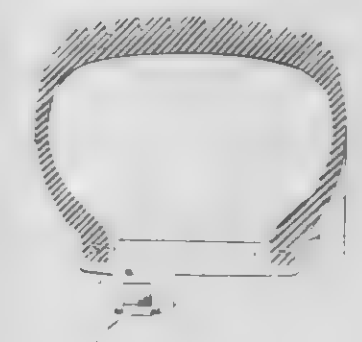
Filed Aug. 9, 1978, Ser. No. 933,117

Claims priority, application Japan, Aug. 12, 1977, 52-108408[U]

Int. Cl. B60C 5/12

U.S. Cl. 152—400

2 Claims



1. A safety wheel apparatus employing, a tubeless tire mounted on a rim about the periphery thereof, said rim being formed with flange members; an air chamber defined by said rim and said tubeless tire, a bead stopper disposed within said air chamber for gripping portions of said tubeless tire in cooperation with said flange members to contain bead portions of said tire against axial displacement relative to said rim; said bead stopper being defined by a plurality of interconnected rigid circular bead stopper units, one of at least a pair of said interconnected bead stopper units being formed at one end with a male connecting section having connecting pins, and another end thereof formed with a female connecting section having hook-like locking concave portions, said locking concave portions and connecting pins of said female and male section respectively, being disengageably connected to each other, wherein: said bead stopper units are flexibly connected in a radial direction thereof so as to form an endless configuration with an inner peripheral surface thereof fitted into a rim base of said rim; said rim being further defined by an outboard

section with a body portion formed by a base of narrow width and a first flange member integrally formed along an outer edge of said portion and an inboard section with a body portion formed by a base of a width greater than said body portion of said outboard section and a second flange member integrally formed along an outer edge of said inboard body portion, said outboard and inboard portions being respectively affixed to one another by bolt means to enable cooperative placement with said bead stopper.

4,228,841

EXTRUDED MATERIAL FOLDING DOOR WITH PANEL LOCK

Guy E. Dixon, Miami, Fla., assignor to Panelfold Doors, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 243,734, Apr. 13, 1972, Pat. No. 3,972,365. This application Jun. 4, 1975, Ser. No. 583,525

Int. Cl.² E05D 15/26

U.S. Cl. 160—183

6 Claims



1. A folding closure comprising a plurality of elongated vertical panels, hinge means connecting the vertical side edges of adjacent panels together to enable relative pivotal movement of the adjacent panels for extending and retracting the closure during movement between closed and open positions, each hinge means comprising a continuous male hinge element on one side edge of each panel and a continuous female hinge element on the other side edge of each panel, said male and female hinge elements being interengaged by relative end to end longitudinal movement between adjacent panels, and means associated with said hinge elements to preclude relative longitudinal movement between adjacent panels while permitting relative pivotal movement therebetween, said means including projecting means stationary with respect to one of the hinge elements and engaged with recess means in the other hinge element to prevent relative longitudinal movement between the hinge elements, said projecting means and recess means being spaced longitudinally inwardly from the ends of the hinge elements, said female hinge element being of generally channel-shaped configuration and said male hinge element being of generally cylindrical configuration with each of the hinge elements including a longitudinally continuous throat arranged so that when the entrance throats are registered in end to end relation, the hinge elements are interconnected by longitudinal movement of the panels to a position alongside of each other with the entrance throats being such as to prevent lateral disengagement of the hinge elements, said channel-shaped hinge element having said projecting means stationary with respect thereto and said cylindrical hinge element having said recess means therein receiving the projecting means, said means associated with said hinge element being in the form of a locking member, said locking member being stationarily engaged with the channel-shaped hinge element and including a projecting means interiorly thereof engaged with the recess means in the cylindrical hinge element, said channel-shaped hinge element including an opening through the bight portion thereof, said locking member including a plate engaging the exterior of the bight portion and said projecting means including a lug projecting from the plate, said lug extending through the opening in the bight portion of the channel-shaped hinge element and engaged in said recess means, said recess means being in the form of a slot through the generally cylindrical male hinge element, said channel-shaped hinge element including a flange opposite to and generally paralleling the bight portion with said flange being imperforate, said lug extending completely through the slot and terminating in a flat end surface adjacent the flange thereby being cantilever supported

solely from the bight portion of the channel-shaped hinge element.

4,228,842

LATCH FOR FOLDING AND SWINGING DOORS

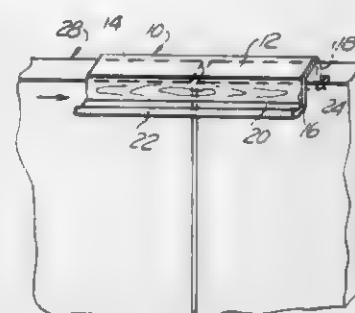
Richard J. Clark, 38582 Grandon, Livonia, Mich. 48150

Filed Oct. 13, 1978, Ser. No. 950,994

Int. Cl.¹ E06B 3/12

U.S. Cl. 160—234

4 Claims



1. A latch for a multi-panel door comprising at least a pair of juxtaposed aligned panels when said door is closed, said latch comprising a U-shaped channel member slidably disposed over the top edge of one of the panels forming said door and slidable to a position straddling over the top edges of both panels when said panels are aligned with each other, said U-shaped channel member having a pair of opposite substantially parallel side walls and at least one of said sidewalls being provided with an integral outwardly extending flange portion disposed substantially at right angle thereto, and means co-operating with one of said sidewalls for fitting said U-shaped channel member over panels of various thickness, said means comprising a rail member having a pair of opposed exterior side surfaces, said rail member being slidable over the flanged edge of one of the sidewalls and having a longitudinal slot for mounting over the flanged edge of said sidewall, said slot being disposed at unequal distance from each of said side surfaces.

4,228,843

ROLL BLIND

Hitoshi Kobayashi, c/o Yokota Inc. of No. 7-2, 5-chome, Ueno, Taito-ku, Tokyo, Japan

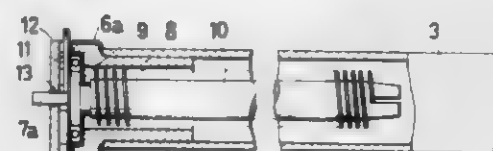
Filed Apr. 21, 1978, Ser. No. 898,861

Claims priority, application Japan, May 7, 1977, 52-57862[U]

Int. Cl.² E06B 9/208

U.S. Cl. 160—306

6 Claims



1. A roll blind comprising an elongated cylindrical roll member having an open end and an internal chamber adjacent to said open end, a winding shaft rotatably mounted within said chamber having an end portion extending beyond said open end, spring means disposed within said chamber connected between said winding shaft and said roll member for rotating said roll member relative to said winding shaft, a winder disposed adjacent to said open end and operatively connected to said end portion for winding said winding shaft and tensioning said spring means, engaging means engageable with said roll member and said winder for preventing relative rotation between said winder and said roll member, said engaging means being withdrawable from said winder and said roll member to permit relative motion therebetween, and said winder including a substantially planar body and a rimmed edge transversely

extending from a side of said body disposed adjacent to said open end, and means formed within said body for receiving said engaging means including rim passages extending through said rimmed edge at oppositely disposed locations.

4,228,844

STRAND GUIDING STAND FOR CONTINUOUS CASTING APPARATUS

Werner Scheurecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

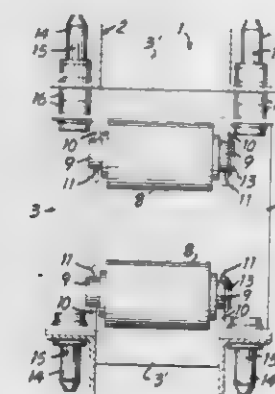
Filed Jun. 23, 1978, Ser. No. 918,472

Claims priority, application Austria, Jul. 7, 1977, 4866/77

Int. Cl.¹ B22D 11/128

U.S. Cl. 164—448

8 Claims



1. In a strand guiding stand to be used in a continuous casting plant, in particular a casting plant for billets or bloom, and of the type including longitudinal beams and cross beams forming a cage-like carrying structure and strand guiding rollers for guiding a strand along a strand guide path and having roller axles, said strand guiding rollers being mounted in said cage-like carrying structure, the improvement comprising roller holding means accommodating the roller axles and being fastened to the longitudinal beams independently of the cross beams, thereby fastening the strand guiding rollers of each side of the strand guiding stand directly to the longitudinal beams, independently of the cross-beams, said roller holding means having an L-shaped cross section taken normal to a longitudinal axis of an associated longitudinal beam with one section accommodating the roller axles and the other section, which is at a right angle with the one section, being detachably mounted directly to the pertaining longitudinal beam; and pins directed substantially perpendicular to the strand guide path, longitudinal beam and associated other section of said roller holding means for mounting the roller holding means on the longitudinal beams, each of said pins penetrating a longitudinal beams and the associated other section of the holding means.

4,228,845

CHILLER WITH MEANS FOR MIXING HOT VAPORS WITH COLD OR REFRIGERATED LIQUID

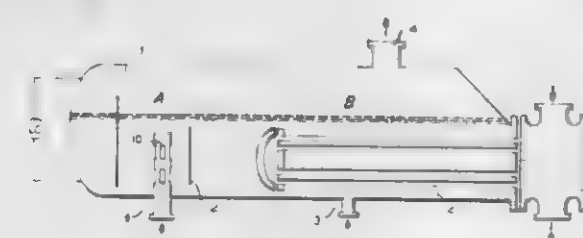
Edgar C. Cowling, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 26, 1978, Ser. No. 872,705

Int. Cl.² F28B 9/04; F28F 9/22

U.S. Cl. 165—1

17 Claims



7. A shell and tube type heat exchanger, said shell being

substantially horizontally disposed and having positioned therein a nest of tubes, chilling introducing means for introducing chilling medium into said shell into contact with said tubes, said tubes being adapted to be cooled directly by chilling medium introduced to within said shell through said introducing means to surround said tubes, said tubes extending within said shell from one end portion thereof toward but not completely to the other end thereof leaving a section at the other end of said shell not containing any portion of said nest of tubes, means for maintaining said tubes substantially submerged in chilling medium liquid within said shell and a level of liquid surrounding said tubes below the upper portion of said shell to provide a vapor removal and collection from the surface of said liquid, an inlet for hot vapors in direct open communication with said section at said other end of said shell adapted for the direct introduction of vapor into liquid in said section and a baffle in said section disposed between said inlet and said nest of tubes whereby to prevent any of said hot vapors from causing disturbance of chilling medium in said shell surrounding said tubes.

4,228,846

CONTROL APPARATUS FOR A TWO-SPEED HEAT PUMP

Michael E. Smorol, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,259

Int. Cl.¹ F25B 13/00

U.S. Cl. 165—2

12 Claims

1. A control circuit for air conditioning apparatus for providing heating and cooling to an area to be conditioned including a refrigeration system having indoor and outdoor heat exchangers, a compressor powered by a multispeed motor, and expansion means connected to form a refrigerant flow control circuit which comprises:

means for energizing the compressor motor at low speed, means for energizing the compressor motor at high speed, means for switching between the cooling mode of operation and the heating mode of operation, a first temperature sensitive means in communication with the air in the enclosure, said first temperature sensitive means being connected in both the cooling mode and the heating mode to the means for energizing the compressor motor at low speed upon the temperature of the enclosure varying a first predetermined amount and to the means for energizing the compressor motor at high speed upon the temperature in the enclosure varying a second predetermined amount; a second temperature sensitive means in communication with outdoor ambient air responsive only in the heating mode for energizing the means for actuating the compressor motor at high speed regardless of whether or not the temperature in the enclosure varied the second predetermined amount when the ambient air temperature is below a first predetermined level; and defrost means for operating the refrigeration system in the cooling mode when a defrost need is sensed.

6. A method of controlling air conditioning apparatus supplying conditioned air to an enclosure, including a refrigeration system capable of being operated to provide either heating or cooling having a compressor powered by a multi-speed motor, an indoor heat exchanger, an outdoor heat exchanger, and expansion means which comprises the steps of:
sensing the temperature of the air in the enclosure;
energizing the compressor motor to provide heating in the first speed of operation when the temperature of the enclosure air falls below a first level;
energizing the compressor motor to provide heating at a second speed of operation when the temperature of the enclosure air falls below a second level;
sensing the temperature level of the outdoor ambient air; and
energizing the compressor motor to provide heating in a second speed of operation regardless of whether the indoor air has reached the second level when the outdoor air is below a first predetermined level.

4,228,847

CORE FOR USE IN HUMIDITY EXCHANGERS AND HEAT EXCHANGERS AND METHOD OF MAKING THE SAME

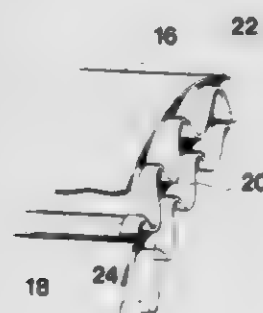
Sven Lindahl, Spanga, Sweden, assignor to Aktiebolaget Care Munters, Sollentuna, Sweden

Filed Feb. 13, 1979, Ser. No. 11,880

Claims priority, application Sweden, Feb. 16, 1978, 7801820
Int. Cl. F28D 19/00

U.S. Cl. 165—10

6 Claims



2. A core usable in humidity exchangers and heat exchangers comprising a laminate of alternate layers of flat and corrugated strip material, said layers cooperating to define a plurality of fine substantially parallel channels extending transversely through said laminate, said corrugated strip material being wider than said flat strip material and having reinforced edges and said flat strip material having a width no greater than the distance between the inner edges of the reinforced portions of the corrugated strip material.

4,228,848

LEAK DETECTION FOR COAXIAL HEAT EXCHANGE SYSTEM

George W. Wadkinson, Jr., Old Bethpage, N.Y., assignor to Grumman Energy Systems, Inc., Bohemia, N.Y.

Filed Jan. 23, 1979, Ser. No. 5,804

Int. Cl. F28D 7/10

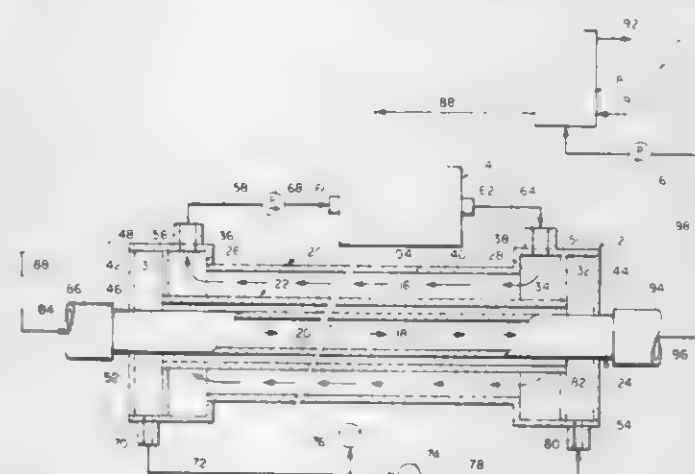
U.S. Cl. 165—11 R

2 Claims

1. In a heat exchange system:

a heat exchanger comprising at least outer, intermediate, and inner tubular members inserted one into the other and being in physical contact with one another, said outer and intermediate members having substantially longitudinally extending relieved areas in their bores that form outer and intermediate fluid passages therein, with the bore of said inner member forming a third fluid passage, the end portions of said outer tubular member having an expanded diameter with respect to the portion of said outer member intermediate said expanded end portions;
first coaxial end walls fixed at each end of said intermediate tubular member and extending transversely outwardly

therefrom into a sealed relationship with the inside surface of said expanded diameter portions of said outer tubular member, second coaxial end walls spaced longitudinally outwardly of said first coaxial walls, said second walls being fixed to the outer surface of said inner tubular member and extending transversely outwardly therefrom into a sealed relationship with the inside surface of said expanded diameter portions of said outer tubular member, said end walls closing off said outer and intermediate longitudinal passages such that said fluid passages are isolated from one another and from said inner passage;
heat conducting means integrally formed in each of said tubular members, said means consisting of substantially longitudinally extending fins projecting radially inwardly, the fins of said outer member contacting the outer wall of



said intermediate member, the fins of said intermediate member contacting the outer wall of said inner member such that there is a metal-to-metal heat exchange relationship between said members, each fin of said members being spaced from its adjacent fins to thus form in said outer and intermediate members said longitudinal fluid passages; inlet and outlet ports opening on said passages in said members to permit the circulation of fluid there-through;

detector means coupled to fluid in said intermediate passages to sense a condition of said intermediate fluid that signifies a leak in one of said tubular members; and
means for circulating fluid through said longitudinal passages of said outer member and through the bore of said inner member whereby heat is exchanged between the fluids.

4,228,849

APPARATUS FOR CONTROLLING RELATIVE GAS FLOW RATES THROUGH DUCTS

Reino Heinola, Kaarina, Finland, assignor to Valmet Oy, Finland

Filed Aug. 1, 1978, Ser. No. 929,951

Claims priority, application Finland, Aug. 12, 1977, 772437

Int. Cl. B60H 1/00

U.S. Cl. 165—39

4 Claims

1. Apparatus for controlling the relative rates of flow of gases through a pair of ducts comprising:

a chamber defining a substantially enclosed interior; a partition member movably mounted within said chamber dividing the interior thereof into first and second partial volumes fluidly sealed with respect to each other;

first means for providing fluid communication with said first partial volume adapted to provide fluid communication between said first partial volume and a first duct in which a gas flows;

second means for providing fluid communication with said second partial volume adapted to provide fluid communication between said second partial volume and a second duct in which a gas flows; and

means associated with said partition member for transmitting the movement thereof exteriorly of said chamber adapted



to control the extent of an opening of a damper located within one of said first and second ducts.

4,228,850

PLATE USED IN CONDENSER

Hiroyuki Sumitomo, Osaka, Japan, assignor to Hisaka Works, Ltd., Osaka, Japan

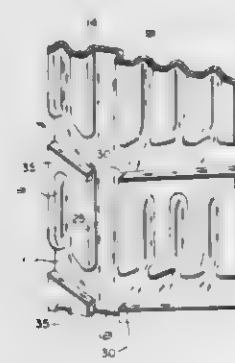
Filed Jul. 25, 1978, Ser. No. 927,689

Claims priority, application Japan, Nov. 8, 1977, 52-134254

Int. Cl. F28B 9/08; F28D 9/00; F28F 3/08

U.S. Cl. 165—110

1 Claim



1. A plate for use in a condenser, said plate including condensate collecting and discharging elements, said condensate collecting and discharging elements comprising a plurality of V-shaped inclined grooves downwardly sloped towards a central portion of said plate, and a vertical groove formed along said central portion of said plate connecting with a lowest portion of each of said inclined grooves, wherein said inclined grooves form ramps leading to said vertical groove and said vertical groove forms a recessed channel, said condensate collecting and discharging elements further comprising a plurality of alternating longitudinal grooves and valleys, lower ends of said valleys opening towards said downwardly sloped inclined grooves, whereby said inclined grooves and said vertical groove minimizes the area of a filmy downflow liquid layer and prevents a film from growing too thick, thereby improving the heat transfer surface of said plate.

4,228,851

SOLAR HEATING PANEL

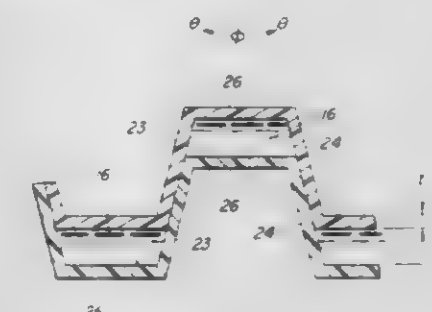
Robert L. LaBarge, Ben Avon, and Marvin H. Williams, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 12, 1977, Ser. No. 823,926

Int. Cl. F28F 3/12

U.S. Cl. 165—170

2 Claims



1. A heat exchanger comprising two corrugated sheet components joined together face-to-face to form a panel having multiple passageways therein between the components for flow of a fluid medium therethrough, each of said components being generally rectangular with parallel corrugations therein formed by diverging sidewall portions spaced by transverse wall portions between each sidewall portion, and with the sidewall portions of the opposing components joined together in with adhesive bonding parallel overlapping and contacting relation and the transverse walls of opposing panels spaced apart and forming passageways therebetween.

4,228,852

TUBULAR BODY

Akira Togashi, 14-31, 6-chome, Ryoke, Urawa-shi, Saitama-ken, Japan

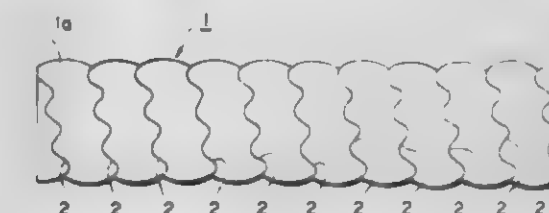
Continuation of Ser. No. 776,215, Mar. 10, 1977, abandoned.

This application Feb. 28, 1979, Ser. No. 15,834

Int. Cl. F28F 1/06

U.S. Cl. 165—173

19 Claims



1. A tubular body comprising a series of periodically wavy recessed ribs formed on the external surface of the tubular body, said recessed ribs having a specific depth and a specific wave form about a base line at a center of the wave form, the base line being spirally formed at a specific lead angle to a plane containing the longitudinal axis of the tubular body; and a corresponding series of projecting ribs having the same specific wave form about the same base line formed on the internal surface of the tubular body; and the specific wave form being selected from a group of wave forms consisting of a sinusoid wave form, a saw tooth wave form, a wave form made of continuously connected alternating opposite semicircular curves, and a rectangular wave form.

4,228,853

PETROLEUM PRODUCTION METHOD

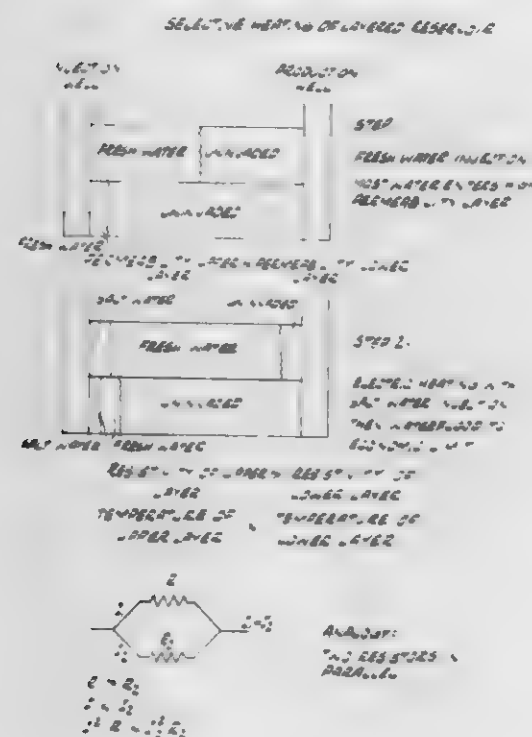
A. Herbert Harvey, and John P. Govier, both of Dept. of Mining, Petroleum and Geological Engineering, University of Missouri, Rolla, Mo. 65401

Filed Jun. 21, 1978, Ser. No. 917,730

Int. Cl.² E21B 43/22, 43/24

U.S. Cl. 166—248

31 Claims U.S. Cl. 166—248



1. A method for facilitating recovery of oil from a crude oil reservoir by selective electrical resistance heating of a portion of the reservoir which would normally be substantially bypassed by fluid injected into the formation in which the reservoir is located, the method comprising the steps of:

- establishing a series electrical circuit for passing current through the formation along a directed path differing from the naturally predominant path of injected fluid flow, said naturally predominant path being substantially occupied by high resistivity fluid, said circuit comprising:
 - a source of alternating current electric power,
 - a first subterranean electrode electrically connected to one terminal of said source and located in or in proximity to a first well in said formation,
 - a second subterranean electrode electrically connected to the other terminal of said source and located in or in proximity to a second well in said formation, and
 - a portion of an oil reservoir in said formation that contains oil and water and is located between said electrodes substantially separate from a naturally predominant path for flow of injected fluids from an injection well through said formation but affords a current path of lesser electrical resistance between said electrodes than that along said naturally predominant path or any alternative path through the formation that is entirely outside said portion;

injecting a low resistivity liquid through an injection well into a region of said formation that forms a part of said circuit in series with said first electrode and said portion; and

passing alternating current from said power source through said circuit so as to cause selective electrical resistance heating of said portion, whereby the resistance to the flow of oil contained in said portion is reduced and oil is swept out of said portion by said low resistivity liquid.

4,228,854

ENHANCED OIL RECOVERY USING ELECTRICAL MEANS

Aleksy Sacuta, Edmonton, Canada, assignor to Alberta Research Council, Edmonton, Canada

Filed Aug. 13, 1979, Ser. No. 66,179

Int. Cl.² E21B 43/22, 43/24, 43/25

4 Claims

SUGGESTED POLYPHASE HEATED WELL PATTERNS



1. In a process for recovering oil from an oil and water bearing formation wherein spaced injection and production wells penetrate the formation and a drive fluid is injected into the formation through the injection well and to assist in producing oil and some water through the production well, the improvement comprising:

maintaining a unidirectional electrical potential gradient between anode means located in the production well and cathode means located in the injection well adjacent the formation, to retard water flow to the production well.

4. In a process for recovering oil from an oil and water bearing formation wherein at least two spaced wells penetrate the formation and there is a natural or induced drive energy within the formation sufficient for producing fluids, the improvement comprising:

providing anode means in one well and cathode means in a second well and maintaining a unidirectional electrical potential gradient between the anode and cathode means; and producing oil from the anode-equipped well.

4,228,855

METHOD OF INJECTIVITY PROFILE LOGGING FOR TWO PHASE FLOW

Alvin J. Sustek, Jr., Terry L. Frazier, both of Houston, and Gregory Daryl, Woodlands, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,074

Int. Cl.² E21B 47/00, 49/00

U.S. Cl. 166—250

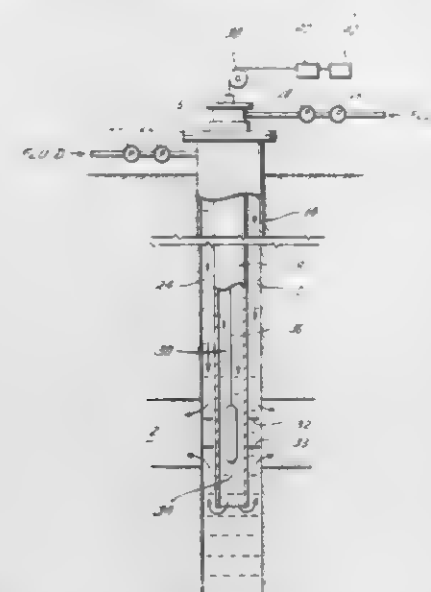
11 Claims

1. A method of making a permeability log of a subsurface formation traversed by a bore hole which comprises:

- (a) injecting a two phase fluid into the bore hole above said formation, said two phase fluid containing an effective amount of one radioactive substance which combines almost exclusively with only one phase of the injected two phase fluid;
- (b) simultaneously injecting a similar two phase fluid which does not contain the radioactive substance into the bore hole below the formation;
- (c) establishing a stable interface between the two fluids;
- (d) determining the depth in the hole of said interface by measuring the radioactivity of the fluids throughout that portion of the hole being examined;
- (e) then varying the ratio of the rates at which the two fluids are injected into the hole while maintaining the sum of the two rates as nearly constant as possible so as to cause said interface to move along the walls of the bore hole to another depth;
- (f) determining the depth of the interface produced by the

change in injection rates in step (e) by the method of step (d);

(g) repeating steps (e) and (f) until a series of depth and injection rated measurements at the various interfaces



sufficient to adequately describe the formation is obtained for one phase of the injected two phase fluid; and

(h) repeating steps (a) through (g) with a second radioactive substance that combines almost exclusively with the other phase of the two phase fluid.

4,228,856

PROCESS FOR RECOVERING VISCOUS, COMBUSTIBLE MATERIAL

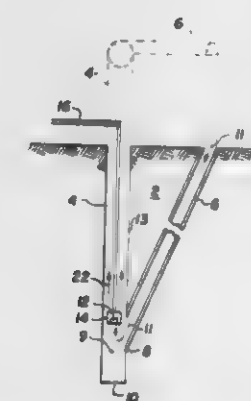
Lucio V. Reale, 1827 - 46th St. SE., Calgary, Alberta, Canada

Filed Feb. 26, 1979, Ser. No. 15,562

Int. Cl.² E21B 43/243

U.S. Cl. 166—256

22 Claims



1. A process for recovering a viscous, combustible material from a sub-surface deposit of the material comprising: forming a substantially vertical, main bore into the deposit; igniting the deposit adjacent the base of the bore; arranging a supply of air to the ignition site whereby a self-sustaining combustion takes place in the bore supported by natural draft generated by the combustion and the gaseous products of the combustion can leave the bore, and where the heat of the combustion and of the gaseous products of the combustion liquid melt the material in the deposit; and extracting liquefied material from the bore.

4,228,857

FLOATING PLATFORM WELL PRODUCTION APPARATUS

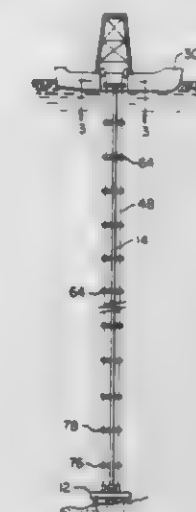
Philippe C. Nobileau, Oxnard, Calif., assignor to Vetco Inc., Ventura, Calif.

Filed Dec. 11, 1978, Ser. No. 968,648

Int. Cl.² E21B 7/12

U.S. Cl. 166—341

12 Claims



1. A cluster well production apparatus for floating platform production comprising: a central large diameter riser having a vertical axis, a plurality of wellheads surrounding the vertical axis of said central riser; a plurality of spiders fastened to said central riser at selected elevations, a plurality of guide funnels on each spider secured in spaced relationship with said central riser and in axial alignment with said wellheads; a production riser running directly upwardly from each wellhead and passing through corresponding guide funnels, said production riser including a tubing string; the openings through said guide funnels being significantly larger than said tubing string; and centralizers attached to said production riser at elevations corresponding to at least some of the spider elevations and sized to be in closely-spaced relationship within said funnels.

4,228,858

DRY SPRINKLER WITH NON-LOAD-TRANSMITTING SEALING ARRANGEMENT

Joseph R. Scialfani, Greenwich, Conn., assignor to The Reliable Automatic Sprinkler Co., Mount Vernon, N.Y.

Filed May 1, 1978, Ser. No. 902,288

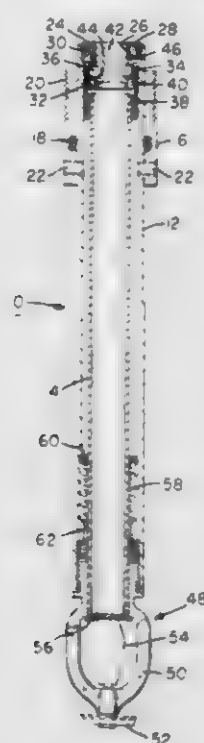
Int. Cl.² A62C 37/12

U.S. Cl. 169—41

23 Claims

1. A dry sprinkler comprising an outer tube adapted for connection at one end to a fluid supply pipe in a fire protection system; an inlet member at said one end of the outer tube; a cap member at the other end of the outer tube; heat-responsive means normally holding the cap member in position at the other end of the outer tube but responsive to an elevated temperature condition to release the cap member therefrom; an inner member disposed in engagement with the cap member and within the outer tube for longitudinal movement relative thereto; said inlet member including means providing a fluid passageway at the end of the outer tube adapted for connection to the fluid supply pipe; sealing means slidably disposed in the fluid passageway for sealing the passageway and capable of passing the inner member when released from the fluid passageway; and seal retaining means responsive to the position of the inner member and cooperating with the sealing means for releasably retaining the sealing means in the passageway against fluid pressure in the fluid supply pipe when the inner member is disposed in one position in engagement with the cap member and permitting release of the sealing means from the passageway to permit ejection from the sprinkler when the cap member is released from the other end of the outer tube and the inner member is in a second position spaced from the sealing

means, the seal-retaining means including a plurality of locking members and means supporting the locking members for lateral motion toward and away from the sealing means, the inner member being spaced from the inlet member so as to permit



longitudinal motion of the inner member toward and away from the inlet member while the sealing means is retained by the seal-retaining means, thereby preventing transmittal of a load to the cap member by the inner member.

4,228,859

SPRINKLER HEAD HAVING A PLURALITY OF SUPPORTING LEGS

Tadashi Hattori, 15-20 1-chome, Kamori-cho, Kishiwada-shi, Osaka-fu, Japan

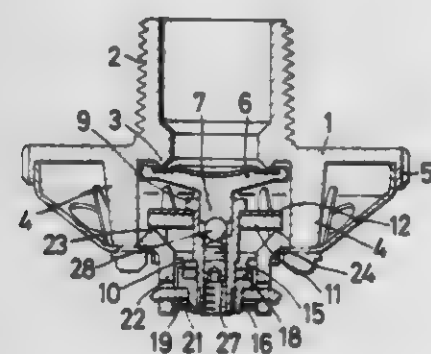
Filed Nov. 22, 1978, Ser. No. 963,021

Claims priority, application Japan, Jul. 31, 1978, 53-106867; Jul. 31, 1978, 53-106868

Int. Cl.¹ A62C 37/08

U.S. Cl. 169-57

1 Claim



1. A sprinkler head, comprising in combination:

(a) a discoidal body (1) with a lower part and a lower center;

(b) a water discharge valve seat (3) in said lower center;

(c) a plurality of supporting legs (4) formed in said lower part so as to be located on both sides of said valve seat (3), said supporting legs having a hook receiver (24) inside the lower end of each supporting leg;

(d) a valve (6) having a lower center held in contact with said valve seat, a valve spindle (7) in said valve lower center, a guide sleeve (8) having an upper and lower end, said upper end being fitted into said valve spindle (7) from under, a pressure screw threaded into said guide sleeve (8), and a valve ball (28) disposed so that said valve (6) is held in pressure contact with said valve seat with the interposition of said ball (28);

(e) a flange (9) on the upper part of said guide sleeve (8), an annular spring-guide (11) fitted externally around the

guide sleeve (8), outwardly extending lines (22) with engaging angles (23), said angles having a top disposed to abut the lower part of the outer periphery of said spring-guide (11) and supported by said flange (9), said levers having a lower element (25), said engaging angles (23) being engaged with said hook receiver (24) inside the lower end of each supporting leg;

(f) a fusible element interposed between said lower elements (25) and said levers (22) to maintain said valve in pressure contact with said valve seat;

(g) a deflector (29) made of thin material mounted on the lower part of said body (1);

and (h) a shoulder (10) on said guide sleeve, an upper ring (15) fitted externally onto the lower part of the guide sleeve from under so that its rise beyond a predetermined extent is precluded by said shoulder (10), said upper ring (15) having a lower part, a lower ring (16) with a small diameter portion on the lower outside part of said lower ring, said lower ring being fitted externally onto the lower end of the guide sleeve (8), said lower ring (16) having an upper part, said fusible member (18) being interposed between the lower part of the upper ring (15) and the upper part of the lower ring (16), and an annular balancer (19) having a supporter formed on each side thereof, said annular balancer being

fitted externally onto said small diameter portion of the outside lower part of the lower ring (16) and being engaged with the engaging lower aperture (25) of said lever (22).

4,228,860

APPARATUS FOR SYNCHRONIZING THE STEERING DISC AND ROW FOLLOWER MEANS OF A ROW CROP IMPLEMENT

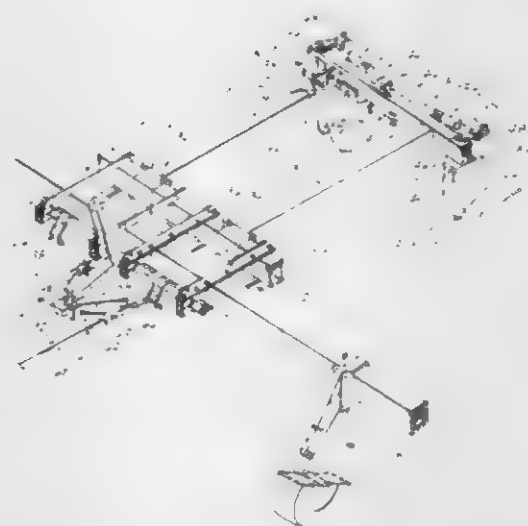
Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing, Inc., Lexington, Nebr.

Filed Sep. 29, 1978, Ser. No. 947,037

Int. Cl.¹ A01B 69/06

U.S. Cl. 172-26

14 Claims



1. In combination with a row crop implement including an elongated tool bar and a steering apparatus on the tool bar comprising a steerable coulters disc, a row follower means movable to a neutral position when the tool bar is transversely aligned relative to the crop rows, and a steering means for steering said coulters disc, in response to movement of the row follower means from said neutral position, said row follower means and coulters disc being disposed in synchronized relation when said row follower means is in said neutral position and said coulters disc is positioned for straight ahead movement of the implement, the improvement comprising,

first means for moving said row follower means to the neutral position therefor,

second means for disabling and enabling said steering means, and

third means for steerably positioning said coulters disc, while said steering means is disabled, for straight ahead movement of the implement whereby, with said row follower means moved to the neutral position therefor by said first means, said row follower means and coulters disc are disposed in synchronized relation upon enablement of said steering means.

4,228,861

FOLDING TRACK REMOVING IMPLEMENT

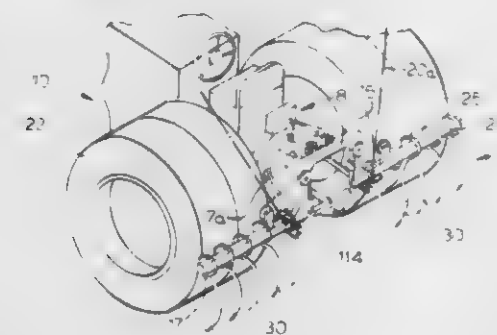
Thomas E. Hart, P.O. Box 81, Lee, Ill. 60530

Filed Aug. 2, 1979, Ser. No. 63,103

Int. Cl.¹ A01B 73/00, 37/00

U.S. Cl. 172-662

23 Claims



22. In a track removing farm implement with a U-shaped downwardly opening central frame member that has first and second elongated wing members extending laterally and essentially horizontally from first and second lower ends thereof, each said wing members has attached thereto a plurality of downwardly extending tines suitable for engaging and breaking up compacted earth, an improvement comprising:

rigid connection means,

first and second means for pivotably attaching the wing members to the frame interposed between the first and second wing members and the first and second lower ends of the central frame member, and

first and second means each for rotating one of said wing members, said first and second means for rotating each have a first and a second end, each said means for rotating is connected at said first end by a means for attaching to a respective one of said wing members, and at said second end to said rigid connection means,

said central frame member, said wing members, said connection means, said means for pivotably attaching, and said means for rotating so cooperating such that as the central frame member is moved in a first direction with respect to said rigid connection means, each said means for rotating causes the attached pivotably mounted one of said wing members to rotate upwardly from the essentially horizontal position to a non-horizontal position and as the central frame member is moved opposite said first direction with respect to said rigid connection means, each said means for rotating permits the attached pivotably mounted one of said wing members to rotate downwardly from the non-horizontal to the essentially horizontal position.

4,228,862

APPARATUS FOR DRILLING HOLES IN THE GROUND

Antoine Causse, 157, route de Blagnac, Toulouse (Haute-Garonne), France

Filed Nov. 13, 1978, Ser. No. 959,852

Claims priority, application France, Nov. 15, 1977, 77 34246

Int. Cl.¹ E21B 9/20

U.S. Cl. 175-242

7 Claims

1. Apparatus for drilling holes in the ground comprising a cylindrical drilling tool having an upper end and a lower end, a drilling edge being provided at the lower end of said drilling tool, a motor assembly for rotating said drilling tool, a rotatable elongate sleeve coupling said motor assembly to said drilling tool, said sleeve being interposed between the motor assembly and the drilling tool and being keyed to the upper end

of said drilling tool, a hydraulic jack disposed for rotation with said sleeve, the hydraulic jack having a piston rod which extends through the upper end of the drilling tool into the



4,228,863

REAMER BIT FOR RAISE BORING

Bernt S. Liljekvist, and Anders E. Persson, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

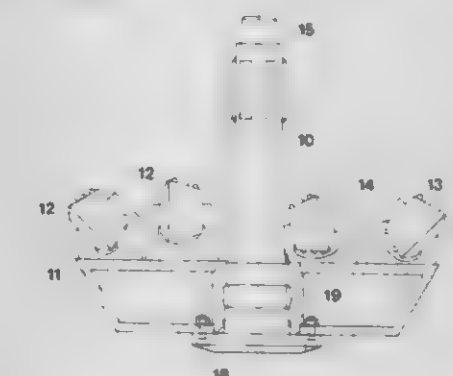
Filed Sep. 5, 1978, Ser. No. 939,221

Claims priority, application Sweden, Sep. 9, 1977, 7710129

Int. Cl.¹ E21B 9/22

U.S. Cl. 175-344

7 Claims



1. In a reamer bit for raise boring in rock, of the type comprising a body on which a number of rolling cutters with inserts are rotatably mounted for contact with and disintegration of the rock, and a detachable stem mounted in a central bore on the body and adapted to be received in a pilot hole drilled in advance in the rock, said stem having two cylindrical portions, an upper one of which having a smaller diameter than a lower one thereof, said bore in the body having corresponding upper and lower cylindrical portions surrounding the stem, the interface between said upper cylindrical portions of said body and said stem defining upper stem restraining surface means, and the interface between said lower cylindrical portions of said body and said stem defining lower stem restraining surface means, the improvement wherein the stem is provided with a flange located below said lower restraining surface means, said flange abutting the body from below and providing substantially all axial support for said body, means releasably connecting said flange to said body, said upper and lower restraining surface means together comprising a substantial

axial portion of that part of the stem surrounded by the bore, the corresponding surrounding portions of the bore in the body forming a close fit with the cylindrical portions of the stem, said upper and lower restraining surface means being separated by an annular relief portion on at least one of said stem and body, the diameter of the portion of said stem located at an upper end of said relief portion being no larger than the diameter of said upper cylindrical portion of said stem.

4,228,864

AUTOMATIC APPARATUS FOR WEIGHING AND EMPTYING A PRODUCT CONTAINED IN A CONTAINER PROVIDED WITH A COVER OR LID

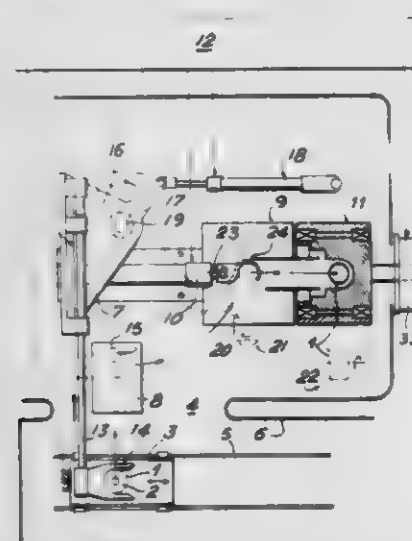
Guy F. Berger, Cherbourg, and Jacques Salom, Beaumont-Hague, both of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Feb. 27, 1979, Ser. No. 15,623

Claims priority, application France, Mar. 1, 1978, 78 05866

Int. Cl.² G01G 19/00; B65B 21/02

U.S. Cl. 177-145



1. An automatic apparatus for the weighing and emptying of a product contained in a container equipped with a cover, wherein it comprises means for bringing the container onto a manipulating area, means for grasping the container, bringing it onto a weighing apparatus and placing it in front of a cover manipulating mechanism, said means being controlled by jacks, means for placing the container in a cover manipulating mechanism and for engaging it in a product emptying mechanism, said means being controlled by jacks and the emptying of the product being effected by turning over the container, electrical synchronisation means able to control the means and mechanisms described hereinbefore in a first direction in such a way that the container is brought onto the manipulating area, grasped so as to bring it onto a weighing area, placed in the manipulating mechanisms so that the cover is removed, engaged in the product emptying mechanism, then so that the said means and mechanisms are controlled in a second direction opposite to the first direction in such a way that the container is disengaged from the emptying mechanism, is placed in the manipulating mechanism so that the cover is placed back on the container and so that the container is grasped and returned onto the weighing apparatus and then is returned to the manipulating area.

4,228,865

VEHICLE CONTROL SYSTEM FOR THE HANDICAPPED

Robert J. Appley, 902 Birch Ave., Shelby, Mont. 59474

Division of Ser. No. 794,822, May 9, 1977, Pat. No. 4,143,281.

This application Aug. 7, 1978, Ser. No. 931,613

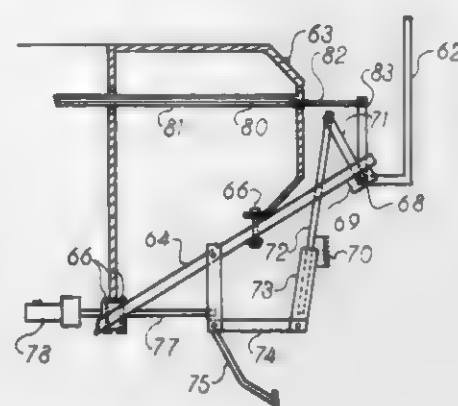
Int. Cl.³ B60K 26/00, 41/20

U.S. Cl. 180-333

4 Claims

1. A dual function hand operated vehicle control system including a lever affixed to a rotatable shaft, two spaced arms

extending generally upwardly from said shaft forward of said lever, one of said arms being pivotally connected to a substantially vertical push rod which extends downwardly into a substantially vertical sleeve, said push rod being capable of



4,228,866

HYDRAULIC POWER-STEERING SYSTEM

Fritz Naumann, Stammham, Fed. Rep. of Germany, assignor to Audi NSU Auto Union AG, Neckarsulm, Fed. Rep. of Germany

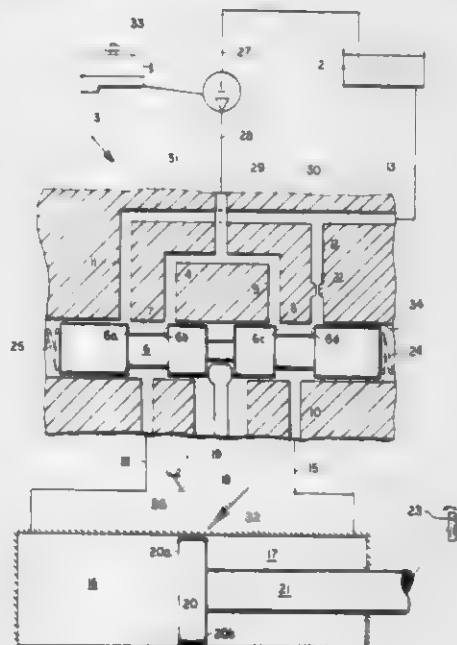
Filed May 11, 1978, Ser. No. 904,992

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721414

Int. Cl.² B62D 5/06

U.S. Cl. 180-132

10 Claims



1. A hydraulic power-steering system comprising: a source of hydraulic liquid having a high-pressure side and a low-pressure side; a power cylinder having a pair of chambers one of which is of larger effective surface area than the other; control means having an input connected to said high-pressure side and having a pair of input branches, an output connected to said low-pressure side and having a pair of output branches, and a pair of control ports respectively connected to said chambers for displacement into one position wherein one of said input branches is connected to one of said control ports and one of said output branches is connected to the other control port and into a rest position wherein each input branch is connected to a

respective output branch and to a respective control port; a restriction in one of the branches connected to said other chamber in said rest position.

4,228,867

NOISE BARRIER

Leslie S. Wirt, Newhall, Calif., assignor to Lockheed Corporation, Burbank, Calif.

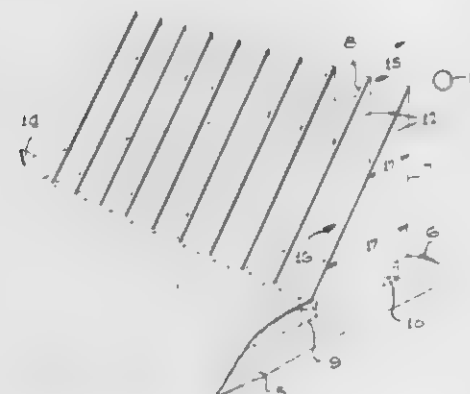
Division of Ser. No. 742,404, Nov. 16, 1976, Pat. No. 4,175,639.

This application Feb. 2, 1979, Ser. No. 8,817

Int. Cl.¹ G10K 11/00; B64F 1/26; E10F 15/00

U.S. Cl. 181-210

8 Claims



1. An acoustical barrier for interposition between a noise source and a noise receiver located within the acoustical shadow zone of the barrier, comprising: a barrier member having an acoustically opaque base portion and having contiguous therewith an upwardly extending transition portion comprising a plurality of identical spaced apart elements contiguous with said base portion defining a plurality of flow ducts therebetween and each of such ducts having an effective path length which continuously decreases in said upwardly extending direction whereby the sound transmissibility between said elements follows a gradient and the sound transmitted between said elements tends to apply a phase opposition to the sound arriving at the noise receiver by refraction in the acoustical barrier through a region outside said shadow zone and thereby effectively redirect such refracted sound away from said noise receiver.

4,228,868

MUFFLER APPARATUS

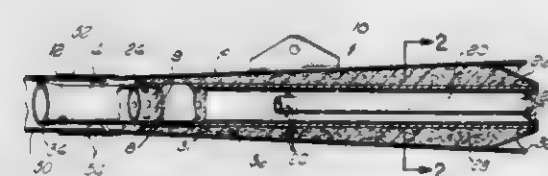
Richard C. Raczuk, 19400 Singing Hills Dr., Northridge, Calif. 91324

Filed Jan. 8, 1979, Ser. No. 1,491

Int. Cl.¹ F01N 1/10

U.S. Cl. 181-247

8 Claims



1. A muffler having an entrance port and an exit port for being coupled to a source of noise having a gas passageway member through which gas flows, the muffler comprising: a housing for being coupled at one of its ends to the gas passageway member; a perforated tube attached to the interior of the housing for interiorly of the perforated tube a first straight unobstructed passageway through the housing; and at least one solid non-perforated tube, each nonperforated tube opened at both of its ends for defining a second straight unobstructed passageway through the nonperforated tube.

forated tube, the non-perforated tube being positioned longitudinally in the first straight unobstructed passageway whereby the gas flows freely without substantial obstruction through both the first and second unobstructed passageways between the entrance and exit ports of the muffler.

4,228,869

VARIABLE VOLUME RESONATORS USING THE BELLEVILLE SPRING PRINCIPLE

Oskar Bschorr, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany

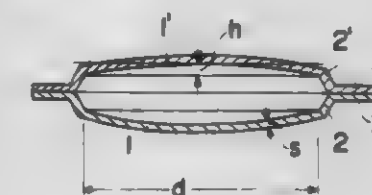
Continuation-in-part of Ser. No. 812,617, Jul. 5, 1977, Pat. No. 4,149,612. This application Feb. 12, 1979, Ser. No. 11,778

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632290; Aug. 9, 1978, 2834823

Int. Cl.¹ E04B 1/82; G10K 11/10

U.S. Cl. 181-286

11 Claims



1. A variable volume resonator for damping noise, comprising resonator wall means confining a volume which is at least partially evacuated; said wall means being constructed to form Belleville spring means, whereby said wall means have a small spring constant in response to reduced pressure loading relative to atmospheric pressure, said wall means comprising a central wall area, a peripheral wall area and shoulder means operatively located between the peripheral wall area and the central wall area of said wall means, said shoulder means connecting said central wall area to said peripheral wall area at least one of said wall means having a domed shape, said wall means having a given wall thickness "s", said domed shape having a height "h" within the range of about 0.5 to 5.0 times said given wall thickness "s", said wall means further having an effective diameter "d" within the range of about 30 to 300 times said given wall thickness "s".

4,228,870

SCAFFOLD DEVICE FOR HARVESTING AND MAINTAINING FRUIT TREES

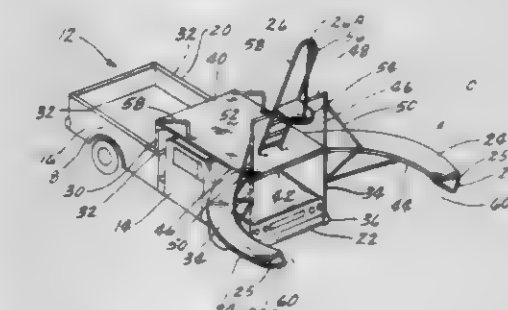
Paul F. Beardsley, Van Wert, Iowa

Filed Nov. 30, 1978, Ser. No. 965,029

Int. Cl.¹ A01D 46/24

U.S. Cl. 182-127

5 Claims



1. A scaffold device for picking and maintaining fruit trees, comprising: a movable truck support means having forward and rearward ends and a longitudinal axis; a single semi-circular catwalk defining an arc of substantially 180° fixedly mounted on said support means and having left and right hand portions oppositely and symmetrically.

spaced with respect to the longitudinal axis of said support means, said catwalk being mounted in an elevated position and extending forwardly beyond said support means so that said catwalk can be directed by the position of said support means to a position embracing a substantial portion of the circumference of a tree without interference of said support means with said tree.

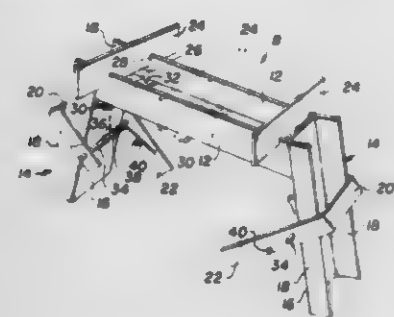
4,228,871 BRACKET

Leonard E. Koffski, Duncan, Canada, assignor to Talbot Industries, Ltd., Duncan, Canada

Filed Jun. 16, 1978, Ser. No. 916,143
Int. Cl.² F16M 11/00

U.S. Cl. 182—184

21 Claims



1. A bracket for carrying a plank on support legs comprising:
 - (a) a cross piece of predetermined length for carrying said plank;
 - (b) a runner provided at each end of the cross piece having a surface defining a support leg pathway;
 - (c) a plurality of spaced fixed sleeves extending from each said runner around said pathway;
 - (d) a sleeve pivotally mounted on said runner and extending around said pathway, said pivotal sleeve having a portion for gripping support legs mounted in said pathway; and,
 - (e) a recess adjacent each end of said cross piece for receiving a cross bracing member extending perpendicularly between said bracket and another like bracket.

4,228,872 LADDER

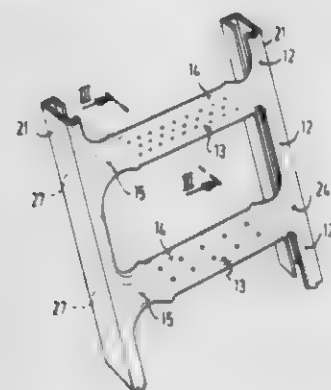
Gerd Treitz, Conollystr. 19, 8000 München 40, Fed. Rep. of Germany

Filed Sep. 14, 1979, Ser. No. 75,581
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840266

Int. Cl.¹ E06C 1/38

U.S. Cl. 182—194

11 Claims



1. A ladder comprising a pair of spaced-apart stiles, and a plurality of steps extending between said stiles, said stiles and steps being provided by a one-piece coherent metal sheet divided between the individual said steps, transversely to said stiles to define step bodies which are twisted out of the plane of said metal sheet to form said steps, each said twisted portion having a lesser depth than the step depth, and said stiles being

formed by profiling of the flat sheet material, characterised by the provision, in the twisted regions between each said step and said stiles, of formations selected from corrugations and holes, and in that each said step body is stiffened by folding.

4,228,873

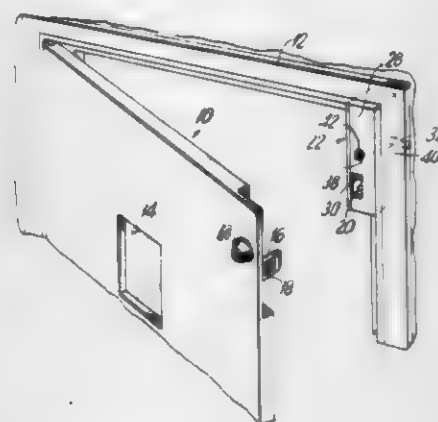
ELEVATOR DOOR SAFETY MECHANISM

George L. Nyborg, Jr., Bronxville, N.Y., assignor to Tri-County Elevator Co., Inc., Bronxville, N.Y.

Filed Nov. 2, 1978, Ser. No. 956,848
Int. Cl.¹ B66B 13/00

U.S. Cl. 187—61

7 Claims



1. A safety mechanism for an elevator shaft door which is hinged to a door frame, comprising in combination:
 - latching means to latch said door to said door frame, said latching means including bolt means,
 - keeper means mounted on said door for engagement with said bolt means of said latching means,
 - said latching means including first and second latch releasing means to free said keeper means from said engagement to said bolt means to permit said door to open,
 - said first latch releasing means being operated by the presence of an elevator proximate to said door,
 - said second latch releasing means including a rod mounted therein, said rod being in engagement with said bolt means, said rod being manually operable to release said engagement of said keeper means by said bolt means,
 - an aperture in at least one of said door and said door frame to permit access to said second latch releasing means; and
 - lock means releasably engageable with said aperture to seal said aperture when said lock means are in place and to permit access to said aperture when said lock means are removed.

4,228,874

ELECTROMAGNETIC BRAKE

Karl E. Brinkmann, Dörentrup, and Bernd L. Assmann, Barntrop, both of Fed. Rep. of Germany, assignors to K. Ernst Brinkmann, Industrieverwaltung, Barntrop, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,538
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747465

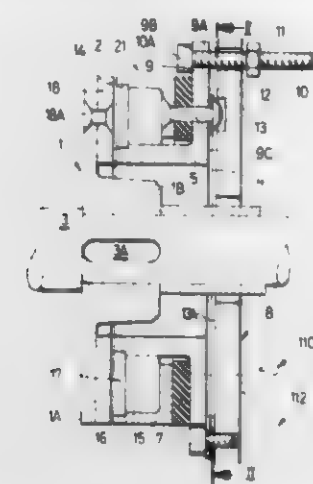
Int. Cl.¹ F16D 59/02

U.S. Cl. 188—72.1

14 Claims

1. An electromagnetic device for braking a first member which is rotatable with respect to a stationary second member, particularly for braking a shaft which is rotatable with respect to a stationary part of a machine, comprising a magnetizable rotary first component fixedly secured to said first member; a second component adjacent to said first component; and means for non-rotatably coupling said second component to said second member with freedom of movement in the axial direction of said first component, said second component comprising a permanent magnet which attracts and axially displaces said second component to and into braking engagement with

said first component, and a solenoid energizable to establish an electromagnetic field tending to repel and axially displace said



second component away from and out of the braking engagement with said first component.

4,228,875

MECHANICAL DISC BRAKE

Tetsuo Haraikawa, Funabashi, and Tomio Hasaka, Kawasaki, both of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 851,587, Nov. 14, 1977, abandoned.

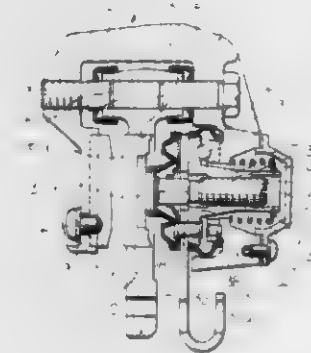
This application Aug. 21, 1979, Ser. No. 69,108

Claims priority, application Japan, Nov. 19, 1976, 51-155521(U)

Int. Cl.¹ F16D 55/224

U.S. Cl. 188—72.7

5 Claims



1. A mechanical disc brake for a vehicle, said brake comprising:
 - a stationary member adapted to be secured to a non-rotatable portion of a vehicle;
 - a caliper adapted to straddle a portion of the periphery of a rotatable disc and including first and second portions adapted to be positioned on opposite sides of the disc, said caliper being slidably supported by said stationary member for sliding movement in a direction parallel to an axis of the disc, said first portion of said caliper including an integral housing having an opening extending therethrough, said opening having a first end adapted to face the disc and a second end adapted to face away from the disc;

force converting means, mounted within said opening of said housing, for receiving a rotary input force, for converting said rotary input force into a linear output force, and for applying said linear output force to brake pads to cause such brake pads to be moved toward the disc, said force converting means comprising a rotatable member positioned within said opening of said housing and having extending therethrough a threaded passage, means, separate from said rotatable member, for rotating said rotatable member about an axis parallel to the axis of the disc, a separate ramp member fixed to said housing at a position adjacent said rotatable member, said rotatable member

and said ramp member having facing inclined surfaces, at least one ball member positioned between said facing inclined surfaces, and a push rod extending through and in threaded engagement with said threaded passage through said rotatable member, said push rod having a first end adapted to engage a first brake pad, a polygonal cross-sectioned rotation retaining portion adjacent said first end of said push rod and a second end adjacent said second end of said opening in said housing, such that upon rotation of said rotatable member with respect to said ramp member, said facing inclined surfaces and said at least one ball member cooperate to impart said linear output force to said rotatable member and to said push rod;

a first dust cover positioned to close the space between said facing inclined surfaces and to cover said at least one ball member, said first dust cover having first and second opposite end portions, said first end portion being sealingly mounted on an outer circumference of said rotatable member, and said second end portion being resiliently mounted on an outer circumference of said ramp member and resiliently clamped between said ramp member and said housing;

a rotation control leaf spring fixed to said rotating means, said leaf spring having an inner periphery extending toward said first end of said push rod and resiliently engaging said rotation retaining portion of said push rod, and said leaf spring having an outer periphery; and a second dust cover positioned to cover a space between said first end of said push rod and said rotating means and rotatable member, said second dust cover having first and second opposite end portions, said first end portion of said second dust cover sealingly surrounding said push rod at a position adjacent said first end thereof, and said second end portion of said second dust cover sealingly surrounding said outer periphery of said leaf spring.

4,228,876

INTERNAL SHOE DRUM BRAKES

Duncan W. Osborne, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

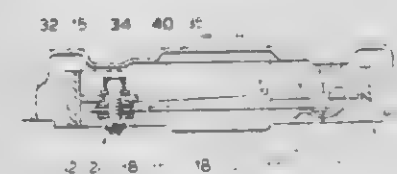
Filed Feb. 26, 1979, Ser. No. 14,990

Claims priority, application United Kingdom, Feb. 28, 1978, 07835/78

Int. Cl.¹ F16D 51/00

U.S. Cl. 188—79.5 GT

7 Claims



1. An internal shoe drum brake assembly including:
 - a pair of brake shoes each having a web thereon;
 - a strut acting between the shoes and having a variable overall effective length for automatic adjustment of clearance between the brake shoes and the brake drum when the brakes are released;
 - a first lost motion connection means whereby one end of the strut is connected to the web of one brake shoe and which provides a minimum clearance between the brake shoes and the drum;

and a de-adjusting means associated with said first lost motion means and whereby said minimum clearance can be increased,
and said de-adjusting means comprises a second lost motion connection having a greater clearance than said first connection means;
and a first spring acting perpendicularly to the web of the one brake shoe to bias the strut towards said web so that for normal service conditions the strut is connected to said one shoe by the first lost motion connection, and the bias of this spring must be overcome by manual operative means insertable through a hole defined in the drum brake assembly, during servicing of the brake, before the strut is connected to said one shoe by the de-adjusting means.

4,228,877

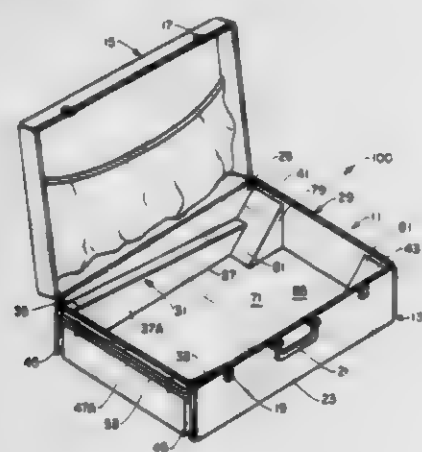
WHEELED SUITCASE WITH EXTENDABLE HANDLE MEANS

Walter G. Cothary, 178 Alleen Way, Grass Valley, Calif. 95945
Filed Dec. 26, 1978, Ser. No. 973,754

Int. Cl.³ A45C 5/14, 13/22

U.S. Cl. 190—18 A

18 Claims



16. A traveling suitcase comprising a top section and a bottom section, said bottom section having upstanding opposed front and rear walls, and first and second opposed side walls, all normally intersecting and a base perpendicular to all of said walls, defining a storage area,

a pair of spaced openings in one of said side walls, one each near the junction of said side wall with said front and rear walls, each opening communicating with a compartment within said storage area,

an extendable U-shaped handle slidably disposed in said openings into the compartments,

means mounted within said storage area on said handle to prevent overextension thereof,

a generally U-shaped leg stand pivotably secured to said handle and extendable therewith from said storage area, and a releasably securable hinged wheelplate assembly disposed parallel to the exterior surface of said second side wall in a storage position and orientable therefrom to an operative position parallel to said base.

4,228,878

CONTROL DEVICE FOR CONTROLLING ACCELERATOR AND BRAKE SWITCHES

Nobuyuki Kisami, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,563

Claims priority, application Japan, Mar. 4, 1977, 52/25129[U]

Int. Cl.² B60T 17/00; F16D 67/00

U.S. Cl. 192—2

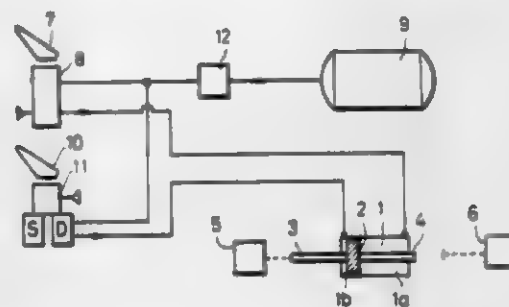
3 Claims

1. A control device for controlling accelerator and brake switches used for opening and closing electromagnetic contactors for an accelerator and brakes provided in a motor driving circuit of an electrically driven vehicle comprising:

mechanical bistable means having two entrance ports for bringing a displaceable member to one position upon

introduction of air from one of said entrance ports, said displaceable member remaining in said one position notwithstanding subsequent interruption or reintroduction of air to said one entrance port and being displaced from said one position to another position only upon introduction of air from the other entrance port;

a first changeover valve for supplying air to said one entrance port upon depression of an accelerator pedal;



a second changeover valve for supplying air to said other entrance port upon depression of a brake pedal;

an accelerator switch disposed in a position in which it is turned on when said displaceable member of the bistable means is brought to said one position; and

a brake switch disposed in a position in which it is turned on when said displaceable member is brought to the other position.

4,228,879

TRACTOR TRANSMISSION SHIFT CONTROL

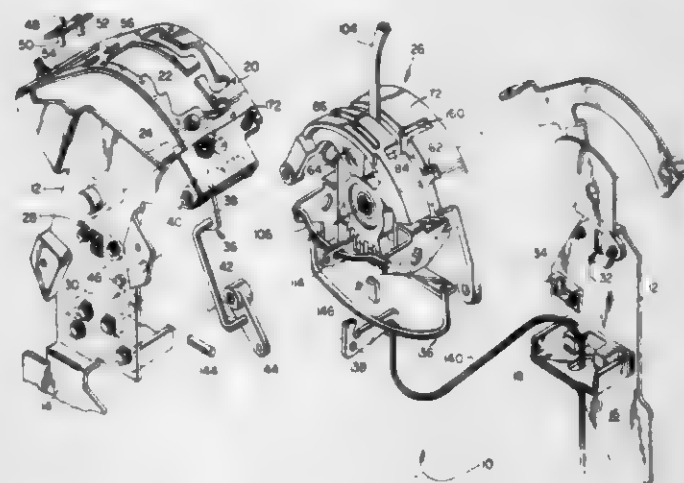
Larry A. Woodbury, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 28, 1978, Ser. No. 946,498

Int. Cl.³ G05G 5/10

U.S. Cl. 192—4 A

30 Claims



1. A shift control for a hydromechanical transmission comprising: support means having primary pivot means provided therein; range shift means pivotally mounted on said primary pivot means and connectible to a range change mechanism to shift said hydromechanical transmission between ranges upon pivotation of said range shift means, said range shift means having hold and shift means provided therein; speed shift means pivotally mounted on said primary pivot means and spaced apart from said range shift means, said speed shift means connectible to a speed change mechanism to shift said hydromechanical transmission between speeds upon pivotation of said speed shift means, said speed shift means having hold and shift means provided therein; main pivot means pivotally mounted on said primary pivot means and having secondary pivot means provided therein perpendicular to said primary pivot means; shift lever means carrying a shift lever and disposed between said range and speed shift means, said shift lever means pivotally mounted on said secondary pivot means

of said main pivot means for pivotation around said secondary pivot means to engage and disengage said shift means of said range and speed shift means and around said primary pivot means to selectively move or not move said range and speed shift means, said shift lever means including range engagement means cooperating with said support means to engage said hold means in said range shift means to hold said range shift means in a fixed pivoted position when said shift lever means is out of engagement with said shift means of said range shift means, said shift lever means including speed engagement means cooperating with said support means to engage said hold means in said speed shift means to hold said speed shift means in a fixed pivoted position when said shift lever means is out of engagement with said shift means of said speed shift means whereby said speed shift means is held when said range shift means is shifted, said range shift means is held when said speed shift means is shifted, and both are held when said shift lever means is not in a position to shift either.

4,228,880

PULSE CONTROL OF AN ELECTRO MAGNETICALLY ACTUATED VISCOUS FLUID COUPLING

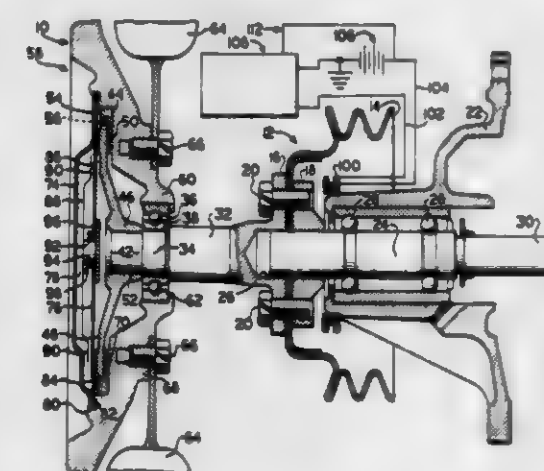
Thomas A. Gee, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 25, 1978, Ser. No. 945,735

Int. Cl.² F16D 35/00, 43/25

U.S. Cl. 192—58 B

8 Claims



1. A viscous fluid coupling member comprising
a first member;
a second member rotatably disposed relative to said first member;
an operating chamber defined between said first and second members;
a fluid storage chamber adjacent said operating chamber; fluid disposed within said storage chamber and movable into said operating chamber to provide in said operating chamber a medium to transmit rotational movement from one of said members to the other of said members;
pump means to move said fluid through a discharge opening from said operating chamber to said storage chamber to reduce said rotational movement;
inlet means to move said fluid through an inlet opening from said storage chamber to said operating chamber to increase said rotational movement;
a valve member movable in response to induction of a magnetic field from a first position to a second position, one of said positions allowing fluid movement between said chambers through one of said openings and the other of said positions blocking said fluid movement through said one opening;
means to bias said valve member to said first position; and
means for selectively inducing and terminating said magnetic field to pulse the movement of said valve member between said first and second positions to control the amount of rotational movement.

4,228,881

CLUTCH RELEASE DEVICE OF THE SELF-CENTERING TYPE USING A PLASTIC DEFORMATION MEMBER

Takeshi Nakamura, Hiratsuka, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

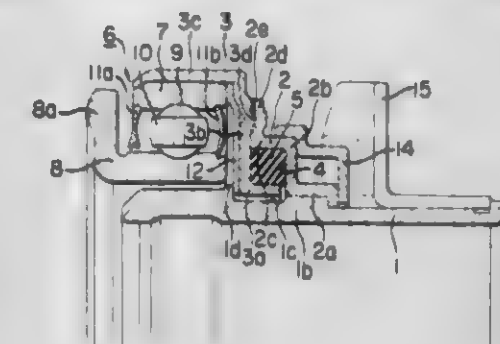
Filed Aug. 31, 1977, Ser. No. 829,575

Claims priority, application Japan, Sep. 14, 1976, 51-109451

Int. Cl.² F16D 23/14; F16C 19/00

U.S. Cl. 192—98

19 Claims



1. A clutch release device of the self-centering type comprising a clutch release bearing means for releasing a clutch, and bearing support means slidably mounted substantially coaxial with the rotational axis of the clutch for supporting and guiding said bearing means, said bearing means being formed for movement in a direction perpendicular to the rotational axis of the fly-wheel of said clutch, the improvement comprising:

a plastic deformation member of visco-elasticity disposed between said bearing means and said bearing support means;

said plastic deformation member being deformed by the motion of said bearing means perpendicular to said rotational axis which results from a centripetal force acting on said bearing means during clutch release when there is an eccentricity between said rotational axis of said fly-wheel and the center line of said bearing means, thus permitting movement of said bearing means to its centered position, so that said plastic deformation member is plastically deformed into said centered position and holds said bearing means at that position.

4,228,882

FRICTION CLUTCH UNIT

Lothar Huber, Bühl-Altschweier, and Werner Reitz, Ottersweier, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

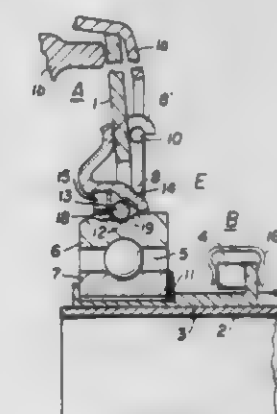
Filed Sep. 7, 1977, Ser. No. 831,109

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639766

Int. Cl.² F16D 23/14

U.S. Cl. 192—98

9 Claims



1. In a friction clutch assembly for selectively connecting a motor and a transmission by rotationally locking them to one another and disconnecting them from one another through a disengaging system acting upon parts of a clutch and against

spring-biasing forces, the disengaging system including a guide member slidable along a guidance path located at the transmission side of the clutch assembly, disengaging means acting upon the guide member for sliding the same along the guidance path, antifriction bearing means having a bearing race connectible with the clutch at the motor side and a bearing race connected to the guide member at the transmission side, means for effecting the connection between the first-mentioned bearing race and parts of the clutch, at least part of the disengaging system being preassemblable, as a first sub-assembly, on the guidance path at the transmission side, the clutch being preassemblable as a second sub-assembly at the motor side, and a locking device including respective matching components lockable one with the other and carried by the first and second sub-assemblies, respectively, and means for effecting, during connection of the motor and the transmission, and at least in direction of disengagement, a force-locking connection between the preassembled first and second sub-assemblies, one of the matching components of the locking device comprising an annular detent formed in one of said first and second preassembled subassemblies and the other of the matching components of the locking device comprising at least one member having an annular configuration supportable by a conical section of the other of said first and second preassembled sub-assemblies and being spring-loadable in axial direction so as to project from the conical section toward said annular detent in radial direction, said member having said annular configuration being initially displaceable in radial as well as axial direction along said conical section until it is snappable into said annular detent so as to connect the bearing means to the clutch.

4,228,883

AUTOMATIC WEAR ADJUSTER FOR BELLEVILLE SPRING CLUTCHES

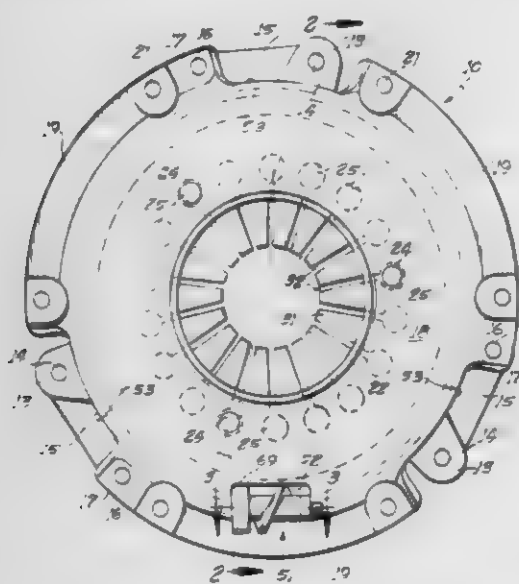
Albion W. Palmer, Birmingham, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 27, 1978, Ser. No. 900,452

Int. Cl.² F16D 13/75

U.S. Cl. 192—111 A

12 Claims



1. An automatic wear compensator for use in a diaphragm spring-actuated clutch assembly having a flywheel and a friction clutch disc with friction facings adapted for engagement by a pressure plate and subject to wear during use, a clutch cover, an annular pressure plate having a friction surface and a diaphragm spring pivotally mounted in said cover and adapted to urge the pressure plate into engagement, the wear compensator comprising a fulcrum ring on the pressure plate having a rearwardly extending annular flange providing a fulcrum edge cooperating with said diaphragm spring, said pressure plate having an annular recess receiving said fulcrum ring, camming means interposed between said pressure plate and said fulcrum ring to alter the distance between the pressure plate friction surface and the fulcrum edge upon relative rotation therebetween, and means sensing wear by sensing the extent of pivotal

movement of the diaphragm spring comprising a peripheral tab on said diaphragm spring, a worm member operatively connected to the fulcrum ring, and an actuator drum actuating said worm member and having a recess receiving said spring tab.

4,228,884

WRAPPING APPARATUS

Charles E. Michels, Racine, Wis., assignor to Reliance Electric Company, Cleveland, Ohio

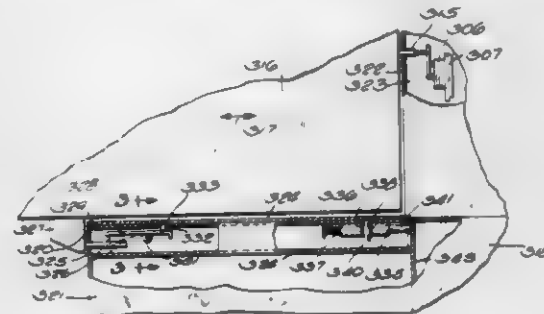
Division of Ser. No. 785,137, Apr. 6, 1977, Pat. No. 4,134,246.

This application Aug. 7, 1978, Ser. No. 931,645

Int. Cl.² F16P 3/08

U.S. Cl. 192—135

4 Claims



1. Interlock mechanism for a wrapping machine having multiple guard covers, said mechanism comprising a switch, a switch actuator on one of said covers and interlock mechanism on the other said covers which will preclude said switch actuator from engaging said switch unless all such guard covers are closed,

said interlock mechanism including a pin on one cover, a movable socket on a second cover and means on a third cover for moving said socket on the second cover to accept the pin on said one cover when all covers are closed.

4,228,885

COIN OPERATED ELECTRIC TIMER AUTOMATIC ELECTRIC CANDLE

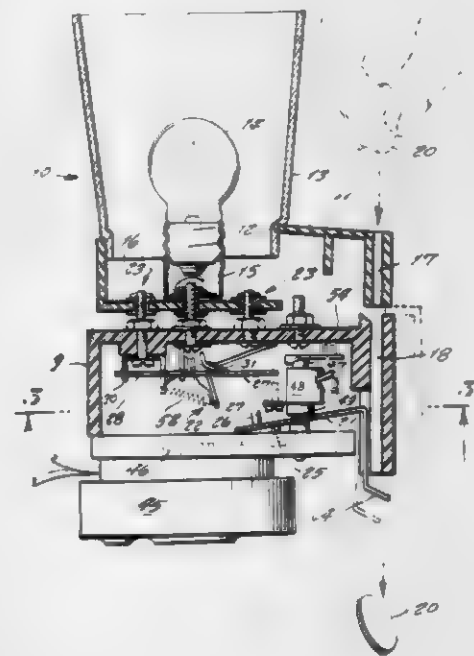
Charles G. Cavalleri, 756 Third Ave., Brooklyn, N.Y. 11232

Filed Jan. 29, 1979, Ser. No. 7,593

Int. Cl.³ G07F 15/12

U.S. Cl. 194—9 T

6 Claims



1. A coin operated electric timer, comprising in combination, an upper and a lower case secured together, a coin slot in said cases receiving a coin, a pivoted lever tripped by said coin, a pivoted arm carrying two contacts, being pivoted by said lever so as to contact a pair of stationary contacts connected to

a socket fitted with a lamp bulb, and said arm contacts being connected to a power source plug.

4,228,886

POSITION SENSOR

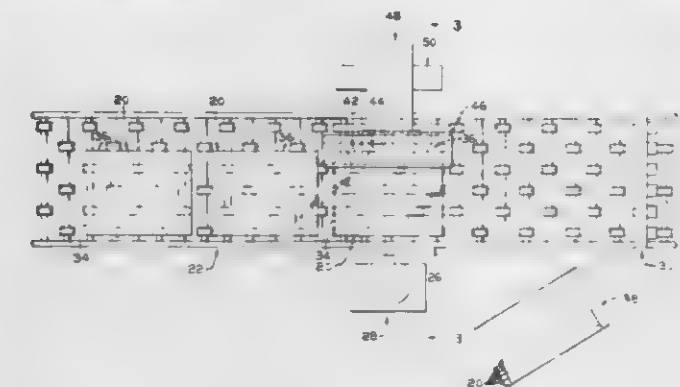
Raymond D. Moran, Springdale, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 26, 1978, Ser. No. 973,307

Int. Cl.³ B65G 47/24

U.S. Cl. 198—395

13 Claims



1. A method of determining orientation of an article having first and second sides, the sides having a fixed relationship to one another, comprising the steps of: establishing at least two spaced energy fields having a fixed relationship with one another; providing at least two detectors each having coordinates; moving the energy fields and the article relative to one another to intersect one energy field by the first side and the other energy field by the first and second sides of the article; determining by way of the detectors intersection coordinates of the energy fields; and determining article orientation from the intersection coordinates and fixed relationship of the first and second sides of the article.

4,228,887

ROTARY BOTTLE DISCHARGE APPARATUS

Michael Vamvakas, Rocky River, Ohio, assignor to Niagara Bottle Washer Manufacturing Co., Cleveland, Ohio

Filed Mar. 19, 1979, Ser. No. 21,622

Int. Cl.³ B65G 29/00

U.S. Cl. 198—408

4 Claims



1. A bottle discharge apparatus using a carrier for empty bottles which provides plural linear rows of regularly spaced bottle receptacles moved by parallel link chains, one attached at each end of said row, said row of receptacles opening at a common face, said carrier moving in a path from a generally

horizontal portion with all of said bottles lying on their sides to a generally vertical portion where said bottles are turned bottom downward nearly vertical with said common faces downward when said bottles reach a critical zone, means for holding said bottles in said receptacles up to said critical zone, means for receiving said bottles individually at said critical zone as they fall out of said receptacles, said receiving means timed relative to said carrier to cause said receiving means to be in position to accept each bottle as it slides out of its receptacle, a single fixed horizontal pad for each pair of associated bottle receptacles below and laterally outside of said critical zone, each receiving means having two portions, one portion curving laterally by an amount equal to one-half the spacing of associated bottle receptacles in one direction from said pad location up to said critical zone, the other portion of each receiving means curving laterally in the opposite direction by the same amount from said pad location up to said critical zone, said receiving means portions carrying said bottles independently to said single horizontal pad, and means at said pad to remove each bottle from its receiving means.

4,228,888

APPARATUS FOR FEEDING ARTICLES SUCH AS SWEETMEAT PRODUCTS TO A PACKAGING MACHINE

C. Ludovico Bruno, Oundle, England, assignor to Alisynco S.A.S. di Bruno & C., Leini, Italy

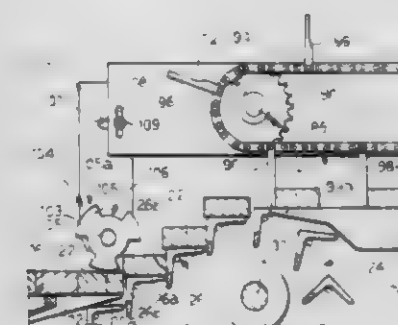
Filed Nov. 9, 1978, Ser. No. 959,387

Claims priority, application Italy, Nov. 15, 1977, 69573 A/77; Aug. 8, 1978, 68873 A/78

Int. Cl.³ B65G 47/66, 47/88

U.S. Cl. 198—461

5 Claims



1. Feeder apparatus for feeding articles such as sweetmeat products to a packaging machine, wherein the apparatus comprises in series:

a continuously driven feed conveyor belt arranged to receive at least one longitudinal row of articles from a production plant; elevator means having shelves movable in the manner of an escalator continuously along a path which includes an ascending run and a descending run in the manner of an escalator, each shelf having a size corresponding to the size of the articles and having an upper comb-shaped support surface for the individual articles; a fixed lower platform adjacent and coplanar with the delivery end of the feed conveyor belt; an upper fixed platform, said lower and upper platforms having comb-like configurations staggered in relation to said comb-shaped support surfaces of the shelves so that the latter pass through said platforms, whereby each shelf in the ascending run of the elevator is displaced from a lower, loading, position in which it is coplanar with the lower platform to an upper, delivery, position in which it is coplanar with the upper platform;

ejecting means; means operating the ejecting means in synchronism with the elevator, for removal of the articles as they are delivered to the upper platform;

a fixed support structure;
an upper horizontal drive shaft supported by the support structure;
a frame articulated to the support structure for movement angularly about the axis of rotation of the drive shaft;
adjusting means for adjusting the angular position of said frame;
a lower horizontal shaft freely rotatably supported by the same frame, each of said upper and lower shafts supporting a pair of sprocket wheels around which pass two chains, and
support means carried by said chains and supporting respective said shelves of the elevator means in the ascending run of the latter.

4,228,589

LUBRICATION CONNECTOR FOR ROLLER CONVEYORS

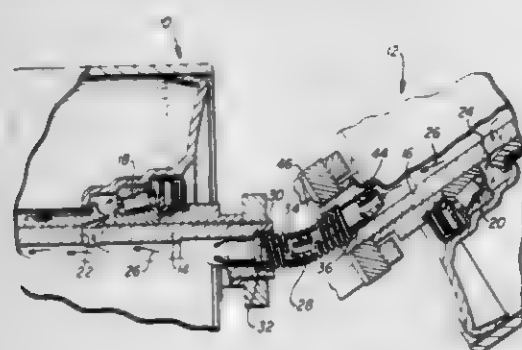
Stephen N. Garrison, Anderson, S.C., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 23, 1979, Ser. No. 14,396

Int. Cl.³ B65G 45/02

U.S. Cl. 198—501

10 Claims



5. A flexible tube connector for a flow through lubricating system between adjacent hollow shafts comprising means for resiliently holding one end of the tube in indexed lubricant flow communication relative to one of the shafts, the other end of the tube adapted to slidably fit in the other shaft and sized to generally prevent pressurized lubricant from leaking therebetween, whereby upon the lubricant having a predetermined pressure limit the tube deflects between said shafts causing said other end of the tube to slide outwardly in said other shaft, and means defining a lubricant leakage passage between said other end and said other shaft for allowing lubricant to escape from the tube and shaft before said other end of the tube is expelled by said pressure from the outer end of its cooperating shaft.

4,228,890

PARTICULATE MATERIAL LOADING EQUIPMENT

Miklos Tothfalusi, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 815,279, Jul. 13, 1977, abandoned. This application Feb. 27, 1979, Ser. No. 15,609

Claims priority, application United Kingdom, Jul. 13, 1976, 29037/76

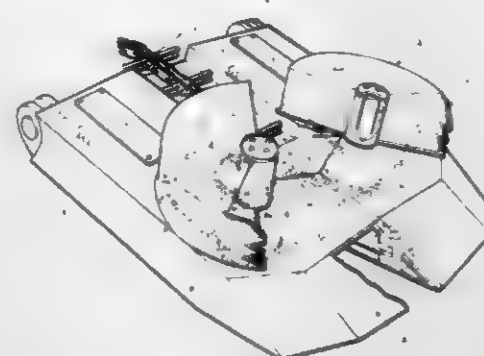
Int. Cl.³ B65G 65/02

U.S. Cl. 198—514

4 Claims

1. A mining machine comprising a forwardly and downwardly inclined loading apron pivotally mounted at the front of the machine and a discharge conveyor extending from the loading apron towards the rear of the machine, the loading apron including a working deck for receiving particulate material to be loaded by the machine and a tapered leading margin for urging particulate material from a pile of particulate material towards the working deck, the loading apron having at least one driven paddle device for urging particulate material over at least a portion of the working deck towards the discharge conveyor, the driven paddle device comprising an

angularly displaceable paddle mounted for repeated to and fro movement about a fixed pivotal axis along the portion of the working deck, and displacing means including hydraulic ram means for angularly displacing the paddle device about the fixed pivotal axis, the paddle device being shaped as a sector of a circle and having a working face for urging the particulate material, the working face extending from adjacent to the fixed pivotal axis of the paddle device towards a radially more re-



mote peripheral face of the paddle device which, in use when the paddle device moves in a material urging direction, substantially extends along the full length of the path defined by the radially outer portion of the working face of the paddle device throughout angular displacement of the paddle device and a rear face which, when the working face of the paddle is not urging the particulate material, acts to guide particulate material onto the conveyor.

4,228,891

ADJUSTABLE IDLER ROLL

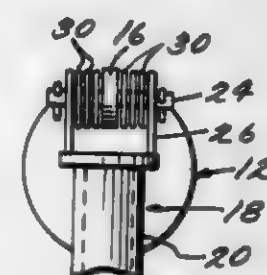
William Hanson, 428 N. Broadway, New Philadelphia, Ohio 44663

Filed Jan. 26, 1979, Ser. No. 6,648

Int. Cl.³ B65G 15/08, 39/16

U.S. Cl. 198—827

4 Claims



1. An apparatus for adjusting an idler roll assembly having at least one idler roll in a belt conveyor comprising: support means, including a shaft disposed parallel in the direction of movement of said conveyor, for suspensably supporting said at least one idler roll; a hook having a given width rigidly attached to at least one end of said idler assembly for hooking across said shaft; said support means having spacer means for securing said hook at any one of a plurality of positions on said shaft parallel to the direction of movement of said conveyor; said spacer means comprising a series of slidable disk elements having widths respectively less than said given width and holes

therethrough slidably mounted on said shaft in such number that said hook may be snugly hooked across said shaft between any adjacent two elements of said series of elements or at either end of said series of elements.

4,228,892

APPARATUS FOR THE STEPWISE ADVANCE OF MOULDS FORMED BY JUXTAPOSED IDENTICAL MOULD PARTS

Marius Gunnergaard, Lyngby, and Ole A. Jacobsen, Tivildeleje, both of Denmark, assignors to Dansk Industri Syndikat, A/S, Herlev, Denmark

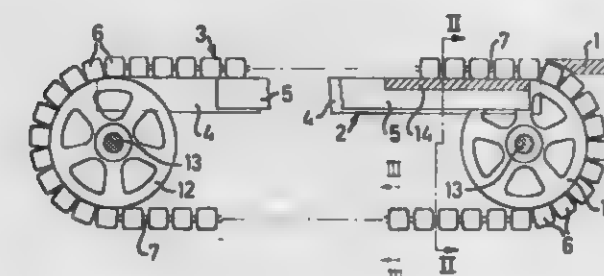
Continuation of Ser. No. 776,928, Aug. 11, 1977. This application Nov. 16, 1978, Ser. No. 961,057

Claims priority, application Denmark, Mar. 18, 1976, 1179/76

Int. Cl.³ B65G 23/00

U.S. Cl. 198—832

5 Claims



1. An apparatus for the stepwise or intermittent advance of a plurality of objects which successively are provided to said apparatus, said apparatus defining the pathway for intermittently advancing the objects and comprising

a walking beam conveyor comprised of a plurality of sets of beams;

a pair of roller means respectively disposed at the opposite ends of and in alignment with said walking beam conveyor for rotation on axes disposed transversely of the pathway and with their upper peripheries substantially coplanar with the upper positions of said sets of beams;

and an endless, elongate belt type conveyor trained around said roller means and supported by said sets of beams at the coplanar upper positions of said sets of beams, whereby the objects are supported and intermittently advanced by said belt type conveyor, said belt type conveyor comprising a plurality of transversely disposed, rigid rod members for supporting the objects, said rod member constituted by a tube of substantially rectangular cross-section including spaced substantially parallel side walls connected by spaced substantially parallel inner and outer walls, wherein the side walls of each tube are provided with aligned openings adjacent their respective end portions, a first clamp member mounted in each end portion of each tube and having a clamping face substantially aligned between the inner edges of said aligned openings, a second clamp member mounted in each end portion of each tube and having a clamping face opposite to and cooperative with the clamping face of said first clamp member, and means releasable securing each of said first and second clamp members together, the clamping faces of said members jointly defining a clamp area extending transversely of the end portion of the tube substantially intermediate the height of said side walls, and flexible, non-extensible means connecting said rod members as a unitary endless structure and maintaining the spacing of said rod member, said connecting means extending through said tube openings and comprising strand like members which are secured to the said tubes in said clamp area to constitute an endless conveyor trained around said rollers and surrounding said walking beam conveyor with said inner walls engaging said rollers and being supported by said walking beam conveyor.

4,228,893

INHIBITION OF PAINT-PRODUCT SKIN FORMATION ON THE INTERIOR SURFACE OF A PAINT VESSEL LID

Kenneth Franklin, Pittsburgh; William S. Rosenthal, Monroeville, and S. Thomas Greer, McMurray, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1979, Ser. No. 25,710

Int. Cl.³ B65D 81/24

U.S. Cl. 206—205

17 Claims

1. A method to inhibit the formation of a paint-product skin on the interior surface of the lid of a closed upright vessel housing a paint composition wherein a portion of said composition is volatile, the method comprising:

a. delivering said paint composition to an upright open vessel closeable at its top with a lid;

b. delivering a sufficient quantity of a barrier material to the open vessel to provide a covering layer of the barrier material for the top of the paint composition, said barrier material being characterized as

1. less dense than the paint composition;
2. containing a volatile portion whose volatility is at least substantially equivalent to the volatility of the volatile portion of the paint composition;

3. sufficiently compatible with the paint composition to produce no detrimental effects therein and to become a mixed non-detrimental component thereof upon adequate mixing therewith; and

4. more viscous than the paint composition; and
c. closing the open vessel at its top with a lid.

4,228,894

COMBINATION FISHING CREEL AND SEAT

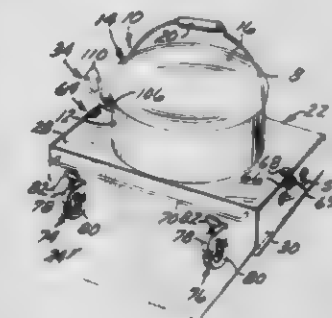
George C. Lyles, 1075 Hoffman Ave., Long Beach, Calif. 90813

Filed Mar. 2, 1979, Ser. No. 17,063

Int. Cl.³ B65D 85/50

U.S. Cl. 206—315 R

5 Claims



1. A portable fishing seat combination comprising an upright cylindrical bucket having a removable padded lid which includes a flat positioning disk located on its underside and which rests upon the mouth of the bucket, a cabinet affixed externally to said bucket at a location below said lid and extending laterally therefrom and having side walls and a flat upper surface with a screw cap mounting thereon for supporting a fishing pole thereon, and said side walls extend downwardly from said flat upper surface on opposite sides of said bucket to the level of the bottom of said bucket, and said cabinet encloses a pair of diametrically opposed laterally reciprocal tackle drawers mounted in said cabinet and externally of said upright bucket, and the inner ends of said drawers are configured to the contour of the sides of said bucket and seat snugly thereagainst, a carrying handle fastened to the sides of said bucket between said padded lid and said cabinet, a towel bar mounted horizontally on one of said side walls of said cabinet and a fishing pole rack mounted on the same side wall of said cabinet below said towel bar for carrying a fishing pole horizontally, a pole support having means for holding a fishing rod in inclined disposition affixed atop said flat upper surface and is removably engageable in said screw cap mounting on said flat upper cabinet surface, said pole support having means for slidably adjusting the degree of inclination of said fishing pole, and a creel removably positionable in said bucket with

said padded lid in position on said bucket, said creel having a solid, cylindrical concave bottom pan portion and open wire mesh walls extending upwardly from said pan and includes a closable lid, whereby said bottom pan retains a minimum water level in said creel and said wire mesh walls and said closable creel lid provide a restraining enclosure for solid objects in said creel while allowing water to flow out of said creel down to said minimum water level of said concave bottom pan.

4,228,895

MAGAZINE TAPE CONTAINING A PLURALITY OF HEMOSTATIC CLIPS

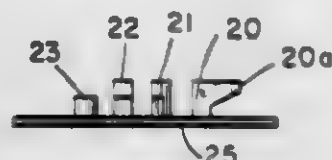
Joseph F. Larkin, Holland, Pa., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 2, 1979, Ser. No. 26,253

Int. Cl.³ B65D 85/24

U.S. Cl. 206—339

6 Claims



1. A magazine tape for containing a plurality of hemostatic clips comprising:

a flat flexible belt;

a plurality of units attached to said belt, each unit containing a hemostatic clip and each unit consisting of in succession a parallel aligned pair of:

leading tabs;

side retaining tabs and apex retaining tabs said retaining tabs containing a groove adjacent the sides of said belt having a height about equal to the thickness of said clip and a thickness about equal to or less than the width of one side of a hemostatic clip, and the portion of said apex tabs adjacent to the clip apex having a contour about equal to said clip apex contour;

feeding and positioning tabs having flanged upper portions parallel with the longitudinal direction of said belt and extending away from said apex tabs, said flanged portions decreasing in thickness away from said positioning tabs, whereby the leading ends of said clip can be contained on said leading tabs and the sides and apex can be contained on said retaining tabs.

4,228,896

PACKING DEVICE FOR DECORATIVE STRING SET

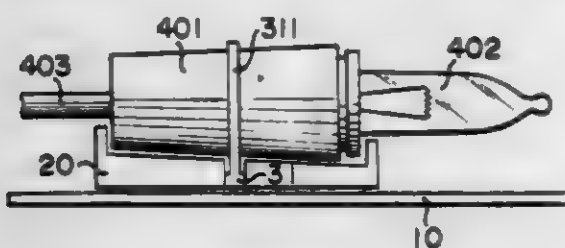
Jeng-Shyong Wu, No. 133 Tungshing Rd., Tounan, Maaili, Taiwan

Filed Mar. 15, 1979, Ser. No. 20,702

Int. Cl.³ B65D 85/42

U.S. Cl. 206—420

11 Claims



1. A packing device for a decorative light string set having a plurality of sockets with bulbs therein comprising:

a base member carried on a protective card, said base member having a front and a rear raised stand formed respectively at opposite ends thereof and defining a recess for receiving the bulbs and sockets of the decorative light string set to be packed, with the front and the rear ends of

each bulb and socket in alignment with said front and said rear raised stands, said base member having a plurality of through-openings in said recess, spaced along a direction transverse to a longitudinal axis of the bulbs and sockets when they are received in said recess;

a fastener member having a lengthwise seat and a number of spaced, upwardly-extending claw elements formed on and integrally with the seat, said fastener member fitted into a position in which said claw elements each extend up through a corresponding through-opening of said base member from a bottom side of said recess so that any two adjacent claw elements can grip, between them, one bulb and socket in said recess intermediately of said front and rear stands and hold the bulb and socket firmly against an upper surface of said base member; and an upper surface of said seat of said fastener member and a lower surface of said base member being provided with interengagement means so that said fastener member when in its fitted position, is firmly attached to said base member.

4,228,897

STACKING ELEMENT FOR RETAINING STACKED ARTICLES

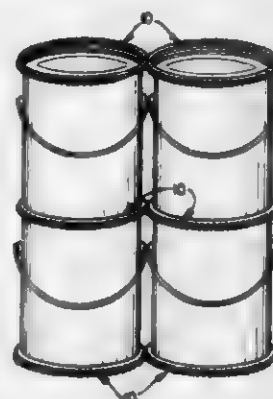
J. Larry Underwood, 104 Dixie Dr., Woodstock, Ga. 30188

Filed May 31, 1979, Ser. No. 44,077

Int. Cl.³ B65D 21/02

U.S. Cl. 206—504

7 Claims



1. A molded plastic stacking element for assembling a plurality of similar articles vertically and laterally in a stack in a plurality of tiers with the articles in each tier laterally adjacent, said stacking element having a closed, peripheral configuration with a radial projection in a plane on its inner periphery to be interposed between two vertically adjacent articles and upper and lower rib formations on said closed configuration for laterally engaging rims on lower and upper ends of said vertically adjacent articles, said element having a series of spaced, solid lateral projections in said plane of said radial projection and extending laterally outwardly from its outer periphery a distance at least as great as the width of a projection and spaced by complementary spaces corresponding to said lateral projections in size and shape to receive and laterally engage similar projections on a laterally adjacent stacking element so that a plurality of said projections on adjacent elements will interengage in substantially any relative positions of said elements.

4,228,898

RECLOSABLE CARTON AND BLANK THEREFOR

Charles R. Zeitler, and John F. Thomas, both of Grand Rapids, Mich., assignors to Packaging Corporation of America, Evanston, Ill.

Filed May 14, 1979, Ser. No. 38,656

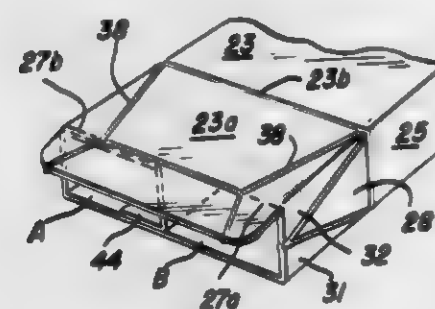
Int. Cl.³ B65D 5/74, 5/54

U.S. Cl. 206—621

5 Claims

1. A reclosable folding carton formed from a single blank of sheet material and having an interior formed into a pair of

upright contiguous relatively isolated compartments, said carton comprising a closed bottom; substantially wide wall panels foldably connected thereto and having upper sections disposed in substantially convergent relation and forming a closed narrow elongated transversely extending top; narrow side panels foldably connected to corresponding side edges of said wall panels, each side panel being provided with an upper section including a center segment having tapered side edges and a pair of gusset segments each foldably connecting a side edge of the center segment to an adjacent side edge of the upper section of a wall panel, the upper edge portions of said pair of gusset segments initially being in face-to-face non-adhered relation and sandwiched between corresponding portions of the wall panel upper sections to initially form a closed leakproof top for said carton, the center segments of said panels being in substantially convergent relation when said carton top is closed; and elongated top closure flap connected by a foldline to the upper edge of one wall panel, said top closure flap being substantially coextensive with the upper edge of said one wall panel and secured to the upper portion of the other



wall panel and concealing the upper edge portions of said other wall panel and said side panels, said foldline having at least one weakened end portion aligned with the upper edge portions of a pair of said gusset segments when the top of the carton is initially closed; and a partition foldably connected to one panel and disposed within the carton interior and having an elongated portion having a length substantially coextensive with the height of said wall panels, said partition extending between said wall panels and separating the carton interior into said contiguous isolated compartments, said partition portion having a foldable upper section of substantially the same configuration as the upper section of a side panel and being sandwiched between and sealingly secured to the convergent upper sections of said wall panels; the weakened end portion of said foldline being adapted to be torn and expose the upper edges of the gusset segments aligned therewith whereby said gusset segments are adapted to be manually folded outwardly relative to one another and coact with the adjacent center segment and form a pouring spout communicating with a selected one of said compartments.

4,228,899

CONTAINER WITH A DISPENSING ORIFICE AND BLANK THEREFOR

John J. Austin, Jr., Hinsdale, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 26, 1979, Ser. No. 15,069

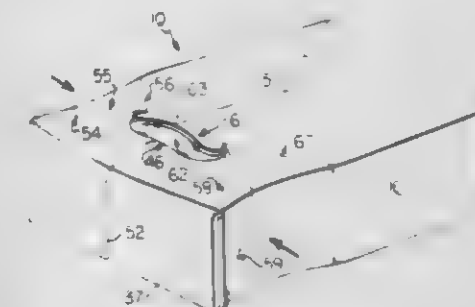
Int. Cl.³ B65D 5/72

U.S. Cl. 206—626

29 Claims

1. A container having a dispensing orifice comprising: a front panel, right and left side panels and a rear panel hingedly connected along parallel fold lines to form an enclosed chamber; a glue flap interconnecting said rear panel and one of said side panels; a bottom closure connected to the bottom of said panels to close the chamber at the bottom; a top closure connected to the top of said panels to close the chamber at the top; and means defining a dispensing flap in said front panel, said means including a frangible perforated line defining a

dispensing orifice, said means further including two sets of a plurality of fold lines formed in said front panel, each set contacting said perforated line at opposed ends and extending from such contact to opposite sides of said front panel with one of said fold lines in each said set extending onto the adjacent side panel,



whereby, once said dispensing flap is manipulated to fully sever the perforated line and form the dispensing orifice, pressure applied to said side panels causes said dispensing flap to extend outwardly from said front panel and away from said chamber to expand said dispensing orifice for the pouring out of the contents of said enclosed chamber.

4,228,900

PACKING OF THE FOLDING BAG TYPE, PRIMARILY FOR PIPE TOBACCO, AND A FOLDING BAG MEMBER FOR SUCH A PACKING

Heinrich W. Lambach, and Lef Sørensen, both of Horsens, Denmark, assignors to Brdr. Schur International A/S J. W. Schursvej, Denmark

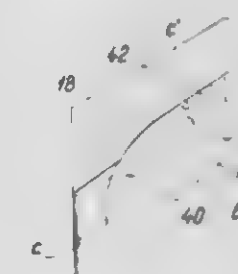
Filed Sep. 18, 1978, Ser. No. 943,125

Claims priority, application United Kingdom, Sep. 16, 1977, 38789/77

Int. Cl.³ A24F 23/02

U.S. Cl. 206—260

2 Claims



1. A packing of the folding bag type, particularly for pipe tobacco, comprising a bag portion formed by two opposed front and rear wall portions of plastic sheet material which are permanently joined along a bottom edge and two side edges, while along an upper mouth edge they are joined in a sealed, yet releasable manner, the rear wall portion being extended upwardly forming a folding flap portion which, when the packing is folded together, is laid against the outside of said bag portion, characterized in that the mouth edge is closed by means of a sheet strip member laid over and along the mouth edge and welded to the outside of the front wall portion and the inside of the folding flap portion, respectively, at least one of these welds being of a breakable or releasable type, in which the sheet strip member consists of a sheet material different from the bag sheet material and is additionally welded releasably to the bag portion adjacent the side edges of the bag portion by end weld lines extending up to the welding line area between the strip member and the folding flap portion, in which said end weld lines at least at one end of the strip member extend upwardly and inwardly to form an easily seizable end portion of the strip member.

4,228,901

SEPARATOR DEVICE FOR ELONGATE OBJECTS ADVANCING ALONG A CONVEYING PATH

Roland Watzka, Feuerthalen, and Henri Bartholme, Neuhausen am Rheinfall, both of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

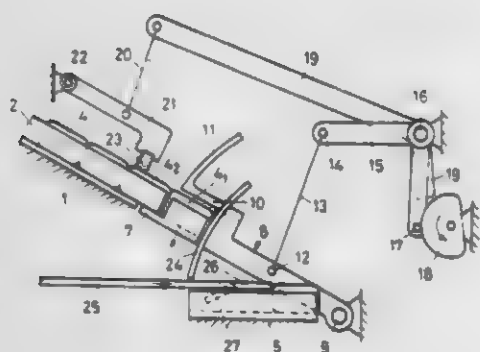
Filed Dec. 22, 1978, Ser. No. 972,369

Claims priority, application Switzerland, Dec. 29, 1977, 16207/77

Int. Cl.¹ B07C 9/00; B65G 25/04; B65H 5/00

U.S. Cl. 209-684

6 Claims



1. A separator device arranged to be disposed in a conveying path for elongate objects each having a desired length, said device comprising means defining an inclined input path presenting at least one channel presenting an object support surface along which a succession of such objects slide downwardly in the direction of their longitudinal dimension; a fixed abutment member disposed downstream of, and in line with, said input path for limiting the movement of an object exiting from said channel; means defining a discharge path for discharging objects in succession from said device, said discharge path presenting an object support surface spaced below the lower extremity of said abutment member by a distance at least equal to the vertical dimension of each object; a pivotally movable plate located between the outlet end of said channel and said abutment member and movable between a raised position in which it is aligned with the support surface of said channel and a lowered position in which it is aligned with the support surface of said discharge path, movement of said movable plate from its raised to its lowered position acting to cause an object located between the outlet end of said channel and said abutment member to move downwardly while sliding along said abutment member into alignment with said discharge path; a pusher member movable for pushing an object which is thus aligned with said discharge path beneath said abutment member and onto said discharge path; a clamping strip movable between a retracted position in which it permits downward sliding movement of objects along said channel and a clamping position in which it blocks such movement, said strip being located relative to the outlet end of said channel such that, when an object having the desired length is positioned against said abutment member, and when said strip is in its clamping position, said strip will clamp the next following object if it has the desired length but not if it has less than the desired length; clamping control means connected to said strip to move it from its retracted position to its clamping position at the start of movement of said movable plate from its raised position to its lowered position in order to permit a next following object having less than the desired length to exit from said channel; and a movable member disposed for separating from the conveying path an object which has exited from said channel after the start of movement of said movable plate from its raised position to its lowered position.

4,228,902

CARRIER FOR SEMICONDUCTIVE WAFERS

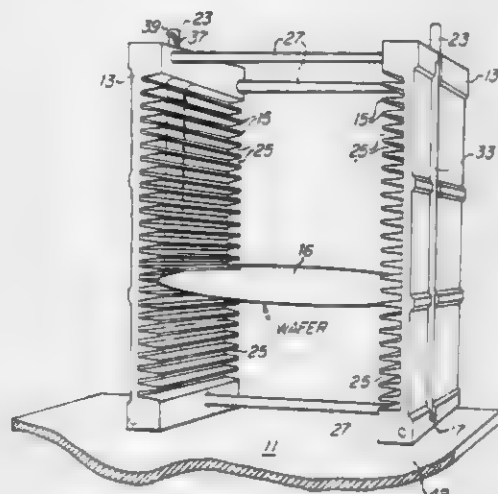
Harvey L. Schulte, Los Altos, Calif., assignor to Kasper Instruments, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 848,921, Nov. 7, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,368

Int. Cl.² B23P 17/00; A47G 19/02

U.S. Cl. 211-41

20 Claims



1. A carrier apparatus for impeding spillage of selected items stored therein, the apparatus comprising:

- a pair of side plates linked to form a plurality of transport channels, at least one of the side plates having a recessed region; and
- a stop member pivotally mounted in the recessed region for automatic movement between an inoperative position out of the transport channels to permit passage of the items therethrough in response to the apparatus being set down, and an operative position protruding into the transport channels and blocking passage of the items therethrough to impede spillage of the items in response to the apparatus being picked up.

4,228,903

GRAVITY FEED CAN DISPENSER FOR BEVERAGE COOLERS

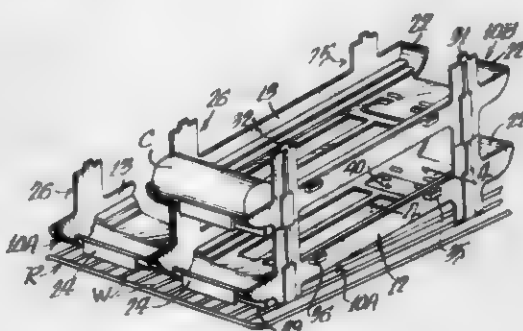
Ronald P. Eckert, Northbrook, Ill., assignor to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Filed Apr. 26, 1979, Ser. No. 33,721

Int. Cl.³ A47F 5/01; B65G 11/00

U.S. Cl. 211-49 D

14 Claims



1. A stackable gravity feed can dispenser for a cooler which has racks formed of parallel wires extending from front to rear of the cooler, said dispenser comprising, in combination:

- a downwardly and forwardly inclined guideway to support a series of cans for seriatim rolling movement from a filling end of the guideway at the rear of the cooler to a delivery end at the front of the cooler;
- side walls defining the sides of the guideway, said side walls having integral upright supporting webs near the rear and the front which are thinner than the space between wires of a cooler rack, said webs having upper ends above the plane of the guideway which have upper interengaging

means and lower ends below the plane of the guideway which have lower inter-engaging means complementary to said upper inter-engaging means, whereby two of said dispensers may be stacked with the webs of the upper of said two dispensers seated on the webs of the lower of said two dispensers and with said upper and lower means inter-engaged, and said webs leaving an unobstructed space for cans in the lower dispenser;

- a depending, transversely elongated rack-engaging foot adjacent the front of the guideway, said foot being adapted to rest upon several of the rack wires to support the front of a lowermost dispenser stably on the rack and being vertically short enough to avoid interference with removal of cans when a dispenser is the upper of two dispensers;

and hinged panel means near the rear of the guideway, said panel means having a non-interference position entirely outside said unobstructed space and having a supporting position with a surface effectively coplanar with the lower ends of the supporting webs, said panel means having a transverse dimension greater than the span across several rack wires, whereby said panel means of a lowermost dispenser may occupy a supporting position resting stably upon a rack and the panel means of an upper dispenser may occupy the non-interference position.

4,228,904

STAIRSTEP DISPLAY RACK

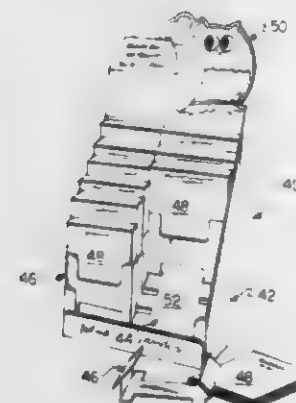
Vernon Dumond, Redfield, Ark., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 18, 1978, Ser. No. 943,046

Int. Cl.² A47F 7/00; B65D 5/50

U.S. Cl. 211-55

11 Claims



1. A stairstep display rack for displaying items in a stairstep arrangement on a horizontal surface comprising:

- an outer casing;
- a support member adapted to be mounted within said casing; said member having a generally planar support panel, means for supporting said support panel so that it is inclined relative to the horizontal surface and exposed in said casing when said member is mounted in said casing, and a plurality of aligned slots in said support panel;

at least one generally channel shaped pocket means for receiving a quantity of items to be displayed; said pocket means including a front panel, two side panels respectively connected to the remaining side edges of said side panels, said pocket means further including at least two legs extending downwardly from the lower edge thereof and adapted to be received in said aligned slots, and wherein the lower edges of said side panels are inclined upwardly towards said back panels, with the angle of inclination of the lower edges of said side panels being equal to the angle of inclination of said support panel such that the lower edges of said side panels rest against the upper surface of said support panel thereby maintaining said pocket means in a vertical orientation; and said casing, support member and pocket means each being in

the form of a flat, planar sheet of material which may be folded to its assembled configuration; whereby said casing, support member and pocket means may be stored and shipped in a flat configuration, and assembled easily on location without any preassembly.

- 11. A stairstep display rack comprising a generally planar support panel; means for supporting said support panel at an angle relative to a generally planar surface on which the rack is to be mounted;

a plurality of aligned slots in said support panel; a plurality of generally channel shaped pocket means said pocket means including a front panel, two side panels attached to opposite side edges of said front panel, and two back panels respectively connected to the remaining side edges of said side panels, said pocket means further including at least two legs extending downwardly from the lower edge thereof and adapted to be received in said aligned slots, and wherein the lower edges of said side panels are inclined upwardly towards said back panels, with the angle of inclination of the lower edges of said side panels being equal to the angle of inclination of said support panel such that the lower edges of said side panels rest against the upper surface of said support panel to maintain said pocket means in a vertical orientation; at least some of said pocket means arranged in a line extending up the incline of said support panel; whereby said pocket means are arranged in a stairstep manner.

4,228,905

STEMWARE SHELF BRACKET

David F. Cammarota, 59 Franklin St., Northport, N.Y. 11768

Filed Nov. 29, 1978, Ser. No. 964,495

Int. Cl.² A47F 7/00

U.S. Cl. 211-71

1 Claim



1. A shelf bracket for hanging inverted stemware having a narrow stem connected to a wide base, comprising

- a flat horizontal rack having front and rear upstanding flanges connected to inwardly opening, elongated channels offset outwardly from said flanges and adapted to snugly fit the front and rear outer edge portions of a shelf on which the rack is mounted with said flanges depending from the lower inner edges of said channels in inwardly spaced relation to the front and rear edges of said shelf to insure stability of said bracket on the shelf,

said front flange having a plurality of wide openings for the passage of an inverted stemware base, and a narrow slot extending rearwardly from the center of each such wide opening for the passage of the stem of said inverted stemware.

4,228,906

ADJUSTABLE RAIL MOUNTING ASSEMBLY

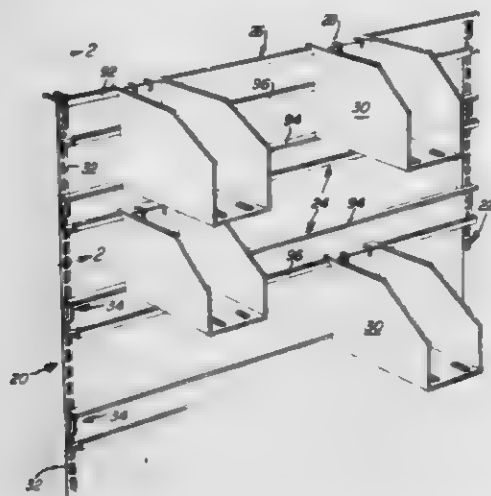
Dennis L. Jones, Bakersfield, Calif., assignor to Kardex Systems, Inc., Marietta, Ohio

Filed Sep. 14, 1978, Ser. No. 942,911

Int. Cl.³ A47F 5/00

U.S. Cl. 211-126

10 Claims



1. An adjustable mounting assembly comprising, in combination, a slotted upright support post, a slotted, substantially horizontal mounting rail for attachment to said post and support of storage containers thereon, and attaching means for removably securing said mounting rail to said post, said attaching means comprising an adjustable locking bracket for insertion through said slotted mounting rail and through said slotted upright support post, said slotted post including equally spaced vertical slots of equal dimension, said rail including a vertical slot and a plurality of vertically spaced holes aligned with the slot, said bracket including a vertical member having three laterally extending fingers thereon with the upper and lower fingers being hook-shaped to extend through the rail and post and interlock therewith to secure the rail to the post, the dimensions and spacing of the post slots, slot and holes in the rail and the fingers on the bracket being such that the rail can be attached to the post in adjusted position fractionally of the vertical distance between the post slots as well as adjusted positions coinciding with the vertical distance between the post slots.

4,228,907

MINIATURE RAILROAD UNCOUPLING APPARATUS

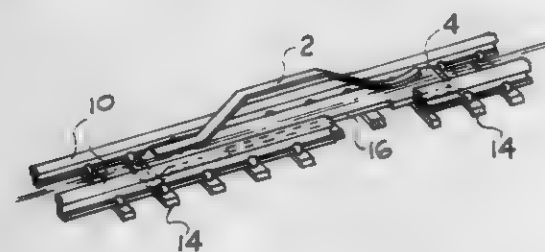
John Werner, 11455 Tampa St., Northridge, Calif. 91324

Filed Jul. 17, 1978, Ser. No. 869,645

Int. Cl.³ B61G 1/00, 3/00, 5/00, 7/00

U.S. Cl. 213-75 TC

11 Claims



1. A portable uncoupling apparatus for use with a miniature railroad system comprising:
base means for locating and securing the apparatus when placed between two rails of a miniature railroad track to restrict side motion; and
a resilient strap having a width less than the distance between the rails and having a raised portion along its length and inclines forming ramps on either side of the raised portion's highest point, said strap being attached to the base means on one side of the raised portion whereby the strap may be depressed towards the base means without buckling, and said strap being oriented along the base

means with its length substantially parallel to the rails and being positioned to one side between said rails whereby the strap lifts only one of at least two vertical lift pins of two engaged couplers between connecting miniature railroad cars, said strap having adequate stiffness to raise the lift pin but sufficient flexibility to depress under the weight of axles of miniature railroad cars passing over the strap.

4,228,908

BABY BOTTLE CARRIER

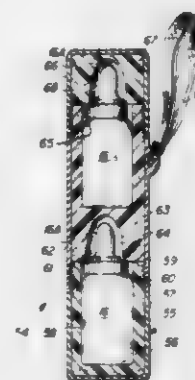
Timothy J. Tweeton, 6808 N. 10th Pl., Phoenix, Ariz. 85014

Filed Nov. 8, 1978, Ser. No. 958,814

Int. Cl.² A45C 11/00; A61J 9/00

U.S. Cl. 215-11 C

7 Claims



1. An insulated baby bottle carrier comprising:
an elongated housing having a bottom portion and a cap interconnected by an open ended hollow shell,
an insulating porous sleeve fitted into said bottom portion and defining a first cavity extending longitudinally thereof for receiving in a snugly fitting arrangement the bottle portion of a first baby bottle,
said shell being provided internally thereof with an elongated insulating insert which is provided with second and third cavities one extending into each end thereof,
said second cavity being positioned and conformed to receive the extended nipple of the first baby bottle when positioned in said porous sleeve and when said shell is engaged with said bottom portion,
the third cavity being formed to receive the bottle of a second baby bottle, and
an insert mounted within said cap and provided with a cavity,
the cavity of said cap being positioned and conformed to receive the extended nipple of a second baby bottle positioned in said third cavity of said shell.

4,228,909

SQUEEZE-OFF CLOSURE WITH TAMPER INDICATING BAND

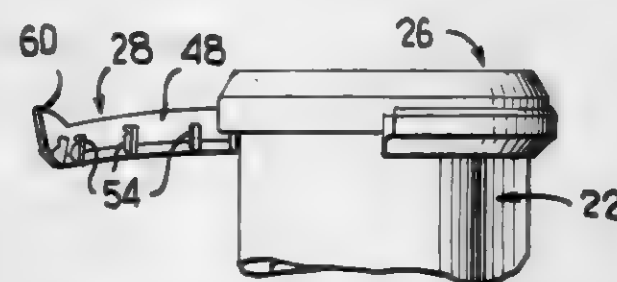
Frank H. Lecinski, Jr., Harwood Heights, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,932

Int. Cl.³ B65D 41/32

U.S. Cl. 215-253

18 Claims



1. A closure assembly comprising a closure member including a one piece body having a generally flat full end panel and

a depending skirt; a separate sealing ring within said body for sealingly engaging a container terminal sealing surface, and a tamper indicating ring carried by said skirt, said tamper indicating ring having a portion removable therewith disposed radially inwardly of and within said skirt for normally preventing radial inward deflection of said skirt sufficient to effect deformation of said sealing ring to a non-sealing configuration.

4,228,910

DEVICE FOR TIGHTLY STOPPING A BOTTLE

Rene E. L. Barre, 39, boulevard Bourdon, Paris, France

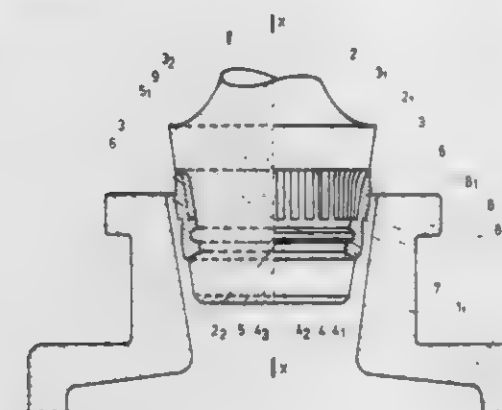
Filed Oct. 18, 1978, Ser. No. 952,285

Claims priority, application France, Jul. 19, 1978, 78 21447

Int. Cl.³ B65D 39/00

U.S. Cl. 215-364

3 Claims



1. An improved stopping device for tightly stopping a bottle comprising a stopper having a body portion provided with at least one neck receiving a flexible fluid-tight sealing ring, the neck having at least one toothed surface and at least one smooth surface, the stopping device being designed and arranged such that the smooth surface is formed at the bottom of an annular groove bounded by two edges, one edge on each side of said annular groove, one of the sides of said groove being constituted by the edge of a rib formed in the bottom of the neck and the depth of said groove corresponding to the depth of the base of said toothed surface.

4,228,911

ROLLER CHIMES FOR CLOSED HEAD DRUMS

Theo Hammes, Cologne, Fed. Rep. of Germany, assignor to Mauser-Kommandit Gesellschaft, Bruhl, Fed. Rep. of Germany

Filed Oct. 30, 1978, Ser. No. 955,616

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815326

Int. Cl.³ B65D 90/02

U.S. Cl. 220-1 R

11 Claims



1. A closed head drum formed of a thermoplastic material

parison blown within a mold openable horizontally along a vertical plane and comprising:

- a head end;
- a bottom end spaced from said head end;
- a side wall formed integrally with and extending between said head and bottom ends, said side wall forming the lateral closure of the drum and having an increased wall thickness on diametrically opposite sides thereof; and
- at least one roller chime formed integrally with and extending circumferentially around said side wall, said roller chime being L-shaped and comprising:
 - a first leg extending radially outwardly from said side wall,
 - a second leg extending from and transversely of the radially outer end of said first leg so that said second leg extends generally in the same direction as said side wall,
 - said second leg being spaced radially outwardly from the outer surface of said side wall and forming, in combination with said side wall and said first leg, an annular recess extending circumferentially around the drum, and
 - a portion of said chime having a variable thickness with the maximum thickness of said portion being located at said diametrically opposite sides and the minimum thickness thereof located between said diametrically opposite sides.

4,228,912

CONTAINER

Clifford E. Harris, Billerica, and Norman B. Spary, Chatham, both of England, assignors to EPS (Research and Development) Limited, Sittingbourne, England

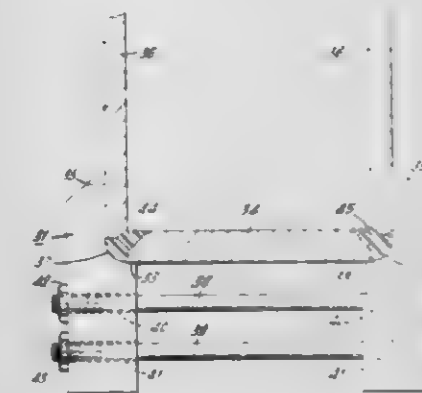
Continuation-in-part of Ser. No. 714,398, Aug. 16, 1976,

abandoned. This application Dec. 11, 1978, Ser. No. 968,414

Int. Cl.³ B65D 6/32

U.S. Cl. 220-4 R

13 Claims



1. A packaging container comprising a base and a plurality of side walls upstanding from the base, the base and each respective side wall being formed from a substantially rigid panel, there being joints between the base and each side wall and between each side wall and each adjacent side wall, each said joint comprising a member of cold cured elastomer which has been cured in situ and which forms a flexible element securing the panels together to form a packaging container having waterproof and flexible shock resistant joints between the substantially rigid panels.

4,228,913

BEVERAGE CAN HAVING A SELF CONTAINED STRAW

Alberto Mack, and Charing Mack, both of 32 Harmony St., Piscataway, N.J. 08854

Filed Apr. 19, 1979, Ser. No. 32,109

Int. Cl.² A47G 19/22

U.S. Cl. 220-90.2

3 Claims

1. A tab top beverage can having a self-contained straw assembly, comprising:

- (a) a beverage can having a top including a tab top opening assembly for forming a drinking slot;
- (b) a drinking straw contained within said beverage can, said straw having a top end abutting the underside of said tab top opening assembly, and a bottom end having a biasing means including a compressible, integrally formed resilient bellows for biasing said top end against said underside of said tab top opening assembly and pushing said top end of said straw through said drinking slot when said tab top assembly is removed to open said can, and
- (c) an elongated straw guide means mounted on the inside of said beverage can in alignment with the longitudinal axis of said can for aligning said top end of said straw with said underside of said tab top opening assembly, said straw guide means including:



- (i) a top retaining portion for slidably receiving and aligning said top end of said straw with said underside of said tab top opening assembly, said top retaining portion having a lower edge for obstructing slidable movement of said bellows of said straw through said top retaining portion, and
- (ii) a bottom retaining portion for slidably receiving said bellows of said straw and for securing said bellows within said can,
- wherein the longitudinal distance between said lower edge of said top retaining portion and the upper edge of said bottom retaining portion is less than the longitudinal length of said bellows when said bellows is expanded, whereby said straw guide means retains said straw in orthogonal disposition with said top of said beverage can at each position of said straw along the longitudinal axis of said straw guide means after said tab top assembly is removed to form a drinking slot.

4,228,914

STERILIZED STORAGE CONTAINER

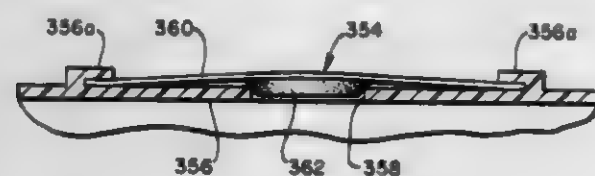
Roger S. Sanderson, 24662 Santa Clara Ave., Dana Point, Calif. 92629

Continuation-in-part of Ser. No. 710,521, Aug. 2, 1976, abandoned, which is a continuation of Ser. No. 501,183, Aug. 28, 1974, abandoned. This application Mar. 1, 1978, Ser. No. 832,489

The portion of the term of this patent subsequent to Aug. 8, 1995, has been disclaimed.

Int. Cl.³ A61B 19/02; A61L 2/06, 2/26; B65D 81/20
U.S. Cl. 220—203

1 Claim



1. Apparatus for containing items while being sterilized or stored comprising:
- means defining a container;
- means in a wall of the container for permitting access to the container interior; and
- means responsive to a sterilizing environment applied to the

container interior and exterior to close said container access means after its contents have been sterilized to prevent further environment from entering the container after sterilization, said container being constructed so that further environment cannot enter the container after said access means is closed;

said responsive means including pressure responsive means for permitting said sterilizing environment to escape from said container when the gaseous pressure in the container exceeds the pressure outside the container a slight amount; said means responsive to the sterilizing environment including a temperature responsive valve which closes automatically after said items have been subjected to a sterilizing temperature long enough to sterilize said items, and said valve being also constructed to serve as a pressure responsive check valve and form the means for permitting said environment to escape from the container.

4,228,915

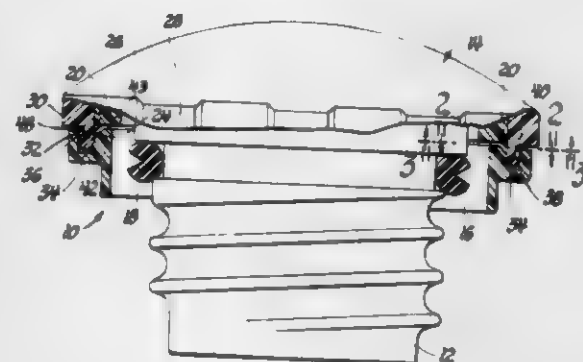
FUEL CAP WITH ANTIROTATION FEATURE BETWEEN COVER AND SKIRT PORTIONS

Robert E. Hooper, and Lawrence P. Johnson, both of Huron, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 14, 1979, Ser. No. 38,633
Int. Cl.³ B65D 41/04

U.S. Cl. 220—288

1 Claim



1. A fuel cap comprising: a handle member having an axially extending wall portion with a radially extending axially facing locking surface adjacent the distal end thereof, a cover portion, and a plurality of spaced radially extending protuberances on said wall portion extending between said radially extending locking surface and said cover portion; closure means operatively rotatably connected with said handle; and a skirt member having a plurality of spaced locking tabs each having a radially extending face abutting said locking surface on said handle member, shoulder means for preventing axial separation of said closure means relative to said handle member, and said spaced locking tabs each having a circumferential dimension substantially equal to said space between said spaced protuberances and each locking tab having radially extending end walls axially aligned to radially mate with the radial extent of said spaced protuberances whereby relative rotation between said handle and skirt is limited.

4,228,916

PLASTIC PAINT BUCKET WITH METAL SEALING RING

Rolf E. Weingardt, Scarsdale, N.Y., assignor to Standard Container Company, Montclair, N.J.

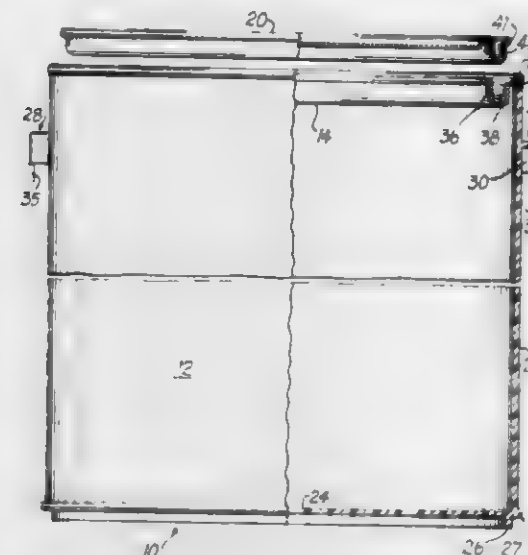
Filed Jul. 20, 1978, Ser. No. 926,542
Int. Cl.³ B65D 43/06

U.S. Cl. 220—354

18 Claims

1. A container, comprising a plastic bucket having a closed bottom and an open top, said bucket including a sidewall, having a generally circular lateral cross-sectional shape, and a top rim formed as an annular upwardly opening channel having an inner circumferential wall and an outer circumferential

wall connected at their lower ends to each other and said outwardly of said sleeve upon forcibly urging ends of said sidewall; and a double-tight metal sealing ring disposed in said sleeve relatively toward one another, as cups are removed past



channel and bridging said inner and outer circumferential walls thereof, an inner circumferential end of said sealing ring being hidden by said inner circumferential wall of said channel.

4,228,917

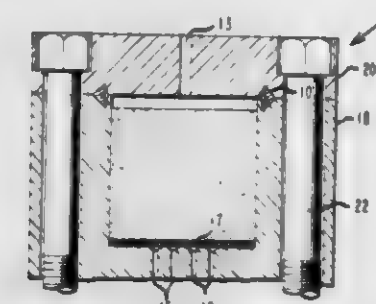
GASKET FOR YARN SPINNING PACK

Lyles H. Sowell, Old Hickory, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1979, Ser. No. 36,540
Int. Cl.³ B65D 53/00

U.S. Cl. 220—378

1 Claim



1. In a polymer filter that includes a body and a lid joined together at juncture surfaces, said surfaces having matching annular V-shaped grooves forming a chamber, the improvement comprising a ring gasket of cold-flowable metal in said chamber, said ring gasket having an inner peripheral surface that includes a circumferential groove, and a height greater than the combined depth of the V-shaped grooves whereby the gasket is compressed when said lid and said body are joined together and said gasket permanently increases in thickness as its height is reduced.

4,228,918

CUP DISPENSING APPARATUS

Thomas W. Kellogg, Irvine, Calif., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 12, 1979, Ser. No. 3,088
Int. Cl.³ A47F 1/06

U.S. Cl. 221—65

19 Claims

11. Cup dispensing apparatus comprising: a sleeve of flexible and resilient material for containing a stack of nested cups, said sleeve including at least one set of a plurality of axially extending circumferentially spaced wall-defining strips of uniform length; circumferentially aligned means intermediate ends of said strips defining weakened foldable regions; and detent means disposed toward one end of said sleeve for engagement by the rim of a cup to retain said stack of nested cups in said sleeve, said sleeve being collapsible by folding of said strips about said weakened foldable regions and about ends thereof

4,228,919

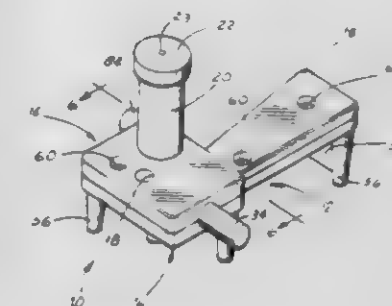
DENTAL AMALGAM DISPENSER

Maurice M. Welkel, 1050 Greenfield Dr., El Cajon, Calif. 92021

Filed Sep. 8, 1978, Ser. No. 940,704
Int. Cl.³ B65B 1/30

U.S. Cl. 221—96

7 Claims



1. A dispenser for liquid mercury and silver for mixture in an amalgam comprising:

a bifurcated plastic housing constructed of upper and lower discrete concave components, each of unitary construction, said upper component having separate inlet ports for mercury and silver and said lower component having an integrally formed funnel for receiving both mercury and silver and for directing both said mercury and said silver to a single outlet port, said upper and lower components respectively having a roof and a floor and together defining a hollow enclosure within said housing, wherein said housing is formed with a pair of parallel spaced tracks on opposite sides thereof laterally bracketing said inlet ports and said outlet port and said funnel;

a plastic carriage having an open rectangular frame with opposing side rails disposed to ride in reciprocating movement along said tracks and opposing transverse ends, and said carriage is movable entirely

4,228,920

DISPENSER FOR SMALL ARTICLES HAVING ARTICLE ORIENTATION MEANS

George W. Burton, London, England, assignor to Johnson & Jorgensen (Plastics) Limited, United Kingdom

Filed Aug. 14, 1978, Ser. No. 933,433

Claims priority, application United Kingdom, Aug. 15, 1977, 34158/77

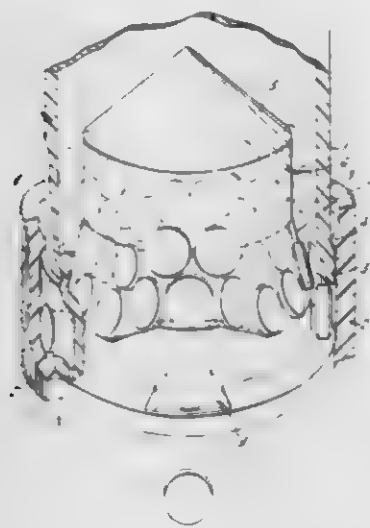
Int. Cl.³ B65D 83/04

U.S. Cl. 221—265

8 Claims

1. A dispenser for dispensing disc-like articles one at a time from a supply of said articles, the dispenser comprising a container for the supply of disc-like articles and a closure cap for an open end of the container, a segregating and orienting member on the cap projecting inside of the container and defining with the container side wall a restricted passage of

sufficient width only to receive a plurality of the disc-like articles on their edges, said passage being of insufficient width to receive said articles with their major end faces across the axis of the container and closure cap, the closure cap having an opening through which the disc-like articles one at a time are dispensed while the closure cap is arranged lowermost and the container uppermost, at least a single article receptor and



transport pocket in the side wall of the container at the open end thereof whereby single disc-like articles are delivered to said opening in the cap by relative rotation of the container and cap, and an article blocking element on the segregating and orienting member to prevent the passage of more than one article at a time to said opening of the closure cap when said cap and container are adjusted to a dispensing position.

4,228,921

APPARATUS FOR MEASURING LIQUID DEVELOPER FLOW RATE

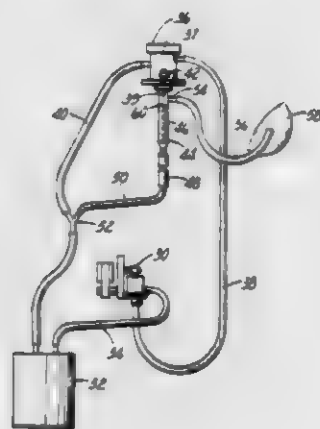
Stephen Ernohazy, Mt. Prospect; Frederick D. Meller, Lomard, and Eugene P. Oddo, Mt. Prospect, all of Ill., assignors to AM International, Inc., Los Angeles, Calif.

Filed Sep. 23, 1978, Ser. No. 945,404

Int. Cl.³ G01F 11/32

U.S. Cl. 222-40

8 Claims



1. An apparatus for measuring the flow rate of aqueous ammonia in a diazotype copy machine, comprising:
a supply source for aqueous ammonia;
a flowmeter means;
means for supplying the aqueous ammonia from the supply source to the flowmeter means;
metering means for dispensing metered quantities of the aqueous ammonia from the flowmeter means;
reservoir means mounted on the flowmeter means for receiving the aqueous ammonia dispensed therefrom;
valve means actuable between a closed condition for retaining the aqueous ammonia in the reservoir means and an open condition for draining the aqueous ammonia from the reservoir means; and
indicator means on the reservoir means for measuring the flow rate, subsequent to actuation of the valve means from

the open to the closed condition, providing an indication of the quantity of aqueous ammonia received by the reservoir means relative to a predetermined time period.

4,228,922

APPARATUS FOR INJECTING A DESIRED VOLUME OF LIQUID IN LIQUID AND GAS-LIQUID CHROMATOGRAPHY

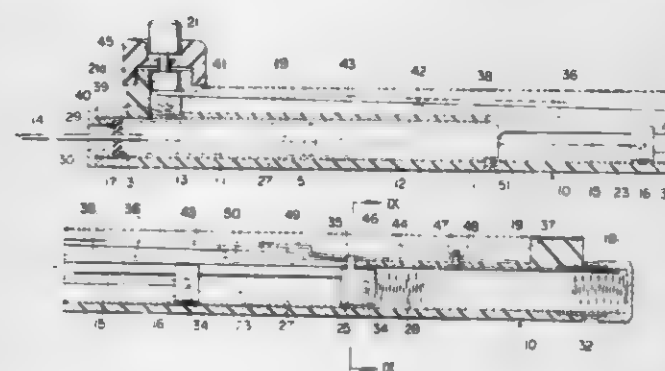
Ryuzo Takeshita, No. 5-4-11, Koenji Minami, Suginami-Ku., Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,943

Int. Cl.³ A61M 5/20; G01N 1/10

U.S. Cl. 222-47

3 Claims



1. An apparatus for injecting a desired volume of a liquid in liquid and gas-liquid chromatography comprising:
a tubular holder defining a lengthwise recess in a wall of an upper part, a cylindrical shell-shaped cover extending over the upper part;
a syringe positioned within said holder comprising, a needle joined to said syringe protruding outwardly from one end of said holder, a plunger head movable inside said holder longitudinally, said head having pins and guide knobs extending therefrom and a capacity scale formed in a side surface of said syringe;
driving means positioned within said holder behind said plunger, said driving means including a push piece lying in contact with said plunger head said push piece having a protuberant pin, guide knobs, and guide knob pins attached to said push piece and a spring inserted between said push piece and the other end of said holder;
a window formed in a side surface of the part of said holder containing said syringe so as to read said capacity scale of said syringe;
first slots formed in side surfaces of said holder, said guide knobs protruding from sides of said push piece and said plunger head through said first slots;
a start button disposed at one end of said recess;
a lever arranged in said recess a portion of which is held in contact with said start button; and
a mechanism locking said push piece in an urged position and including a flat spring arranged in contact with the other end of said lever in said recess and an hole provided in a flat portion of said flat spring and engaging with said protuberant pin of said push piece.

4,228,923

ICE MAKER DISPENSER STRUCTURE

Walter C. Barnard, White Bear Lake, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 17, 1979, Ser. No. 67,536

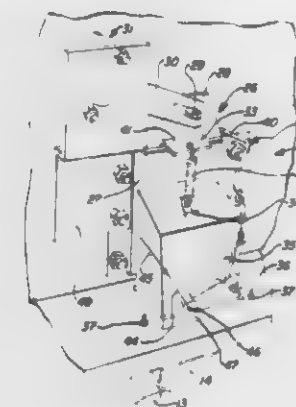
Int. Cl.³ B65G 65/48

U.S. Cl. 222-32

14 Claims

1. In an ice maker having a storage receptacle for holding a plurality of discrete ice bodies having a discharge opening, agitating means in the receptacle for agitating the ice bodies adjacent the discharge opening to promote free delivery of the ice bodies through the discharge opening during a dispensing

operation, closure means for selectively closing the discharge opening, means for removing the closure means from said opening and concurrently energizing the agitating means to effect a delivery of ice bodies therethrough, and guide means for conducting delivered ice bodies from said opening to a dispense position, at least a portion of said guide means comprising removable means, said discharge opening being accessi-



ble to a user's fingers upon removal of said removable means, the improvement comprising:

means responsive to removal of said removable means of the guide means to prevent removal of the closure means from said opening thereby to prevent injury to said user's fingers by said agitating means during an attempted dispensing operation.

4,228,924

MIXTURE METERING MACHINE

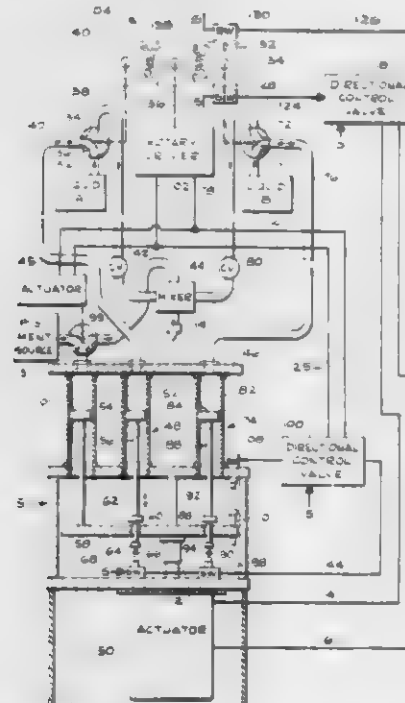
Charles H. Gilbert, 2101 Camino Rey, Fullerton, Calif. 92633

Filed Aug. 23, 1978, Ser. No. 936,312

Int. Cl.³ B67D 5/08

U.S. Cl. 222-63

5 Claims



1. A machine for metering fluids in a precise mixture to an outlet chamber from a plurality of pressurized sources, comprising:

a plurality of cylinder structures coinciding in number to said plurality of pressurized sources, each of said cylinder structures including piston means for varying the operating volume of said cylinder structures to receive and discharge said fluids;

a plurality of positive control two-state valve means coinciding in number to said cylinder structures, said valve means being connected to control the flow of fluids into said

cylinder structures from said pressurized sources and out of said cylinder structures to said outlet chamber;
independent switch means for each of said piston means for sensing the positions of said piston means whereby to indicate that each of said piston means has attained a predetermined bottom position in one of said cylinder means;

actuator means loosely coupled to linearly drive said piston means for moving said piston means from said predetermined bottom positions to meter fluids therefrom; and
control means for said actuator means and said positive control valve means whereby upon said independent switch means indicating that said piston means have attained said bottom position, said control valves are set to provide passages from said cylinder means to said outlet chamber and said actuator drives said piston means to meter fluid from said cylinder means until said piston means attains a predetermined top position in said cylinder means, whereupon said actuator means is de-energized and the states of said valve means are changed to provide passages from said sources to said cylinder structures.

4,228,925

TOOTHPASTE HOLDER AND DISPENSER

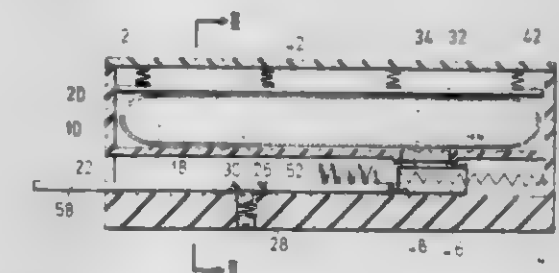
Isaac Mendelovich, 1936 Kentwood St., Philadelphia, Pa. 19116

Filed Sep. 22, 1977, Ser. No. 835,749

Int. Cl.³ F65D 35/20, 35/36

U.S. Cl. 222-103

4 Claims



1. A toothpaste holder and dispenser, comprising: a housing including a first compartment having a greater length than width for receiving a collapsible tube of toothpaste; a pressure member in said first compartment for collapsing the tube to dispense toothpaste therefrom; a second compartment of substantially the same length as said first compartment for receiving a toothbrush therein; said second compartment being closed at one end and open at the opposite end for receiving the toothbrush through the open end; a partition wall common to and separating both said compartments and formed with a dispensing opening therethrough adjacent to the closed end of the second compartment for dispensing the toothpaste from the collapsible tube in the first compartment to the toothbrush in the second compartment; a closure member in said second compartment adjacent to its closed end; and a spring urging said closure member away from said closed end to underlie said dispensing opening in the partition wall; said second compartment being of sufficient length to retain the toothbrush in a first position therein and to permit the toothbrush to be manually moved towards the closed end of the second compartment to engage the closure member and to move same towards the closed end of the second compartment, thereby to uncover said dispensing opening and to permit the dispensing of toothpaste therethrough onto the toothbrush, said second compartment further including detent means for retaining the toothbrush in said first position therein, said detent means comprising a spring-urged ball disposed in the bottom wall of the housing and receivable in a recess formed in the toothbrush handle, and guide means for guiding the movement of the toothbrush from said first position to engage said closure member and to move same towards the closed end of the second compartment.

4,228,926

DISPENSING VISCOUS FLUIDS

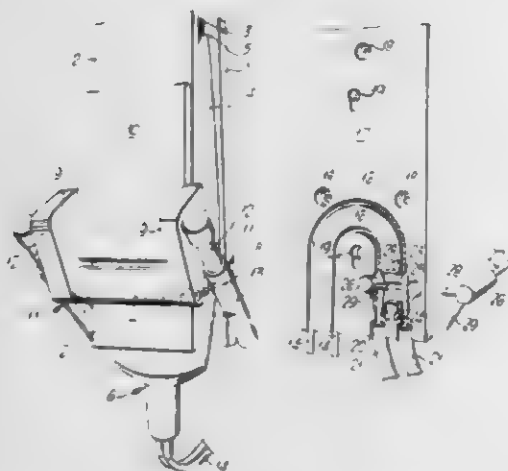
Alan J. Gordon, Liverpool, England, assignor to Shandon Southern Products Limited, Cheshire, England

Filed Mar. 6, 1978, Ser. No. 883,465

Int. Cl.³ B67D 3/00

U.S. Cl. 222-103

12 Claims



1. A method of dispensing a viscous fluid from a discharge orifice in a fluid flow path constituted at least in part by the bore of a resilient conduit, comprising

- feeding the fluid under a constantly maintained pressure to a pinch valve movable between an open and closed position and capable of squeezing or pinching the conduit in the closed position to occlude the bore of the conduit;
- inducing flow of fluid through the bore of the conduit to said orifice by moving said pinch valve into the open position while concurrently squeezing or pinching a part of said conduit downstream of the pinch valve so as partly to occlude the bore of the conduit, and effect a reduction in the bore volume of that part of the conduit; and
- thereafter moving said pinch valve into the closed position while concurrently releasing said conduit part downstream of said pinch valve to increase the volume of said part of the conduit by an amount at least sufficient to accommodate any expansion of the fluid in said downstream conduit part.

4,228,927

LIQUID DISPENSING HEAD AND INSTALLATION

Jozef Beyens; Guillaume Dewit, and Jules Lambrechts, all of Ruisbroek aan de Rupel, Belgium, assignors to Konstruktie J. Lambrechts p.v.b.a., Ruisbroek aan de Rupel, Belgium

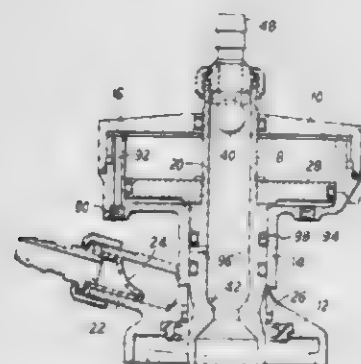
Filed Oct. 30, 1978, Ser. No. 956,357

Claims priority, application United Kingdom, Mar. 7, 1978, 00018/78

Int. Cl.³ B67D 1/04

U.S. Cl. 222-148

11 Claims



1. A dispensing head adapted to be fitted to a container having a valve plunger with which the dispensing head cooperates to enable liquid in the container to be dispensed through the dispensing head under pressure of a gas supplied to

the container through the dispensing head, the dispensing head comprising:

- a body;
- gas inlet means in said body for connection to a source of the pressurizing gas;
- rinsing fluid inlet means in said body for connection to a source of rinsing fluid;
- outlet means for connection to a dispensing tap;
- a valve member vertically movable in said body between a first position in which:
 - (i) the valve member engages the valve plunger and holds it in its open position,
 - (ii) the gas inlet means is in communication with the interior of the container to which the dispensing head is fitted and the outlet means is in communication with the interior of the container through the valve plunger so that liquid is dispensed from the container, and
 - (iii) communication between the rinsing fluid inlet means and the outlet means is cut off,
 and a second position in which:
 - (i) the valve member is disengaged from the valve plunger, and
 - (ii) the outlet means is disconnected from the interior of the container and placed in communication with the rinsing fluid inlet means so that rinsing fluid flows through the outlet means;
- a piston fixed to said valve member and movable in a cylinder forming part of said body;
- control inlet means for connection to the source of rinsing fluid, said control inlet means opening into said cylinder so that when rinsing fluid is supplied to the control inlet means the pressure of the rinsing fluid acts on the piston to urge the valve member to said first position.

4,228,928

BOTTLE WITH A CLIP FOR SUSPENDING THE BOTTLE IN INVERTED POSITION

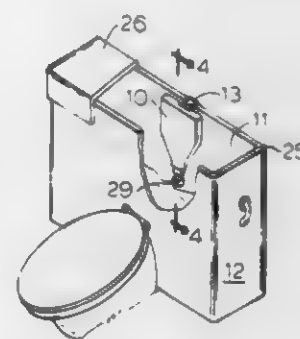
Harvey L. Hocker, Fort Bragg, and John M. Alcamo, Modesto, both of Calif., assignors to Northwest Sanitation Products, Inc., Fort Bragg, Calif.

Filed Oct. 25, 1978, Ser. No. 954,362

Int. Cl.³ B65D 25/22; B67D 5/06

U.S. Cl. 222-181

10 Claims



1. A liquid-dispensing assembly, comprising:

- a plastic bottle having a flat bottom wall, vertical side walls, and a dispensing valve at its upper end, adapted to dispense liquid contained in said bottle when said bottle is inverted, one side wall and said bottom wall of said bottle being formed to provide an inset recess in said one side wall extending to said bottom wall, said recess including two facing side wall portions with an inset wall between them, and a pair of pivot receptacles horizontally opposite each other in the facing side wall portions adjacent and spaced up from the bottom end of said recess,
- a hanger, comprising a flat main bottle-support portion, lip means generally perpendicular to said flat portion at one end thereof, cooperating flange means generally perpendicular to said flat portion at the other end of the flat portion, a pair of opposed pivot nipples on a horizontal axis at the opposite end of the hanger from the lip means,

4,228,930

DISPENSING PUMP

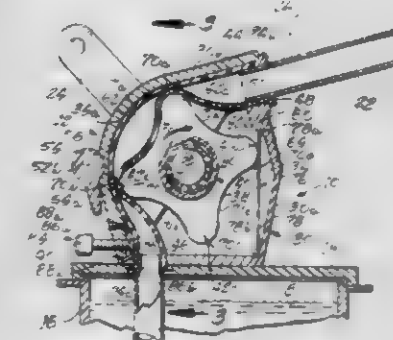
Lawrence R. Hogan, Lake Villa, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Sep. 9, 1977, Ser. No. 831,731

Int. Cl.³ F04B 43/12

U.S. Cl. 222-212

15 Claims



on the other side of the flange from the flat portion and offset from the plane of the flat portion, inwardly with respect to the recess, said pivot nipples being engaged in said pivot receptacles, and stop means on the hanger for engaging the inset wall of the recess in abutting relation to the vertical plane of the inset wall when the hanger is in extended position with the flat portion approximately perpendicular to the bottle side wall and approximately parallel to the bottom wall, and for preventing further pivotal movement of said hanger from the extended position, said stop means being positioned above the axis of the pivot nipples when the bottle is inverted and the hanger is extended, and extending up to a position approximately flush with the flat portion of the hanger and with the bottom wall of the bottle, said hanger when pivoted into a stored position lying in said recess substantially flush with said one side wall.

4,228,929

STAND FOR HOLDING A BEER KEG IN POSITION FOR GRAVITY FEED

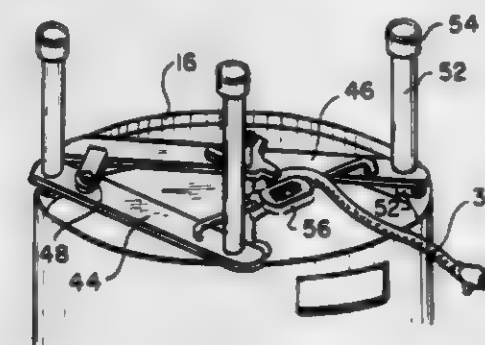
Charles Gross, Saddle Brook, N.J., assignor to Vending Components, Inc., Hackensack, N.J.

Filed May 2, 1979, Ser. No. 35,218

Int. Cl.³ B67D 1/06

U.S. Cl. 222-185

7 Claims



1. The combination with a beer keg, or the like, having an end that comprises the top of the keg when the keg is in an upright position, an opening through said top communicating with the interior of the keg, a supporting frame that fits over the top of the keg and that extends across the top with an opening in the frame that leaves the center portion of the top unobstructed, characterized by detachable fastening means for securing the frame to the keg with the frame extending upward above the top of the keg and above the upper end of said opening, the frame extending beyond the top of the keg far enough to space the opening in the end of the keg from a substantially horizontal surface over which the keg is supported when turned upside down, the frame being long enough to support the keg over said substantially horizontal surface with space between the keg and said horizontal surface to provide clearance for a hand to reach under the upside down keg to said opening through the end of the keg, and the frame having part of the circumference thereof open to provide access for a hand to reach under the end of the keg to said opening, and further characterized by the frame having elements that fold with respect to one another including an element that moves into one position that prevents the elements from folding with respect to one another and that moves into another position to permit the elements to be disconnected from the keg and folded into a space of lesser extent than they occupy when secured to the keg.

4,228,931

MANUALLY OPERATED PUMP FOR DISPENSING MICRONIZED LIQUIDS AT A PREDETERMINED PRESSURE

Tommaso Ruscitti; Giovanni Albini, and Roberto Torretta, all of Milan, Italy, assignors to ADM S.p.A., Milan, Italy

Filed Jan. 11, 1979, Ser. No. 2,767

Claims priority, application Italy, Feb. 9, 1978, 20110

Int. Cl.³ G01F 11/36

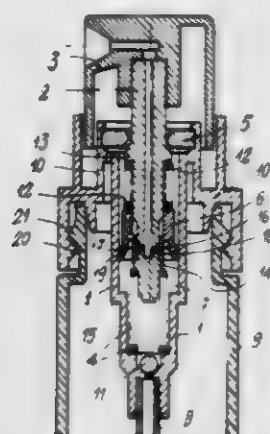
U.S. Cl. 222-321

2 Claims

1. A manually operable pump for dispensing atomized liquids at a predetermined pressure, comprising:

- a hollow body having a top end and a bottom end, said bottom end including a one way valve for permitting liquid only to enter the cavity of said body, said hollow body including a stop edge on the surface of the cavity of said body intermediate said top and bottom end;
- a stem having a first end normally in said hollow body and second end extending out of said top end of said hollow body, said stem including a longitudinal bore extending from said second end to adjacent said first end, said stem also including a first stop edge and a second stop edge intermediate said first stop edge and said second end;
- an annular shaped gasket surrounding said stem, said gasket sealing said cavity, said gasket also including a substan-

tially cylindrical tubular extension of resiliently deformable material, said extension having a bottom edge and closely surrounding said stem;
a first spring connected between said body and said stem and operable to bias said stem out of said top end of said body;
a second spring connected between said second stop edge of said stem and said gasket and operable to bias said bottom edge of said tubular extension against said first stop edge of said stem;
a circumferential annular groove on the surface of said stem



adjacent said first end and normally surrounded by said tubular extension, said groove having a bottom edge; and at least one radial bore in said stem, each said at least one radial bore extending from a portion of said longitudinal bore adjacent said first end of said stem to said annular groove, whereby when bottom edge of said tubular extension uncovers said bottom edge of said groove, the pressure in said body cavity deforms said tubular extension into said groove to fully communicate said body cavity with said at least one radial groove.

4,228,932

SEALING STRUCTURE FOR ROTARY VALVES

Tatuo Aonuma, Kashiwa; Michio Kiuchi, Nagareyama; Hirozi Watanabe, and Takeshi Akao, both of Noda, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Japan

Division of Ser. No. 740,391, Nov. 10, 1976, Pat. No. 4,180,188.

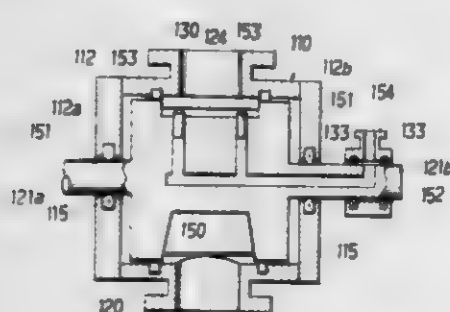
This application Apr. 5, 1979, Ser. No. 27,514

Claims priority, application Japan, Nov. 18, 1975, 50-137794; Dec. 2, 1975, 50-160983

Int. Cl.³ G01F 11/10

U.S. Cl. 222-368

4 Claims



1. A sealing structure for a rotary valve, comprising:
a rotary member provided with a plurality of pockets opening toward the outer periphery of said rotary member;
a casing enclosing the outer periphery of said rotary member;
sealing members provided between the outer periphery of said rotary member and the inner periphery of said casing;
said sealing members being formed to be adjustably projectable in the radial direction;
radial blades partitioning and separating said plurality of pockets provided in said rotary member;

cavities in the outer tips of said blades;
said sealing members being slidably fitted in said cavities to be pressed to project outwardly in the radial direction of said rotary member;
a first passage provided in the axial direction in the center portion of said rotary member;
a plurality of auxiliary passages within each said radial blade communicating with said first passage, and communicating with said sealing member containing cavities;
means for supplying, from outside, fluid under pressure to said first passage;
piston-shaped pushing members, each fitted at least partially in each said auxiliary passage, for projecting said sealing members radially outwardly in response to fluid pressure in said first passage; and
said piston-shaped pushing members being pressed so as to slide radially outwardly by said fluid pressure in said first passage so as to bear against and project said sealing members radially outwardly.

4,228,933

PRESSURIZED FLUID-DISPENSING APPARATUS

James T. Elson, 55 The Street, Shalford, Guildford, England

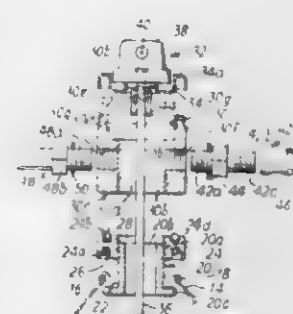
Filed Jan. 24, 1979, Ser. No. 6,020

Claims priority, application United Kingdom, Feb. 6, 1978, 04731/78

Int. Cl.³ B65D 83/14

U.S. Cl. 222-400.7

4 Claims



1. A portable liquid-dispensing apparatus for dispensing a liquid in the form of a jet, spray or aerosol, the apparatus comprising a container, a valve body having an annular top removably secured to the container whereby it can be removed to expose an aperture for charging the container with a liquid to be dispensed, first valve means mounted by a cup on said annular top of said valve body and resiliently biased towards a closed position, tube means for establishing fluid communication from near the bottom of the container to the first valve means, a manually operable push button on said valve body, a dispensing nozzle in a side wall of said push button communicating with said tube means wherein, in use, depression of said push button is arranged to open said first valve means to dispense the fluid under pressure, second valve means mounted on said valve body for connecting the container temporarily to an air compressor for pressurising the contents of the container, a third pressure relief valve means mounted on said valve body and arranged to open when the pressure in the container is greater than a predetermined value.

4,228,934

ICE BODY DELIVERY APPARATUS

Keith E. Carr, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Belmont Harbor, Mich.

Filed Dec. 26, 1978, Ser. No. 972,805

Int. Cl.³ G01F 11/20; B01F 7/24

U.S. Cl. 222-412

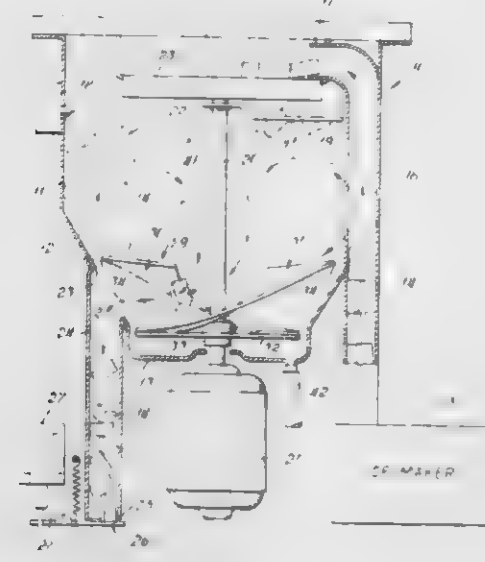
12 Claims

1. In an ice body delivery apparatus having a hopper for storing a plurality of discrete ice bodies and having a wall

portion defining an outlet opening having an upper edge portion and a lower edge portion for passing the ice bodies serially outwardly therethrough for dispensing the same, the improvement comprising:

helical wall means in said hopper defining a vertical helix axis, an upwardly facing lifting surface, an under surface, a lower end, an upper end, a radially outer edge and a radially inner edge; and

driver means driving the lower end of the wall means for rotation of the wall means about said vertical axis with said outer edge sweeping said hopper wall portion and across said outlet opening as a result of said rotation, said inner edge defining an open cylindrical space about said vertical axis extending at least the full height between said upper and lower edge portions of the outlet opening, said driven lower end of the wall means being positioned at a level no higher than approximately that of said lower edge



portion of the discharge opening and said upper end of the wall means being free and positioned at a level no lower than approximately that of said upper edge of the discharge opening, said cylindrical space having a lateral extent sufficient to freely pass ice bodies downwardly therethrough and being unobstructed at the periphery thereof to pass the ice bodies outwardly therefrom to under said helical wall means, whereby said wall means lifts from said discharge opening ice bodies which may have lodged therein, and causes the lifted ice bodies to move to the open cylindrical space, and pass downwardly through the cylindrical space and substantially horizontally radially outwardly under the helical wall means under surface freely to said discharge opening, said wall means preventing the weight of the ice bodies in the hopper above the wall means from acting on the ice bodies moving outwardly under said under surface.

4,228,935

GLOVES AND HOLDING RACK THEREFOR

Robert M. Madray, P.O. Box 401, Blackshear, Ga. 31516

Filed Jan. 11, 1978, Ser. No. 868,509

Int. Cl.³ A47J 51/06

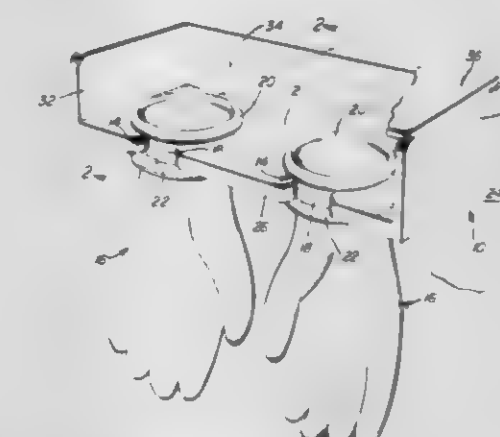
U.S. Cl. 223-111

1 Claim

1. A glove and holding rack comprising in combination:
(a) A support provided with a planar bottom wall having a free edge;
(b) said free edge having at least one aperture shaped for receiving the wrist portion of a glove;
(c) a pair of substantially parallel, spaced side walls extending perpendicularly and codirectionally from the bottom wall;
(d) a back wall extending perpendicularly from the bottom

wall and co-directionally with and extending between the side walls; and

(e) a top removable mounted on the side walls and the back wall, whereby a glove having a pair of spaced, substantially parallel retaining collars, each in the form of a solid toroid, may be receivable in the aperture provided in the



support, with one of the collars being arrangeable above the support for restraining the glove against movement relative to the support when a hand is being put into the glove, and the other of the collars being arrangeable beneath the support for restraining the glove against movement relative to the support when a hand is being removed from the glove.

4,228,936

TIRE AND TOOL CARRIER

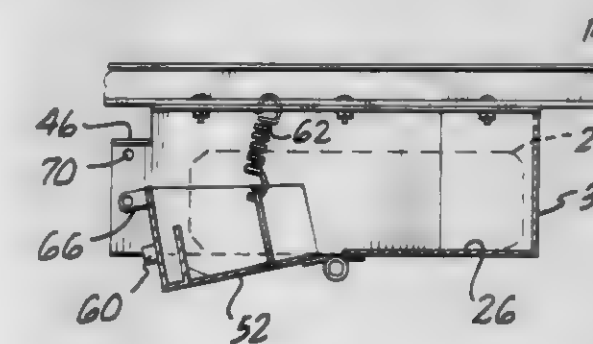
Orin S. Rife, Rte. 1, Elkland, Miss. 65644

Filed Aug. 15, 1979, Ser. No. 66,566

Int. Cl.³ B60R 9/00, 27/00

U.S. Cl. 224-42.23

7 Claims



1. A tire and tool carrier for vehicles, said carrier comprising a box-like support having means for attaching the support to the underside of said vehicle, said support comprising a stationary base for supporting said tire and cover forming a rear portion of said support having means hingedly connecting it to said base, said cover including a bottom wall hinged to said stationary base at a point to the rear of the mid point of said carrier, said bottom wall being bounded by opposed side walls and an intermediate rear wall and having arcuate upstanding tire positioning flange means defining corner spaces at a junction of each of said side walls with said rear wall for storage of tools and the like.

4,228,937

CLEAVING APPARATUS

Anthony J. Tocci, North Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 29, 1979, Ser. No. 25,098

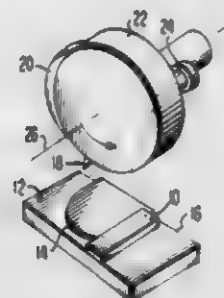
Int. Cl.³ B26F 3/00

U.S. Cl. 225-96.5

5 Claims

1. An apparatus for cleaving crystalline material, comprising:

- (a) a platform for supporting the crystalline material thereon, having a substantially straight edge over which the crystalline material projects; and
- (b) a rotatable member having a scribing point and protrusion extending substantially radially therefrom and located on a plane which is perpendicular to the axis of



rotation of the rotatable member, such that upon axial rotation of the rotatable member, the arcs described by the scribing point and protrusion are substantially parallel to the platform edge, and intersect the crystalline material which projects over the edge such that a bending moment is created in that portion of the crystalline material which projects over the platform edge.

4,228,938

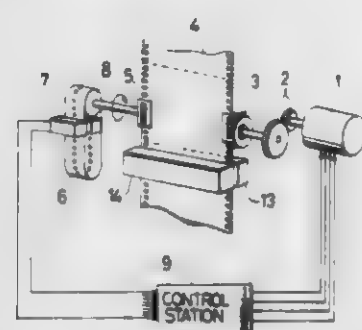
PAPER FEED CONTROL SYSTEM IN A PRINTER

Hisayoshi Monma; Shigenobu Katagiri, and Hiroomi Kozawa, all of Katsuta, Japan, assignors to Hitachi Koki Company Limited, Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 923,240
Int. Cl.³ B65H 25/10

U.S. Cl. 226-9

3 Claims



1. In a paper feed control system employing a prepunched format tape containing perforations arranged thereon in a direction of tape advancement for controlling paper feed, perforation sensing means for detecting perforations in said tape as said tape advances and for providing perforation signals, driving pulse generating means for generating driving pulses, a pulse motor steppably rotatable in response to said driving pulses applied thereto to proportionately advance a printing paper whereat a line pulse is produced every one line advancement of said printing paper, means responsive to advancement of said printing paper to proportionately advance said tape, and a control station responsive to external feed command signals and to said perforation signals to provide said driving pulses and said line pulses, the improvement comprising: means for counting said driving pulses and for producing said line pulse upon counting a first predetermined number of driving pulses, driving pulse gating means for preventing said driving pulses from being applied to said pulse motor when said line pulse and one of said perforation signals are coincidentally provided and for permitting said driving pulses to be applied thereto in response to said external feed command signals, and means responsive to actuation of said control station and the receipt of said perforation signal to preload said counting means with a second predetermined number of driving pulses less than said first predetermined number of driving pulses, whereby each of said line pulses is

generated in the approximate midpoint of each of said perforation signals.

4,228,939

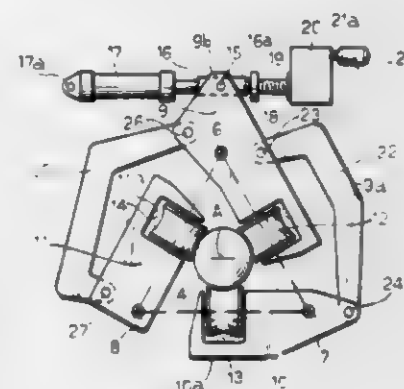
COMBINED SUPPORT AND GUIDE FOR THE MANDREL OF A RESTRAINED MANDREL CONTINUOUS ROLLING MILL

Filippo Cattaneo, Milan, Italy, assignor to Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Sep. 28, 1978, Ser. No. 946,792
Int. Cl.³ B65H 17/34

U.S. Cl. 226-172

3 Claims



1. A combined support and guide for supporting and guiding a mandrel for movement along a horizontal rolling axis of a continuous, restrained-mandrel rolling mill comprising: a support structure, three pivot means supported by said support structure and defining horizontal pivot axes parallel to said rolling axis, said pivot axes being disposed equidistant from and equiangularly spaced with respect to said rolling axis, three levers pivotally mounted one on each said pivot means, three rollers freely rotatably mounted one on each said lever about an axis of rotation which intersects the respective pivot axis of the lever, said axes of rotation of said rollers lying in a common plane perpendicular to said rolling axis, drive means for driving angular displacements of said levers simultaneously about the respective said pivot axes to displace the rollers with respect to said rolling axis by the same amount and in the same sense to accommodate and support a mandrel between them in coaxial alignment with said rolling axis.

4,228,940

TAPE GUIDE MEANS FOR RECORDING AND/OR REPRODUCING APPARATUS AND METHOD OF MANUFACTURING THE SAME

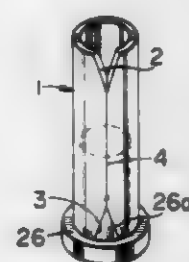
Yozaburu Umehara, 2-8-6, Shakujiimachi, Nerima-ku, Japan

Filed Sep. 7, 1978, Ser. No. 940,198
Claims priority, application Japan, Sep. 14, 1977, 52-124344(U); Mar. 3, 1978, 53-24344

Int. Cl.³ B65H 23/04, 27/00

U.S. Cl. 226-196

15 Claims



1. Tape guide means for recording and/or reproducing apparatus, comprising a non-magnetic base body and a non-

magnetic hard surface layer formed on said base body, said surface layer having rounded microscopic tips whose surface roughness is obtained by surface grinding of the circumferential surface of said surface layer after said surface layer is formed on said base body, thereby the pattern of said microscopic tips extends substantially linearly in the traverse direction to the axial direction of the tape guide means.

4,228,941

METHOD OF JOINING AN INNER METAL PIPE WITH AN OUTER SURROUNDING METAL PIPE

Ingemar P. Persson, Nora, Sweden, assignor to Nitro Nobel AB, Gytterp, Sweden

Filed Nov. 2, 1978, Ser. No. 957,131
Claims priority, application Sweden, Nov. 24, 1977, 7713287
Int. Cl.³ B23K 20/08

U.S. Cl. 228-107

9 Claims



1. A method of joining an inner metal pipe with an outer surrounding metal pipe by welding by explosion such that the outer surface of the inner pipe is joined metallurgically with the inner surface of the outer pipe, the method comprising placing inside the inner pipe a contact body which prevents a change of the inside diameter of the inner pipe, said contact body being a rigid body made of salt.

4,228,942

METHOD OF PRODUCING ABRASIVE COMPACTS

Rainer Dietrich, 5 Mooregrove, Kibler Park, Johannesburg, Transvaal, South Africa

Filed May 31, 1978, Ser. No. 911,107
Claims priority, application South Africa, Jun. 24, 1977, 77/3813

Int. Cl.³ B23K 1/04; B24D 3/06

U.S. Cl. 228-121

16 Claims

1. A method of bonding a diamond or cubic boron nitride abrasive compact to a second such compact or to a cemented carbide support including the steps of depositing a layer of a transition metal on the first compact in unbonded condition, depositing a layer of a braze alloy on the transition layer in unbonded condition, the braze alloy having a melting point in the range 650° C. to 750° C. and being capable of alloying with the transition metal, then, with the two layers unbonded to each other and the first compact, placing the second compact or carbide support on the braze layer; and heating the thus-formed unbonded assembly at a temperature between 650° C. and 750° C. for a period of 2 to 180 minutes with the first and second compacts clamped together at a pressure of between 72.5 and 1450 lbs./sq. inch to produce an alloy bonding layer bonding the first compact to the second compact or carbide support.

4,228,943

DEVICE FOR SEPARATING SUSPENDED MATERIAL FROM A FLUID STREAM BY SPECIFIC GRAVITY DIFFERENCE

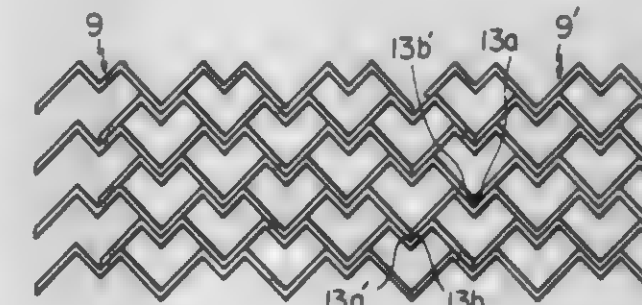
Kaichi Tanabe, Tondabayashi; Shigeto Koga, and Yoshinori Maeda, both of Kobe, all of Japan, assignors to Shinko-Pfau-dler Company, Ltd., Kobe, Japan

Division of Ser. No. 830,697, Sep. 6, 1977, Pat. No. 4,122,017.
This application Jul. 5, 1978, Ser. No. 921,900

Claims priority, application Japan, Dec. 28, 1976, 51/160692
Int. Cl.³ B23K 1/16; B01B 23/06

U.S. Cl. 228-182

2 Claims



1. A method of fabricating a tubular passage assembly, which comprises the steps of

- forming a plurality of corrugated sheets, each having a series of alternating large and small corrugations,
- superposing said corrugated sheets one over another so as to dispose each backside of large corrugations of an upper sheet in contact with a corresponding small corrugation of a lower sheet,
- jointing each contacting portion of said backside of large corrugations of the upper sheet and said small corrugations of the lower sheet by adhesive fixing means to fabricate the tubular passage assembly, and jointing a plurality of said tubular passage assemblies in crosswise direction by
- disposing the side end of a second alternate corrugated sheet layer in a superposed assembly more inwardly with respect to the axis of the assembly than the side end of a first alternate sheet layer by the sum of half a pitch of large corrugation and half a pitch of small corrugation,
- bringing the side ends of a first assembly into alternate contact with the side ends of a second assembly so as to butt-joint one end of a first sheet layer of said first assembly with the end of a second sheet layer of said second assembly, and likewise to butt-joint the end of a second sheet layer of said first assembly with the end of the first sheet layer of said second assembly, and
- jointing each contacting portion of the first assembly and the second assembly by adhesive fixing means for jointing the tubular passage assemblies in crosswise direction.

4,228,944

METHOD OF BONDING SUBSTRATES MADE OF METAL OR ALLOY

Minoru Inamura; Noboru Takeuchi; Kazuhiro Inukai; Kentaro Taninouchi, and Shin Utsunomiya, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,284

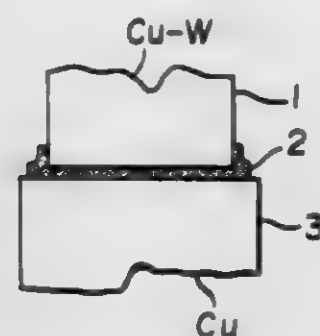
Claims priority, application Japan, Oct. 31, 1977, 52/131139
Int. Cl.³ B23K 1/04, 25/00

U.S. Cl. 228-198

9 Claims

1. A method of bonding metal or metal alloy substrates in air, comprising: coating a solid brazing flux containing a powdered metal or powdered metal compound onto the surface of said substrates having a melting point greater than 700° C.; and heating said coated substrates to a temperature greater than the melting point of the flux but less than the melting point

of the powdered metal or powdered metal compound, whereby molten crystallization and mutual diffusion oc-



curs between metal of the surfaces of the substrates and the activated metal derived from the powdered metal or powdered metal compound containing flux.

4,228,943

FOOD CARTON FOR MICROWAVE HEATING

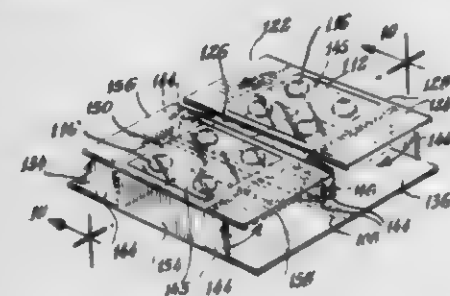
Lawrence S. Wysocki, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 5, 1979, Ser. No. 17,603

Int. Cl.³ B65D 5/20

U.S. Cl. 229—30

4 Claims



1. A two part severable carton having venting apertures therein comprising:

- first and second bottom panels each having a plurality of spaced tabs formed integrally therein, each of said tabs being defined by spaced cut lines to facilitate the removal of said tabs;
- a strip of film secured to the undersurface of each said bottom panel by an adhesive applied to the bottom face of each said tab, said strip being secured in a manner to permit its removal from said bottom panels while remaining adhered to said tabs to thereby remove said tabs from said bottom panels to define venting apertures therein;
- a pair of opposed first side wall panels hingedly connected to each said bottom panel and extending upwardly therefrom;
- a pair of opposed end wall panels hingedly connected to the free edges of each said bottom panel and extending upwardly therefrom, with one of said end wall panels associated with each bottom panel being disposed in face to face abutting relationship and being adhesively connected at discrete locations therebetween;
- a common top panel extending over both said bottom panels and being disposed parallel thereto, said top panel being hingedly connected to the top edge of the other said end wall panels;
- a pair of opposed, common second side wall panels hingedly connected to the free side edges of said common top panel and extending downwardly therefrom, said second side wall panels being disposed outwardly of said first side wall panels and being adhesively secured thereto, said second side wall panels extending below the plane of said bottom panels to support said bottom panels in spaced relation to a surface upon which said carton is placed; and
- said top and second side panels including a continuous line of perforation, said perforated line being disposed perpendicular to the hinged connection between said top and second side panels and lying in a plane coincident with the plane between said adhesively secured end wall panels whereby

said carton may be separated into two individual parts by severing said line of perforation and breaking said adhesive connection between said one end wall panels thereby enabling the separation of said parts of said carton.

4,228,946
CARTON

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 750,396, Dec. 14, 1976, Pat. No. 4,144,996.

This application Jan. 2, 1979, Ser. No. 154

Int. Cl.³ B65D 5/22

U.S. Cl. 229—33

2 Claims



1. A unitary carton blank for forming a carton having a reclosable cover portion hingedly nestable over a receptacle portion, said blank comprising:

- (a) a bottom panel having a front edge, rear edge, and a pair of side edges;
- (b) a front receptacle wall, rear receptacle wall, and a pair of side receptacle walls hingedly connected to said bottom panel along the front, rear, and side edges respectively of said bottom panel;
- (c) a top panel having a front edge, rear edge and a pair of side edges;
- (d) a front cover wall and a pair of side cover walls hingedly connected to said top panel along the front and side edges respectively of said top panel;
- (e) a front cover flap hingedly connected to said front cover wall opposite said top panel;
- (f) an inner top flap hingedly connected to said front cover flap opposite said front cover wall for underlaying said top panel;
- (g) a rear cover wall hingedly connected to said inner top flap opposite said front cover flap;
- (h) a rear receptacle flap hingedly connected to said rear receptacle wall opposite said front cover wall; and
- (i) a rear hinge panel hingedly connected to said rear receptacle flap opposite said rear receptacle wall and to said top panel opposite said front cover wall.

4,228,947

SELF-SECURING BOX CONSTRUCTION

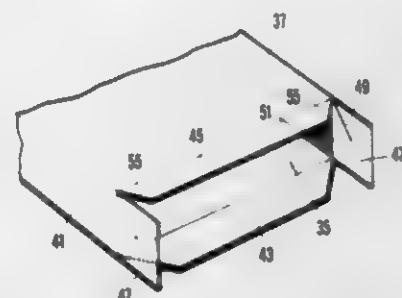
Gary Eroyan, 1314 N. Crawford St., Detroit, Mich. 48209

Filed Apr. 16, 1979, Ser. No. 30,012

Int. Cl.³ B65D 5/10, 65/12, 65/14

U.S. Cl. 229—39 R

13 Claims



- 1. A self-securing box formed from a blank, cut, scored, folded and secured to define an open ended tube having a top with foldable outer end flaps, a bottom with foldable inner end flaps and sides with foldable end tabs;
- each of the tabs adjacent the outer end flaps having an acute angular edge portion therein;
- the respective tabs, inner flaps and outer flaps at opposite ends of the tube being folded successively through 90

degrees into engaging registry; the sides of the outer flaps defining lock edges inclined at an acute angle to normally overlap said tab edge portions and adapted for manual flexing interlocking inward projection respectively, so as to retainingly engage interior portions of the adjacent tabs at said edge portion, each outer flap retainingly engaging an inner flap, the opposed tabs at opposite ends of the tube being innermost, the inner end flaps overlying and retainingly engaging said tabs, and the outer end flaps having their lock edges outwardly of the inner end flaps.

4,228,948

CENTRIFUGAL LIQUID CLEANER

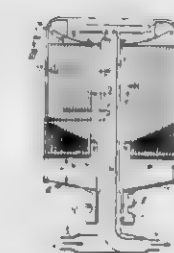
Viktor A. Berber, Shelkovichnaya ulitsa, 184, kv. 65; Nikolai A. Khodosov, Oktyabrsky poselok, 6 linia, 36; Stanislav A. Kosygin, Shelkovichnaya ulitsa, 180, kv. 17; Vladimir I. Mozyakov, Shelkovichnaya ulitsa, 190, kv. 47, and Igor M. Lapshev, ulitsa 20 let VLKSM, 21, kv. 13, all of Saratov, U.S.S.R.

Filed Jun. 5, 1978, Ser. No. 912,178

Int. Cl.³ B04B 11/06

U.S. Cl. 233—3

1 Claim



1. A centrifugal liquid cleaner comprising: a base; a vertical hollow axle fixed rigidly on said base and provided with an inlet for the incoming liquid and an outlet for the cleaned liquid; a cylindrical rotor mounted rotatably on said hollow axle; a rotation drive of said cylindrical rotor; said cylindrical rotor comprising a bushing arranged coaxially with said hollow axle, a band secured at one end on said bushing and wound in a helix, spacers located radially one after another between the adjacent turns of the helix of said band, parallel with said hollow axle, gaps for the passage of the liquid, formed by said spacers and said band; one impeller located at the lower end of said bushing and connected to it for joint rotation, another impeller located at the upper end of said bushing and connected with it for joint rotation, each said impeller consisting of a disc and ribs secured on said disc at equal angular distances, said spacers secured by their edges in the ribs of said two impellers; discs of said impellers made and secured in such a manner that the distance between each disc and the corresponding edge of the helix of said band satisfies the condition:

$$\frac{l_1}{l_2} = \frac{R^3 - r^3}{r^3 - r_0^3}$$

where:

- l_1 =distance between the disc of one of said impellers and the corresponding edge of the band helix;
- l_2 =distance between the disc of the other one of said impellers and the corresponding edge of the band helix;
- R =maximum radius of the helix of said band;
- r =current radius of the helix of said band;
- r_0 =minimum radius of the helix of said band;

such an arrangement of said discs relative to the edges of the helix of said band ensuring an optimum distribution of liquid flow velocities in said gaps, a casing connected with said two impellers, enclosing said bushing with the band and, both impellers and chambers which are located between the ends of said bushing with said band and said two impellers and communicate, respectively, with the liquid inlet and outlet in said hollow axle, said chambers communicating with each other

through said gaps, a pressure disc mounted in said casing on said hollow axle above the other impeller.

4,228,949

SOLID BOWL SCROLL DISCHARGE DECANter CENTRIFUGES

Joseph F. Jackson, Huddersfield, England, assignor to Thomas Broadbent & Sons Limited, Huddersfield, England

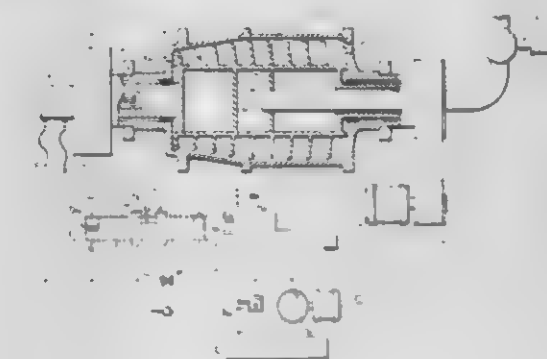
Filed Oct. 3, 1978, Ser. No. 948,274

Claims priority, application United Kingdom, Oct. 4, 1977, 41143/77

Int. Cl.³ B04B 1/20, 9/10, 11/04

U.S. Cl. 233—7

7 Claims



1. In a solid bowl decanter centrifuge comprising a solid, generally cylindrical bowl having a liquids outlet at one end and a solids outlet at the other end, means for rotating the bowl at a first speed, inlet pipework for introducing influent to the interior of the bowl, a feed valve in said inlet pipework for controlling the rate of flow of influent therethrough, a scroll conveyor mounted for rotation within the bowl at a second speed, a hydraulic motor whose body is connected to the bowl and whose output shaft is connected to the scroll conveyor whereby the motor speed determines the differential speed of the conveyor relative to the bowl, a hydraulic drive system for the hydraulic motor which includes a pump for supplying hydraulic fluid to the motor, and a primary control system adapted to monitor the hydraulic pressure in the hydraulic drive system for the hydraulic motor and to regulate the displacement of the pump so as to maintain a predetermined relationship between conveyor speed and the pressure in the hydraulic drive and hence between the conveyor speed and the conveying torque, the improvement comprising a secondary control system which is adapted to respond to the flow rate in the hydraulic drive of the motor to control the feed valve opening state such as to maintain the flow rate in the hydraulic drive, and hence the conveyor speed and the rate of discharge of solid material, at a substantially constant predetermined value.

4,228,950

HORIZONTAL FLOW-THROUGH COIL PLANET CENTRIFUGE

Yoichiro Ito, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 966,329

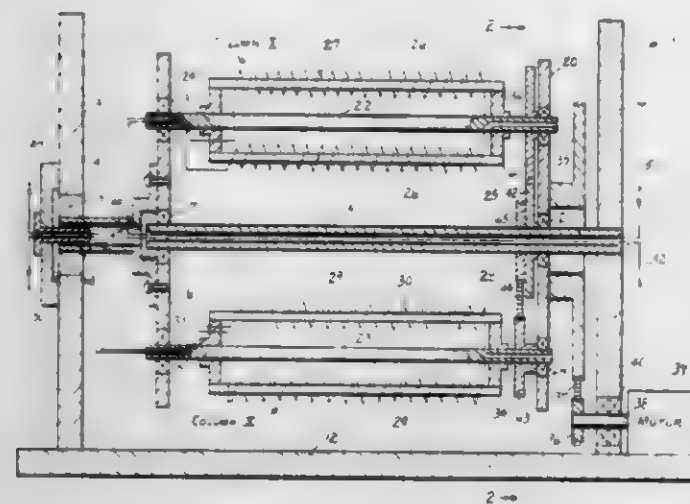
Int. Cl.³ B04B 9/08

U.S. Cl. 233—25

15 Claims

1. A horizontal flow-through coil planet centrifuge apparatus comprising a support, a stationary shaft member horizontally rigidly mounted in said support, a pair of spaced parallel wing members, means rotatably supporting said wing members on said shaft member perpendicularly thereto, respective horizontal separation column assemblies journaled respectively for independent, planetary motions between portions of said wing members located on opposite sides of said shaft member, respective inlet and outlet flow tubes connected to each of said column assemblies to define flow paths therethrough, and

means to simultaneously rotate said column assemblies around their rotational axes relative to said wing members and to above the top one of said impellers and designed for pumping the liquid.



revolve said wing members around said shaft member at relative rates and directions to avoid twisting of the flow tubes.

4,228,951

CENTRIFUGAL LIQUID PURIFIER

Viktor A. Berber, Shelkovichnaya ulitsa, 184, kv. 65, Saratov, U.S.S.R.

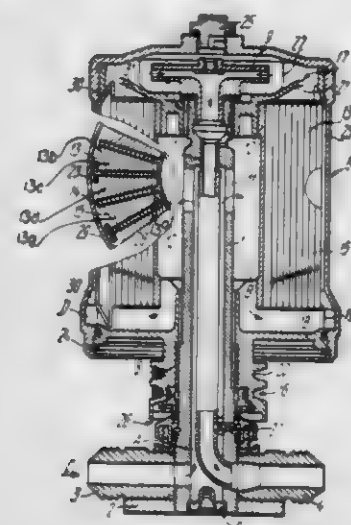
Filed May 26, 1978, Ser. No. 909,976

Claims priority, application U.S.S.R., Jun. 20, 1977, 2489796

Int. Cl.² B04B 11/06

U.S. Cl. 233-31

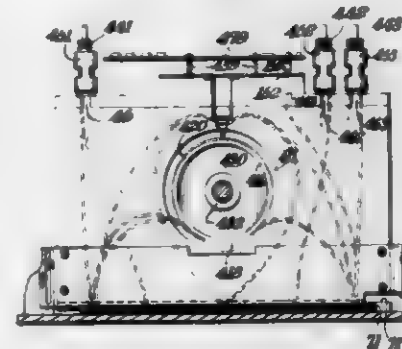
8 Claims



1. A centrifugal liquid purifier comprising: a base; a vertically extending hollow axle fixed on said base and having an inlet for the liquid to be purified and an outlet for the purified liquid; a cylindrical rotor mounted on said hollow axle with a possibility of rotation about the latter; a drive for rotating said cylindrical rotor; said cylindrical rotor including a top impeller and a bottom impeller, arranged at the opposite ends of said hollow axle, a bushing arranged coaxially with said hollow axle between said top and bottom impellers and coupled with said impellers for joint rotation, a band attached with its one end to said bushing and spiral-like wound thereon, said band being made crimped with crimps running parallel with said hollow axle, spacers located one after another in a radial direction between adjacent turns of said band spiral form in parallel with said hollow axle in crimp tops of said band to form radial rows, slit passages for the liquid being purified defined by said spacers and said band; a casing coupled with said top and said bottom impellers and designed to cover said bushing with said band, top and bottom impellers, spaces in said casing located between the ends of said bushing with said band and said top and bottom impellers and communicated one with the inlet and the other one with the outlet of said hollow axle, said spaces communicated with each other via said slit passages, and a pressure disk being mounted in said casing on said hollow axle

4,228,952
AUTOMATIC MARK READING
Charles W. Britton, 30 Laurel Hill Rd., Cherry Hill, N.J. 08003
Filed Apr. 9, 1976, Ser. No. 675,628
Int. Cl.³ G06K 7/14, 13/00
U.S. Cl. 235-473

14 Claims



1. An automatic reading assembly for pencil-marked sheets, said assembly having a light-fiber line-to-circle converter that contains a packed line of light-conducting fibers, the pack merging from said linear array to a generally circular array, the linear array being the ends of 4 to 5 rows of fibers each about two to about three mils thick whose terminal portions are packed in contiguous parallel relationship, means for moving a sheet to be read across the sight of said line of rows, and means for scanning the generally circular array of ends of said rows of fibers with a single stationary light-responsive cell to determine whether light from the sheet is momentarily diminished by a pencil mark that interferes with the light passing into the scanning means.

4,228,953

DUAL BELT DRIVE

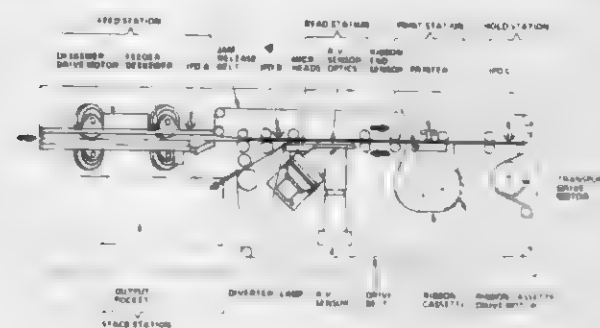
James R. Ingram, Jr., Dallas, and George A. Kiesel, Irving, both of Tex., assignors to Recognition Equipment Inc.

Filed Nov. 13, 1978, Ser. No. 960,209

Int. Cl.² G06K 13/07, 13/18; B65G 47/24

U.S. Cl. 235-480

4 Claims



1. A reversible document transport wherein gear tooth type drive belts are used to engage each other and a document while the document is carried in a first then a second direction in the transport path past processing stations, comprising: a drive belt, an idler belt, first and second roller sets and a reversible drive means, said drive belt extending around said first roller set and driven by one roller which is attached to said drive means, said idler belt extending around said second roller set and having the gear teeth thereon engaging similar gear teeth on the drive belt, some of the rollers of the second roller set being spring biased holding the idler belt in contact with the drive belt and the document which is carried between the drive and idler belts maintaining the document in a fixed indexed position while it is moving from one processing station

to another and until it is removed from the transport path while traveling in said second direction.

4,228,954

TEXTILE ARTICLE

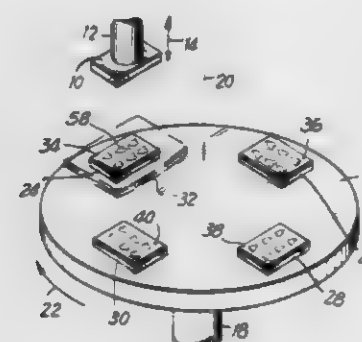
William Rosenzweig, New York, N.Y., assignor to Fashion Ribbon Company Inc., New York, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,876

Int. Cl.² B32B 7/00

U.S. Cl. 239-60

18 Claims



1. A method of making a shaped unitary composite puffy scented textile article which comprises providing a sealing die plate and a negative die plate, each of said die plates having at least one cavity, said negative die plate matching said sealing die plate and having a mating cavity smaller in overall size than that of said sealing die plate, said sealing die plate having a peripheral steel rule die about its cavity, said steel rule die being in the shape of the periphery of the textile article, said sealing die plate having an inner spring-loaded brass die parallel and adjacent to and within said steel rule die, said brass die normally extending out beyond the edge of said steel rule die, providing a flat planar sheet of insulating material, cutting a pattern from said sheet of insulating material, said pattern including an opening having the same shape and size as the cavity in said negative die plate, securing said sheet of insulating material to said negative die plate so that said pattern cannot shift, with the opening in said sheet of insulating material being in registration with the cavity in said negative die plate, disposing said sealing die plate and said negative die plate in juxtaposed registration, with the insulating sheet-covered side of said negative die plate facing said sealing die plate, inserting between the registered sealing die plate and negative die plate, successively and in planar parallelism, a first layer of gas-permeable cloth, a plurality of planar plies of spongy resilient filler, at least one fragrance pill, said pill being disposed between said plies, at least one sheet of a thermally activatable bonding agent, and a second layer of gas-permeable cloth, all of said layers, plies and sheet overlapping and coinciding and being larger than and extending beyond the area defined by said steel rule die, moving said sealing die plate and said negative die plate from a juxtaposed position to a contiguous position relative to each other for a finite time interval, generating an elevated temperature during at least a finite portion of said finite time interval by means of a radio frequency generator juxtaposed with said sealing die plate and opposite to said negative die plate, so that peripheral sealing and bonding of said layers and interposed bonding agent sheet and plies takes place in a sealed and bonded peripheral zone, said insulating material sheet serving to insulate and to prove radio frequency return during said finite portion of said finite time interval, exerting a force against said sealing die plate toward said negative die plate, said negative die plate being fixed, so that said brass die is retracted into said sealing die plate and said steel rule die cuts the textile article away from peripheral material about said sealed and bonded zone, and removing the resulting textile article from between said sealing die plate and said negative die plate.

4,228,955
SAFETY DEVICE FOR MOBILE IRRIGATION ASSEMBLIES

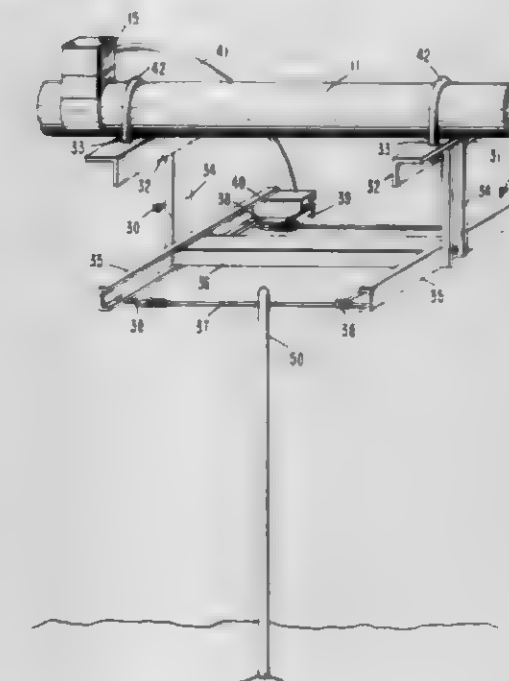
Loyal F. Petersen, P.O. Box 207, Osmond, Nebr. 68765

Filed Jul. 2, 1979, Ser. No. 54,095

Int. Cl.¹ B05B 3/00

U.S. Cl. 239-177

2 Claims



1. A safety device for a mobile irrigation assembly having a plurality of pipe segments which are movably mounted for rotation about a pivot point by a drive mechanism wherein the safety device comprises

- a framework, selectively disposed on one of said plurality of pipe segments, and comprising at least two end pieces connected by a horizontally disposed elongated support member,
- each of said end pieces composed of a mounting bracket having at least one downwardly depending member, and an elongated bottom portion which projects perpendicular to, and substantially beyond, the sides of said pipe segment,
- a switch element mounted on the framework and operatively connected to the drive mechanism
- a flexible member operatively connected to the switch element, and suspended between and supported by the elongated bottom portions of the end pieces, and
- a separate elongated ground engageable member whose length is dimensioned so as to engage the flexible member at a point in the arc of rotation of said one of said plurality of pipe segments during movement of the mobile irrigation assembly whereby the ground engageable member will deform the flexible member to actuate the switch to disengage the drive mechanism.

4,228,956

IRRIGATION SYSTEM AND FLUID DISPERSION NOZZLE

James P. Varner, Hanover Park, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 879,556, Feb. 21, 1978, abandoned. This application Nov. 30, 1978, Ser. No. 965,221

Int. Cl.¹ B05B 1/30, 1/34, 3/04

U.S. Cl. 239-237

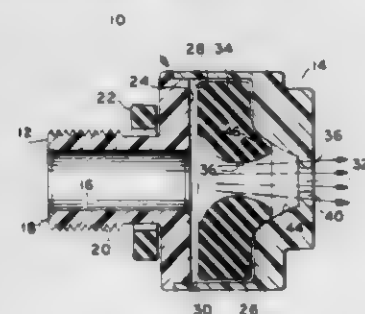
14 Claims

1. A nozzle device for controlling the dispersion of a pressurized supply of fluid, comprising:

- (a) housing means defining an inlet passage and a control chamber downstream from said inlet passage and further defining an outlet orifice located downstream from said control chamber and substantially aligned with said inlet passage in the direction of flow;
- (b) flow control means disposed in said control chamber,

said flow control means having a control orifice therein for limiting the fluid flow rate therethrough, said control orifice being effective for guiding said flow to an outwardly projecting fluid stream;

(c) said outlet orifice having an internal transverse dimension greater than the periphery of said fluid stream such that said fluid stream is substantially unobstructed while flowing therethrough; and



(d) channel forming means for deflecting a portion of said fluid flow passing through said outlet orifice, said channel forming means being disposed around the periphery of said outlet orifice and being effective for forming channels in and dispersing substantially uniformly said fluid stream downstream of said outlet orifice.

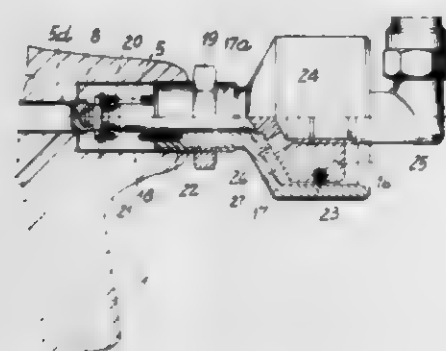
4,228,957 SPRAY GUN

Giorgio Davini, Milan, Italy, assignor to Basfer S.R.L., Milan, Italy

Filed Apr. 10, 1978, Ser. No. 895,087
Int. Cl.³ B05B 1/28

U.S. Cl. 239—300

2 Claims



1. A spray gun comprising: a body having a threaded hole, a nozzle in said body for spraying paint and the like; a pair of oppositely located nozzles for sending jets of compressed air to the sides of a spray cone in order to flatten and fan it out; a control valve for controlling supply of compressed air to the said pair of nozzles, a valve element in said control valve, a movable rod fixed to the valve element that reciprocates from a position closing the control valve and corresponding to cone spraying, to an open position, corresponding to fan spraying, an adjustable limit device determining the open position; pneumatic means, of the single acting type, to alternately displace said movable rod into one or the other of the said positions, said pneumatic means comprising a cylindrical jacket of a cup-shaped configuration having a narrower, tubular structure, extension piece adjustably screwed into said threaded hole provided in the body of the gun, a piston provided with an axial hole communicating with a connection for the supply of compressed air, said jacket and said piston defining a chamber therebetween, said hole in said piston communicating move-over, via a passage machined into the same piston, with said chamber formed between said cylindrical jacket and said piston; and said piston being a differential area type piston having a larger area on a downstream face thereof.

4,228,958

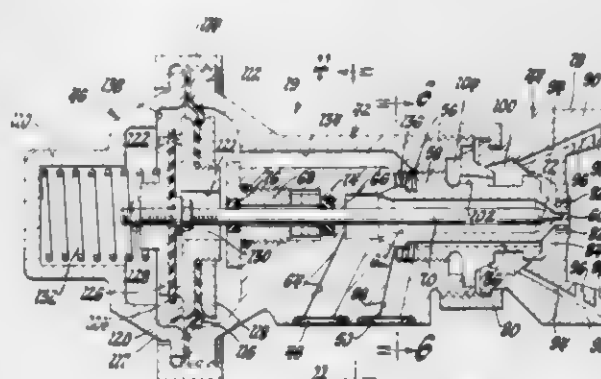
AIR-OPERATED SPRAY DEVICE

James C. Perry, Almont, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 27, 1979, Ser. No. 61,506
Int. Cl.³ B05B 7/04

U.S. Cl. 239—411

3 Claims



1. A spray device comprising in combination a body member including a nozzle at one end thereof, said nozzle having an orifice formed therein, a pressure chamber formed in the other end of the body member, a first passage for sprayable liquid located in said body member and leading to said orifice in the nozzle, an axially movable needle valve in said first passage, one end of said needle valve adapted to open and close said orifice, the other end of said needle valve extending into said pressure chamber and having a support member connected thereto, a spring in said pressure chamber contacting said support member and urging said needle valve to a closed position, a source of pressurized air at a predetermined pressure, said body member having a second passage formed therein for simultaneously connecting said source of pressurized air to said pressure chamber and to said nozzle for atomizing the liquid as it flows through the orifice, and a flexible member in said pressure chamber cooperating with said support member for allowing pressurized air to flow from said second passage into said pressure chamber and thereby augment the force of said spring so as to maintain a closing force on said needle valve that is substantially equal to but less than the force required to open the needle valve whereby said needle valve will not open to allow the sprayable liquid to flow to the orifice in the nozzle until the pressurized air is at a pressure sufficient to atomize said sprayable liquid.

4,228,959

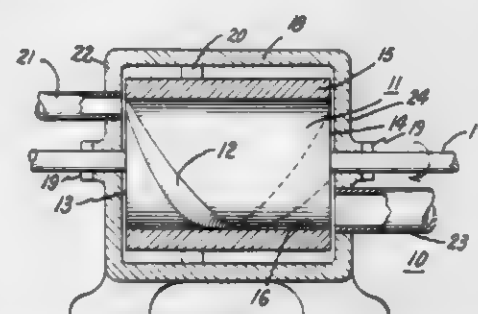
ROTATING NOZZLE EXPANDER

Bahram Keramati, and Vedanth Kadambi, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,587
Int. Cl.³ B05B 1/32

U.S. Cl. 239—451

5 Claims



1. A rotating nozzle expander comprising a rotor, the rotor having a groove along its length, the rotor groove size changing from one end of the groove to the other end, a sleeve encasing the rotor thereby defining a fluid flow passage, a housing, fluid inlet means for the housing, fluid outlet means

for the housing, the rotor and associated sleeve rotatably mounted with the housing, the rotor groove inlet in communication with the fluid inlet means, and the rotor groove outlet in communication with the fluid outlet means.

4,228,960

LIQUID FUEL INJECTORS

Dorian F. Mowbray, Burnham, and Stephen Edwards, Sible Hedingham, both of England, assignors to Lucas Industries Limited, Birmingham, England

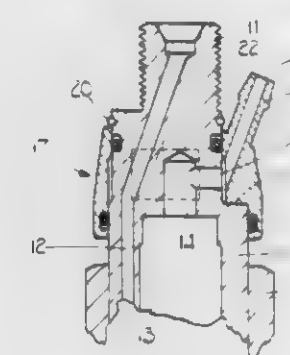
Filed Aug. 30, 1978, Ser. No. 938,022

Claims priority, application United Kingdom, Sep. 9, 1977, 37681/77

Int. Cl.³ F02M 61/20

U.S. Cl. 239—533.9

10 Claims



1. A liquid fuel injector of the kind which in use, is intended to be mounted on an internal combustion engine at a position to direct fuel into a combustion space of the engine, the injector comprising an elongated body part having a liquid fuel inlet at or adjacent one end thereof and an outlet orifice at or adjacent the other end, a valve member slidably mounted within a bore defined in the body part, resilient means acting on the valve member to urge the valve member into contact with a seating thereby to prevent flow of fuel through said orifice, a surface defined on the valve member and against which fuel under pressure can act to lift the valve member from the seating thereby to allow fuel flow through the orifice, an outlet for fuel leaking between the valve member and the bore, said outlet breaking out onto the periphery of the body part at a position adjacent said fuel inlet, a collar surrounding the body part and defining with the body part a cavity into which fuel can flow from said outlet, said collar having formed integrally therewith a nipple or nipples in which is formed a flow passage or flow passages in communication with said cavity, a circlip engageable within a groove within the body part to hold the collar in assembly with the body part, and a pair of sealing means to prevent the escape of fuel from the cavity other than through said flow passage or passages.

4,228,961

ELECTROSTATIC POWER PAINTING HEAD

Tsutomu Itoh, Tokyo, Japan, assignor to Onoda Cement Co., Ltd., Onoda, Japan

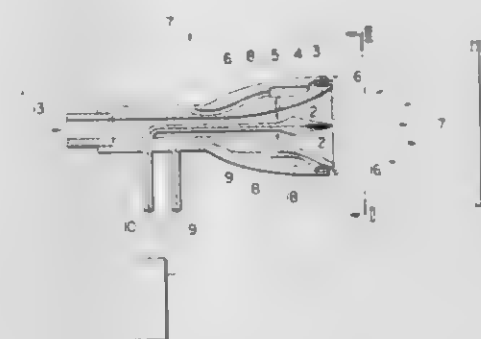
Filed May 7, 1979, Ser. No. 36,282

Int. Cl.³ B05B 5/02

U.S. Cl. 239—698

8 Claims

1. An electrostatic powder painting head characterized in that said head comprises a powder ejection port made of insulator, a needle electrode disposed in the proximity of said powder ejection port, a strip electrode disposed outside of said



4,228,962

COMMUNUTING LIQUID SWIRLER

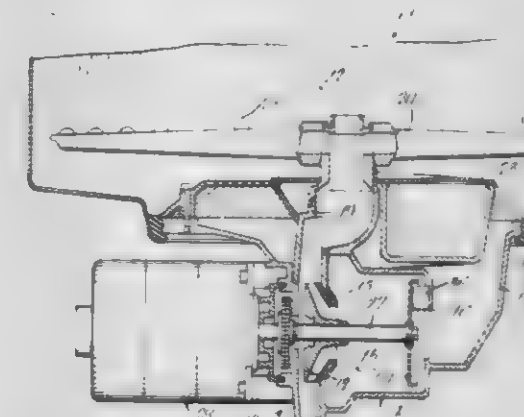
Geoffrey L. Dingler, St. Joseph Township, Berrien County, Mich., and Philip P. Johnson, Conway, Ark., assignors to Whirlpool Corporation, Belmont Harbor, Mich.

Filed Jun. 14, 1979, Ser. No. 48,444

Int. Cl.³ B02C 18/40

U.S. Cl. 241—46 R

12 Claims



1. In a dishwasher having a pump for supplying washing liquid to a spray system for cleaning dishes and a centrifugal separator for separating particles from the washing liquid as said liquid passes from said spray system to said pump, swirling and chopping means for causing swirling movement of the liquid being flowed through said flow passage and chopping of solids carried by the liquid, said swirling and chopping means comprising:

a wall member having distributed through openings for passing the liquid being flowed, and means for rotating the wall member about an axis parallel to the longitudinal extent of the flow passage for causing the portions of the wall member defining the edges of the openings to comprise means for chopping and thereby comminuting large solids carried in the liquid to a small enough size to permit passage thereof through said openings with said liquid; and holding means adjacent the wall member for preventing unchopped large solids caught on the upstream portion of the wall member from being carried therewith thereby to prevent clogging of the openings by said large solids, said holding means further cooperating with the wall member for causing chopping of the large solids and thereby effectively assuring comminuting action by the wall member on substantially all large solids for maintained swirling of the liquid in the flow passage.

4,228,963

RECEPTACLE FOR MOTOR-DRIVEN FOOD PROCESSOR

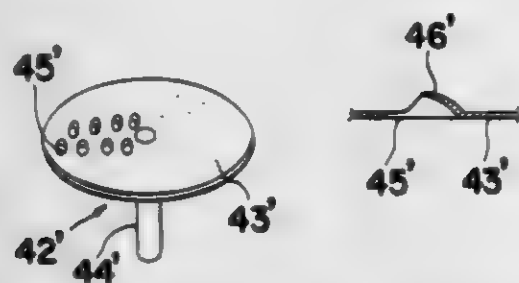
Terukazu Yamauchi, Mino; Katsufumi Nishio, Toyonaka; Fusao Niino, Suita, and Toyoaki Murasawa, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 26, 1979, Ser. No. 33,410

Int. Cl.¹ B02C 18/22

U.S. Cl. 241-92

11 Claims



1. A tilt preventing means for use in a food processor of the type which has an electric motor with a drive shaft, a removable receptacle which includes a container and a lid with the lid having an upwardly extending wall which defines a feed chute which connects the exterior at one open end of the chute with the interior of the receptacle at a second end when it is mounted on the container, and a rotary treating element which is caused to rotate at a high speed within the receptacle by the drive shaft, said tilt preventing means comprising:

an elastic retaining means having a plurality of long elastic tines which are spaced laterally from each other and a corresponding plurality of short elastic tines which are spaced laterally from each other, said elastic retaining means being removably mounted at said one open end of said feed chute so that said long and short tines extend downwardly into said feed chute, said long and short tines being curved so that said long and short tines extend inwardly away from said chute wall defining said chute.

4,228,964

APPARATUS FOR PROCESSING CELLULOSE INSULATION

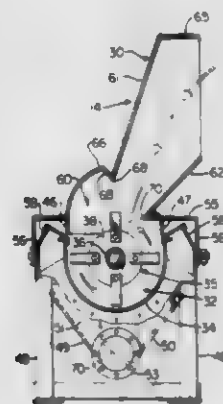
John H. Brady, Broomfield, Colo., assignor to Easy Engineering Corporation, Broomfield, Colo.

Filed May 8, 1978, Ser. No. 903,685

Int. Cl.¹ B02C 13/284, 13/282

U.S. Cl. 241-186.3

10 Claims



1. In apparatus for grinding and pulverizing cellulose materials and the like wherein an outer frame supports a grinder housing, said grinder housing defined by an outer semicylindrical housing wall provided with discharge openings to permit removal of pulverized materials less than a predetermined size from said housing wall, said frame providing an upper inlet opening above said sidewalls, and grinding means having rotary beater elements is disposed within said housing wall for grinding and pulverizing materials coming into contact there-

with into a predetermined size for removal through said discharge openings, the improvement comprising:

(i) feed inlet means for introducing unground materials through said upper inlet opening into communication with the interior of said housing wall, said feed inlet means having opposite, downwardly convergent sidewall portions terminating in a throat region spaced above said upper inlet opening; and

(ii) reverse flow means defined by a generally arcuate-shaped hood diverging away from one of said sidewall portions at said throat region of said feed inlet means and extending downwardly toward one wall of said housing wall, said hood disposed on the side of said housing wall in the direction of rotation of said beater elements, said reverse flow means forming a relatively low pressure area with respect to the air pressure within said housing wall whereby to encourage reverse flow of partially ground materials not sufficiently small enough to pass through said discharge openings in a direction counter to the movement of the unground materials through said feed inlet means, and deflector means on said hood being operative to cause the partially ground materials flowing into the low pressure area of said hood to be reintroduced into said throat region for intermixture with the unground materials introduced into said housing wall.

4,228,965

ASSEMBLY FOR WINDING YARNS AND THE LIKE ON A BOBBIN

Richard Heim, Hürth; Peter Hermanns, and Alfred Tschentscher, both of Cologne, all of Fed. Rep. of Germany, assignors to FMN Schuster GmbH & Co. KG, Hürth, Fed. Rep. of Germany

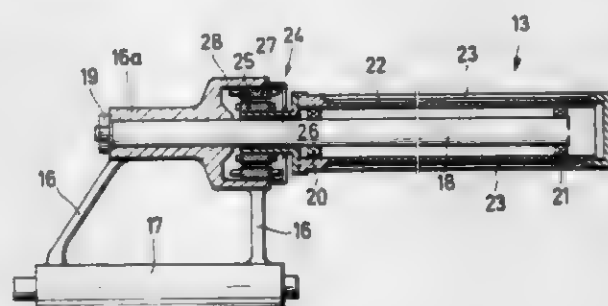
Filed May 30, 1979, Ser. No. 43,854

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825183

Int. Cl.¹ B65H 54/40, 59/00

U.S. Cl. 242-45

5 Claims



1. An assembly for winding yarn on a thread package, especially synthetic threads, on to a bobbin or bobbin tube carried on a mandrel, said assembly comprising:

(a) the mandrel including a frame portion and a mandrel tube mounted to rotate on bearing means located on a stationary axle fixed to the frame portion,

(b) said bearing means includes two bearings laterally spaced with respect to each other on said stationary axle to rotatably support said mandrel tube,

(c) electrically operated friction drive means driving the mandrel tube which carries the bobbin tube and the thread package, and

(d) electrically operated axial drive means for directly rotating the mandrel tube which includes a tube attachment at one end thereof,

(e) said friction drive means and said axial drive means being effective to operate in tandem,

(f) the axial drive means includes a three-phase a.c. motor having a stator and a rotor with the rotor rigidly disposed on the tube attachment,

(g) said mandrel frame portion includes a casing part overlapping the tube attachment with the stator of the three-phase motor being disposed therein around said rotor.

4,228,966

SATELLITE REEL

Hendrik M. W. Croese, Vlaardingen, Netherlands, assignor to Ir. H.M.W. Croese Raadgevend, Vlaardingen, Netherlands

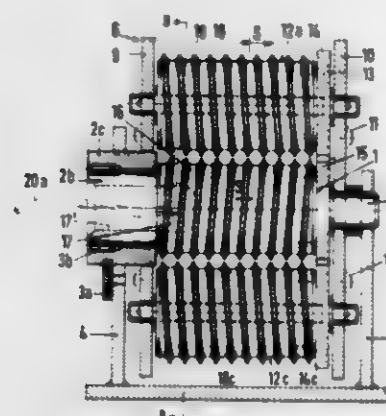
Filed Aug. 2, 1979, Ser. No. 62,938

Claims priority, application Netherlands, Jan. 25, 1979, 7900609

Int. Cl.¹ B65H 75/00

U.S. Cl. 242-54 R

2 Claims



1. A storage reel for provisionally receiving a variable cable length between a stationary end and a movable end of the cable, characterized by a central drum which is stationary mounted and is fitted with a cable-receiving groove extending helically over the drum surface, with a connection to an axial cable passage for a stationary cable end, and at least two satellite drums, each having the same diameter as the central drum and each likewise being fitted in its drum surface with a helical cable-receiving groove of the same pitch as that of the central drum, however oppositely directed with respect to the pitch of the central drum, said satellite drums being rotatable about the central drum and simultaneously about their own axes, such that the oppositely disposed portions of the respective grooves take up a portion of the cable between them.

4,228,967

REEL LOADER CONSTRUCTION

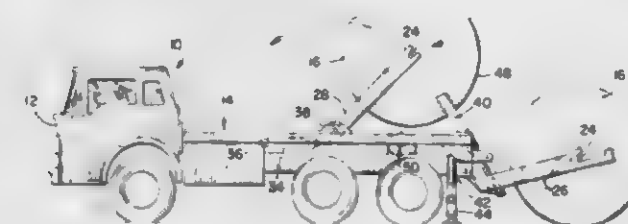
Roger D. Woodruff, Hebron, Ind., assignor to Champion Corporation, Hammond, Ind.

Filed Sep. 19, 1979, Ser. No. 76,832

Int. Cl.¹ B65H 19/20

U.S. Cl. 242-86.5 R

10 Claims



1. In a reel loader apparatus comprising a mechanism for loading reels onto a supporting bed and for unloading the reels, the reels comprising a center section for holding cable and side flange sections, each flange section defining a rim engageable with said bed, the improvement comprising reel drive means for rotating a reel about its horizontal axis, rim engaging means defined by said drive means, means supporting said drive means on said bed whereby at least one rim of a reel located on the bed engages a rim engaging means, and motive power means for said drive means, said motive power means being adapted to operate the drive means in either direction whereby cable can be fed from or driven onto a reel, and means associated with said motive power means for varying the pressure applied by said rim to said drive means for thereby varying the driving force of said drive means.

4,228,968

REEL FOR AUTOMATIC SAFETY BELTS FOR VEHICLES, ESPECIALLY MOTOR VEHICLES

Walter Jahn, Ehningen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,276

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822099

Int. Cl.¹ A62B 35/00; B65H 75/48

U.S. Cl. 242-107

13 Claims



1. A reel arrangement for automatic safety belts of motor vehicles, the arrangement including roller means for accommodating the safety belt rotatably mounted in a housing, spring means connected to the roller means for providing a force counteracting a withdrawal of the safety belt from the roller means, and means for automatically locking the roller means upon the safety belt being subjected to high belt forces, characterized in that a gear means is connected to the roller means so as to be rotatable therewith, a rotatably mounted drag disk means is eccentrically disposed with respect to said gear means so as to enable the gear means to rotate relative to the drag disk means in a belt extraction direction, said drag disk means including a bearing surface means for carrying an engagement means for engaging said gear means in a belt take-up direction, an additional spring means connected with the drag disk means for exerting a force upon the drag disk means in opposition to the force of the spring means connected to the roller means thereby providing a reduced tension in the safety belt, stop means provided on the housing for limiting a rotational movement of the drag disk means, two additional spaced stop means are provided on the drag disk means and are adapted to come into engagement with said stop means on the housing, curved control and guide track means provided on the housing, and in that a guide means is provided on the drag disk means and cooperates with the curved control and guide track means for guiding a rotational movement of the drag disk means.

4,228,969

DEVICE IN CONNECTION WITH REEL MECHANISMS FOR SAFETY BELTS FOR AUTOMOBILES

Gustav E. V. Svensson, Kolm, Sweden, assignor to Autoliv AB, Vargarda, Sweden

Filed Oct. 10, 1978, Ser. No. 949,677

Claims priority, application Sweden, Oct. 12, 1977, 7711468

Int. Cl.¹ A62B 35/02; B65H 75/48

U.S. Cl. 242-107.4 A

6 Claims

1. Activation means for a safety belt for a vehicle wherein there is provided a reel shaft for winding up said belt, a stop mechanism for the reel shaft having a wheel with ratchet teeth thereon rotatable together with said shaft and a pawl for cooperating with said ratchet teeth, and connecting means operably connecting said activation means with said pawl, said activation means comprising a supporting means, a body of inertia located in said supporting means, and an operating member for cooperation with said body of inertia constituting one unit, said body of inertia having a neutral position in said supporting means and being displaced from said neutral position in response to an abnormal change in movement of the vehicle to

move said operating member and through said connecting means to actuate said pawl into engagement with one of said ratchet teeth, said activation means being located in a housing and being rotatable in said housing around a horizontal center



axis of the supporting means, and a rotatable ring shaped plate is mounted coaxially with said reel shaft, said housing being supported by said plate for displacement about a circle having the same center as the reel shaft.

4,228,970

SAFETY BELT RETRACTOR WITH EMERGENCY LOCKING MECHANISM

Masaru Morinaga, Yamato, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

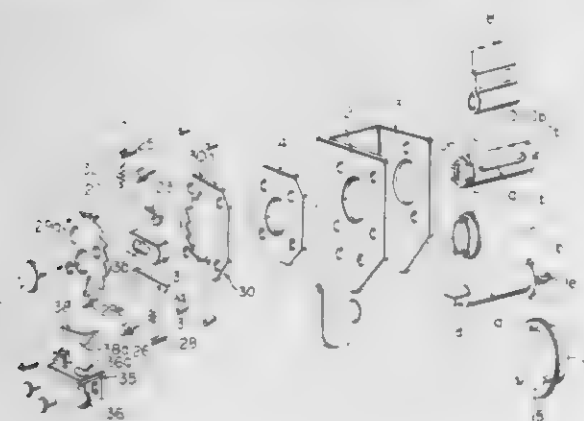
Filed Dec. 22, 1978, Ser. No. 972,508

Claims priority, application Japan, Jan. 6, 1978, 53/408; May 29, 1978, 53/63375

Int. Cl.³ A62B 35/02; B65H 75/48

U.S. Cl. 242-107.4 A

8 Claims



1. An emergency locking mechanism for the webbing take-up shaft of a safety belt retractor for a motor vehicle comprising:

- an inertia sensitive ratchet gear supported coaxially on the take-up shaft for rotation therewith in a normal state, but rotating relative to the take-up shaft due to its inertia when the webbing pay-out exceeds a predetermined rate;
- a latch member pivotally supported on the ratchet gear and adapted to pivot outwardly from the center of rotation of the ratchet gear;
- vehicle acceleration sensing means for sensing a predetermined speed change of the vehicle and having means for engaging the ratchet gear to arrest its rotation upon sensing said predetermined speed change to cause relative rotation between the ratchet gear and the take-up shaft when the take-up shaft rotates in response to webbing pay-out;
- a fixed member attached to the retractor and adapted to be engaged by the latch member when the latch member pivots outwardly; and
- an engaging member attached to the take-up shaft, the engaging member causing the latch member to pivot outwardly and engage the fixed member when the ratchet gear rotates relative to the take-up shaft, engagement between the latch member and the engaging member

arresting the rotation of the take-up shaft when the latch member engages the fixed member.

4,228,971

SEAT BELT RETRACTOR WITH TENSION ELIMINATING MECHANISM

Tatsuhiko Arima, Fujisawa, and Chusaku Yamanashi, Kosai, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Fuji Kiko Company, Limited, Tokyo, both of Japan

Filed Mar. 26, 1979, Ser. No. 23,598

Claims priority, application Japan, Apr. 6, 1978, 53/40485; Apr. 6, 1978, 53/40486

Int. Cl.³ A62B 35/00; B65H 75/48

U.S. Cl. 242-107.6

6 Claims



1. A belt retractor for a safety seat belt arrangement having a webbing, comprising:

- a housing;
- a reel rotatably mounted in said housing and winding thereon said webbing when said reel is rotated about the axis thereof in one direction, said reel being formed thereon with first and second cylindrical bearing portions which are respectively concentric and eccentric with respect to the longitudinal axis of said reel;
- first biasing means for biasing said reel to rotate about the axis of the same in said one direction;
- a wheel journaled on said first cylindrical bearing portion;
- a stopper for stopping rotation of said wheel about the first cylindrical bearing portion when engaged with said wheel;
- second biasing means for biasing said stopper to move in a direction to be disengaged from said wheel;
- an external gear journaled on said second cylindrical bearing portion of said reel;
- third biasing means for biasing said wheel to rotate in the same direction as said one direction relative to said external gear;
- an internal gear stationarily connected to said housing at a position to be operatively engaged with the external gear;
- memorizing means including at least one stud fixed to said external gear and at least one arcuate slot formed in said wheel, said stud being spacedly received in said slot and said arcuate slot being concentric with said first cylindrical bearing portion, said stud and said slot being so arranged and formed that when said stud is kept in contact with one longitudinal end of said slot under engagement of said stopper with said wheel, said external gear becomes fixed so as to be prevented from rotation relative to said internal gear; and
- actuating means for causing said stopper to be brought into engagement with said wheel against the force of said second biasing means when said webbing takes the passenger restraining position.

4,228,972

WEB SUPPLY AND TAKE-UP SYSTEM

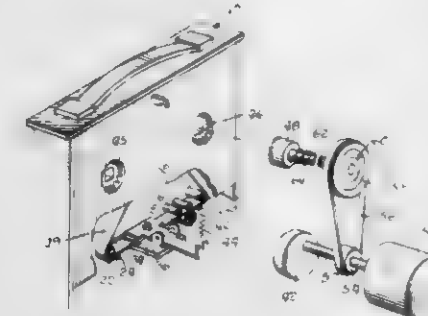
Eugene F. Koppensteiner, Niles, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 4, 1979, Ser. No. 36,193

Int. Cl.³ G03B 1/04; G11B 15/32

U.S. Cl. 242-201

7 Claims



1. In a web supply and take-up system wherein a web is transported by means of a capstan and pressure roller from a supply reel to a take-up reel and wherein the take-up reel is driven to wind up the web transported, the improvement comprising:

- a friction roller placed between the supply and take-up reels comprising an outer cylindrical face to receive the web in frictional engagement, a fixed central post having a substantially flat portion affixed near one end, a pressure plate having at least one substantially flat surface in frictional contact with the flat portion of the fixed central post, spring means positioned internal to the outer cylindrical face for continuously urging the pressure plate against the flat portion, whereby the friction roller supplies a force counter to the take-up reel drive force to assist the capstan and pressure roller in stopping undesired web movement.

4,228,973

INFANTRY PROJECTILE

Peter Klein, Putzbrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

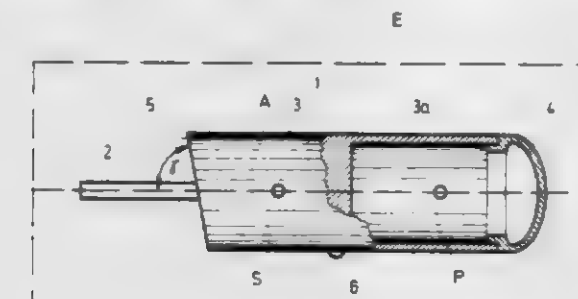
Filed Dec. 2, 1975, Ser. No. 637,669

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1974, 2457503

Int. Cl.³ F42B 15/18, 15/10, 13/00

U.S. Cl. 244-3.1

10 Claims



1. An infantry projectile for use against ground targets comprising an elongated projectile body having a longitudinal axis and said body being symmetrical about its longitudinal axis, said projectile body having a leading end and a trailing end each extending transversely of the longitudinal axis, the surface of said projectile body between the leading and trailing ends thereof in a plane extending perpendicularly of the longitudinal axis is concentric to the longitudinal axis, trimming means provided on the leading end of said projectile body, wherein the improvement comprises that said projectile body

has a single flow-control projection extending outwardly from its concentric surface at a location intermediate the leading and trailing ends of the projectile body, said projection is arranged so that in a vertical plane of symmetry through the longitudinal axis of said projectile body with the vertical plane of symmetry determined by said trimming means said projection is located on the lower side of said projectile and the aerodynamic center of the projectile is located below the center of gravity of said projectile.

4,228,974

PROTECTIVE DEVICE FOR INSTRUMENTS AND LOCKING OF AIRCRAFT CONTROLS

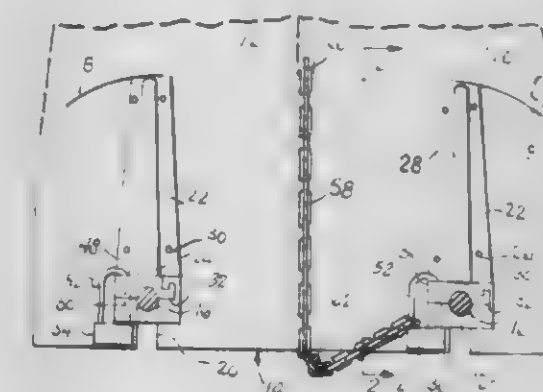
August B. Yates, Orlando, Fla., assignor to J. Talmadge Webb, Satellite Beach, Fla.

Filed Feb. 15, 1979, Ser. No. 12,463

Int. Cl.³ B64C 13/14; B64D 47/00; E05D 73/00

U.S. Cl. 244-224

7 Claims



1. In an aircraft having an instrument panel and controls for ailerons and elevators, said controls including at least one column turned by a hand operated yoke and movable axially for controlling the ailerons and elevators respectively, a protective device for preventing theft of the aircraft instruments from said panel and preventing unauthorized flight removal of the aircraft from a parking area, said device comprising a protective instrument cover, and means for lockingly mounting said cover in a position immediately adjacent the aircraft instrument panel and to said at least one column in such manner as to prevent unauthorized movements of said at least one column and the ailerons and elevators controlled thereby, said means for lockingly mounting the cover comprises first and second complementary blocks which clamp about said at least one column to prevent its movements, said first block being fixed to said cover and the second block being separable from the first, and means for locking the blocks together.

4,228,975

KNEELING NOSE LANDING GEAR ASSEMBLY

Francis Sealey, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 29, 1979, Ser. No. 43,060

Int. Cl.³ B64C 25/14

U.S. Cl. 244-102 R

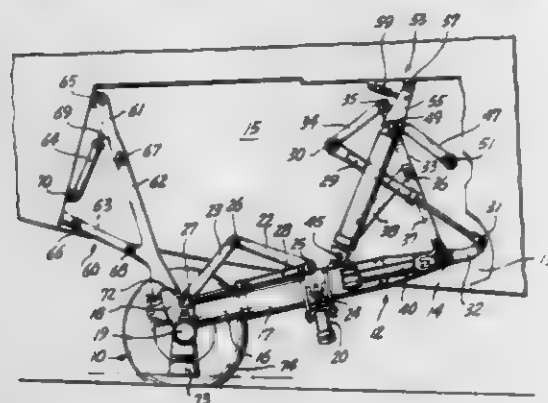
5 Claims

1. A kneeling nose landing gear assembly for an airplane having a fuselage frame comprising:

- a landing gear strut having an upper and a lower end, means pivotably coupling said upper end of said strut to said fuselage frame for swinging movement between a retracted position within a wheel bay and an upright taxiing position wherein said strut extends downwardly from said airplane, said strut having wheel means journaled to said lower end of said strut;
- retraction actuator means operatively coupled between said strut and said frame for selectively swinging said strut between said taxiing position and said retracted position;
- kneeling actuator means having a first end and a second end, means coupling said first end of said kneeling actuator

means to said landing gear strut, idler arm means having a first end and a second end, said first end of said idler arm means being pivotally coupled to said frame of said airplane, means pivotally coupling said second end of said idler arm means to said second end of said kneeling actuator means, said second end of said kneeling actuator means being thereby constrained by said idler arm means to swing through a predetermined arc, and;

stop means operatively coupled to said frame of said airplane and movable between an operable position wherein said stop means is interposed in said predetermined arc for receiving said second end of said kneeling actuator means and an inoperable position wherein said stop means is removed from said predetermined arc thereby permitting said second end of said kneeling actuator means to swing



freely through said predetermined arc as said strut is moved between said taxiing and said retracted positions by said retraction actuator means, said stop means in said operable position and said kneeling actuator means being cooperable to support said strut in a kneeling position intermediate between said upright taxiing position and said retracted position, said kneeling actuator means being forcibly extensible against said stop means in said operable position and thereby operable to cushion the descent of the nose of the airplane as said strut is pivoted from said taxiing position into said kneeling position, said kneeling actuator means and said stop means being further cooperable to augment said retraction actuator means to raise the nose of the airplane by pivoting said strut from said kneeling position to said taxiing position.

4,228,976

MAIN CONNECTOR FOR AN AIRFOIL OR WING

Max Eiselbrecher, Unterpfaffenhofen; Rolf Guenther, Munich, and Helmut Jakob, Zorneding, all of Fed. Rep. of Germany, assigns to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

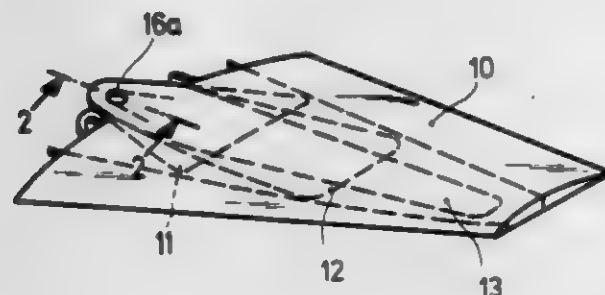
Filed May 18, 1978, Ser. No. 907,405

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721651

Int. Cl.² B64C 3/20, 3/24

U.S. Cl. 244—123

8 Claims



1. A wing structure having a free end forming a wing tip and a connector end adapted to be connected to a craft, said wing structure further including a leading edge and a trailing edge,

comprising a plurality of laminated layers (14) and connector means (16) secured to said connector end of said wing structure, said connector means comprising a connector bore (16c) with a central axis (16b) and metal grommet means (15) centered relative to said central axis (16b), said metal grommet means (15) comprising a plurality of bearing recesses (17) arranged in radial succession at radii which increase from said central axis (16b) away from said wing tip, said wing structure further comprising tension loop means (18) each having two loop legs (18') and a bight (18'') connecting the respective two loop legs, each loop bight being held in one of said bearing recesses (17) of the metal grommet means (15), said loop legs (18') being spread out substantially between said leading edge and said trailing edge of said wing structure, said spread out loop legs being embedded in said laminated layers (14) whereby said loop legs (18') are operatively connected to said wing structure for introducing substantially tension loads only into said wing structure, said metal grommet means further comprising a concavity (19) opening toward said wing tip, and pressure body means (20) operatively held at one end (20') thereof in said concavity (19) of said metal grommet means (15) and operatively connected to said wing structure between said loop legs (18) for introducing substantially pressure loads only into said wing structure.

4,228,977

KITE

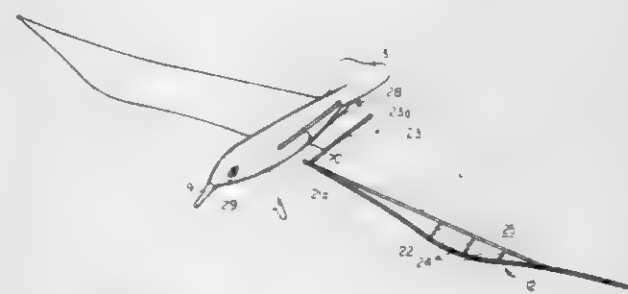
Yasuo Tanaka, 320 Oaza Murata, Washima-mura, Santo-gun, Niigata-ken, Japan

Filed Jan. 31, 1979, Ser. No. 8,333

Int. Cl.² B64C 31/06

U.S. Cl. 244—153 R

7 Claims



1. A kite comprising:

- a longitudinally extending central body formed of a lightweight material;
- a first tube extending through said body transversely of the longitudinal axis thereof;
- a pair of second tubes disposed on opposite sides of said body and extending in directions substantially parallel to said longitudinal axis of said body; and
- a pair of wings, each said wing comprising a skeleton structure formed of a flexible material and a sheet material stretched over said skeleton structure to form a wing surface, said skeleton structure including a leading edge member, a spar, a plurality of auxiliary ribs extending between said leading edge member and said spar, an installing rib, a first projection adapted to be inserted into said first tube, a second projection adapted to be inserted into a respective one of said second tubes, said first projection being provided at an inward end of said spar, and said second projection being provided at a rearward end of said installing rib.

4,228,978

RECREATIONAL VEHICLE SEWER HOSE SUPPORT

Roger Rand, 3810 N. Romero, Tucson, Ariz. 85705

Filed Oct. 16, 1978, Ser. No. 951,361

Int. Cl.² F16L 3/00

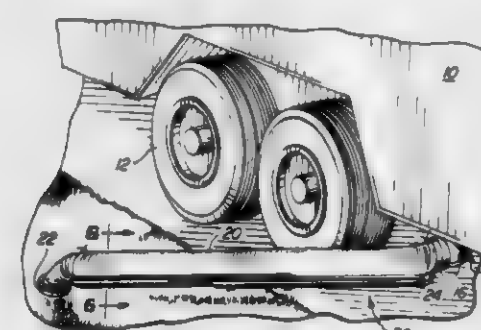
U.S. Cl. 248—49

1 Claim

1. A hose support device for supporting a flexible sewer hose

attached to an RV when discharging waste to a dumping location; said hose support comprising:

- (a) a first generally elongate rigid section having a generally trough-like cross-section adapted to receive at least a portion of said hose; said first section having opposite first and second ends and being substantially free of any projections;
- (b) a second generally elongate rigid section having a generally trough-like cross-section and being substantially free of any projections and adapted to be slidable relative to



said first section; said second section having opposite first and second ends;

- (c) said first and second sections each defining at least one aperture extending therethrough which apertures may be selectively aligned;
- (d) fastening means cooperative with said apertures for securing said sections together at a desired length; and
- (e) flexible tie means associated with the first end of said first section and the second end of said second section whereby the support is engageable with said hose and securable thereabout as said ties adjacent both ends of said support.

4,228,979

RIGID CHAIN SYSTEM FOR ARTICLES WITH COLUMN STRUCTURES

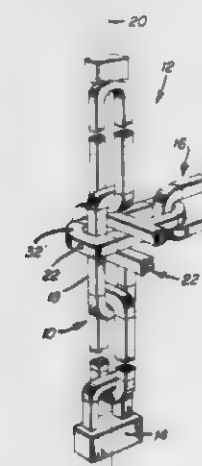
Marvin P. Lanphear, 2740 22nd St. La., Greeley, Colo. 80631

Continuation-in-part of Ser. No. 616,878, Sep. 25, 1975, Pat. No. 4,135,689. This application Oct. 31, 1978, Ser. No. 956,993

Int. Cl.² F16M 11/20

U.S. Cl. 248—188.1

8 Claims



1. In a load supporting article having a horizontal element interconnected between at least two rigid vertical columns, each of said columns having a plurality of chain-like link sections, adjacent ones of the link sections being aligned with perpendicular planes intersecting along a common column axis, each of the link sections comprising solid leg portions and bridging portions rigidly interconnecting the leg portions at opposite longitudinal ends thereof, the bridging portions of the adjacent link sections being formed by a single unitary piece of material, and coupling means holding the bridging portions in

rigid assembled relation to the leg portions for alignment with said perpendicular planes.

4,228,980

VALANCE HANGER BRACKET AND SYSTEM

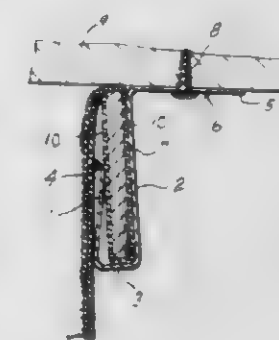
Pierre Beauchamp, 3187 St. Charles St., St. Laurent, Canada (H4R 1B5), and Augusto Di Giacomo, 9338 Bruchesi, Montreal, Canada (H1Z 2P7)

Filed Nov. 9, 1978, Ser. No. 959,333

Int. Cl.² A47H 1/10

U.S. Cl. 248—262

4 Claims



1. A curtain hanger system comprising, in combination, a ceiling, a curtain hanger bracket, a flat curtain hanger and a curtain or valance having a gusset at one edge portion, in which said flat bar is longitudinally inserted and constituting a bar and gusset assembly, said curtain hanger bracket including a hook portion and a fixing portion integrally formed of a strip of resilient material, the hook portion having a transverse U-shape configuration including a transverse bottom portion and a front and a rear upright portion extending from the respective ends of said bottom portion, said fixing portion extending rearwardly from the upper end of said rear upright portion and at substantially right angle to said rear upright portion, said fixing portion being flat and fixed flat to said ceiling, said front upright portion being shorter than said rear upright portion and leaving between said ceiling and the upper end of said front upright portion a gap through which said bar and gusset assembly is inserted edgewise into said hook portion, said bar having a width slightly greater than the vertical distance between said ceiling and said bottom portion, said bar and gusset assembly inserted edgewise in said hook portion and having a lower edge resting on said bottom portion and a top edge bearing against said ceiling, said rear upright portion flexed rearwardly relative to said fixing portion, thereby inclined downwardly and rearwardly and biasing said bar and gusset assembly against said ceiling, said curtain or valance depending from the top edge of said bar and gusset assembly in front of said front upright portion and concealing said bracket.

4,228,981

ADJUSTING MECHANISM FOR THE SEAT OF AN AUTOMOTIVE VEHICLE

Hans Rampel, Eich; Peter Hess, and Volkmar Schulz, both of Coburg, all of Fed. Rep. of Germany, assigns to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 888,503

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713693

Int. Cl.² F16M 13/00

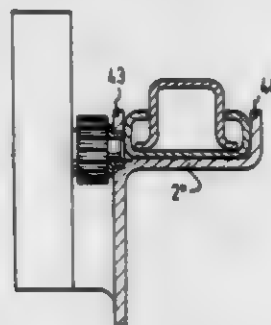
U.S. Cl. 248—430

6 Claims

5. In an adjusting mechanism for a seat of an automotive vehicle and the like in which the seat rests on carriers elongated in the direction of seat shifting movement, and a seat shifting guide arrangement is interposed between the seat and the carriers, the improvement which comprises:

- (a) two groups of lugs respectively unitary with said carriers being arranged on respective side portions of said carriers, (1) the lugs on one side portion being longitudinally offset from the lugs on the other side portion,

(2) said lugs being partly separated from the remainder of the carrier and extending upward from said remainder and adapted to be received over the outer ends of the clamp screws of the outboard motor mounting clamp, and said secur-



for laterally backing the seat shifting guide arrangement.

4,228,982

HANGING DEVICE FOR PICTURES

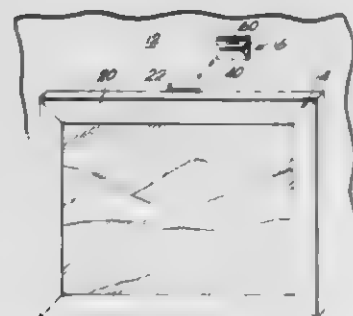
Jose M. Sellera, 721 SW. 2 St., Miami, Fla. 33130

Filed Feb. 12, 1979, Ser. No. 11,302

Int. Cl.² A47F 7/14

U.S. Cl. 248-467

3 Claims



1. A hanging device comprising a wall pad having an adhesive surface and an oppositely facing main surface, said adhesive surface being lined with a removable waxed paper, said opposite surface having an upper edge, a lower edge, and side edges, and outwardly extending angled portion defining a mouth between the portion and the outside surface comprising an open pocket, and a leveler means in the form of a bubble gauge on said opposite surface comprising leveling means for leveling the pad, and

a companionate device for hooked-up engagement, said companionate device comprising a pad having an outwardly downwardly extending portion for hooked-up engagement with said portion and means for attaching said device to a picture frame for use in mounting the picture frame to a wall.

4,228,983

OUTBOARD MOTOR LOCKING DEVICE

John H. Bowman, Jr., 9723 S. Mead, Oak Lawn, Ill. 60453

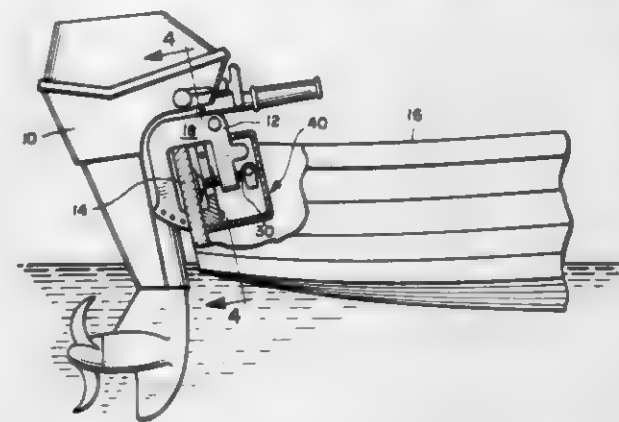
Filed Dec. 1, 1978, Ser. No. 965,288

Int. Cl.² B63H 21/26; F16F 15/00

U.S. Cl. 248-553

8 Claims

1. Outboard motor locking means adapted to be fixed to the transom of a boat and comprising means for receiving an outboard motor mounting clamp for an outboard motor, means for enclosing the mounting clamp and said receiving means and means for securing said enclosing means to said receiving means, said receiving means being fixable to the transom of the boat and including a member which is fixed to the inside wall of the transom, said member having two parallel spaced, clamp screw-receiving slots for receiving, respectively, two clamp screws of the outboard motor mounting clamp, said enclosing means including a cover pivotally mounted to said member



ing means being operable to lock said cover to said member and over said outboard motor mounting clamp.

4,228,984

VIBRATION ATTENUATOR SEAT

James E. Thompson, and Robert L. Mayfield, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Continuation of Ser. No. 861,735, Dec. 16, 1977, which is a

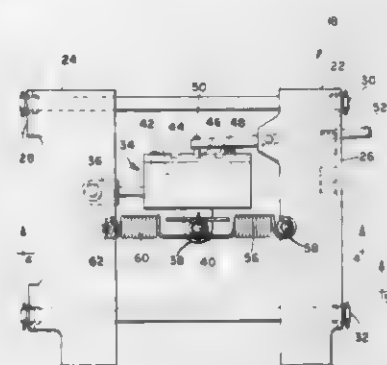
continuation-in-part of Ser. No. 689,472, May 24, 1976,

abandoned. This application Nov. 13, 1978, Ser. No. 960,125

Int. Cl.² B60N 1/08

U.S. Cl. 248-636

19 Claims



1. A vibration attenuator seat comprising: a base assembly; a seat assembly; antifriction means connecting the base assembly to the seat assembly and supporting the seat assembly relative to the base assembly for predetermined ultra low coefficient of friction horizontal movement of the seat assembly relative to the base assembly; first spring means having a predetermined low spring rate and a predetermined preload operatively connecting the seat assembly to the base assembly for urging the seat assembly in a first direction with a first predetermined spring force and holding the seat assembly in a predetermined operating position with a first predetermined preload force relative to the base assembly; and second spring means having a predetermined low spring rate and a predetermined preload operatively opposed to the first spring means and operatively connecting the seat assembly to the base assembly for urging the seat assembly in a second direction opposite the first direction with a second predetermined spring force and holding the seat assembly in the predetermined operating position with a second preload force relative to the base assembly whereby a positive centering force towards the predetermined operating position is always provided.

4,228,985

APPARATUS FOR PRODUCING MOLDED CONCRETE PRODUCTS

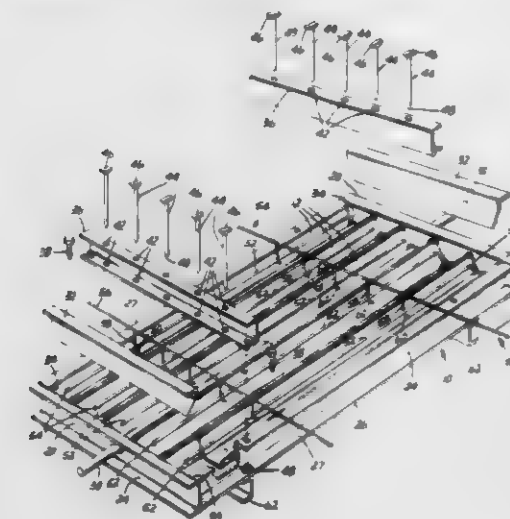
Edmond N. Gaudelli, 2438 Payson Ave., Pittsburgh, Pa. 15220, and Edward E. Shepler, 1733 Potomac Ave., Dormont, Pa. 15216

Filed Feb. 15, 1978, Ser. No. 877,892

Int. Cl.² B28B 7/08, 7/18, 7/24

U.S. Cl. 249-93

5 Claims



1. An apparatus for producing a number of molded concrete products from a single molding apparatus, comprising a mold bed having a mold means forming a plurality of elongated mold cavities and elongated mold walls and having reinforcement means surrounding said mold means and forming therewith a unitary structure whereby said mold bed can be carried as a whole, removable end wall portions of said mold cavity which are interfittable between the ends of the mold walls and the adjacent reinforcing means and are removable from said position, bracket means overlying the upper surfaces of said mold cavities and extending transversely to said elongated mold cavities at spaced-apart locations thereof, means for releasably clamping said transverse bracket members to said reinforcement means, insert means associated with said transverse bracket members and adapted to extend within respective ones of said mold cavities to intersect with an opening at the bottom of a respective one of said mold cavities, load-bearing means receiving complementary portions of said mold bed and adapted for rotational inverting of said mold bed by rotation about said load-bearing means after the molded products are sufficiently hardened, and thereby transferring the weight thereof to the transverse bracket means, said removable clamping means securing said transverse bracket means, and providing detachment of said transverse bracket means to allow for gravity separation of the finished products from within the respective mold cavities.

4,228,986

ATTACHMENT FOR ANCHORING A SAFETY BELT

Vernon R. Schimmel, and Joseph L. Foszcz, both of Chicago, Ill., assignors to Symons Corporation, Des Plaines, Ill.

Filed Mar. 12, 1979, Ser. No. 19,922

Int. Cl.² E04G 11/06

U.S. Cl. 249-202

12 Claims

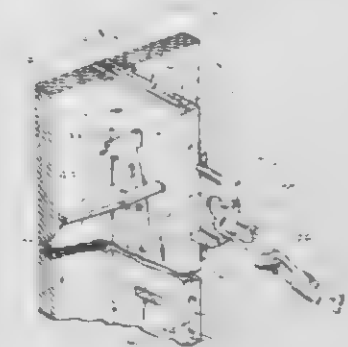
1. An attachment for use in anchoring a safety belt on a supporting member having a vertically extending side surface terminating at a vertically extending free edge on the member, and also having an opening extending therethrough from the side surface, said attachment comprising:

a bracket member having integral body, head, and ear portions, said body and head portions adjoining each other at end margins thereof and said ear portions extending outwardly from one face of said head portion at opposite lateral margins thereof,

said head portion having an opening extending through it from said one face and sized to receive a hook portion of

a workman's safety belt therethrough for connecting the belt to the bracket member, and a connecting member extending outwardly from one face of said body portion and insertable through said opening in the supporting member for connecting the attachment thereto.

said body portion being disposed with said one face thereof adjacent to said side surface of the supporting member



4,228,987

VALVE ARRANGEMENT

Michael B. Potter, Winterbourne, England, assignor to Seetru Limited, Bristol, England

Filed Nov. 27, 1978, Ser. No. 963,802

Claims priority, application United Kingdom, Dec. 20, 1977, 53086/77

Int. Cl.² F16K 1/34

U.S. Cl. 251-210

4 Claims



1. A valve of the kind which includes a plunger guided for movement toward and away from a coaxial annular plunger seat surrounding an inlet port of the valve, comprising:

a flat annular metal seating surface on the plunger seat;

a nose on the plunger having a flat annular metal portion thereon positioned to lie in metal-to-metal contact with said metal seating surface when the valve is closed to obturate fluid flow through the inlet port of the valve;

a housing recess defined in said flat annular metal portion, said recess having an open mouth portion;

said flat annular metal portion having an overhang in said housing recess adjacent said open mouth portion;

an annular L-shaped elastomeric sealing element housed in said housing recess, and having a square body portion trapped in said housing recess behind said overhang and a further rectangular portion extending into said open mouth portion of said housing recess and a flat annular sealing region on a terminal end of said further portion, said flat annular sealing portion of said elastomeric sealing element being immediately within but set back from said annular metal surface of said plunger nose to define a

set-off portion of said recess, said elastomeric element square body portion essentially completely filling said housing recess behind said overhang, said rectangular protruding portion having a width approximately one-half the width of said square body portion;

an upstanding annular ridge on said plunger seat flat annular metal seating surface, said ridge being positioned to be immediately adjacent and to surround the inlet port of the valve and to be immediately surrounded by said plunger seat flat annular metal seating surface, said ridge having a height above said metal seating surface sufficient so that said ridge extends into said recess open mouth and into deforming contact with said elastomeric member flat annular sealing region when said plunger nose flat annular metal portion is in metal-to-metal contact with said plunger seat flat annular seating surface.

4,228,968 VALVE

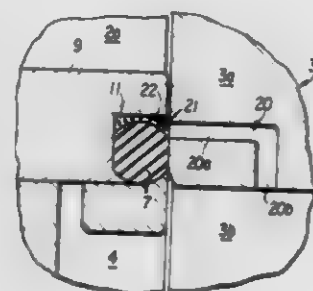
Kazo Higashi; Sadayuki Nakanishi, both of Kobe, and Akio Fukunaga, Kakogawa, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Oct. 20, 1978, Ser. No. 953,111

Claims priority, application Japan, Oct. 28, 1977, 52-129968
Int. Cl.³ F16K 3/00

U.S. Cl. 251—327

4 Claims



1. A gate valve which comprises:

a resilient seat which is circular in cross section;

a retainer housing within which said resilient seat is disposed, said housing comprising a first member and a second member connected to said first member forming an open ended chamber therebetween wherein said first member includes an upper edge portion and said second member includes a lower edge portion, such that said upper and lower edge portions cooperate to retain said resilient seat;

gate means cooperatively engageable with said resilient seat;

passage means formed in said gate means and in said first member for communicating fluid flowing from said chamber out of said passage means.

4,228,969

ACTUATOR FOR THE RELEASE MECHANISM OF A WINCH RECEIVING A TRACTION ROPE THERE THROUGH

Michel Cavallieri, Neuilly sur Marne, France, assignor to Tractel S.A., France

Filed Feb. 26, 1979, Ser. No. 15,072

Claims priority, application France, Mar. 1, 1978, 78 05835
Int. Cl.³ B66F 3/00

U.S. Cl. 254—384

6 Claims

1. An apparatus for hauling in and out a metal rope to which a load is attached, which comprises:

two pairs of self-clamping jaws acting by turns on the rope by performing a to-and-fro movement under the control of a linkage mechanism,

a pre-clamping spring system acting on said pairs of jaws and adapted, when compressed, to cause the jaws of each pair to engage the rope so as to warrant at all time the self-

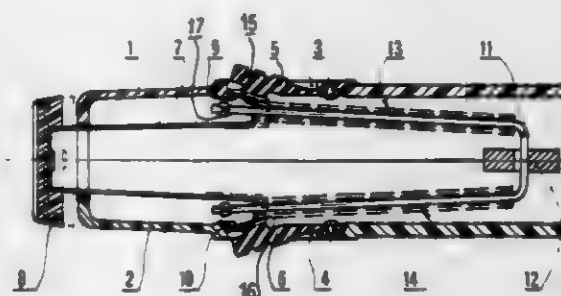
clamping action of the pairs of jaws under the influence of the load,

a release mechanism comprising:

(i) a release control strap slidably mounted in a casing of the apparatus, presenting an end push knob and two flexible substantially parallel arms having their ends bend outwardly, these flexible parallel arms being constantly urged from each other to bear against inner walls of the casing,

(ii) a two arm transmission rod, connecting said release control strap to an actuating lever of said pairs of self-clamping jaws, each arm of said two arm transmission rod being adapted to slide in an opening of a transverse portion of said release control strap,

(iii) a pair of pre-clamping compression springs from the pre-clamping spring system, each pre-clamping compression spring of said pair being associated with an arm of the two arm transmission rod and bearing at one end on said arm and at the opposite end on said transverse portion of the release control strap,



(iv) a lateral aperture provided in each wall of the casing, said apertures registering, each one of said apertures ensuring the locking of said outwardly bent end of the corresponding arm of the release control strap when said release control strap is in a retracted position involving a pre-clamping action of said pair of pre-clamping compression springs,

(v) a release actuator comprising a pair of push-members, each push-member of said pair being fixed in the aperture of a corresponding wall of the casing and being adapted, when actuated by an operator hand, to push inwardly the corresponding arm of the release control strap for unlocking same, thus allowing to move said release control strap to an expanded position in which the pre-clamping action of the pre-clamping compression springs is cancelled and said actuating lever is operated to open simultaneously both pairs of self-clamping jaws.

4,228,990

HYDRAULIC SEWER CLEANING SYSTEM

Steve Horvath, 915 W. Bluelick Rd., Lima, Ohio 45801

Filed Oct. 26, 1978, Ser. No. 954,999

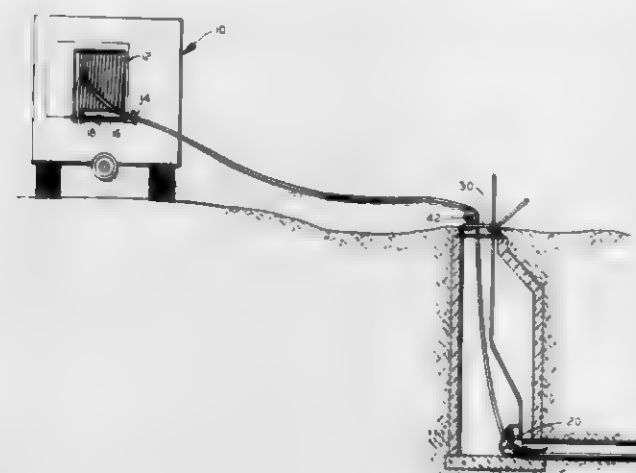
Int. Cl.³ F21C 29/16

U.S. Cl. 254—134.3 FT

6 Claims

1. A hydraulic hose sewer cleaning system and the like, comprising: a movable frame; a hose reel mounted with its axis generally horizontally of said frame; a first wheel positioned to one side of said hose reel, and supported from said frame about a generally horizontal axis that is generally perpendicular to the axis of said hose reel, and with a tangent to its periphery generally centered longitudinally of said reel, said wheel having a groove in its periphery for receiving a hydraulic hose; a generally Y-shaped frame having a base leg and two oblique legs, said oblique legs having hooks thereon for receiving an internal flange of a manhole and the like; a second wheel mounted generally above said base leg, said second wheel having a groove in its periphery for receiving a hydraulic hose from said first wheel and guiding it down a manhole between said oblique legs; and a traverse mechanism between said first

wheel and said hose reel for guiding hose from said first wheel onto portions of said hose reel on opposite sides of said first



wheel; and whereby hose can be fed vertically over said second pulley then laterally to said first wheel and uniformly coiled onto said hose reel.

4,228,991

SEAT SPRING ASSEMBLY AND SPRING UNIT

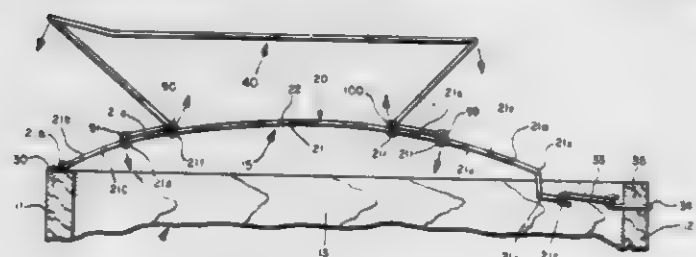
Lawton H. Crosby, Lake Bluff, Ill., assignor to Morley Furniture Spring Corporation, Lake Bluff, Ill.

Continuation-in-part of Ser. No. 942,872, Sep. 15, 1978, abandoned. This application Dec. 29, 1978, Ser. No. 974,236

Int. Cl.² F16F 1/46

U.S. Cl. 267—110

13 Claims



1. A furniture seat, comprising:

a seat frame having front and back rails;

a seat spring assembly furniture seat mounted between the front and back rails;

said spring assembly including a sinuous spring band connected at its front end to the front frame rail and at its back end to the back frame rail;

said spring band being biased upwardly by means associated with the band; and

a zig-zag wire unit fastened to said sinuous spring band and extending upwardly therefrom;

said zig-zag wire unit including a substantially horizontal wire section for supporting a cushion and including means effective to introduce torquing forces in said band adjacent the front end of the band and at a point removed from the back end of the band but more than half of the distance between the front seat frame rail and the back seat frame rail.

4,228,992

SHEET SELECTING AND DISPENSING APPARATUS

Adi K. Ashburner, Hargrave, England, assignor to Harper & Tunstall, Limited, Dennington, England

Filed Nov. 24, 1978, Ser. No. 963,423

Int. Cl.³ B65H 43/00

U.S. Cl. 270—59

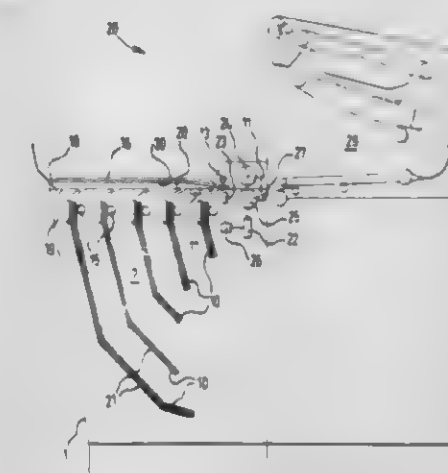
10 Claims

1. Apparatus for positioning a primary sheet having a leading edge and a leading end portion and for selecting a secondary sheet of a desired size in a store containing secondary sheets of different sizes which each having a leading edge and a leading end portion and are arranged in groups for dispensing the selected secondary sheet from the related group so that the secondary sheet is associated and aligned with the primary

sheet, the secondary sheet being selected in accordance with the size of the primary sheet, characterised in that:

stop means are provided as an abutment for the leading edges of the primary and secondary sheets;

first sensing means are provided for sensing the size of the primary sheet and are adapted to operate so that as the primary sheet is fed into the apparatus, until its leading edge arrives at the stop means, the sensing means producing a control signal indicative of the size of the primary sheet; and



dispensing means are provided for operation in response to the control signal for automatically selecting one of said groups and dispensing a secondary sheet therefrom so that the secondary sheet moves away from the group until after its leading edge arrives at the stop means, in which position the secondary sheet is associated and aligned with the primary sheet and the leading end portions of the primary and secondary sheets are in facing abutment with each other.

4,228,993

SHEET ORIENTING AND TRANSPORTING FRAME

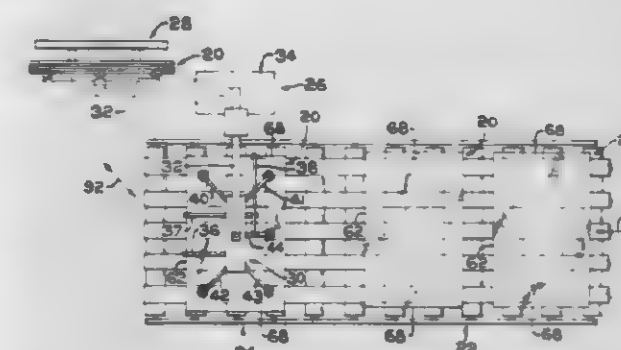
William P. Cathers, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 1, 1978, Ser. No. 901,944

Int. Cl.³ B65H 9/06, 29/24

U.S. Cl. 271—236

15 Claims



1. Sheet orienting and transporting apparatus for transferring a sheet from a sheet supply position to a predetermined sheet receiving position, comprising:

a pair of sheet orienting members;

means for maintaining said pair of sheet orienting members in predetermined spaced relationship to one another to define orienting axes;

means for moving said pair of sheet orienting members along a first reciprocating path towards said sheet supply position into a sheet engaging and orienting position and away from said sheet supply position toward a sheet non-engaging position;

means for displacing said maintaining means in a sheet ori-

enting direction along a second reciprocating path from a remote position to the sheet supply position and for moving said maintaining means in a non-orienting direction along the second reciprocating path subsequent to orientation of said sheet, said second reciprocating path being transverse to said first reciprocating path; and means mounted on said maintaining means for engaging an oriented sheet to said maintaining means for movement therewith subsequent to movement of said maintaining means in said orienting and non-orienting directions, said means for displacing said orienting members moving said maintaining means and said sheet from said sheet supply position to said predetermined sheet receiving position.

4,228,994

VARIABLE JOGGER FOR A SHEET FEEDER

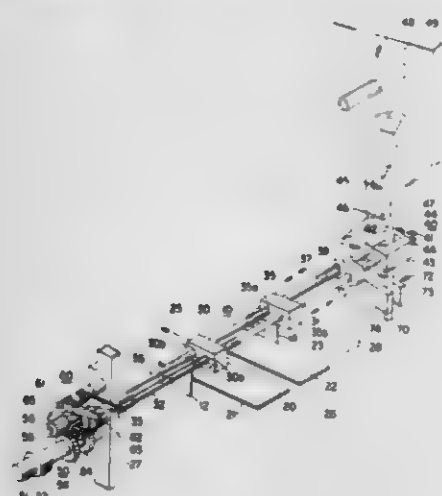
Richard L. Volpe, Hopedale, Mass., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 16, 1979, Ser. No. 58,093

Int. Cl. B65H 9/10

U.S. Cl. 271—250

10 Claims



1. A sheet jogger mechanism comprising:
 - a pair of carriage support bars extending across a sheet feeding path lying between the ends of the pair of bars, each bar being rotatable on its longitudinal axis;
 - a pair of paddle providing carriage members each carried on a respective one of the pair of bars, bidirectional rotation of the bars effecting movement of the carriage members back and forth along the bars;
 - drive means engaging one end of the pair of bars to effect reciprocating movement of the bars back and forth along their longitudinal axes over a predetermined range of movement; and
 - paddle positioning means engaging the other end of the pair of bars for rotating the bars to effect carriage movement along the bars while the bars are reciprocating back and forth along their longitudinal axes.

4,228,995

SORTING DEVICE

Theo P. C. Breuers, Venlo; Andreas T. Heijnen, Tegelen, and Hendrikus J. J. van Soest, Helden, all of Netherlands, assignors to Oec'-van der Grinten N.V., Venlo, Netherlands

Filed Jan. 8, 1975, Ser. No. 539,542

Claims priority, application Netherlands, Jan. 21, 1974, 00758; Jan. 21, 1974, 00759

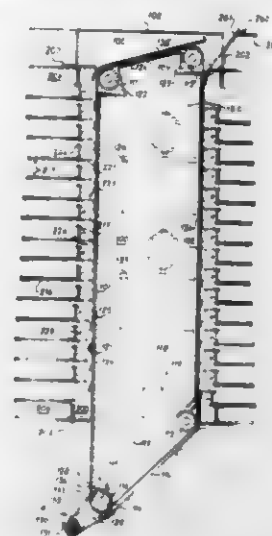
Int. Cl. B65H 31/24

U.S. Cl. 271—292

22 Claims

1. Apparatus for the assorted collection of sheets, comprising means for transporting sheets to be assorted successively along a sorting track, a group of bins situated along a side of said track, and guide organs movable selectively into said track and each operative therein to divert a sheet therefrom into a pertaining bin, characterized in that each bin of a plurality of said bins has a guide organ unified therewith and is movable to and fro relative to said track and independently of the other of

said bins between two positions in a first of which the guide organ on the bin is situated out of the path of movement of a



4,228,996

AUTOMATIC SHEET COLLATOR

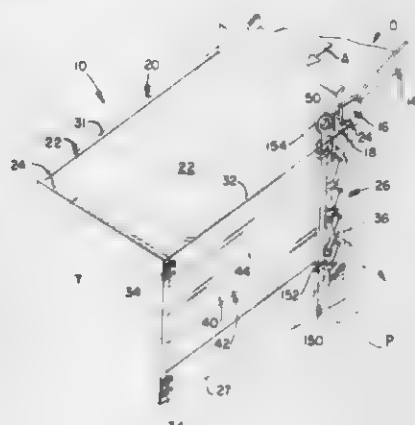
Earl H. Wilcox, Jr., 1208 Windsor Rd., Florence, S.C. 29501

Filed Sep. 17, 1979, Ser. No. 76,468

Int. Cl. B65H 31/24

U.S. Cl. 271—297

11 Claims



1. A collator comprising:

a housing adapted to be associated with a source of sheets to be collated, said housing having a plurality of compartments therein for receiving collated sheets, an access means for permitting access to said compartments, an entranceway defining means for diverting sheets from a source of sheets into said housing, and a sheet chute defining means positioned in said housing to receive sheets from said entranceway;

a plurality of sheet diverter vanes each associated with one of said housing compartments and located to divert sheets from said chute into said associated compartment, each of said sheet diverter vanes having a base portion, a leading arm and a trailing arm each connected to said base portion, a rocker means on said base portion between said arms and rockably connecting each sheet diverter vane to said housing, a diverter vane rocking means movably mounted in said sheet diverter vane adjacent said rocking means, said diverter vane rocking means including a keeper chamber defined in said diverter vane and a weight located in said keeper chamber to be movable from a first position on the trailing arm side of said rocker means across a rocking axis defined by said rocker means to a second position located on the leading arm side of said rocker means, said diverter vanes being positioned adjacent said chute so that said vane leading arms block said sheet chute when said vane rocking means is in said second position and unblock said chute when said vane rock-

ing means is in said first position, said vane rocking means of each diverter vane being moved from said second position to said first position by action of a sheet passing over said each vane from said chute into said associated compartment so that each vane is moved from a chute blocking sheet diverting orientation to a chute clearing orientation after diverting a sheet into an associated compartment so that a plurality of successive sheets are each successively diverted into successive compartments after bypassing the compartment into which a preceding sheet has been diverted; and a reset means for moving said diverter vanes into position to occlude said chute.

4,228,997

STACKING MACHINE

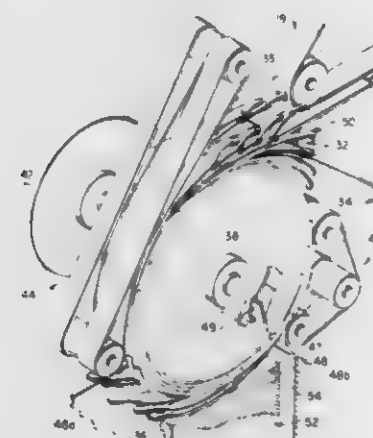
Edward B. Schoonmaker, and Paul W. T. Moran, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,617

Int. Cl. B65H 29/20, 29/40

U.S. Cl. 271—315

7 Claims



1. In a device for transporting through a curved path, sheets received seriatim at high speed, wherein a plurality of overlapping web elements are attached at one end of each element to the periphery of a member which is rotatable in the direction of said attached ends, the other ends of the web elements being free to move relative to each other to provide sheet receiving pockets between adjacent web elements,

the improvement wherein said pocket providing ends of the web elements have a preformed bend toward the rotatable member and are more flexible than the leading edge portions of the sheets so that upon collision between an incoming sheet and a web tip, the web is deflected, because of its flexibility and preformed bend, toward the rotatable member to insure reception of the sheet between that web and an adjacent underlying web.

4,228,998

BRAKING APPARATUS FOR DOG TRACK RABBIT LURE CAR

Lorn L. Trickel, 8806 NE. Thompson St., Portland, Ore. 97220

Filed Nov. 30, 1978, Ser. No. 964,950

Int. Cl. A63K 1/02, 3/00

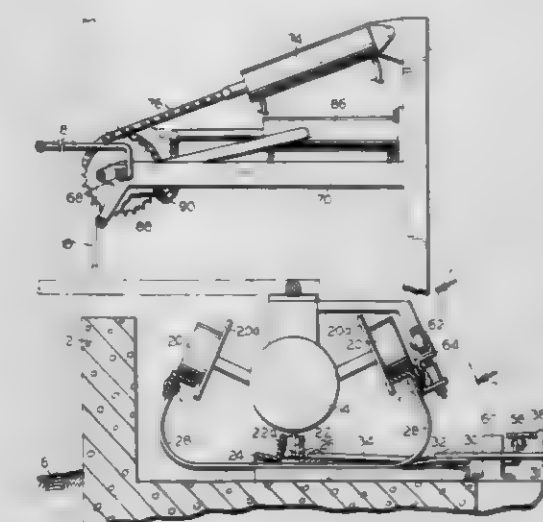
U.S. Cl. 272—4

5 Claims

1. Dog track rabbit lure car braking apparatus for a lure car provided with a longitudinally arranged brake shoe, the braking apparatus comprising:

- (a) laterally spaced, elongated clamp members positioned for traversal by the lure car with the brake shoe extending between the clamp members,
- (b) drive means connected to one of the clamp members for moving it toward and away from the other clamp member between brake shoe clamping and unclamping positions,
- (c) first control means for the drive means for moving said one clamp member toward said other clamp member into

pre-set preliminary clamping engagement with the brake shoe to effect initial, partial braking of the lure car, and (d) second control means for the drive means operable by



4,228,999

SOMERSAULT SWING

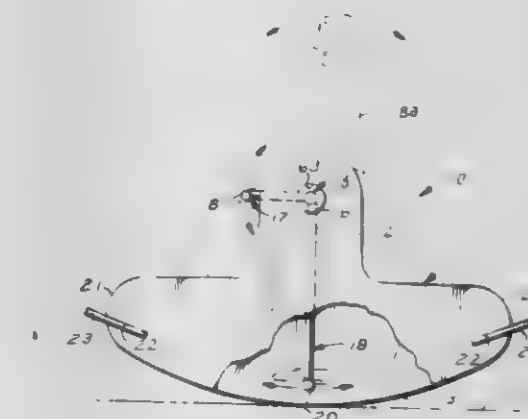
W. Ted Armstrong, P.O. Box 40962, San Francisco, Calif. 94140

Filed Oct. 13, 1978, Ser. No. 951,163

Int. Cl. A63G 1/20

U.S. Cl. 272—33 R

5 Claims



1. A somersault swing, comprising, in combination, a pair of parallel spaced-apart side members each with an arcuate bottom rocking surface, for rocking engagement with a floor or ground surface, a shaft rotatably received in said pair of parallel spaced-apart side members and extending therebetween, with a horizontal and "T"-shaped handle secured thereto, and a "T"-shaped foot rest bar secured to said shaft, for the person using said swing to stand upon with his hands grasping the handle whereby on sufficient rocking the person may rotate about the shaft.

4,229,000

TRAPEZE FIXTURE

J. Daniel Scherling, 4431 Ocean View, Apt. 8, Montrose, Calif. 91020

Filed May 21, 1979, Ser. No. 40,509

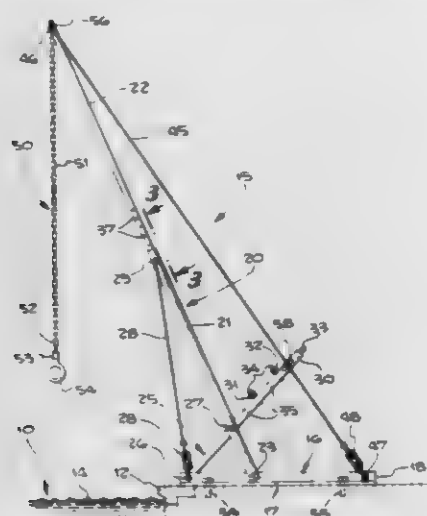
Int. Cl. A63B 7/02

U.S. Cl. 272—61

10 Claims

1. An adjustable trapeze fixture comprising a base, a side structure mounted on each side of the base in spaced parallel

relationship, each side structure comprising a column having its lower end anchored to the base intermediate fore and aft portions of the base and extending obliquely upwardly and forwardly over said fore portion of the base, a diagonal brace having an attachment at one end to the fore portion of the base and an attachment at an intermediate point to an intermediate portion of the column, and a forward guy brace having an attachment at one end to the fore portion of the base at the



other end to the upper portion of the column, a plurality of parallel rungs extending from one diagonal brace to the other whereby to serve as platforms for the user, a longitudinally adjustable extension with its lower end removably secured to the column, an aft guy brace having an anchored attachment at the upper end of the column, said aft guy brace having an adjustable connection at its lower end to the aft portion of the respective side of the base, and a trapeze sling having an attachment to the tops of the extensions.

4,229,001

THERAPEUTIC EXERCISE DEVICE

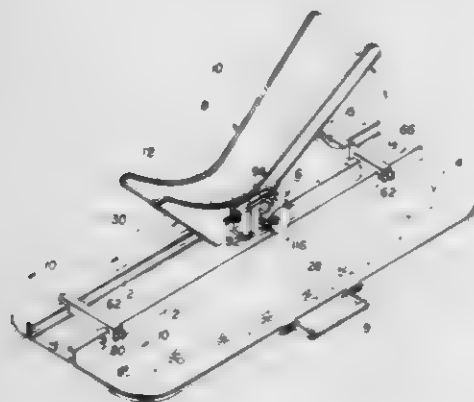
Michael P. Roman, 1969 Virginia La., Norristown, Pa. 19401

Filed Feb. 23, 1979, Ser. No. 15,522

Int. Cl.³ A63B 23/04, 21/04

U.S. Cl. 272-96

20 Claims



1. Therapeutic exercising apparatus comprising, elongated guide means,
- a carriage assembly engaged with and guided by said elongated guide means,
- a boot assembly supported on said carriage assembly, said boot assembly including a leg receiving member for engaging the lower leg of a patient and a sole member for engaging the sole of a patient's foot, said sole member being movable relative to said leg receiving member about a substantially horizontal pivot axis, said boot assembly being movable in a substantially horizontal linear path and in a substantially horizontal arcuate path.

4,229,002

GOLF SWING EXERCISE DEVICE

David H. Masters, 7254 Blanco, #101, San Antonio, Tex. 78216

Filed Sep. 21, 1978, Ser. No. 944,417

Int. Cl.³ A63B 21/06

U.S. Cl. 272-117

6 Claims



1. A portable golf swing exercise device adapted to be attached and supported by a door, wall, or other upright structure for positioning above a golfer's head comprising:

- (a) elongated base means adapted to project along a vertical plane surface;
- (b) base support means attached to said elongated base means for mounting said elongated base means on a vertical plane surface above said golfer's head retaining said base means in a stable position;
- (c) a projecting beam with a first end secured to said elongated base means and projecting normal thereto, said projecting beam having a second end;
- (d) a stabilizer secured at one end of said elongated base means and projecting upward from an extension of said elongated base means at an angle to said second end of said projecting beam interconnecting and retaining said elongated base and said projecting beam in a fixed spaced position;
- (e) a first pulley attached to said projecting beam adjacent to said first end;
- (f) a second pulley attached to said projecting beam adjacent to said second end;
- (g) rope means passing through said first and second pulleys;
- (h) golf grip means attached to a first end of said rope means nearest said second pulley; and
- (i) load means attached to a second end of said rope means nearest said first pulley, said load means moving responsive to movement of said golf grip means by said golfer to simulate swinging of a golf club through approximately 180 degrees of swing.

4,229,003

FISHING TOY

Takeshi Shimizu, Yashio, Japan, assignor to Kabushikikaisha Anoa, Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,324

Claims priority, application Japan, Apr. 6, 1978, 53-44294[U]

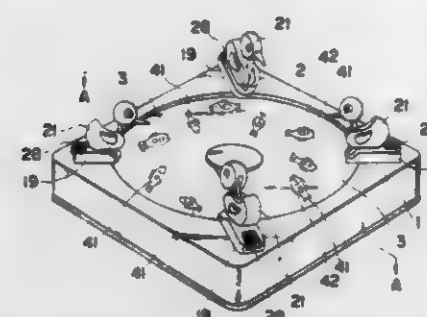
Int. Cl.³ A63F 9/00

U.S. Cl. 273-1 E

3 Claims

1. A fishing toy comprising:
- a base having a generally horizontal top surface;
- a turntable rotatably centrally mounted flush with and on an axis normal to said horizontal top surface of said base;
- a means for rotating said turntable;
- a plurality of flat, magnetically attractive objects randomly disposed on said turntable; and
- a plurality of manually operated spring-loaded, normally upright retrieval mechanisms each having an upper portion carrying a magnet, and having a lower portion swivelably connected to said base above said turntable and a linkage pivotally connected to respective upper and lower portions of a mechanism, said retrieval mechanisms hav-

ing a spring-loading release means for momentarily causing cooperative simultaneous forward and downward movement of said upper and lower portions and said linkage to position said magnet adjacent said turntable;



such that one of said objects disposed on said turntable may be attracted by said magnet and lifted from said turntable by each said retrieval mechanism upon return to an upright position.

4,229,004

FLOOR TYPE POOL GAME APPARATUS

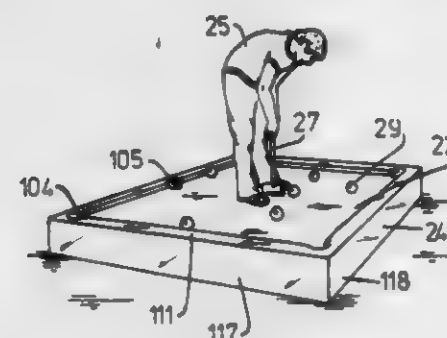
Alvin R. Stokes, 700 N. Zimmer, Pampa, Tex. 79065

Filed Aug. 4, 1978, Ser. No. 930,902

Int. Cl.³ A63J 3/00

U.S. Cl. 273-3 C

2 Claims



1. A portable billiard game apparatus comprising, in combination, a substantially rectangular playing surface and surface support assembly and a rim and rim support assembly, the surface and surface support assembly comprising a frame assembly, a plurality of adjacently positioned like floor support units, a plurality of like frame support and adjustment assemblies and an upper playing surface, said frame assembly comprising straight rigid side elements and transverse rigid straight frame elements extending between and fixed to said side elements, the floor support units each comprising a core composed of a plurality of vertical rigid floor support columns and a strong skin extending thereover, the cross-section of each floor support unit being trapezoidal in its transverse cross-section, said skin completely enclosing and being tightly and firmly attached to (a) the columns of each of said floor support units and (b) components of the frame assembly to provide a light yet rigid support structure, the skin of adjacent floor support units are firmly joined together at junctions of the adjacent extremities thereof, said playing surface being flat and comprising a lower foam rubber layer, a middle fabric layer and an upper pile layer, all firmly joined together, said foam rubber layer being firmly attached to said skin said playing surface further having ball receiving pockets, each pocket being an opening at each corner and an opening intermediate each longitudinal side of said playing surface, each frame support and adjustment assembly comprises a rigid foot plate and an adjustable support therefor

whereby each foot plate may be raised and lowered relative to the frame assembly, said rim and rim support assembly comprising side rails attached to said frame assembly, said side rails extending above, and around the perimeter of said playing surface; cushion means attached to said side rails for rebounding balls rolling on said playing surface.

4,229,005

TRACK RACING GAME

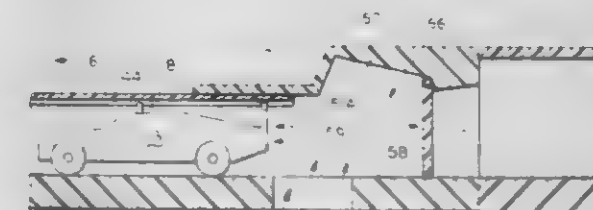
Gordon A. Barlow, Evanston; Anthony T. Janiszewski, Elmwood Park, and John R. Krutsch, Glenview, all of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Dec. 14, 1978, Ser. No. 969,584

Int. Cl.³ A63F 9/14

U.S. Cl. 273-86 D

9 Claims



1. A racing game, said game comprising a track, racing objects for racing over said track, said track making a complete circuit, said track having a starting section transparently enclosed wherein each of the racing objects are laterally positioned abreast of each other, said track further having a racing section dimensioned to hold at least two racing objects juxtaposed, and wherein said racing section is unobstructed so that each racing object is free to laterally traverse the said racing section, said starting section further comprises entrance means for receiving said racing objects from said racing section, said entrance means leading to an impulse chamber for each of said racing objects, impulse means in said impulse chamber for providing forces to said racing objects to propel said racing objects over said racing section, said impulse chamber leading directly to an orienting portion, and means in said orienting portion for maintaining said racing objects directed straight forward.

4,229,006

MAZE PUZZLE

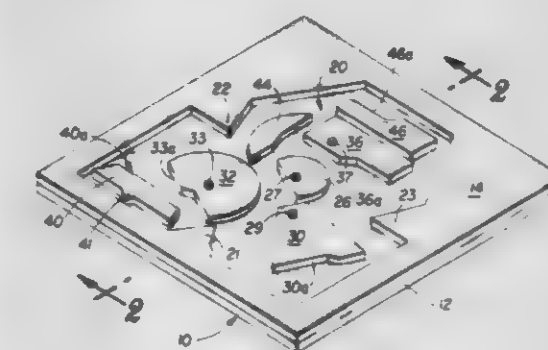
Harold Morse, 1445 S. Pearl, Denver, Colo. 80210

Filed Jun. 28, 1979, Ser. No. 53,093

Int. Cl.³ A63F 9/08

U.S. Cl. 273-153 S

10 Claims



1. A maze puzzle comprising:

- (a) a playing board having a planar recessed playing area with a complete peripheral border, said playing area having a predetermined size and shape;
- (b) a series of spaced, pivoted shapes, each being a portion of a geometrical configuration and mounted in said recessed area to provide a limited passage therearound for free playing pieces;
- (c) a series of free playing pieces, each one of which is a complement of one of said pivoted shapes arranged to mate therewith and form a predetermined geometrical shape, and to pass around each one of said pivoted shapes in predetermined positions; and
- (d) at least one general central pivoted shape of small dimensions mounted on said playing area arranged as a limit to passage of said free playing pieces and being without a mating piece.

4,229,007

RIM FOR A MINI-GOLF COURSE

Jan Göransson, Ekliden 20, Örskälljunga, Sweden (286 00)

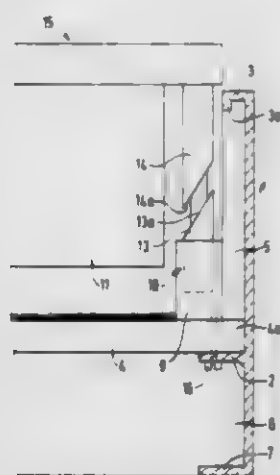
Filed Nov. 8, 1978, Ser. No. 958,695

Claims priority, application France, Nov. 16, 1977, 77 34965

Int. Cl.³ A63B 69/36, 67/02

U.S. Cl. 273-176 B

5 Claims



1. A rim for a mini-golf course comprising:

- (a) a continuous profile element having at least two flange portions turned inwardly;
- (b) a plate having an end portion positioned on one of said flange portions forming a play ground;
- (c) a rim element extending substantially between said flange portions forming the side of the play ground wherein said plate and said rim element form a corner and substantially fill the space between said flange portions;
- (d) a corner strip positioned substantially at the juncture of said plate and rim element and being anchored to said one flange portion and said plate element whereby said corner strip is anchored to said rim and retains said rim element against said profile.

4,229,008

BOARD GAMES FOR PLAYING DRAUGHTS AND CHESS

Michael J. Jameson, 21 Upper Lattimore Rd., St. Albans, Hertfordshire, England

Continuation of Ser. No. 787,021, Apr. 13, 1977, abandoned.

This application Sep. 28, 1978, Ser. No. 946,637

Claims priority, application United Kingdom, Apr. 15, 1976, 15601/76

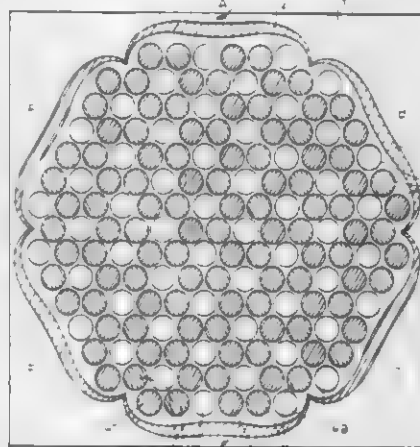
Int. Cl.³ A63F 3/02

U.S. Cl. 273-261

7 Claims

1. A game board for playing draughts and chess, said board comprising a hexagonal playing surface having marked thereon 163 discrete unit areas aligned in three intersecting mutually inclined sets of parallel lines with the unit areas being spaced apart from each other by equal distances to form a regular equilateral triangular array, each set of lines of unit

areas being parallel to a respective pair of opposite sides of said hexagonal playing area, each side of said hexagonal playing area having six unit areas spaced apart therealong, a single unit area being omitted from each of the corners of said hexagonal playing area and the unit areas being arranged in three mutually distinguishable sets so that in each set the unit areas are separated from each other in each of said lines by two unit



areas belonging one to each of the other sets, the unit areas of said playing surface arranged in a plurality of files, each file beginning with a unit area along one side of said playing surface and ending with a unit area at the side opposed to said one side, each file having end unit areas of the same distinguishable set of unit areas at opposed sides of said playing surface, there being a total of eight unit areas of the same distinguishable unit area set as said file end unit areas arranged along each file.

4,229,009

LIGHT-EMISSION GUN AMUSEMENT MACHINE FOR HOME USE

Takao Ohta, Hirakata, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 893,302, Apr. 4, 1978, abandoned. This application May 15, 1978, Ser. No. 906,277. Claims priority, application United Kingdom, Apr. 5, 1977, 14414/77; Japan, May 13, 1977, 52-55803

The portion of the term of this patent subsequent to Oct. 4, 1994, has been disclaimed.

Int. Cl.³ F41J 5/02, 9/14

U.S. Cl. 273-312

11 Claims



11. A light-emission gun amusement device for projecting a light image onto a screen and receiving a reflected light image from said screen, said device comprising:

- a light-emission gun;
- a machine housing separate from said light-emission gun and said screen;
- a light source within said housing;
- a photoelectric element within said housing above said light source;
- lens means within said housing between said photoelectric element and said screen for substantially coaxially aligning

the light rays shining from said light source to said screen and said light rays from said screen reflected toward said photoelectric element;

an electrically operated motor within said housing;

an electrical power source connected to said light source and said motor;

a power source control means between said power source and said motor actuated by said photoelectric element for reversing the electrical connection between said power source and said motor and for reversing the normal rotational direction of said motor; and

target producing means within said housing between said light source and said photoelectric element operatively connected to said motor for producing target and hit images of said light source on said screen.

4,229,010

SELF-ALIGNING SHAFT SEAL

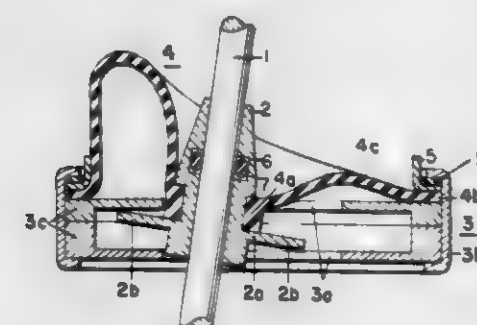
Wilfred H. St. Laurent, Jr., Marblehead, Mass., assignor to Bellofram Corporation, Burlington, Mass.

Filed Dec. 20, 1978, Ser. No. 971,615

Int. Cl.³ F16J 15/52

U.S. Cl. 277-30

3 Claims



1. A self-aligning shaft seal comprising

- (a) a shaft;
- (b) a bushing surrounding said shaft;
- (c) a fixed structure defining an aperture, said bushing being arranged in said aperture with a clearance left between said bushing and said fixed structure;
- (d) a convoluted diaphragm having radially inner support means and having radially outer support means for the convoluted wall thereof;
- (e) said radially inner support means being affixed to said bushing;
- (f) said radially outer support means being affixed to said fixed structure; and wherein
- (g) said bushing has the external shape of a frustum of a cone having an external groove therein adjacent the bottom thereof, and wherein said diaphragm has a radially inner elastomeric portion of increased thickness engaging said groove.

4,229,011

LUBRICATION SYSTEM FOR RECIPROCATING PLUNGER COMPRESSORS

Karl W. Wikelski, and Henry K. Tyson, both of Odessa, Tex., assignors to El Paso Polyolefins Company, Paramus, N.J.

Continuation of Ser. No. 671,872, Mar. 29, 1976, abandoned.

This application Jul. 3, 1979, Ser. No. 54,543

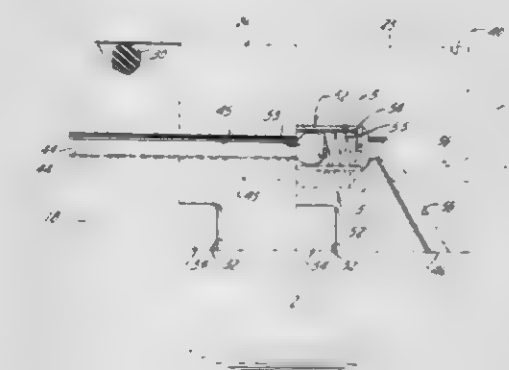
Int. Cl.³ F16J 15/40, 15/46

U.S. Cl. 277-72 FM

10 Claims

1. An assembly for compressing an operating fluid to a high pressure comprising a reciprocating plunger rod compressor cylinder lubricated with a fluid other than the operating fluid; an attendant plunger rod; a crank mechanism connected to one end of the plunger rod for imparting thereto a reciprocatory motion of alternating suction and discharge strokes; laterally surrounding said plunger rod an annular seal assembly which includes a plurality of closely abutting continuous annular seal elements the inner peripheries of which lie immediately adja-

cent the outer periphery of said plunger rod and at least one of which annular seal elements contains a bored, lubricant-supply passageway running internally through the solid body of same; upstream of said seal element and in communication with said passageway a lubricant supply source; a two-part pressure-



4,229,012

VARIABLE BORE PACKER ASSEMBLY FOR RAM-TYPE BLOWOUT PREVENTERS

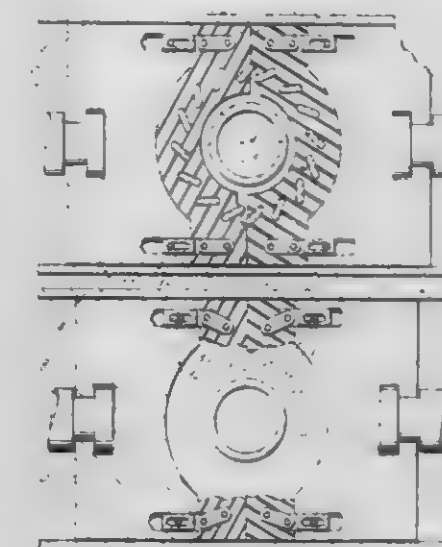
Bolle C. Williams, III, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 28, 1978, Ser. No. 901,062

Int. Cl.³ E21B 33/06

U.S. Cl. 277-127

11 Claims



1. A packer assembly for use in a variable bore, ram-type blowout preventer and adapted to be mounted in the front faces of the rams of said preventer, said assembly including, a pair of packers coacting with each other to encircle and seal around a well member within a preselected size range extending through the blowout preventer, each packer comprising, a main body portion of resilient material having a recess in its front face, the front face which defines the recess forming a sealing

surface engageable with the exterior of the well member when the resilient material of the main body portion is displaced in a direction to move said sealing surface into contact with such member,

side sealing portions of resilient material on each side of the main body portion and located adjacent the sides of the front face of the recess,

said side sealing portions having a volume of resilient material which is displaced radially inward when a force is applied to the assembly to move the sealing surface of said recess toward sealing position with the well member,

connecting means extending from each side sealing portion of the packer to the ram for that respective packer,

said connecting means being sufficiently yieldable rearwardly and laterally to allow the displacement of the material of said side sealing portions into sealing position,

said displaced volume of material of the side portions being so related to the volume of material in the main body portion which is displaced as the main body portion is moved toward sealing position that the combined volumes fill the space between the packer and the particular size of a well member which extends through the blowout preventer to effect a sealing contact with said member,

a plurality of relatively rigid reinforcing inserts in the main body portion of each packer and arranged in a generally semi-circular path,

said inserts coating with each other as the resilient material of the main body portion is displaced toward the well member to prevent extrusion of the resilient material in a vertical direction along the well member after the resilient material has engaged said member.

4,229,013

SPRING SEAL

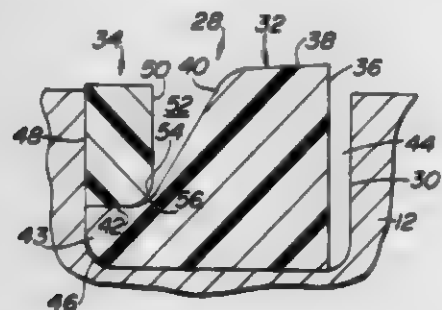
John A. Burke, Rocky River, Ohio, and James B. Gross, Lansdale, Pa., assignors to Greene, Tweed & Co., Inc., North Wales, Pa.

Filed Jul. 2, 1979, Ser. No. 53,883

Int. Cl.³ F16J 15/00

U.S. Cl. 277-188 R

4 Claims



1. A seal assembly comprising:

(a) an annular sealing ring of resilient deformable plastic material and a mating back-up ring,

(b) said sealing ring having a radially disposed side face defining the pressure side of the assembly, said sealing ring having its inner peripheral surface defined by three contiguous portions, the first portion converging toward said side face with a taper of between 3° and 10° with respect to the axis of the sealing ring, the second portion being an angled surface extending outwardly from said first portion at an angle of between 20° and 40° with respect to a radius on said sealing ring, said third portion being an axially extending flange adjacent the outer periphery of said sealing ring,

(c) said back-up ring being disposed radially inwardly of said third portion and having radially disposed side faces, one side face of said back-up ring cooperating with said second portion to define a generally triangular shaped space on the inner periphery of said assembly with the apex of the triangular shaped space extending radially outwardly.

4,229,014

AIR-EXPANDED MANDREL HAVING MEANS TO EQUALIZE EXPANSION TO OBTAIN CONCENTRIC CHUCKING

Thomas J. Crowe, 177 Rockaway Ave., Rockaway, N.J. 07866, assignor to Thomas J. Crowe, Rockaway, N.J.

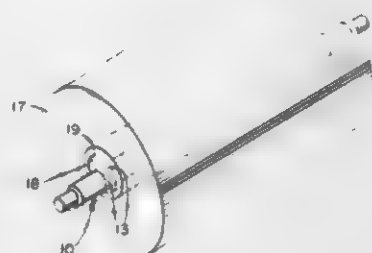
Continuation of Ser. No. 850,497, Nov. 11, 1977, abandoned.

This application Dec. 20, 1978, Ser. No. 971,521

Int. Cl.³ B23B 31/40

U.S. Cl. 279-2 A

7 Claims



1. In a device for holding and rotating any one member of a class of objects;

said class of objects being characterized in that each member thereof has a major surface in the shape of a circular cylinder,

the diameter of the major surface of each member of said class of objects being nominally identical, but varying slightly from the nominal diameter and from the shape of a circular cylinder by small individual manufacturing tolerances;

the major cylindrical surface of each member of said class of objects defining a longitudinal axis of symmetry;

said device comprising:

means to rotate said device about an axis of rotation;

a support body carried by said means to rotate, extending longitudinally from said means to rotate along the said axis of rotation and disposed symmetrically about said axis of rotation;

a plurality of identical abutting members symmetrically arranged about said axis of rotation;

each of said identical abutting members being supported on said support body by guide means for limited radial movement perpendicularly to said axis of rotation between an extended and a retracted position;

the extend and limits of motion of said abutting members permitted by said guide means being such that, when the abutting members are in said retracted position any member of said class of objects may be placed in opposition to said plurality of abutting members of said device without the occurrence of any binding, and, when the abutting members are advanced from said retracted position towards said extended position, said abutting members abut against said major surface of said member of said class of objects and are thereby prevented from advancing further towards said extended position;

a plurality of identical push means, in one-to-one correspondence with said plurality of identical abutting members, arranged about said axis of rotation;

each of said identical push means being supported on said support body for limited radial movement perpendicularly to said axis of rotation between an extended and a retracted position;

said extended position of each of said identical push means being determined by seating engagement of said push means with a limiting surface of said support body, said limiting surface being accurately concentric with said axis of rotation;

elastomeric bladder means, capable of inflation and deflation, for radially extending said plurality of identical push means, to the extent determined by the said limiting surface of said support body, and for radially permitting withdrawal, of said plurality of identical push means;

the improvement comprising:

a plurality of identical stiff elastic means for communicating radial movement of each of said identical push means to the corresponding one of said identical abutting means; whereby, when said one member of said class of objects and said device for holding and rotating are positioned, relatively to each other, so that said plurality of abutting members are in opposition to said major cylindrical surface, and when said elastomeric bladder means is inflated, said elastomeric bladder will expand and radially extend each of the identical push means into seating engagement with said limiting surface, thereby correspondingly communicating movement, by way of a corresponding stiff elastic means, to the corresponding abutting member, thereby compressing said stiff elastic means, to radially extend said abutting member into abutment with said major cylindrical surface;

the spring deflection rate of said plurality of identical stiff elastic means being sufficient that any eccentric gravity forces present during inflation of said elastomeric bladder means do not substantially interfere with alignment of said axis of rotation and said longitudinal axis of symmetry as said inflation is completed.

4,229,015

SKI POLE ADAPTED TO CONTAIN A LIQUID

Richard R. Ramsey, 1121 Davis St., Clovis, N. Mex. 88101, and James B. Ramsey, Rte. 5, Box 300, Los Lunas, N. Mex. 87031

Filed May 25, 1978, Ser. No. 909,563

Int. Cl.³ A63C 11/22

U.S. Cl. 280-819

1 Claim



1. In a ski pole comprising a shaft, a hand grip, a stop basket, and a cavity in said shaft,

the improvement comprising non-toxic liner means directly on the interior wall of said shaft in said cavity, whereby said cavity is adapted to contain a liquid,

hand strap means on said hand grip,

and access means, in said hand grip, to said cavity,

said access means being an internally threaded bore in said hand grip, and a hollow, open-ended plug means adapted to be received in said bore and to engage a sealing means in said hand grip.

4,229,016

SAFETY SKI POLE

David Wolf, 67 Brackett Rd., Newton, Mass. 02159

Filed Nov. 6, 1978, Ser. No. 957,980

Int. Cl.³ A63C 11/22

U.S. Cl. 280-821

3 Claims



1. A ski pole adapted to fold on application of a force of a

predetermined minimum magnitude in a direction angular to its length, said pole comprising an upper tubular section and a separate lower tubular section, means for securing said sections in longitudinal alignment against forces angular to the length of said pole and below a preselected magnitude and for allowing said upper section to be moved to a position angular to the length of said lower section in response to forces above said preselected minimum magnitude in directions at an angle to the length of said pole, said means for securing comprising a flexible member having one end extending into said upper tubular section and the other end extending into said lower tubular section and further having a connector section secured in one of said upper and lower tubular sections and extending into the other thereof, said connector section securing said upper and lower tubular sections together when said upper and lower sections are folded in response to the applications of a force in excess of said preselected minimum, said means for securing further including a cylindrical end secured in said upper tubular section and integral with said connector section, a sleeve secured in said lower tubular section and having a hole through which said connector section extends, and means extending through said sleeve for engaging said connector section.

4,229,017

KING PIN ASSEMBLY

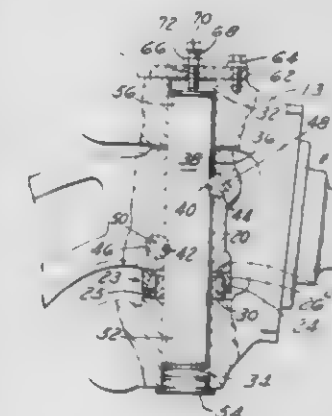
Vincent H. Hagedorn, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 29, 1978, Ser. No. 947,281

Int. Cl.³ B60G 3/02

U.S. Cl. 280-96.1

10 Claims



1. A king pin assembly comprising:

a yoke with a first and second arm spaced apart from each other and a hole in each arm;

a knuckle support sized to fit within the space between the two arms with an aperture extending therethrough and aligned with said holes in the two arms;

a kingpin extending through the aperture in the knuckle support and into the holes in the two arms;

retaining means for retaining the kingpin in its position relative to the knuckle support;

a bearing assembly operatively interposed between the knuckle support and one of the arms;

a separate adjustable member being longitudinally adjustable in the hole of the first arm;

means for adjustably securing said separate member in a plurality of fixed longitudinal positions in the hole of the first arm;

said separate member being operably connected to the knuckle support for pressing the knuckles and bearing assembly toward the second arm such that the bearing assembly is in snug abutting relationship interposed between the knuckle support and said one of the arms.

4,229,018

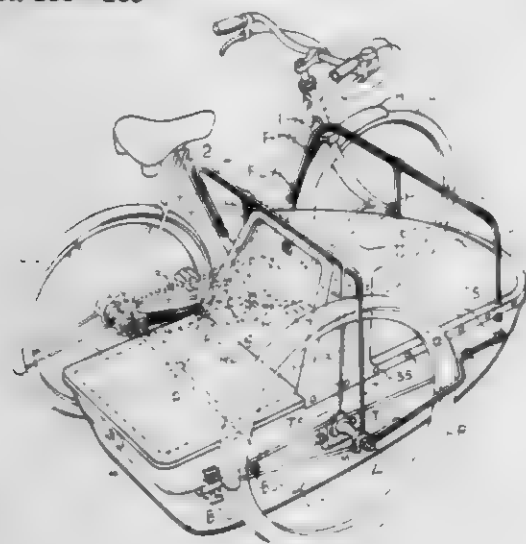
TORSIONALLY RESILIENT STRUCTURE FOR A SIDECAR

John J. Chika, 1350 Orchard Ridge Rd., Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 437,482, Jan. 28, 1974, abandoned. This application Dec. 5, 1977, Ser. No. 857,566
Int. Cl.² B62K 27/12

U.S. Cl. 280—203

64 Claims



1. In combination a coupling structure to operatively couple a sidecar to existing two-wheel tandem-type land vehicle, the structure comprising plural, rigid and torsionally resilient connecting members, each bent to form a longer mid-portion and two shorter end-portions; their longer mid-portions positioned substantially horizontally and transversely between the two-wheel vehicle and the sidecar, their shorter end-portions on one side aligning with and operatively attached at two points to rigid structural members of said two-wheel vehicle and their shorter end portions at the opposite side attached to rigid structural members of said sidecar.

4,229,019

TRANSPORT LOCK FOR LIFT BED TRAILER JACKBOX

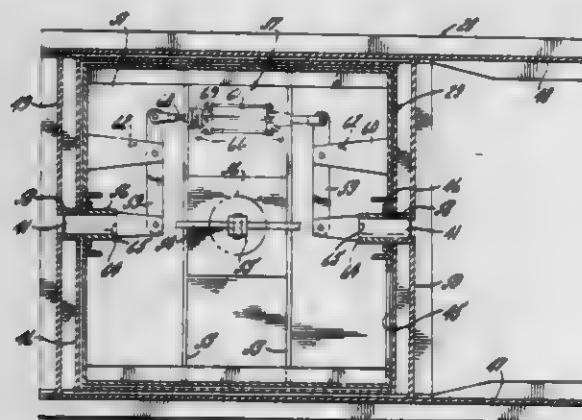
Charles R. Kohley, Rensselaer, Ind., assignor to Eugene A. LeBoeuf, Noblesville, Ind.

Continuation-in-part of Ser. No. 823,680, Aug. 11, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,297

Int. Cl.³ B62D 21/02

U.S. Cl. 280—438 R

9 Claims



1. In a lift bed highway trailer attachable to a tractor by means of a fifth wheel connection and adapted to carry a pallet frame unit with legs spaced to straddle the trailer, the combination comprising:

- (a) a liftable main frame having a lowered loading and unloading position and a raised transport position;
- (b) a subframe underlying said main frame and pivotally connected to same;
- (c) a wheeled suspension underlying said subframe and adapted to serve as a ground support therefor;
- (d) a gooseneck fixed to the forward end of said main frame

and having a pair of longitudinal structural members and a pair of transverse structural members defining a jackbox opening therebetween;

- (e) a jackbox mounted within said opening for vertical sliding movement relative to said gooseneck, said jackbox being adapted for attachment to the tractor fifth wheel;
- (f) power lift means for moving said main frame and gooseneck between the lowered loading and unloading position and the raised transport position;
- (g) a pair of power actuated shot pins mounted in said jackbox in axially spaced relation with each other in the longitudinal center plane of the trailer, said shot pins being adapted to be moved outwardly from said jackbox in a locking stroke to engage said gooseneck and inwardly in a return stroke to disengage said gooseneck;
- (h) abutment means defining the limits of the locking stroke and the return stroke of said shot pins; and
- (i) means including a double acting fluid actuator connected between said shot pins and offset laterally from said longitudinal center plane of the trailer; said actuator being adapted to drive said shot pins positively through both the locking stroke and the return stroke.

4,229,020

SAFETY STRAP FOR SKIS

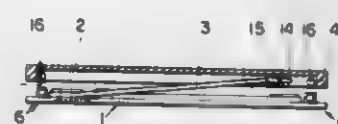
Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Nov. 2, 1978, Ser. No. 957,087

Claims priority, application Austria, Nov. 7, 1977, 7911/77
Int. Cl.³ A63C 9/086

U.S. Cl. 280—618

9 Claims



1. In a safety strap for a ski arranged between a ski-fixed base plate and a ski boot-fixed support plate and maintaining, following a release of a ski boot, a connection between said ski boot and said ski, wherein the improvement comprises releasable connecting means for releasably connecting said base plate and said support plate together, holding elements on one of said base plate and said support plate, said holding elements being spaced from one another both in longitudinal direction of said ski and also laterally thereof, a strap wound around said holding elements along its longitudinal extent, said strap being secured at one of its ends to said support plate and at its other end to said base plate, a part of said strap extending from said holding elements to a fastening point on the other of said base plate and said support plate and holding means for holding said strap normally in a tensioned condition on said holding elements and allowing release of said strap from said holding elements when said boot is released from said ski.

4,229,021

PASSENGER MOTOR VEHICLE

Walter Schmid, Sindelfingen, Fed. Rep. of Germany; Karl Wilfert, deceased, late of Gerlingen-Waldstadt, Fed. Rep. of Germany (by Dorothea Wilfert nee Rischawy, legal heir), by Thomas Wilfert, legal heir, Gerlingen-Waldstadt, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

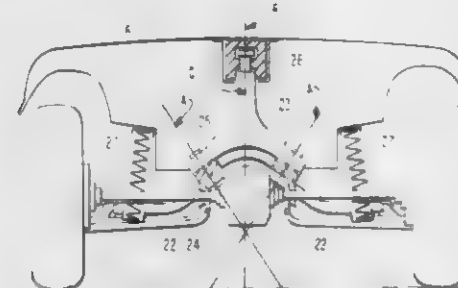
Filed Oct. 5, 1977, Ser. No. 839,418

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644870

Int. Cl.² B62D 31/00, 27/04

U.S. Cl. 280—787

21 Claims



1. A motor vehicle comprising:

- (a) chassis means with front and rear axle;
 - (b) vehicle body means;
 - (c) connecting means including at least two support column means elastically retained at least at one end and provided with upper and lower bearing support means; and
 - (d) wheel spring means coordinated between the chassis means and the vehicle body means;
- wherein said connecting means supports the vehicle body means upon the chassis means by way of at least two support column means arranged one behind the other, transverse to the driving direction, with at least one support column means being elastically connected, at its upper end, to the vehicle body means by a substantially central upper bearing support means and being further connected, at its lower end, to the chassis means by lower bearing support means whose lines of action intersect approximately in the vertical axis of the support column means;

whereby said support column means is operable in the manner of a crank and thus the vehicle body means may move in a translatable manner with respect to the chassis means while also being capable of pivoting about an axis located substantially in the driving direction.

4,229,022

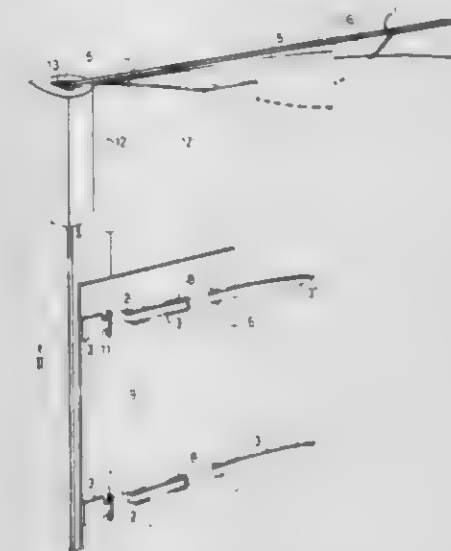
FILING FOLDER FOR PERFORATED PAPERSCarl-Erik Grundell, Osmogatan 8, S-122 48 Enskede, Sweden
Continuation of Ser. No. 764,932, Feb. 2, 1977, abandoned, which is a continuation of Ser. No. 522,065, Nov. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 398,765, Sep. 19, 1973, abandoned. This application Feb. 21, 1978, Ser. No. 879,557Int. Cl.³ B42F 9/00

U.S. Cl. 281—45

3 Claims

- 1. A filing folder for perforated papers, comprising:
 - at least one stiff rectangular cover,
 - at least one elongated binding tongue of a flexible material arranged approximately perpendicular to and extending away from one edge of said cover,
 - a portion of said binding tongue adjacent one end thereof being secured to said cover adjacent said edge of the cover,
 - said one end of the binding tongue forming a laterally enlarged part,
 - a flap having an opening therein for receiving said enlarged part of the tongue so as to be hooked thereon between said

one edge of the cover and the attached portion of the tongue with the edge of the flap flush with the free end of the laterally enlarged part of the tongue, said flap having further openings therein for receiving the non-enlarged part of the binding tongue after it has been threaded through perforated papers.



and a channelled bar locking together said cover marginal edge, said enlarged part of the tongue and the marginal edge of the flap.

4,229,023

IDENTITY CHECKING DEVICE

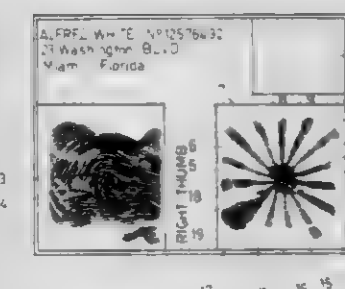
Wilson S. Luz, Rua Alcindo Guanabara, 25/102, 20.000 Rio de Janeiro RJ, Brazil

Filed Mar. 2, 1979, Ser. No. 16,852

Int. Cl.³ B42D 15/00

U.S. Cl. 283—7

15 Claims



1. Identity Checking Device comprising a card having a region carrying an identified fingerprint of a given finger of the legitimate card holder, said fingerprint having sections cut therefrom whereby said region comprises alternate transparent and partial fingerprint zones.

4,229,024

SWIVEL CONNECTOR

David A. Oberrecht, Cincinnati, and Fred A. Wilson, Middletown, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,829

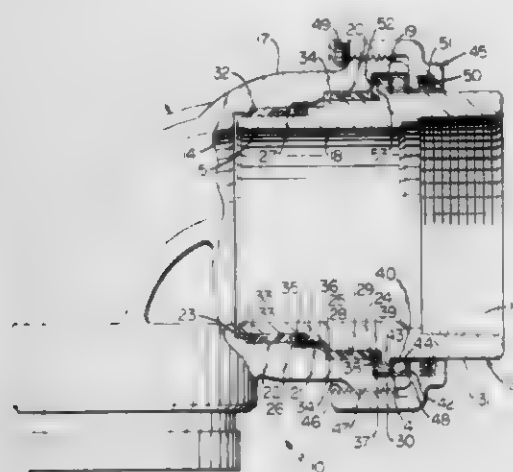
Int. Cl.² F16L 17/00, 27/00, 33/16

U.S. Cl. 285—98

10 Claims

1. A swivel connector including first body means; a second body; said first body means having stepped axial bore means therein; said first body means having a passage therein with one end of said passage communicating with one end of said stepped axial bore means and its other end communicating with the exterior of said first body means; said passage having a smaller diameter than the minimum diameter of said stepped axial bore means; said stepped axial bore means in said first body means having its other end communicating with the exterior of said first body means; said second body having at least a portion for disposition within said stepped axial bore

means in said first body means and in radial spaced relation thereto; said second body having a passage extending through and communicating with said passage in said first body means when said portion of said second body is disposed within said stepped axial bore means in said first body means to provide a continuous passage extending through said first body means and said second body; and means to rotatably connect said first body means and said second body to each other and disposed between the wall of said stepped axial bore means in said first body means and said portion of said second body, said rotatably connecting means including first and second non-metallic bearing means disposed between the wall of said



stepped axial bore means in said first body means and said portion of said second body and in engagement with each to support all bending loads, a non-metallic thrust ring disposed between said first body means and said second body to absorb thrust loads produced by relative movement of said second body into said first body means, ball bearing means disposed between said first body means and said portion of said second body to support thrust loads produced by relative movement of said second body out of said first body means, and sealing means disposed between the wall of said stepped axial bore means in said first body means and said portion of said second body and in engagement with each.

4,229,025

STAB-TYPE COUPLING

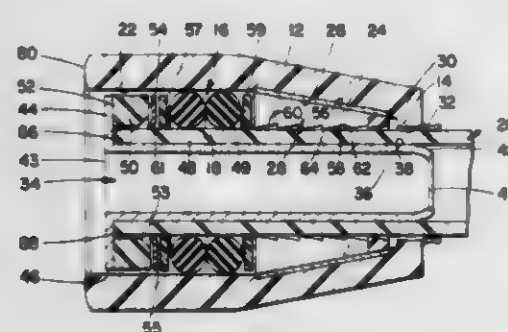
Frank R. Volgstadt, Madison, and David P. Passerelli, Geneva, both of Ohio, assignors to Perfection Corporation, Madison, Ohio

Filed Apr. 25, 1978, Ser. No. 899,813

Int. Cl.² F16L 47/00

U.S. Cl. 285-105

14 Claims



1. A stab-type coupling for connecting an end portion of a smooth wall non-metallic pipe to a fitting or another pipe, said coupling comprising in combination:

a non-metallic coupling body having a first end and an internal recess adapted to receive the end portion of a smooth wall non-metallic pipe;

a generally elongated metallic hollow insert disposed within said recess and about which the end portion of a smooth wall non-metallic pipe is adapted to be received;

at least one elastomeric seal ring disposed within said recess and adapted to sealingly engage the end portion of a

smooth wall non-metallic pipe and said coupling body when said pipe is disposed within said seal ring;

a non-metallic retaining collet disposed within said recess, said collet having a tapered external surface which converges in the direction of said first end of said coupling body and a toothed internal surface adapted to engage the end portion of a smooth wall non-metallic pipe;

a generally frusto-conical metallic back-up ring retained by said coupling body, said back-up ring having an internal surface generally complementary to said external surface of said collet and against which said collet is adapted to bear in the event of an attempted withdrawal of said smooth wall non-metallic pipe from said coupling body.

4,229,026

SOCKET CONNECTION FOR PIPES AND PIPE ELEMENTS

Georg Seiler, Munich, Fed. Rep. of Germany, assignor to Eisenwerke Friedr. With. Duker GmbH & Co., Fed. Rep. of Germany

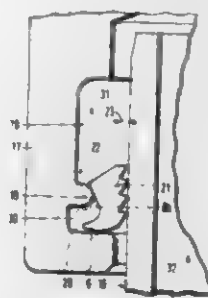
Filed Mar. 5, 1979, Ser. No. 17,565

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2829307

Int. Cl.² F16L 21/08

U.S. Cl. 285-105

8 Claims



1. A connector for connecting pipes, which comprises a pipe having a smooth insertion end, a socket adapted to receive the pipe with radial clearance, and a seal and friction ring; the socket having in its interior a substantially radially extending end shoulder and axially spaced therefrom an annular bead so as to form an annular groove; a base portion of the ring being disposed between the shoulder and the bead and a sealing portion of the ring being situated on a side of the annular bead which is distal from the base portion, the sealing portion having embedded therein a plurality of retaining elements which are distributed in the circumferential direction and each of which has at least two serrated internal edges for acting on the circumference of the smooth insertion end and which are tiltably supported on the annular bead, the radially outwardly oriented circumferential surface of each retaining element diverging towards the sealing portion to define a divergence angle with respect to an envelope surface that contacts all internal edges of the retaining element, the circumferential surface being a sliding surface for axially slidably guiding the embedded retaining element on the annular bead while maintaining the retaining element freely tiltably supported in every axial position.

4,229,027

REMOTE AUTOMATIC MAKE-UP STAB-IN SEALING SYSTEM

Charles D. Morrill, Bellaire, Tex., assignor to McEvoy Oilfield Equipment Company, Houston, Tex.

Filed Sep. 15, 1977, Ser. No. 833,553

Int. Cl.² F16L 39/00

U.S. Cl. 285-137 A

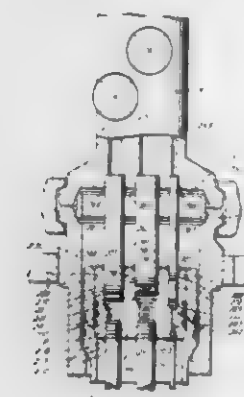
26 Claims

1. A sealing system, comprising:

a tubing hanger having multiple bores therethrough, said bores having substantially parallel walls;

an assembly suspended above said tubing hanger having

multiple nipples depending therefrom, each of said nipples being telescopically received in one of said bores; a plurality of seal assemblies, one of said seal assemblies being mounted on each of said nipples;



each said seal assembly including a member having seal means thereon for forming a metal-to-metal seal with said corresponding nipple and said substantially parallel walls of said bore.

4,229,028

PIPE COUPLER

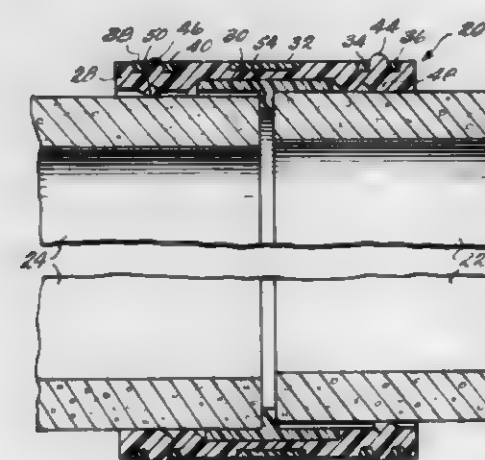
Paul E. Gray, Gnadentunten, Ohio, assignor to Universal Sewer Pipe Company, Mogadore, Ohio

Filed Dec. 20, 1978, Ser. No. 971,216

Int. Cl.² F16L 21/02

U.S. Cl. 285-235

4 Claims



1. A coupling for connecting the adjacent ends of two pipes comprising:

a flexible sealing member having a generally cylindrical shape, an outer, central circumferentially extending groove on the outside periphery of said member, an inner circumferentially extending groove on the inside periphery of said member opposite said outer groove, first and second pairs of adjacent support grooves, each pair including first and second grooves circumferentially extending on the outside periphery of said member on either side of said outer groove, the grooves of each pair being separated by a flexible band of said member, and first and second unitary sealing lips extending radially inwardly from the inner periphery respectively opposite said bands, said lips compressing against said pipes to effect a seal and said bands displacing outwardly during connection of said two pipes;

an inner rigid center ring disposed in said inner groove and having a stop surface extending radially inward for positioning pipes to be coupled together;

an outer rigid center ring disposed in said outer groove; and first and second pairs of rigid support rings, each pair including first and second rings disposed respectively in said first and second support grooves.

4,229,029

HOSE COUPLING

Jean-Jacques, deceased Boyer, late of Montchauvet, and Pascal by Boyer, heir, Rue Freneaux, Montchauvet, Yvelines, France

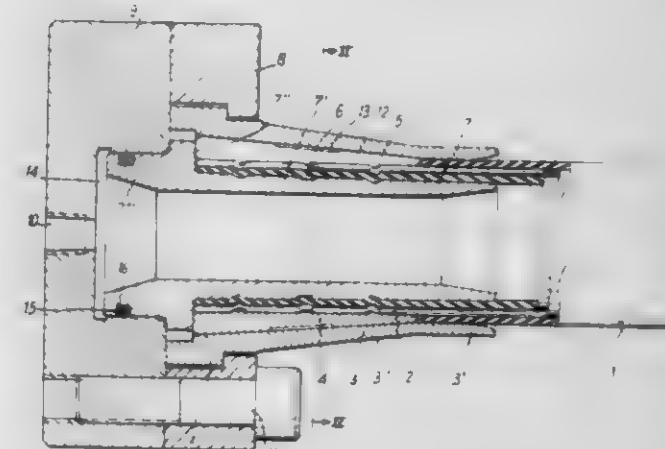
Filed Jul. 17, 1978, Ser. No. 925,205

Claims priority, application France, Jul. 18, 1977, 77 21904

Int. Cl.² F16L 33/22

U.S. Cl. 285-242

3 Claims



1. A coupling for reinforced hose with reinforcement metallic sleeve comprising a fixation collar formed with a tapered inner surface, an assembly clamp to which the fixation collar is to be attached, a plurality of jaws in the shape of tapered sectors engageable in and spaced around the collar with the outer surfaces of the jaws in contact with the inner face of the fixation collar while leaving a clearance between two successive jaws, the inner surfaces of said jaws forming a substantially cylindrical surface for surrounding the outer surface of the hose to be connected, and a cylindrical sleeve having a portion engageable inside the hose to be connected and formed with a tip portion, the assembly clamp having a coaxial bore in which said tip portion of said cylindrical sleeve slides and which forms a pressure chamber so as to form with said tip a differential piston, the cylindrical sleeve having a flange which comes to bear against the end face of the jaws in response to a differential pressure to drive the sleeve toward the jaws so that the flange of the sleeve drives the tapered sectors further into the fixation collar to increase the grip on the hose between the fixation collar and the cylindrical sleeve.

4,229,030

SAFETY DOOR FASTENING

Francisco J. Tarragona Corbella, Urgell 143, Barcelona, Spain

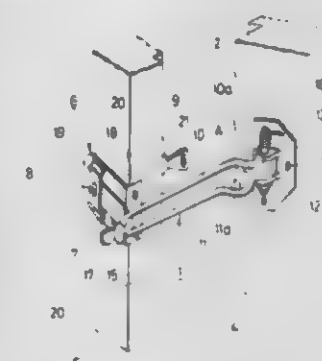
Filed Jan. 22, 1979, Ser. No. 5,086

Claims priority, application Spain, Jan. 31, 1978, 467,065

Int. Cl.² E03C 17/24

U.S. Cl. 292-270

7 Claims



1. A safety door fastening of the type for limiting the angle of opening of a door and comprising on the one hand a rigid retaining member defining a longitudinal space and being pivotally attached to a vertical pin located on the door frame and on the other hand a catch member mounted to the door,

comprising an arm having a terminal member adapted to slide in the longitudinal space of the retaining member and hold it, characterized in that the arm of the catch member is adapted for pivoting around a horizontal axis by operation of a lock means operable from the outside of the door, the retaining means having resilient means biasing it against the inner face of the door when the door is in the closed position thereof and said retaining member also having means which, in the closed position of the door, allow the arm of the catch member to be pivoted until its terminal member is disengaged from the longitudinal space of the retaining member, and further characterized in that the catch member arm is fixedly attached to the cylinder of a lock, said cylinder constituting the pivot shaft of the arm.

4,229,031 SEAL

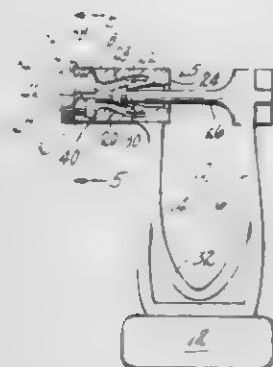
Richard S. Guiler, Stewartville, N.J., assignor to E. J. Brooks Company, Newark, N.J.

Filed May 11, 1979, Ser. No. 38,325

Int. Cl.³ B65D 33/34

U.S. Cl. 292—322

7 Claims



1. A seal comprising housing open at both ends and a shackle, said housing and a shackle end having means for locking engagement when the shackle end is inserted into one end of the housing, and means for closing the other end of the housing, comprising a plug having a base for covering said other end and resilient legs for extending into said other end, and means in the housing engaging said legs and preventing withdrawal thereof.

4,229,032

UNIVERSAL IMPLEMENT FOR CLEANING CORRUGATED SURFACES

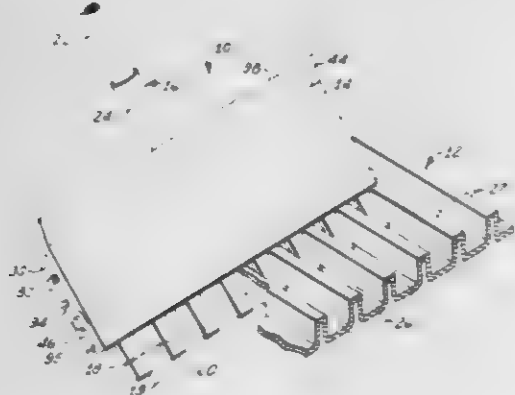
Michael R. Murphy, Louisville, Ky., assignor to The Murphy Advantage Corporation, Louisville, Ky.

Filed Mar. 9, 1979, Ser. No. 19,102

Int. Cl.³ A01B 1/20

U.S. Cl. 294—51

16 Claims



1. An improved hand manipulable implement for cleaning a surface of the type having essentially straight, parallel, and regularly spaced apart channels and ridges, said implement being of the type having an elongate handle, a generally planar

blade, means for attaching the handle to the blade in general coplanar relationship therewith, the blade including a first working edge perpendicular to the handle and oppositely disposed on the blade from the handle, and a plurality of scraping members attached to the blade, each of said scraping members including a tooth extending outward from the first working edge, each one of said plurality of scraping members being spaced apart from an adjacent one of said plurality of scraping members by an equal distance, the teeth of said plurality of scraping members being arranged to fit into the channels of the surface, the first working edge resting on the ridges, where by shoveling action imparted to said implement foreign matter is scraped from the channels and ridges of the surface, wherein the improvement comprises: means intermediate adjacent ones of said plurality of scraping members for resiliently holding said scraping members regularly spaced apart, each one of said plurality of scraping members being slidable laterally with respect to the blade along the first working edge under constraint of said holding means, whereby during the shoveling action and in response to an irregularity of a corresponding one of the channels in which the tooth of said one scraping member fits, said one scraping member is moved laterally to accommodate the irregularity and prevent binding of the teeth of said plurality of scraping members in the channels.

4,229,033

SHOVEL WITH AUXILIARY HANDLE

Michael Vosbikian, 3 Pinecrest, Medford, N.J. 08055

Filed Mar. 26, 1979, Ser. No. 23,735

Int. Cl.³ B65G 3/00; A01B 1/22

U.S. Cl. 294—58

8 Claims



1. In a shovel of the type including a blade, a rearwardly open socket affixed to the blade and a first handle having its forward end secured within the socket, the improvement comprising

a second handle adapted to pivot relative to the first handle about a pivotal connection,

said second handle being movable from an aligned position in substantial alignment with the first handle to pivoted positions not in substantial alignment with the first handle;

pivot pin means positioned in a forward portion of said first handle to pivotally connect the second handle to the first handle; and

frictional engagement means frictionally engaging a lower portion of the second handle to releasably secure the second handle to the first handle when the second handle is moved to its said aligned position.

4,229,034

DEVICE FOR THE ROTATION OF CONTAINERS

Oscar Zinno, Genoa-Quinto, and Antonio Tocchella, Genoa-Pegli, both of Italy, assignors to Costruzioni Meccaniche Industriali Genovesi C.M.I. S.p.A., Genoa-Fegino, Italy

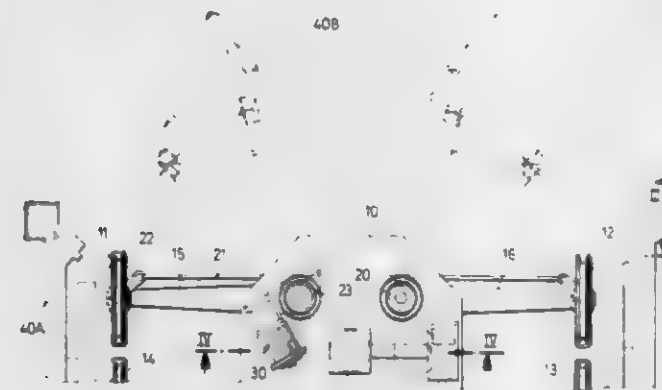
Filed Oct. 11, 1978, Ser. No. 950,303

Claims priority, application Italy, Nov. 23, 1977, 12850 A/77

Int. Cl.³ B66C 1/62

U.S. Cl. 294—81 SF

6 Claims



1. In a device for rotating containers, the improvement comprising a central body, four orientable arms pivotally mounted on said central body to swing about parallel vertical axis relative to said central body, a pulley mounted on each of said arms for pivotal movement about a vertical axis, said pulleys receiving support ropes coming down from a carriage arranged above and sliding on the main bar of a crane, means for keeping said pulleys parallel to themselves during the orienting movement of said arms, and a lower catching frame rotatably supported by said central body for rotation about a vertical axis and connected to a spreader.

4,229,035

VEHICLE WINDSHIELD RAIN DEFLECTOR SYSTEM

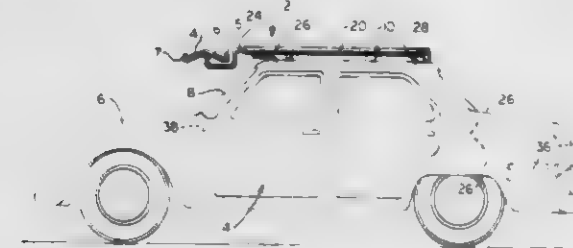
Joseph W. Newman, Rte. 1, Box 71-B, Lucedale, Miss. 39452

Filed Jan. 16, 1978, Ser. No. 869,795

Int. Cl.³ B60J 1/20

U.S. Cl. 296—95 R

19 Claims



1. A windshield rain deflector system for use on a vehicle movable at a significant rate of speed having a transparent windshield through which an occupant of the vehicle has a particular, forward, desired line of vision when riding in the moving vehicle, comprising:

at least one rain deflector shield defining an effective rain shielding area, which defined shielding area is movable through a series of operative dispositions each located in front of the windshield at longitudinally spaced locations from the others and located above at least most of the windshield;

support means for mounting the system on the vehicle and for carrying said shield and allowing said effective shielding area to move among its various operative dispositions, said shield(s) and said support means further defining an open, variable air pressure release area between said shield and the upper portions of the vehicle body and windshield, said air pressure release area becoming greater in size as the effective shield area is moved further forward and away from the windshield in its operative dispositions preventing extreme compression of air underneath said shield(s) as the vehicle moves forward at a significant rate

of speed, the location of said effective shielding area being determined based at least in part on the forward speed of the vehicle, said movable effective shielding area and said variable air pressure release area being provided by means of a shield movable out and spaced away from the windshield by said support means, said pressure release area being defined by the ever increasing longitudinal separation space between said shield and the windshield as the shield is longitudinally moved away from and further in front of the windshield, said support means enabling movement of said shield further forward of the windshield as the speed of the vehicle is increased, said effective rain shielding area being capable of deflecting rain away from a free, clear vision zone on the windshield around the line of vision of the occupant in spite of rainy conditions and the speed of the vehicle.

4,229,036

PILLAR GARNISH

Tadayoshi Toda, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

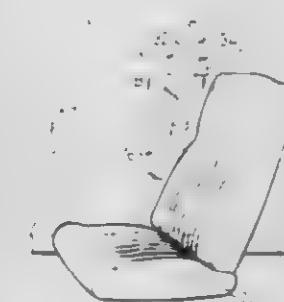
Filed Feb. 6, 1979, Ser. No. 9,915

Claims priority, application Japan, Feb. 10, 1978, 53-16775

Int. Cl.³ B62D 33/00

U.S. Cl. 296—202

9 Claims



1. In a vehicle body pillar garnish made up of two individual pillar garnish members and having a seam mark formed by the mating edge portions of said pillar garnish members, the improvement being in that one of the mating edge portions of said pillar garnish members is formed with a step which cooperates with the other of said mating edge portions to form a recess having at least two bottom corners, one of which coincides with said seam mark.

4,229,037

VEHICLE, PROVIDED WITH A SLIDING ROOF ASSEMBLY

Theodorus H. Vermeulen, Heemstede, Netherlands, assignor to Vermeulen-Hollandia Octroolen B.V., Haarlem, Netherlands

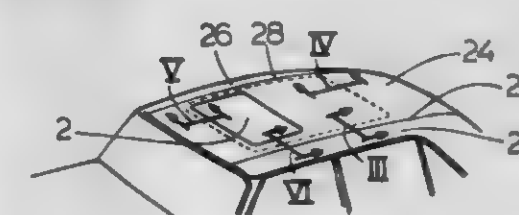
Filed Mar. 8, 1979, Ser. No. 18,792

Claims priority, application Netherlands, Dec. 15, 1978, 7812198

Int. Cl.³ B62D 25/06

U.S. Cl. 296—216

12 Claims



1. A vehicle, in particular a motor-car, provided with a sliding roof assembly comprising a sliding panel which is mounted in a frame so as to be movable forward and backward, and which closes a ventilating opening in its forward position and releases this ventilating opening in its opened position, while a roof plate, fastened on the frame, forms a covered

portion behind this ventilating opening underneath which the sliding panel extends at least partly when in its opened position, whereby the assembly consisting of the frame, the sliding panel and the roof plate is inserted from above into a substantially rectangular opening in the vehicle roof and is connected on the vehicle roof by means of a peripheral supporting rim of this assembly, while the upper side of this assembly is provided with a cover, and the supporting rim of the assembly is at least substantially flat in the direction perpendicular to the adjacent edge of the opening in the vehicle roof, the cover of the assembly extending beyond the outer circumference of the peripheral supporting rim onto the roof of the vehicle.

4,229,038

PORTABLE FOLDING TABLE AND CHAIRS

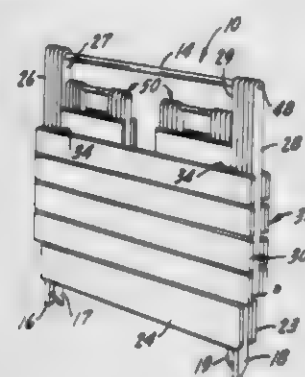
Edward J. Drost, 8101 Kenneth, Skokie, Ill. 60076

Filed Aug. 16, 1978, Ser. No. 934,024

Int. Cl.² A47B 39/00

U.S. Cl. 297—139

1 Claim



1. A table and chair set, said set including, in combination a table, said table, in a collapsed condition, also functioning as a chair receptacle, said table including,
 - a first pair of legs (19, 17), the upper end of each leg of said first pair of legs having
 - a table arm (29, 27) pivotally connected thereto (49), said table arms comprising a first pair of table arms,
 - the free, non-pivoted end of each table arm of said first pair of table arms carrying a first flat table top sub-assembly (31),
 - a combined carrying and connecting rod (14) pivotally connected to, and extending between, the upper, pivoted end of each said first legs and the pivoted end of each associated table arm, the axis of the carrying/connecting rod being co-axial with the pivot axis at the pivot jointer of each leg of said first pair of legs and its associated table arm,
 whereby said combined carrying and connecting rod functions as a carrying handle for the table and chair set when the table is in a collapsed condition, and as a connecting rod which maintains the two table arms associated with the first pair of legs in a connected, but spaced, position with respect to one another in an erected condition,
 - a second pair of legs (18, 16),
 - the upper end of each leg of said second pair of legs having a table arm (28, 26) pivotally connected thereto (48), said just mentioned table arms comprising a second pair of table arms,
 - the free, non-pivoted end of each table arm of said second pair of table arms carrying a second flat table top assembly (30),
 - leg pivot connecting means (20, 15),
 - each of said leg pivot connecting means connecting one of said first legs to one of said second legs,
 - whereby said legs are connected, in pairs, about a common pivot axis, (20)
 - the two table legs and the two table arms at each end of the set being axially offset with respect to each other whereby said pairs of arms and legs at each end of the table formed

by the abutment of the two table sub-assemblies swing in vertical, non-intersecting planes, (FIG. 6), the end edge portions of each table sub-assembly being supported by at least a portion of the pivotally connected table arm and table leg structure associated with the other table sub-assembly, a cross brace member (23, 24) extending between and connected to the lower end of each of the pair of table legs associated with each of the table top sub-assemblies, each cross brace member being located on the exterior side of an associated pair of table legs whereby said cross brace members are arranged in opposed, spaced relationship to one another when the table legs are vertically aligned with one another, and closure means (25) carried by at least one of said cross brace members and being arranged to form, with the cross brace members, a receptacle closed on the bottom and upwardly open therefrom on both sides of the bottom when the first and second pairs of legs are in a collapsed condition, said receptacle being of a width wide enough to receive and support one or more chairs which are collapsible by scissors actions to a width substantially no wider than the width of the legs and seat surface thereof, (FIG. 9), said carrying/connecting rod being located at the upper end portion of the collapsed table and the receptacle at the lower end portion of the collapsed table to thereby provide maximum access to the receptacle, and one or more chairs (A, B, C, D) formed and adapted to be collapsed to a width less than the width of the receptacle whereby it may be inserted from the top region downwardly into the receptacle, when either, or both, of table sub-assemblies (31, 30) are swung away from their downwardly collapsed position.

4,229,039

INSERT TRAVEL CHAIR AND METHOD OF TRANSPORTING THE HANDICAPPED

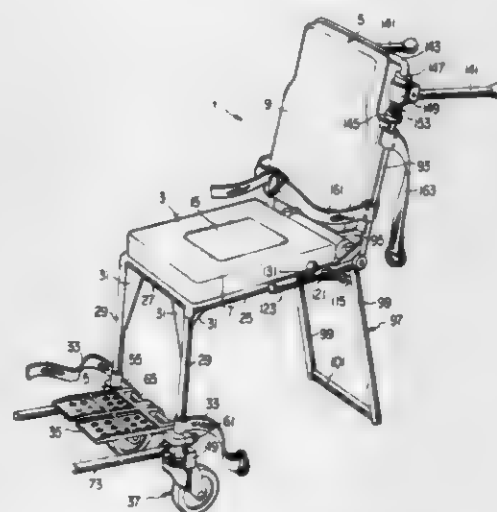
Frederick L. Day, Rte. 2, Box 78, Ladson, S.C. 29456

Continuation-in-part of Ser. No. 800,434, May 25, 1977, Pat. No. 4,113,307, and a continuation-in-part of Ser. No. 680,766, Apr. 27, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,253

Int. Cl.² A47K 11/02; A47C 15/00, 4/52

U.S. Cl. 297—232

28 Claims



1. A foldable insert travel chair comprising:
 - (a) a seat having a front and rear,
 - (b) a back pivotally attached to the rear of said seat, said back being pivotable forwardly from an upright position and rearwardly to a collapsed position relative to said seat, wherein said back is positioned substantially under said seat,
 - (c) means for latching said back in a position wherein said back may be locked in the upright, non-pivoting position and unlocked into the pivotable position,

- (d) wheel means connected to the chair,
- (e) the area under the rear of said seat being substantially unobstructed whereby said seat may be positioned over a conventional seat,
- (f) leg means extending downwardly from and pivotally connected to the rear of said seat, said leg means being movable from a ground engaging position to a position substantially under said seat,
- (g) handle means extending from said back for moving the chair from place to place.

4,229,040

SEAT SUPPORT STRUCTURE

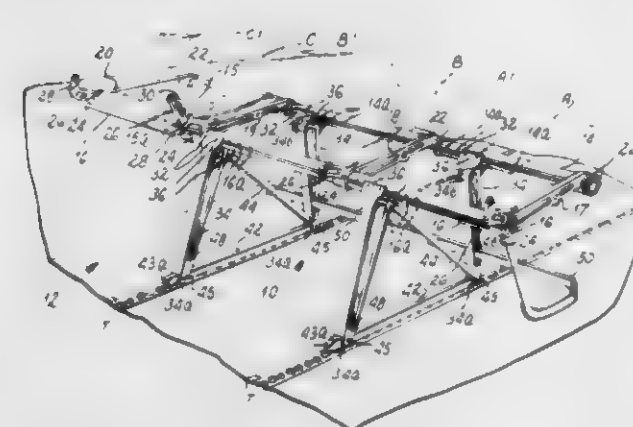
Russell B. Howell, Pfafftown, and Ralph G. Marrojo, Winston-Salem, both of N.C., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed Nov. 27, 1978, Ser. No. 964,269

Int. Cl.² A47C 1/00

U.S. Cl. 297—355

8 Claims



1. Supporting means for vehicle seats having seat cushions and locatable in a vehicle with a floor comprising in combination a pair of tubular members located to be horizontally disposed beneath the seat cushions of the seat, a plurality of spacing members operatively connected to said tubular members and adapted to maintain said tubular members in a fixed spaced relationship, a pair of leg members fastened to each of said tubular members to support said tubular members a fixed distance above the floor of the vehicle, said leg members having a bifurcated upper and lower portion, said bifurcated upper portion and bifurcated lower portion being disposed substantially perpendicular to one another, the upper bifurcated portion of said leg member being adapted to straddle said tubular member, and means for operatively connecting said leg members to said tubular members at varying locations thereon, said means for operatively connecting said leg members comprising fastening means to secure said leg members to said tubular members.

4,229,041

ANCHORING ARRANGEMENT FOR SAFETY BELTS IN A MOTOR VEHICLE

Paul Werner, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid-Hasten, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,310

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1978, 2802616

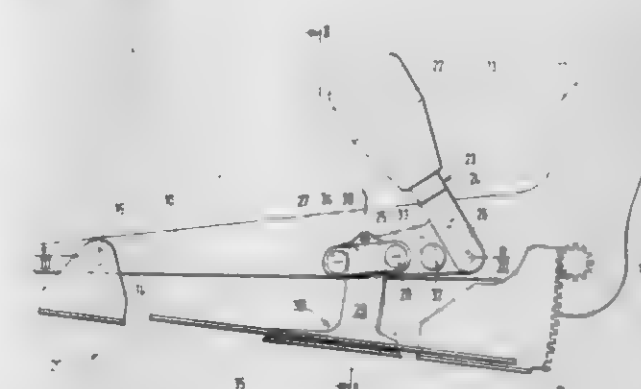
Int. Cl.² A62B 35/00

U.S. Cl. 297—468

7 Claims

1. In an anchoring arrangement for a safety belt of an adjustable vehicle seat having a seat frame, a guide rail assembly secured to the vehicle body and including a longitudinally adjustable guide rail and a vertical adjuster provided between the guide rail and the seat frame, a combination comprising a support member secured to said longitudinally adjustable guide rail and including a clamping arm projecting upwardly to said seat frame; a clamping lever pivotally connected to said seat frame and having one arm secured to the safety belt, the

other arm of said lever supporting clamping means normally slidably engaging two opposite sides of said clamping arm and



being adapted for locking the clamping lever to the clamping arm when an excessive force is applied to the safety belt.

4,229,042

EXCAVATING MACHINES

Derek Plummer, Burton upon Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Division of Ser. No. 621,374, Oct. 10, 1975, Pat. No. 4,136,910.

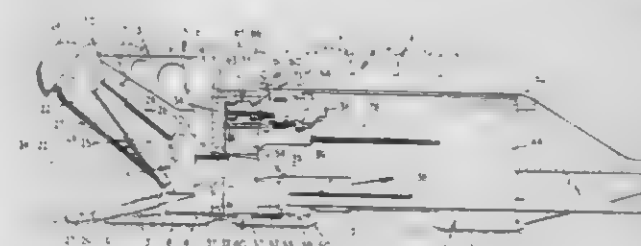
This application Sep. 8, 1978, Ser. No. 940,699

Claims priority, application United Kingdom, Oct. 30, 1974, 46943/74

Int. Cl.² E21C 41/00

U.S. Cl. 299—18

7 Claims



1. The method of excavating for forming an underground roadway at least a part of a rock boundary of which is of arcuate form comprising supporting a rotating cutter on one end of a boom, supporting another end of the boom on a pivot means, supporting the pivot means on a forward end of a boom support member, securing the boom at a predetermined angle to the pivot means and rotating the boom support on an axis extending along the longitudinal axis of the roadway; thereby rotating the pivot means on the axis of the boom support member and rotating the cutter in an arc having a center on an extended axis of the boom support member.

4,229,043

COWL ARRANGEMENTS FOR MINING MACHINES

Roy L. Bell, Burton-on-Trent; James B. Garner, Mansfield, and Douglas Salmon, Newark, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Oct. 24, 1978, Ser. No. 954,155

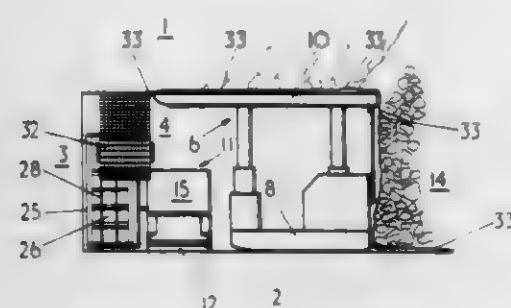
Int. Cl.² E21D 19/02

U.S. Cl. 299—33

6 Claims

1. A cut mineral loading arrangement for a mining machine which includes a cutter head and which in use traverses along a path cut by the machine, comprising a cut mineral loading member mountable adjacent to the rear of the cutter head which in association with said loading member urges cut mineral towards conveyor means, and a bracket which is at least

partly pivotally supported with respect to said loading member for paying out an elongated element extending along the cut



path, the elongated element being arrangeable to retain or contain mine roof material.

4,229,044

CLEVIS-MOUNTED IMPACT RIPPER

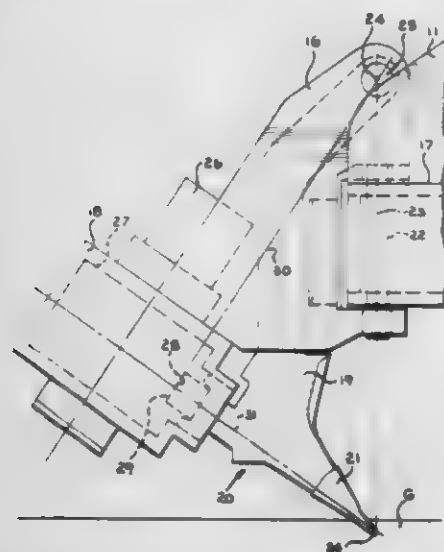
Delwin E. Cobb, and Richard E. Livesay, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 12, 1979, Ser. No. 31,560

Int. Cl.³ A01B 35/00

U.S. Cl. 299—37

14 Claims



1. In a ripper assembly (10) having a beam (11) adapted to be secured to an earthworking machine, a clevis pivot pin (22) mounted to said beam to define a vertical pivot axis (23), an impact breaker mechanism (18), a shank (19) provided with a shank pivot pin (25), a ripper tip (21) defining a ripper tip axis (31), and a bracket (16) pivotally mounted to the clevis pivot pin (22) and carrying the impact breaker mechanism (18) to apply an impact force to the shank (19) urging the ripper tip (21) about the axis (24) of the shank pivot pin (25), the improvement comprising

means on said bracket (16) for mounting said shank pivot pin (25) to define a horizontal pivot axis (24) substantially intersecting said clevis pivot pin vertical axis (23).

4,229,045

RESONANT TOOL DRIVING APPARATUS WITH TOOL STOP

Raymond A. Gurries, Reno, Nev., assignor to The Gurries Company, Sparks, Nev.

Continuation-in-part of Ser. No. 905,372, May 12, 1978, abandoned. This application Dec. 26, 1978, Ser. No. 973,187

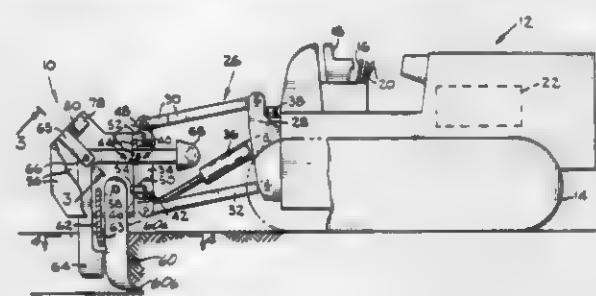
Int. Cl.² E01C 23/09

U.S. Cl. 299—37

5 Claims

1. A material working machine having a tool holder, a tool movably attached to the tool holder and adapted to move forward and backward relative to the tool holder along a work path, a resonant member mounted on the tool holder, the resonant member having an output backwardly spaced from the tool and an input, means for rigidly supporting the resonant

member with respect to the tool holder as to all motion except resonance, means remote from the supporting means for applying an oscillatory, resonance causing force to the input of the resonant member for a given period of time to cause the output to oscillate forward and backward relative to the tool holder about a neutral position and to strike the tool on forward oscillations, and means for applying a unidirectional force to



the tool holder for the given period of time to advance the tool intermittently along the work path as the resonant member resonates, wherein the improvement comprises means for stopping the backward movement of the tool before the tool reaches the neutral position of the output of the resonant member when the tool encounters an immovable object during the given period of time.

4,229,046

TOOL DRIVING APPARATUS AND METHOD

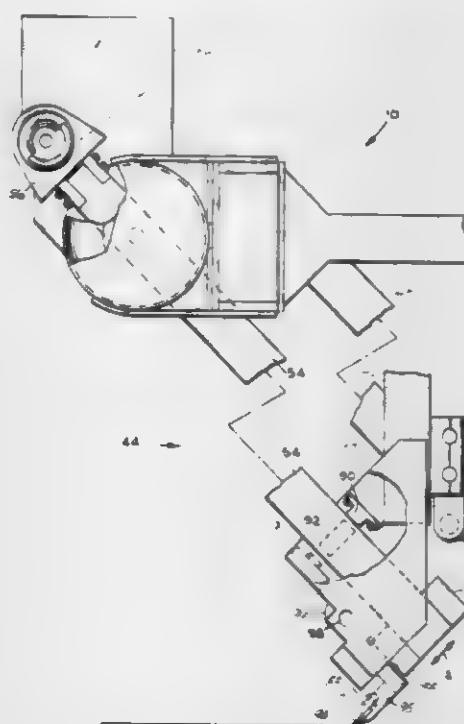
Raymond A. Gurries, Reno, Nev., assignor to The Gurries Company, Sparks, Nev.

Continuation-in-part of Ser. No. 873,249, Jan. 30, 1978, abandoned. This application Dec. 26, 1978, Ser. No. 973,161

Int. Cl.² E21C 37/20; E01C 23/09

U.S. Cl. 299—37

6 Claims



1. A material working machine having a tool holder, a tool adapted to move freely relative to the tool holder along a work path, a resonant member supported by the tool holder, the resonant member having an output coupled to the tool and an input, means attached to the tool holder for applying an oscillatory, resonance causing force to the input of the resonant member for a given period of time, and means for applying a unidirectional force to the tool holder for the given period of time to advance the tool intermittently along the work path as the resonant member resonates, the oscillatory force being sufficiently larger than the maximum value of the unidirectional force to overcome the unidirectional force and to drive the resonant member back, thereby preventing cessation of

resonance, when the tool is unable to advance responsive to the unidirectional force and the oscillatory force.

4,229,047

WHEEL TRIM RETENTION SYSTEM

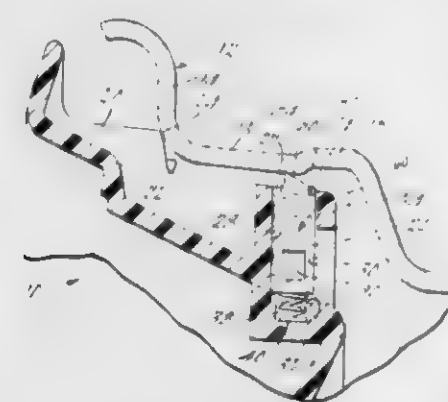
Hans R. Beisch, Amherstburg, Canada, assignor to Norris Industries, Inc., Ypsilanti, Mich.

Filed Jul. 21, 1977, Ser. No. 817,629

Int. Cl.³ B60B 7/06

U.S. Cl. 301—37 P

34 Claims



1. A wheel trim for a vehicle wheel comprising a trim member; at least one radially elongated radially outwardly opening cavity provided in said trim member; clip means movably disposed within said cavity, said clip means including radially elongated spaced sidewalls defining a partially enclosed area and having projections cooperating with sidewall portions of said cavity so as to limit movement of said clip with respect to said cavity; a toothed portion provided on said clip means; a flange means positioned between said sidewalls; and biasing means engaging said flange means and urging said clip means radially outwardly from said cavity through said opening and urging said toothed portion into biting engagement with a portion of a vehicle wheel when said trim member is installed thereon so as to retain said trim member in position thereon.

4,229,048

WIRE WHEEL COVER

Thomas F. Brinson, Lake Park, Ga., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 27,666

Int. Cl.² B60B 7/00

U.S. Cl. 301—37 SS

7 Claims



1. A simulated wire wheel cover for attachment to the outer face of a vehicle wheel, said cover comprising, in combination: a retaining ring having a plurality of retention clips fastened

to the outer margin thereof for bitingly engaging said vehicle wheel;

a generally circular mounting plate secured at its peripheral portion to said retaining ring and having an annular generally radially facing spoke retaining flange having a plurality of apertures therein;

a first generally circular retaining cap of a diameter which is substantially less than the diameter of said spoke retaining flange and having an annular generally axially inwardly directed and radially facing cap flange, said cap flange having a plurality of circumferentially spaced elongated slots therein which open at the axially inner edge of said cap flange;

means for mounting said retaining cap to said mounting plate;

a plurality of spoke members each spoke member comprising an elongated member having a looped central portion the diameter of which is greater than the circumferential width of said slots and a pair of legs extending therefrom in a generally V-shaped configuration, each of said spoke members being mounted in respective ones of said slots of said first cap wherein the loop portions thereof are disposed radially inwardly of said slots and wherein the free ends of said legs project through said slots, generally radially outwardly from said cap flange, and through a corresponding pair of said apertures of said mounting plate;

a second generally circular retaining cap of a diameter which is substantially less than the diameter of said first cap and having an annular generally axially inwardly directed and radially facing cap flange with said second cap flange having a plurality of circumferentially spaced elongated slots which open at the axially inner edge of said second cap flange;

means for mounting said second retaining cap to said mounting plate; and

a second plurality of spoke members each spoke member comprising an elongated member having a looped central portion the diameter of which is greater than the circumferential width of said slots of said second cap and a pair of legs extending therefrom in a generally V-shaped configuration, each of said spoke members being mounted in respective ones of said slots of said second cap wherein the loop portions thereof are disposed radially inwardly of said slots and wherein the free ends of said legs project through said slots of said second cap, generally radially outwardly from said flange of said second cap, and through a corresponding pair of said apertures of said mounting plate.

4,229,049

HYDRAULIC PRESSURE CONTROL SYSTEM FOR SPLIT BRAKE SYSTEM

Masamoto Ando, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Oct. 4, 1978, Ser. No. 948,485

Claims priority, application Japan, Oct. 4, 1977, 52-119244; Oct. 4, 1977, 52-119245

Int. Cl.² B60T 8/02, 8/26

U.S. Cl. 303—6 C

5 Claims

1. A hydraulic pressure control system for a split brake system which comprises:

a tandem master cylinder having first and second hydraulic pressure sources;

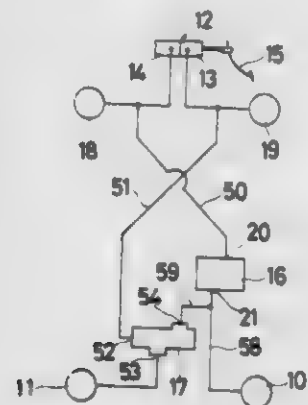
at least first and second rear wheel cylinders;

a first brake pressure supply line communicating said first source with said first rear wheel cylinder;

a second brake pressure supply line communicating said second source with said second rear wheel cylinder;

a first hydraulic pressure control device positioned within said first supply line for controlling output hydraulic pressure transmitted therefrom with respect to hydraulic pressure transmitted from said first source; and

a second hydraulic pressure control device including a housing positioned within said second supply line and including a balance piston mounted in said housing and a first passage formed in said housing for controlling output hydraulic pressure transmitted therefrom with respect to input hydraulic pressure transmitted from said second source in response to output hydraulic pressure transmitted from said first control device, said second hydraulic pressure control device further including a by-pass passage formed in said housing, a second piston disposed within said housing, one end thereof receiving hydraulic



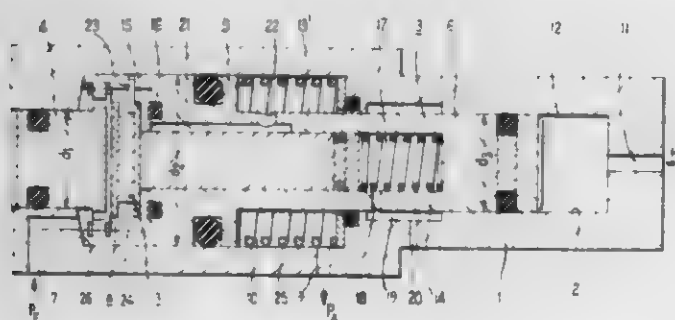
pressure from said first source and the other end thereof receiving hydraulic pressure transmitted through said valve means which is normally open by said balance piston and second valve means disposed within said first passage such that said first passage is normally open for passing fluid between said valve means and said second supply line such that said second valve means also normally closes said by-pass passage and, upon failure of said supply line, said second valve means opens said by-pass passage and, at the same time, interrupts communication between said first passage and said balance piston.

4,229,050
BRAKE FORCE REGULATOR FOR A MOTORCYCLE HYDRAULIC BRAKE SYSTEM
Klaus Engert, Buerstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 27,980
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822933

Int. Cl.³ B60T 8/26
U.S. Cl. 303—6 C

4 Claims



1. A brake force regulator for a motorcycle brake system comprising:

- a housing having a longitudinal stepped bore;
- a fluid inlet chamber connected to a pedal-actuated master cylinder of a rear-wheel brake circuit disposed in said bore;
- a fluid outlet chamber connected to a rear-wheel brake of said rear-wheel brake circuit disposed in said bore spaced from said inlet chamber;
- a control piston slidably sealed to said bore, said control piston having first, second and third stepped sections in that order, adjacent ends of said first and second sections

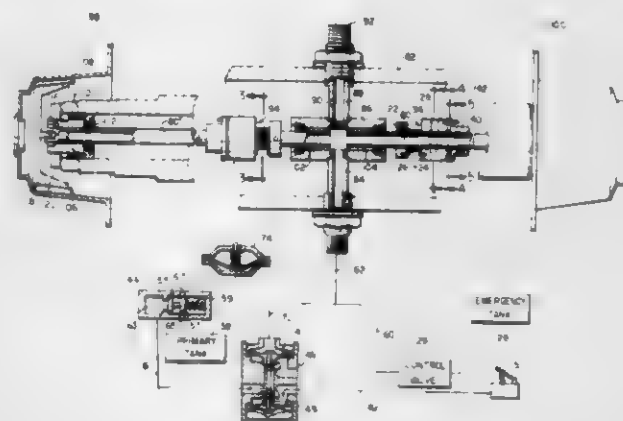
being associated with said inlet chamber and adjacent ends of said second and third sections being associated with said outlet chamber, said control piston being responsive to pressure from a hand-actuated master cylinder of a front-wheel brake circuit applied to an end of said third section remote from said second section to control pressure applied to said rear-wheel brake;

- a fluid passageway disposed in said control piston interconnecting said inlet and outlet chambers;
- a closure member for said passageway disposed in said inlet chamber;
- a closure piston connected to said closure member and extending into a bore in said control piston, said closure piston being movable in the closing direction of said closure member against the force of a valve spring contained in a valve chamber at the end of said bore in said control piston, said valve chamber being connected to atmosphere; and
- a weak return spring disposed in said outlet chamber to urge said control piston against a stop in said bore in said inlet chamber, said control piston having a differential effective area adjacent said stop subjected to pressure in said inlet chamber in a direction opposite to the direction of the force of said return spring to cause displacement of said control piston in the direction of said outlet chamber.

4,229,051
ANTI-LOCKING SYSTEM
George Mekosh, Jr., Warrington, and David O. Hulse, Lionville, both of Pa., assignors to The Budd Company, Troy, Mich.
Filed Sep. 5, 1978, Ser. No. 939,179

Int. Cl.³ B60T 8/093
U.S. Cl. 303—99

10 Claims



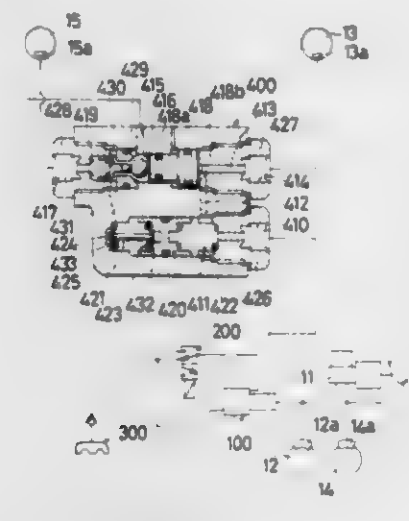
1. In combination with a wheel on a vehicle, having a brake associated therewith, an anti-lock system comprising:

- (a) a source of service pressure,
- (b) a source of braking pressure for applying braking pressure to said wheel,
- (c) first control means responsive to the application of said service pressure to permit said braking pressure to be applied to said brake,
- (d) second control means responsive to pressure changes adapted to permit and prevent pressure from passing therethrough connected between said source of service pressure and said first control means, and
- (e) valve means responsive to the speed of said wheel to control the operation of said second control means by altering operating pressure supplied thereto to permit service pressure to pass therethrough during normal braking operations and to prevent service pressure from passing therethrough when the deceleration of said wheel exceeds a predetermined rate to thereby prevent braking pressure from being applied to said wheel.

4,229,052
HYDRAULIC PRESSURE CONTROL SYSTEM FOR SPLIT BRAKE SYSTEM
Toshiyuki Kondo, Anjo, and Masamoto Ando, Toyota, both of Japan, assignors to Aisin Seiki Company, Limited, Kariya, Japan

Filed Jan. 9, 1979, Ser. No. 2,179
Claims priority, application Japan, Jan. 26, 1978, 53-7635
Int. Cl.³ B60T 8/10, 8/26
U.S. Cl. 303—115

8 Claims



1. A hydraulic pressure control system for a split brake system comprising:

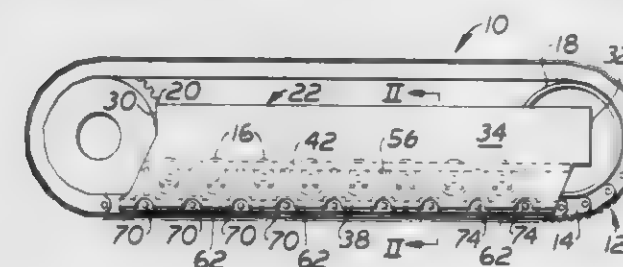
- a tandem master cylinder;
- first and second wheel brakes;
- a first braking line between one of said tandem master cylinders and said first wheel brake;
- a second braking line between the other of said tandem master cylinders and said second wheel brake;
- an anti-skid actuator positioned within said first braking line to thereby decrease and increase braking fluid pressure transmitted to said first wheel brake in response to rotational conditions of wheels, and
- a control valve assembly positioned downstream of said anti-skid actuator communicating with said first braking line between said anti-skid actuator and said first wheel brake at a first side thereof, and communicating with said second braking line at a second side thereof, said control valve assembly comprising normally open valve means interrupting said second braking line when fluid pressure within said first braking line attains a predetermined value, and balance piston means being balanced by means of fluid pressures transmitted to said first and second wheel brakes, respectively, to thereby maintain said fluid pressures of said first and second wheel brakes at the same magnitude.

4,229,053
TRACK GUIDE ASSEMBLY
Lawrence R. Cline, Oswego, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 27, 1978, Ser. No. 881,268
Int. Cl.³ B62D 55/14

U.S. Cl. 305—28

12 Claims



1. In a track frame assembly which comprises an endless

track passing over a plurality of roller means and an idler and being driven by sprocket means, an improvement comprising: a track roller frame having a generally U-shaped cross-section defined by a pair of parallel rails and a joining bridge, said frame being supported adjacent opposite ends thereof adjacent said sprocket means and said idler and being positioned generally above said roller means; a pair of side panels integral with said track roller frame and spaced laterally outwardly from said parallel rails, said side panels each extending downwardly to respective lower portions thereof at a level defined by said endless track; a plurality of bars located adjacent and generally parallel to the opposite sides of said endless track to provide a guide for the movement thereof; and means for removably securing said bars to said track roller frame.

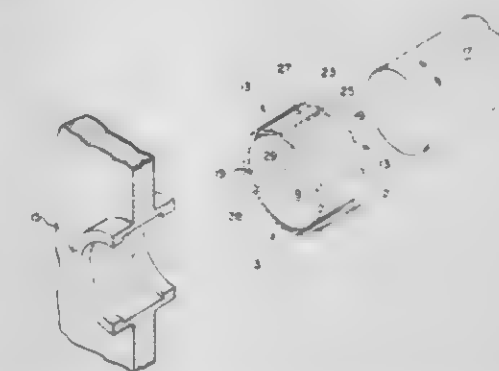
4,229,054
MULTI-PAD COMPLIANT HYDRODYNAMIC JOURNAL BEARING

William H. Miller, Jr., Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,261
Int. Cl.³ F16C 32/06, 27/02

U.S. Cl. 308—9

11 Claims



1. A compliant hydrodynamic fluid journal bearing comprising:

- a bearing sleeve having a cylindrical bore therein;
- a rotatable shaft received within said bore and defining a gap between the wall of said bore and the surface of said shaft;
- a plurality of bearing modules received within said gap and circumferentially spaced around said wall of said bearing sleeve, and attached thereto against rotation relative to said bearing sleeve;
- each of said modules including a bearing sheet having a radially inwardly facing bearing surface and a resilient support element having spaced resilient projections for supporting a bearing sheet for resilient deflection under load variations exerted by said shaft;
- said bearing sheet being attached adjacent one end thereof to one end of said resilient support element with a spacer element connected to said ends;
- the other end of said bearing sheet having a portion underlying portions of the adjacent module to restrain said bearing sheet other end from lifting radially inward toward said shaft while permitting relative circumferential movement of said bearing sheets and said resilient support elements;
- whereby said bearing includes bearing surface interruptions where said bearing sheet portion underlies said adjacent module portions to interrupt incipient half-speed whirl and said bearing sheet is radially restrained from wrapping around said shaft so that start-up torque for said shaft is held to a low value, and said shaft is free to rotate in either direction with respect to said bearing sheets.

4,229,055

VIBRATION-ABSORBING ANTIFRICTION BEARING, ESPECIALLY FOR A DRIVESHAFT OF A MOTOR VEHICLE

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusebeheim, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

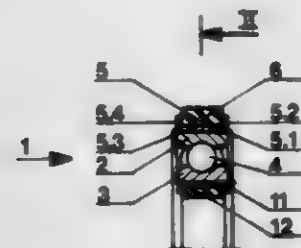
Filed Jun. 7, 1979, Ser. No. 46,357

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 7817917[U]

Int. Cl.¹ F16C 27/06

U.S. Cl. 308—26

12 Claims



1. In a vibration-absorbing antifriction bearing having an outer bearing ring, a resilient bushing coaxial with and radially outwardly of said outer bearing ring, and an intermediate member between said outer ring and bushing and having radially extending tab means for axially positioning said intermediate member with respect to said ring and bushing; the improvement wherein the intermediate member comprises a sleeve surrounding said outer ring, said tab means comprising tabs extending from the axial ends of said sleeve in the radially inward and outward directions.

4,229,056

BEARINGS (BEARING THRUST LUBRICATION)

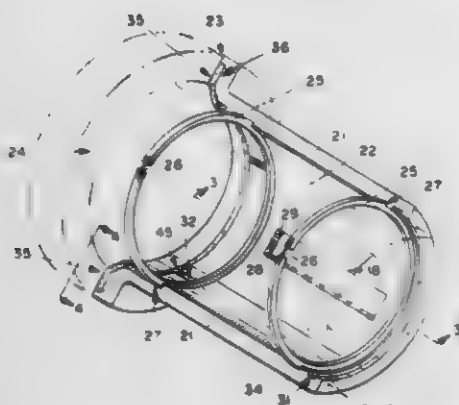
Richard J. Renk, Winona, Minn., assignor to Gladys D. Miller, Winona, Minn.

Continuation of Ser. No. 830,074, Sep. 2, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 14,944

Int. Cl.¹ B61F 17/06

U.S. Cl. 308—99

4 Claims



1. A bearing for use with an assembly wherein a rotatable member can be carried on a somewhat horizontally disposed shaft to reduce lubricant losses through said bearing comprising:

a bearing body having an arcuate bearing surface defining an axial sleeve bore portion adapted to engage a surface of said shaft with said bore having its axial centerline extending somewhat horizontally with the axis of rotation of said shaft;

said bearing having a window opening therein through which lubricant can be introduced to said shaft;

a radially projecting thrust face at an end of said bearing which is adapted to engage a thrust surface;

said bearing body having a first groove formed circumferen-

tially in the periphery of said bearing surface into which said rotatable member can extend when mounted for rotation with said shaft, said first groove being spaced axially outwardly from said window and located between said window and said thrust face;

said bearing body also having a confined collector groove in the periphery of said bearing surface having a lowermost area below said bearing surface in which a lubricant may collect;

said collector groove being positioned between said first groove and said thrust face and being spaced from said first groove by a wall extending transversely to the axial direction of said bearing bore so as to provide a positive reservoir area for collecting lubricant draining in an axial direction toward said thrust face;

connecting means in said wall operatively coupling said first groove and said collector groove together in proximity to said lowermost area of said collector groove so some of said lubricant can move between said first groove and said collector groove;

said bearing also having a recess therein which opens at the thrust face thereof and which communicates with said collector groove and extends through said wall to said first groove at a point above the lowermost point of said collector groove;

said recess being displaced from a vertical centerline passing through said rotational axis of said shaft and above said lowermost point of said collector groove; and lubricant transfer means in said recess for receiving and moving lubricant from both said first groove and collector grooves toward the thrust face for use in lubricating the thrust face;

said lubricant transfer means having a main leg in said recess and an offset leg which extends circumferentially in said collector groove toward said connecting means between said first and said collector grooves to gather lubricant therefrom and move it to said main leg for use in providing lubricant to said thrust face;

said main leg also having a portion exposed to said recess area in said wall between said collector groove and said first groove to enable said main leg to receive lubricant from said first groove and said rotatable member during rotation of said member by said shaft;

said main leg extending at an angle to said offset leg and terminating short of intersecting or overlapping said window opening.

4,229,057

BEARINGS

Ronald N. Howse, Waltham St. Lawrence, Nr. Reading, England, assignor to Vandervell Products Limited, Maidenhead, England

Filed Apr. 17, 1979, Ser. No. 30,730

Claims priority, application United Kingdom, Apr. 21, 1978, 15818/78

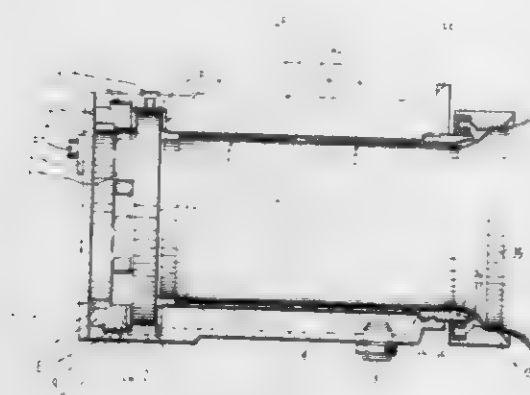
Int. Cl.¹ B61F 15/02; F16C 17/10

U.S. Cl. 308—161

4 Claims

1. A bearing for an axle, the bearing comprising a housing; a bearing liner to engage the axle in the housing; a radially extending circumferential thrust face on the housing adjacent one end thereof, said face facing in one direction; an internal groove in the housing between said face and said end; a thrust ring located in said groove and having a radially extending circumferential thrust face opposite to, and facing in the opposite direction to, said first mentioned thrust face, said ring

comprising a plurality of arcuate elements assembled into said groove and which are located axially thereby; and a spacer



ring located within said thrust ring to hold the elements thereof in said groove.

4,229,058

CLUTCH RELEASE BEARING ASSEMBLY

David R. Arrowsmith, Leamington Spa, and David Parsons, Kenilworth, both of England, assignors to Automotive Products Limited, Leamington Spa, England

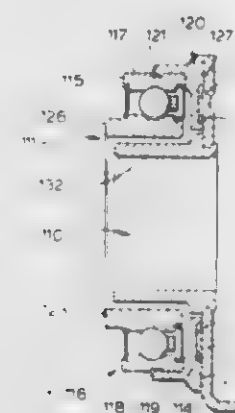
Filed Oct. 19, 1978, Ser. No. 952,779

Claims priority, application United Kingdom, Oct. 22, 1977, 44027/77

Int. Cl.¹ F16D 13/60; F16C 19/00

U.S. Cl. 308—184 A

9 Claims



1. A self-aligning clutch release bearing assembly comprising:

a rolling element bearing having a rotary race and a non-rotary race, said non-rotary race including a part having an axially directed face;

support means on which the bearing is mounted and which permits the non-rotary race to move transversely to the rotary axis of the release bearing assembly so that in use the bearing can align with the rotary axis of the clutch;

and an adhesive viscous material disposed in a space defined between the support means and said axially directed face so as to damp vibration and permit said transverse self-centering movement and being the sole means whereby the rolling element bearing is held in axial assembly to the support means with respective parts of the support means and the axially directed face in direct axial opposition for the transmission of clutch release loads from the support means to the bearing.

4,229,059

BEARING ASSEMBLY

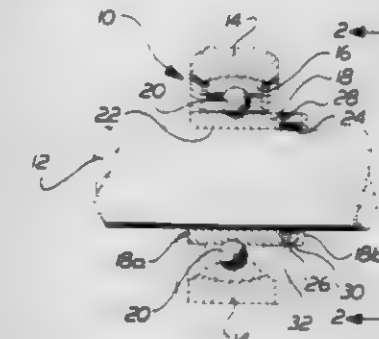
Alfred J. Dever, 18501 Hilliard, Rocky River, Ohio 44116

Filed Nov. 2, 1978, Ser. No. 957,285

Int. Cl.¹ F16C 33/30

U.S. Cl. 308—236

8 Claims



1. An assembly for rotatably supporting a shaft, said assembly comprising a plurality of rotatable bearing elements disposed in a circular array, an outer race member circumscribing the circular array of bearing elements, an inner race member circumscribed by the circular array of bearing elements, said inner race member having a cylindrical inner surface adapted to engage the shaft and surface means for defining an annular groove which is disposed between opposite axial end portions of said cylindrical inner surface, said annular groove having a circular bottom surface with a central axis which is offset from the central axis of said cylindrical inner surface, said bottom surface of said groove having a first portion which is spaced apart from said cylindrical inner surface of said inner race member by a first distance to at least partially define a relatively deep part of said groove and a second portion which is spaced apart from said cylindrical inner surface of said inner race member by a second distance which is less than said first distance to at least partially define a relatively shallow part of said groove so that said inner race member has a relatively thin wall portion radially outwardly of said first portion of said bottom surface and a relatively thick wall portion radially outwardly of said second portion of said bottom surface, and retaining means for preventing relative rotation between said shaft and said inner race member, said retaining means comprising a ring member having a cylindrical outer surface and a cylindrical inner surface, said cylindrical outer surface of said ring member having a central axis which is offset from the central axis of said cylindrical inner surface of said ring member so that said ring member has a relatively thick first portion disposed between said cylindrical inner and outer surfaces of said ring member and a relatively thin second portion disposed between said cylindrical inner and outer surfaces of said ring member, said ring member being disposed in said annular groove in said inner race member with said cylindrical outer surface of said ring member disposed in abutting engagement with said bottom surface of said groove, said ring member and said inner race member being rotatable relative to each other between a released condition and a locking condition, said first portion of said ring member being pressed against the shaft by the bottom surface of said annular groove when said ring member and said inner race member are in the locking condition to thereby hold the shaft against rotation relative to said inner race member, said ring member having an axially extending gap in the relatively thick first portion of said ring member, said gap being defined by a pair of spaced apart end surfaces which are disposed diametrically opposite from said relatively thin second portion of said ring member, said retaining means including fastener means for holding said ring member and said inner race member in the locking condition, said fastener means including a fastener member which extends through an opening in the relatively thick wall portion of said inner race member into engagement with said relatively thin second portion of said ring member at a location where the outer surface of said arcuate member is disposed in engagement with the second portion of said bottom surface to tend to maximize

the thickness of the portion of the inner race member through which said fastener member extends.

4,229,060

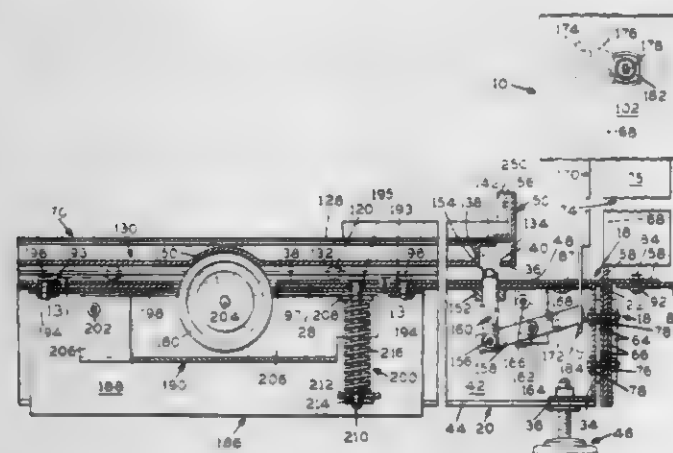
STOP MECHANISM FOR ROTARY STORAGE CABINET
Sherwood S. Browalee, Waynesboro, and Warren G. Lohr, Aroda, both of Va., assignors to Acme Visible Records, Inc., Crozet, Va.

Filed Oct. 6, 1978, Ser. No. 949,230

Int. Cl.² A47B 88/00; A47F 3/10

U.S. Cl. 312-305

3 Claims



1. In a rotary storage cabinet having a stationary housing with openings in two opposite sides and a rotor mounted for rotation in said housing and wherein said rotor has four sides with two opposite sides positionable to present the contents of the cabinet to the openings in said housing and said rotor also having two other opposite sides positionable to close the openings in said housing, the improvement comprising said housing having a base with an upper surface, said rotor having a rectangular base with an under surface, said rotor base being mounted for rotation relative to said housing base with said under surface facing said upper surface, a plurality of detents in said under surface, a slot through the upper surface of said housing base, a lever pivotally mounted in said base beneath said upper surface, a wheel rotatably mounted on said lever, spring means for urging said lever in one direction, the mounting of said lever and of said wheel on said lever being such that said wheel protrudes through said slot under the urging of said spring means and bears against said under surface, and said wheel seating in a detent whenever a detent aligns with said slot, whereby said rotor is maintained in selected position and restrained against inadvertent movement.

4,229,061

ELECTRICAL ADAPTER OR CONNECTOR

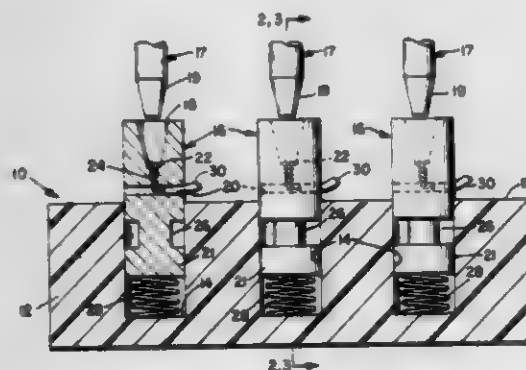
James P. Majors, 19515 Frederick Rd., Germantown, Md. 20676

Filed Apr. 30, 1979, Ser. No. 34,451

Int. Cl.¹ H01R 13/14, 13/24

U.S. Cl. 339-64 M

1 Claim



1. An electrical adapter capable of facilitating the installation of new electrical contacts and the repair of defective electrical contacts by insuring the aligned receipt of a plurality of com-

plementary shaped mating contacts by said adapter, said adapter comprising:

- a block of electrically insulating material having an upper surface, said block including a plurality of generally inverted conical recesses in said upper surface;
- electrically conductive contact pins positioned in at least two of said recesses, each of said pins having an initial position biased outwardly from said upper surface by a spring positioned beneath said pin along the bottom of each of said recesses, each of said pins including:
 - an upper mating electrical contact surface; and
 - connecting means for conductively securing said pin to a conductive wire, said connecting means including a longitudinal wire receiving bore extending through each of said pins beneath each of said contact surfaces;
- means for retaining each of said pins within each of said recesses, for limiting movement of each said pin within each said recess and for continuously maintaining said mating contact surface and said connecting means at a level above said upper surface of said block;
- a screw threaded bore extending from said upper mating contact surface to said receiving bore; and
- a screw engageable within said threaded bore for securing a wire placed within said receiving bore, said adapter being configured so that when said plurality of complementary shaped mating contacts is placed into engagement with said upper mating electrical contact surfaces, each of said pins will be downwardly displaced within a corresponding recess until the spring within each recess reacts against said displacement to upwardly bias each said pin towards said initial position, said springs and said complementary shaped contacts interacting to align the complementary contacts and mating surfaces and insure an electrical connection therebetween, said bore remaining at all times at a level above said upper surface of said block.

4,229,062

IGNITION LOCK UNIT WITH ANTI-THEFT PROTECTION

Karl Peitsmeier, Neuhausen, and Manfred Link, Waiblingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Neuhausen, Fed. Rep. of Germany

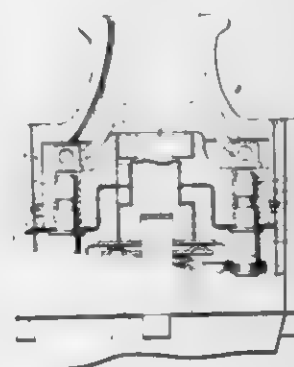
Filed Feb. 1, 1979, Ser. No. 8,583

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804614

Int. Cl.¹ H01R 13/44

U.S. Cl. 339-82

5 Claims



1. An ignition lock unit with a disassembly protection that can be rendered inoperable only by means of an associated key rotated into a predetermined position, the ignition lock unit comprising an ignition lock switch part provided with contact pins, a locking rod means extending out of the ignition lock switch part, the locking rod means being rotatable by the key, coupling means connected to cable ends and adapted to be mounted over the contact pins of the ignition lock switch part, characterized in that the coupling means includes a contact carrier plate means having a centrally arranged aperture for accommodating the locking rod means, said locking rod means passing through the aperture when the coupling means are

assembled, and in that means are provided at a free end of the locking rod means for preventing a disassembly of the ignition lock unit other than when the key has been rotated into the predetermined position, said means at the free end of the locking rod means being adapted to hook behind the aperture when the key has been rotated to any position other than said predetermined position or when the key is removed from the ignition lock unit thereby preventing a disassembly of the ignition lock unit.

4,229,063

PRESSURE TERMINAL FOR USE WITH ALUMINUM WIRE

Masaaki Yoshizawa, Gotenba, Japan, assignor to Yazaki Corporation, Tokyo, Japan

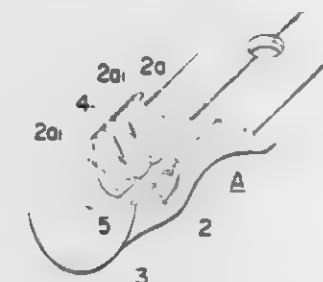
Continuation of Ser. No. 840,043, Oct. 6, 1977, abandoned, which is a continuation of Ser. No. 694,172, Jan. 9, 1976, abandoned. This application Dec. 15, 1978, Ser. No. 969,678

Claims priority, application Japan, Jan. 24, 1975, 50-76814

Int. Cl.¹ H01R 11/20

U.S. Cl. 339-95 R

5 Claims



1. A pressure terminal for use with aluminum electric wire formed of a metal having a hardness characteristic greater than aluminum, comprising an electric contact portion and a pressure-connecting portion, wherein at least one inwardly folded contact plate portion is provided inside said pressure-connecting portion and said inwardly folded contact plate portion is provided with at least one incision circumferentially extending from its inside portion, said incision being defined by two side portions, each said side portions forming a ridge having an elasticity in a direction perpendicular to the axial direction thereby adapted to clampingly bite the wire.

4,229,064

POLARIZING ADAPTER SLEEVES FOR ELECTRICAL CONNECTORS

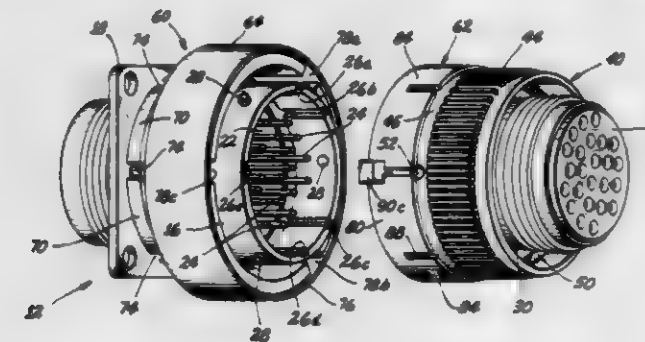
Ottomar H. Vetter, Golden Valley, and Terrance W. Hanlon, Blaine, both of Minn., assignors to TRW Inc., Minneapolis, Minn.

Filed Oct. 25, 1978, Ser. No. 954,615

Int. Cl.² H01R 13/64

U.S. Cl. 339-186 M

16 Claims



1. In combination with an electrical connector comprising a pair of mateable components, one of said connector components including a cylindrical shell of one diameter, and the other of said components including a shell of smaller diameter than said one diameter shell, and said other connector component further including a coupling ring of larger diameter than

said one diameter shell so that said smaller diameter shell will fit within said one diameter shell and said coupling ring will fit over said one diameter shell, said one diameter shell having a circumferential groove extending therearound and said coupling ring also having a circumferential groove extending therearound, a first sleeve encircling an exterior portion of said one diameter shell having a predetermined keyway pattern, and a second sleeve encircling an exterior portion of said coupling ring having a predetermined key pattern complementing the keyway pattern of said first sleeve, said first sleeve including a cylindrical body freely and rotatably encircling said one diameter shell and having a plurality of resilient fingers extending therefrom with the free ends of said resilient fingers releasably engaging in the circumferential groove of said one diameter shell so that said first sleeve can be manually attached to, and manually removed from, said one diameter shell, and said second sleeve including a cylindrical body freely and rotatably encircling said coupling ring and having a plurality of resilient fingers extending therefrom with the free ends of said last-mentioned resilient fingers releasably engaging in the circumferential groove of said coupling ring so that said second sleeve can be manually attached to, and manually removed from, said coupling ring.

4,229,065

ELECTRICAL CONTACT WITH TORSION BARS

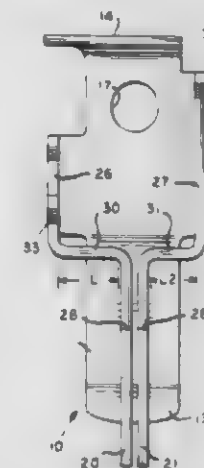
Frank C. Jaconette, Trumbull, Conn., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Filed Mar. 5, 1979, Ser. No. 17,130

Int. Cl.¹ H01R 13/11

U.S. Cl. 339-258 T

16 Claims



1. An improved female electrical contact composed of an electrically conductive material including, a base portion and at least one upstanding side wall portion extending perpendicularly from an edge of said base portion, a first elongated contact element joined at one end to said base portion and extending from said base portion to terminate in a free end, said first contact element having a longitudinal axis and a contact surface, a second elongated contact element having a longitudinal axis substantially parallel to the longitudinal axis of said first contact element, having an inner surface facing and spaced from said contact surface of said first contact element and forming a gap therewith into which a male contact blade can be inserted to make an electrical contact with the female contact, having a significantly greater rigidity in a plane perpendicular to the plane containing said gap than in planes parallel thereto, and having a free end, a torsion bar spaced from said base portion and having a longitudinal axis, said bar extending laterally from said one side wall portion at substantially a right angle thereto toward the longitudinal axis of said second contact element, and being joined to the end of said second contact

element opposite said free end with the longitudinal axes of said bar and said second element at substantially right angles, said bar, said base, said side wall portion and said first and second elements being of unitary construction whereby the insertion of the male contact blade into the gap tends to twist said bar and produces torsional forces therein which resist the outward displacement of the free end of said second contact element.

4,229,066

VISIBLE TRANSMITTING AND INFRARED REFLECTING FILTER

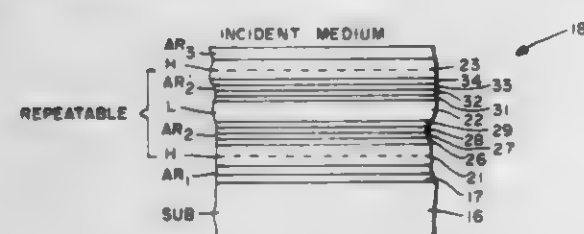
James D. Rancourt, Santa Rosa, and William T. Beauchamp, Windsor, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Sep. 20, 1978, Ser. No. 944,136

Int. Cl.³ G02B 5/28

U.S. Cl. 350—1.6

14 Claims



1. In a filter which is reflecting at a longer wavelength region and transmitting over a wide band shorter wavelength region, a substrate having a surface, and a coating carried by the surface comprising at least one period which is reflecting at longer wavelengths and transmitting in a wide band of shorter wavelengths, each period being formed of a plurality of thick layers of high and low index materials with alternate layers being formed of a material having a high index of refraction and other layers being formed of a material having a low index of refraction, at least one thin anti-reflection layer disposed between adjacent thick layers for matching the thick layers of the period to each other in the shorter wavelength region so that the transmission of the filter is relatively high in the shorter wavelength region while maintaining high reflection and low absorption in the longer wavelength region.

4,229,067

OPTICAL WAVEGUIDE MODE SCRAMBLER

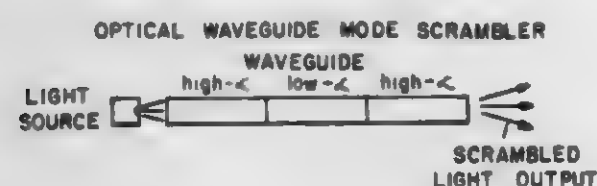
Walter F. Love, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 17, 1978, Ser. No. 961,663

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.15

8 Claims



1. An article of manufacture which includes a high-alpha optical waveguide spliced to a low-alpha optical waveguide, the length of the low-alpha optical waveguide being at least sufficient to obtain angular diffusion of light launched therein.

4,229,068

FIBER OPTIC RELAY SWITCH

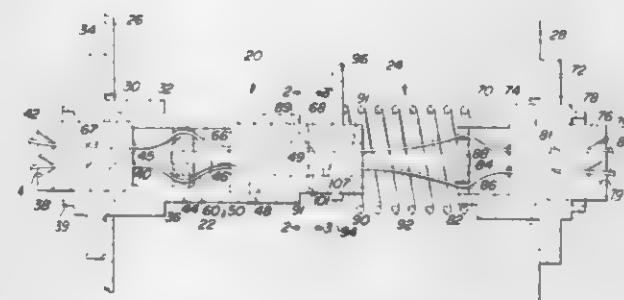
Malcolm H. Hodge, Claymont, Del., and William M. Dunn, Philadelphia, Pa., assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 1, 1977, Ser. No. 856,440

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.20

12 Claims



1. A fiber optic relay switch for switching optical signals from a first fiber to a second fiber, said switch comprising a first member for housing at least one optic fiber and a second member for housing at least two optic fibers; said first and second members each having a coupling face and including a tube at the center thereof surrounded by a plurality of parallel rods which are secured to the periphery of said tube; each pair of adjacent rods and the outer peripheries of said tubes of said first and second members defining interstitial channels for reception of optic fibers; said faces of said first and second members being slidably disposed with respect to each other so that in a first position of said members the interstitial channels thereof are aligned whereby the end of a fiber in said first member and having an end terminated with the coupling face of said first member is aligned with and optically coupled with the end of a fiber which is disposed in said second member and terminated with the coupling face of said second member, and in a second position of said members the end of such fiber in said first member is aligned with and optically coupled with the end of another fiber in said second member which latter end is terminated with the face of said second member whereby movement of said members relative to each other between said first and second positions switches the optical signals in a first path to a second path.

4,229,069

DEVICE FOR REMOTE VIEWING OF OBJECTS IN IONIZING RADIATION FIELDS

Jury D. Motin, ulitsa Sadovaya, 6, kv. 21, Moskovskaya oblast, Podolsky raion, Scherbinka; Igor A. Reformatsky, ulitsa Druzhby 2/19, kv. 85, ow; Pavel R. Sinitsyn, Naberezhnaya Chernoi rechki, 6, kv. 13, Leningrad; Nikolai M. Ivanov, prospekt Lunacharskogo, 62, korpus 1, kv. 134, Leningrad; Igor K. Malakhov, ulitsa Frunze, 16, kv. 371, Leningrad, and Boris I. Ivanov, Komsomolsky prospekt, 41, kv. 154, Moscow, all of U.S.S.R.

Filed Nov. 30, 1978, Ser. No. 965,038

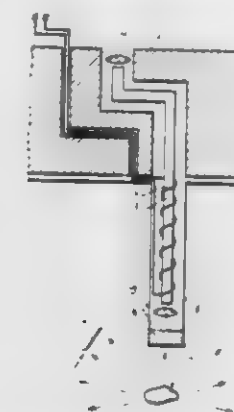
Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.29

8 Claims

1. A device for remote viewing of objects in ionizing radiation fields, comprising:
a fibre-optics channel intended for transmission of the image of an object under observation beyond a biological shield against ionizing radiation;
an entrance lens of said fibre-optics channel;
a fibre bundle of said fibre-optics channel, one end whereof is placed in the immediate vicinity of said entrance lens, while the other end is beyond said biological shield against ionizing radiation;

a source of heat in said fibre-optics channel, intended to maintain at least only said fibre bundle at a temperature



ensuring thremostabilization of its light conducting properties in the presence of the ionizing radiation.

4,229,070

HIGH BANDWIDTH OPTICAL WAVEGUIDE HAVING B₂O₃ FREE CORE AND METHOD OF FABRICATION

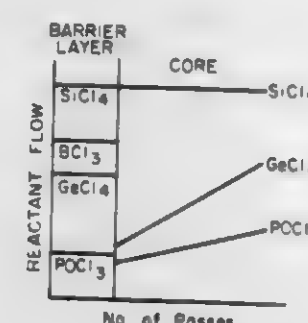
Robert Olshansky, Addison, and Arnab Sarkar, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,415

Int. Cl.³ G02B 5/14; C03B 37/075

U.S. Cl. 350—96.31

13 Claims



10. A high bandwidth gradient index optical filament comprising

an outer cladding layer,
a barrier layer having an index of refraction equal to or less than said cladding layer disposed on the inside wall surface of said cladding layer, said barrier layer consisting essentially of a base glass and at least one dopant, the quantity of each of said base glass and dopant being substantially uniform throughout the thickness of said barrier layer, and
a B₂O₃ free core of high purity glass having a gradient index of refraction disposed within said barrier layer and adhered thereto to form an interface therebetween, said core having an index of refraction equal to or less than said barrier layer at said interface there being no step increase in the index of refraction of the core at said interface, said core consisting essentially of a base glass, and at least one dopant, the quantity of said one or more dopants gradually varying from said interface towards said central axis in a predetermined manner so as to result in a desired substantially continuously varying gradient index of refraction across the cross section of said core.

4,229,071

ELECTRO-OPTICAL SWITCHING APPARATUS

Luigi d'Auria, and Jean-Pierre Huignard, both of Paris, France, assignors to Thomson-CSF, Paris, France

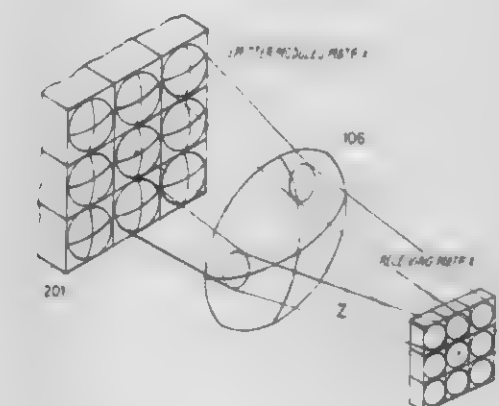
Filed Mar. 24, 1978, Ser. No. 889,905

Claims priority, application France, Mar. 25, 1977, 77 09001

Int. Cl.³ G02F 1/03; G02B 27/10

U.S. Cl. 350—150

9 Claims



1. Optical switching apparatus for optically coupling at least one photo-emitter circuit of a plurality of such photo-emitter circuits disposed as an emitting matrix to at least one circuit of a plurality of photo-receiver circuits disposed as a receiving matrix, comprising:

a plurality of individually and simultaneously addressable photo-emitter circuits;
a plurality of selecting matrices, one such selecting matrix associated with each photo-emitter circuit, for receiving and selectively transmitting, respectively, light emitted by the photo-emitter circuit associated therewith, each of said selecting matrices including:
a first polarizer for polarizing light received by said matrix,
a layer of electro-optical material for transmitting light polarized by said first polarizer, said layer having first and second faces,
a first plurality of transparent strip electrodes parallel to each other and disposed on said first face,
a second plurality of transparent strip electrodes parallel to each other but crossed with reference to said first plurality of electrodes said second plurality of electrodes being disposed on said second face and defining with said first plurality of electrodes a plurality of crossing points whereat the polarization of light transmitted by said layer can be locally rotated by selective activation of electrodes among said first and second pluralities, and
a second polarizer having a direction of polarization that is crossed with respect to the direction of polarization of said first polarizer for selecting light transmitted by said layer at crossing points whereat the polarization of said transmitted light is rotated;
a plurality of photo-receiver circuit matrices, each such matrix associated with a particular one of said photo-emitter circuits and a particular one of said selecting matrices, each such photo-receiver circuit matrix including a plurality of photo-receiver circuits; and
means for forming images of said selecting matrices onto said plurality of photo-receiver circuits, so that light transmitted by each crossing point of one selecting matrix energizes one of said photo-receiving circuits, whereby light from any addressed photo-emitter circuit can be coupled to any photo-receiver circuit within the array of photo-receiver circuits associated therewith by energizing a selected cross point of the selecting matrix associated therewith.

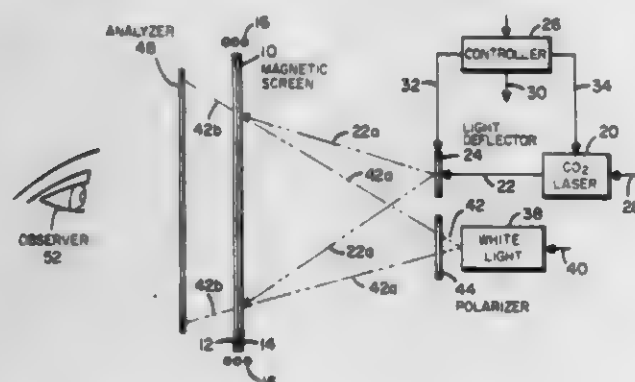
4,229,072

COLOR DISPLAY SYSTEM USING MAGNETO-OPTIC SCREEN HAVING A DISPERSIVE FARADAY COEFFICIENT

Ernest J. Torok, Saint Paul; David L. Fleming, Edina, and Thomas R. Johansen, Minneapolis, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jun. 6, 1978, Ser. No. 913,259

Int. Cl.³ G02F 1/09; G11C 13/06; H04N 9/31; G11B 11/10
U.S. Cl. 350—151 3 Claims



1. A multicolor display system, comprising: magneto-optic means including magnetic means having a plurality of separate localized areas, each of which localized areas is capable of having a different associated Faraday coefficient for light of each of four different associated wavelengths said magnetic means comprising: a multilayer magnetic bubble domain memory plane formed of first and second magnetic film layers separated by and affixed to a non-magnetic layer; and said localized areas of each of said four patterns are formed of no or one or two magnetic bubble domains in none or one or both of said first and second magnetic film layers, respectively; means for generating a multiwavelength light beam; polarizer means for polarizing said multiwavelength light beam along a plane polarization axis; analyzer means having a plane polarization axis that is rotated with respect to the crossed orientation to the plane polarization axis of said polarizer means; means establishing groups of said localized areas of said magnetic means into four patterns, the localized areas of each of said four patterns having the same Faraday coefficient but the Faraday coefficient of the localized areas of said four patterns being different, with each of said different Faraday coefficients associated with a separate different one of said four different wavelengths; and display means, including said analyzer means, for simultaneously displaying said four patterns as four different color patterns and simultaneously providing a four color display.

4,229,073

ISO-INDEX COUPLED-WAVE ELECTRO-OPTIC FILTERS

James F. Lotspeich, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 10, 1979, Ser. No. 65,704

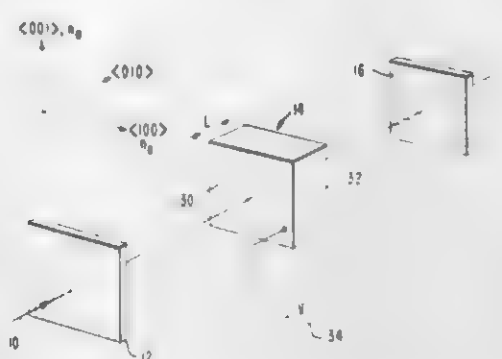
Int. Cl.³ G02F 1/03

U.S. Cl. 350—150

8 Claims

1. An optical filter comprising: first and second polarizers spaced from one another along a predetermined path and having their respective pass directions for polarized light oriented at a desired angular relationship with respect to one another; a crystal of birefringent material in which the birefringence becomes zero and changes sign at a predetermined wavelength disposed along said path between said first and second polarizers and oriented with its optic axis perpendicular to said path; means for directing light at a plurality of wavelengths in-

cluding a preselected wavelength in the vicinity of said predetermined wavelength through said first polarizer and said crystal along said path; and



means for applying a dc electric field to said crystal to produce wave coupling therein between ordinary and extraordinary polarizations of light at said preselected wavelength, whereby light at said preselected wavelength is selectively passed or blocked by said second polarizer.

4,229,074

ZOOM LENS ASSEMBLY FOR PHOTOGRAPHIC CAMERAS

Masahiko Nonogaki, Konan, Japan, assignor to Elmo Company Limited, Japan

Division of Ser. No. 782,784, Mar. 30, 1977, Pat. No. 4,162,822.

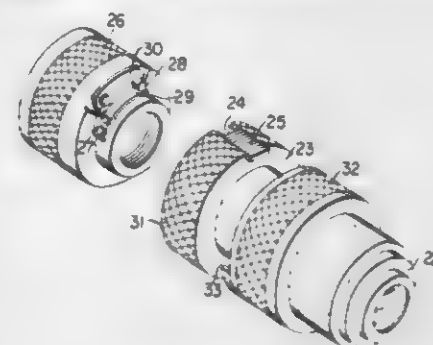
This application Nov. 16, 1978, Ser. No. 962,565

Claims priority, application Japan, Apr. 9, 1976, 51-45012

Int. Cl.³ G02B 7/10

U.S. Cl. 350—187

4 Claims



1. In a zoom lens assembly for a photographic camera including a focussing ring, a zooming ring and a stationary fixed tube for supporting said rings and associated lens, the improvement comprising means for making operation of the lens assembly free from the necessity of focussing for certain conditions of the lens assembly, said improvement comprising locking means for fixing said focussing ring at a hyperfocal position on said fixed tube and means cooperating with said locking means for restricting the rotation and hence the zooming range of said zooming ring, whereby a sharp image will be recorded at said hyperfocal position of said focussing ring as set by said locking means, through the restricted zooming range, said focussing ring having an engaging means thereon, said zooming ring being rotatable around the optical axis and being blocked against axial movement and having an engagement means thereon for cooperating with an engaging means for defining the rotation of said zooming ring in said restricted zooming range, and said lens assembly further comprising an intermediate ring between said focussing ring and said zooming ring, said intermediate ring being fixed to said fixed tube and having an engagement means thereon for engagement with said engaging means on said focussing ring for blocking movement of said focussing ring, and having an engaging means thereon for engagement with said engagement means on said zooming ring when said engaging means on said focussing ring is engaged with said engagement means of said intermediate ring.

4,229,075

ELECTROSTATIC DISPLAY DEVICE

Hirotsada Ueda, Kobe, and Satoshi Ihara, Akashi, both of Japan, assignors to Displaytek Corporation, Kobe and Daiwa Shinku Corporation, Kakogawa, both of Japan

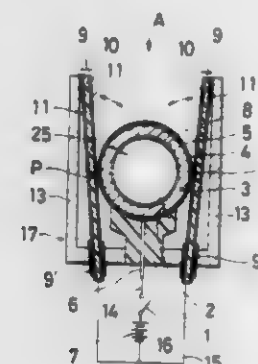
Filed Aug. 7, 1978, Ser. No. 931,438

Claims priority, application Japan, Aug. 5, 1977, 52-93896

Int. Cl.³ G02F 1/00

U.S. Cl. 350—269

16 Claims



1. An electrostatic display device comprising: an insulative base; a substantially transparent fixed electrode mounted on the base, said fixed electrode being constructed of an electrically conductive transparent material, said fixed electrode having inner and outer surfaces; a substantially transparent dielectric layer applied on said outer surface of said fixed electrode; at least one resilient sheet electrode fixed at one end thereof to the base and extending therefrom adjacent to the fixed electrode; a means for applying a voltage between the fixed electrode and the resilient sheet electrode; and a display placed on or behind said inner surface of the fixed electrode; whereby when there is no voltage between the fixed electrode and the sheet electrode, the display is visible through the substantially transparent fixed electrode and the substantially transparent dielectric layer thereon, whereas upon applying a voltage between the fixed electrode and the sheet electrode, the sheet electrode is attracted to and covers the outer surface of the fixed electrode, thereby concealing the display.

4,229,076

SOLAR ENERGY CONCENTRATOR

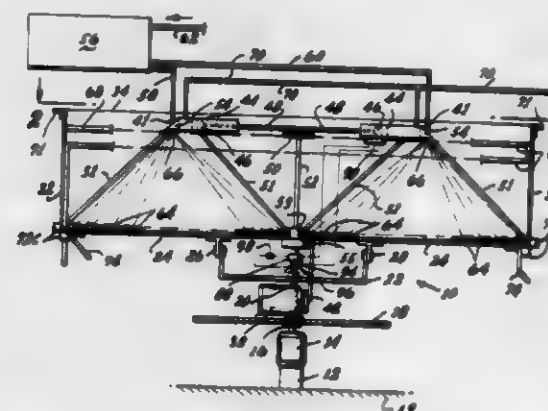
Edsel Chromie, 6720 Belle Glade, San Diego, Calif. 92119

Continuation-in-part of Ser. No. 735,593, Oct. 26, 1976, Pat. No. 4,144,716. This application Jul. 10, 1978, Ser. No. 922,857

Int. Cl.³ G02B 5/08

U.S. Cl. 350—292

12 Claims



1. Method for producing a light energy concentrator comprising the steps of: (a) selecting a flat base member of desirable size;

- (b) selecting a target member having a flat surface area of desirable size;
- (c) selecting a plurality of reflectors of a predetermined size;
- (d) positioning said target member above and substantially parallel with said flat surface facing said base member and at a distance from said base member determined by the size of said base member, the size of the flat surface of said target member and the size of said reflectors whereby each of said plurality of reflectors when properly positioned cast their entire reflected light within the flat surface of said target member;
- (e) marking an area equal to the size of the flat surface of said target member on said base member;
- (f) aligning said base member with respect to a source of light energy so that said target member casts a shadow within the boundaries of the marked off area on said base member;
- (g) positioning and securing a first one of said plurality of reflectors on said base member whereby all of the light from the light source reflected by it impacts said flat surface of said target member;
- (h) positioning and securing a next one of said plurality of reflectors on said base member so that all of the light reflected therefrom impacts said flat surface of said target member;
- (i) covering the reflective surface of said next one of said plurality of reflectors;
- (j) repeating steps (h) and (i) above for each of the remaining ones of said plurality of reflectors;
- (k) uncovering the covered reflective surfaces; and
- (l) removing said target member from its fixed position and discarding same.

4,229,077

GLASS MIRROR PLATE

Kurt Schwab, Innsbruck, Austria, assignor to D. Swarovski & Co., Wattens, Austria

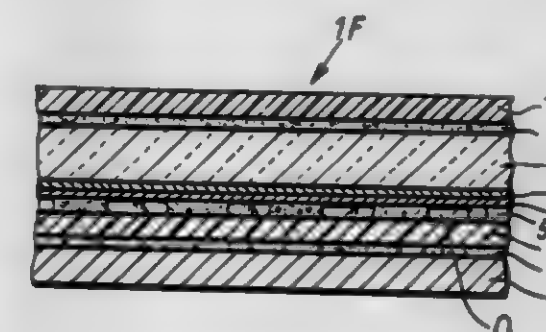
Filed Jun. 7, 1978, Ser. No. 913,504

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1977, 2726530

Int. Cl.³ G02B 5/10, 7/18

U.S. Cl. 350—293

9 Claims



1. A solar collector comprising a curved supporting framework; a pliable mirror plate for mounting on said framework comprising a pliable glass film layer, a reflective layer disposed on one surface of said glass film layer, and a gummed layer disposed on said reflective layer; said pliable mirror plate also including a flexible supporting plate supportably underlying said pliable mirror plate; said pliable mirror plate being mounted on said curved supporting framework.

4,229,078

HYDRO-OPTICAL MODULATOR FOR MODULATING TRANSMISSION OF RADIATION

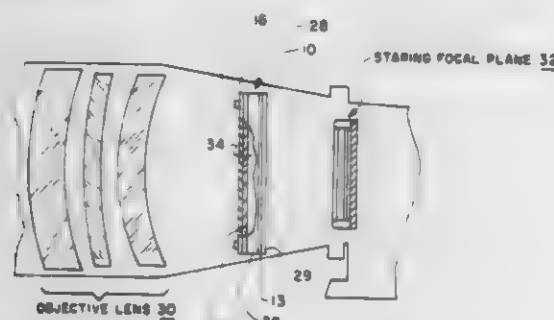
Vincent T. Bly, Alexandria, and Anthony T. Depersia, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 28, 1978, Ser. No. 974,157

Int. Cl.³ G02F 1/11

U.S. Cl. 350—353

19 Claims



1. A hydro-optical modulator for modulating the transmission of a broad spectral range of optical radiation therethrough in an AC sensitive viewing device, said hydro-optical modulator comprising:

- a modulator housing having a sealed container enclosed therein comprised of a thin liquid cell that is enclosed by oppositely facing front and back transparent windows wherein said thin liquid cell and said front and back transparent windows are aligned to receive incident radiation therethrough;
- a working fluid filling said sealed container; and
- a pressure modulating system in working contact with said working fluid in said sealed container wherein said sealed container is further comprised of a passage between said pressure modulating system and said thin liquid cell wherein said pressure modulating system produces bubbles within said working fluid by expansion of the volume of the working fluid filled sealed container and modulates the size of said bubbles to modulate the transmission of said incident radiation therethrough.

4,229,079

ELECTRO-OPTIC MODULATOR WITH IMPROVED ACOUSTO-OPTIC SUPPRESSION, HEAT TRANSFER AND MECHANICAL SUPPORT

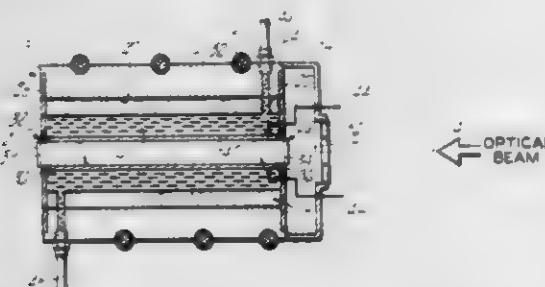
Robert J. Wayne, Glastonbury, and Robert W. Henschke, East Hampton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 20, 1978, Ser. No. 926,490

Int. Cl.³ H01S 3/098

U.S. Cl. 350—356

12 Claims



1. An improved electro-optic modulator comprising:
- an elongated crystal of material capable of exhibiting an electro-optic effect said crystal having a first and second end at its longitudinal extremities;
 - a housing longitudinally disposed about the crystal in a spaced apart relationship;
 - means for supporting the first and second ends of the crystal within the housing wherein said means provides a liquid-tight seal between the crystal and the housing;
 - an acoustic matching liquid disposed within a cavity en-

veloping longitudinally the crystal wherein said cavity is defined by the crystal, the housing and the means for supporting the first and second ends of the crystal and wherein said acoustic matching liquid has an acoustic impedance substantially matching the acoustic impedance of the crystal and has high acoustic absorption to the crystal; and

means for applying an electric field across the crystal.

4,229,080

ADDITIONAL ELECTRODE OF ELECTROCHROMIC DISPLAY AND REFRESHING METHOD FOR THE SAME

Hiroshi Take, Katubumi Koyanagi, both of Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

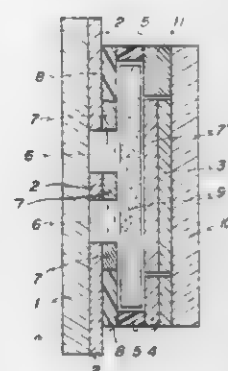
Filed Jun. 23, 1978, Ser. No. 918,416

Claims priority, application Japan, Jun. 29, 1977, 52-78111; Aug. 18, 1977, 52-99251; Sep. 26, 1977, 52-116211

Int. Cl.³ G02F 1/17

U.S. Cl. 350—357

13 Claims



1. An electrochromic display cell comprising:
- a pair of electrodes, one of said pair functioning as a counter electrode, the other of said pair functioning as a display electrode;
 - at least one layer of electrochromic material disposed between said counter electrode and said display electrode;
 - additional electrode means for establishing a unidirectional current path leading from said additional electrode means to the layer of electrochromic material so that the electrochromic layer may retain a low overvoltage, said current path between said additional electrode means and said layer of electrochromic material being independent of a current path extending between said pair of electrodes; and
 - an electrolyte filled between the electrodes.

4,229,081

ELECTRO-MECHANICAL IMAGE CONVERTER

Terry L. Jones, Springfield, and Brian S. Miller, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 26, 1978, Ser. No. 919,182

Int. Cl.³ H01J 29/70

U.S. Cl. 350—361

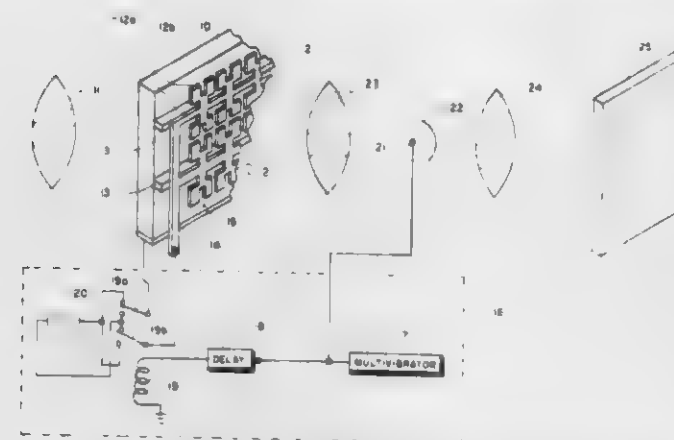
1 Claim

1. An electro-mechanical image converter including:
- a photoelectric layer having essentially planar and parallel photon-image and electron-image sides;
 - an array of deformable, light-reflective elements on said electron-image side of said photoelectric layer, wherein said elements each include an insulating support with one end on said electron-image side of said layer and with at least a thin metallic leaf on the other end;
 - means for establishing a voltage potential between said layer and said array and whereby a photon image on the photon-image layer induces an electron image on the photon-image side thereof and further whereby said elements

deflect toward said electron-image side of said layer in accordance with the electron image thereon;

a light source;

means for projecting said light from said light source onto



said elements and for forming an image of light reflected therefrom; and

means for reversing said voltage potential whereby said elements of said array return to their undeflected positions.

4,229,082

SELECTIVE OPTICAL FILTER

Bernard A. Carreau, 14, Passage Duguesclin, 75015 Paris, France, and Gabriel Lombard, 175, rue de la Pompe, 75016 Paris, France

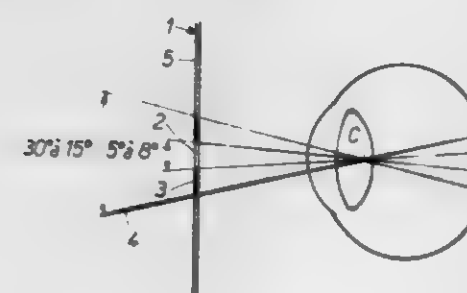
Filed May 8, 1978, Ser. No. 903,483

Claims priority, application France, May 6, 1977, 77 13840; Feb. 27, 1978, 78 05521

Int. Cl.³ G02C 7/10

U.S. Cl. 351—44

8 Claims



1. A selective optical filter for use with eyes for the protection and improvement of the vision thereof, said filter comprising, a plurality of different light absorption zones, said zones including a central zone having a low light absorption capability, a second zone surrounding the central zone the second zone being light permeable and having a relatively high light absorption capability, and a third zone extending from at least a portion of the outer periphery of the second zone, the third zone having a low light absorption capability.

4,229,083

TWO SPEED LOOP CONTROL ARRANGEMENT

William R. Wray, Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,911

Int. Cl.³ G03B 19/18

U.S. Cl. 352—14

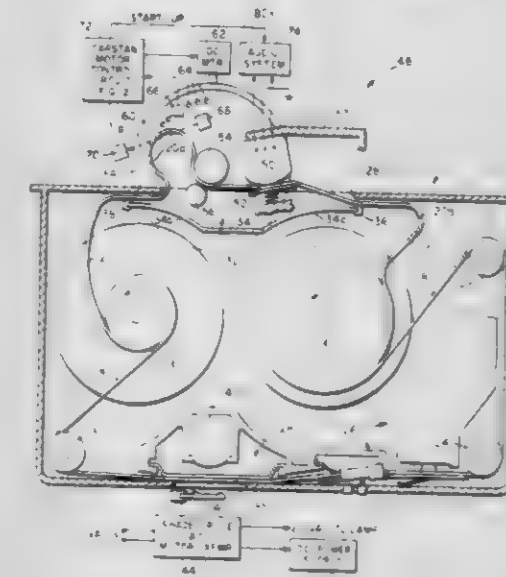
24 Claims

1. In a control apparatus for providing controlled movement of a flexible strip between a supply location from which the strip is withdrawn at a uniform rate and a takeup location to which the strip is advanced at a nonuniform rate, the improvement comprising:

means for driving the strip at a sufficient speed to at least establish and maintain a buffer loop between the strip supply location and the strip takeup location; and

control means responsive to variations in the size of said

buffer loop from a select size for controlling the speed of said drive means to establish and maintain said loop substantially at said selected size, said control means being operable in either a first relatively fast mode of response or a second relatively slow mode of response, said control



means also comprising means for transferring control of the speed of said drive means between said first fast response and said second slow response without substantial immediate change in the average speed of said drive means.

4,229,084

TRANSPARENCY CASSETTE AND VIEWER OR PROJECTOR

Tadashi Goto, 380, 3-Chome, Tsukagoshi, Kawasaki, Japan

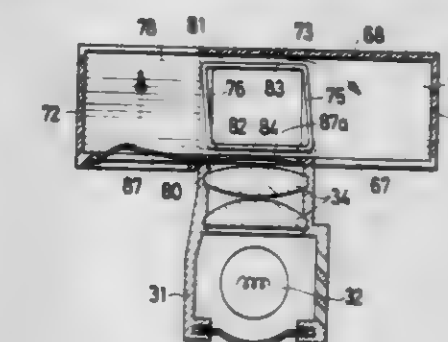
Continuation of Ser. No. 597,638, Jul. 21, 1975, abandoned, which is a continuation of Ser. No. 365,109, May 30, 1973, abandoned. This application Dec. 29, 1975, Ser. No. 645,252

Claims priority, application Japan, Jun. 14, 1972, 47/59142

Int. Cl.³ G03B 23/02; G09F 11/30

U.S. Cl. 353—113

4 Claims



1. A viewer and a cassette, which cassette includes planar upper and lower walls and is in the general form of a parallelepiped and which includes two compartments, each compartment having a cross-section corresponding to the dimensions of slides adapted to be received therein and adapted for holding stacks of slides, each compartment having an end wall and a separate box-shaped structure interposed between and connecting the two compartments and having at least one open end, passages at the top and bottom of said connecting structure communicating with both said compartments, the lower wall of said cassette being provided centrally with a first opening of a size corresponding to a slide to be projected, said box-shaped connecting structure also provided with an opening aligned with said lower wall cassette opening, said viewer having a housing provided with a light source, a condenser lens and a focusing lens, a protruding, hollow supporting element provided on said housing and removably entering said open end of said box-shaped connecting structure and support-

ing said cassette, with said openings optically aligned with said condenser lens and said focusing lens.

4,229,085 FILM READER

Yu Yamada, Kokubunji; Mutsuhiro Inoue, Sagami-hara; Toshio Arai; Kokichi Omi, both of Kawasaki; Hiroaki Suzuki, Hachi-oji, and Tetsuro Kawayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

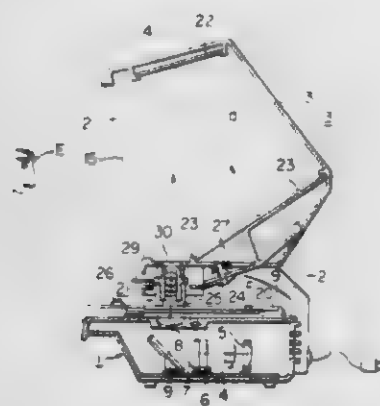
Filed Mar. 8, 1978, Ser. No. 884,536

Claims priority, application Japan, Mar. 10, 1977, 52/28856(U); Apr. 11, 1977, 52/41092

Int. Cl.³ G03B 21/22, 21/60

U.S. Cl. 353-75

9 Claims



9. A film reader comprising:

a housing having an observation aperture; means for illuminating a film having an image recorded thereon;

a screen disposed in said housing and in opposition to said observation aperture for allowing an observer to observe from outside said housing an image projected thereon, said screen having a number of concentrically arranged ring strip surfaces having different inclination angles and having increasing diameters away from a common center of said ring strip surfaces, which center is located off said screen, the plane of the surface of said screen being disposed at an inclination relative to the horizontal plane and an end of said screen nearest to said common center being located adjacent to the observation aperture; and optical means for projecting the image of the film onto said screen;

said screen including a diffusion layer having an internal structure comprising a mixture of at least two synthetic resin substance melts which are optically transparent and non-soluble with respect to each other and which have different refractive indexes, said diffusion layer diffusively reflecting light incident thereinto at the interface between the synthetic resin substances having different refractive indexes, and said screen further including a rough surface formed on the diffusion layer.

4,229,086

PHOTOSENSITIVE RECORDER PROVIDING LINGUISTIC CHARACTERS

Jack Beery, Fairport, N.Y., and Andrew S. Mihalik, Jr., Northville, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 836,599, Sep. 26, 1977, abandoned. This application Aug. 3, 1979, Ser. No. 63,465

Int. Cl.³ G03B 41/00; B41B 13/00

U.S. Cl. 354-5

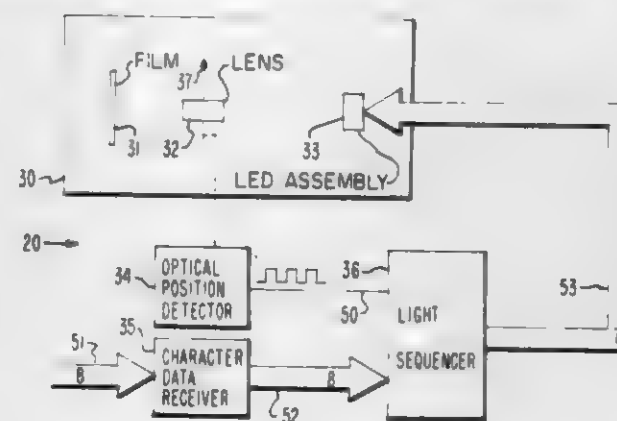
9 Claims

1. Apparatus for converting electrical signals representing visual information into a form which may be made visible in a photosensitive media, the electrical signals being used to operate selected light sources from among an array of light sources to produce light patterns for projection by movable projection means onto the photosensitive media, comprising:

means for receiving and storing electrical signals representing visual information; position detecting means responsive to motion of said movable projection means to provide timing signals representative of said motion;

sequencer means responsive to the electrical signals and the timing signals for selectively energizing the light sources to provide images through the projection means onto the photosensitive media;

said sequencer means comprising a plurality of interconnected elements including control logic means, column character generator means, column latch means, shift register means, gating means and driver means;



said control logic means responding to the data signals and the timing signals to provide a plurality of control signals; the column character generator responding to selected control signals and selected data signals to provide column data signals;

the column latch means and shift register means responding to column data signals from the character generator and store-and-shift signals from the control logic to shift data through the column latch and into the shift register;

the gating means responding to the presence of column data in the shift register and fire control signals from the control logic to energize the driver means and the related light sources.

4,229,087

FOCUSING OPTICAL SYSTEM FOR SINGLE-LENS REFLEX

Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

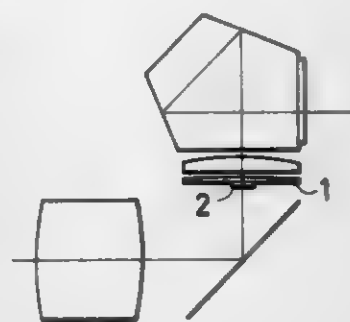
Filed Jan. 29, 1979, Ser. No. 7,591

Claims priority, application Japan, Feb. 10, 1978, 53-13606

Int. Cl.³ G03B 13/16

U.S. Cl. 354-23 R

7 Claims



1. A focusing optical system for single-lens reflex which includes a viewfinder having an optical axis, said optical system comprising a photographing lens, a focusing glass arranged at the position at which an object image is formed by said photographing lens, a penta-prism arranged at the back of said focusing glass, image detecting means, arranged on said optical axis in contact with said penta-prism, for detecting light intensity of paraxial rays for enabling automatic focusing of

said photographing lens and an auxiliary optical means for transferring a portion of the image of the object image formed on said focusing glass to said image detecting means.

4,229,088

EXPOSURE TIME CONTROLLING SYSTEM

Yoshio Yuasa, Kawachinagano, and Nobuyuki Taniguchi, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

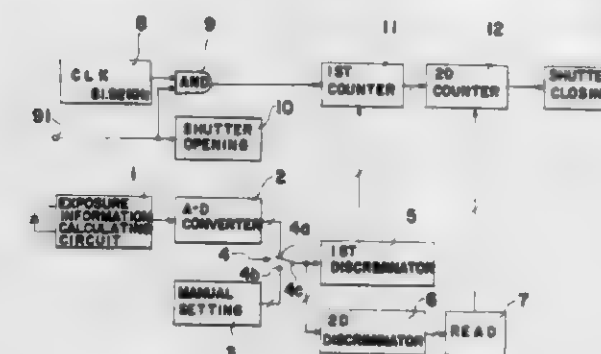
Filed Mar. 1, 1979, Ser. No. 16,607

Claims priority, application Japan, Mar. 1, 1978, 53-23908

Int. Cl.³ G03B 7/08, 9/62

U.S. Cl. 354-23 D

10 Claims



1. An exposure time controlling system for controlling exposure time by the use of APEX shutter speed value, said exposure time controlling system comprising:

(a) signal producing means for producing a signal corresponding to the APEX shutter speed value;

(b) memorizing means having a plurality of addresses for memorizing a plurality of data corresponding to logarithmically expanded values of various APEX shutter speed values, each of said data being memorized at corresponding one of the plurality of addresses of the memorizing means, respectively;

(c) means for designating one of the addresses in response to the signal of the signal producing means to read out said data memorized at the designated address in said memorizing means; and

(d) counting means for counting a period of time in accordance with said data read out from said memorizing means to control the exposure time.

4,229,089

AUTOMATIC FOCUSING DEVICE FOR CAMERA

Kiyoshi Kitai; Eichi Onda; Tomoo Yonemoto, and Shinji Nagao, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

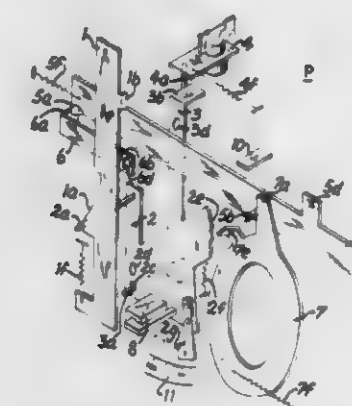
Filed Nov. 17, 1978, Ser. No. 961,725

Claims priority, application Japan, Nov. 18, 1977, 52/138732

Int. Cl.³ G03B 3/00, 17/38

U.S. Cl. 354-25

5 Claims



1. In an automatic focusing mechanism, for a double image coincidence type automatic focusing camera, including a release member movable from a first position through a predeter-

mined stroke to a second position for releasing a camera shutter, and a movable mirror for scanning an object to be photographed in response to actuation of said release member, the improvement comprising: biasing means for biasing said release member toward said first position and for returning said release member to said first position; and mechanical scanning means cooperative with said release member for scanning said movable mirror through one scan each time said release member travels from said first position through a certain initial portion of its stroke before reaching said second position and for returning said movable mirror to an initial pre-scan position as said biasing means returns said release member to said first position, whereby said movable mirror can be repeatedly scanned without releasing the camera shutter by repeated movement of said release member through the certain initial portion of its stroke.

4,229,090

FILM PACK FOR SMALL FORMAT FILM SHEETS

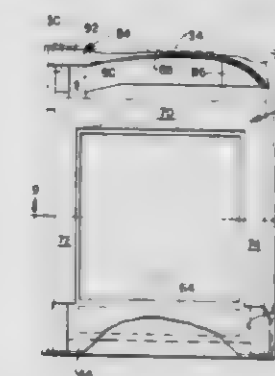
John J. Driscoll, Andover; Nicholas Gold, Arlington; Philip R. Norris, North Reading, and Richard R. Wareham, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1978, Ser. No. 902,063

Int. Cl.³ G03B 17/02, 17/26, 17/52, 19/06

U.S. Cl. 354-86

13 Claims



1. In a self-processing photographic system including a camera normally intended to operate with a standard film pack of film sheet assemblies which are successively presented at a window in an upper marginal wall of a standard film pack container, the camera including means for defining a well to receive and position the standard film pack for exposure of each film sheet assembly through the container window, a processing roller pair defining a pressure nip through which each film sheet assembly is passed as it is withdrawn from the film pack and ejected, from the camera, and the camera including pick means of limited stroke for engaging each uppermost film sheet and for advancing each film sheet assembly from the film pack to the pressure nip of the processing roller pair, the improvement comprising:

a modified film pack having an exterior surface conformation to fit the camera well in the same manner as the standard film pack and an interior recess to receive one or more superimposed film sheet assemblies of a size smaller than the area of the standard film pack container window and to position said smaller sheet assemblies for exposure in the area of such window; and

a relay pick device carried by said modified film pack for transmitting movement of the camera pick means to advancing movement of each one of the successive uppermost ones of said smaller sheet assemblies in said modified film pack responsive to successive strokes of the camera pick means, said relay pick being constructed so as to automatically return to an initial position prior to its next advancement by the pick means.

4,229,091

MOTOR DRIVE DEVICE FOR A CAMERA

Nobuaki Date, Kawasaki; Susumu Kozuki, Yokohama, and Tomonori Iwashita, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 827,000, Aug. 23, 1977, abandoned.

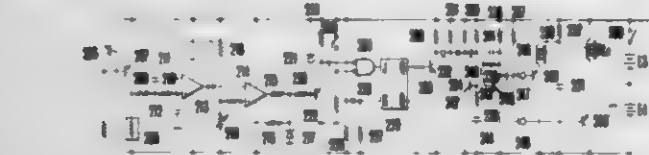
This application Mar. 16, 1979, Ser. No. 21,180

Claims priority, application Japan, Sep. 6, 1976, 51/106463; Sep. 6, 1976, 51/106464

Int. Cl.³ G03B 1/18

U.S. Cl. 354-173

3 Claims



1. A motor drive device of a camera designed so that the motor is automatically stopped at the termination of the film during the continuous photographing, comprising:

- a motor for driving a winding up mechanism of the camera for winding up the film and charging the shutter;
- an over-torque detecting means, said means producing an over-torque signal when the wind up torque of the camera is larger than a certain determined value;
- a wind up completion switch, said switch being changed over by the incompletion and completion of the winding up of the film and being closed in accordance with the wind up completion to produce the wind up completion signal;
- a holding means, which includes a flip-flop and is reversed to generate a film finishing signal when an excessive torque signal is generated from an excessive torque detection switch while the winding up completion switch is deactuated; and
- a motor control circuit which stops the motor by the excessive torque signal generated by the excessive torque detection means and prevents starting of the motor by the film finishing completion signal input from the holding means, said film finishing signal being connected to at least the motor control circuit.

4,229,092

DISTANCE INDICATOR FOR CAMERA

Hiroshi Iwata, Osaka, Japan, assignor to West Electric Company, Ltd., Osaka, Japan

Continuation of Ser. No. 804,808, Jun. 8, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,174

Claims priority, application Japan, Jun. 17, 1976, 51-71955

Int. Cl.³ G03B 3/00, 17/20

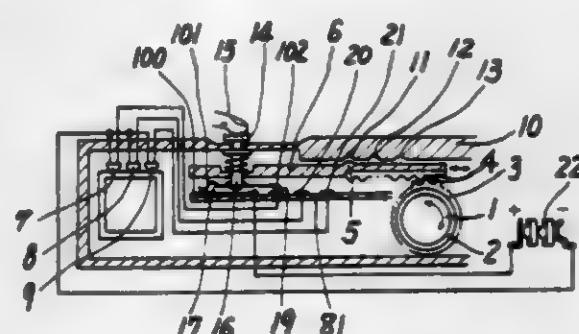
U.S. Cl. 354-198

19 Claims

1. A distance indicator for a photographic camera having a shutter releasing mechanism comprising:

- an indication plate provided with plural distance marks representing distances to an object being photographed, plural light-emitting means for illuminating corresponding ones of said plural distance marks,
- a power supply means for supplying electric current to said plural light-emitting means, and
- a switching means for selectively feeding current from said power supply means to said light-emitting means, the switching means being linked with a focusing adjustment means of a main lens and operable independently of said shutter releasing mechanism, wherein said switching means is connected between said power supply means and said light-emitting means for normally stopping current

supply from said power supply means to said plural light-emitting means, and



said switching means contains a current supply control means for controlling the current to selectively illuminate said plural distance marks in response to actuation of a knob for adjusting said focusing adjustment means.

4,229,093

CONTROL DEVICE IN A SHUTTER FOR A CAMERA

Mitsuo Koyama; Tadashi Nakagawa; Masanori Watanabe; Eiichi Onda, and Ichiro Nemoto, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

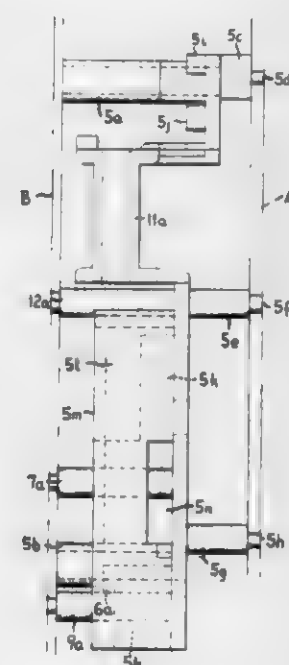
Filed Nov. 30, 1976, Ser. No. 746,113

Claims priority, application Japan, Dec. 5, 1975, 50-164830[U]

Int. Cl.³ G03B 9/08

U.S. Cl. 354-266

4 Claims



1. A control mechanism for a camera shutter, comprising: a first base plate having an exposure aperture therethrough; opening and closing means controllable for opening and for closing the exposure aperture;
- a second base plate opposite and spaced from said first base plate and having a first major surface facing said first base plate and a second major surface facing away from said first base plate, said second base plate comprised of synthetic resin and including synthetic resin shafts extending from the second major surface of said second base plate and terminating at respective free ends of said shafts;
- mechanical control means mounted on said second base plate for controlling operation of said opening and closing means and including at least one element mounted on one of said shafts of said second base plate; and
- a metallic auxiliary base plate spaced from the second major surface of said second base plate fixed to the free ends of said shafts of said second base plate for supporting and

maintaining the relative positions of said shafts and covering said mechanical control means.

4,229,094

CAMERA WITH TRANSVERSELY DISPLACEABLE OBJECTIVE

Albert Bääb, and Paul Himmelsbach, both of Bad Kreuznach, Fed. Rep. of Germany, assignors to Jos. Schneider GmbH & Co., Optische Werke Kreuznach, Bad Kreuznach, Fed. Rep. of Germany

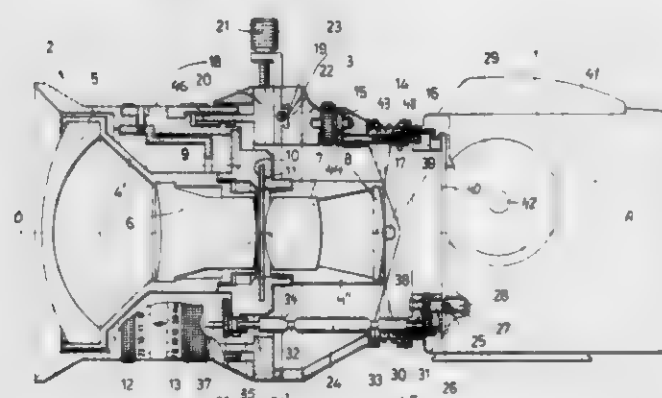
Filed Jan. 11, 1979, Ser. No. 2,743

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801994

Int. Cl.³ G03B 17/56

U.S. Cl. 354-286

4 Claims



1. In a camera comprising a housing with an exposure window and an objective secured to said housing for illuminating a photosensitive medium through said window, said objective being provided with exposure-controlling means and defining an optical axis normally aligned with a reference line passing substantially centrally through said window, adjustable mounting means securing said objective to said housing with freedom of disalignment of said optical axis from said reference line, and release means on said housing for initiating a picture-taking operation,

the combination therewith of a mechanical linkage extending generally parallel to said optical axis from said release means to said exposure-controlling means for actuating same upon operation of said release means, said linkage including a rotatable shaft having a central portion, a first extremity connected with said central portion on the side of said housing, and a second extremity connected with said central portion on the side of said objective, said extremities being independently tiltable relatively to said central portion.

4,229,095

ELECTRO-OPTICAL COLOR IMAGING APPARATUS

Jose M. Mir, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,283

Int. Cl.³ G03G 15/01

U.S. Cl. 355-4

34 Claims

14. Apparatus for color imaging, at an exposure station, a photosensitive layer of the kind adapted to record different colors, said apparatus comprising:

- (a) exposure means for exposing successive strip portions of such layer at said exposure station, each strip portion comprising a row of pixel regions, said exposure means including a linear array of discretely operable electro-optical means that are each respectively located for alignment with a different pixel region of such strip portions and that are each individually addressable by electrical energiza-

tion for effecting multicolor exposure of its respective pixel region; and



(b) means for electrically addressing each of said electro-optical means concurrently and according to the color content of respective portions of an image to be produced.

4,229,096

COUNTDOWN AND START MECHANISM FOR AN ELECTROSTATIC COPIER

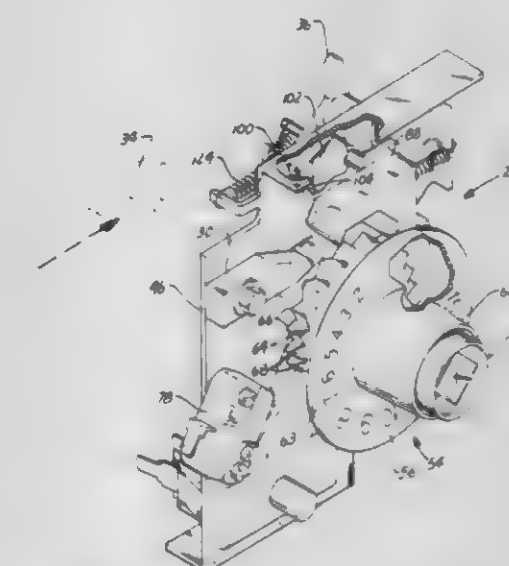
David P. Bujese, Toms River, N.J., and George P. Rahgo, Stratford, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 26, 1978, Ser. No. 973,214

Int. Cl.³ G03G 15/00; G06F 15/18; G06M 1/00

U.S. Cl. 355-14 CU

18 Claims



1. In a controlled, cyclically operable machine having a control circuit, a countdown control mechanism for operating said machine for a selected number of cycles, comprising in combination:

- a. a start switch transferable between first and second positions, normally biased toward said second position and electrically connected to the control circuit for (1) continuously operating the machine when said start switch is in said first position and (2) for stopping said machine when said start switch is in said second position,
- b. means for transferring said start switch from said second position to said first position in order to start the operation of said machine,
- c. a releasable latch for maintaining said start switch in said first position to thereby continuously operate said machine,
- d. an escape wheel having a plurality of angular settings including a null setting and turnable to any one of said plurality of settings each of which corresponds to a differ-

ent selected number of cycles of operation of said machine.

- e. a latch release operable by said escape wheel when said wheel is in said null position for releasing said start switch latch, and
- f. an anchor having a pair of pallets alternately operable on said escape wheel for incrementally returning said escape wheel in angular setting increments toward said escape wheel null setting, and
- g. means for operating said anchor once during each cycle of operation of said machine, whereby the escape wheel is incrementally returned toward said null setting until the selected number of machine cycles is complete whereupon the start switch latch is released and the start switch transfers to its second position and the machine stops.

4,229,097

APPARATUS FOR THE PHOTOGRAPHIC REPRODUCTION OF TRANSPARENT DOCUMENTS

Huguette N. Vulmiere, and Jacques C. Vulmiere, both of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

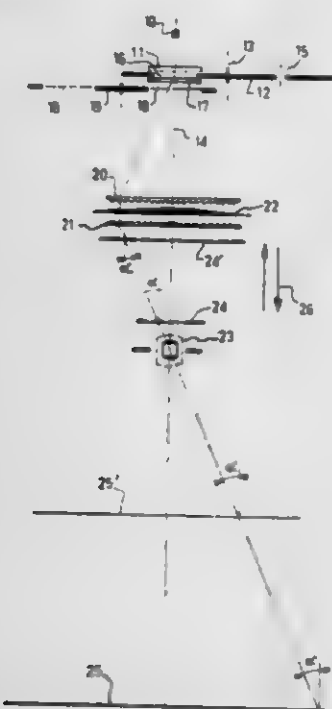
Filed May 31, 1978, Ser. No. 911,073

Claims priority, application France, Jun. 3, 1977, 77 16947

Int. Cl.³ G03B 27/72, 27/73

U.S. Cl. 355—35

14 Claims



1. Apparatus for the photographic reproduction of transparent documents in black and white or in color, of the type comprising a principal light source, colored or uncolored, a condenser, interchangeable objectives, object and image planes movable with respect to one another and an auxiliary light exposure source, wherein said condenser is constituted by two thin stepped lenses, the source being in the object focal plane of the first of said lenses and the pupil of the objective being in the image focal plane of the second lens, a corrector screen arranged between said two lenses for the variations in illumination in the image plane due to the inclination of the useful beam to the axis of the system, this screen being fixed so that its surface is perpendicular to the parallel ray beam, the constituent elements of the source, of the condenser and of the pupil of the objective used being fixed with respect to one another and movable in a single unit relative to the document to be reproduced according to the focal length of said objective determining the size of the document.

4,229,098 PHOTOGRAPHIC ENLARGER FOR PRODUCING GIANT-SIZE PRINTS

Peter Schmoker, Daenikon-Zurich, Switzerland, assignor to Fotomec S.p.A., Fiume Veneto, Italy

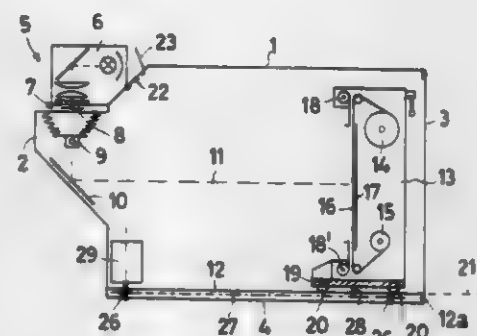
Filed Oct. 26, 1978, Ser. No. 954,916

Claims priority, application Switzerland, Oct. 31, 1977, 13212/77

Int. Cl.³ G03B 27/70

U.S. Cl. 355—60

7 Claims



1. A photographic enlarger for producing large-size prints comprising: walls forming an enclosure; an enlargement optical system including an objective lens for projecting light rays in a vertical direction within the enclosure; a mirror within the enclosure for deflecting the vertical light rays to a horizontal direction on to a vertical exposure plane within the enclosure; a light-tight box within the enclosure, said box supporting takeup and delivery rollers for photographic paper and a driving mechanism therefor and said box supporting a shutter device for masking the exposure plane and for delimiting the copy size, and said box being arranged so that photographic paper extending between the rollers lies in the vertical exposure plane of the optical system; and mounting means for adjusting the position of the box horizontally toward and away from the mirror.

4,229,099

METHOD AND APPARATUS FOR BURNING OR DODGING PRESELECTED PORTIONS OF AN IMAGE FORMED ON PHOTOGRAPHIC PAPER

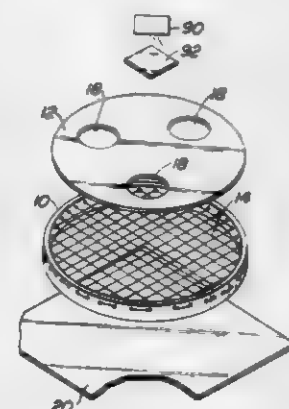
Ronald C. Watkins, 263 W. Tulpehocken St., Philadelphia, Pa. 19144

Filed Dec. 22, 1978, Ser. No. 972,608

Int. Cl.³ G03B 27/72, 27/32

U.S. Cl. 355—71

11 Claims



1. Apparatus for selectively dodging preselected portions of an image formed on photographic paper by a light source from a developed negative, comprising: light transmissive support means disposed between said negative and paper for transmitting light to said paper; at least one cut-out having a lesser surface area than the photographic paper, said cut-out comprising a material which blocks light to which the photographic paper is sensitive to prevent such light from reaching a preselected

portion of said paper and which passes light to which the photographic paper is not sensitive to permit viewing of said paper through said cut-out to align said cut-out with said preselected portion of said paper, said cut-out being disposed on said support means;

whereby said support means transmits light to which said paper is sensitive to expose said paper and said cut-out blocks light to which said paper is sensitive to effect dodging of said preselected portion of said paper.

8. A method of dodging at least a preselected portion of an image formed by a light source on photographic paper from a developed negative, comprising:

placing plural spaced light transmissive elements between said negative and said photographic paper;

placing at least one cut-out of a material which blocks light to which the photographic paper is sensitive and which passes light to which the photographic paper is not sensitive on said light transmissive elements;

aligning said cut-out with the preselected portion of said photographic paper to be dodged; and

exposing said photographic paper to light transmitted through said light transmissive elements while blocking light to which said paper is sensitive from reaching said preselected portion of said paper aligned with said cut-out.

4,229,101 DUPLEX/SIMPLEX PRECOLLATION COPYING SYSTEM

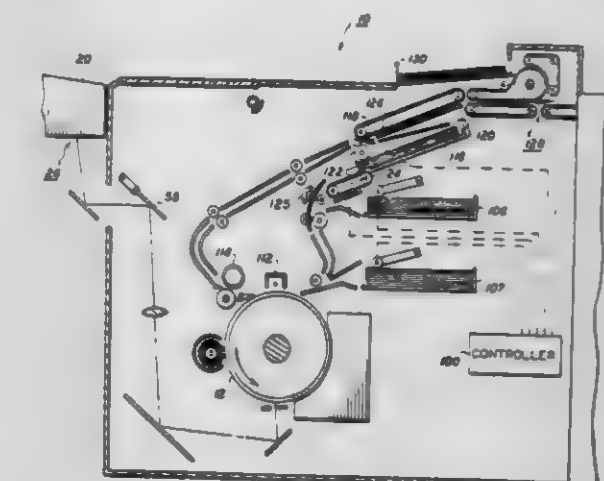
Thomas J. Hamlin, and Clifford L. George, both of Macedon, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 825,743, Aug. 18, 1977. This application Jul. 2, 1979, Ser. No. 54,344

Int. Cl.³ G03B 27/32

U.S. Cl. 355—77

4 Claims



1. A method of producing pre-collated simplex (one-sided) copy sheet sets at the output of a copier from duplex (two-sided) original document sheets which are recirculated to the imaging station of the copier comprising the steps of:

copying only the first sides of said duplex document sheets in a first copying circulation thereof onto one side of copy sheets as simplex copy sheets,

temporarily storing in said copier said simplex copy sheets made on said first copying circulation of said duplex documents as an intermediate buffer set,

copying the opposite sides of said duplex documents onto additional simplex copy sheets in a second copying circulation and feeding said additional simplex copy sheets as they are made to the copier output alternately and interleaved with copy sheets fed from said buffer set to produce a complete precollated simplex copy sheet set from said duplex document sheets,

and alternately repeating the above first and second copying recirculation steps to form plural, precollated simplex copy sheet sets.

4,229,100

AUTOMATIC COPY RECOVERY

Terence Travis, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,629

Int. Cl.³ G03G 15/00; B65H 39/02

U.S. Cl. 355—77

11 Claims



6. The method of operating a copy production machine having collating output means comprising the steps of:

operating said copy production machine so as to process within the machine at the same time copies bearing images from different sources,

maintaining separate counts of copy sheets within said machine bearing images from the same source,

decrementing the nonzero separate count representing the oldest copy sheets in said machine as copy sheets bearing respective ones of said images pass through said collating means, and

actuating said collating output to start a new collating operation when any one of said separate counts is decremented to zero.

4,229,102

METHOD AND APPARATUS FOR BALANCING OUT DISTURBANCES IN DISTANCE MEASURING SYSTEMS

Klas R. Wiklund, and Lars A. Ericsson, both of Täby, Sweden, assignors to AGA Aktiebolag, Lidingö, Sweden

Filed May 19, 1978, Ser. No. 907,577

Claims priority, application Sweden, Jun. 3, 1977, 7706290

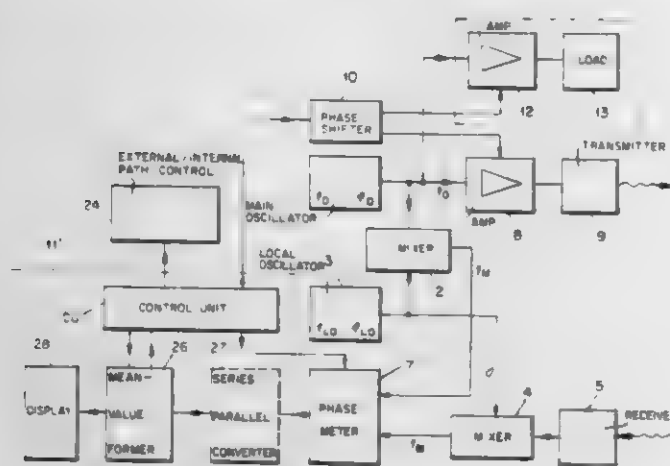
Int. Cl.³ G01C 3/08

U.S. Cl. 356—5

13 Claims

1. A method of balancing out interference caused by stray coupling between the internal circuits of a distance-measuring apparatus of the phase-type having a receiver section and a transmitter section, wherein a phase measurement operation is carried out which comprises an external phase measurement wherein a modulated electromagnetic signal is transmitted from the transmitter, reflected by a measurement target and received by a receiver section, and a reference measurement wherein an electromagnetic signal of the same frequency and phase of the first mentioned signal is transmitted from the transmitter section to the receiver section over an internal path of known length for comparison with the signal received by said receiver section during the external phase measurement; wherein at least two groups of separate distance measurements, each comprising at least one said phase measuring operation, are carried out; wherein for each pair of groups the one mea-

asuring group is effected with the transmitter unit of the transmitter section supplied with a transmitter signal of a first phase, and the other measurement group is effected with the transmitter unit of the transmitter section supplied with the transmitter signal of a second phase which is displaced substantially 180° relative to the first phase; and the mean value being formed of



the mean values of the measuring results in each measurement group, a control unit being used to control switching between the external phase measurement and the reference measurement during each phase measurement operation and to control switching the phase of the transmitter signal between said first phase and said second phase during alternate measuring groups.

4,229,103

APPARATUS FOR DETERMINING OFF-AIM DURING FIRING SIMULATION

Jan Hipp, SchulteBdamm 57, 2000 Hamburg 64, Fed. Rep. of Germany

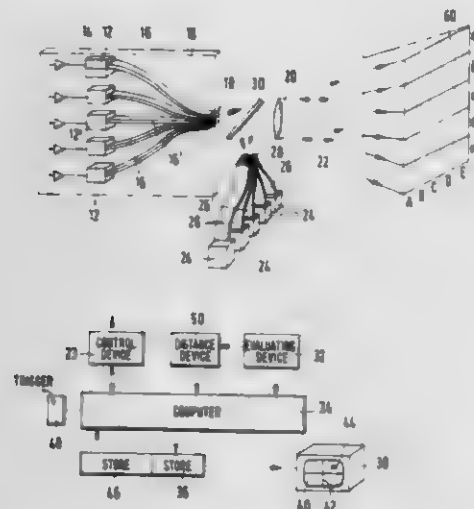
Filed Jan. 19, 1979, Ser. No. 5,029

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802477

Int. Cl.³ G01B 11/26

U.S. Cl. 356—141

15 Claims



1. A shot simulating apparatus for determining the off-aim distance between the line of sight of a shot-simulator emitting laser light and a target capable of reflecting laser light, comprising:

- (a) an optical assembly which has its optical axis parallel to said line of sight and which defines a target field, said assembly including a beam splitter defining first and second image planes of said optical assembly;
- (b) a laser transmitter having n opto-electronic laser emitter elements coupled to flat optical conductors, for transmitting laser light into said target field, said conductors having their free ends arranged approximate said first image plane to form a first area divided into n parallel strips

corresponding to a first set of n parallel space angle segments projected by said optical assembly on said first image plane;

- (c) a laser receiver having n opto-electronic laser detector elements coupled to flat optical conductors, for receiving laser light from said target field, said conductors having their free ends arranged at least near said second image plane to form a second area divided into n parallel strips corresponding to a second set of n parallel space angle segments projected by said optical assembly on said second image plane, said first and second areas of n parallel strips being perpendicular to each other about said optical axis so as to divide said target field into n^2 space angle sectors;
- (d) a control means, for controlling said laser emitter elements to emit individually time-coded laser light selectively into the space segments of said first set; and
- (e) an off-aim determining means, for evaluating the vertical and lateral off-aim distance of a reflecting target by identifying the space angle sector from which reflected laser light is received through identification of the time code and the receiving detector elements.

4,229,104

MIXING CUVETTE

Gerhard Lahme, Quickborn; Dieter Sölter, Hamburg, and Hermann Bohnsack, Halstenbek, all of Fed. Rep. of Germany, assignors to Eppendorf Gerätebau Netheler & Hinz GmbH, Hamburg, Fed. Rep. of Germany

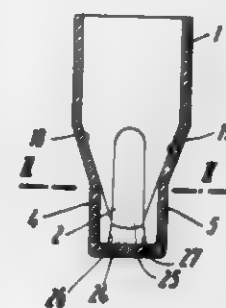
Filed Mar. 7, 1978, Ser. No. 884,118

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710889

Int. Cl.² G01N 21/24

U.S. Cl. 356—246

10 Claims



10. A mixing cuvette comprising an upper portion and a lower portion, a longitudinal central axis extending through said upper and lower portions, a pair of opposed wall portions extending generally parallel with said longitudinal axis and defining therebetween a photometric measuring region of said cuvette, with a photometric measuring direction of the cuvette being defined to extend across said measuring region, a pair of side walls each extending between said wall portions on opposite sides of said measuring region, said side walls being configured to define a pair of opposed concave interior surfaces of said measuring region, said concave interior surfaces being shaped to effect an enlargement of the interior of said cuvette through a central region of said measuring portion extending perpendicularly to said measuring direction.

4,229,105

SENSITIVE MEASURING CELL FOR A DIFFERENTIAL REFRACTOMETER OF THE INTERFERENCE TYPE

Sten Silverbärg, Bergencrantz väg 6, 196 30 Kungsängen, Sweden

Filed Apr. 12, 1979, Ser. No. 29,401

Claims priority, application Sweden, Apr. 17, 1978, 7804340

Int. Cl.³ G01N 1/10

U.S. Cl. 356—246

ization sense passing through such medium in different directions.

4,229,107

OPTICAL DENSITOMETER

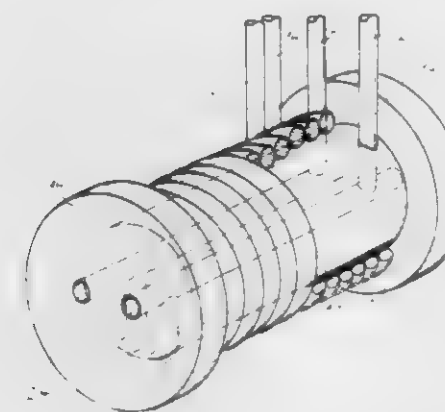
8 Claims Warren Childers, Houston, Tex., assignor to Graphic Arts Manufacturing Company, Houston, Tex.

Filed Jun. 8, 1978, Ser. No. 913,680

Int. Cl.³ G01N 21/00; G01J 1/42

U.S. Cl. 356—443

14 Claims



1. A highly sensitive measuring cell for an interference type of differential refractometer, said measuring cell comprising:
 - (a) a measuring body provided with two channels,
 - (b) one of said channels being a measuring channel for a medium whose refractive index is to be measured, and
 - (c) the other measuring channel being a reference channel for a reference medium of a known refractive index, and
 - (d) means for mechanically adjusting the respective path lengths of said measuring channel and of said reference channel to exactly the same geometrical length for achieving a maximum CMRR value.

4,229,106

ELECTROMAGNETIC WAVE RING RESONATOR

Terry A. Dorschner, Waltham; Irl W. Smith, Jr., Newton, and Hermann Statz, Wayland, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 646,307, Jan. 2, 1976, abandoned. This application May 18, 1978, Ser. No. 907,219

Int. Cl.² G01B 9/02; G01P 9/00

U.S. Cl. 356—350

28 Claims



1. In combination:

- (a) an electromagnetic wave ring resonator wherein resonant electromagnetic waves propagate through a non-solid medium, such resonator including an amplifier medium;
- (b) means, included in such ring resonator, for spatially rotating the electromagnetic field distribution of the resonant electromagnetic waves as such waves pass through the non-solid medium about the direction of propagation of such waves to enable such electromagnetic waves in such resonator to resonate with different frequencies; and
- (c) means, including the amplifier medium, for providing different indices of refraction to waves of the same polar-

4,229,108

OPTICAL DENSITOMETER

Warren Childers, Houston, Tex., assignor to Graphic Arts Manufacturing Company, Houston, Tex.

Filed Jun. 8, 1978, Ser. No. 913,809

Int. Cl.³ G01N 21/00; G01J 1/42

U.S. Cl. 356—443

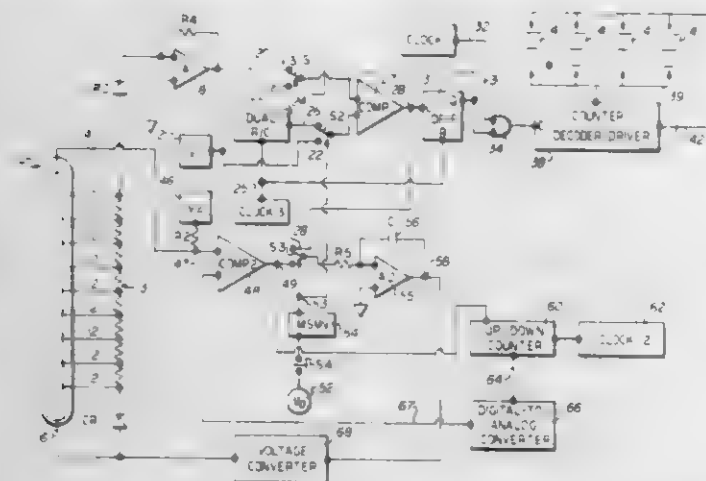
8 Claims

1. An optical densitometer with improved resolution having a photomultiplier tube with a controlled anode current and varying dynode voltage when measuring light intensities, comprising:

- anode reference signal generator means maintaining an analog reference anode signal corresponding to an anode current obtained from a reference dynode voltage when said photomultiplier tube is exposed to a reference optical density sample,
- dynode voltage adjustment means for maintaining the anode current equivalent to said analog reference anode signal

during a measurement cycle and producing a first output signal,

means for generating a reference exponential output signal,



optical density signal generating means for comparing said first signal and said reference exponential output signal to obtain the optical density of a selected sample.

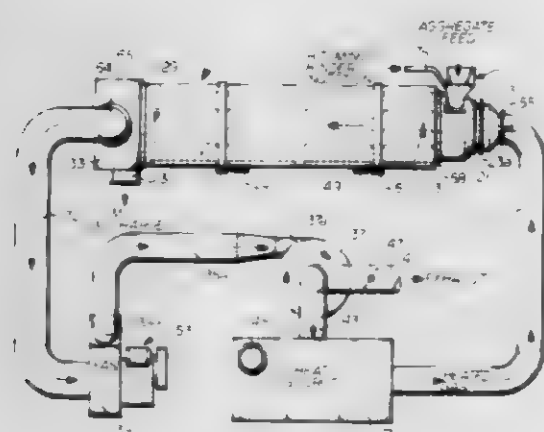
4,229,109

SYSTEM FOR PRODUCING BITUMINOUS PAVING MIXTURES

Bernard A. Benson, Issaquah, Wash., assignor to Boeing Construction Equipment Company, Tukwila, Wash.
Filed Apr. 24, 1978, Ser. No. 899,385
Int. Cl.³ B28C 1/22, 5/46

U.S. Cl. 366—24

14 Claims



1. A partially closed system for producing bituminous paving mixtures comprising:

drum mixer means having an intake region in the vicinity of one end thereof and a discharge region in the vicinity of the other end thereof, said drum mixer means being operable, when fired, to produce a bituminous paving mixture at said discharge region;

means for introducing graded aggregate into said drum mixer means at said intake region;

means for introducing a bituminous binder into said drum mixer means at said intake region;

plenum means disposed at said intake region and arranged to substantially enclose the end of said drum mixer means at said intake region, the interior of said plenum means being open to the interior of said drum mixer means;

exhaust manifold means disposed at said discharge region and arranged to substantially enclose the end of said drum mixer means at said discharge region;

heating means, spaced apart from said drum mixer means, for producing a heated gas having a temperature in the range of 700 to 2000 degrees Fahrenheit;

said heating means comprising a burner, a combustion chamber having an outer periphery within said heating means and a heating means manifold substantially surrounding said combustion chamber;

said burner being arranged to produce an open flame for

direction into said combustion chamber for a portion of the length thereof;

sealing means for sealing the ends of said heating means manifold to the outer peripheral surface of said combustion chamber;

said combustion chamber having a plurality of slot-like openings in at least a portion of its peripheral surface for permitting gas from said heating means manifold to pass into said combustion chamber through said openings;

first channeling means for receiving heated gas from said heating means and directing said heated gas to the interior of said plenum means;

second channeling means communicating with the interior of said exhaust manifold for directing a selected portion of exhaust gases within said exhaust manifold to the interior of said heating means manifold;

means for maintaining a flow of heated gas throughout said partially closed system.

4,229,110

MIXING MACHINE WITH WEDGE-SHAPED OR PLOUGHSHARE-LIKE MIXING TOOLS

Roland Lücke, Paderborn, Fed. Rep. of Germany, assignor to Gebrüder Lodge Maschinenbau GmbH of Elsener Str., Paderborn, Fed. Rep. of Germany

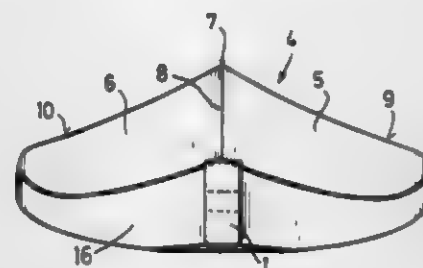
Filed Jan. 8, 1979, Ser. No. 1,902

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801460

Int. Cl.³ B01F 7/00

U.S. Cl. 366—343

1 Claim



1. A mixing machine for particulate material, said machine having movable wedge-shaped or ploughshare shaped mixing tool members each of which has a body having a tip running upstream and lateral cheeks which are oppositely disposed relative to the longitudinal center line of said body, said cheeks acting as working surfaces, each of the cheeks being disposed obliquely to the direction of movement of the mixing tools, wherein the cheeks of said body are disposed with an obtuse included angle to present working surfaces at an angle which corresponds substantially to the breaking lines for said material.

4,229,111

FEED MECHANISM FOR MARKING MACHINE

Roy A. Schacht, 744 Des Peres Rd., St. Louis, Mo. 63131

Filed Nov. 13, 1978, Ser. No. 959,785

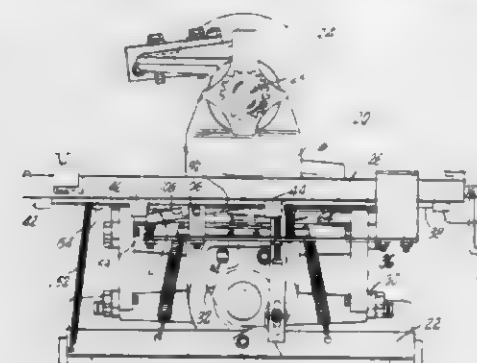
Int. Cl.³ B41J 11/06

U.S. Cl. 400—45

12 Claims

1. In a marking machine having a vertically moveable carriage supporting a transversely moveable work table supporting a workpiece to be marked by marking characters, said table being transversely moveable with respect to said carriage to advance the workpiece as it is being marked, table advancing means comprising a toothed rack having a series of teeth equidistantly spaced along a side of the rack and pawl means engageable with said rack for advancing the table the distance between adjacent teeth for each marking operation, the improvement comprising said pawl means including a feed pawl having a pair of teeth engageable with the teeth in said rack, said pawl being pivoted at one end to a feed link member

operable to pivot one end of the pawl and pivoted at a second end to a drag member operable to pivot a second end of the feed pawl about a moveable pivot member, limit guide means on said carriage defining upper and lower stops for said pivot



member as the carriage is raised and lowered and friction clutch means on said drag member permitting the drag member to move responsive to contact of the limit guide means with the moveable pivot member.

4,229,112

RANDOM STUFFER RIBBON CARTRIDGE WITH IMPROVED RIBBON EXIT CONTROL

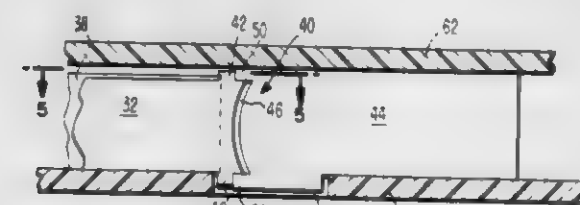
John O. Schaefer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,596

Int. Cl.³ B41J 33/10

U.S. Cl. 400—196.1

3 Claims



1. In a stuffer type ribbon box having top, bottom, and side walls joined to form a cartridge, an endless ribbon loop, further comprising ribbon pulling and stuffing means, box wall means defining a storage chamber, entrance and exit ports from said cartridge; and means for regulating the removal of said ribbon from said chamber; said means for regulating further comprising, slot means for the passage of said ribbon therethrough, said slot means comprising two slot forming members, said slot forming members matingly comprising stop surfaces engageable with each other to regulate the width of said slot means, said stop surfaces supported by said slot forming members wherein said slot forming members support said surfaces and further define upper and lower constraints for the end of said slot means;

resilient means biasing at least one of said members toward the other of said members;

said slot forming members defining a slot means having a shape deviating from a plane sufficient to cause said ribbon to buckle out of a plane, thereby causing the adjacent ribbon folds to be moved away from said slot means thereby preventing jamming.

4,229,113

SHARED DOCUMENT FEED STATION

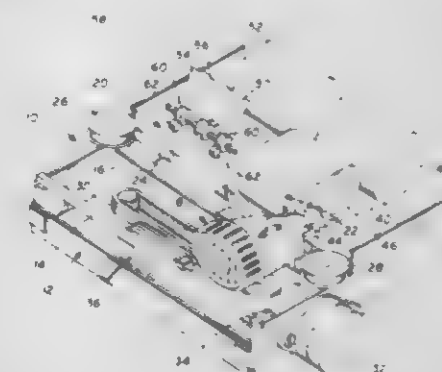
Theodore H. Anderson, R.R. #1; Wallace E. Beuch, R.R. #2, both of Pine Island, Minn. 55963, and Richard E. Lagergren, R.R. #1, Rochester, Minn. 55901

Filed Oct. 5, 1978, Ser. No. 948,860

Int. Cl.³ B41J 13/00

U.S. Cl. 400—596

16 Claims



1. A printing system comprising: means for effecting printing along a predetermined printing path;

means for advancing a first document through a first printing zone extending across the printing path;

means for advancing a second document through a second printing zone overlying the first printing zone and extending across the printing path;

means for normally activating the first document advancing means and responsive to the presence of a document in the second printing zone for actuating the second document advancing means;

the second printing zone extending laterally beyond the first printing zone; and

first and second document detecting means located in the portion of the second printing zone extending beyond the first printing zone and on opposite sides of the printing path.

4,229,114

MECHANISM FOR OPERATOR-REPLACEABLE PRINTHEAD

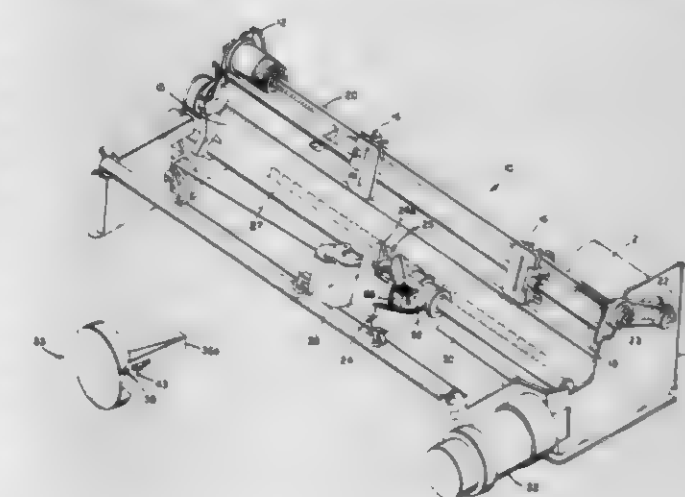
Arthur C. Van Horne, Santa Clara, Calif., assignor to Data-products Corporation, Woodland Hills, Calif.

Filed Feb. 12, 1979, Ser. No. 11,385

Int. Cl.³ B41J 29/00

U.S. Cl. 400—692

15 Claims



1. A mechanism for mounting a removable print head or like device to the shuttle of a printer, said device including a cylindrical head section and a generally tapering guide section, said mechanism comprising:

a generally upright member on said shuttle, having an opening through which said guide section is insertable.

at least one wedge-shaped projection extending from said guide section,
 a releasable retaining assembly mounted on said shuttle, including at least one movable locking member adapted for clamping, wedging engagement with said guide section projection, and
 bias spring means for urging said locking member into clamping engagement with said guide section projection, so that said bias means exerts force via said locking member and said projection to urge said cylindrical head section into tight abutting, rigid relationship with said shuttle upright member.

4,229,115

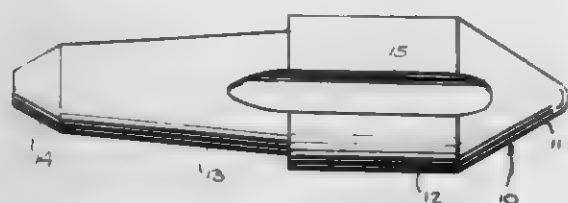
NIB FOR A WRITING INSTRUMENT

Lester H. Olinsky, Nazareth, Pa., assignor to Binney & Smith, Inc., Easton, Pa.

Filed Feb. 12, 1979, Ser. No. 11,147
 Int. Cl.³ A43K 5/00

U.S. Cl. 401-196

3 Claims



1. A molded nib for a writing instrument comprising:
 a porous plastic tapered tip portion of substantially circular cross section;
 a porous plastic substantially cylindrical barrel portion extending from said tip portion and of the same diameter as the maximum diameter of said tip portion; and
 a porous plastic trunk comprising a frusto-conical portion of smaller maximum diameter than said barrel portion and extending from said barrel portion.

4,229,116

LIQUID SOAP DISPENSER AND BRUSH COMBINATION

Lee P. Moore, 13315 S. Norfolk, Detroit, Mich. 48235
 Filed Mar. 5, 1979, Ser. No. 17,367

Int. Cl.³ A46B 11/04

U.S. Cl. 401-275

1 Claim



1. A liquid soap dispenser with brush combination, comprising:
 an elongated arm having a longitudinal passage;
 a first valve member carried on a first end of said arm so as to be rotatable therewith about an axis of rotation, said first valve member having a fluid opening for receiving liquid soap into said passage, and an arcuate opening disposed about said axis of rotation, said arcuate opening having a first end and a second end;
 brush means carried on the opposite end of said arm, said

arm having outlet opening means for passing liquid soap from said passage to said brush means;
 a container;
 a second valve member carried with the container so as to be rotatable therewith, the second valve member having a second fluid opening therein, and being supported in close proximity adjacent the first valve member;
 a finger carried on the second valve member and received in the arcuate opening of the first valve member;
 a collar carried on the arm and threadably connected to the container such that the container and the arm are relatively movable between a first rotated position defined by said finger engaging the first end of said arcuate opening in which the fluid opening of the second valve member is aligned with the fluid opening of the first valve member to permit passage through both of said fluid openings, and a second rotated position defined by the finger engaging the second end of the arcuate opening in which the fluid opening in the second valve member is blocked by the first valve member; and
 an O-ring sealingly mounted between said valve members and said collar.

4,229,117

APPARATUS FOR SECURING A METAL HOOP ONTO A METAL RIM

Roland Coppin, Marbaix-la-Tour, and Andre Ghislain, Lanefte, both of Belgium, assignors to Ateliers de Constructions Electriques de Charleroi (ACEC), Charleroi, Belgium

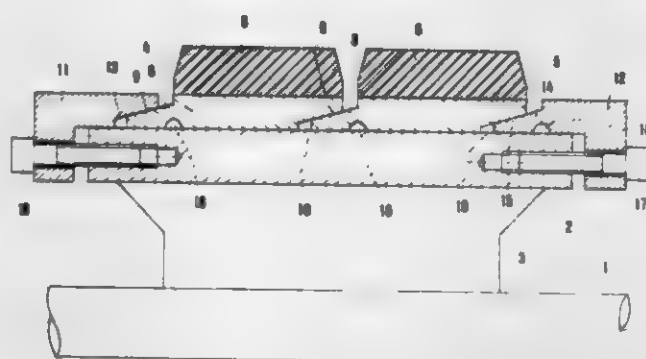
Filed Aug. 29, 1978, Ser. No. 937,768

Claims priority, application Belgium, Aug. 30, 1977, 18351

Int. Cl.² F16D 1/06

U.S. Cl. 403-370

3 Claims



1. An apparatus for securing a plurality of metal hoops to a metal rim, said metal rim adapted for supporting radial loads and having an axial direction, each metal hoop having an internal diameter slightly greater than an external diameter of said rim, each of said metal hoops having two sides with a conical shoulder on one side and a conical bore on the other side, said apparatus comprising conical clamping means for deformably clamping said metal hoops to said rim, said clamping means comprising at least two clamping collars, one of said collars having a conical shoulder and the other one of said collars having a conical bore, said plurality of hoops arranged slidably on said rim with said conical shoulders thereof extending in the same axial direction, said other one of said clamping collars arranged slidably on said rim and over the conical shoulder of one of said plurality of hoops and said one of said collars arranged slidably on said rim and with its conical shoulder extending in the same axial direction as said conical shoulders on said plurality of hoops, said clamping means further including means for connecting said collars to said rim and for drawing said collars axially towards said plurality of metal hoops.

4,229,118

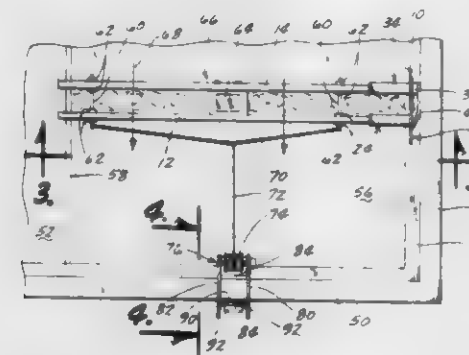
SCREED SUPPORT

Russell L. Kisling, 1220 S. Third St., Beatrice, Nebr. 68301
 Filed Jan. 17, 1979, Ser. No. 4,021

Int. Cl.² E01C 19/22

U.S. Cl. 404-72

16 Claims



14. A method of smoothing and finishing a newly poured surface adjacent an upright form having an inwardly extended generally horizontal surface, comprising,
 providing a pair of elongated screed members secured in generally parallel spaced-apart relation,
 supporting one end of said screed members on an upstanding plate having a flat bottom surface,
 arranging said plate in parallel relation to the upright form with the flat bottom surface supported on the horizontal surface,
 supporting the other end of said screed members at a height approximately level with said one end,
 maintaining said plate in uniformly spaced relation from the form whereby a portion of said poured surface lies between said plate and said form, and
 advancing said screed members across said surface and thereby simultaneously sliding said plate along the horizontal surface.

4,229,119

LIFTABLE AND COLLAPSIBLE BARRAGE

Bruno Borca, Milan, and Francesco Calza, Monza, both of Italy, assignors to Pirelli Furlanis—Applicazioni Idrauliche Agricole Gomma S.p.A., Italy

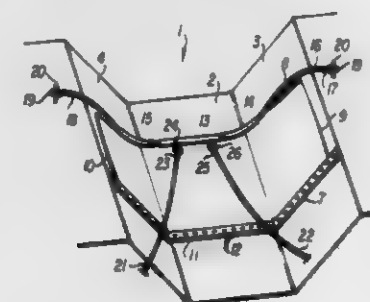
Filed Apr. 17, 1978, Ser. No. 897,750

Claims priority, application Italy, May 31, 1977, 24178 A/77

Int. Cl.² E02B 7/20

U.S. Cl. 405-96

3 Claims



1. A barrage for a waterway which waterway has a bottom and a bank along each side, said barrage separating the waterway into upstream and downstream portions, said barrage being adapted to be raised and lowered and comprising a flexible inextensible sheet having a vertical length not less than the depth of the waterway and spanning the width of the waterway, continuous means for fixing the said sheet along one of its sides to the bottom of the waterway and to the side banks of the waterway in water-tight relations, a rigid tubular element and two flexible tubular elements fastened respectively to the central portion and to the two lateral portions of the side of the sheet opposite to that side of the sheet which is fixed to the bottom and side banks of the waterway, a flexible inextensible

cable passing through said tubular elements, the ends of said cable are fixed to the side banks of the waterway downstream of the barrage, at least two flexible inextensible cables each having one extremity fixed to the rigid tubular element and other extremities fixed to opposite side banks of the waterway upstream of the barrage and means to vary the length of the cables fixed to the side banks of the waterway, said means to vary the length comprising a pair of drums respectively fixed on opposite side banks, each of said cables which are fixed to the side banks of the waterway upstream of the barrage having one end fixed to one of the drums, each said drum being provided with means for the rapid release of an associated cable fixed to the rigid tubular element controlled by the water level upstream of the barrage.

4,229,120

SUBMARINE PIPELINE ALIGNMENT RIG

Kenneth W. Wallace, Gretna, and Anthony V. Gaudiano, Metairie, both of La., assignors to Taylor Diving & Salvage Co., Inc., Belle Chasse, La.

Filed Sep. 11, 1978, Ser. No. 941,288

Int. Cl.² B63C 11/00; F16L 1/04

U.S. Cl. 405-158

30 Claims



1. Apparatus for working on conduit sections in a submerged location, comprising:
 truss means having a fulcrum assembly adapted to engage a submerged conduit section a distance from said conduit's end and provide a fulcrum therefor about which said conduit section may pivot; and
 working means spaced from said fulcrum assembly for aligning of said conduit section, being detachably connected to the truss means and including housing means for containing a submerged gaseous environment into which said conduit section extends the housing means being vertically movable and carrying a pair of manipulating means for engaging and moving the conduit sections vertically and horizontally about said fulcrum to effect alignment within said housing means thereof.

4,229,121

CONCRETE REMOVAL APPARATUS

Lee O. Brown, Houston, Tex., assignor to The Sea Horse Corporation, Houston, Tex.

Filed Nov. 17, 1977, Ser. No. 852,244

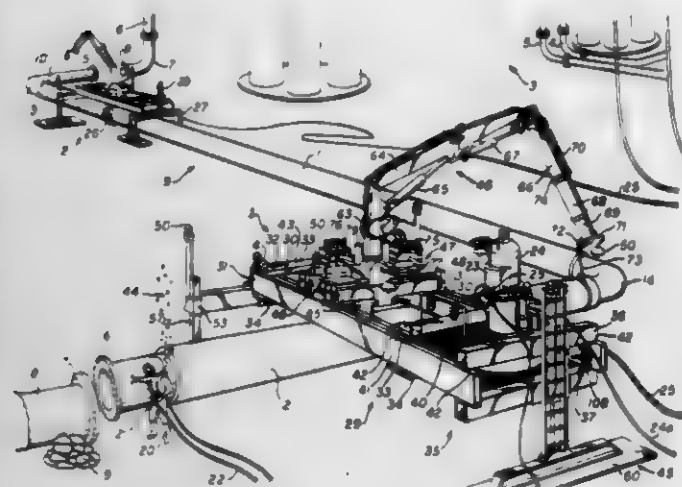
Int. Cl.² F16L 1/00

U.S. Cl. 405-158

2 Claims

1. A submarine concrete removal tool comprising a crescent carrying two coaxially opposed concrete removal jets and

track means for said crescent for transporting said jets along pipe wherein said track means comprises a pipe lift means



coaxial therewith for lifting and holding pipe above the sea floor.

4,229,122

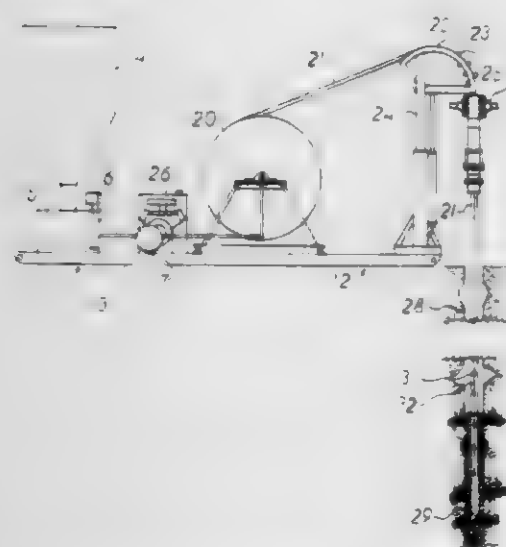
HOLE FILLING AND SEALING METHOD AND APPARATUS

James W. Ballantyne, Shelby, Mont., assignor to Toole Energy Company, Inc., Shelby, Mont.

Filed Oct. 10, 1978, Ser. No. 949,961

Int. Cl.³ E02D 15/00

U.S. Cl. 405—258



1. A method of continuously filling and sealing a hole extending a great distance into the earth and containing liquid contaminants, the steps comprising forming a cement slurry, continuously pumping said cement slurry through a continuous conduit disposed in a coiled configuration on the surface of the earth with the free end thereof extending the entire distance to the bottom of said hole, continuously forcing said cement slurry from the open end of said conduit while said conduit is being withdrawn from said hole, continuously monitoring the level of said cement slurry within said hole remotely at a point adjacent that at which the withdrawal of said conduit from said hole is controlled, controlling the rate of withdrawal of said conduit so as to maintain the open end thereof below the level of the cement slurry being deposited within said hole, and removing the contaminants from said hole as they are displaced by the cement slurry being deposited therein.

4,229,123 INCLINED RETAINING WALL AND ELEMENT THEREFOR

Erich Heinzmann, Balfrinstrasse 17a, CH-3930 Visp, Switzerland

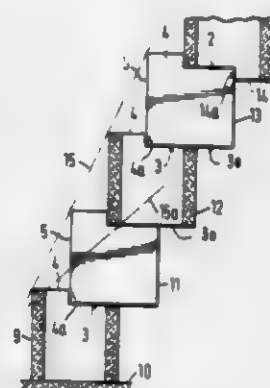
Filed Jan. 16, 1979, Ser. No. 3,987

Claims priority, application Switzerland, Jan. 18, 1978, 509/78

Int. Cl.³ E02D 29/02

U.S. Cl. 405—273

14 Claims



1. An inclined retaining wall secured to the soil of a slope of an inclined piece of terrain for covering, retaining and securing said slope, said wall being adapted for having plants planted therein and permitting the roots of said plants to grow downward into the soil of said slope, said wall comprising a plurality of horizontal rows of prism-shaped elements, said rows of elements being superimposed one upon the other in a relationship staggered rearwardly in upward direction, said elements of each row being spaced relative to one another leaving gaps therebetween, a concrete or stone base at the foot of said slope on which base a lowermost row of said elements is supported, each element of superimposed one of said rows bridging a corresponding gap in the next adjacent row therebeneath and being aligned in an inclined series with an element in any second row therebeneath or thereabove; each of said prism-shaped elements comprising:

- a casing having a hollow soil-fillable interior open at the top end and the bottom end of said element, a front wall zone of said casing being destined to face away from said slope, and said casing further comprising side wall zones adjacent said front wall zone, and a rear wall zone, and
- rampart means at least on the face of the rim of said open top end, protruding upwardly above said rim face and being positioned centrally on said front wall zone, said rampart means extending rearwardly from said central position on said rim face on the rims of said side wall zones; the two ends of said rampart means on said rim face about said open top end of the casing forming steps with the remaining part of the said rim face which steps comprise abutment faces perpendicular to the last-mentioned rim face and destined to face toward the slope, all the remaining portion of said rim face on the top open end of said casing to the rear of said perpendicular abutment faces extending in a single horizontal plane, and the rim face about the open bottom end of said element being in a single horizontal plane.

4,229,124

AUTOMATIC ROOF BOLTING SYSTEM FOR MINES

G. Robert Frey; Joseph Parrotto, and Francis X. Fontaine, all of Franklin, Pa., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,429

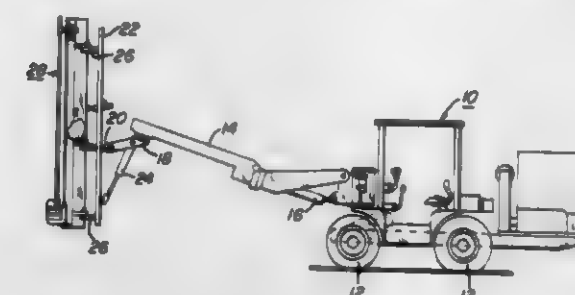
Int. Cl.² E21D 11/00

U.S. Cl. 405—303

9 Claims

1. Mine roof bolting apparatus comprising support means, an indexing device mounted on said support means for rotation about an axis extending parallel to a roof bolt to be inserted

into a mine roof, drilling apparatus carried on said indexing device and adapted to force a drill up into the mine roof to form a drilled hole for the reception of a roof bolt, resin cartridge insertion apparatus carried on said indexing device and adapted to insert a resin cartridge into a drilled hole in the mine roof, roof bolt insertion apparatus carried on said indexing



device and adapted to insert a roof bolt into a hole which has been drilled in the mine roof, and apparatus for actuating said indexing device to initially index a drill into alignment with the axis of a hole to be drilled and thereafter index said cartridge insertion device and said roof bolt insertion apparatus into alignment with the drilled hole.

4,229,125

APPARATUS FOR SEPARATING OBJECTS HAVING A TENDENCY TO HITCH TO EACH OTHER

Jan Lindström, Täby, Sweden, assignor to Tekno-Detaljer Sture Carlsson AB, Vällingby, Sweden

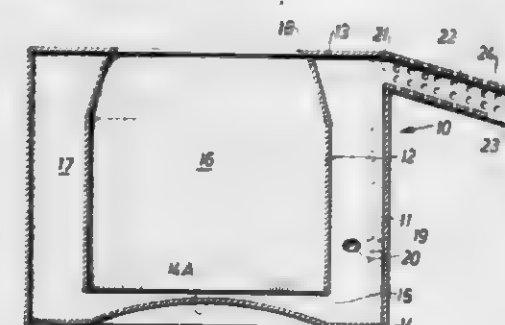
Filed Nov. 13, 1978, Ser. No. 960,308

Claims priority, application Sweden, Nov. 14, 1977, 7712840

Int. Cl.³ B65G 51/02

U.S. Cl. 406—137

7 Claims



1. An apparatus for separating entangled objects from each other, such as springs or other objects having a tendency to hitch to each other, said apparatus comprising an upstanding receptacle which is generally symmetrical about a substantially vertical axis and contains a separation chamber of annular cross-section formed between a generally cylindrical outer wall and an inner wall located radially inside the outer wall and in coaxial relationship thereto, and means for generating a generally helical flow of air along the inner side of the outer wall in order to move objects, fed into the receptacle, from the lower portion of the separation chamber to a discharge opening located at a higher level, the outer wall being arranged to have a braking or disturbing effect on the objects carried by said air flow when they contact said wall, a reception chamber for objects fed into the receptacle extending radially inside the inner wall from an entrance opening for said objects provided at the upper end of the receptacle and along substantially the entire vertical height of the receptacle to a position near the lower end of the separation chamber, where the reception chamber is connected to the surrounding separation chamber by means of a circumferentially extending opening formed between the lower end of the inner wall and the bottom of the receptacle and adapted to permit objects received in the reception chamber to pass from said chamber to the separation chamber through said opening.

4,229,126 MACHINES FOR TAPPING NUTS

George A. Harrow, Swansea, Wales, assignor to Westlane Industries, Inc., Dearborn Heights, Mich.

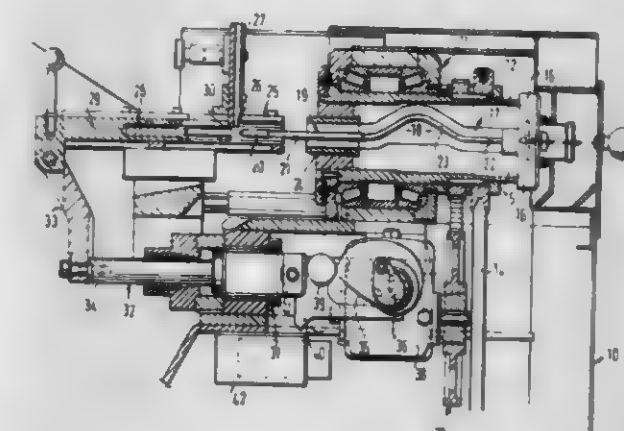
Filed Sep. 1, 1978, Ser. No. 938,888

Claims priority, application United Kingdom, May 24, 1977, 21744/77; Aug. 11, 1978, 33142/78

Int. Cl.² B23G 1/18; B23Q 5/26

U.S. Cl. 408—63

4 Claims



1. A nut tapping machine comprising a rotary tap, a reciprocating pusher in line with said tap, means for feeding a nut to a position between and in line with said tap and pusher, a fluid actuated piston and cylinder unit, said piston having one end connected to said pusher, a rotary cam driven in synchronization with said tap, a cam follower carried by said piston and engaging said cam, said piston acting under fluid pressure supplied thereto in a direction to cause said pusher to advance toward said tap to force a nut onto and along said tap while said cam follower engages said cam whereby to limit the speed of movement of the pusher toward the tap to a speed determined by the profile of the cam.

4,229,127

BORING BAR

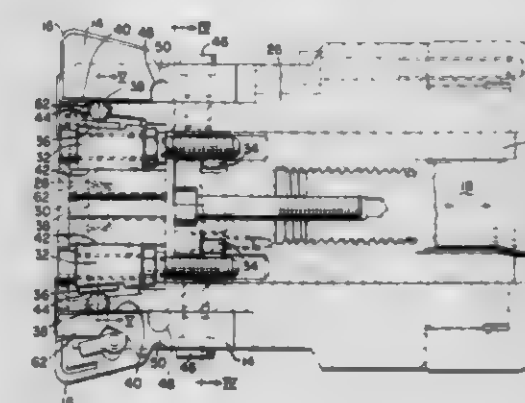
Donald L. Bartley, Willoughby, Ohio, assignor to Kennametal Inc., Latrobe, Pa.

Filed Jan. 22, 1979, Ser. No. 5,431

Int. Cl.³ B23B 47/18, 51/00

U.S. Cl. 408—158

3 Claims



1. A collapsible boring bar which comprises: a drawbar; piston means connected to one end of said drawbar; a head with a first end telescopically engaging said piston means; a spacer telescopically engaged with and abutting a second end of said head; ramp means axially slidable on said spacer and rigidly connected to said piston; at least one radially movable tool unit mounted on the periphery of said head; cylindrically shaped roller means located on said head, said roller means being interposed between said ramp means and said individual tool units and abutting with line contacts said individual ramp means and said individual tool unit so that axial movement of said piston moves said tool units in a radial direction.

4,229,128

REINSERTABLE ADJUSTABLE BORING BAR

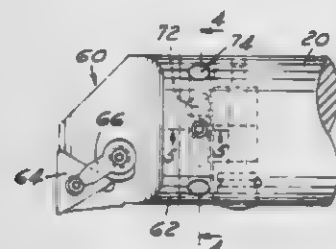
Marvin M. Heisner, Howell, Mich., assignor to Fansteel Inc., North Chicago, Ill.

Filed Apr. 30, 1979, Ser. No. 34,446

Int. Cl. B23B 51/00

U.S. Cl. 408—185

2 Claims



1. An adjustable boring bar combination comprising:

- (a) an elongate bar having an axis of rotation and a first recess in the working end of said bar extending transversely to said axis across said bar with parallel side walls lying in planes parallel to said axis of rotation, and a second transverse recess formed as a well in the bottom of said first recess and closed at each end;
- (b) an adjustment screw having a threaded shank with each end mounted for rotation in said bar at the respective ends of said second recess and axially retained in said bar;
- (c) an index block slidably positioned in said well and having a projection extending into said first recess and having a tapped hole to receive said threaded shank of said adjustment screw;
- (d) a boring head having a rib with parallel side walls to fit slidably in said first recess and a hole on said rib to receive said projection on said index block; and
- (e) means to retain said rib in said first recess comprising a lock pin in a transverse hole aligned with said first recess and communicating therewith through an opening in a wall of said first recess, and a pressure screw to move said pin laterally against one side of said rib of said boring head.

4,229,129

CHAMFER TOOL

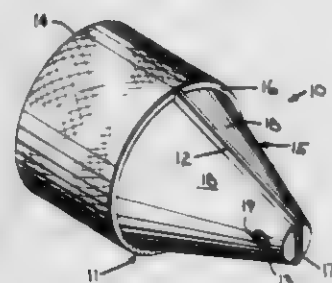
Gordon N. Schaefer, 11737 N. Solar Avenue 77W, Mequon, Wis. 53092

Filed Mar. 21, 1979, Ser. No. 22,636

Int. Cl. B23D 79/08

U.S. Cl. 408—228

2 Claims



1. A tool for chamfering the peripheral edges of the mouth of an empty cartridge case, comprising:

- a hollow body including a cylindrical base, and an integral conical head extending forwardly from the base which is recessed at its lower end from the external surface of said base to provide a circumferential shoulder therebetween, said conical head includes a solid forward end in this form of a frustum of a right circular cone and said head is bisected by a blade-receiving slot extending from said shoulder through its forward end to form a pair of opposed blade-supporting portions,

said forward end includes aligned openings formed there-through transversely of said blade-receiving slot; a V-shaped blade disposed in said blade-receiving slot, said blade including a pair of tapered legs which taper at about the same angle as the slope of the conical head, and extend beyond the surfaces of said conical head to present outer cutting edges for chamfering the interior peripheral edge of the mouth of the cartridge case, and inner cutting edges for chamfering the exterior peripheral edge of the mouth of the cartridge case;

said tapered legs converge to define an apex having a bore formed therethrough in alignment with the openings in said forward end of said head and include flat rear ends which engage said shoulder of said body; and

a removable pin extending through said aligned bore and openings for removably fastening said blade within said blade-receiving slot.

4,229,130

COLLETS

Reginald A. Franklin, Witney, England, assignor to Crawford Collets Limited, Oxfordshire, England

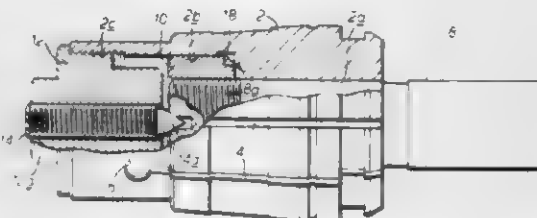
Filed Jul. 11, 1978, Ser. No. 923,652

Claims priority, application United Kingdom, Dec. 28, 1977, 53930/77

Int. Cl. B23B 31/20; B23C 5/26

U.S. Cl. 409—234

6 Claims



1. In combination a collet, and a tool bit having a threaded end portion, said tool bit being engaged and gripped in the collet, said collet comprising a body having front and rear end portions, means defining a plurality of slots extending forwardly and axially from the rear end portion of the body to split the body into a number of segments, said body having an internal surface extending rearwardly from the front end of the body of a size to grip the shank of the tool bit when the collet is clamped within a chuck, a nut engaged in a portion of the body of the rear of the tool bit-engaging surface such that the nut is restrained, against rotation relative to the body, said nut being insertable into the body from the rear end thereof, and the threaded end portion of the tool bit being threadedly engaged with the nut, a member threadedly mounted on the body at the rear end portion thereof to engage the rear end of the tool bit and to lock the tool bit in the nut, and means defining a radial clearance between said nut and the collet body with said tool bit gripped therein.

4,229,131

TIEDOWN WINCH

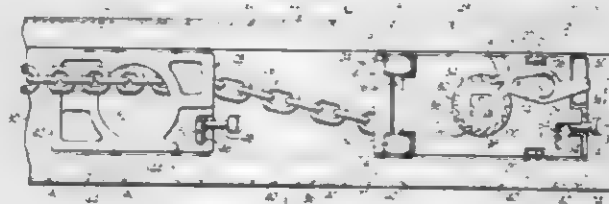
Richard E. Hague, Franklin, Mich., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Jan. 21, 1977, Ser. No. 760,870

Int. Cl. B60P 3/06, 7/08; B61D 45/00

U.S. Cl. 410—12

8 Claims



1. A vehicle tiedown winch for use in a tiedown system

including a track structure having opposed tracks, at least one of which has spaced latching recesses, said tiedown winch comprising:

- a housing;
- a central chamber located between a pair of end portions of the housing;
- top and bottom walls extending between said end portions;
- a winch drum in said chamber mounted for rotation about an axis extending between said top and bottom walls;
- a first of said end portions including a first passage extending outwardly from said chamber, said first passage being disposed to one side of the central longitudinal axis of the housing;
- a transversely extending cavity in said first end portion disposed on the opposite side of said central longitudinal axis;
- said first passage and said cavity both lying in the same horizontal plane;
- a locking bolt slidable in said cavity between a retracted position and a locked position wherein said bolt extends transversely from said housing for engaging said latching recesses;
- said bolt being substantially shorter than the width of said end wall structure.

4,229,132

CARGO TIEDOWN ANCHOR MEANS

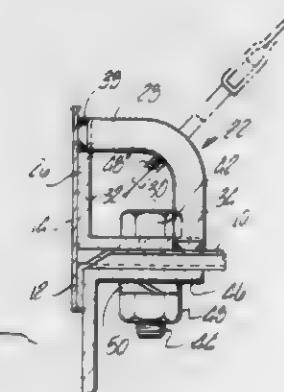
Chester J. Taylor, Warren, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 16, 1978, Ser. No. 961,436

Int. Cl. B61D 45/00

U.S. Cl. 410—115

5 Claims



1. In association with a motor vehicle having a cargo box that includes a box front wall, a floor, and a rear tailgate: the improvement comprising a first cargo tiedown anchor means bolted to the floor at the front wall, and a second cargo tiedown anchor means bolted to the floor adjacent to the tailgate; said first anchor means comprising a first rail extending along the box front wall for substantially the full width of the box, said first rail having a first horizontal flange abutting the floor upper surface and a second upstanding flange in near adjacency to the box front wall, and a series of curved rods located at spaced points along the rail, each curved rod having one of its ends welded to the horizontal flange and its other end welded to the upstanding flange; each rod being connected to the respective rail flange at the tip area of the flange whereby the space circumscribed by the rod is sufficient to readily receive the hook connector of a flexible cargo tiedown mechanism; said second cargo tiedown anchor means comprising a second rail extending along the floor for substantially the full width of the cargo box, and a second series of curved rods located at spaced points therealong; the second rail-rod assembly being identical to the aforementioned first rail-rod assembly, whereby the second assembly can be removed from its position on the cargo box floor and stowed atop the first rail-rod assembly; each curved rod having a circular cross section for engagement with cargo-retention hooks or straps adapted

to take different angular positions relative to the cargo box floor in accordance with the dimensions of the cargo.

4,229,133

LUMBER SPACER AND STICK LAYER

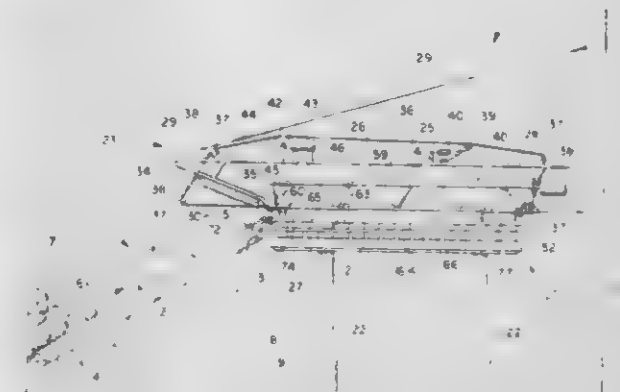
Charles L. Johnson, 1000 Virgle St., Durham, N.C. 27705

Filed Sep. 20, 1978, Ser. No. 944,073

Int. Cl. B65G 57/26

U.S. Cl. 414—42

7 Claims



1. A lumber stick laying and spacing device comprising: means for moving individual pieces of lumber onto a support means for a row of lumber; spacer means for separating each piece of lumber as it is moved onto said row, said spacer means being in the form of a plurality of spacer blocks movably mounted on an inclined track, means responsive to said lumber moving onto said support means for individually releasing said blocks whereby each block in turn will slide down said track into spacing relationship between said lumber, and an endless cable operatively associated with said spacers for reciprocatingly returning such spacers to said track upon completion of a row of lumber; and means responsive to a completed row of spaced lumber for automatically laying at least one stick means on top of the completed row of spaced lumber whereby a stack of lumber can be formed with spacing between each piece of lumber in each row and spacing between rows can be accomplished.

4,229,134

APPARATUS FOR DISPLACING THREE DIMENSIONAL ARTICLES, ESPECIALLY STACKS OF PRINTED PRODUCTS

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,515

Claims priority, application Switzerland, Oct. 24, 1977, 12893/77; Nov. 29, 1977, 14565/77

Int. Cl. B65H 31/30

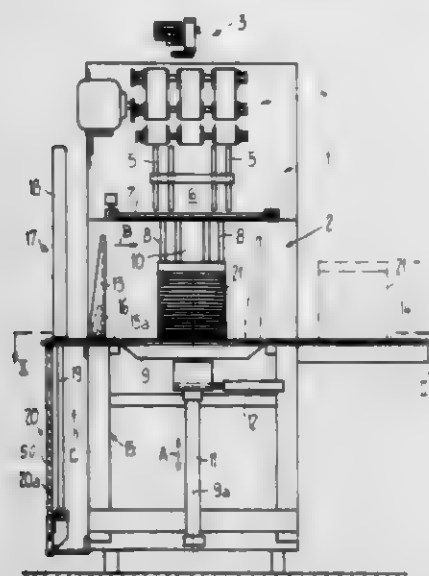
U.S. Cl. 414—46

11 Claims

1. An apparatus for displacing three dimensional articles, especially printed products, comprising:

- a substantially horizontal, support element adjustable in its position;
- a pusher element exerting a pushing action upon the articles to be displaced;
- drive means for forwardly and rearwardly displacing the pusher element parallel to the support element and over said support element;
- said pusher element, during its displacement over the support element, bearing upon said support element;
- said drive means including a flexible, spatially movable thrust and traction element having a first end and a second end;
- said pusher element being secured to said first end of said flexible, spatially movable thrust and traction element;
- said drive means further including a drive unit connected with the other end of said flexible, spatially movable thrust and traction element;

guide means through which there is guided said flexible, spatially movable thrust and traction element; said guide means having a stationary section and at least one section extending within the support element;



said at least one extending section, in a rest position of the support element from which the articles may be displaced, being alignable with the stationary section.

4,229,135

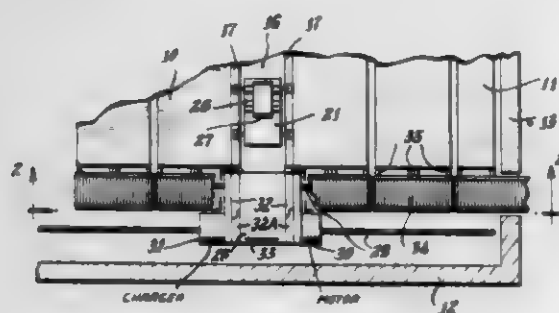
STORAGE SYSTEM INCLUDING MOVABLE PALLET RACKS

Carl-Henrik B. S. Malmros, Amal, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 21, 1978, Ser. No. 880,011

Claims priority, application Sweden, Feb. 18, 1977, 7701824
Int. Cl.³ B65G 1/06, 1/10

U.S. Cl. 414-284

3 Claims

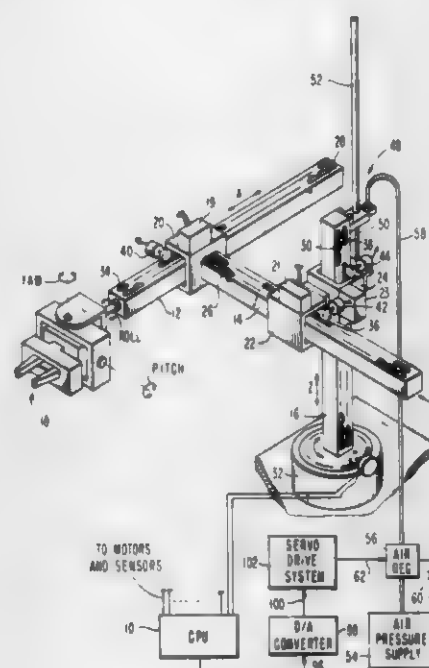


1. In a storage system including a row of separate horizontally movable wheeled rack means arranged to permit a passageway to be formed between selected adjacent rack means, a carriage movable into and along said passageway and having a vertically movable fork lift enabling depositing articles in and removing articles from said rack means, the improvement comprising horizontal rail means affixed to the sides of said rack means, said carriage being positioned to ride on said rail means, a separate horizontal conveying means mounted at the end of each of said rack means, whereby said separate conveying means on each side of said passageway form continuous conveyors parallel to said row of rack means, and further comprising a transfer carriage movable parallel to said row of rack means at said end thereof, said transfer carriage having rail means alignable with the rail means of said rack means, whereby said first-mentioned carriage may be movable into said transfer carriage, said transfer carriage being at a level lower than said conveyor, and further including guiding means for guiding said first mentioned carriage, whereby articles may be moved to and from said fork lift by way of said conveyor.

4,229,136
PROGRAMMABLE AIR PRESSURE
COUNTERBALANCE SYSTEM FOR A MANIPULATOR
Hugo A. Panissidi, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 19, 1979, Ser. No. 21,647
Int. Cl.³ B66C 1/42

U.S. Cl. 414-673

17 Claims



1. A programmable fluid pressure counterbalance system for an X Y Z orthogonal manipulator comprising:
an arm assembly for grasping objects;
storage means for maintaining information representing a measure of the weights of objects to be grasped by said arm assembly in the course of executing an assembly program;
adding means for adding the weight from said storage means to a predetermined counterbalance weight of said arm assembly to thereby provide a measure of the counterbalancing force required to compensate for the effects of gravity produced by an object to be grasped as well as the weight of said arm assembly;
fluid pressure regulator means responsive to said adding means;
a fluid pressure counterbalance cylinder and piston operatively connected to said arm assembly so as to provide forces in opposition to the gravity forces on said arm assembly, said fluid pressure counterbalance cylinder and piston being connected to said fluid pressure regulator to produce the predetermined counterbalancing force which compensates for the gravity forces of both said arm assembly and the grasped object.

4,229,137

PROCESS OF CONVEYING CIGARETTES OR OTHER ROD-LIKE ARTICLES

Desmond W. Molins, London, England, assignor to Molins, Limited, England
Division of Ser. No. 681,247, Apr. 28, 1976, Pat. No. 4,099,637, which is a division of Ser. No. 276,302, May 15, 1975, Pat. No. 3,967,740. This application Mar. 22, 1978, Ser. No. 889,014
Claims priority, application United Kingdom, Aug. 2, 1971, 36319/71

Int. Cl.³ B65G 65/04

U.S. Cl. 414-786

11 Claims

1. A method of conveying cigarettes or other rod-like articles comprising the steps of conveying a stream of rod-like articles towards a loading station in a direction transverse to their lengths, forming the articles into confined batches, moving successive batches into containers at the loading station, moving containers filled with batches of articles away from the

loading station, delivering a succession of containers filled with batches of articles to an unloading station at which the batches of articles are pushed successively out of the contain-



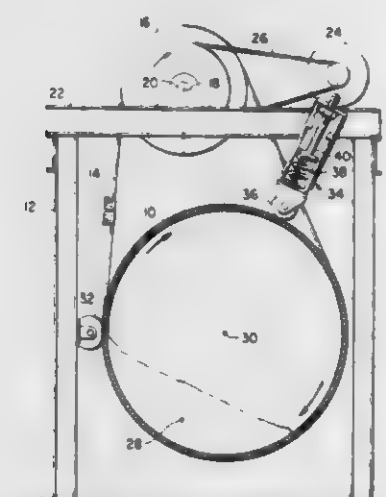
4,229,138

CABLE TENSION ROLLER

George P. Hurst, 235 Hill St., Jackson, Calif. 95642
Continuation-in-part of Ser. No. 763,188, Jan. 27, 1977, Pat. No. 4,078,298. This application Dec. 19, 1977, Ser. No. 861,604
Int. Cl.³ B65G 47/74

U.S. Cl. 414-787

10 Claims



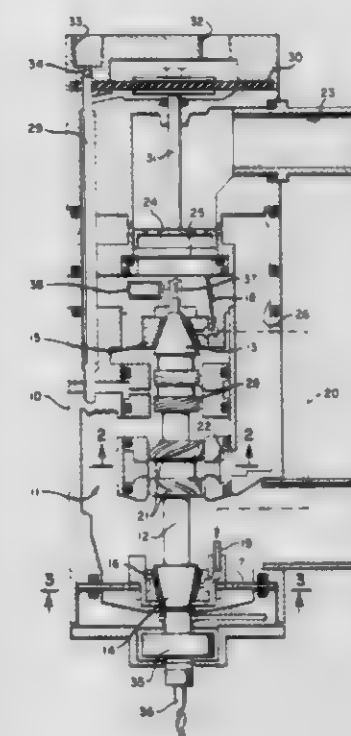
1. The combination with a horizontally extending hollow cylindrical drum for bearing material therein for processing, comprising:

- a plurality of sheaves spaced over said drum and spaced from each other along an axis parallel with the central axis of said drum for rotation;
- means connected to said sheaves for supporting and rotating said sheaves;
- a connecting cable means extending around below said drum and around over said sheaves for rotating said drum upon rotation of said sheaves;
- means mounted laterally of and abutting to said drum for carrying a laterally directed load; and
- means mounted to abut to said drum at a position on said exterior above and substantially opposing the center of mass of material along the interior side wall within said drum when said drum is rotating for selectively loading said drum, wherein said selective loading means comprises an idler arm overlying said drum; roller means for riding said drum; and bias means coupling said idler arm and said roller means for pressing said roller means against said drum to increase traction between said drum and said cable.

4,229,139
WATER POWERED HIGH SPEED MOTOR
William F. Marantette, and Ruth B. Marantette, both of 20624 Earl St., Torrance, Calif. 90503
Filed May 3, 1979, Ser. No. 35,723
Int. Cl.³ F03B 13/04

U.S. Cl. 415-29

2 Claims



1. A water powered high speed motor, including, in combination;

- (a) a casing defining an inner chamber;
- (b) a rotor shaft in said chamber having oppositely directed conical end surfaces;
- (c) first and second axially aligned oppositely directed conical bearing blocks engaging in mating relationship said end surfaces to mount said rotor shaft in said casing, said first bearing block being fixed to said casing and said second bearing block being resiliently mounted to said casing for axial movement towards and away from said first bearing block;
- (d) means biasing said second bearing block in an axial direction to increase the engaging pressure between said bearing blocks and conical end surfaces;
- (e) water inlet means passing into each bearing block to communicate with the surfaces of the bearing blocks and conical surfaces of the shaft;
- (f) turbine wheel means on said shaft between said first and second bearing blocks;
- (g) turbine wheel water inlet nozzle means communicating with said turbine wheel means;
- (h) a high water pressure inlet passage in said casing for directing water under high pressure into said water inlet means in each bearing block so that the conical end surfaces of said shaft float on a film of water covering the engaging surfaces of said bearing blocks to provide a water bearing, said high water pressure inlet passage also connecting to said turbine wheel water inlet nozzle to pass water under high pressure through said turbine wheel means to rotate said shaft, water from between the engaging surfaces of said bearing blocks and conical end portions and from the turbine wheel means passing into said chamber; and
- (i) a water outlet passage from said chamber to the exterior of said casing to exhaust water from said chamber, whereby high pressure water simultaneously serves to float said rotor shaft in its bearings and rotate said shaft at high speed.

4,229,140

TURBINE BLADE

Alexander Scott, Bristol, England, assignor to Rolls-Royce (1971) Ltd., London, England

Continuation of Ser. No. 694,031, Jun. 16, 1976, abandoned, which is a continuation of Ser. No. 413,189, Nov. 14, 1973, abandoned. This application Dec. 15, 1978, Ser. No. 973,601 Claims priority, application United Kingdom, Nov. 28, 1972, 54965/72

Int. Cl.³ F01D 5/18

U.S. Cl. 416—97 R

3 Claims



1. A turbine blade comprising an aerofoil-shaped body having spanwise and chordal extent and including a main portion and a trailing portion, the trailing portion having an upstream end integral with the main portion and a free downstream extremity, the trailing portion being a single wall having an undulating shape defining exteriorly of the wall and at each side thereof chordally extending troughs and ribs, wherein any one rib at one side of the wall has a hollow back defined by one of said troughs at the other side of the wall, and wherein the troughs are open to said downstream extremity and terminate at said upstream end, and cooling air holes extending between the interior of the main portion and the troughs at at least one side of the wall.

4,229,141

DEVICES FOR OPERATING VARIABLE-PITCH PROPELLERS

Jose Luis de Francisco Mesado, Po Cordelles, 6 F, 40 3a, Barcelona (Sardanyola Spain)

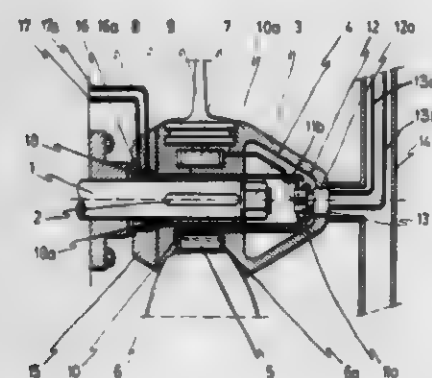
Filed Apr. 10, 1978, Ser. No. 895,106

Claims priority, application Spain, Apr. 6, 1977, 458,039

Int. Cl.² B63H 1/06

U.S. Cl. 416—157 R

1 Claim



1. A variable pitch propeller comprising:
a rotatable propeller shaft;
a propeller hub positioned around and fixed to said propeller shaft and adapted to rotate therewith;
a plurality of propeller blades spaced around said hub, each said blade having a base mounted within said hub for rotation about the axis of said base, whereby rotation of said bases around said axes will vary the pitch of said blades;
an annular cylindrical piston slidably mounted within said hub for rectilinear movement in opposite directions parallel to and coaxial with said propeller shaft;

first and second pressure fluid chambers within said hub at opposite ends of said piston;
a plurality of lugs and extending outwardly from said piston, each said lug engaging a respective said base eccentrically of said axis thereof, whereby rectilinear movement of said piston is transformed into rotation of said bases about said axes;
a double-acting valve unit positioned within said hub for rotation therewith, said unit including first and second double-acting valves, said valves being ganged so that movement of either of said valves causes movement of the other of said valves;
a first fluid duct connecting said first pressure fluid chamber to said first valve;
a second fluid duct connecting said second pressure fluid chamber to said second valve;
first feed conduit means for supplying pressure fluid from a supply to said first valve, and for thereby opening said first valve in a first valving direction;
second feed conduit means for supplying pressure fluid from the supply to said second valve, and for thereby opening said second valve in a second valving direction;
whereby when said first feed conduit means supplies pressure fluid to said first valve and opens said first valve in said first valving direction, said pressure fluid is caused to pass through said first fluid duct into said first pressure fluid chamber and to move said piston in a first rectilinear direction, thereby causing rotation of said bases and blades in a first rotative direction, said opening of said first valve in said first valving direction causing opening of said second valve in said first valving direction, thereby allowing pressure fluid to pass from said second pressure fluid chamber, through said second fluid duct, said second valve and said second feed conduit means, to thereby be returned to the supply; and
whereby when said second feed conduit means supplies pressure fluid to said second valve and opens said second valve in said second valving direction, said pressure fluid is caused to pass through said second fluid duct into said second pressure fluid chamber and to move said piston in a second rectilinear direction, thereby causing rotation of said bases and blades in a second rotative direction, said opening of said second valve in said second valving direction causing opening of said first valve in said second valving direction, thereby allowing pressure fluid to pass from said first pressure fluid chamber, through said first fluid duct, said first valve and said first feed conduit means, to thereby be returned to the supply.

4,229,142

ONE-PIECE PUMPING DEVICE WITH AMBIVALENT OPERATION

Jean-Claude Le Dall, Rueil-Malmaison, and Jean-Claude M. Pasquet, Saint Cloud, both of France, assignors to Le Materiel Telephonique, Boulogne-Billancourt, France

Filed Nov. 6, 1978, Ser. No. 957,918

Claims priority, application France, Nov. 10, 1977, 77 33889

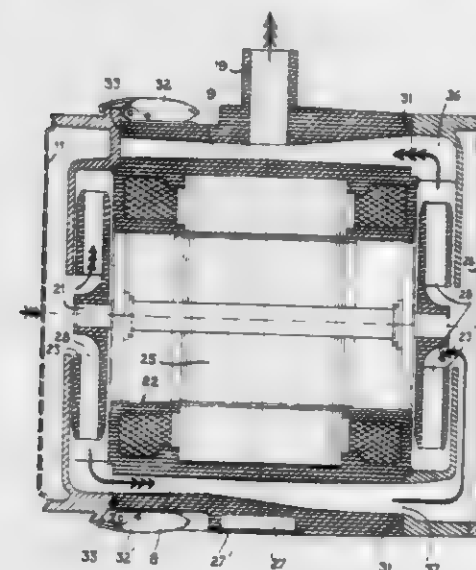
Int. Cl.³ F04B 23/04, 49/02

U.S. Cl. 417—38

9 Claims

1. A pumping device having two modes of operation and including at least two centrifugal pump elements connected to a single device motor characterized by:
a one-piece structure for said pumping device, said one-piece structure including means for providing serial or parallel coupling configurations for said centrifugal pump elements; and
means for changing from one of said coupling configurations to the other;
wherein said one-piece structure comprises:
a central member including said drive motor;
a first end member fixedly mounted to and communicating with said central member and including a first continuous

recess for receiving a first one of said at least two centrifugal pump elements;
a second end member detachably mounted to and communicating with said central member and including a second continuous recess for receiving a second one of said at least two centrifugal pump elements, said drive motor including a drive shaft with said at least two centrifugal pump elements being co-axially mounted to opposite ends



of said shaft, said central member and said first and second end members being co-axially positioned with respect to said drive shaft, said configuration changing means comprising:

means for releasably securing said second end member to said central member in either of two different positions, each of said positions corresponding to one of the coupling configurations of the pump elements and hence to one of the two operating modes.

4,229,143

METHOD OF AND APPARATUS FOR TRANSPORTING FLUID SUBSTANCES

Janos Pucher, and Antal Schmdler, both of Budapest, Hungary, assignors to "NIKEX" Nehezipari Külkereskedelmi Vállalat, Budapest V, Hungary

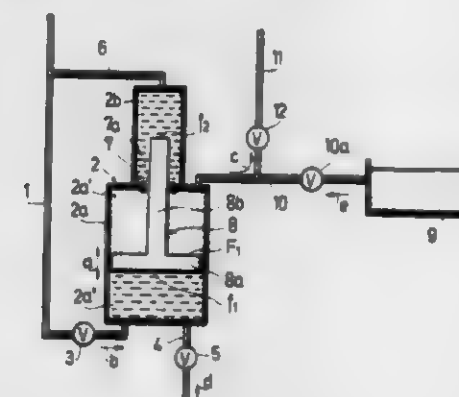
Filed Apr. 9, 1975, Ser. No. 566,410

Claims priority, application Hungary, Apr. 9, 1974, PU 191

Int. Cl.³ F04B 17/00

U.S. Cl. 417—53

4 Claims



1. A method of delivering a secondary fluid substance from its source by means of the potential energy of a primary liquid column by applying alternative suction and forcing strokes to said secondary fluid substance by means of an exchange of energy between said primary liquid column and said secondary fluid substance, comprising the steps of
interposing an axially aligned system of vessels sealed off from the atmosphere between said primary liquid column and said secondary fluid substance;
sucking into said system of vessels a quantum of said secondary fluid substance from its source during each suction

stroke by means of the potential energy of said primary liquid column;
ejecting from said system of vessels simultaneously the quantum of primary liquid which had been introduced into said system of vessels during the preceding forcing stroke;
forwarding said ejected quantum of primary liquid to a situs free from the pressure exerted by said primary liquid column;
drawing in a quantum of primary liquid into said system of vessels during each forcing stroke in a direction opposite to the suction stroke;
and ejecting thereby said quantum of secondary fluid substance which had been sucked into said system of vessels during the preceding suction stroke;
a pressure originating from the primary liquid column acting in said system of vessels in the direction of the suction stroke and also during the forcing stroke; and
preventing at least in part the mixing of the primary liquid and secondary fluid substance quanta during the alternative forcing and suction strokes.

4,229,144

FEEDBACK SHAFT EXTENDING BETWEEN SWASHPLATE AND DISPLACEMENT CONTROL VALVE

John J. Kass, Dubuque, and Donald O. Johannsen, Sherrill, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 7, 1978, Ser. No. 967,368

Int. Cl.³ F04B 49/00

U.S. Cl. 417—222

10 Claims



1. In an axial piston pump or motor and controls therefor including a pump or motor housing containing a swashplate mounted for angular adjustment, about a fixed axis, between a neutral position for effecting zero fluid displacement, and various positions at varying angular distances from the neutral position for effecting increasing fluid displacement as the angular distance from its neutral position increases, at least one hydraulic actuator coupled to the swashplate for selectively adjusting the latter in response to receiving control fluid pressure, a source of fluid pressure, a fluid sump, a pilot-operated displacement control valve located exteriorly of the housing and having separate fluid ports respectively coupled to the source of fluid pressure, the sump and the hydraulic actuator and including an axially shiftable spool member located within an axially shiftable sleeve member with the spool and sleeve members normally occupying a centered position relative to each other wherein they cooperate to block the flow of fluid to and from the actuator, a valve controller connected to the spool member for shifting the latter axially relative to the sleeve member a distance corresponding to an input command signal received by the valve controller and a feedback linkage connected between the swashplate and the sleeve member for shifting the latter axially to restore the centered relationship between it and the valve spool member in response to the swashplate moving to a new position corresponding to the input command signal, the improvement residing in the feedback linkage and comprising: a feedback shaft located along said fixed axis and having a first end fixed to the swashplate so

that the shaft rocks about the axis with the swashplate during adjustment of the latter, said feedback shaft extending through the housing and having a second end projecting into the control valve in crosswise relationship to the sleeve member and being connected directly to the latter at a location spaced radially from the axis whereby the sleeve member will be reciprocated when the shaft rocks.

4,229,145

SWASH PLATE COMPRESSOR

Yutaka Iizuka, Higashimetsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

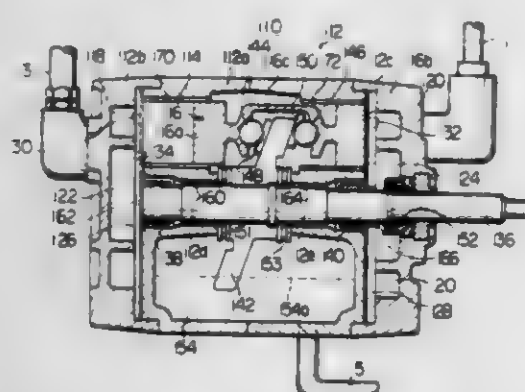
Continuation of Ser. No. 606,276, Aug. 20, 1975, abandoned.

This application Jan. 27, 1977, Ser. No. 763,178

Int. Cl.³ F04B 1/14

U.S. Cl. 417-269

3 Claims



1. A swash plate compressor comprising, in combination:
a housing defining an inlet chamber having an inlet pipe through which refrigerant fluid is introduced, an outlet chamber having an outlet pipe and a piston chamber, the housing being provided with first and second hubs, a bottom portion of the housing constituting a lubricating fluid reservoir containing liquid oil;

a piston reciprocally slidable in the piston chamber;
valve means operatively connecting the piston chamber to the inlet and outlet chambers and comprising first and second valve plates, each being formed with a hole;

a drive shaft rotatably supported within the housing, the drive shaft extending through the hubs of the housing and the hole of the second valve plate, the diameter of the hole of the second valve plate being larger than the diameter of the drive shaft;

a swash plate fixed for rotation with the drive shaft and being operatively connected to the piston to reciprocate the piston in the piston chamber, the swash plate being arranged to partially extend below a lubricating liquid oil level in the reservoir to thereby splash the oil within the housing and atomize the oil in a portion of the reservoir above the liquid oil level;

first and second thrust bearings disposed between the swash plate and the first and second hubs respectively, the first and second valve plates being disposed between the inlet chamber and the first and second thrust bearings respectively;

first and second journal bearings supported by the first and second hubs respectively within the housing to rotatably support the drive shaft, said journal bearings having a sliding contact portion extending over a longitudinal portion of the journal bearing to slidably support said drive shaft with a clearance being provided between said sliding contact portion and said drive shaft;

first and second passageways connecting the portion of the reservoir above the liquid oil level with the inlet chamber, the first passageway extending through the portion of the reservoir above the liquid oil level, the first thrust bearing, a first clearance defined between the drive shaft and the hub, the clearance between the drive shaft and the sliding contact portion of the first journal bearing, the hole of the first valve plate and the inlet chamber, the second passage-

way extending through the portion of the reservoir above the liquid oil level, the second thrust bearing, a second clearance defined between the drive shaft and the second hub, the clearance between the drive shaft and the sliding contact portion of the second journal bearing, the hole in the second valve plate and the inlet chamber, and

a third passageway providing communication between the piston chamber and the portion of the reservoir above the liquid oil level, the third passageway comprising third and fourth clearances provided between an outer surface of the piston and the inner surface of the piston chamber, the third and fourth clearances constituting part of the first and second passageways, the longitudinal width of the sliding contact portions of the journal bearings being variable so that the pressure difference between the first clearance and the hole of the first valve plate and the pressure difference between the second clearance and the hole of the second valve plate are optimally provided, whereby the liquid oil is circulated through the first, second and third passageways.

4,229,146

AIR COMPRESSORS

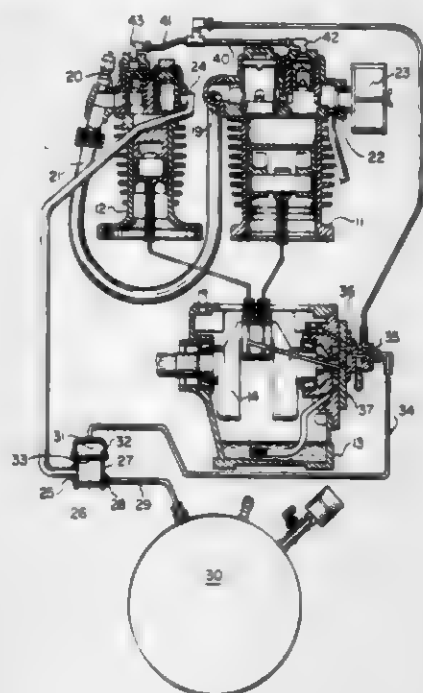
Paul W. Errett, Greensburg, Pa., assignor to Airtek, Inc., North Huntingdon, Pa.

Filed Feb. 2, 1979, Ser. No. 8,472

Int. Cl.³ F04B 49/00

U.S. Cl. 417-281

8 Claims



1. In an air compressor assembly having a high pressure air receiver, a compressor, an outlet port and an inlet port on said compressor, said inlet port having a normally closed spring loaded inlet valve, the improvement comprising a two position normally open spring loaded poppet valve on said compressor, oil pressure actuator means acting on said poppet valve opposite said spring, receiving pressure oil from a pressure lubricating system in said compressor to close said poppet valve against the spring in normal operation of the compressor, a pulsation damper having upper and lower chambers connected by a metering means between the compressor and air receiver, a connection from the compressor to the lower chamber delivering high pressure air thereto, a connection from the lower chamber to the air receiver, a connection from the upper chamber to the poppet valve on the same side as the spring, a pressure responsive actuator means selectively acting on the inlet valve, and a connection from the poppet valve to said pressure responsive actuator means acting to deliver pressurized air from the poppet valve to open the inlet valve when the poppet valve is in its open position.

4,229,147

ROTARY POSITIVE-DISPLACEMENT PUMP

Ernst Linder, Mühlacker; Helmut Rembold, Stuttgart; Walter Teegen, Waiblingen; Achill Kessler, Sindelfingen, and Roland Ehmann, Abstatt, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

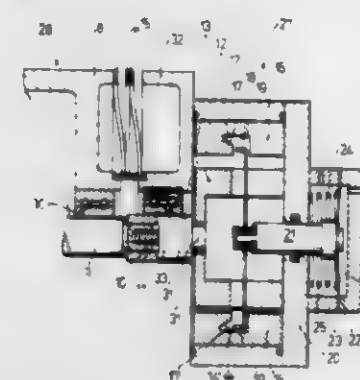
Filed Jan. 17, 1979, Ser. No. 4,232

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807721

Int. Cl.³ F04B 49/00

U.S. Cl. 417-283

12 Claims



1. A rotary positive-displacement pump of the type generating a vacuum comprising, in combination, a housing having a bore and including an inlet side and an outlet side, a rotatable piston eccentrically disposed within said housing bore for rolling engagement therewith, at least one vane in said housing for separating said inlet side from said outlet side and means responsive to supply pressure for locking said vane in a position which shuts off the pumping action of said pump, said locking means including a detent for locking said vane in said position for shutting off the pumping action.

4,229,148

FUEL INJECTION PUMP

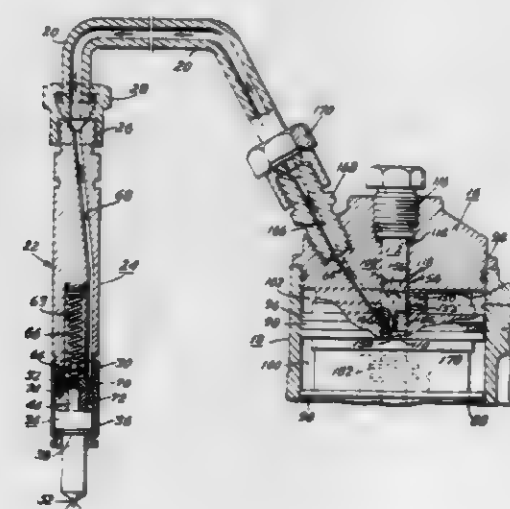
James A. Richmond, Monson, and Christopher A. Parent, Holyoke, both of Mass., assignors to Ambac Industries, Incorporated, Springfield, Mass.

Filed Dec. 22, 1978, Ser. No. 972,516

Int. Cl.³ F02M 41/12

U.S. Cl. 417-485

8 Claims



1. A fuel injection pump comprising a hydraulic head having a bore therein, a fuel pumping plunger slidably disposed in said bore and defining a fuel pumping chamber therewithin in conjunction with a closed end of said bore, means for reciprocating said plunger within said bore to produce pumping and suction strokes of said plunger, fuel supply means for supplying fuel to said pumping chamber during the suction strokes of said plunger, a valveless fuel distribution passage communicating with said bore, passage means in said plunger for delivering high pressure fuel from said pumping chamber to said fuel distribution passage during pumping strokes of said plunger, a

spill chamber in said hydraulic head adjacent said plunger, passage means in said plunger connecting said pumping chamber with said spill chamber upon termination of fuel injection, a low pressure fuel chamber, and restricted passage means connecting said spill chamber with said low pressure fuel chamber for producing a pressure buildup in said spill chamber and a restricted drainage of said fuel distribution passage upon injection termination.

4,229,149

OIL WELL PUMP

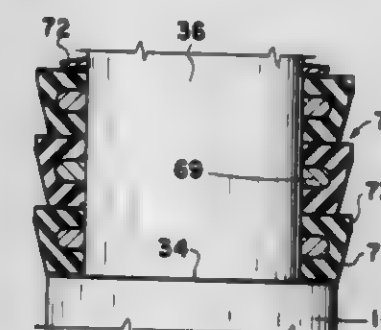
Richard L. Turner, Rte. 2, Box 138, Broken Arrow, Okla. 74012

Filed Aug. 28, 1978, Ser. No. 937,156

Int. Cl.³ F04B 21/04, 39/10

U.S. Cl. 417-554

2 Claims



1. A subsurface well pump for disposition within a working barrel of a well bore and arranged for reciprocal movement therebetween, said pump comprising housing means having one end in communication with a well fluid reservoir, ball check valve means carried by the housing means for providing alternate open and closed positions for the pump during operation thereof, self-centering ball stop means disposed within the housing means for cooperation with the ball check valve means for efficient operation thereof in an open position of the pump for admission of the well fluid to the interior of and longitudinally through the housing, discharge means provided in the housing for discharging well fluid from the interior of the housing to an annulus between the housing means and the working barrel for elevation of the well fluid to the surface of the well during operation of the pump, sealing means removably secured to the outer periphery of the housing means and in sealing engagement with the outer periphery of the housing means and the inner periphery of the working barrel for sealing the annulus from the well fluid reservoir, said sealing means comprising a plurality of substantially identical sealing rings having rigid core members removably disposed in stacked relation around the outer periphery of the housing means, each of said core members having a resilient material bonded to the outer periphery thereof for sealing engagement between the adjacent sealing ring and the outer periphery of the housing means and the inner periphery of the working barrel, and means removably engageable with the outermost sealing ring for securely locking the sealing rings in position around the housing means, and wherein the last mentioned means comprises an annular ring of substantially conical cross-sectional configuration wherein the inner diameter of the ring in the normal relaxed position thereof is slightly greater than the outer diameter of the housing means and in a flattened position of the ring the inner diameter thereof is slightly less than the outer diameter of the housing means whereby the inner periphery of the ring bites into the outer periphery of the housing means for securely locking the sealing rings in the sealing position around the housing means.

4,229,150

ANTI-ROTATION ARRANGEMENT FOR NUTATING FLUID DEVICE

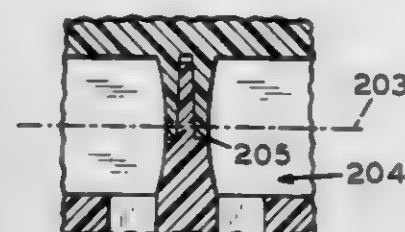
Walter D. Teague, Jr., Tweed Blvd., Nyack, N.Y. 10960, and Arthur T. Sempliner, 37-04 Van Nostrand Pl., Douglaston, N.Y. 11363

Filed Jan. 2, 1978, Ser. No. 911,803

Int. Cl.³ F01C 1/00; F03C 2/00

U.S. Cl. 418—50

6 Claims



1. In a fluid driven, nutating action appliance
 - (a) a motor housing consisting of two or more component parts
 - (b) a wobble plate mounted in said motor housing for universal tilting movement and movable by a driving fluid through progressively changing tilt angles for a nutating action cycle,
 - (c) means for ingress and egress of said driving fluid into the motor housing, and
 - (d) a dividing wall arranged between said means for ingress and egress and extending from the top of the motor housing to the bottom thereof,
 - (e) said wobble plate including a radial slot for reception of said dividing wall,
 - (f) at least a portion of the edges of the slot being in a close bearing relation to said dividing wall, and the improvement comprising
 - (g) said dividing wall comprising integral extensions of at least two of said motor housing components arranged in a mating relation
 - (h) the dividing wall being arranged and configured whereby the areas thereof in a close bearing relation to the radial slot are contoured to a concave surface,
 - (i) whereby the close bearing relation between the radial slot and the dividing wall is maintained for the entire nutating action cycle of the appliance, thereby providing a smooth operation for the appliance,
 - (j) said mating extensions defining a line of intersection therebetween,
 - (k) said line of intersection being formed whereby at least certain portions of said line of intersection are offset from the radial slot of said wobble plate at any particular angular orientation of the wobble plate.

4,229,151

SIDE PORT - RC ENGINE

Russell J. Van Rens, Waukesha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 12, 1975, Ser. No. 586,266

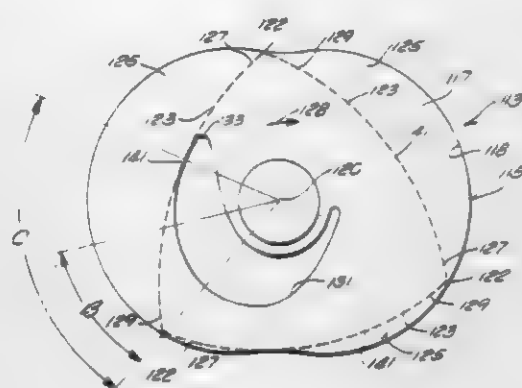
Int. Cl.³ F01C 1/02, 21/12

U.S. Cl. 418—61 A

1 Claim

1. A rotary internal combustion engine comprising a generally trochoid shaped housing including a pair of spaced generally parallel side walls, a generally triangularly shaped rotor supported within said housing for rotation about an axis perpendicular to said side walls, said rotor including three generally identically shaped side flanks which define, in cooperation with said housing, respective chambers which rotate with said flanks and which vary in volume in accordance with such rotation, each of said flanks having an end which leads in relation to the direction of rotor rotation, and end which trails in relation to the direction of rotor rotation and a length extending between said leading and trailing ends, and a charge inlet port which is located in one of said side walls, which

selectively communicates with said chambers in response to rotor rotation whereby to open and close said port, which extends arcuately relative to said rotor axis, and which includes a portion which, after opening of said part, terminally communicates with said chambers and which is located such



4,229,152

EPICYCLIC GEAR SYSTEM AND DRIVING MEANS THEREFOR

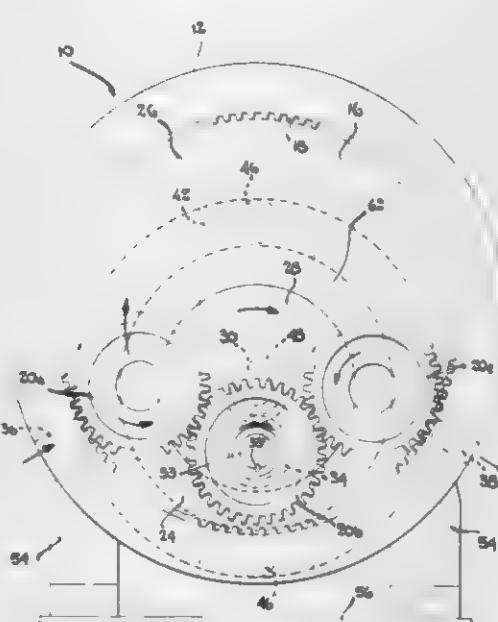
Charles K. Wojcik, Box #42, University of Petroleum & Minerals, Dhahran, Saudi Arabia

Filed Jan. 30, 1978, Ser. No. 873,179

Int. Cl.³ F01C 1/08; F16H 3/44

U.S. Cl. 418—61 R

6 Claims



1. An epicyclic gear system capable of use as a pump or a motor comprising:

- a housing;
- a ring gear within said housing;
- a plurality of epicyclic gears disposed within said housing and sealed therein to form a first variable volume compartment and a second variable volume compartment within said housing; and
- drive means attached to at least one of said epicyclic gears, said drive means including means for displacing said at least one epicyclic gear and means for imparting rotary motion to said at least one epicyclic gear about its own axis, said latter means including rotating means and second gear means, the latter comprising a sun gear and a planetary gear in engagement with one another, said sun gear being fixed with respect to said housing, said planetary gear rolling on said sun gear in response to rotation of

said rotating means and being connected to said at least one epicyclic gear, the latter being in engagement with at least two of said epicyclic gears.

4,229,153

APPARATUS FOR USE IN SLIP FORMING STRUCTURAL CONCRETE MEMBERS

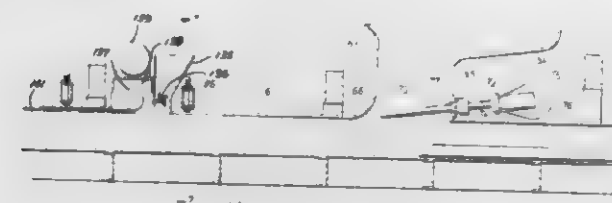
Henry D. Hight, Jr., 6400 Drury La., Fort Worth, Tex. 76116

Filed Mar. 8, 1979, Ser. No. 18,787

Int. Cl.³ B29D 7/12

U.S. Cl. 425—64

24 Claims



1. Apparatus for use in slip forming a structural concrete member on the top surface of an elongate pallet which has rails extending along its sides, said apparatus comprising a frame having rollers engageable with the rails to support the frame on the pallet for movement forwardly along the pallet, a forming body on the frame having a forming chamber comprising a top wall spaced above the pallet, side walls depending from the top wall to dispose their lower edges close to the top surface of the pallet, and an open rear end through which concrete may pass as the frame is so moved, and a hopper through which concrete may be fed to the front end of the forming chamber, and means for adjusting the elevation of the rollers with respect to the frame so as to raise and lower the lower edges of the side walls of the chamber.

4,229,154

SPINNERET FOR THE PRODUCTION OF HOLLOW FILAMENTS

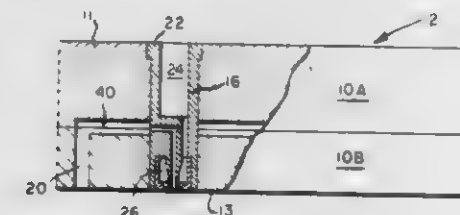
Castulo Chaban, Jr., Chattanooga, Tenn., and Curtis O. Hawkins, Cove City, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 4, 1979, Ser. No. 27,027

Int. Cl.³ B29C 25/00

U.S. Cl. 425—72 S

2 Claims



1. A spinneret for the production of hollow filaments comprising: upper and lower plates having contiguous surfaces, said contiguous surfaces having matching cavities to form a chamber, the top surface of the upper plate and the bottom surface of the lower plate being connected by a cylindrical passage, the cylindrical passage being counterbored at the top surface of the upper plate; and a cylindrical insert coextensive with said passage, said insert having a flange at one end that fits into the counterbore in the top surface of the upper plate, said top surface being swaged into said one end, said insert having a first axial bore partially through it from said one end and a second bore coaxial with said first bore partially through it from the other end of the insert, said first and second bores being separated by a median member having a plurality of radially spaced holes in communication with said first and second bores thereby providing a flow path through the spinneret within the insert; an inflation member projecting from a central location on said median member into said second axial bore, said inflation member having an axial passageway in

4,229,155

APPARATUS FOR BONDING A PLASTIC CASE TO A STUB CABLE

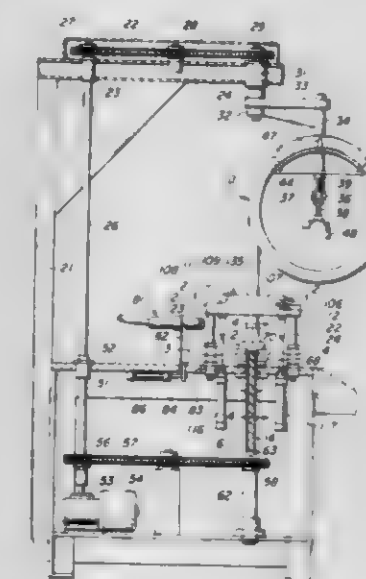
John S. Gellatly, La Grange, and Fred T. Richter, La Grange Park, both of Ill., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,393

Int. Cl.³ B29C 27/10

U.S. Cl. 425—114

6 Claims



2. An apparatus for bonding a straight section of a plastic sheathed, stub cable to a plastic casing part having an aperture formed therein, the cable also having an offset coiled section, which comprises:

- a nest for receiving the plastic part;
- means for supporting the coiled section of the cable in offset relation to the longitudinal axis of the straight section while the straight section is positioned within the aperture of the casing part;
- means for rotating said supporting means about the center of the apertured nest to orbit the coiled section about the longitudinal axis of the straight section of cable;
- means for simultaneously rotating the nest to rotate the casing part in unison with the rotating straight section of cable;
- means for laying a bead of bonding means along the juncture between the apertured casing part and the straight section of the cable; and
- means mounted coaxially of the straight section of the cable for movement toward the nest to force the extruded bead into the juncture between the apertured casing and the straight section of the cable.

6. An apparatus for bonding a flanged cap having a central aperture to the end of a plastic sheath of a cable having a projecting desheathed section and a coiled section, which comprises:

- a frame having a table with a slot extending from one edge thereof;
- a tube rotatably mounted to the table about the inner end of said table slot and said tube having a longitudinal slot alignable with said table slot for entry of the desheathed section of the cable;
- a boom projecting from said frame to overlie the table;
- an arm rotatably mounted at one end to said boom;
- means mounted on said arm for supporting the coiled section of the cable with the desheathed section extending into said tube;
- a nest secured to the tube for supporting the flanged cap with the central aperture about the sheath at the juncture of sheathed and desheathed sections of the cable;
- means for simultaneously rotating the arm to orbit the coiled

section of cable about the nest and tube and for rotating the nest and tube; and
 an extruder slidably mounted on said table for movement toward and away from said nest, said extruder having a nozzle that is positioned adjacent to the juncture of the flange aperture and the end of the sheath on the cable for extruding bonding material to said juncture of the rotating flange and cable sheath.

4,229,156

APPARATUS FOR MAKING CONCRETE BRICK HAVING ANTIQUE APPEARANCE

Nitilo M. Hyytinen, Reno, Nev., assignor to ABC Concrete Products, Reno, Nev.

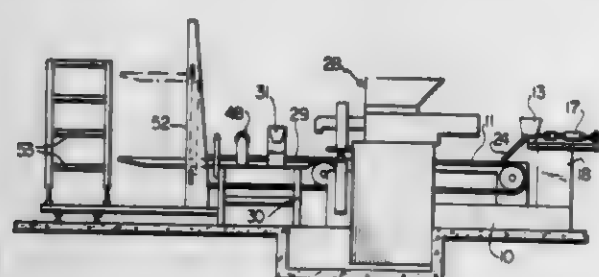
Division of Ser. No. 919,529, Jan. 26, 1978, Pat. No. 4,178,340.

This application Jan. 15, 1979, Ser. No. 3,577

Int. Cl.³ B28B 3/04, 5/04

U.S. Cl. 425-145

5 Claims



1. In an apparatus for making bricks which includes a molding means having a mold and supply of liquefied hardenable material, the improvement comprising inlet and outlet conveyor means associated with said molding means, at least one pallet carried by said conveyor means, a first hopper located adjacent to said inlet conveyor means and containing a first supply of flowable coloring material, first dispensing means for selectively discharging coloring material from said first hopper onto said pallet as said inlet conveyor means moves said pallet past said first hopper, said brick making apparatus including a mold and means to position said mold in engagement with said pallet to mold at least one brick on said pallet with one side of said brick engaging said coloring material and means to remove said mold from said pallet, a second hopper located adjacent to said outlet conveyor means and containing a second supply of flowable coloring material, second dispensing means for selectively discharging coloring material from said second hopper onto the opposite side of said brick carried by said pallet, and means for saturating said second coloring material on said brick, whereby coloring material is applied substantially to opposite sides only of said brick.

4,229,157

SYSTEM FOR CONTROLLING FEED OF WASTE GAS TO GROUND FLARE

Takuesen Ito; Masami Murakami, both of Osaka; Eizo Ishikawa, and Keiichi Otsuka, both of Ibaraki, all of Japan, assignors to Hitachi Shipbuilding & Engineering Company Limited, Osaka, Japan

Filed Sep. 15, 1978, Ser. No. 942,769

Claims priority, application Japan, Oct. 4, 1977, 52-119850

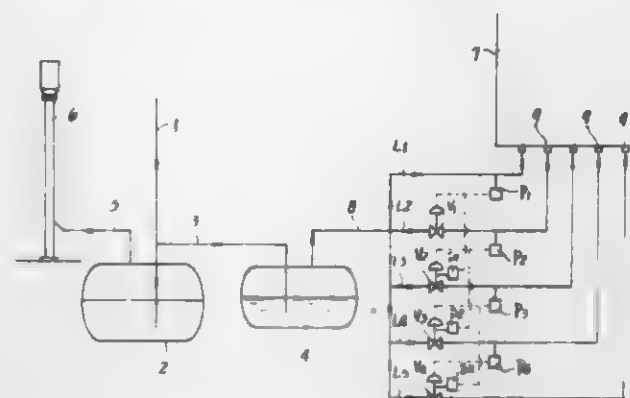
Int. Cl.³ F23D 13/20

U.S. Cl. 431-90

7 Claims

1. In a system for controlling the feed of waste gas to a ground flare comprising a plurality of branch pipes branching from a waste gas conduit and each connected to burners of the ground flare, a valve mounted on each of the branch pipes other than the first branch pipe for opening and closing the branch pipe, and a pressure detector mounted on each of the branch pipes other than the last branch pipe to feed an opening or closing signal to the valve on the following branch pipe, the improvement comprising:

means mounted on each of the valves for detecting the closing of the valve, and



the valve being closable in response to both a signal from the detector on the preceding branch pipe and a signal from the valve closing detecting means on the following branch pipe.

4,229,158

LINEAR CAPILLARY ORIFICE INJECTOR

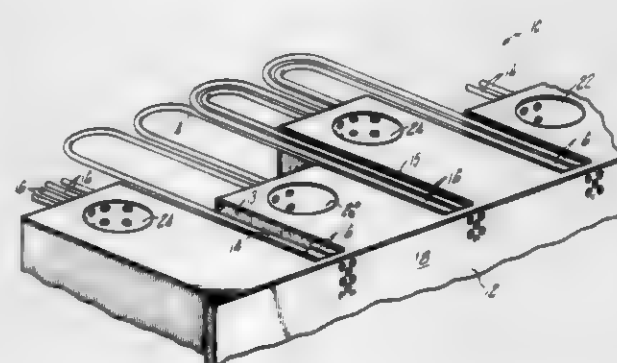
Joe F. Arnold, North Palm Beach; Robert G. Browning, Lake Park, both of Fla., and Richard A. Meinzer, Newington, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 26, 1979, Ser. No. 15,502

Int. Cl.³ F23C 5/08

U.S. Cl. 431-178

8 Claims



1. An injector for a combustion chamber for injecting fuel and oxidizer into said combustion chamber where combustion ensues, said injector comprising a block-like element having wall means defining a face in said combustion chamber, a plurality of spaced vertically stacked capillary tubes disposed in a slot in said block-like element, which slot extends rearwardly from a point short of the face of said wall means, said capillary tubes terminating in said face and defining an array of orifices disposed in a given pattern which pattern includes two columns of parallel spaced orifices for injecting an oxidizer and a single column of orifices spaced equidistance from two adjacent parallel orifices for injecting fuel, said capillary tubes being sized so that frictional pressure drop regulates the flow therethrough, and separate fuel and oxidizer manifold means in said block-like element for communicating with an end remote from said orifices of each of said capillary tubes.

4,229,159

COMBUSTION DEVICE FOR LIQUID FUELS

Yoshimi Ohmukai, Hirakata; Takeshi Tomisawa, Katana, and Yoshitaka Kawasaki, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

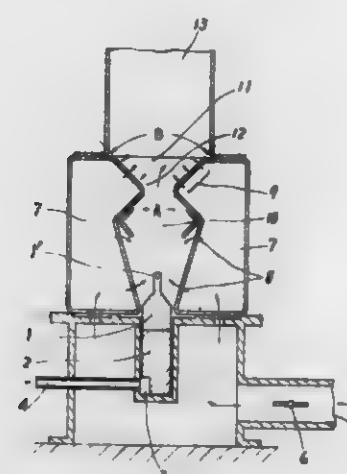
Filed Dec. 14, 1978, Ser. No. 969,555

Claims priority, application Japan, Dec. 20, 1977, 52/154015; Feb. 27, 1978, 53/1022643; Mar. 10, 1978, 53/028152; Mar. 16, 1978, 53/030684

Int. Cl.³ F23D 13/12

U.S. Cl. 431-328

11 Claims



1. A combustion device for a liquid fuel comprising a burner head capable of containing the liquid fuel in a liquid state, means for feeding the liquid fuel to the burner head, a fuel vaporizing portion for vaporizing the fuel fed to the burner head, a combustion chamber for burning the fuel released from the vaporizing portion upon vaporizing, means for supplying air to the vaporizing portion and to the combustion chamber, and means for regulating the flow of air to be supplied from the air supplying means, the burner head being made of a heat-resistant porous material having extending therethrough minute channels predominantly up to 100 μ m in diameter and giving the burner head a porosity of at least 25%, the burner head being capable of raising the liquid fuel at a rate of at least 0.001 g/cm³·min to a height of up to 70 mm.

an elongated clip mounting member having an arcuate fastening portion grasping said burner, and an arcuate, black,



non-reflective shield supported by the member concentrically relative to the arcuate portion, the mounting member comprising an arm.

4,229,161

PHOTOFLASH LAMP AND METHOD OF MAKING

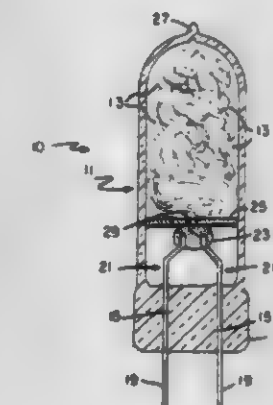
Andre C. Bouchard, Peabody, and Lawrence R. Fraley, Ipswich, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 2, 1979, Ser. No. 33

Int. Cl.³ F21K 5/02

U.S. Cl. 431-362

17 Claims



1. A photoflash lamp comprising:
 a hermetically-sealed, light-transmitting envelope including a combustion-supporting atmosphere therein;
 a quantity of filamentary combustible material located within said envelope;
 ignition means for igniting said combustible material, said ignition means including a pair of electrical conductors sealed within said envelope and projecting therefrom, each of said conductors including an end portion having access to the interior of said envelope, and a mass of primer material located within said envelope in electrical contact with said end portions of said electrical conductors; and
 a thin member positioned within said envelope and dividing said envelope into first and second portions, said first portion containing said combustible material and said second portion containing said end portions of said electrical conductors and said primer material and being void of filamentary combustible material, said thin member preventing said combustible material from electrically contacting said end portions and said primer material; means

4,229,160

BUNSEN BURNER GUARD

William E. Butler, 401 E. 10th, Eugene, Oreg. 97401

Continuation of Ser. No. 80,549, May 31, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 961,975

Int. Cl.³ F23D 13/40

U.S. Cl. 431-355

7 Claims

1. In combination with a bunsen burner, a bunsen burner guard comprising:

forming a passage between said first and second portions of said envelope for ignition of said filamentary material by said primer material.

4,229,162

CLOSURE APPARATUS FOR A SLAB FURNACE AND METHOD OF HEATING SLABS THEREIN

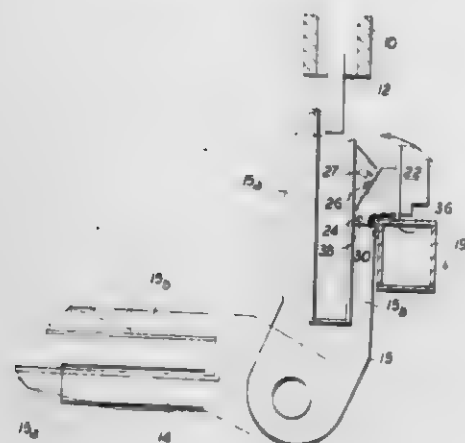
Richard G. Kotler, and Francis H. Bricmont, both of Pittsburgh, Pa., assignors to Washington Steel Corporation, Washington, Pa.

Filed Feb. 5, 1979, Ser. No. 9,064

Int. Cl.³ F27D 5/00, 1/18

U.S. Cl. 432-6

9 Claims



7. A method for charging a furnace in which a slab is raised into the furnace through a bottom opening by an elevator traveling between upper and lower limits adjacent a cam apparatus, said bottom opening being covered by a door hinged about a horizontal axis and having a cam follower attached thereto, said method comprising:

positioning the cam apparatus laterally adjacent the elevator doors when the elevator is adjacent its lower limit of travel;

raising the elevator from adjacent its lower limit toward its upper limit to engage the cam and the cam follower and pivot the door to a position in which the door substantially covers the bottom opening of the furnace when the elevator is adjacent the upper limit of travel; and

lowering the elevator from adjacent its upper limit toward its lower limit to engage the cam and cam follower and pivot the door in a direction away from the cam.

4,229,163

HEATING FURNACE

Yoshiaki Shinohara, Kurashiki, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

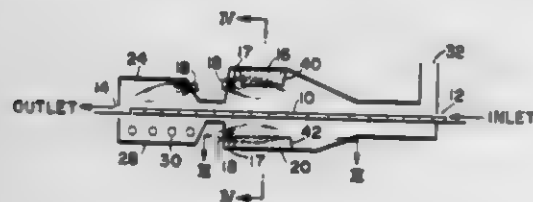
Filed Jul. 25, 1978, Ser. No. 927,850

Claims priority, application Japan, Jul. 25, 1977, 52-89680; Mar. 20, 1978, 53-30937

Int. Cl.³ F27B 7/00

U.S. Cl. 432-194

2 Claims



1. A heating furnace for heating bodies by combustion flame comprising:

conveying means which moves said heating bodies in the heating furnace;

furnace walls which cover said conveying means with said heating bodies;

burners which are attached to said furnace so as to heat said heating bodies by fuel combustion flames; and heat transfer converters comprising substantially vertical plate-like heat-resistant materials connected to one another by means of at least one bar material and parallelly disposed within and to the flow of the combustion flame of said burners, wherein said heat transfer converters are heated through convection heat transfers from high temperature and high speed flow of said combustion flame to increase the radiation heat transfer to said heating bodies.

4,229,164

ORTHODONTIC METHOD AND MEANS

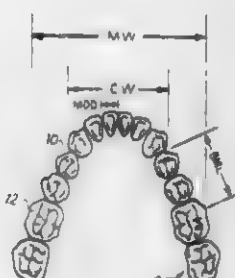
James H. Robnett, 4630-50th, Suite 505, Lubbock, Tex. 79414

Filed Oct. 16, 1978, Ser. No. 951,625

Int. Cl.³ A61C 7/00

U.S. Cl. 433-20

8 Claims



1. The method of forming the curvature of orthodontic appliances such as arch wires, retainers and positioners wherein the appliance requires an arch shaped portion comprising the steps of:

a. determining the

(i) sum of the mesio-distal diameters of the six anterior teeth,

(ii) cuspid width, and

(iii) molar width of the mandibular arch, then

b. drawing a pattern by

c. drawing an axis line,

d. drawing two cuspid width lines each parallel to the axis and spaced one-half the determined cuspid width from the axis,

e. drawing two molar width lines each parallel to the axis and spaced one-half the determined molar width from the axis,

f. striking a circular arc with the center on the axis and arc length between the cuspid width lines equal to the determined sum of the mesio-distal diameters, and thereafter

g. extending a bi-molar line from each intersection of the arc and the cuspid width line to the molar width line, and

h. forming the arch shaped portion of the appliance to said pattern.

4,229,165

PULSATING ORTHODONTIC APPLIANCE

Craven H. Kurz, 10921 Wilshire Blvd., Suite 512, Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 717,090, Aug. 24, 1976, abandoned. This application Apr. 11, 1978, Ser. No. 895,438. The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

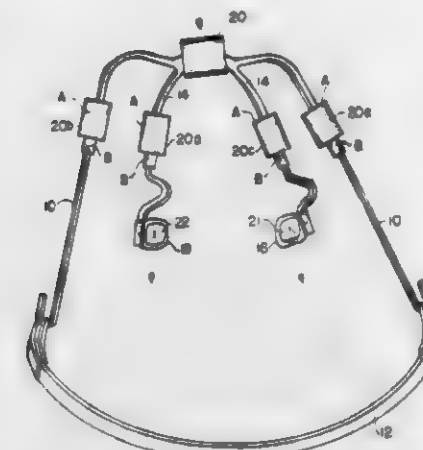
Int. Cl.³ A61C 7/00

U.S. Cl. 433-24

1 Claim

1. A method for producing orthodontic tooth movement which comprises introducing pressure impulses to the tooth of sufficient amplitude alternately to increase the tissue pressure in the periodontal membrane and adjacent bone tissue and to reduce the tissue pressure in the periodontal membrane and

adjacent bone tissue so as to produce a pump-like action in the area surrounding the tooth cyclically to suck blood and tissue



4,229,166

PARALLELING TOOL OR GAUGE FOR GENERAL DENTISTRY

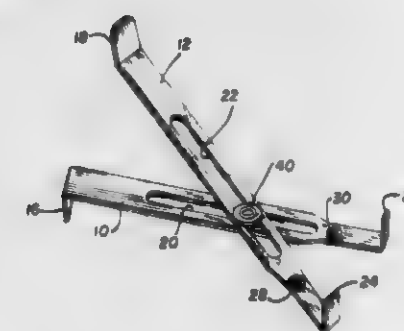
Anthony J. Cusato, Closter, NJ, and Jerome J. Goodman, 25 Pinehill Rd., Closter, N.J. 07624, assignors to Jerome J. Goodman, Closter, N.J.

Filed Jun. 20, 1979, Ser. No. 50,302

Int. Cl.³ A61C 19/04

U.S. Cl. 433-72

8 Claims



1. A paralleling tool and gauge for dentists and the like, and providing means for manipulating to a desired position and condition to indicate the desired spacing and offset of teeth, said tool including: (a) a pair of blade members arranged in a scissors relationship with at least one of said blades having a longitudinal slot in and through its midlength; (b) a pivot means holding the two blade members in a near contiguous relationship and with this pivot means extending through the slot and enabling longitudinal movement of one blade with the other, this pivot means retaining the blades so as to be moved only against a determined friction and to the selected attitude and position; (c) a movable end member disposed at one of the ends of each blade, each end member having a support surface by which is placed in a contiguous relationship to a selected end surface of the blade and with the end member having a face surface substantially normal to the mounting surface; (d) a pivot means by and with which each end movable member is pivotally secured to the blade member with said pivot means having a determined friction so that the end member may be selectively moved against said friction to a desired position and condition in which the end members are bent and substantially at right angles and the pivot securing means is a rivet extending through holes in the blade member and end member and securing the movable end member so that the upstanding faces of each of the members are in or may be moved to a common plane; and (e) manipulative on the blades are bent ends formed on each blade so that an attendant may move the several components of the assembled tool to the desired condition.

4,229,167

DOWEL PIN SETTING INSTRUMENT

Makoto Kikuchi, and Kijyu Yamada, both of Tokyo, Japan, assignors to Porceny Co., Ltd., Tokyo, Japan

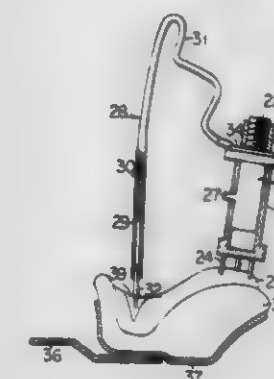
Filed Jun. 30, 1978, Ser. No. 921,049

Claims priority, application Japan, Apr. 12, 1978, 53/47109[U]

Int. Cl.³ A61C 19/00

U.S. Cl. 433-74

18 Claims



fluid into the area and to expel blood and tissue from the area so as to increase cellular action around the tooth.

1. A dowel pin setting instrument to be attached on an impression material comprising a flexible tube adapted for fitting a dowel pin at one end;

a flexible core wire coaxially inserted in said tube;

supporting means comprising a sleeve having an opening at one end and a rod for insertion into the opening in the sleeve;

engaging means for engaging the rod to the sleeve to prevent the rotation of the rod in a peripheral direction relative to the sleeve when the rod is inserted into the sleeve, and disengaging the rod from the sleeve when the rod is removed from the opening in the sleeve;

connecting means for connecting the other end of the flexible tube to the rod; and

fixing means for fixing the sleeve at its other end at a portion other than a tooth mark formed on the impression material.

4,229,168

CONTRA-ANGLE ULTRASONIC ENDODONTIC INSTRUMENT

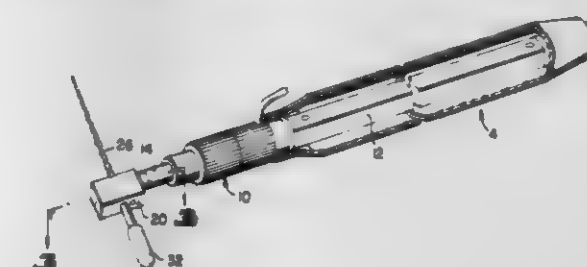
Howard W. Scholz, Jr., 1433 Monterey St., San Luis Obispo, Calif. 93401

Filed Aug. 23, 1978, Ser. No. 935,926

Int. Cl.³ A61C 1/07, 3/03

U.S. Cl. 433-124

5 Claims



1. A contra-angle ultrasonic endodontic instrument including:

ultrasonic vibration generator means for simultaneously producing both longitudinal and lateral ultrasonic vibrations;

means for actuating the ultrasonic generator means to produce vibrations;

a shaft mechanically coupled to the ultrasonic generator means to vibrate both longitudinally and laterally along its main longitudinal axis;

an endodontic tool of relatively uniform longitudinal and lateral cross-section that is spiraled longitudinally and that is free of indentations along its length; and

means for mechanically coupling the endodontic tool to the shaft with the longitudinal axis of the tool at a substantial angle to the longitudinal axis of the shaft so that the ultrasonic vibrations in the shaft are transmitted to the tool.

4,229,169

DENTAL PROSTHESES FITTING

Peter J. Smith, 6 Kegworth St., and Kishor Bava, 246 High St., both of Eltham, New Zealand

Filed Nov. 9, 1978, Ser. No. 959,149

Claims priority, application New Zealand, Nov. 17, 1977, 185708

Int. Cl.³ A61C 8/00

U.S. Cl. 433—174

10 Claims



1. A dental implant for insertion into a jaw bone, comprising in combination:

- (a) a self-tapping metal screw with a head end and an apex end having an anti-rotation means and including a blind hole extending axially from the head end of said screw, said blind hole including a knurled surface in at least a portion thereof; and
- (b) a metal post member having one end thereof capable of

being anchored by adhesive means within said blind hole and the other end being bifurcated and adapted to be attached to a prosthetic tooth.

4,229,170

PONTIC HAVING AN INTERNAL CERAMIC CORE

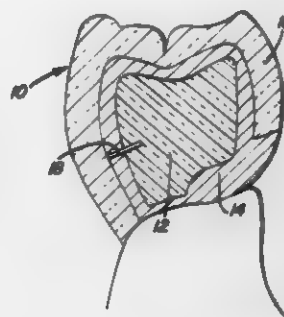
Richard D. Perez, 1118 El Centro St., South Pasadena, Calif. 91030

Filed May 4, 1978, Ser. No. 902,885

Int. Cl.³ A61C 13/08

U.S. Cl. 433—206

1 Claim



1. A pontic, comprising, in combination:

- (a) a core constructed from a ceramic material;
- (b) a relatively thin metal mass disposed around and embedding the core; and
- (c) a covering layer formed of porcelain fused to the metal mass and extending over at least a substantial portion of the metal mass to provide a pontic of lightweight construction having high strength characteristics with minimum distortion, porosity and heat conduction.

CHEMICAL

4,229,171

PROCESS FOR THE PREPARATION OF FIBER-REACTIVE DYESTUFFS

Fritz Meininger, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 5, 1978, Ser. No. 948,907

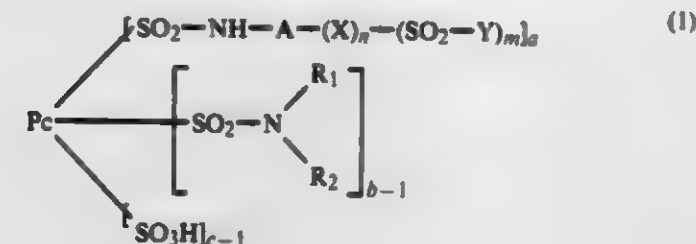
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1977, 2745480

Int. Cl.² C09B 62/66, 62/68, 62/74, 62/76

U.S. Cl. 8—661

6 Claims

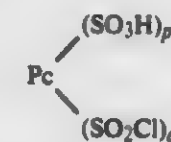
1. A process for the preparation of a fiber-reactive dye mixture of a phthalocyanine dyestuff of the formula (1)



and an azo dyestuff of the formula (2)



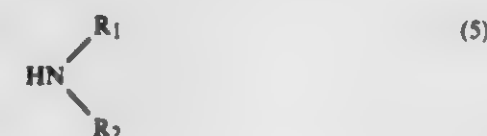
(each in the form of an acid or as a salt), which comprises reacting a phthalocyanine sulfochloride which in the form of the free acid corresponds to the formula (3)



with an aromatic amine of the formula (4)



as such or—simultaneously or in any order—in conjunction with an amine of the formula (v)



in water or in an organo-aqueous or in an organic solvent at a pH value of from about 4 to about 8 and at a temperature of from about -10°C. to about 100°C. , in the presence of an acid binding agent, and subsequently diazotizing unreacted amine of the formula (4) and coupling said diazotized amine with a coupling component of the formula (6)



wherein:

Pc is a metal-free or metal-containing phthalocyanine, which is unsubstituted except by substituents as indicated in formula (1) which are arranged in the 3- or 4-position of the carbocyclic aromatic nuclei of the phthalocyanine skeleton, or substituted additionally by substituents as indicated in formula (1) which are arranged in the 3- or 4-positions of the carbocyclic aromatic nuclei of the phthalocyanine, or by phenyl or halogen,

A is phenylene or naphthylene which is unsubstituted or substituted by substituents selected from the group consisting of hydroxy, lower alkyl, lower alkoxy, sulfo, carboxy, halogen, nitro, phenylamino, lower alkanoylamino, benzoylamino, phenylsulfonylamino, phenylamino, ben-

zoylamino and phenylsulfonylamino, which are substituted by lower alkyl, lower alkoxy and/or halogen;

X is the group $\text{—CH}_2\text{—}$ or $\text{—N(CH}_3\text{)—}$;

Y is vinyl, β -sulfoethyl or β -hydroxyethyl;

R₁ and R₂ are identical or different and each is hydrogen, unsubstituted or substituted alkyl, or unsubstituted or substituted phenyl or

R₁ and R₂ form a ring together with the nitrogen atom;

m is the number 1 or 2;

n is the number 0 or 1;

a, b and c are identical or different and each is a whole or fractional number of from 1 to 4, the sum of (a+b+c) is a whole or fractional number of 6 at a maximum;

p is a whole or fractional number of from 0 to 3,

q is a whole or fractional number of from 1 to 4, the sum of (p+q) is a whole or fractional number of 4 at a maximum, and

K is the radical of a pyrazolone, an aminopyrazole, a pyridone or of a methylene carboxylic acid arylamide coupling component.

4,229,172

DISPERSE DYEING OF POLYESTER WITH BENZALKETO DERIVATIVES AS CARRIERS: BENZALACETONE, METHYL CINNAMATE ETC.

Hans-Peter Baumann, Ettingen; Hans-Georg Karmann, Binningen, both of Switzerland, and Achim Wiedemann, Weil am Rhein, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 786,073, Apr. 11, 1977,

abandoned. This application Feb. 21, 1978, Ser. No. 879,562

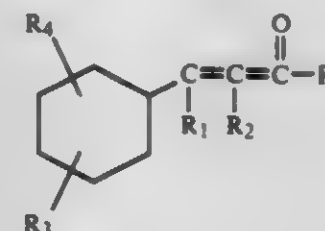
Claims priority, application Switzerland, Apr. 13, 1976, 4849/76; Jun. 8, 1976, 7186/76

Int. Cl.² D06P 3/82, 1/68

U.S. Cl. 8—533

27 Claims

1. A method of dyeing a polyester or polyester blend textile material with a disperse dyestuff which comprises exhaust dyeing in a dyebath to which has been added before the introduction of the textile material a dyeing carrier of formula



wherein

R is (C₁₋₄)alkyl or (C₁₋₄)alkoxy,

each of

R₁ and R₂, independently, is hydrogen, halogen, methyl or ethyl,

and each of

R₃ and R₄, independently, is hydrogen, halogen, hydroxyl, (C₁₋₂)alkyl or (C₁₋₂)alkoxy,

(6) or a mixture of such dyeing carriers.

4,229,173

PROCESS AND APPARATUS FOR THE CONTINUOUS DYEING OF LENGTHS OF MATERIAL CONSISTING AT LEAST PARTLY OF CELLULOSE FIBERS

Heinz Fleissner, Frankfurt am Main, Fed. Rep. of Germany, assignor to Vepa AG, Switzerland

Filed Jun. 29, 1973, Ser. No. 375,028

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1972, 2231767

Int. Cl.³ D06P 1/22, 5/20; D06B 1/12, 13/00, 23/24

U.S. Cl. 8—519

1 Claim

1. In a process for the continuous dyeing of lengths of textile material, which, at least partly, contains cellulose fibers by the Pad-Steam process wherein the textile material onto which

dyestuff has been applied is impregnated with chemical reducing agents including an alkaline solution, is transported into a steamer for dyestuff-fixation by steaming therein, is after-treated by the sequential steps of rinsing with a liquor to remove the alkaline solution, oxidizing the dyestuff in the material with a liquor, and soaping and again rinsing with a liquor to neutralize the material and then is finally dried, the improvement which comprises effecting the rinsing step required for



removing the alkaline solution and the rinsing step after soaping by conveying the material on a perforated surface of a suction drum means and by forcing the appropriate rinsing liquors through the material being conveyed on said suction drum means, removal of the alkaline solution after steaming being effected within the discharge portion of said steamer by the rinsing liquor being forced through the material in direct succession after the steaming whereby the oxygen of the air has no contact with the material.

4,229,174

DISPERSANT FOR TEXTILE DYEING AND OPTICAL BRIGHTENING

Paul Boerzel, Frankenthal; Peter Freyberg, Speyer; Norbert Greif, Bobenheim, and Rudi Widder, Leimen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 974,621

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758881

Int. Cl.³ C09B 67/00

U.S. Cl. 8-588

3 Claims

1. A process for dyeing textile materials, containing natural and/or synthetic fibers, in an aqueous liquor, with dyes which are sparingly soluble or insoluble in water and are selected from the group comprising the disperse dyes, pigment dyes, vat dyes and optical brighteners, wherein the dispersant used is a water-soluble sulfonic acid group containing random copolymer of from 80 to 20% by weight of olefins of 3 to 6 carbon atoms and from 20 to 80% by weight of a monomer selected from the group comprising styrene, α -methylstyrene, nuclear-substituted monohalogenated methylstyrenes, α -ethylstyrene, p-chlorostyrene and p-bromo-styrene, which random copolymers contain from 0.5 to 2 sulfonic acid groups per styrene or substituted styrene unit in the copolymer.

4,229,175

LIME-FREE AND SULFIDE-FREE LIMING PROCESS

France Knaflle, Frankenthal, and Franz-Friedrich Miller, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 24, 1978, Ser. No. 889,835

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714813

Int. Cl.³ C14C 1/00, 1/08

U.S. Cl. 8-94.17

7 Claims

1. A lime-free and sulfide-free process for liming skins and hides which comprises treating the hair-bearing animal skins or hair-bearing animal hides with a mixture of

- (a) sodium hydroxide solution,
- (b) at least one sodium salt of dicarboxylic acids of 3 to 6 carbon atoms, and
- (c) sodium sulfate,

wherein the sodium hydroxide solution loosens the attachment of the hair to the hides or skins, the proportion of the sodium salt of dicarboxylic acids in the sum of components (b) and (c)

being at least 10% by weight, and wherein said components (b) and (c) are agents for controlling swelling of the skins or hides.

4,229,176

PROCESS FOR PREVENTING OLIGOMER DEPOSITS ON DYED POLYESTER TEXTILE MATERIAL

Paul Schäfer, Riehen, and Heinz Abel, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,579

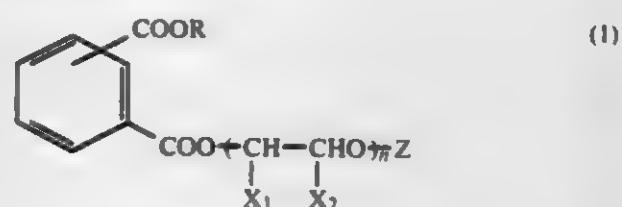
Claims priority, application Switzerland, Aug. 10, 1977, 9800/77

Int. Cl.³ D06P 1/18, 1/16, 1/64, 5/02

U.S. Cl. 8-582

16 Claims

1. A process for preventing oligomer deposits on dyeings produced on polyester textile material containing up to 100 polyester fibers, which process comprises applying to said material during or after the dyeing procedure a phthalic acid ester of the formula



wherein

R is alkyl or alkenyl of 6 to 22 carbon atoms, one of X_1 and X_2 is hydrogen or methyl and the other is hydrogen, Z is hydrogen or alkyl of 1 to 4 carbon atoms, and n is 1 to 4.

4,229,177

DYE COMPOSITIONS

Remus I. Lazar, Berwyn, and Richard C. Reichel, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 5, 1978, Ser. No. 912,169

The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.

Int. Cl.³ D06P 1/64, 3/24, 3/14

U.S. Cl. 8-435

5 Claims

1. The dye composition comprising one part by weight C.I. Disperse Blue 79 dye and from 1 to 20 parts by weight of a dye assistant comprising a combination of:

- (A) from 10 to 90 parts by weight dicyclopentenyl alcohol and
- (B) from 90 to 10 parts by weight of a material selected from the group consisting of butyl and benzoate and dibenzyl ether.

4,229,178

DYE COMPOSITIONS

Remus I. Lazar, Berwyn, and Richard C. Reichel, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 5, 1978, Ser. No. 912,170

Int. Cl.³ D06P 1/651, 3/84, 1/16

U.S. Cl. 8-583

5 Claims

1. A dye composition for synthetic polyamide fibers comprised of forty percent or more of the condensation product of 4,4'-diamino-dicyclohexyl methane and decanodicarboxylic acid having the bias repeating unit:



which comprises:

- A. One part of weight C. I. Disperse Blue 79 dye and
- B. From 1 to 20 parts by weight of a dye assistant comprised of a combination of:
 - (a) from about 10 to about 90 weight percent of a mixture of lower alkyl esters of mono- and di-chlorinated benzoic acids; and
 - (b) from about 90 to about 10 weight percent of a mixture of lower alkyl esters of toluic and benzoic acids.

4,229,179

SPECTROPHOTOMETRIC MEASUREMENT IN A CHEMICAL TESTING APPARATUS

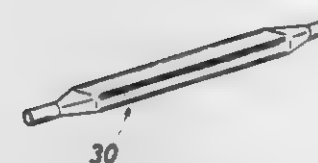
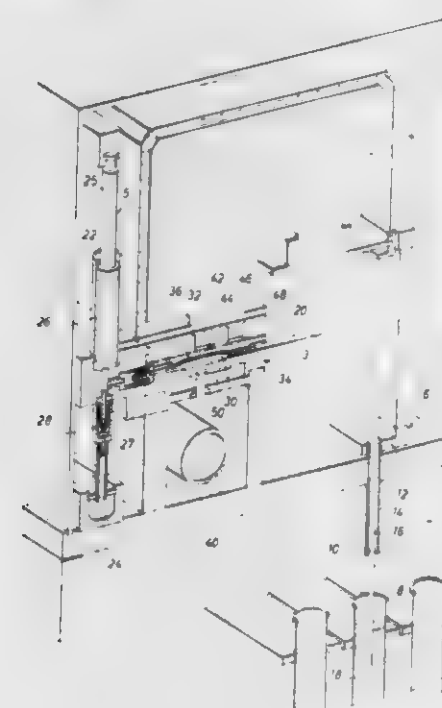
Lap Y. Lee, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Filed Jun. 30, 1978, Ser. No. 920,863

Int. Cl.³ G01N 21/24, 21/26

U.S. Cl. 23-230 R

16 Claims



10. A method of analyzing a sample liquid in a chemical testing apparatus comprising the steps of providing a substantially horizontal elongated optically transmissive cuvette defining a liquid flowpath along a longitudinal axis and having a pair of parallel opposed flat surfaces along said longitudinal axis separated by an internal dimension no greater than that which will maintain a meniscus of a leading edge of liquid sample statically occupying said cuvette, moving a liquid having a leading edge defining a meniscus into said cuvette, maintaining said sample liquid in said cuvette for a predetermined period of time, moving said liquid from said cuvette and moving a sample liquid having a leading edge defining a meniscus into said cuvette, maintaining said sample liquid in said cuvette for a predetermined period of time, directing radiant energy through said sample liquid along a path substantially perpendicular to said flat surfaces of said cuvette while said sample liquid statically occupies said cuvette, and measuring the radiant energy transmitted from said cuvette.

999 O.G.-40

4,229,180

PROCESS AND CATALYST FOR DETERMINING NITROGEN IN A SAMPLE ACCORDING TO THE KJELDAHL PRINCIPLE

Steen R. Christoffersen, Hilleroed, and Ole-Christian Bjarno, Holte, both of Denmark, assignors to A/S N. Foss Electric, Hilleroed, Denmark

Filed Oct. 6, 1978, Ser. No. 949,269

Claims priority, application Denmark, Oct. 7, 1977, 4452/77 Int. Cl.³ G01N 31/10, 31/16; B01J 23/16

U.S. Cl. 23-230 R

17 Claims

1. A process for determining nitrogen in a sample according to the Kjeldahl principle, comprising catalyzing the sample destruction with an antimonate.

4,229,181

METHOD FOR DETERMINING OIL-RELATED CHARACTERISTICS OF GEOLOGICAL SEDIMENTS FROM SMALL SAMPLES THEREOF

Jean Espitalie, le Vesinet; Jean-Loup Laporte, Rueil Malmaison; Marcel Madec, Suresnes, and Francois Marquis, Saint Prix, all of France, assignors to Institut Français du Pétrole, France

Continuation-in-part of Ser. No. 760,524, Jan. 19, 1977, Pat. No. 4,153,415. This application Sep. 8, 1978, Ser. No. 940,753

Claims priority, application France, Jan. 20, 1976, 76 01765; Nov. 12, 1976, 76 34402

Int. Cl.³ G01N 31/12

U.S. Cl. 23-230 EP

12 Claims



1. A method for rapidly evaluating at least one oil-related characteristic of a geological sediment using a small-sized sample thereof comprising determining the overall amount of hydrocarbons initially present in the sample and the overall amount of hydrocarbon products obtained by pyrolyzing the insoluble organic material contained in the sample, this method comprising the steps of

- (a) heating the sample to a first temperature suitable for releasing only the gaseous hydrocarbons initially contained in the sample,
- (b) determining a first parameter representative of the amount of these gaseous hydrocarbons,
- (c) heating the sample to a second temperature greater than said first temperature and suitable for vaporizing the whole amount of the liquid hydrocarbons initially contained in the sample, without pyrolyzing the insoluble organic material of the sample,
- (d) determining a second parameter representative of the amount of said liquid hydrocarbons,

- (e) heating the sample to a third temperature greater than said second temperature to pyrolyze the insoluble organic material contained in the sample;
- (f) determining a third parameter representing the amount of the hydrocarbon products resulting from this pyrolysis, and
- (g) deriving from said third parameter, together with said first and second parameters, the kind of hydrocarbons contained in the geological sediment and the degree of evolution of the insoluble organic material of the sample.

4,229,182

RECOVERY OF ALUMINUM FROM COMPOSITE PROPELLANTS

Robert A. Froesch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Graham C. Shaw, Garland, Utah

Filed Sep. 29, 1978, Ser. No. 947,000

Int. Cl.³ B01J 19/00; B01F 1/00

U.S. Cl. 23—293 R

9 Claims

1. A method of recovering metal powder from a solid composite propellant comprising a synthetic polymeric binder containing hydrolyzable cured groups, and less than 15% oxidizer salt comprising the steps of:

dissolving the composite propellant in an active transesterification solvent comprising an alcohol solution of a catalyst and the catalyst being present in an amount of at least 5% by weight based on composite propellant and is an alkali metal alkoxide of the formula MOR where M is an alkali metal and R is an alkyl group containing 1 to 6 carbon atoms whereby the binder is depolymerized into fragments soluble in the solvent; and separating the metal from the solution.

4,229,183

METHOD OF REFINING SOLID FUEL OF ORGANIC VEGETABLE MATERIAL

Jan-Mats Eneroth, and Sven A. Nordfeldt, both of Vaxjo, Sweden, assignors to AB Svenska Flakfabriken, Stockholm, Sweden

Filed Mar. 30, 1979, Ser. No. 25,551

Claims priority, application Sweden, Apr. 4, 1978, 7803776

Int. Cl.³ C10L 5/44; C10F 7/02

U.S. Cl. 44—1 D

13 Claims

1. A method of refining solid fuel of organic vegetable material, which fuel is dried with utilization of drying gases, characterized in that the fuel is supplied to a mill together with an adjusted amount of drying gases, in which mill the material is disintegrated to finely distributed state and dried simultaneously with said disintegration, whereafter the dried disintegrated material is transported pneumatically by the drying gas from said mill and is further dried in at least one pneumatic drying step, and the material thereafter is separated from the drying gas to produce refined solid fuel.

3. A method as defined in claim 1, characterized in that the fuel consists of a mixture of one or more of bark, wood shavings, wood chips, other wood waste and peat.

11. A method as defined in claim 1, characterized in that the material is formed to briquets after refining.

4,229,184

APPARATUS AND METHOD FOR SOLAR COAL GASIFICATION

David W. Gregg, Moraga, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 13, 1979, Ser. No. 29,962

Int. Cl.³ B01J 3/00

U.S. Cl. 48—62 R

15 Claims

1. A solar coal gasification apparatus comprising:

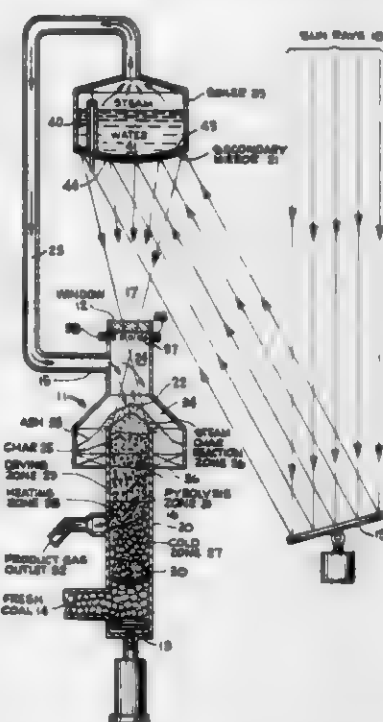
(a) a gasification reactor comprising a reaction chamber,

including means for withdrawing reaction products from said chamber;

(b) a transparent window set in an upper surface of said gasification reactor, said window being transparent to solar radiation;

(c) a secondary mirror having a reflective frontside and a conductive backside disposed in spaced-apart, optically communicating relation to said window;

(d) an array of primary mirrors adapted to reflect and direct said solar radiation onto said secondary mirror, said pri-



mary and secondary mirrors being oriented to collect and redirect, solar radiation into said reaction chamber through said transparent window and concentrate said solar radiation in a reaction zone within said reactor said reaction zone being located below and spaced apart from said window; and

(e) means for feeding carbonaceous materials and gaseous reactants into said reaction chamber to form a moving bed of carbonaceous material having an upper surface located in said region in spaced-apart relation to said window.

4,229,185

PROCESS FOR THE GASIFICATION OF CARBONACEOUS MATERIALS

Allan Sass, Los Angeles, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 292,883, Sep. 28, 1972,

abandoned. This application Nov. 10, 1975, Ser. No. 630,557

Int. Cl.³ C10J 3/46

U.S. Cl. 48—197 R

30 Claims

1. A process for the gasification of particulate carbonaceous material comprising:

(a) introducing into a first pyrolysis zone a particulate carbonaceous feed material, a first gas which is substantially free of free oxygen, and a first solid heating media;

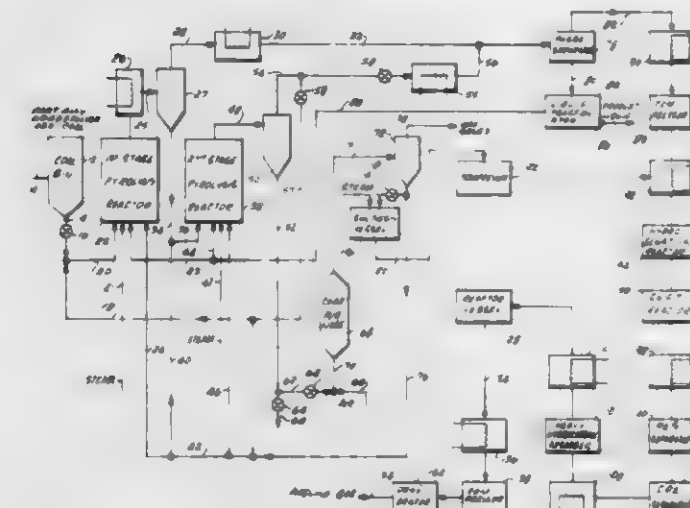
(b) rapidly conducting said first gas, and said first solid heating media, and said particulate carbonaceous feed material through said first pyrolysis zone in turbulent entrained flow to provide for the rapid transfer of heat from said first solid heating media to said particulate carbonaceous feed material to yield first solids and first fluids, said first solids comprising said first solid heating media and a first char product, said first fluids comprising said first gas and a first gaseous product comprising hydrocarbons of from one to four carbon atoms;

(c) separating a portion of said first solids from said first fluids;

(d) introducing into a second pyrolysis zone, a second gas

substantially free of free oxygen, a portion of said first solids, and a second solid heating media;

(e) rapidly conducting said second gas, said first solids, and said second solid heating media through said second pyrolysis zone in turbulent entrained flow to provide for the rapid transfer of heat from said second solid heating media to said first solids to yield second solids and second fluids, said second solids comprising said first solid heating media, a second char product, and said second solid heating media, said second fluids comprising said second gas and a second gaseous product comprising hydrogen and carbon monoxide, said second gaseous product being produced at least in part directly from the devolatilization of the remaining volatilizable matter in said first solid product, and maintaining said second pyrolysis zone free of



free oxygen by preventing free oxygen from being introduced into said second pyrolysis zone;

(f) removing essentially all gases and solids from said second pyrolysis zone in a single entrained stream, and separating a portion of said second solids from said second fluids;

(g) heating said portion of said second solids separated from said second fluids in step (f) by combustion with a gas comprising free oxygen to a first heating temperature high enough to impart to same sufficient thermal energy to form a solid heating media and a combustion gas;

(h) separating said second solids heated in step (g) from said combustion gas; and

(i) recycling at least a portion of said second solids separated from said combustion gas step (h) to at least one of said pyrolysis zones as said solid heating media.

4,229,186

ABRASIVE BODIES

William I. Wilson, 18 East St., East Town, Johannesburg, Transvaal, South Africa

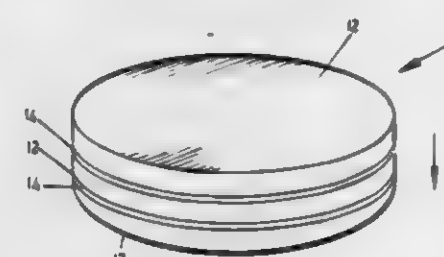
Filed Feb. 28, 1978, Ser. No. 882,808

Claims priority, application South Africa, Mar. 3, 1977, 77/1270

Int. Cl.³ B24D 3/06

U.S. Cl. 51—297

21 Claims



1. A laminated abrasive body comprising a plurality of abrasive compacts joined together to form a laminate; each compact comprising a mass of diamond or cubic boron nitride abrasive particles or a mixture thereof, present in an amount of

at least 70 percent by volume of the compact, bonded into a hard conglomerate; the adjacent compacts being joined by means of a layer of a metal or metal alloy braze; the thickness of the laminate exceeding 5 mm and the longest dimension of the body transverse to the thickness exceeding 2 mm.

4,229,187

MOVABLE, CONTINUOUSLY CHANGING, SELF-CHARGING ELECTROSTATIC FILTER

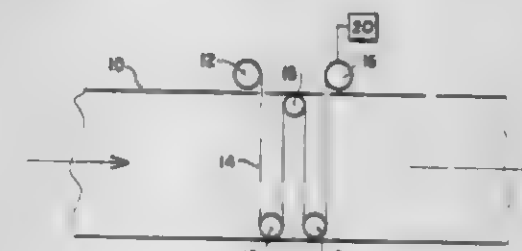
William F. Stockford, and Joseph M. Gamewell, both of Salisbury, N.C., assignors to Gamewell Manufacturing, Inc., Salisbury, N.C.

Filed Apr. 9, 1979, Ser. No. 28,524

Int. Cl.³ B03C 3/10; B01D 46/22

U.S. Cl. 55—14

2 Claims



2. A method for separating contaminants from an environment containing weld smoke or the like comprising the steps of:

(a) moving contaminated air from the environment through an air separating device;

(b) at the air separating device passing a movable, self-charging electrostatic filter through the contaminated air, said filter being formed of a length of relatively thin non-woven filter media formed of a synthetic material constructed of fibers from the polymeric group including polyester, nylon, and polypropylene, said material having the characteristics of:

(i) generating an electrostatic charge in the presence of air moving at a velocity of at least 200 feet per minute, and;

(ii) including fibers in the range of 1.5 to 6 denier in a homogenous mix of substantially 50% large fibers and 50% small fibers with a resin bonding agent distributed evenly throughout the mixture and completely throughout the thickness of the media prior to heat curing.

4,229,188

SELECTIVE ADSORPTION PROCESS

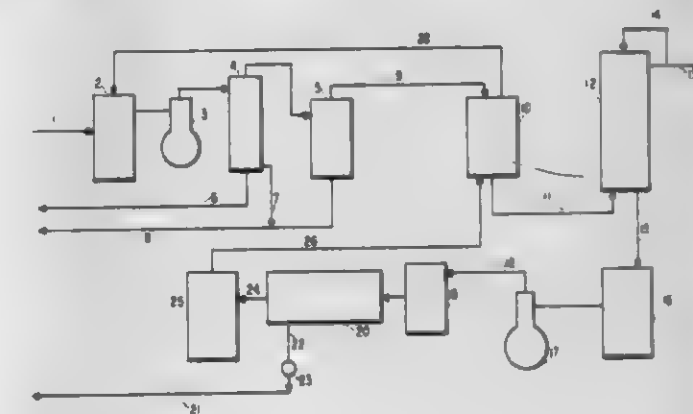
George M. Intille, Randolph, N.J., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 18, 1979, Ser. No. 49,515

Int. Cl.³ B01D 53/04, 53/22

U.S. Cl. 55—16

27 Claims



1. In a selective adsorption process wherein a feed gas mix-

ture containing hydrogen, at least one heavier gas and vapors of at least one normally liquid hydrocarbon is directed to a guard adsorber of a selective adsorption unit, vapors of normally liquid hydrocarbons are adsorbed by said guard adsorber, said feed gas mixture substantially freed of said vapors is thereafter directed to a selective adsorber of said selective adsorption unit, a hydrogen product is obtained from said selective adsorption unit and a first purge gas comprising hydrogen is obtained from said selective adsorption unit, the improvement comprising directing said first purge gas to a membrane permeator selectively permeable to hydrogen, recovering from said permeator permeated gas comprising hydrogen, sequentially directing said permeated gas to said guard adsorber, purging said guard adsorber with said permeated gas of at least a portion of said adsorbed vapors, blending the resulting second purge gas from the guard adsorber with said feed gas mixture and recovering at least a portion of said normally liquid hydrocarbon.

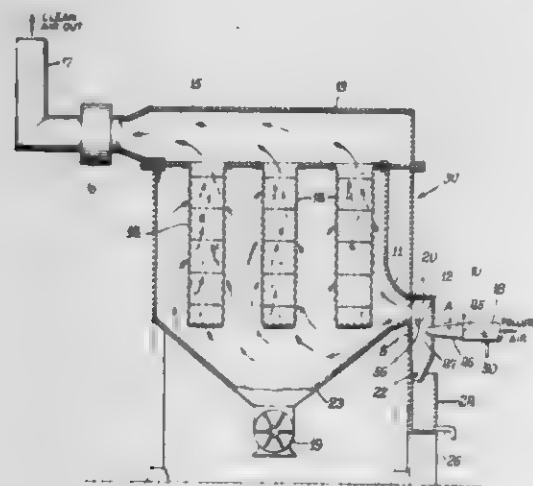
15. In a selective adsorption process wherein a feed gas mixture containing hydrogen, at least one heavier gas and vapors of at least one normally liquid hydrocarbon is directed to a guard adsorber of a selective adsorption unit, said vapors are adsorbed by said guard adsorber, said feed gas mixture substantially freed of said vapors is thereafter directed to a selective adsorber of said selective adsorption unit, a hydrogen product is obtained from said selective adsorption unit and at least one desorbed heavier gas and purge gas are joined in a regenerating gas obtained from said selective adsorption unit, the improvement comprising directing said regenerating gas to a membrane permeator selectively permeable to hydrogen, recovering from said permeator a permeated gas comprising hydrogen, sequentially directing said permeated gas to said guard adsorber, purging said guard adsorber with said permeated gas of at least a portion of said adsorbed vapors, blending the resulting second purge gas from the guard adsorber with said feed gas mixture and recovering at least a portion of said normally liquid hydrocarbon.

4,229,189

POLLUTION CONTROL APPARATUS AND METHOD
Ladislav J. Pircon, 305 Canterbury La., Oak Brook, Ill. 60521
Continuation-in-part of Ser. No. 816,677, Jul. 18, 1977, Pat. No. 4,120,670, which is a continuation-in-part of Ser. No. 632,648, Nov. 17, 1975, Pat. No. 4,016,609, which is a continuation-in-part of Ser. No. 252,914, May 12, 1972, Pat. No. 3,920,422, which is a continuation-in-part of Ser. No. 190,248, Oct. 18, 1971, Pat. No. 3,853,506. This application Oct. 17, 1978, Ser. No. 952,058
The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.
Int. Cl.² B01D 47/06

U.S. Cl. 55—90

22 Claims



1. A process for removing particulate matter from gas streams by combination of impingement and filtration comprising: passing said gas stream having particulate matter therein through the entry of a nozzle; accelerating the gas stream

through a converging portion of said nozzle having a mean angle of convergence of about 4 to 8 degrees providing outlet velocities of about 2 to 12 times the entrance velocity; passing said particulate-containing gas stream from the nozzle outlet through an expansion zone decelerating the gas, said acceleration and deceleration of the gas stream causing particulates to agglomerate; impinging said agglomerates and particulates upon a fixed impingement surface of substantially impermeate material thereby separating said particulates and agglomerates from the expansion zone; separately removing gas having a major portion of original particulate matter removed therefrom from the expansion zone and passing it through fabric filter means removing a substantial amount of the remaining particulates forming clarified gas; and removing the clarified gas from said fabric filter means; said acceleration, deceleration and impinging removing in excess of about 70 weight percent of said particulate matter in said gas stream.

13. The process of claim 1 wherein said nozzle is conical.

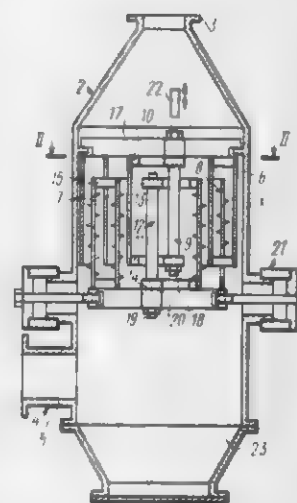
4,229,190

ROLL-TYPE ELECTRICAL PRECIPITATOR

Sergei M. Andoniev, prospekt Pravdy, 5, kv. 60; Valentina Y. Laktjushina, prospekt 50 let VLKSM, 51, kv. 362; Viliam M. Medvedovsky, prospekt Pravdy, 5, kv. 226A, and Kim S. Shuster, ulitsa Darvina, 1, kv. 36, all of Kharkov, U.S.S.R.
Filed Jul. 30, 1979, Ser. No. 62,404
Int. Cl.³ B03C 3/00

U.S. Cl. 55—112

4 Claims



1. A roll-type electrical precipitator comprising a housing having:
gas inlet and outlet means;
a strip-like corona discharge electrode having holes;
a strip-like collecting electrode having holes;
first and second mandrels, each having end portions shaped as Archimedean spirals having a pitch equal to two electrode spacings, said corona discharge electrode being wound about said first mandrel to form a spiral and said collecting electrode being wound as a helix about said second mandrel, said corona discharge and collecting electrodes having a common axis of winding and said mandrels being displaced with respect to each other by 180°; and
spacers for providing a constant electrode spacing between said corona discharge and said collecting electrodes, said spacers being fixed to the adjacent spiral turns of one of said electrodes and passed through a respective hole of a spiral turn of the other electrode.

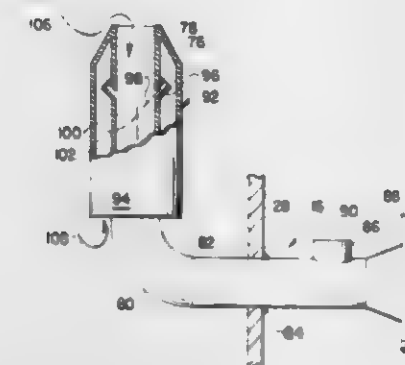
4,229,191

TECHNIQUE FOR MODIFYING THE CAPACITY OF GAS-LIQUID SEPARATOR

Lester P. Moore, 233 Hereford, Corpus Christi, Tex. 78408
Filed Aug. 4, 1978, Ser. No. 931,275
Int. Cl.² B01D 53/24

U.S. Cl. 55—203

7 Claims



1. A gas-liquid separator comprising:
a collection vessel including a gas outlet and a liquid outlet;
an inlet structure including:
an inlet conduit opening into the vessel having an inlet end providing an inlet opening and means on the inlet end for connection to a mixture flow line for delivering mixture from the flow line to the inlet conduit; and
a corkscrew mechanism in the inlet conduit providing a predetermined effective cross-sectional flow area for centrifugally swirling an incoming mixture;
means for reducing the predetermined effective cross-sectional area of the corkscrew mechanism and thereby increasing the velocity of a given volume of mixture through the corkscrew mechanism, comprising:
a blocking member insertable through the inlet opening of the inlet conduit when the flow line is removed from the connection means; and
means retaining the blocking member;
the inlet opening of the inlet conduit being sufficiently large to pass the blocking member.

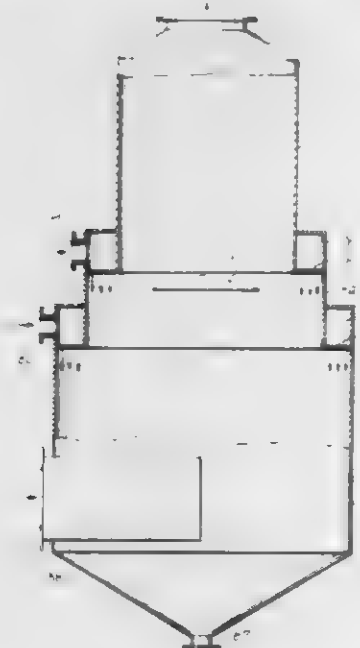
4,229,192

CYCLONIC SCRUBBER WITH PERFORATED PLATE DISTRIBUTOR

Ralph R. Calaceto, 248 Palmer Ct., Ridgewood, N.J. 07450
Filed Jul. 19, 1979, Ser. No. 58,655
Int. Cl.² B01D 47/10

U.S. Cl. 55—238

22 Claims



1. An improvement in a cyclonic gas-scrubber including a

vertical tower shell having cylindrical portions and introduction port means for introducing a gas stream tangentially into one of said portions thereof for movement in a spiral through said tower shell toward the other of said portions, said improvement comprising:

a cylindrical lower tower shell portion having a height at least twice the diameter thereof, said cylindrical upper tower shell portion having a diameter smaller than that of said lower portion, the bottom of said upper portion being disposed below the top of said lower portion;
a lower annulus joining said lower portion proximate and below the top thereof to said upper portion proximate the bottom thereof, said lower annulus being perforated for spraying liquid or slurry therethrough;
an upper annulus disposed above and spaced apart from said lower annulus and joining said lower portion of said upper portion, said upper and lower tower shell portions and said upper and lower annuli forming an annular compartment around said upper tower shell portion and proximate the bottom thereof; and
conduit means for introducing scrubber liquid or slurry into said compartment and thereby through said lower annulus to said lower portion, the diameter of said upper portion being large enough for transit of said gas stream therethrough with but minimal pressure drop and for effective separation of said scrubber liquid or slurry from said gas stream to occur where the direction of flow of said gas stream is upward.

4,229,193

VACUUM CLEANER AND SEALED FILTER BAG ASSEMBLY THEREFOR PARTICULARLY USEFUL FOR FILTERING ASBESTOS FIBERS FROM AIR

Jonathan Miller, Williamsport, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.
Continuation of Ser. No. 819,002, Jul. 26, 1977, abandoned. This application Sep. 19, 1978, Ser. No. 943,637
Int. Cl.³ B01D 50/00

U.S. Cl. 55—318

4 Claims



4. A filter bag assembly for a vacuum cleaner, comprising:
a primary filter bag for collecting particulate material; a first inlet into said primary filter bag; said primary filter bag being otherwise sealed closed, said primary filter bag being permeable to air, but impermeable to particulate material to be collected in said primary filter bag;
a shield around said primary filter bag; said shield being impermeable to both particulate material and to air; said shield having an open neck;
a secondary filter being sealingly attached to said shield to seal closed said shield open neck so as to define an enclosure comprised of said shield and said secondary filter around said primary filter bag and in which said primary filter bag is wholly enclosed; said secondary filter being

permeable to air but impermeable to the particulate material; a second inlet through said enclosure opening into said enclosure and also communicating with said first inlet; said secondary filter having an outlet side; a tertiary filter positionable outside said enclosure; said tertiary filter having an inlet side and an outlet side; said tertiary filter being positionable inside said shield open neck and said neck being closed around said tertiary filter, such that the inlet of air and particulate material to said tertiary filter is from said secondary filter and said outlet side of said secondary filter communicates to said inlet side of said tertiary filter; said tertiary filter is positioned at and is surrounded by said attached shield open neck and said secondary filter; at said shield open neck, and the attachment there with said secondary filter, elastic means being provided for drawing said shield open neck closed and thereby squeezing against said tertiary filter.

4,229,194

VAPOR-SOLIDS SEPARATING DEVICE

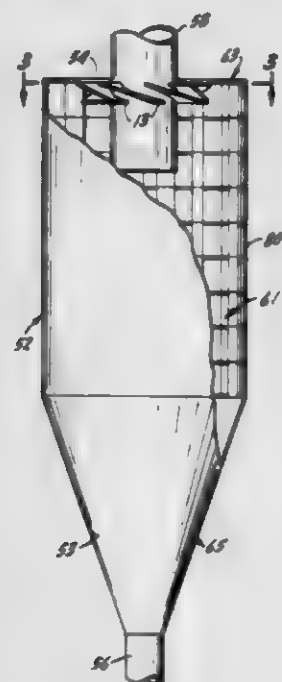
Lloyd A. Baillie, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Nov. 20, 1978, Ser. No. 962,453

Int. Cl.² B01D 45/12; B01J 8/24, 37/12

U.S. Cl. 55—397

7 Claims



1. An apparatus for separating from a mixture of vapor and solid particles at least a portion of said particles therefrom, said apparatus comprising: a chamber defined by a top, a bottom and at least one peripheral wall, an inlet means for said mixture so situated so as to induce a flow of at least a portion of said particles preferentially toward said peripheral wall, a fluid outlet means, a particle outlet means and a means for reducing the attrition of said portion of said particles comprising a plurality of zones each of which is a partially enclosed space having an opening defined by at least two generally vertical vanes and two generally horizontal vanes acting in cooperation with at least a portion of said peripheral wall, wherein said horizontal vanes comprise a lower vane and an upper vane, wherein at least a substantial portion of the top and bottom edges defined by the surfaces of said vertical vanes overlap at least a portion of the surfaces defined by said horizontal vanes, and wherein there is a means for attaching at least one of said vertical and horizontal vanes to said peripheral wall, said opening being oriented with respect to said peripheral wall so that as said portion of said particles move toward said peripheral wall said particles enter said zone.

4,229,195 METHOD FOR LIQUIFYING NATURAL GAS

Wolfgang G. Förg, Icking, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Holtriagelekreuth, Nr. Munich, Fed. Rep. of Germany

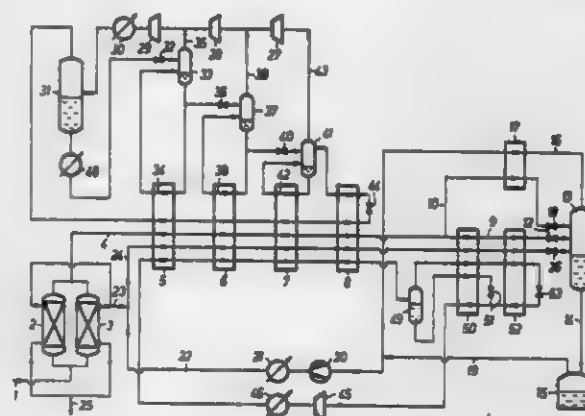
Filed May 3, 1979, Ser. No. 35,706

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820212

Int. Cl.³ F25J 3/02

U.S. Cl. 62—23

12 Claims



1. A method for liquefying natural gas, in which a flow of pressurized natural gas is brought into heat exchange with two coolants flowing in closed circuits which are at least partly compressed, liquefied and expanded, the coolant in the first circuit being used to pre-cool the natural gas and the coolant in the second circuit while the coolant in the second circuit is used to liquefy the pre-cooled natural gas; the coolants in said first and second circuits comprising multiple components, after pre-cooling the natural gas down to approximately -50°C ., the natural gas is divided into major and minor streams, said major stream being liquefied by heat exchange with the coolant in the second circuit, while said minor stream being liquefied by heat exchange with the flash-gas formed when the liquefied natural gas is expanded and the liquid fraction separated, the flash-gas after heat exchange with said minor stream is compressed and is at least partly liquefied in heat exchange with the coolant in said first and second circuits, and is subsequently expanded and the liquid fraction separated.

4,229,196

ATOMIC HYDROGEN STORAGE METHOD AND APPARATUS

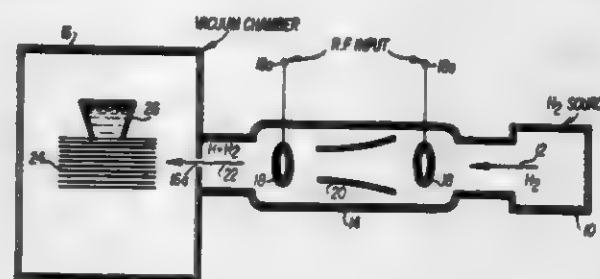
John A. Woollam, Oberlin, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 837,794, Sep. 29, 1977, Pat. No. 4,193,827, which is a division of Ser. No. 676,432, Apr. 13, 1976, Pat. No. 4,077,788. This application Feb. 6, 1979, Ser. No. 9,887

Int. Cl.³ F25J 1/02

U.S. Cl. 62—40

1 Claim



1. An apparatus for storing atomic hydrogen in high concentration, said apparatus comprising a vacuum chamber, a delaminated layered compound located in said chamber, said compound being a transitional metal dichalcogenide of the form TX_2 where T is a transition metal and X is a material selected from the group consisting of S, Se or Te, means for

maintaining said compound at a temperature T in the range $0^{\circ}\text{C} < T < 14^{\circ}\text{K}$., and means for impressing a strong magnetic field of at least 1 Tesla per degree Kelvin on said layered compound, atomic hydrogen being collected on the exposed surfaces of said delaminated layered compound.

4,229,197

METHOD FOR MAKING MULTIPLE OPTICAL CORE FIBER

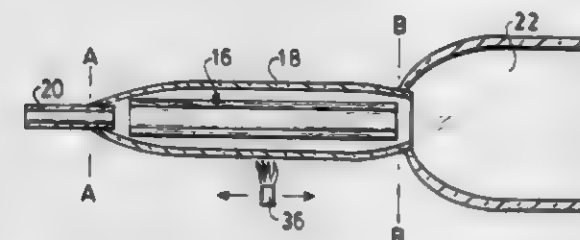
DeWayne A. Streng, Troutville, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,470

Int. Cl.² C03B 37/02

U.S. Cl. 65—4 B

7 Claims



1. A method of producing a multiple optical core preform which can be drawn into a light-conducting fiber, comprising the steps of:
providing a plurality of preforms having central portions of fiber core material and outer portions of fiber cladding material;
assembling said preforms into a bundle;
fusing said bundle of preforms;
providing a fused silica tube having a first end and a second end;
expanding said fused silica tube by means of internal gas pressure and heat;
inserting said fused bundle into said expanded silica tube; and
collapsing said silica tube about said bundle to form a substantially solid multiple optical core preform.

4,229,198

APPARATUS FOR DRAWING OF GLASS FIBER

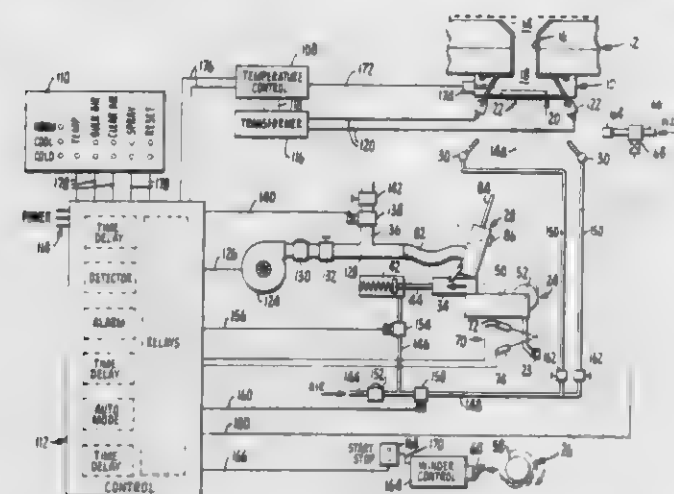
Charles H. Coggin, Jr., Upland, and John L. Jones, Jr., Baldwin Park, both of Calif., assignors to Nitto Boseki Co., Ltd., Tokyo, Japan

Division of Ser. No. 865,961, Dec. 30, 1977, Pat. No. 4,149,865. This application Jan. 25, 1979, Ser. No. 6,382

Int. Cl.² C03B 37/02

U.S. Cl. 65—11 W

3 Claims



1. In a glass fiber drawing assembly comprising a bushing having an orifice plate with a generally planar undersurface from which fibers are drawn, a supply nozzle for directing bulk gas against the undersurface of the plate, means for applying a binder to fibers being drawn from the orifice plate, means for collecting the binder applied fibers together to form at least a strand of glass fibers, and a collet spaced beneath the orifice

plate for drawing fibers therefrom, the improvement further comprising a detector for sensing the break-out of fibers being drawn from the orifice plate, said detector including a modulated light source disposed between the binder applying means and the collecting means to direct a beam of light against the fibers being drawn from the orifice plate, and a sensor disposed to sense whether the beam is being intercepted by fibers being drawn from the orifice plate, said sensor being responsive only to the modulated beam of the source.

4,229,199

SHAPING GLASS SHEETS BY DROP FORMING WITH DIFFERENTIAL VACUUM RELEASE

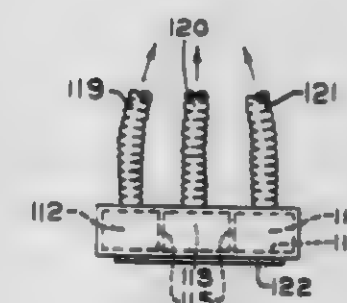
Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 960,404, Nov. 13, 1978, abandoned. This application May 21, 1979, Ser. No. 41,287

Int. Cl.³ C03B 23/02

U.S. Cl. 65—106

24 Claims



1. A method of shaping glass sheets, comprising the steps of:
heating a glass sheet to approximately its softening point;
bringing a surface of the glass sheet and a flat platen into close proximity to each other;
drawing a vacuum through the platen so as to retain the glass sheet on the platen;
supporting the platen and the glass sheet carried thereon in an essentially horizontal orientation with the glass sheet under the platen;
bringing into vertical alignment with and beneath the glass sheet held on the platen on a shaping mold having a contour defining the desired contour for the glass sheet;
releasing the vacuum from a portion of the platen adjacent to a first area of the glass sheet while maintaining vacuum in the remaining portion of the platen adjacent to a second area of the glass sheet whereby a sufficient bending force is created in the glass sheet to impart a curvature thereto; and
releasing the glass sheet from the platen so as to fall onto the shaping mold and conform to the contour defined by the shaping mold.

12. An apparatus for shaping glass sheets comprising:
a furnace for heating glass sheets to a softened condition;
a bending station at an exit end of the furnace;
conveyor means for transferring glass sheets heated in the furnace into the bending station;
a platen associated with the bending station, having a plurality of enclosed chambers bounded on a common side by a flat, perforated plate, each of the chambers being in communication with a source of vacuum;
valve means for periodically interrupting the vacuum supply to at least one of said chambers while maintaining vacuum in the remainder of the chambers;
lift means for bringing the perforated plate of the platen and a heated glass sheet in the bending station into close proximity to each other so that vacuum in the platen may retain the glass sheet thereon, and for bringing the perforated plate and the glass sheet thereon to a generally horizontal orientation with the perforated plate facing downwardly;

a shaping mold having upwardly facing shaping surfaces defining the desired curvature and corresponding to the shape of the glass sheets; and shuttle means for alternately bringing the platen and the shaping mold into and out of superimposed vertically spaced relationship to each other, wherein the shaping mold in the superimposed position is supported at an elevation below the perforated plate so as to receive and shape a glass sheet dropped from the platen.

4,229,200

DROP FORMING GLASS SHEETS WITH AUXILIARY SHAPING MEANS

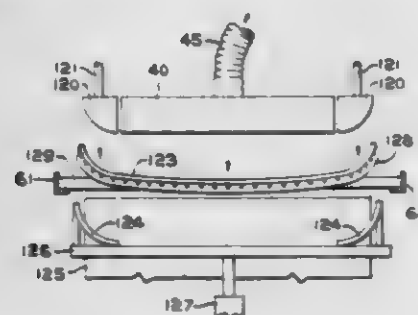
Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 960,404, Nov. 13, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,443

Int. Cl.¹ C03B 23/02

U.S. Cl. 65—106

13 Claims



1. A method of shaping glass sheets comprising the steps of: heating a glass sheet to approximately its softening point; bringing a major portion of a surface of the glass sheet into close proximity to a flat platen with a portion of the glass sheet extending beyond a side of the platen; drawing a vacuum through the platen so as to retain the glass sheet on the platen; engaging the extending portion of the glass sheet with shaping means so as to pre-shape the extending portion of the glass sheet; bringing the glass sheet on the platen to an elevated essentially horizontal orientation with the glass sheet on the underside of the platen; bringing into vertical alignment with and beneath the glass sheet held on the platen a shaping mold having a contour defining the desired contour for the glass sheet; and releasing the glass sheet from the platen so as to fall onto the shaping mold and conform to the contour defined by the shaping mold.

9. An apparatus for shaping glass sheets comprising: a furnace for heating glass sheets to a softened condition; support means adjacent the furnace for supporting heated glass sheets; conveyor means for transferring glass sheets from the furnace to the support means; a platen having a flat, perforated plate on one side thereof and an enclosed interior space in communication with a source of vacuum; means for bringing the flat, perforated plate and a side of a glass sheet into close proximity to each other so as to transfer support of a major portion of the glass sheet from the support means to the platen with a portion of the glass sheet extending beyond a side of the platen; shaping means aligned with the extending portion of the glass sheet and adapted to engage and pre-shape the extending portion of the glass sheet; means for bringing the pre-shaped glass sheet on the platen into a generally horizontal orientation, with the glass sheet on the underside of the platen; a shaping mold having upwardly facing shaping surfaces defining the desired curvature and corresponding to the shape of the glass sheet; and shuttle means for alternately bringing the platen and the

shaping mold into and out of superimposed, vertically spaced relationship to each other, wherein the shaping mold in the superimposed position is supported at an elevation below the platen so as to receive and shape a glass sheet dropped from the platen.

4,229,201

APPARATUS FOR BENDING GLASS SHEETS TO COMPLICATED CURVATURES USING LOCALIZED SUPPLEMENTARY HEATING

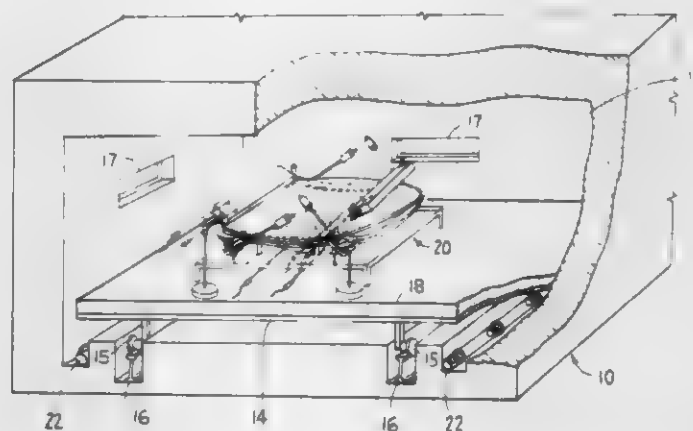
John A. Comperatore, Natrona Heights; Edward D. Black, Brackenridge, and David J. Wise, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1979, Ser. No. 25,137

Int. Cl.¹ C03B 23/02

U.S. Cl. 65—287

10 Claims



1. Apparatus for shaping a glass sheet to a complex shape having sharply bent end portions and a substantially spherically bent central portion, comprising:

an outline shaping frame having an upwardly facing shaping surface conforming in elevation and outline to the periphery of the bent glass sheet;

first and second elongated heating elements supported above the shaping frame at an elevation above and closely adjacent to the elevation assumed by an unbent glass sheet loaded onto the shaping frame, and extending across respective end portions of the frame in alignment with the desired locations for the sharp bends; and

a third heating element of extended area supported below the shaping frame at an elevation below and closely adjacent to the elevation assumed by the bent glass sheet, and aligned with a central portion of the area circumscribed by the shaping frame between the first and second heating elements.

9. Apparatus for shaping a glass sheet within a hot atmosphere to a complicated shape comprising a pair of sharply bent areas extending across its transverse dimension and a substantially spherically sagged portion intermediate said pair of sharply bent areas comprising an outline mold comprising an upward facing shaping frame of outline configuration conforming in elevation and plan outline to said complicated shape comprising a mold support structure including a central mold section comprising a pair of longitudinally extending shaping rails rigidly connected to said mold support structure and extending longitudinally along the opposite longitudinal sides of said shaping frame and having upwardly facing, extended, planar shaping surfaces sloping obliquely and downwardly inward transversely of their length, the central mold section being flanked by a pair of end mold sections, each extending in plan outline to enclose the ends of said shaping frame and having upwardly facing, extended, planar shaping surfaces sloping obliquely and downwardly inward transversely of their length, means hingedly connecting each said end mold section to said mold support structure to permit said end mold sections to pivot outwardly to a spread mold position to support the ends of a flat glass sheet for bending, and means con-

nected to each end mold section to pivot the latter into a closed mold position wherein said end mold sections are in end to end relation with the longitudinal ends of said longitudinally extending shaping rails of said center mold section to provide a substantially continuous shaping frame conforming in elevation and plan outline to the shape desired for the margin of the bent glass sheet and sloping obliquely and downwardly inwardly transversely of its length.

4,229,202

WASTEWATER TREATMENT WITH ULTRAVIOLET DISINFECTION AND INCREASED CAPACITY

Steven B. Mullerheim, Walnut Creek, and Fred G. Williams, San Anselmo, both of Calif., assignors to Great Circle Associates, Walnut Creek, Calif.

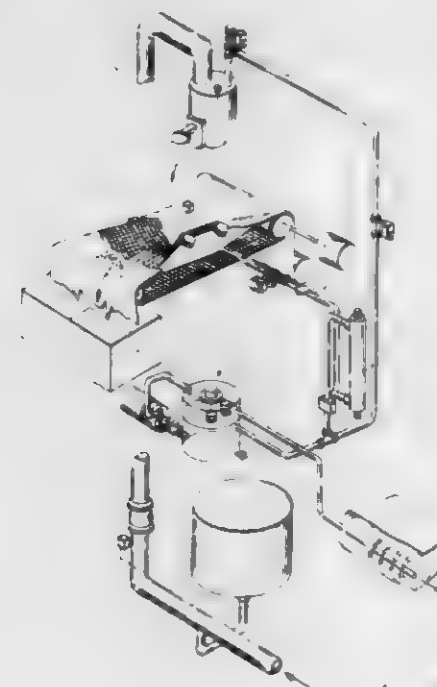
Continuation-in-part of Ser. No. 752,201, Dec. 20, 1976, Pat. No. 4,137,062. This application Jan. 29, 1979, Ser. No. 7,209

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.¹ C02C 1/00, 1/40

U.S. Cl. 71—8

31 Claims



15. A process for treating fresh sewage containing organic liquid and solid wastes, comprising:

separating the solids from the liquids while the sewage is fresh, through an organic compostible filter medium, to produce a liquid component low in suspended solid material;

exposing the liquid component to ultraviolet radiation including germicidal wavelength, to destroy pathogens but not beneficial nutrients present in the liquid component; introducing ozone in the liquid component to react with pathogens to form stable compounds and to produce residual hydrogen peroxide for deterring subsequent pathogen growth;

dispersing the nutrient-rich treated liquid component to unsaturated ground; and composting the separated solids along with used filter medium.

4,229,203

PHOSPHORUS COMPOUNDS AS SUGARCANE RIPENERS

Sidney R. Siemer, Fresno, Calif., assignor to W. R. Grace & Co., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 71,958

Int. Cl.¹ A01N 57/12, 57/14

U.S. Cl. 71—86

13 Claims

1. A process for modifying the ripening of sugarcane plants so as to increase their yield of sucrose which comprises applying a phosphorus compound in a sucrose increasing amount

directly to the cane plants at a time from about 2-10 weeks prior to harvest; said phosphorus compound being selected from the group consisting of diphenylchlorophosphate; phenyldichlorophosphate; triethylphosphite; dimethylphosphite; triphenylphosphite; 2-cyanoethylphosphate, barium salt dihydrate; and bis(2,2,2, trichloroethyl) chlorophosphate.

4,229,204

TRIFLUOROMETHYLPHENYL ISOXAZOLYL BENZOATES

Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

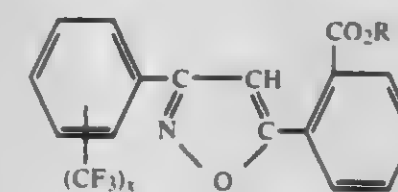
Continuation-in-part of Ser. No. 907,069, May 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 796,248, May 12, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 966,403

Int. Cl.¹ C07D 261/08; H01N 9/28

U.S. Cl. 71—88

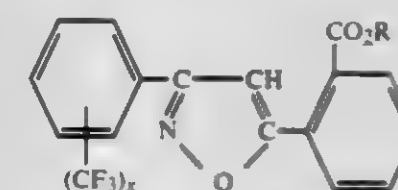
23 Claims

1. A compound having the formula



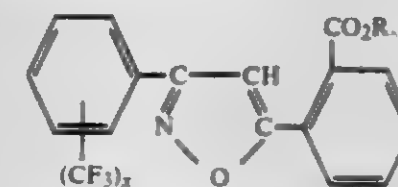
wherein x is 1 or 2; and R is hydrogen, lower alkyl or agriculturally acceptable cations.

7. A method for preventing the growth of undesirable vegetation which comprises applying to said vegetation or the locus thereof a herbicidally effective amount of a compound having the formula



wherein x is 1 or 2; and R is hydrogen, lower alkyl or agriculturally acceptable cations.

13. A method of regulating the growth of desirable plants which comprises applying to said plants an effective amount of a compound having the formula



wherein x is 1 or 2; and R is hydrogen, lower alkyl or agriculturally acceptable cations.

4,229,205

SUBSTITUTED ALKOXYIMINO-PYRIDAZONES, THEIR MANUFACTURE, AND THEIR USE AS HERBICIDES

Hans Theobald; Bruno Wuerzer, both of Limburgerhof, and Karl Kiehs, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,857

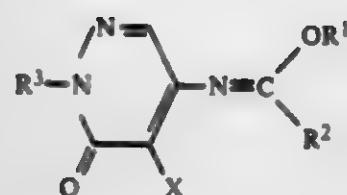
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821809

Int. Cl.¹ C07D 237/22; A01N 9/22

U.S. Cl. 71—92

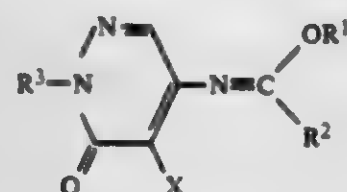
3 Claims

1. A pyridaz-6-one compound of the formula



where X denotes halogen, R¹ denotes C₁-C₆-alkyl, R² denotes H, C₁-C₆-alkyl or haloalkyl, and R³ denotes phenyl or cyclohexyl.

2. A process for combating unwanted plant growth, wherein the plants or the soil are treated with a herbicidally effective amount of a composition containing from 0.1 to 95% by weight of a compound of the formula



where X denotes halogen, R¹ denotes C₁-C₆-alkyl, R² denotes H, C₁-C₆-alkyl or haloalkyl, and R³ denotes phenyl or cyclohexyl.

4,229,206

S-TRIAZINES AS SUGARCANE RIPENERS

Sidney R. Siemer, Fresno, Calif., assignor to W. R. Grace & Co., New York, N.Y.

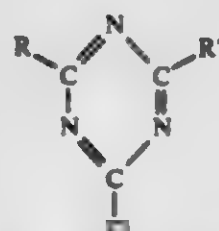
Filed Sep. 4, 1979, Ser. No. 72,000

Int. Cl.³ A01N 43/70

U.S. Cl. 71-93

14 Claims

1. A process for modifying the ripening of sugarcane plants so as to increase their yield of sucrose which comprises applying an s-triazine in a sucrose increasing amount directly to the cane plants as hereinafter specified at a time from about 2-10 weeks prior to harvest; said s-triazine having the formula



- in which R is EtNH—, R' is —N(CH₂COOMe)₂, and the sugarcane variety is CL-59-1052 or CL-41-223;
- in which R is EtNH—, R' is —N(CH₂CONH₂)₂, and the sugarcane variety is CL-59-1052;
- in which R is EtNH—, R' is —HNCH₂COOEt, and the sugarcane variety is CL-59-1052;
- in which R is EtNH—, R' is —N(CH₂COOH)₂, and the sugarcane variety is CL-59-1052;
- in which R is iPrNH—, R' is —HNCH₂COOH, and the sugarcane variety is CL-59-1052;
- in which R is iPrNH—, R' is —N(CH₂COOBu)₂, and the sugarcane variety is CL-59-1052;
- in which R and R' are —N(CH₂COOH)₂, and the sugarcane variety is CL-59-1052; or
- in which R and R' are —N(CH₃)CH₂COOH, and the sugarcane varieties are CL-59-1052 or CL-41-223.

4,229,207

ESTERS OF

1,2-DIPHENYL-CYCLOHEX-1-ENE-4-CARBOXYLIC ACID

Verena Laanio, Arisdorf; Werner Föry, Basel, and Rolf Schurter, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

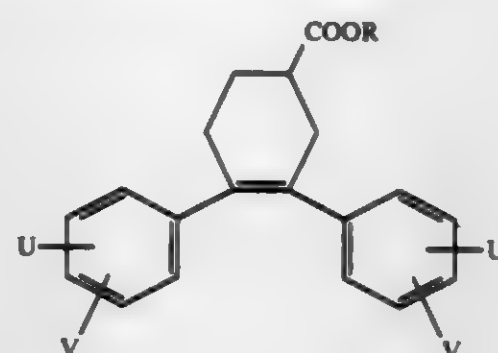
Continuation-in-part of Ser. No. 713,477, Aug. 11, 1976, abandoned. This application Jun. 22, 1978, Ser. No. 918,212

Int. Cl.² A01N 9/24

U.S. Cl. 71-107

9 Claims

1. A method for controlling *Avena fatua* (wild oats) in cultures of cereal which comprises applying to cereal fields infested with the weed *Avena fatua* in post-emergence application a herbicidally effective amount of an ester of 1,2-diphenyl-cyclohex-1-ene-4-carboxylic acid of the formula



wherein R is

- C₁-C₇ alkyl, optionally substituted by halogen, C₁-C₄ alkoxy, C₃-C₈ cycloalkyl, by phenyl or phenoxy unsubstituted or substituted by chlorine, bromine, C₁-C₄ alkyl or C₁-C₄ alkoxy;
 - C₃-C₇ alkenyl, optionally substituted by chlorine, bromine or C₁-C₄ alkyl;
 - C₃-C₆ cycloalkyl optionally substituted by chlorine, bromine or methyl;
 - phenyl or benzyl unsubstituted or substituted by chlorine, bromine, C₁-C₄ alkyl, C₁-C₄ alkoxy, nitro or trifluoromethyl;
- and U and V are hydrogen, chlorine, bromine, C₁-C₄ alkyl, C₁-C₄ alkoxy, nitro or trifluoromethyl.

4,229,208

DIURETHANES WITH SELECTIVE HERBICIDAL ACTION

Gerhard Boroschewski, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 11, 1975, Ser. No. 557,286

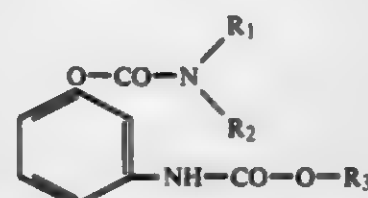
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1974, 2413933

Int. Cl.³ A01N 9/20

U.S. Cl. 71-111

1 Claim

1. The method for the control of weed growth in cotton fields which comprises treatment of said fields with a herbicidally effective amount of a composition comprising from about 20 to about 80 weight percent of a compound having the formula:



wherein R₁ is ethyl or allyl; R₂ is phenyl, alkylphenyl having from 1 to 3 carbons in the alkyl group, alkoxyphenyl having from 1 to 3 carbons in the alkoxy group, or halophenyl; and R₃

is methyl or ethyl at a rate sufficient to provide between about 0.5 and 5 kg of said compound per hectare.

4,229,209

PROCESS FOR BENEFICIATING GOLD

James K. Kindig, Arvada, and Ronald L. Turner, Golden, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Continuation-in-part of Ser. No. 658,259, Feb. 17, 1976, abandoned. This application Jan. 27, 1978, Ser. No. 873,148

Int. Cl.² C22B 1/00, 11/00

U.S. Cl. 75-1 R

19 Claims

1. A process for beneficiating particulate gold from foreign material with which it is mixed which comprises contacting the mixture with an iron carbonyl under conditions which cause the iron carbonyl to decompose and then cause a coating at the surface of the gold particles to the substantial exclusion of the foreign material so as to alter the surface characteristics of the gold particles thereby causing a selective enhancement of the magnetic susceptibility of the gold particles to the substantial exclusion of the foreign material so that a magnetic separation between the gold and foreign material may be effected.

8. A process for beneficiating gold mixed with foreign material, which comprises the steps of:

- reducing the mixture to a particulate form;
- placing the particulate mixture in a gas treatment chamber;
- introducing iron carbonyl vapor into said chamber under conditions which preclude substantial non-selective decomposition of the iron carbonyl, and
- maintaining the iron carbonyl vapor in contact with said mixture for a sufficient time for the iron carbonyl to selectively enhance the magnetic susceptibility of substantially all of the gold particles in the mixture.

4,229,210

METHOD FOR THE PREPARATION OF THIXOTROPIC SLURRIES

Joseph Winter, New Haven; Derek E. Tyler, Cheshire, and Michael J. Pryor, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 12, 1977, Ser. No. 859,132

Int. Cl.³ C22D 7/06

U.S. Cl. 75-10 R

6 Claims

1. A process for producing a thixotropic metal or alloy composition containing discrete degenerate dendritic primary solid particles homogeneously suspended in a secondary phase having a lower melting point than said primary solid particles which comprises the steps of:

- heating a metal or alloy to produce at least a partially liquid mixture comprising between 20 and 80% volume fraction primary solid particles;
- supplying a current in the range of 500 to 10,000 amps to an AC induction coil at a frequency in the range of from 60 to 10,000 cps to form an induced electromagnetic force field of sufficient intensity to vigorously agitate said partially liquid mixture;
- placing said partially liquid mixture within said induced electromagnetic force field;
- holding said partially liquid mixture within said induced electromagnetic force field for sufficient duration to vigorously agitate said partially liquid mixture so as to convert said primary solid particles to discrete degenerate dendrites of substantially spheroidal configuration; and
- simultaneously cooling said partially liquid mixture during said holding step at a cooling rate determined so as to counteract the heating effect of the induced current of said electromagnetic force field and maintain said volume fraction of primary solid particles.

4,229,211

LADLE HEATING SYSTEM

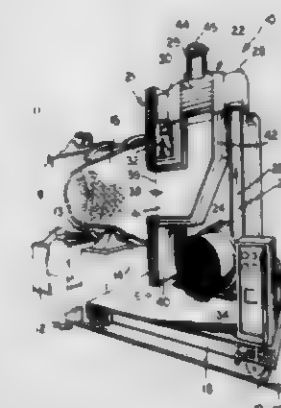
Donald D. Battles, Atlanta, Ga., assignor to The Cadre Corporation, Doraville, Ga.

Continuation-in-part of Ser. No. 22,687, Mar. 21, 1979. This application Nov. 8, 1979, Ser. No. 92,374

Int. Cl.³ F27B 14/14

U.S. Cl. 75-46

22 Claims



1. Apparatus for heating a ladle or the like which includes a chamber with an opening and a rim about the opening, said apparatus comprising a seal assembly for sealing engagement with the rim of the ladle, said seal assembly comprising a support frame of greater breadth than the rim of the ladle, a plurality of refractory fiber modules mounted on said support frame approximately in a common plane, each said module being compressible and held in lateral compression by said frame and by lateral engagement with one another and said plurality of modules positioned on said support frame to sealingly engage the rim of the ladle, a heat exchanger mounted adjacent said seal assembly, air conduit means extending through said heat exchanger and through said seal assembly for directing air through the heat exchanger, through said seal assembly and into the ladle in sealing engagement with the seal assembly, an exhaust gas conduit means extending through said seal assembly and through said heat exchanger for directing exhaust gases from the ladle in sealing engagement with said seal assembly through said seal assembly and through said heat exchanger, blower means for inducing a stream of air through said air conduit means and a stream of exhaust gases through said exhaust gas conduit means, burner means for supplying fuel to said air conduit means and for directing a flame into the ladle in sealing engagement with said seal assembly.

4,229,212

RECOVERY OF COPPER FROM MATERIALS CONTAINING COPPER AND ACID SOLUBLE IRON COMPOUNDS

Alan J. Parker, South Perth, and David M. Muir, Palmyra, both of Australia, assignors to Anumin Pty. Ltd., Canberra, Australia

Continuation of Ser. No. 760,330, Jan. 18, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,566

Claims priority, application Australia, Jan. 19, 1976, PC4557; Feb. 27, 1976, PC5034

Int. Cl.³ C22B 15/00

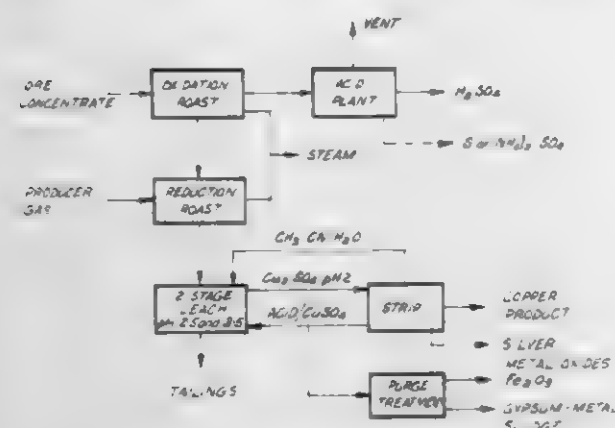
U.S. Cl. 75-101 R

12 Claims

1. A method of preventing acid soluble iron from entering solution while preparing a solution of Cu(I) salts from a material containing both copper and acid soluble iron comprising the steps of:

- leaching said material with an acidic aqueous solution containing a Cu(II) salt and an organonitrile selected from the group consisting of acetonitrile, 2-hydroxycyanonitrile, acrylonitrile and propionitrile, the amount of nitrile being sufficient to stabilize the resulting Cu(I) solution;
- controlling the ratio of Cu(II) to Cu(I), while maintaining

the pH of the solution between about 2 and 5, to ensure that acid soluble iron does not dissolve as Fe(II).



10. The method of claim 1, further comprising the steps of separating the Cu (I) solution from the insoluble materials and disproportionating the Cu (I) salt solution to produce particulate copper.

4,229,213 HYDROMETALLURGICAL RECOVERY OF NICKEL VALUES

Yoon T. Auck, Tucson, Ariz., assignor to UOP Inc., Des Plaines, Ill.

Filed May 7, 1979, Ser. No. 36,486
Int. Cl.² C22B 23/04

U.S. Cl. 75—103

9 Claims

1. A method for the recovery of nickel from a nickel bearing source which comprises treating said source with at least one additive selected from the group consisting of hydrogen halide and a sulfur containing compound, subjecting said treated source to a reductive roast in contact with a reducing gas at a temperature in the range of from about 700° to about 1300° F., maintaining during said roast an annealing temperature at a constant degree for a period of time of from about 1 to about 20 minutes, cooling said source upon completion of said roast, extracting the cooled source with an ammoniacal ammonium compound, and recovering the desired nickel.

4,229,214 PROCESS FOR COMBINED PRODUCTION OF FERROSILICOZIRCONIUM AND ZIRCONIUM CORUNDUM

Boris A. Shushlebin, Sirenev bulvar, 27, korpus 3, kv. 53; Nikolai P. Lyakishev, 1 Parkovaya ulitsa, 8, kv. 51, both of Moscow; Viktor V. Tregubenko, ulitsa Zavodskaya, 6, kv. 2 Krasnogorsk, Moskovskaya oblast; Gennady F. Ignatenko, ulitsa Klubnaya, 9, kv. 19, and Nikolai I. Subbotin, ulitsa Klubnaya, 9, kv. 3, both of poselok Dvurechensk, Sverdlovskaya oblast, all of U.S.S.R.

Filed May 30, 1979, Ser. No. 43,956
Int. Cl.² C22B 5/00; C22C 28/00

U.S. Cl. 75—133

1 Claim

1. A process for combined production of ferrosilicozirconium and zirconium corundum which comprises melting a zirconic concentrate, iron ore and aluminum in a weight ratio 51:69:9-16.5:19.8-34.8 respectively, at a temperature of 1950° to 2000° C. to form a melt having an upper layer of zirconium corundum and a lower layer of ferrosilicozirconium, adding to said melt from 0.5 to 50% by weight of zirconic concentrate of alumina and subsequently casting the upper and lower layers separately.

4,229,215 NON-PRECIOUS STAINLESS DENTAL ALLOY

Emil M. Prosen, Bala-Cynwyd, Pa., assignor to Neoloy Products, Inc., Posen, Ill.

Filed Jan. 22, 1979, Ser. No. 51,003
Int. Cl.² C22C 19/07

U.S. Cl. 75—134 C

4 Claims

1. A stainless dental alloy especially adapted for the adhesion of opaque porcelain having a fusing temperature of approximately 1800° F., consisting essentially of:

Cobalt	49 to 59%
Chromium	25 to 30%
Tungsten	7 to 14%
Gallium	2 to 6%
Copper	1 to 3%
Niobium	0.5 to 2%
Silicon	0.5 to 2%
Iron	0.5 to 6%

said alloy having a melting temperature of approximately 2550° F., and a linear coefficient of expansion of about 1.4×10^{-5} per °C.

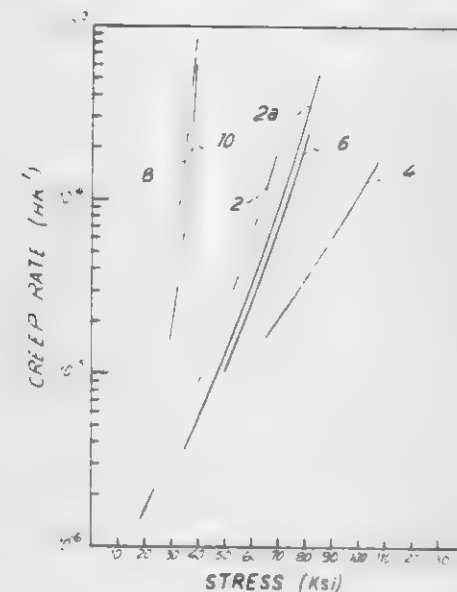
4,229,216 TITANIUM BASE ALLOY

Neil E. Paton, Thousand Oaks, and Cecil G. Rhodes, Simi Valley, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 22, 1979, Ser. No. 13,992
Int. Cl.² C22C 14/00

U.S. Cl. 75—175.5

4 Claims



1. A titanium base alloy consisting essentially of about 7.5 to 12% aluminum, about 4 to 10% zirconium, about 4 to 7% columbium, up to about 0.5% silicon, and balance titanium and impurities.

4,229,217 METHOD OF PRODUCING POROUS METAL BODIES FOR USE IN THE ELECTRONIC INDUSTRY

Reinhard Hähn, Langelsheim, Fed. Rep. of Germany, assignor to Hermann C. Starch, Berlin, Fed. Rep. of Germany
Division of Ser. No. 769,603, Feb. 17, 1978, Pat. No. 4,154,609.

This application Nov. 20, 1978, Ser. No. 961,901
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610224

Int. Cl.² B22F 1/100, 3/00

U.S. Cl. 75—244

11 Claims

1. A method of producing a porous sintered metal body which comprises molding under pressure metal powder to form a molded body and sintering said molded body, said metal being selected from the group consisting of Groups IVB, VB

and VIB of the Periodic Table, which comprises prior to the molding step mixing with the metal powder about 0.01 to about 10% by weight of at least one inorganic lubricant selected from nitrides of boron and silicon, whereby the sintered metal bodies still contains 2% to 70% by weight of the inorganic lubricant.

7. A mixture for forming molded sintered bodies which comprises a powdered base metal selected from the group consisting of Groups IVB, VB and VIB of the Periodic Table and at least one inorganic lubricant selected from nitrides of boron and silicon, said lubricant being present in an amount of 0.01 to about 10% by weight.

4,229,218 SELF-MONITORING ELECTROLESS PLATING SOLUTION

Michael Gulla, Sherborn, Mass., and Barry J. Hartnett, Nashua, N.H., assignors to Shipley Company Inc., Newton, Mass.

Filed Feb. 5, 1979, Ser. No. 9,542
Int. Cl.¹ C23C 3/02

U.S. Cl. 106—1.23

11 Claims

COLORENT USED	B	G	O	COLOR SENSATION
NONE				WHITE
YELLOW				YELLOW
MAGENTA				MAGENTA
BLUORN				BLUORN
YELLOW + MAGENTA				RED
YELLOW + BLUORN				GREEN
MAGENTA + BLUORN				BLUE
TL + MAG + BLUORN				BLACK

1. In a solution capable of depositing metal over a catalytic surface in the absence of electricity comprising a source of the plating metal, a reducing agent therefore, a complexing agent and a pH adjustor, the improvement comprising a soluble colorant in an amount sufficient to produce a color change in the solution relative to the concentration of the plating metal wherein said colorant is of substantially fixed optical density in solution, does not adversely react with the other components in solution and absorbs and transmits light in portions of the spectrum differing from those portions of the visible spectrum where the dissolved plating metal in solution absorbs and transmits light.

4,229,219 INKS FOR INK JET PRINTING

Eric A. Metz, Gilroy, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1979, Ser. No. 69,427
Int. Cl.² C09D 11/02

U.S. Cl. 106—22

3 Claims

1. An ink for use in ink jet printing comprising an aqueous solution of both crystal violet and the n-butyl ether of diethylene glycol, wherein the crystal violet is present in the amount of from about 0.10% to about 10% by weight and the n-butyl ether of diethylene glycol is present in an amount of from about 1% to about 20% by weight.

4,229,220 EDGE-COATING GLASS FOR LASER DISKS

Shinichiro Hirota, Hachioji, Japan, assignor to Hoya Corporation, Tokyo, Japan

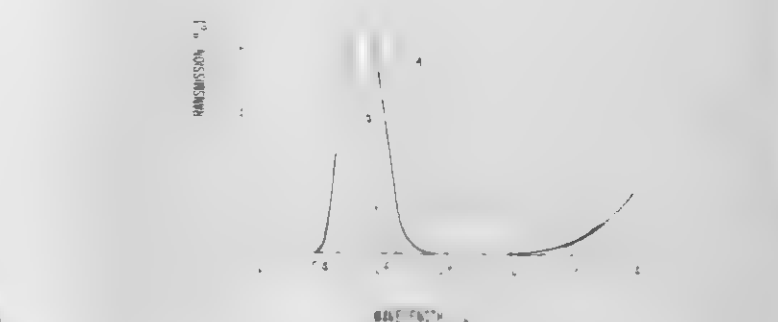
Continuation of Ser. No. 937,642, Aug. 28, 1978, abandoned.

This application Aug. 30, 1979, Ser. No. 71,413
Claims priority, application Japan, Aug. 31, 1977, 52/104664

Int. Cl.² C03C 3/16

U.S. Cl. 106—47 R

1 Claim



1. A glass for coating a laser glass, having a high absorption for laser light consisting essentially of, in mol %, 51 to 59 % P₂O₅; 0 to 8 % B₂O₃; 4 to 10 % Al₂O₃; 0 to 19 % Li₂O; 0 to 16.5 % Na₂O; 8.5 to 19 % Li₂O + Na₂O; 0 to 23 % ZnO; 0 to 14.5 % BaO; 7.5 to 28 % CuO; and 0 to 12.5 % V₂O₅.

4,229,221 METHOD FOR PRODUCING REFRACTORIES

Seiichi Uemura; Syunichi Yamamoto, both of Kawasaki; Takao Hirose, Kamakura; Hiroaki Takashima, Kawasaki; Osamu Kato, Yokohama, and Minoru Nagai, Kawasaki, all of Japan, assignors to Nippon Oil Co., Ltd. and Shinagawa Refractories Co., Ltd., both of Tokyo, Japan

Filed Jan. 15, 1979, Ser. No. 3,761
Claims priority, application Japan, Jan. 18, 1978, 53-4105; Jan. 18, 1978, 53-4106

Int. Cl.² C04B 35/04

U.S. Cl. 106—58

8 Claims

1. A method for producing unburned refractories which comprises the steps: continuously feeding a heavy oil having a boiling point more than 150° C. obtained by thermal cracking or steam cracking of petroleum hydrocarbons as a raw material oil in a first stage stirring vessel maintained at a pressure of more than 2 Kg/cm²G and at a temperature in the range of from 300° to 360° C.; maintaining the average residence time of said raw material oil at a time of more than 15 minutes; continuously withdrawing a first stage treated oil from said first stage stirring vessel; supplying said first stage treated oil in a second stage stirring vessel maintained at a temperature from 370° C. to 450° C.; continuously withdrawing a second stage treated oil from said second stage stirring vessel while maintaining the average residence time of said oil therein at a time of from 30 minutes to 10 hours; continuously obtaining a pitch by eliminating lighter components from said second stage treated oil; and producing unburned refractories by mixing said pitch with basic refractory materials.

4,229,222 EARTHEN CEMENT COMPOSITIONS FOR BUILDING MATERIALS AND PROCESS

Gordon L. Schneider, 4236 Cottage Cir. #3, Las Vegas, Nev. 89109

Filed Jul. 28, 1978, Ser. No. 928,798
Int. Cl.² C04B 43/12

U.S. Cl. 106—74

9 Claims

1. A process for producing an improved earthen composition comprising:
(a) preparing an aqueous hydroxide solution selected from

- the group consisting of sodium hydroxide, potassium hydroxide, and mixtures thereof,
- (b) adding cellulose to said aqueous hydroxide solution and agitating the mixture to separate cellulose fibers throughout the mixture,
- (c) blending the product of (b) with soil until a substantially homogeneous mixture is achieved having a pH of between about 12.5 and 13.5,
- (d) adding and mixing sodium silicate to said mixture of (c), and
- (e) drying the resulting composition.

4,229,223

GYPSUM WITH RESIN BINDER

Duane W. Flake, Sandy, Utah, assignor to Mary W. White, Murray, Utah, a part interest
Filed Apr. 27, 1979, Ser. No. 33,961
Int. Cl.² C04B 21/00

U.S. Cl. 106—88

6 Claims

1. A building material formed from the combination and curing of a hard water slurry of a cementitious material and hard water detergent containing resinous foam wherein the resin is selected from the group consisting of urea-formaldehyde, phenol-formaldehyde and melamine-formaldehyde resins and consisting of about 99.5 to 85 percent of said cementitious material intimately combined with from about 0.5 to 15 percent by weight of said foamed resin and also containing calcium and magnesium ions from said hard water and detergent from said resinous foam.

4,229,224

CEMENTITIOUS COMPOSITIONS

David G. Dawson, High Wycombe; Desmond W. J. Osmond, Windsor; Maurice W. Skinner, Maidenhead, and Edmund J. West, High Wycombe, all of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Feb. 22, 1979, Ser. No. 14,247
Claims priority, application United Kingdom, Feb. 22, 1978, 7041/78; Nov. 20, 1978, 45296/78

Int. Cl.² C08L 00/00

U.S. Cl. 106—90

13 Claims

1. A homogeneous uncured cementitious composition which comprises the ingredients:
- (a) a hydraulic cement,
- (b) water, and
- (c) a water-dispersible polymer selected from those polymers which contain carboxyl groups and which have total carboxyl content equivalent to at least 50 mg KOH/g of polymer, and which have a pK_a in the range of 3–10; and wherein:
- (i) the ratio of water to hydraulic cement is in the range of 10–28 parts by weight of water to 100 parts of hydraulic cement;
- (ii) the ratio of the water-dispersible polymer to hydraulic cement is in the range 0.1–10.0 parts by weight of water-dispersible polymer to 100 parts by weight of hydraulic cement; and
- (iii) the water-dispersible polymer is further selected with reference to the hydraulic cement and to the selected proportions of water and hydraulic cement for its suitability to facilitate homogenisation and to yield on homogenisation a product which can be shaped under pressure and which product is shape retaining; and wherein the ingredients (a), (b) and (c), have been jointly subjected to a homogenisation process and, optionally, are shaped such that on curing and drying, the homogeneous uncured composition yields a cured, dried and optionally shaped cementitious material having a modulus of rupture greater than 15 MN/m².

4,229,225

CEMENT-BASED POWDERED WATER-REPELLENT COMPOSITION, AND ITS APPLICATIONS

Richard Kraszewski, 31450, Odars, and Jean J. Damiguet, 66 Avenue Sainte Marie, 94160 Saint Mande, both of France
Filed Jul. 20, 1979, Ser. No. 59,155
Claims priority, application France, Aug. 3, 1978, 78 22961
Int. Cl.² C04B 7/02

U.S. Cl. 106—99

12 Claims

1. Cement-based powdered water-repellent composition, comprising, expressed as dry weight:

(a) 20–60% of a cement,

(b) 30–70% of an inorganic or organic filler,

(c) 2–10% of a fibre selected from zirconium, hafnium, vanadium and cesium silicate fibres,

(d) 0.2–1% of plasticizers for cement,

(e) 1–3% of an adhesive,

(f) 0.1–0.5% of a water-repellent.

4,229,226

METHOD FOR THE PRODUCTION OF CEMENT CLINKER LOW IN SULPHUR

Andris Abelitis, Rösraht, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Wedag AG, Fed. Rep. of Germany
Filed Dec. 29, 1978, Ser. No. 974,610
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759249

Int. Cl.² C04B 7/36

U.S. Cl. 106—100

4 Claims

1. In a method for the production of cement clinker low in sulphur from a sulphur and calcium carbonate containing particulate raw material which involves sequentially preheating said material in a plurality of successive preheating stages of progressively increasing temperatures, sintering the preheated material in a sintering furnace to produce sulphur containing hot exhaust gases, and cooling the resulting sintered material in a cooler, the improvement which comprises: separating a portion of said sulphur containing exhaust gases issuing from said sintering furnace, passing the separated portion into the hottest zone of said preheating stages, heating the raw material in contact with said separated portion to a temperature below the deacidification temperature in said hottest stage, adding a reducing agent to the thus heated raw material, sintering the thus treated raw material and reducing agent in said sintering furnace, and removing the remaining portion of said sulphur-containing exhaust gases issuing from said sintering furnace from the system without passing the same into said preheating stages.

4,229,227

GEL COMPOSITION FOR NAIL ENAMEL

Tooshihide Ikeda, Yokohama, and Motokiyo Nakano, Sagami-hara, both of Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1978, Ser. No. 970,243

Int. Cl.² A61K 7/043; C08L 1/18

U.S. Cl. 106—181

10 Claims

1. A gel composition for a nail enamel comprising (i) 10 through 30% by weight of a chip composition which is prepared by mixing, under heat and compression, a mixture of (A) 25 through 70% by weight of an organically modified montmorillonite clay, (B) 5 through 70% by weight of nitrocellulose and (C) 5 through 30% by weight of at least one substance selected from the group consisting of compounds having a general formula, $HO(RO)_mH$ (wherein R is C_2H_4 and C_3H_6 and m is an integer of 3 through 90); compounds having a general formula $R'O(RO)_nH$ (wherein R is C_2H_4 and C_3H_6 ; R' is an alkyl group having 4 through 20 carbon atoms and n is an integer of 1 through 50) and esters of dicarboxylic acids having

4 through 10 carbon atoms with aliphatic lower alcohols having 1 through 4 carbon atoms, and; (ii) 70 through 90% by weight of an organic mixed solvent.

4,229,228

COATING COMPOSITION

Don H. Rotenberg, Westboro; Patricia M. Cuffe, Dudley; Bernard L. Laurin, Ludlow, and Peter R. Ramirez, Southbridge, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Continuation-in-part of Ser. No. 897,317, Apr. 18, 1978, Pat. No. 4,173,490. This application Oct. 4, 1978, Ser. No. 948,595
The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.
Int. Cl.³ C09K 3/00

U.S. Cl. 106—287.14

3 Claims

1. A coating composition which is curable to provide an optically clear abrasion resistant coating, which comprises a hydrolysis product of about 35 to 45 weight percent tetraethyl orthosilicate and 55 to 45 weight percent methyltrimethoxysilane, and 5 to 15 weight percent 3-glycidoxypopyltrimethoxysilane.

4,229,229

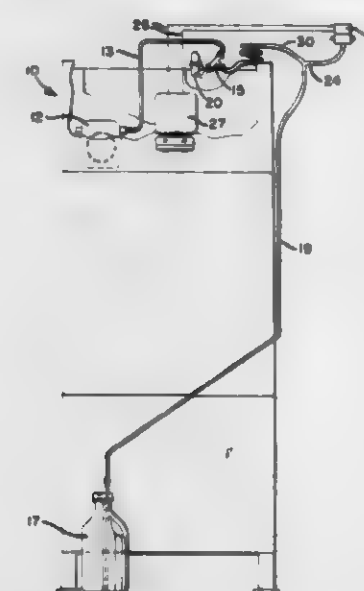
WAREWASHER SANITIZER VENTED METERING SYSTEM

George Churley, and Louis F. Fraula, both of Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio
Filed May 18, 1979, Ser. No. 40,256

Int. Cl.³ B08B 7/04

U.S. Cl. 134—18

7 Claims



6. A method for injecting a measured quantity of a liquid sanitizing agent into the sanitizing system of a warewasher such as a dishwashing machine having a sanitizing system for chemically sanitizing foodware items therein, including a dispenser which is operable for controllably delivering a liquid sanitizing agent from a supply thereof into the sanitizing system, comprising:

- (a) filling a capillary conduit section of defined volume with a liquid sanitizing agent drawn upwardly from a supply thereof,
- (b) then venting the upstream end of said capillary section to atmosphere to separate the agent in the capillary section from that in the supply and provide a liquid plug of defined volume which is delivered into the sanitizing system wherein said venting occurs after the sanitizing agent is delivered into the capillary section from said supply for a predetermined time which is just long enough to fill the capillary section regardless of atmospheric conditions.

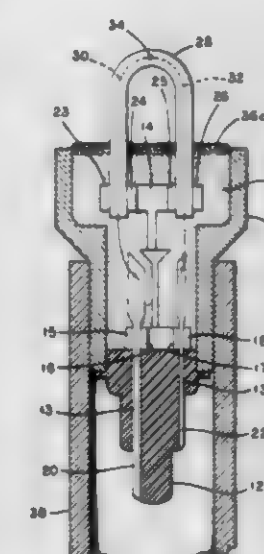
4,229,230

EXPENDABLE IMMERSION THERMOCOUPLE

Richard J. Hance, Philadelphia, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed Oct. 19, 1978, Ser. No. 952,756
Int. Cl.³ H01J 35/02

U.S. Cl. 136—234

5 Claims



1. In the method of manufacture of an expendable immersion thermocouple having a thermocouple enveloped in a high temperature protective tube and secured in the face of a body member by a mass of refractory cement, the improvement comprising the step of forming within the exposed face of said refractory cement a zone of high temperature refractory material comprising alumina or magnesia.

4,229,231

METHOD OF FORMING A LAMINATED RIBBON STRUCTURE

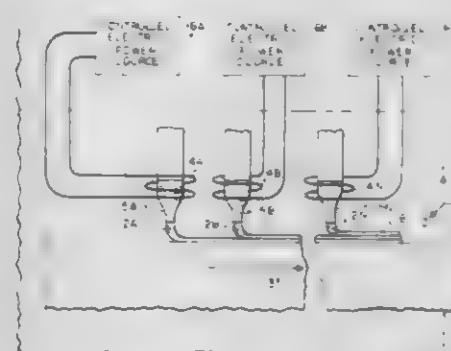
August F. Witt, Winchester, and Ramaswamy V. Raman, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 13, 1978, Ser. No. 950,965

Int. Cl.² H01L 21/208

U.S. Cl. 148—1.5

28 Claims



1. A method of forming a multi-layered solid structure by means of rapid quenching of separate melts, that comprises depositing a first melt in the form of a liquid stream from a first delivery orifice upon a fast moving heat extracting surface to effect quenching and solidification thereon and form a first solid layer in ribbon form; and simultaneously depositing a second melt in the form of a liquid stream from a second delivery orifice which is physically separated by a small distance from the first orifice in the direction of movement of the first solid layer upon said first solid layer to effect quenching of the second melt and form a second solid layer upon the first solid layer to provide a multi-layered solid structure.

4,229,232

METHOD INVOLVING PULSED BEAM PROCESSING OF METALLIC AND DIELECTRIC MATERIALS

Allen R. Kirkpatrick, Lexington, Mass., assignor to Spire Corporation, Bedford, Mass.

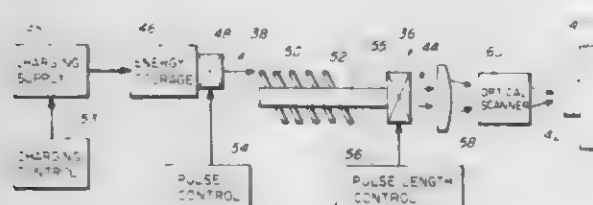
Continuation-in-part of Ser. No. 780,416, Mar. 23, 1977, Pat. No. 4,151,008, which is a continuation-in-part of Ser. No. 636,055, Nov. 28, 1975, abandoned, which is a division of Ser. No. 524,062, Nov. 15, 1974, Pat. No. 3,950,187. This application Dec. 11, 1978, Ser. No. 968,379

The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.

Int. Cl.² H01L 21/263; B23K 27/00

U.S. Cl. 148—1.5

2 Claims



1. A method for localized thermal processing of a selected surface region of a specimen composed of a metallic or dielectric material comprising the steps of:

- generating a short duration, noncoherent pulsed light;
- directing said short duration pulsed light at the selected surface region of the specimen, said short duration pulsed light beam interacting with said selected surface region; and
- momentarily elevating temperature only in a vicinity of the selected region by impacting said short duration, noncoherent light pulse upon the selected surface region.

4,229,233

METHOD FOR FABRICATING NON-REFLECTIVE SEMICONDUCTOR SURFACES BY ANISOTROPIC REACTIVE ION ETCHING

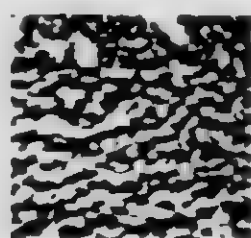
Thomas A. Hansen, Poughkeepsie; Claude Johnson, Jr., Yorktown Heights, and Robert R. Wilburg, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,005

Int. Cl.³ H01L 21/22, 21/306

U.S. Cl. 148—1.5

6 Claims



1. A method for texturing a silicon substrate to provide an anti-reflective surface thereon comprising the step of:

reactive ion etching the surface of said substrate, in the absence of an etch mask on said surface, in a reactive ion etching chamber which contains a chemically active gaseous species which combines with said silicon to form a volatile species such that said surface is subjected to both physical sputtering as well as a chemical reaction with the gaseous species, said etching taking place for a sufficient time to texture said silicon surface.

6. A method as in claim 1 further comprising: forming a P/N junction with in said substrate after said texturing step.

4,229,234

PASSIVATED, PARTICULATE HIGH CURIE TEMPERATURE MAGNETIC ALLOYS

Richard C. Krutenat, New Providence, and Chih-an Liu, Fords, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 29, 1978, Ser. No. 384

Int. Cl.² H01F 1/06

U.S. Cl. 148—105

16 Claims

1. A process for the preparation of passivated, particulate high Curie temperature magnetic alloys which are useful per se or as inclusions for the preparation of magnetizable solids composites, catalytic or non-catalytic, which comprises alloying an element characterized as aluminum, silicon, chromium, or admixture thereof, in concentration ranging up to about 30 percent, based on the total weight of the alloy, with a base metal comprised of cobalt or nickel, forming particles of the alloy which range in average diameter from about 20 microns to about 1500 microns, and then contacting the alloy particles with an atmosphere of low oxygen activity, the oxygen partial pressure of which is lower than the dissociation pressure of an oxide formed from the base metal, sufficient to preferentially oxidize the alloying element and cause it to diffuse to the surface of the particles to form an impervious oxide film of thickness ranging from about 0.1 micron to about 5 microns.

4,229,235

HEAT-TREATING METHOD FOR PIPES

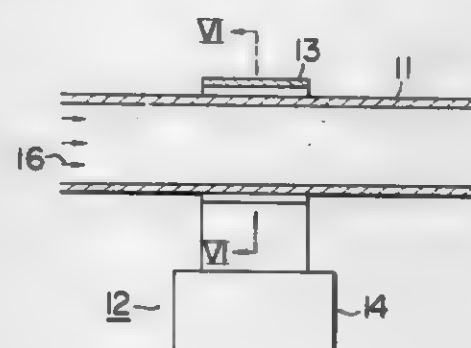
Noriaki Matsuda, Mito, and Kunio Enomoto, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 25, 1977, Ser. No. 845,063

Int. Cl.³ C21D 9/08

U.S. Cl. 148—127

26 Claims



1. A method of heat-treating piping in situ within a plant comprising the steps of:

- supplying a liquid coolant to the piping after said piping is installed by plastic working or welding of portions of the piping in a plant, said plastic working or welding causing residual stresses that may lead to stress corrosion;
- heating the outer side of the plastic worked or welded portions of said piping while the liquid coolant is present in said piping to create a great temperature differential between said outer side of said piping and the inner side of said piping so that compressive yielding is produced in said outer side of said piping and tensile yielding is produced in said inner side of said piping; and then
- stopping the heating of said piping whereby residual compressive stress is induced into said portions to reduce possible stress corrosion during subsequent operation of said plant.

4,229,236

PROCESS AND APPARATUS FOR HEAT TREATING STEEL USING INFRARED RADIATION

James E. Heath, Mississauga, Canada, assignor to Samuel Strapping Systems Limited, Mississauga, Canada

Filed Jul. 27, 1979, Ser. No. 61,471

Int. Cl.² C21D 1/54

U.S. Cl. 148—128

10 Claims U.S. Cl. 156—50



1. A furnace adapted for use in stress relieving a length of steel sheet, strip, strapping, wire and the like comprising opposing spaced-apart parallel banks of high intensity infrared radiation emitters having ceramic reflectors along said banks and located behind said emitters, each emitter being an elongate lamp having an electrode at each end, opposing spaced-apart suitable supports secured within said furnace and provided with aligned apertures to permit said lamp ends to extend through such apertures in supporting each lamp in a respective bank, each lamp electrode being external of a corresponding support, means defining a channel along the outside of each support and in which said lamp electrodes are disposed and fan means for forcing sufficient air through each channel to maintain said lamp electrodes at operating temperatures.

4,229,237

METHOD OF FABRICATION OF SEMICONDUCTOR COMPONENTS HAVING OPTOELECTRONIC CONVERSION PROPERTIES

Daniel Bensahel, Grenoble; Jean-Claude Pfister, Saint Ismier, and Louis Revoll, Seyssinet Pariset, all of France, assignors to Commissariat à l'Energie Atomique, Paris

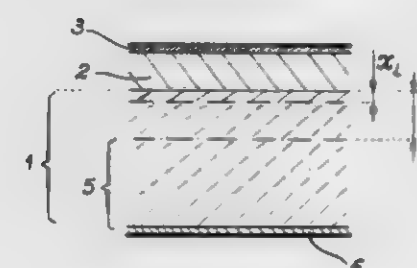
Filed Oct. 18, 1979, Ser. No. 85,948

Claims priority, application France, Oct. 26, 1978, 78 30497

Int. Cl.³ H01L 21/225

U.S. Cl. 148—190

14 Claims



1. A method of fabrication of a semiconductor component having optoelectronic conversion properties, wherein said method comprises the following steps:

- there is employed at the outset a wafer of p-type ZnTe semiconductor material;
- the top surface of said wafer is subjected to double diffusion of an acceptor impurity and of a donor impurity so as to create in ZnTe on the one hand a compensated region having high resistivity and on the other hand a surface injection region of small thickness; and
- a metallic contact is formed on both faces of said wafer.

4,229,238

PROCESS FOR MANUFACTURING COAXIAL CABLE

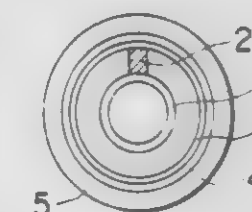
Yasunori Saito, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 9, 1978, Ser. No. 932,161

Claims priority, application Japan, Dec. 2, 1977, 52-145536

Int. Cl.³ B29F 3/10

1 Claim



1. In a process for manufacturing a coaxial cable core which includes the steps of winding a rib in a spiral fashion on the outer peripheral surface of an inner conductor along the length thereof, extruding a synthetic resin material onto the outer peripheral surface of said rib so as to form a tubular outer layer surrounding said inner conductor but in contact only with said rib, and cooling and solidifying said tubular outer layer so as to form an insulating layer, the improvement comprising the steps of:

- reheating said insulating layer until said insulating layer assumes a substantially uniform shape and recoiling and resolidifying said reheated insulating layer;
- reducing the outer diameter of said inner conductor by an amount in the range of 2% to 5% of the original outer diameter prior to the step of winding the rib.

4,229,239

TRANSFER PRINTING METHOD

Eisuke Arai, Koganei; Kuniaki Kamet, Kodaira; Akio Kawasaki, Urawa; Fumio Takagi; Koichi Shirai, both of Tokyo, and Yasuharu Orihara, Urawa, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 924,853

Claims priority, application Japan, Jul. 27, 1977, 52-90049; Aug. 17, 1977, 52-98482; Aug. 25, 1977, 52-102007; Jan. 24, 1978, 53-6317

Int. Cl.² B32B 31/12; B44C 1/16

U.S. Cl. 156—155

15 Claims



1. A method for transfer printing on an article comprising the steps of: preparing a printing pattern support sheet made-up of a film soluble in a liquid and a pattern preprinted on one surface of film; applying a solvent to said pattern thereby to activate the pattern into an adherent condition ready for printing; feeding the sheet towards a position for transfer printing on the free surface of a mass of said liquid, the film of the sheet thereby contacting and floating on the free surface; causing the film of the sheet to gradually dissolve in the liquid, while being fed toward said position, to leave the pattern on the free surface of the liquid; isolating the part of the sheet in said position from the other part of the sheet, which is being fed toward said position, by raising the sheet, by means of a bar located below the sheet, above the surface of the liquid between said parts; and moving the article against the pattern floating on the free

surface in said position and into the liquid to transfer the pattern onto the article.

(c) coextruding a layer of said core blend between two layers of said auxiliary composition to form a multi-layer

4,229,240 METHOD OF MAKING SIMULATED TUFTED SEAT CUSHION

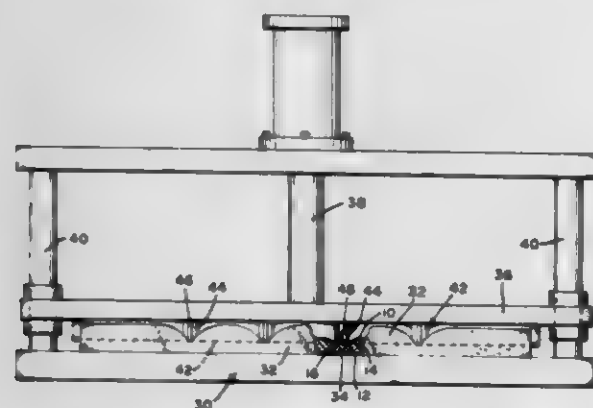
Olivio Borgiani, Toronto, Canada, assignor to Electrolux Corporation, Old Greenwich, Conn.

Filed Feb. 13, 1978, Ser. No. 877,216

Int. Cl.² A47C 27/14; B29C 17/04

U.S. Cl. 156—214

4 Claims



1. An improvement in the method of making a simulated tufted cushion, which comprises:

- forming discrete spaced openings extending through a foam rubber pad;
- placing said pad on a lower sheet of plastic material, said sheet being disposed so as to have its entire upper surface in a single horizontal plane such that said extended openings remain available for filling;
- substantially filling said openings from said horizontal plane upwardly with discrete plugs of fusible material;
- placing an upper sheet of plastic material over said pad;
- applying pressure selectively to said upper sheet so as to draw the upper sheet down into the openings containing said plugs of material, thereby to give the appearance of tufts;
- heating selectively in at least said openings so as to fuse both of said sheets to the fusible material; and
- providing tooling in the form of a grid with spaced hollow cylinders for insertion into said openings, said cylinders being connected by coordinate bars.

4,229,241 PROCESS FOR MAKING A MULTI LAYER POLYOLEFIN SHRINK FILM

Walter B. Mueller, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 896,963, Apr. 17, 1978. This application

Dec. 4, 1978, Ser. No. 966,437

Int. Cl.² B29D 7/09, 23/04

U.S. Cl. 156—243

5 Claims

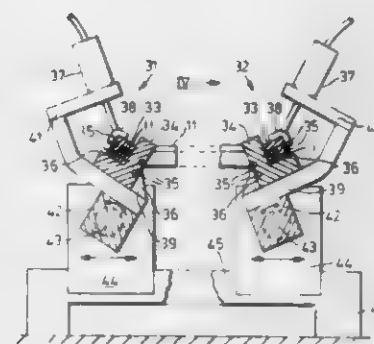
1. A process for making a multi-layer, flexible, thermoplastic packaging film comprising the steps of:

- blending 70% to 90% by weight of polymer selected from the group consisting of homopolymers and copolymers of ethylene with 30% to 10% by weight of a polymer selected from the group consisting of butylene homopolymers and copolymers to form a core blend;
- providing an auxiliary composition comprising a polymer selected from the group consisting of propylene homopolymers and copolymers;

(c) coextruding a layer of said core blend between two layers of said auxiliary composition to form a multi-layer

film, said core layer being 1 to 8 times the thickness of said auxiliary layers; and,

- stretching said multi-layer film to orient same.



4,229,242 METHOD AND APPARATUS FOR PRESSING AND CURING RESIN-IMPREGNATED WRAPPINGS ABOUT COILS

Malcolm Otty, Westering, Mill Hay Rd., Caldy, Merseyside, England

Filed May 31, 1978, Ser. No. 911,230

Claims priority, application United Kingdom, Jun. 1, 1977, 23879/77

Int. Cl.² B29C 27/00; B32B 31/14

U.S. Cl. 156—245

13 Claims

1. A method for heat setting a thermosetting resin impregnated in wrappings around a coil having opposed straight leg portions, which comprises:

- adjusting as necessary the relative positions of two separate mold base members adapted to separately support said leg portions;
- disposing said leg portions of said coil in said mold members; placing a pair of mold cover members against said leg portions;
- moving fluid actuated clamping means from a position in which the mold members are open for insertion of said core to a clamping position;
- clamping said pair of mold cover members against said leg portions by said clamping means; and
- applying heat and pressure to said coil, thereby bonding said wrappings of said coil around said straight leg portions.

4,229,243 RESILIENTLY STABILIZED WEB MOVEMENT FOR HONEYCOMB MACHINE

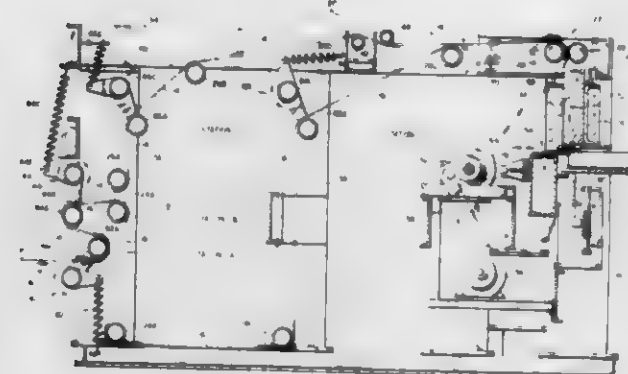
Daniel H. Ellnor, 6820 Briar Cove, Dallas, Tex. 75240

Filed Mar. 15, 1979, Ser. No. 20,759

Int. Cl.² B32B 31/00

U.S. Cl. 156—269

3 Claims



1. A method for manufacturing a continuous length of unexpanded honeycomb stock from first and second webs drawn from supply rolls comprising the steps:

- guiding the webs in superimposed relation into a take-up zone;
- applying tension to the superimposed webs at a first thrusting station by a first common dancer roller assembly which is biased to apply a yieldable thrusting force against the superimposed webs in the direction of unwinding movement of the webs as they are played out from the supply rolls;
- applying tension to the superimposed webs at a second thrusting station by a second common dancer roller assembly which is biased to apply a relatively weaker yieldable thrusting force against the superimposed webs in the direction opposite to the direction of unwinding movement of the webs as they are played out from the supply rolls;
- dividing the webs at a third station and guiding them along separate paths through the take-up zone;
- applying a relatively weaker yieldable thrusting force against each separated web in the take-up zone at fourth and fifth thrusting stations, respectively, by third and fourth separate dancer roller assemblies, respectively, which are biased to apply a yieldable thrusting force against each respective separate web in a direction transverse to the movement of the web as it is engaged by the dancer roller;
- applying stripes of adhesive to opposite sides of one of the webs as said web is advanced through the take-up zone;
- pulling the webs along their separate paths through the take-up zone and delivering them out of the take-up zone in mutually adhered and laminated condition;
- interrupting the pulling force during a cutting cycle following delivery of the laminated webs;
- securing the mutually adhered and laminated end of the webs against displacement in response to the thrusting forces applied during the cutting cycle; and,
- severing strips of predetermined width from the laminated webs and thrusting each severed strip into a pack of previously severed strips.

4,229,244 MANUAL BAG SEALER WITH LIFT BAR

Jack G. Swope, St. Ignace, Mich., assignor to Rennco Incorporated, Homer, Mich.

Filed Jul. 17, 1978, Ser. No. 925,434

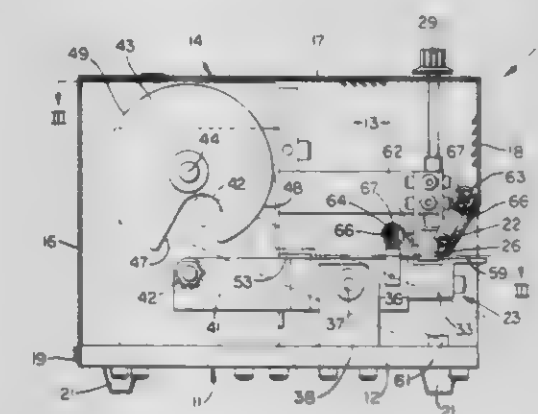
Int. Cl.² B30B 15/34; B65B 51/14

U.S. Cl. 156—358

12 Claims

1. In a heat-sealing machine for sealing the open top of a manually-held preformed heat-sealable bag, said machine including a housing, a pair of jaws mounted on said housing

adjacent the front vertical side thereof for permitting the open top of a bag to be manually inserted between said jaws, said jaws being disposed in opposed and relatively movable relationship toward and away from one another for permitting the open top of a preformed bag to be manually held therebetween, heater means associated with one of said jaws for creating a sealing strip across the bag adjacent the top thereof when the latter is held between the jaws, wherein said pair of jaws includes first and second jaws which are horizontally elongated and are positioned vertically one above the other, the improvement comprising said first jaw being disposed uppermost and being fixedly and stationarily connected relative to said housing, said heater means being fixedly associated with said first jaw, said second jaw being positioned vertically below said first jaw and movably substantially vertically between a lowered open position wherein the second jaw is spaced downwardly from the first jaw and a raised closed position wherein an upper clamping surface on said second jaw is substantially engaged with a lower clamping surface on said first jaw for permitting the open top portion of the bag to be clampingly held therebetween, support means movably mounting said second jaw on said housing for movement between said open and closed positions and for normally urging said second jaw into said open position, hand-engaging handle means fixed to said second jaw for permitting said second jaw to be manually moved upwardly from said open position into said closed position, said hand-engaging handle means being



disposed closely adjacent and projecting forwardly from the clamping surface of said second jaw so that an operator can manually hold the bag top between the jaws and simultaneously lift the second jaw upwardly into said closed position, sensing means for sensing the positioning of said second jaw substantially in said closed position, power means activated by said sensing means for holding said second jaw in said closed position for a preselected time and for then automatically releasing said second jaw whereby said support means automatically returns said second jaw into said open position, said support means including elongated lever means pivotally supported on said housing for swinging movement about a substantially horizontal pivot axis which is spaced from and substantially parallel to the elongated direction of said second jaw, said second jaw being mounted on said lever means at a location spaced a substantial distance from said pivot axis, and said power means being engageable with said lever means at a predetermined location thereon which is spaced from said pivot axis when said jaw is in said closed position for both holding said jaw in said closed position for said predetermined time and applying a controlled clamping pressure between said jaws throughout said predetermined time, said power means including first means for gradually increasing the clamping pressure between said jaws during an initial portion of said predetermined time and second means for maintaining a constant clamping pressure between said jaws during the remainder of said predetermined time.

4,229,245

BONDING FIXTURE

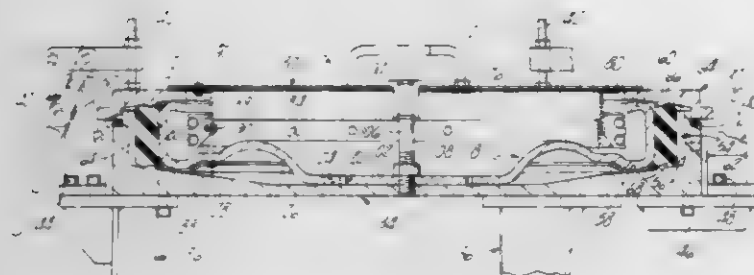
William L. Pringle, Grosse Pointe Shores, Mich., assignor to Leonard Friedman, Beverly Hills, Calif.

Filed Nov. 13, 1978, Ser. No. 959,575

Int. Cl.² B29H 17/36

U.S. Cl. 156—382

11 Claims



1. A fixture for bonding an elastomeric ring to a generally circular and rigid rim of a wheel comprising, first and second die portions relatively movable to open and closed positions and constructed and arranged to define when closed a cavity receiving therein a wheel rim and an elastomeric ring to be bonded to the rim, said first die portion having a first wall encircling and spaced outwardly of the elastomeric ring and a second wall extending generally radially inward thereof to underlie at least a portion of the elastomeric ring, said second die portion having a third wall extending generally radially inward of said first wall to overlie at least a portion of the elastomeric ring and having a central opening therethrough, said die portions being constructed and arranged to define in cooperation with the elastomeric ring a passage encircling and opening onto the generally radially outer surface of such elastomeric ring such that when the die portions are closed and a fluid is admitted under pressure into said passage the elastomeric ring is urged generally radially inward into firm engagement with the rim, and heater means having a cover constructed and arranged to overlie said central opening through said third wall and at least one heater element disposed generally radially inward of such rim and constructed and arranged to heat the rim to an elevated temperature to cure a bonding agent interposed between the elastomeric ring and the rim such that the elastomeric ring is adhered to the rim of the wheel.

4,229,246

BUILDING DRUM ASSEMBLY

Robert S. Vanderzee, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Filed Dec. 18, 1978, Ser. No. 970,570

Int. Cl.³ B29H 17/22

U.S. Cl. 156—417

10 Claims

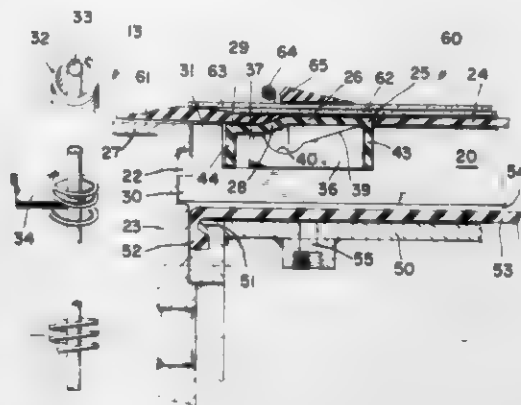
1. In a tire building drum assembly having a longitudinal axis, a plurality of longitudinally oriented drum segments mounted to be selectively movable between a radially outwardly, expanded, position and a radially inwardly, collapsed, position, said drum segments presenting, in said collapsed position, a cylindrical surface for receiving tire carcass material;

a bead receiving area;

said bead receiving area comprising:

- a cavity in each said drum segment forming an annular groove in said cylindrical surface;
- a rigid bead receiving seat located in the cavity of at least selected drum segments and being secured to the drum segment in which it is received;

a flexible boot mounted on said drum segments; said boot having a support portion overlying said bead receiving seat to present a surface that is substantially



continuous with the cylindrical surface provided by said drum segments when said drum segments are in the collapsed position for receiving said tire carcass material.

4,229,247

GLOW DISCHARGE ETCHING PROCESS FOR CHROMIUM

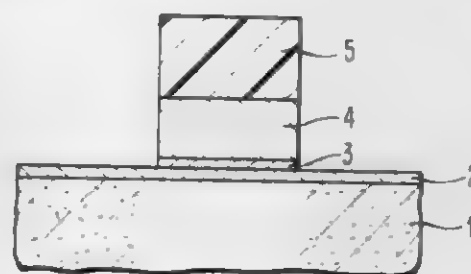
George T. Chiu, Wappingers Falls; James R. Kitcher, Poughkeepsie; Gunars M. Ozols, Wappingers Falls, and Bryant N. Zingerman, Monroe, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1978, Ser. No. 972,844

Int. Cl.³ C23F 1/02

U.S. Cl. 156—643

16 Claims



1. A process for selectively etching chromium comprising exposing chromium to a glow discharge in a low pressure ambient atmosphere comprising a mixture of from about 5 to 50 percent by volume of a polychlorinated organic compound and from about 50 to 95 percent by volume of a material selected from the group consisting of a noble gas and oxygen to which mixture is added from 5 to 30 percent by volume, based on said mixture, of water vapor.

10. A process for selectively etching chromium in the presence of a layer of material which is also exposed to the etching atmosphere comprising exposing the chromium to a glow discharge in an ambient atmosphere comprising from about 2 to 5 parts by volume of a polychlorinated organic compound, from about 5 to 8 parts by volume of a material selected from the group consisting of a noble gas and oxygen and from about 1 to 2 parts by volume of water vapor, the ambient atmosphere having a pressure of from about 5 to 50 milli-torr.

4,229,248

PROCESS FOR FORMING BONDING PADS ON MAGNETIC BUBBLE DEVICES

Peter J. Silverman, and Donald K. Rose, both of Palo Alto, Calif., assignors to Intel Magnetics, Inc., Santa Clara, Calif.

Filed Apr. 6, 1979, Ser. No. 27,669

Int. Cl.³ B44C 1/22; B29C 17/08; C03C 15/00, 25/06

U.S. Cl. 156—653

10 Claims

1. In a magnetic bubble device which includes a layer of magnetic material in which magnetic bubbles are moved and a

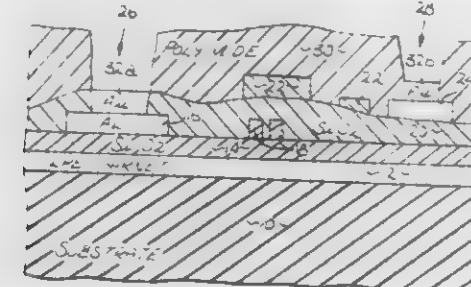
metal layer covered except for an exposed region by an overlying protective layer, a process for increasing the thickness of said exposed region comprising the steps of:

forming a layer of gold over said protective layer and over said exposed region;

washing said layer of gold from said protective layer but not from said exposed region;

whereby the thickness of said exposed region is augmented by a layer of gold without an additional masking and etching step.

5. In a magnetic bubble device which includes a first layer of



material in which magnetic bubbles are moved and a second layer disposed above said first layer, said second layer defining bonding pads, a process for preparing said device for probe testing or bonding comprising the steps of:

forming a protective layer over said second layer;

etching said protective layer to expose said bonding pads underlying said protective layer;

forming a gold layer on said protective layer and on said bonding pads;

washing said gold layer from said protective layer;

whereby gold remains on said bonding pads, thereby thickening them before probe testing or bonding.

4,229,249

PRODUCTION OF A POWDER OF POLYVINYLCHLORIDE OR A VINYLCHLORIDE COPOLYMERIZATE SUITABLE FOR PRODUCING PLASTISOLS

Karsten S. Felsvang, Allerød, and Ove E. Hansen, Værløse, both of Denmark, assignors to A/S Niro Atomizer, Denmark

Continuation of Ser. No. 792,609, May 2, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,885

Claims priority, application Denmark, May 12, 1976, 2108/76

Int. Cl.² B01D 1/18

U.S. Cl. 159—4 B

9 Claims



1. A drying tower comprising a tower having a cylindrical part, means at one end thereof for providing a flow of drying air through the tower, at least one two-fluid nozzle for atomizing liquid into the tower by means of pressurized air in which the pressurized air is projected annularly with respect to the liquid, and at least one injector member for injecting air in a direction which, projected onto a plane at right angles to the longitudinal axis of the tower, forms an angle with a line

through the centre of the tower and the outlet opening of the injector member, thereby providing within said drying tower a controlled rotary motion of the particles produced by the atomization and the flow of drying air.

4,229,250

METHOD OF IMPROVING PROPERTIES OF MECHANICAL PAPER PULP WITHOUT CHEMICAL REACTION THEREWITH

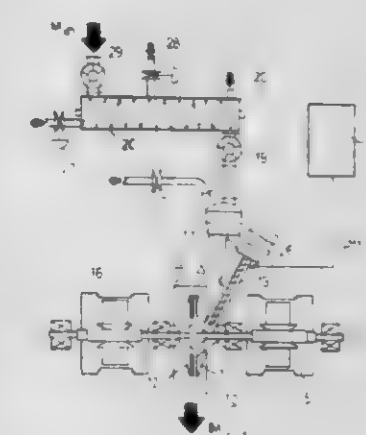
Antti Lehtinen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Feb. 28, 1979, Ser. No. 16,146

Int. Cl.² D21B 1/16

U.S. Cl. 162—23

10 Claims



1. In the production of mechanical paper pulp from natural vegetable fibrous raw material such as wood by frictionally acting upon a natural vegetable fibrous raw material containing plasticizable constituents to at least partially separate the fibers thereof from each other while heating the plasticizable constituents thereof to a temperature sufficiently high to plasticize the same rendering the plasticizable constituents soft and sticky, the method of improving the quality and properties of pulp produced therefrom which comprises adding at least one paper filler material which is not chemically reactive with the pulp when added and at such time that it comes into contact with the plasticizable constituents of the pulp while the same are in softened and sticky condition so that the filler material adheres to but does not chemically react with the fibers of the pulp to result in improvement of the properties of the pulp.

4,229,251

HIGH-YIELD SEMI-CHEMICAL CARBONATE PULPING PROCESS

Jan S. Temler, Beaconsfield, Canada, assignor to Domtar, Inc., Montreal, Canada

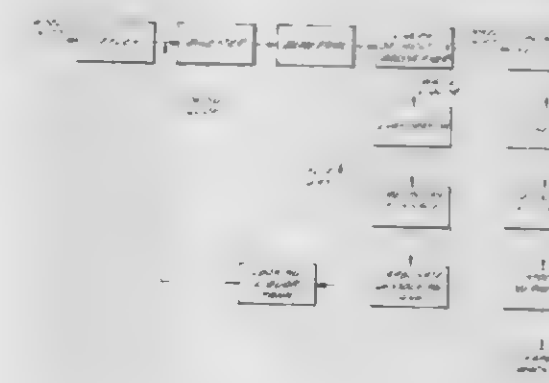
Continuation-in-part of Ser. No. 545,796, Jan. 31, 1975, abandoned. This application Mar. 31, 1976, Ser. No. 672,138

Claims priority, application Canada, Dec. 9, 1974, 215531

Int. Cl.³ D21C 3/02, 11/12

U.S. Cl. 162—28

9 Claims



1. A method of producing high-yield semi-chemical pulp

suitable for the manufacture of corrugating medium comprising mixing hardwood chips with a liquor consisting essentially of an aqueous solution of sodium carbonate having a concentration of carbonate between 65 and 120 grams per liter expressed as Na_2O , cooking the chips with said liquor at a temperature between 170°C . and 200°C . to a pulp yield of about 70-85%, separating the cooked chips from residual liquor and immediately thereafter passing said chips to a primary refining state, mechanically refining the cooked chips in said primary refining state to a pulp of a C.S.F. value not greater than 480, and mechanically refining said pulp in a secondary refining stage.

4,229,252

ADDITIVES FOR OZONE BLEACHING

Michael D. Meredith, Federal Way, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jan. 11, 1979, Ser. No. 2,491

Int. Cl.² D21C 9/10

U.S. Cl. 162-65

14 Claims

1. The process of enhancing the bleaching efficiency of ozone, based on the degree of delignification, when bleaching cellulosic fiber with ozone comprising providing said fibers in a liquid phase at a consistency in the range of 0.01-4.9%, said liquid phase comprising water and a water-soluble alcohol, said alcohol being present in an amount in the range of 0.0000001 to 0.03 moles per liter of said liquid phase, and mixing an ozone-bearing gas with said liquid phase.

4,229,253

EXTENDED NIP PRESS WITH SPECIAL BELT REINFORCEMENT

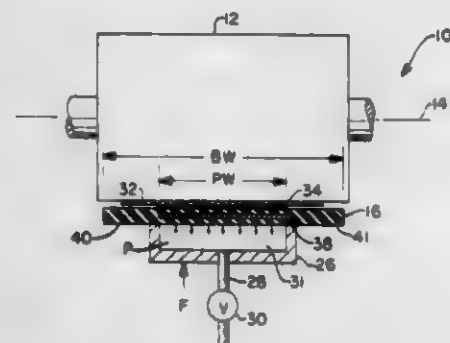
Dennis C. Cronin, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 26, 1979, Ser. No. 33,707

Int. Cl.² D21F 3/02

U.S. Cl. 162-358

10 Claims



1. An extended nip press for removing water from a moving web of material, said press comprising: a rotatable roll having a cylindrical outer pressing surface; a flexible endless belt trained about a plurality of pulleys such that said belt turns about the pressing surface of said roll over an arc of contact; at least one movable felt means trained about said roll between said belt and said roll for carrying said web of material between said belt and said roll; a pressure shoe disposed on the side of said belt opposite said roll and adjacent said arc of contact, said shoe terminating in lateral directions substantially short of the lateral edges of said belt; and a reinforcing structure in said belt extending circumferentially thereof and having its lateral edges disposed within the lateral edges of said shoe so that said belt is substantially free of any bulging adjacent said shoe.

4,229,254
EXTENDED NIP PRESS WITH BIAS PLY REINFORCED BELT

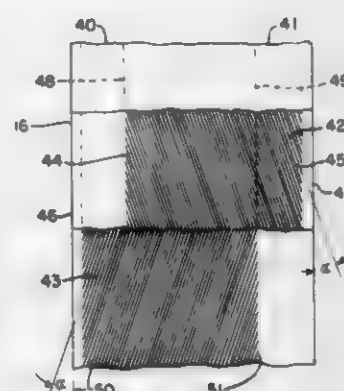
Michael L. Gill, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 26, 1979, Ser. No. 33,709

Int. Cl.² D21F 3/02

U.S. Cl. 162-358

14 Claims



1. An extended nip press for removing water from a moving web of material, said press comprising: a rotatable roll having a cylindrical outer pressing surface; a flexible endless belt trained about a plurality of pulleys such that said belt turns about the pressing surface of said roll over an arc of contact; at least one movable felt means trained about said roll between said belt and said roll for carrying said web of material between said belt and said roll; a pressure shoe disposed on the side of said belt opposite said roll and adjacent said arc of contact, said shoe terminating in lateral directions substantially short of the lateral edges of said belt; and a reinforcing structure in said belt extending circumferentially thereof, said reinforcing structure comprising a first ply of parallel cord fabric having its cords extending at a first angle no greater than 25° with respect to the longitudinal direction and a second ply of parallel cord fabric having its cords extending at a second angle equal in magnitude but opposite in direction with respect to the longitudinal direction, said first ply and said second ply forming an overlapped portion which is limited in lateral directions substantially to the area of said shoe so that the portions of said belt laterally outside the area of said shoe are free of cross ply shearing layers and said belt is substantially free of any bulging adjacent said shoe.

4,229,255

METHOD AND APPARATUS FOR POSITIONING AND EJECTING FUEL ELEMENT BUNDLES IN AND FROM A DOWNSTREAM END OF A HORIZONTALLY EXTENDING FUEL CHANNEL

Peter Isaac, Mississauga, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

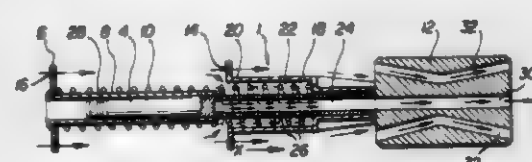
Filed Jun. 20, 1978, Ser. No. 917,345

Claims priority, application Canada, Jul. 11, 1977, 282410

Int. Cl.² G21C 19/22

U.S. Cl. 176-31

6 Claims



1. A nuclear fuel bundle assembly positioning and ejecting apparatus using pressurized coolant flow entrainment to eject

fuel bundles from a downstream end of a horizontally extending fuel channel, beyond the coolant flow therein, comprising:

- a first piston member slidable along the bore of the fuel channel;
- a stem integral with the first piston member and extending therefrom in a sliding direction thereof;
- a second piston member slidable along the bore of the fuel channel and slidably located on the stem;
- a compression spring between the first and second piston members for compression therebetween, and whereby;
- with the positioning and ejecting apparatus in a portion of the fuel channel which is upstream of pressurized coolant flow therethrough, and with the compression spring held compressed at the upstream end by the fuel channel and at the downstream end by a series of fuel bundles, in a shielded portion of the fuel channel, opening the downstream end of the fuel channel with a fuelling machine connected thereto will cause the compression spring to move the piston members apart and the positioning and ejecting apparatus will become entrained in the coolant flow and eject the fuel bundles from the downstream end of the fuel channel into the fuelling machine.

4,229,256

CORRUGATED THIMBLE TUBE FOR CONTROLLING CONTROL ROD DESCENT IN NUCLEAR REACTOR

Howard J. Luetzow, Dearborn, Mich., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 28, 1977, Ser. No. 865,145

Int. Cl.² G21C 7/16

U.S. Cl. 176-36 S

2 Claims



1. In a shock absorber for a control rod used in a nuclear reactor cooled by liquid, the improvement comprising a guide or thimble tube for said control rod, said thimble tube being internally helically corrugated along at least one extended axial portion near its lower end, said helically corrugated portion having internal diameters of smaller distance at the lower end than at the upper end of said corrugated portion and a progressively smaller pitch of corrugation from the top to the bottom of said corrugated portion and cooperating with the outer wall portion of the lower end of said control rod to brake the descent of said control rod with progressively increasing hydraulic restraining force provided by the liquid coolant in the annular space between the thimble or guide tube and said control rod as each adjacent progressively smaller section of corrugation is encountered.

4,229,257

METHOD OF OPERATING A NUCLEAR POWER INSTALLATION AND A POWER PLANT ADAPTED FOR SUCH OPERATION

Siegfried Förster, Alsdorf, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,316

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724812

Int. Cl.² G21C 15/22; F01K 23/04

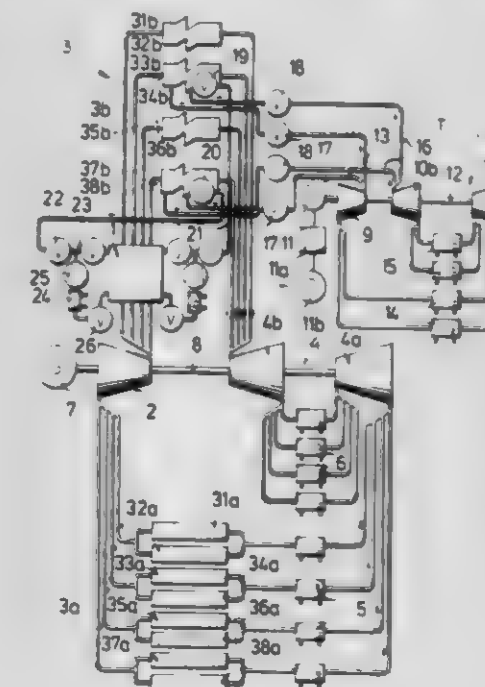
U.S. Cl. 176-60

11 Claims

1. A method of operating a nuclear plant which comprises the steps of:

- heating a primary working gas in a high temperature nuclear reactor;
- driving at least one primary turbine set with the primary gas heated in step (a) by passing the heated primary gas through a turbine and displacing at least one compressor

- of said set connected to said turbine, and driving an electrical generator of said set to generate electric power thereby expanding said primary gas;
- abstracting heat from said primary gas subsequent to step (b) by recuperative heat exchange;
- compressing the primary gas from which heat is abstracted in step (c);
- heating the compressed primary gas of step (d) by said recuperative heat exchange and introducing the recuperatively heated primary gas into said nuclear reactor for further heating therein in step (a);
- upon the development of an increased electrical power



- demand, heating a secondary gas by said recuperative heat exchange from a portion of the expanded primary gas of step (b);
- driving an auxiliary turbine set and electric power generator with the secondary gas heated by recuperative heat exchange in step (f) and
- compressing the secondary gas subsequent to step (g) and recirculating the compressed secondary gas to recuperative heating in step (f), the secondary gas being circulated along a path excluding said reactor through steps (f), (g) and (h) while being heated exclusively by said portion of the primary gas recirculated through steps (a), (b), (c), (d) and (e).

4,229,258

FUEL ASSEMBLY

Renzo Takeda, Yokohama; Sadao Uchikawa, Kawasaki; Kunitoshi Kurihara, Sagami; Masaaki Yamamoto, Kokubunji; Michio Yokomi, Ibaraki; Junichi Yamashita, and Jun Takamatsu, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 23, 1977, Ser. No. 835,962

Claims priority, application Japan, Sep. 25, 1976, 51/115269

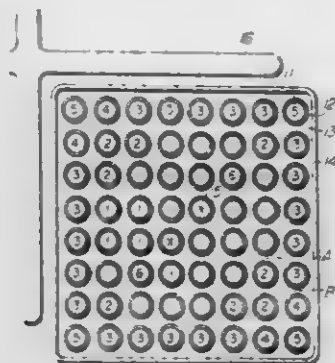
Int. Cl.² G21C 3/02

U.S. Cl. 176-76

31 Claims

1. A fuel assembly for boiling-water reactors comprising a plurality of fuel rods and arranged in a core of a boiling-water reactor in which coolant flows from the bottom of the core toward the top thereof, wherein said fuel assembly is axially divided substantially into upper and lower regions, said upper region having an enrichment larger than that of the lower region, the enrichment in each of said upper and lower regions being uniformly distributed axially thereof and wherein the boundary between said upper and lower regions is located

such that when the fuel assembly is arranged in the core of the boiling-water reactor and the reactor has started its operation,



a peak power is produced in each of said upper and lower regions.

4,229,259

GRID SLEEVE BULGE TOOL

Ronald E. Vaill, Penn Township, Westmoreland County, and William D. Phillips, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 831,459, Sep. 8, 1977, Pat. No. 4,182,152.
This application Oct. 10, 1978, Ser. No. 950,206
Int. Cl.² G21C 21/08

U.S. Cl. 176-78

3 Claims



1. The method of securing a nuclear reactor fuel assembly grid to control rod guide tubes extending therethrough comprising the steps of:

- immovably fixing a short sleeve in selected cells in said grid;
- pulling a control rod guide through each of said sleeves;
- inserting a bulge tool in said guide tube, the end of said tool being positioned near the end of said sleeve on one side of said grid;
- said tool including a housing having flexible tines thereon and outwardly extending projections on certain of said tines;
- pulling a ram having surfaces complementary to the inner surfaces of said tines, into said housing;
- causing said projections to move radially outward into contact with the inner surface of the guide tube;
- continuing the pulling of said ram and causing said projections to create an outward bulge in said guide tube; and
- moving said bulge tool in the guide tube to a position on the other side of said grid, and repeating the above process of creating a bulge in the guide tube to thereby mechanically secure said grid to the control rod guide tubes.

4,229,260

NUCLEAR REACTOR FUEL ELEMENT

Carl E. Johnson, Elk Grove, Ill., and Carl E. Crouthamel, Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

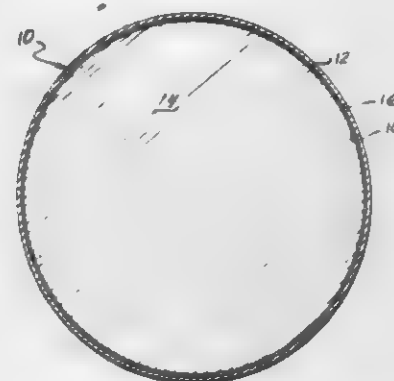
Continuation of Ser. No. 499,958, Aug. 23, 1974, abandoned.

This application Jun. 2, 1976, Ser. No. 692,161

Int. Cl.² G21C 3/20

U.S. Cl. 176-82

7 Claims



1. A nuclear reactor fuel element comprising:
 - a tubular-shaped outer metallic cladding having an inner surface and sealed ends;
 - a layer of chromium bonded to the inner surface of the cladding to form an integral member, said chromium acting as an oxygen getter to protect the cladding from corrosion;
 - a central core of actinide fuel material disposed within the cladding, said core being movable relative to the cladding.

4,229,261

PROCESS FOR SEPARATING WATER FROM ORGANIC MULTIPLE COMPONENT MIXTURES BY DISTILLATION

Günter Heck, Hofheim; Günter Roscher, and Rudolf Donth, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

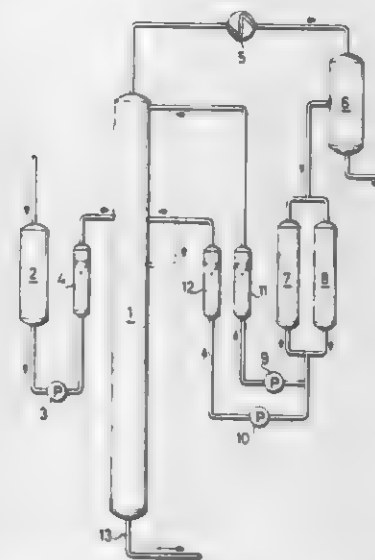
Continuation of Ser. No. 487,741, Jul. 11, 1974, abandoned. This application Dec. 21, 1978, Ser. No. 971,900

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1973, 2335673

Int. Cl.² B01D 3/36; C07B 51/42

U.S. Cl. 203-14

4 Claims



1. A distillation process for the removal of water from organic multiple component mixtures containing water and consisting essentially of carboxylic acids having less than 5 carbon atoms and esters thereof, at least one of said organic components being partly miscible with water and being an azeotrope forming agent, comprising the steps of: introducing said or-

ganic multiple component mixture containing water into an inlet of a distillation column, azeotropically distilling overhead the water and the partly miscible azeotrope forming agent in said distillation column; condensing the resultant azeotropic distillate and separating the condensate into a water layer which is removed and an azeotrope forming agent layer; separating substantially all of the azeotrope forming agent layer into two parts and recycling one part to the top of the distillation column and the other part to the column at a point at or below the mixture inlet; and removing said organic multiple component mixture, free or almost free of water as a bottoms product.

4,229,262

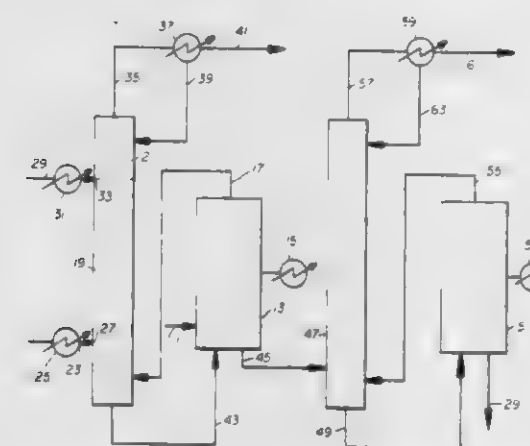
PROCESS FOR SEPARATING ALKOXYKETONE COMPOUNDS FROM THE CORRESPONDING 1-ALKOXY-2-ALKANOL COMPOUND

Denvil E. Reed, and Richard C. Grimm, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Continuation of Ser. No. 822,197, Aug. 5, 1977, Pat. No. 4,153,516. This application May 4, 1979, Ser. No. 36,237

Int. Cl.² B01D 3/40; C07C 49/24

U.S. Cl. 203-29

7 Claims



1. A process for separating an alkoxyketone compound from a feed mixture of the alkoxyketone compound and the corresponding 1-alkoxy-2-alkanol compound which comprises:

- A. introducing an extractant solvent selected from the group of aliphatic diols, triols and polyols having from two to six carbon atoms into an extractive distillation zone;
- B. introducing said feed mixture into said extractive distillation zone at a point above the bottom thereof and below the point of entry of said extractant solvent, wherein said feed mixture contains an organic or inorganic base in an amount sufficient to raise the pH to 8 or greater;
- C. subjecting the resulting mixture to extractive distillation in said extractive distillation zone; and
- D. recovering at the top of said extractive distillation zone a distillate fraction containing alkoxyketone compound and said extractant solvent substantially free of the corresponding 1-alkoxy-2-alkanol compound.

4,229,263

RECOVERY OF METHYL HEPTAFLUOROBUTYRATE FROM METHANOL BY DISTILLATION

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 867,078, Jan. 5, 1978, Pat. No. 4,156,791, which is a continuation of Ser. No. 695,217, Jun. 11, 1976, abandoned. This application Dec. 21, 1978, Ser. No. 972,087

Int. Cl.² B01D 3/36; C07C 69/62

U.S. Cl. 203-44

5 Claims

4. A process of separating an admixture comprising methanol and methyl heptafluorobutyrate which comprises the steps of:

- (a) distilling a mixture comprising methanol and methyl

heptafluorobutyrate to produce an overhead methanol/-methyl heptafluorobutyrate azeotrope,

- (b) condensing said overhead,
- (c) adding water to the condensed overhead, thereby effecting a phase separation into a predominantly aqueous methanol liquid phase and a predominantly ester-containing liquid phase,
- (d) separating said phases,
- (e) returning the predominantly ester-containing liquid phase to said distillation step until the methanol content in said admixture is substantially exhausted, thereby obtaining a substantially pure methyl heptafluorobutyrate.

4,229,264

METHOD FOR MEASURING THE RELATIVE ETCHING OR STRIPPING RATE OF A SOLUTION

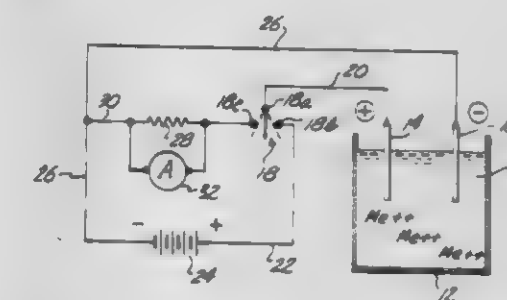
Donald R. Graunke, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 6, 1978, Ser. No. 957,742

Int. Cl.² B01D 59/40

U.S. Cl. 204-1 T

6 Claims



1. A method for providing an indication of the relative etching rate of a partially depleted oxidizing metal processing solution, said solution being partially depleted as a result of spontaneously oxidizing a metal to a dissolved metal ionic species, comprising the steps of:

- (a) immersing in said solution first and second spaced electrodes each composed of a metal relatively inert with respect to said solution;
- (b) applying a predetermined potential for a predetermined time across said electrodes to create a direct current through said solution between said electrodes to plate a determinable quantity of said metal ionic species as a metal plating on one of said electrodes;
- (c) thereafter allowing said solution to oxidize said metal plating back to said ionic species without applying a potential to said electrodes; and
- (d) measuring the elapsed time required for substantially all of said metal plating on said one electrode to be oxidized back to said ionic species.

4,229,265

METHOD FOR FABRICATING AND THE SOLID METAL ORIFICE PLATE FOR A JET DROP RECORDER PRODUCED THEREBY

E. J. Doyle Kenworthy, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 861,852, Dec. 19, 1977, Pat. No. 4,184,925. This application Aug. 9, 1979, Ser. No. 65,035

Int. Cl.² C25D 1/08, 1/02

U.S. Cl. 204-11

8 Claims

1. A method for producing a solid orifice plate adapted for use in a jet drop recorder, comprising:

- (a) forming a resist peg on a substrate to define an orifice recess,
- (b) plating the substrate around the sides of the peg to form the orifice recess and over the peg to form an orifice smaller than the recess over the peg,
- (c) using the orifice as a mask to form a resist plug larger

than the orifice over the orifice to define a cavity on the side of the orifice opposite the recess,
(d) plating the substrate again around the sides of the plug to thicken the orifice plate and to form the cavity, and



(e) removing the resist to leave an orifice plate having an orifice disposed between the recess and the cavity.

4,229,266

PROCESS FOR ANODICALLY OXIDIZING ALUMINUM AND USE OF THE MATERIAL SO PREPARED AS A PRINTING PLATE SUPPORT

Gerhard Usbeck, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Aug. 17, 1979, Ser. No. 67,391

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1978, 2836803

Int. Cl.² C25D 11/04, 11/08, 11/16, 11/18

U.S. Cl. 204—33

5 Claims

1. In the process for anodically oxidizing materials in the form of strips, foils, or sheets composed of aluminum or aluminum alloys in an aqueous electrolyte containing sulfuric acid and phosphoric acid, if appropriate, after a previous mechanical, chemical or electrochemical roughening,

the improvement which comprises anodically oxidizing the material in an electrolyte having a concentration of sulfuric acid ranging from about 25 to 150 g per liter, of phosphoric acid ranging from about 10 to 50 g per liter, and of aluminum ions ranging from about 5 to 25 g per liter, at a current density ranging from about 4 to 25 A/dm², and a temperature ranging from about 25° to 65° C.

4,229,267

ALKALINE BRIGHT ZINC PLATING AND ADDITIVE THEREFOR

Carl Steinecker, Milford, Mich., assignor to Richardson Chemical Company, Des Plaines, Ill.

Filed Jun. 1, 1979, Ser. No. 44,683

Int. Cl.² C25D 3/22, 3/24

U.S. Cl. 204—55 R

23 Claims

1. A bright zinc electroplating bath comprising an aqueous alkaline solution which includes a source of zinc ions and a bath soluble polymer containing repeating tertiaryaminoalkyl acrylamide groups or a quaternary salt thereof.

4,229,268

ACID ZINC PLATING BATHS AND METHODS FOR ELECTRODEPOSITING BRIGHT ZINC DEPOSITS

Richard K. Lowery, Garfield Heights, and Thomas W. Starinshak, Berea, both of Ohio, assignors to Rohco, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 972,739, Dec. 26, 1978,

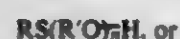
abandoned. This application Jul. 9, 1979, Ser. No. 55,803

Int. Cl.³ C25D 3/22

U.S. Cl. 204—55 R

16 Claims

1. An aqueous acidic plating bath substantially free of ammonium ions for the electrodeposition of a zinc coating on a substrate which comprises zinc ions, and an amount, sufficient to provide a level and bright zinc electrodeposit, of a polymeric sulfur-containing compound having the general formula



wherein R is an alkyl group containing up to about 24 carbon atoms, each R' independently is an alkylene group or mixture of alkylene groups containing 2 or 3 carbon atoms and each n is independently an integer of from 1 to about 100.

4,229,269

SPRAY CELL FOR SELECTIVE METAL DEPOSITION OR REMOVAL

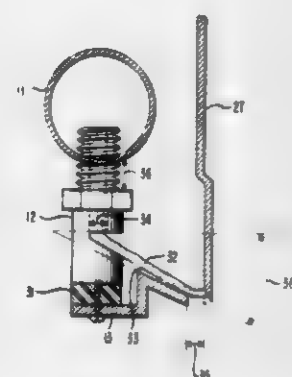
Reginald R. Buckley, Summit, and Paul A. Kohl, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 1, 1979, Ser. No. 80,401

Int. Cl.² C25C 1/20, 7/00

U.S. Cl. 204—109

4 Claims



1. A method of manufacturing an article including the step of selectively electrochemically processing a portion of the article by steps comprising directing at the article a spray of electrochemical processing fluid, with the article being a first electrode of the electrochemical process, and the spray conducting electric current between said first electrode and a second electrode of the electrochemical process, the invention CHARACTERIZED in that said spray comprises two or more fan-shaped spray portions produced by two or more spray nozzles, with said spray having a Reynold's number of at least 10,000, and further characterized in that said second electrode comprises one or more deflectors that intersect said spray at an included angle less than 45 degrees and thereby deflect the spray onto the portion of the article to be selectively processed, with the deflectors extending to a point closer than 10 millimeters from the portion of the article to be selectively processed.

4,229,270

PROCESS FOR THE RECOVERY OF METAL VALUES FROM ANODE SLIMES

Kohur N. Subramanian, East Hanover, N.J.; Malcolm C. E. Bell, Oakville, Canada; John A. Thomas, Norval, Canada, and Norman C. Nissen, Oakville, Canada, assignors to The International Nickel Co., Inc., New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,302

Claims priority, application United Kingdom, Apr. 12, 1978, 14345/78; Apr. 12, 1978, 14346/78; Apr. 12, 1978, 14347/78; Apr. 12, 1978, 14348/78

Int. Cl.² C25C 1/00

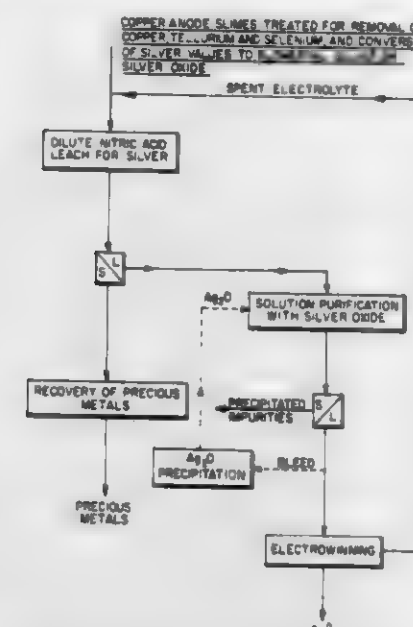
U.S. Cl. 204—109

18 Claims

1. In a process for treating anode slimes which contain silver values and at least one of the metal values selenium and tellurium, and which may contain copper, nickel, precious metals and gold values, in which silver is recovered by electrowinning from an aqueous silver nitrate-containing solution, the improvement comprising converting silver values comprising silver compounds of selenium and/or tellurium to a material

containing silver in a form readily leachable in dilute nitric acid, leaching such silver-containing material with dilute nitric

(f) electrowinning the lead from the separated supernatant.



acid, and recovering silver from such leach solution by electrowinning.

4,229,271

METHOD OF RECOVERING LEAD VALUES FROM BATTERY SLUDGE

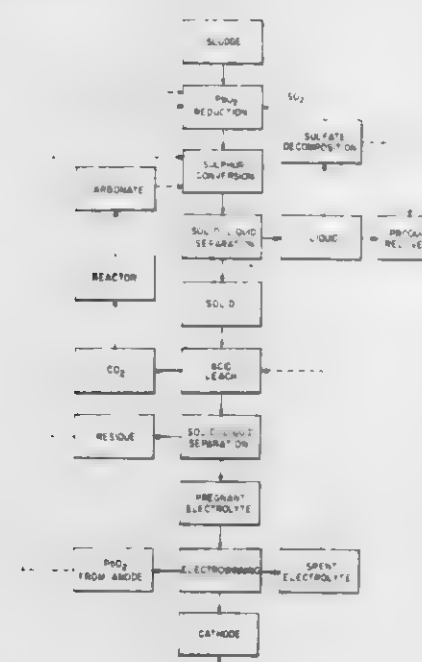
Raymond D. Prengaman, Arlington, and Herschel B. McDonald, Red Oak, both of Tex., assignors to RSR Corporation, Dallas, Tex.

Continuation of Ser. No. 3,079, Jan. 12, 1979. This application May 24, 1979, Ser. No. 42,158

Int. Cl.² C25C 1/18

U.S. Cl. 204—114

11 Claims



1. A method for recovering substantially all lead values from battery sludge as metallic lead, which comprises:

- subjecting the sludge to low temperature reducing conditions;
- treating an aqueous solution of the sludge with a compound selected from the group comprising salts and bases which form soluble sulfur-containing materials while converting lead sulfate to insoluble non-sulfur containing compounds;
- separating the resultant solid product by solid-liquid separation techniques;
- leaching the solid product from step (c) with an aqueous solution of an acid suitable for use in an electrolytic cell;
- separating the supernatant resulting from step (d) from the solid residue; and

4,229,272

METHOD FOR PREPARING SILICONE GRAFT COPOLYMERS

Georges H. Wajs, Ivry, France, assignor to Essilor International Compagnie Generale d'Optique, Joinville le Pont, France
Continuation of Ser. No. 889,640, Mar. 24, 1978, abandoned.

This application May 23, 1979, Ser. No. 41,734

Claims priority, application France, Mar. 31, 1977, 77 09766
Int. Cl.³ C08L 51/08; C08F 2/46; B29D 11/00

U.S. Cl. 204—159.13

14 Claims

1. A method for preparing graft polyorganosiloxanes comprising an irradiating step, wherein an article previously moulded from a polyorganosiloxane is subjected to a non ionizing UV radiation having a wave-length within the range from 1800 to 4000 Angstroms in the presence of oxygen, the article being exposed to a power intensity of said radiation of about 100 to 1000 mw/cm² for a time period of about 5 seconds to 30

minutes and a subsequent grafting step wherein said article is contacted with a monomer selected from compounds having a pyrrolidone ring wherein the nitrogen atom of the heterocyclic ring carries as a substituent a hydrocarbon radical including an ethylenically unsaturated group, whereby said monomer is grafted onto the polyorganosiloxane.

4,229,274

ULTRAVIOLET LIGHT CURABLE COMPOSITIONS FOR PRODUCING COATINGS OF LOW GLOSS

Leland H. Carblom, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 26, 1979, Ser. No. 15,544

Int. Cl.² C08F 8/00

U.S. Cl. 204—159.15

18 Claims

1. An ultraviolet light curable coating composition comprising:

- a. at least one photoinitiator which generates a radical pair by way of unimolecular homolysis resulting from photo-excitation, at least one member of said radical pair being capable of initiating addition polymerization of acryloxy groups;
- b. at least one photosensitizer which
 - (1) has a triplet energy in the range of from 54 to 72 kilocalories per mole, and
 - (2) promotes photopolymerization through bimolecular photochemical reactions;
- c. at least one quencher
 - (1) having at least one quenching moiety which quenches said photosensitizer to an extent greater than the extent to which said photosensitizer is quenched by acryloxy groups,
 - (2) which is not itself either an effective initiator or an effective inhibitor of free radical polymerization of acryloxy groups,
 - (3) which does not produce products during quenching of said photosensitizer which are either effective initiators or effective inhibitors of free radical polymerization of acryloxy groups,
 - (4) which either does not quench said photoinitiator or quenches said photoinitiator at a rate much less than the rate at which said photoinitiator induces polymerization of acryloxy groups so as not to significantly interfere with the initiation of free radical polymerization of acryloxy groups by said member of said radical pair, and
 - (5) which has at least one of the following characteristics:
 - (i) a triplet energy in the range of from 35 to 68 kilocalories per mole, but lower than the triplet energy of said photosensitizer,
 - (ii) an ionization potential in the range of from about 6½ to 9 electron volts,
 - (iii) an ionization potential in the range of from 10½ to about 12 electron volts; and
- d. at least one compound having a plurality of acryloxy groups and capable of being free radically addition polymerized by interaction with said photoinitiator and said photosensitizer; wherein upon exposure to ultraviolet light, a coating of said coating composition is cured to a crosslinked film having a lower gloss than if said quencher were absent.

4,229,275

SOLID ELECTROLYTE OXYGEN SENSOR AND METHOD OF MAKING SAME

Edward P. Habdas, and Jon D. Aaron, both of Decatur, Ala., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 9, 1979, Ser. No. 55,573

Int. Cl.² G01N 27/58; C04B 37/00

U.S. Cl. 204—195 S

8 Claims

1. A method of making an oxygen sensing device comprising the steps of:

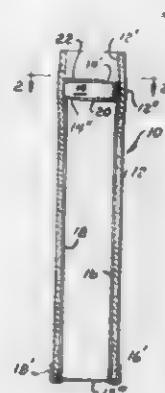
forming a sintered wafer of stabilized solid electrolyte ceramic;

applying a first, porous, continuous electrode coating to the major portion of the sensing side of said wafer and to a narrow first band portion along the axial length of a first side edge portion of said wafer while leaving said sensing side of said wafer devoid of said electrode coating in the area thereof which is immediately adjacent a second side edge portion which is circumferentially spaced from said first band of coating;

applying a second, porous, continuous electrode coating to the major portion of the reference side of said wafer and to a narrow second band portion along the axial length of said second side edge portion while leaving said reference side of said wafer devoid of said electrode coating in the area thereof which is immediately adjacent said first narrow band portion;

applying first and second spaced conductive stripes internally along at least a portion of the length of an unfired ceramic tube having an inner diameter greater than the outer diameter of said wafer and a temperature coefficient of expansion which is compatible with said wafer after firing but will cause said tube to shrink into a hermetic sealing relationship with said wafer during firing, said stripes being applied at a circumferential spacing corresponding to the spacing between said first and second bands of coating;

positioning said wafer internally of said unfired ceramic tube so that its first and second bands of coating are aligned with and overlies said first and second conductive stripes;



firing said tube and wafer assembly to shrink said tube onto said wafer and mechanically force said bands of coating into intimate contact with said conductive stripes.

6. An oxygen sensing device comprising a ceramic tube having a relatively uniform wall thickness; a thin wafer of stabilized solid electrolyte material positioned intermediate the ends of said tube and transverse to the axis thereof, said wafer having a sensing side and a reference side, the outer diameter of said wafer being greater than the inner diameter of said tube in at least the spaced axial regions of said tube which are immediately adjacent the two sides of said wafer, and the outer diameter of said ceramic tube being greater in the plane of said wafer than in the transverse axial planes immediately adjacent thereto, said difference in diameters being sufficient to hermetically seal said wafer into said ceramic tube throughout a temperature range of at least about 500°–2000° F.; a first, continuous, porous electrode coating on the major portion of the sensing side of said wafer and along a first narrow band on the side edge of said wafer; a second, continuous porous electrode coating on the major portion of the reference side of said wafer and along a second, narrow band on the side edge of said wafer which is spaced circumferentially around said wafer from said first coating band, said sensing and reference sides being devoid of coating in the regions thereof which are immediately adjacent said second and first coating bands, respectively; first and second, axially extending, spaced conductive stripes positioned along the interior of said ceramic tube from the reference end thereof to at least the sensing edge of said wafer, said first and second conductive stripes being aligned with, and in

intimate electrical and mechanical contact with said first and second coating bands, respectively.

4,229,276

VIBRATORY PLATING APPARATUS

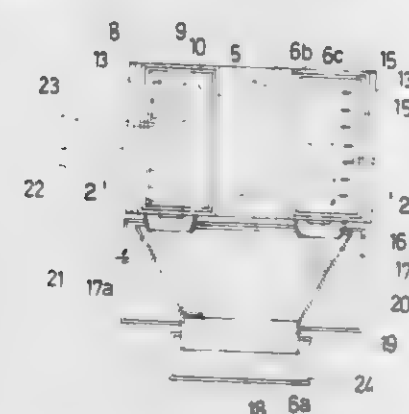
Hisamine Kobayashi, Nagoya; Motoo Kawasaki, Hirakata; Shozo Mizumoto, Takarazuka; Hidemi Nawafune, Takatsuki, and Sadamasa Suzuki, Tatsuta, all of Japan, assignors to Shikishima Tipton Manufacturing Co. Ltd., Nagoya and Motoo Kawasaki, Hirakata, both of Japan

Filed Feb. 28, 1979, Ser. No. 16,144

Int. Cl.² C25D 17/02, 17/26

U.S. Cl. 204—222

8 Claims



1. An apparatus for plating workpieces in a plating container, which comprises:

- a base;
- a vibratory plating container means resiliently mounted on said base for vibratory movement, said container means having a lid covering the top and having a bottom with a concavely arcuate cross-section;
- a vibration-generating motor connected with said container means for causing vibration of said container means; for causing workpieces in said container means to roll and to be transferred in a direction along said container means parallel to said bottom; and
- electrodes of opposite polarities disposed within said container means;
- said container means having a discharge port on one side of the arcuate bottom for discharging a mixture of plated workpieces and plating liquid;
- a screening means below and separate from said container means for receiving said mixture from said discharge port and separating workpieces from the plating liquid; and
- liquid return means connected between said container means and said screening means for returning plating liquid to said container means.

4,229,277

GLOVE-LIKE DIAPHRAGM STRUCTURE FOR ELECTROLYTIC CELLS

Steven J. Specht, Mentor, Ohio, assignor to Olin Corporation, New Haven, Conn.

Filed Aug. 30, 1979, Ser. No. 71,204

Int. Cl.² C25B 13/02, 13/08

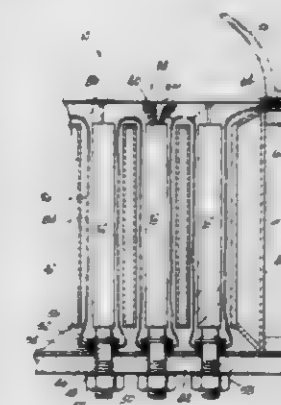
U.S. Cl. 204—252

20 Claims

1. A non-adherent, glove-like diaphragm structure for use in an electrolysis cell of the type having an anolyte, a catholyte, a grate-like cathode structure with a plurality of vertical openings and an upper edge, a cell base supporting said cathode structure from below, a plurality of vertical anode risers attached to said cell base, a plurality of anodes attached to said anode risers and passing upwardly into openings in said cathode structure and a cell top for closing the top of the cell, said diaphragm structure comprising the following parts:

- (a) a plurality of interconnected finger means, having an open upper end, a closed lower end and a middle section connecting said upper and lower ends, for passing over and downwardly through said grate-like cathode structure and loosely around and under said anodes so as to separate said anodes from said cathode structure, said

finger means having portions defining at least one opening in the lower end thereof through which said anode risers can sealingly pass; and



(b) border means, sealingly attached to said upper end of said finger means, for passing between said cell top and said upper edge of said cathode structure so as to separate said upper edge of said cathode from said anodes and said anolyte.

4,229,278

ELECTROLYTIC SUPPORT ASSEMBLY

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

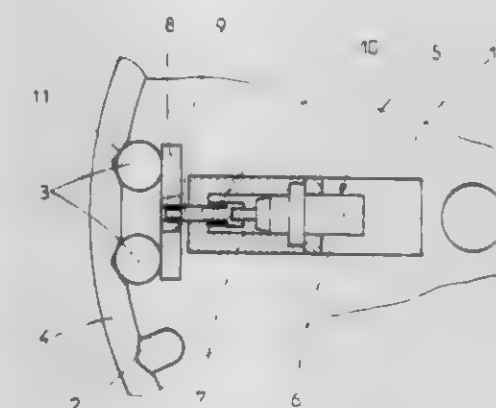
Filed Feb. 26, 1979, Ser. No. 15,388

Claims priority, application France, Mar. 10, 1978, 78 06914

Int. Cl.² C25D 17/06

U.S. Cl. 204—297 R

8 Claims



1. A support assembly for clamping at least one workpiece to be subjected to treatment during which the temperature of the workpiece is raised above a predetermined level comprising:

- (a) a carrier plate,
- (b) first clamping means on said carrier plate,
- (c) second clamping means on said carrier plate movable towards said first clamping means to effect securing of said workpiece between said first and second clamping means during treatment, and
- (d) driving means secured to said carrier plate capable of effecting a translational movement of said second clamping means, said driving means including
 - (e) a body,
 - (f) a temperature sensitive expansion means within said body, and
 - (g) a driving rod extending from said body and movable by said expansion means, which rod is caused to extend further from the body by said sensitive means to effect clamping of the workpiece by the clamping means as the temperature of the sensitive means is increased beyond said predetermined level and is caused to move back into the body when the temperature falls below said level to release the workpiece.

4,229,279

ELECTROPLATING ELECTRODE AND METHOD OF MOUNTING AN ARTICLE TO BE PLATED THEREON

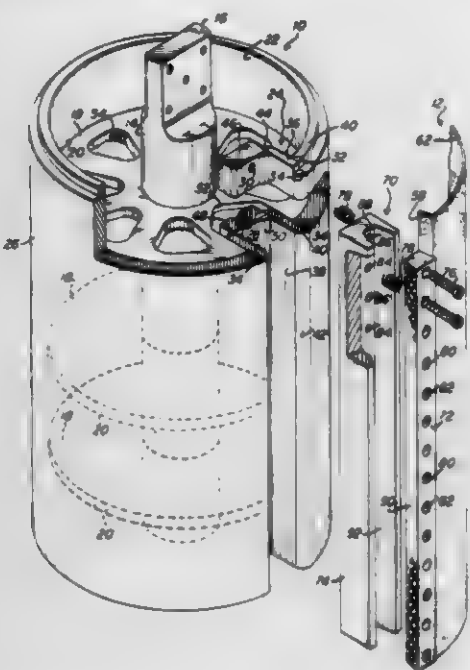
Frank B. Price, Jefferson County, and Mathieu J. Vertenstein, Denver, both of Colo., assignors to Silver Engineering Works, Inc., Denver, Colo.

Filed Aug. 31, 1979, Ser. No. 71,758

Int. Cl.² C25C 7/00, 7/02

U.S. Cl. 204—297 R

10 Claims



1. In a drum-like electrode for use as a mandrel to support a sheet material wrapped therearound when being electroplated: a first channel-shaped element having a longitudinally-extending groove therein; a first tongue-forming element adapted for insertion into the groove in the first channel-shaped element; and first fastener means connecting the first channel-shaped element and first tongue-forming element together to form a first clamp subassembly effective to fasten the ends of the article to be plated together and cooperate therewith to define an endless electrically-conductive loop; a hollow cylindrical shell of electrically-conductive material sized for insertion into the endless loop defined by the article to be plated and the first clamp subassembly, said shell having a longitudinally-extending slit therein of a width substantially greater than that of the first clamp subassembly; a second channel-shaped element having a longitudinally-extending groove therein sized to receive the first clamp subassembly, said second channel-shaped element being fastened in bridging relation across the slit in the shell with its groove facing outwardly; second fastener means connected between the first clamp subassembly and the second channel-shaped element operative upon actuation to draw the former down into the groove in the latter so as to tighten the article to be plated snugly against the surface of the shell; and means within the hollow interior of the shell effective to conduct an electrical current thereto upon connection to a source of electrical energy.

4,229,280

PROCESS FOR ELECTRODIALYTICALLY CONTROLLING THE ALKALI METAL IONS IN A METAL PLATING PROCESS

Richard E. Horn, Pittsburgh, Pa., assignor to Pitt Metals & Chemicals, Inc., Pittsburgh, Pa.

Division of Ser. No. 716,225, Aug. 20, 1976, Pat. No. 4,111,772, which is a continuation-in-part of Ser. No. 579,947, May 22, 1975, abandoned. This application Apr. 13, 1978, Ser. No. 776,058

Int. Cl.² B01D 13/02; C25C 1/14

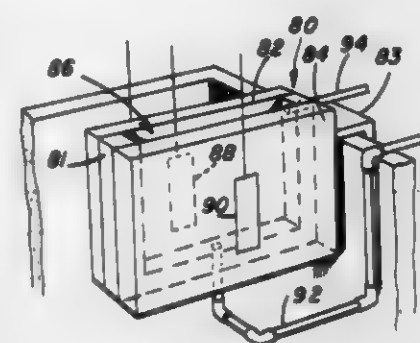
U.S. Cl. 204—301

6 Claims

1. Apparatus for controlling the concentration of alkali

metal ions in an electrochemical tin-plating bath while plating tin on a metallic member comprising,

a tin-plating tank adapted to contain a first liquid with said alkali metal ions, said tin-plating tank forming an anode compartment an anode positioned in said tin-plating tank adapted to be in contact with said first liquid, a cathode compartment in said tank including at least one cation permselective membrane, said cation permselective membrane positioned in said tin-plating tank, a cathode positioned in said cathode compartment and an anode positioned in said tin-plating tank,



means to supply a second liquid to said cathode compartment, means to withdraw said second liquid from said cathode compartment, and said anode and cathode arranged to continuously remove a portion of said alkali metal ions from said first liquid and transfer said portion of said alkali metal ions through said cation permselective membrane into said second liquid while said metallic member is being plated with tin in said tin plating tank.

4,229,281

PROCESS FOR EXTRACTING BITUMEN FROM TAR SANDS

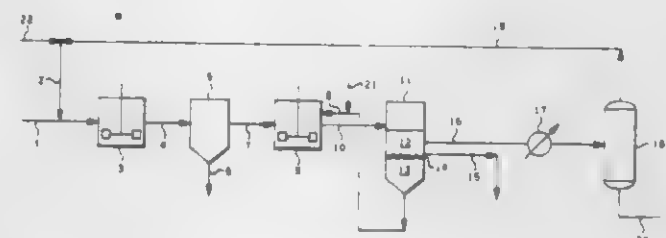
Henry E. Alquist, Bartlesville, Okla., and Allen M. Ammerman, McPherson, Kans., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1978, Ser. No. 933,346

Int. Cl.² C10G 1/00

U.S. Cl. 208—11 LE

7 Claims



1. A process for recovering bitumen from tar sands wherein bitumen is extracted from the tar sands with a solvent which process comprises contacting the bitumen solution comprising said solvent, bitumen and sand fines with water containing about 0.01 to about 0.10 weight percent of a cationic surfactant to effect the removal of said sand fines from said bitumen solution,

recovering the resulting bitumen solution thereafter and recovering bitumen from said bitumen solution.

4,229,282

CATALYTIC DEWAXING OF HYDROCARBON OILS

Alan W. Peters, Moorestown; Emerson Bowes, Woodstown, and Thomas R. Stein, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,775

Int. Cl.² C10G 47/16, 71/00

U.S. Cl. 208—111

17 Claims

1. A process for dewaxing a hydrocarbon oil boiling above 350° F. which comprises contacting said oil and H₂ gas at a temperature of about 450° to 950° F., a pressure of 50 to 3000 psig, a space velocity of 0.1 to 20 LHSV, and an H₂ circulation rate of 500 to 20,000 SCF/bbl, with a catalyst comprising a nickel-tungsten hydrogenation component and a crystalline zeolite having an effective pore diameter greater than 5 Angstroms and a crystal framework density, in the dry hydrogen form, of not less than about 1.6 grams per cubic centimeter.

4,229,283

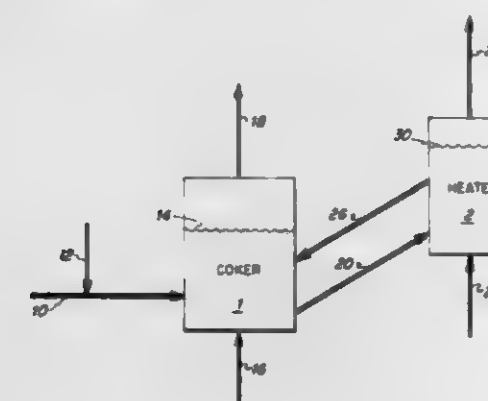
FLUID HYDROCKING WITH THE ADDITION OF DISPERSIBLE METAL COMPOUNDS

John Sosnowski, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 9, 1978, Ser. No. 959,208

Int. Cl.² C10G 13/18

U.S. Cl. 208—127



1. A fluid coking process which comprises the steps of: (a) adding to a carbonaceous chargestock having a Conradson carbon content of at least 5 weight percent, a metal compound selected from the group consisting of metal salts of organic acids, metal phenolates, metal halides, inorganic poly acids and mixtures thereof wherein the metal constituent of said metal compound is selected from the group consisting of Groups IVB, VB, VIB, VIIB and VIII of the Periodic Table of Elements and mixtures thereof, (b) contacting the resulting mixture with hot fluidized solids in a fluidized coking bed contained in a coking zone maintained in fluidized state by the introduction of a hydrogen-containing fluidizing gas, said coking zone being maintained at a temperature ranging from about 750° F. to about 1100° F. and at a total pressure ranging from about 400 to about 3000 psig to produce a vapor phase product and a solid carbonaceous material which deposits on said fluidized solids, (c) withdrawing a portion of said solids from said coking zone, and contacting at least a portion of said withdrawn solids with steam and a molecular oxygen-containing gas at a temperature ranging from about 1600° F. to about 2000° F. to produce a fuel gas and metallic ashes, (d) recycling at least a portion of said metallic ashes to said chargestock, and (e) discontinuing the addition of said metal compound of step (a).

4,229,284

CORROSION CONTROL METHOD USING METHOXYPROPYLAMINE (MOPA) IN WATER-FREE PETROLEUM AND PETROCHEMICAL PROCESS UNITS

James A. White, Richmond, and Thomas C. Maynard, Houston, both of Tex., assignors to Nalco Chemical Co., Oak Brook, Ill. Continuation-in-part of Ser. No. 743,898, Nov. 22, 1976, abandoned. This application May 15, 1978, Ser. No. 905,814 The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.

Int. Cl.² B01D 3/34; C10G 7/10; C23F 11/14

U.S. Cl. 208—348

9 Claims

1. A process for controlling corrosion in water-free petroleum and petrochemical hydrocarbon processing system separation units consisting essentially of adding a corrosion inhibiting amount of a composition having the formula R—O—(CH₂)_nNH₂ wherein n is 2 or 3 and R is a lower alkyl radical of not more than 4 carbon atoms to the hydrocarbon being processed in the separation unit.

4,229,285

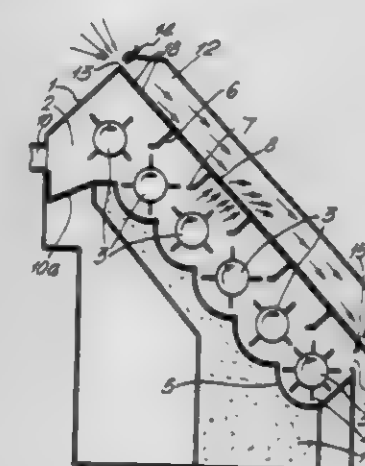
DUST REMOVAL IN AN OPENING AND CLEANING APPARATUS FOR FIBROUS MATERIALS

Gerald Wild, Pickup Bank, Near Darwen, England, assignor to Platt Saco Lowell Limited, Helmschore, England Filed Jun. 22, 1978, Ser. No. 918,304

Int. Cl.² B07B 1/04

U.S. Cl. 209—3

13 Claims



1. In an opening and cleaning apparatus for fibrous materials, including a beater, and a perforate screen positioned adjacent said beater such that said materials acted upon by said beater may contact a facing surface of said screen by impact to separate foreign materials including particulate dust and short unusable fibers from usable fibers of said fibrous materials, the improvement comprising

said screen being positioned above said beater and being formed with perforations therethrough of a prescribed size sufficient to permit said dust particles and to prevent said usable fibers to pass and from passing therethrough, and

means for providing a flow of air adjacent to and along the full perforate surface of said screen which is opposite said facing surface, said means including an inlet to said apparatus for receiving said air flow therethrough adjacent one edge of said opposite surface of said screen and an outlet from said apparatus for discharging said air flow therethrough adjacent another edge of said opposite surface of said screen, whereby said dust particles may be drawn through said perforations and into said air flow and said usable fibers are prevented from being so drawn.

4,229,286

APPARATUS AND METHOD FOR REMOVING DUST FROM TUFTS OF OPENED COTTON FIBER

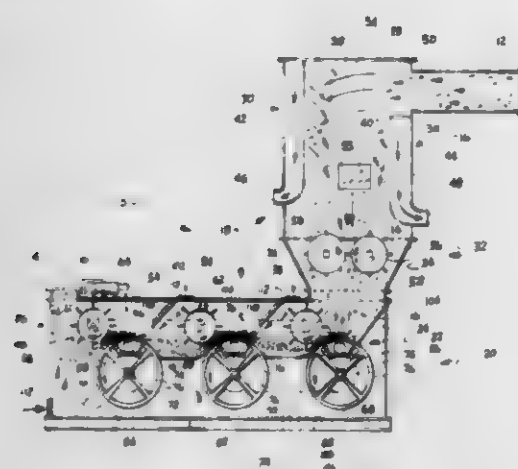
Charles R. Bridges, 816 Floyd St., Kings Mountain, N.C. 28086

Filed Aug. 16, 1978, Ser. No. 934,193

Int. Cl.² B07B 1/22

U.S. Cl. 209—22

33 Claims



1. Dust removing apparatus for tufts of opened cotton fiber stock comprising

- (a) entrance and exit ducts for airborne transport of said tufts, a housing therebetween and passages through said housing for the passage of said tufts therethrough;
- (b) screen means disposed in said housing between said entrance duct and said exit duct;
- (c) means for causing high velocity impingements of said tufts against said screen means for shaking cotton dust from said tufts and through said screen means, thereby forming a mat of said tufts on said screen means, and passing of air at a high velocity through said screen means for removing cotton dust from said mat; and
- (d) means for removal of said tufts from said screen means disruptively of said mat and propelling said tufts in a tumbling floccular state farther through said passages toward said exit duct comprising moving means located contiguously to said screen means and to an interior portion of said passages for striking said mat repeatedly for said removal and for sealing off said tufts just-removed from said high velocity air passing through said screen means from which just-removed.

4,229,287

TIN FLOTATION

Vuko M. Lepetic, Iselin, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Dec. 4, 1978, Ser. No. 966,485

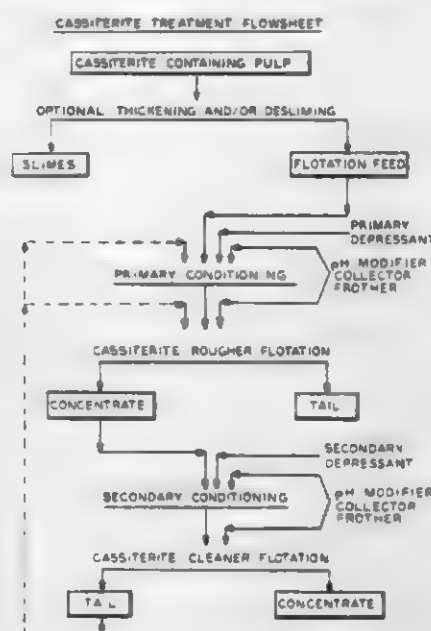
Int. Cl.² B03D 1/04

U.S. Cl. 209—167

12 Claims

12. A process for the recovery of cassiterite from an ore, ore concentrate or ore preconcentrate by froth flotation of cassiterite from gangue and optionally slimes, which comprises forming said ore, ore concentrate or ore preconcentrate into an aqueous flotation pulp, conditioning said pulp with a first depressant for gangue, and, optionally slimes that may be present, said first depressant comprising a hydrosol prepared by mixing a dilute aqueous solution of a polyvalent metal sulfate and a dilute aqueous solution of sodium silicate, subjecting the resulting conditioned pulp to rougher froth flotation in the presence of one or more collector reagents selected from the group consisting of sulfosuccinamate, phosphonic acid, aspartic acid, arsonic acid, hydroxamic acid and salts of these acids, at a pH ranging from mildly acidic to neutral, thereby producing a rougher flotation concentrate containing cassiterite along with gangue and optionally slimes, recovering rougher flotation concentrate and conditioning it with at least one second depressant selected from the group consisting of tannic acid, activated charcoal, sodium fluorosilicate, sodium

lignin sulfonate, lignin sulfonate and quebracho, subjecting the resulting pulp to at least one cleaner froth flotation operation using the same type of collector employed in the rougher



flotation operation to float cassiterite selectively, and recovering the resulting cleaner flotation concentrate or concentrates now having a substantially reduced amount of gangue and optionally slimes associated therewith.

4,229,288

LINEAR MOTOR TYPE, NON-MAGNETIC METAL SEPARATING APPARATUS

Masaru Akama, Toyohashi, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

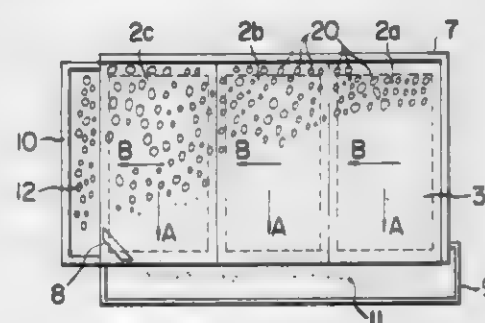
Filed Jan. 4, 1979, Ser. No. 892

Claims priority, application Japan, Mar. 16, 1978, 53-30269

Int. Cl.² B03C 1/08

U.S. Cl. 209—212

10 Claims



1. A linear motor-type, non-magnetic metal separating apparatus comprising:

- a vibration feeder provided with a vibrating deck and means for causing vibration and defining a vibrating direction of conveyance;
- at least two linear motors disposed on the vibrating deck of said vibration feeder so that the advancing directions of the forces provided to non-magnetic metals to be separated by the moving magnetic fields of said linear motors are approximately parallel to one another and perpendicular to the vibratory direction of the conveyance; and
- a trough disposed as a cover for said linear motors and adapted to be vibrated by said vibration feeder from the underside thereof, said trough defining a series of steps.

4,229,289

FLUIDIZED BED APPARATUS AND PROCESS

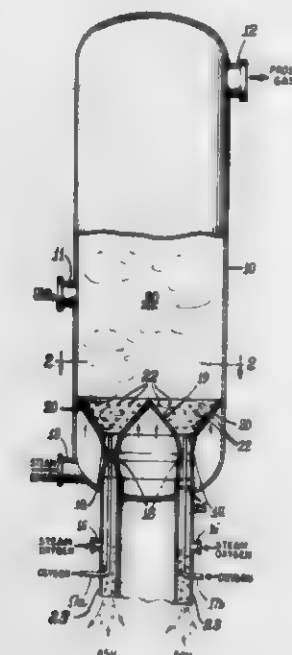
John G. Victor, Darien, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Mar. 12, 1979, Ser. No. 19,441

Int. Cl.² B07B 4/08; C10J 3/54, 3/56

U.S. Cl. 209—474

14 Claims



1. In an apparatus for contacting a mass of fluidized solids with a gaseous medium and withdrawing heavy solid particles from said mass while maintaining lighter solid particles in said mass wherein the apparatus comprises a fluidizing chamber, a sloping, perforated grate in the lower portion of said fluidizing chamber to support said mass of fluidized solids and having means for passing a gaseous medium through said grate to assist in maintaining said mass in a fluidized state and means for withdrawal of said heavy solid particles, the improvement comprising: said grate being sloping and perforated for passage of gas and retention of said solids and having at least one substantially continuous open slot sufficiently wide for passage of said heavy solid particles and in communication with a withdrawal conduit for preferentially removing the heavy solid particles from the fluidizing chamber and returning lighter solid particles to said mass of fluidized solids, said withdrawal conduit having a reduced cross section portion spaced from said grate open slot, and wherein said at least one open slot is: (a) an annular shaped opening in said grate and said grate comprises a conical central portion having its apex upward and an inverted truncated conical outer portion, both conical portions symmetrical about a common center line, said annular open slot being located at the intersection of the downwardly sloping conical portions, or (b) at least one straight open slot extending across substantially the entire width of said grate and said grate comprises multiple downwardly sloping portions with said at least one straight open slot located at the intersection of two downwardly sloping portions.

4,229,290

COMPACT LOW SURFACE AREA DIALYZER METHOD AND APPARATUS

Ghen M. G. Raj, 38 Forestwood Dr., Stamford, Conn. 06903

Filed Mar. 14, 1978, Ser. No. 886,458

Int. Cl.² B01D 13/00, 31/00

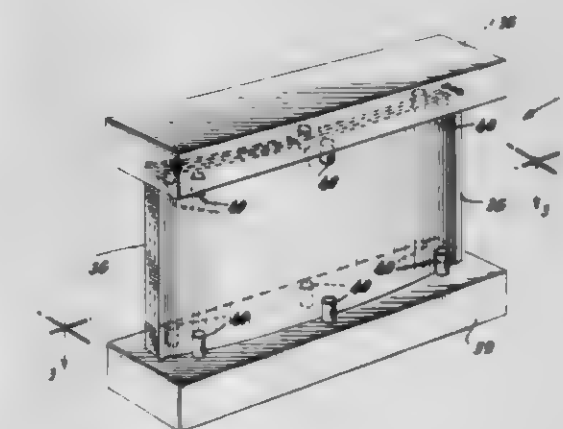
U.S. Cl. 210—646

17 Claims

1. A compact, low surface area dialyzer for extracorporeal dialysis of blood comprising:

- a semi-permeable membrane suitable for blood dialysis,
- first and second plates positioned against opposite surfaces of said membrane and holding said membrane in sandwiched relationship between said plates,
- each of said plates having a multiplicity of spaced parallel

flow channels formed therein on the side thereof adjacent to the respective surfaces of said membrane, said first plate having first and second header passageways formed therein, said first header passageway interconnecting one end of all of said flow channels in said first plate, said second header passageway interconnecting the other ends of all of said flow channels in said first plate, said flow channels in said first plate having a width facing said membrane and having a depth in a direction perpendicular to said membrane, said flow channels in said first plate having a width-to-depth ratio of approximately seven, first and second connection means connected to said first and second header passageways, respectively, for feeding a flow of dialysate into said first header passageway and out of said second header passageway, respectively, for flowing the dialysate through said multiple flow channels in said first plate in parallel flow relationship adjacent to one surface of said membrane, said second plate having third and fourth header passageways therein, said third header passageway interconnecting one end of all of said flow channels in said second plate,



said fourth header passageway interconnecting the other ends of all of said flow channels in said second plate, the flow channels in said second plate being aligned with the flow channels in said first plate and being on the opposite side of said membrane from the flow channels in said first plate, said third and fourth connection means connected to said third and fourth header passageways, for feeding a flow of blood to be dialyzed into said third header passageway and out of said fourth header passageway, respectively, for flowing the blood through said multiple flow channels in the second plate in parallel flow relationship adjacent to the opposite surface of said membrane from the dialysate for dialyzing the blood, and the flow channels in said second plate having a depth in the direction perpendicular to said membrane and having a width facing said membrane, said flow channels in said second plate having a width-to-depth ratio of approximately twenty for exposing multiple thin wide films of flowing blood to the membrane for providing efficient exposure of the flowing blood to the surface of the membrane.

4,229,291

PERMSELECTIVE MEMBRANE AND USE

Axel Walch, Frankfurt; Jürgen Wildhardt, Wallrabenstein, and Dieter Beissel, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

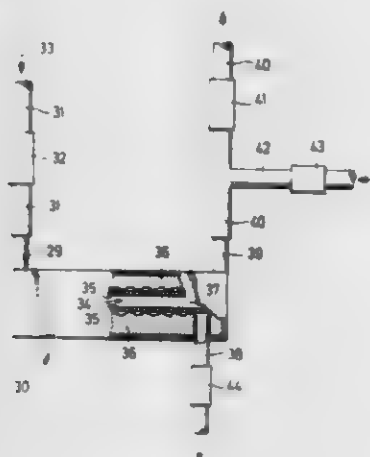
Filed Nov. 20, 1978, Ser. No. 962,269

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1977, 2751910

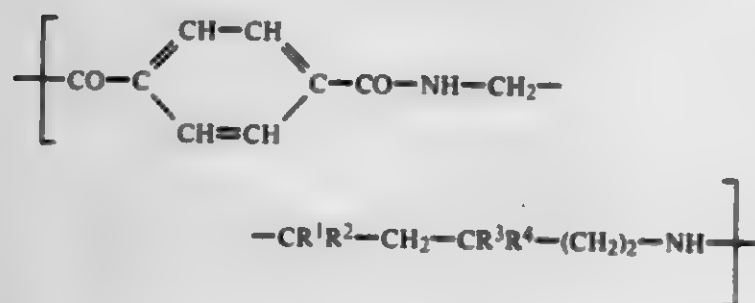
Int. Cl.² B01D 13/00

U.S. Cl. 210—23 F

9 Claims



1. A permselective asymmetric membrane suitable for hemofiltration, comprised of polyamide and having a heteroporous structure, comprising a polyamide which comprises a plurality of repeating terephthaloyldiamine units of the formula:



wherein R¹ represents hydrogen and R², R³, and R⁴ represent lower alkyl, or R³ represents hydrogen and R¹, R², and R⁴ represent lower alkyl, having an ultrafiltration-capacity of from about 1.5·10⁻³ to about 15·10⁻³ cm/s-bar, determined for water at 0.1 bar and 20° C., a thickness of not more than about 100 microns, and a molecular weight exclusion limit of from about 20,000 to about 70,000 Dalton.

4,229,292

COUNTERCURRENT LIQUID-SOLID CONTACTING APPARATUS

Shoichi Mori; Yorifumi Ikeda, both of Suita, and Kikuo Nishikawa, Neyagawa, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 28, 1977, Ser. No. 865,328

Claims priority, application Japan, Dec. 31, 1976, 51-158048

Int. Cl.² B01D 15/06

U.S. Cl. 210—673

15 Claims

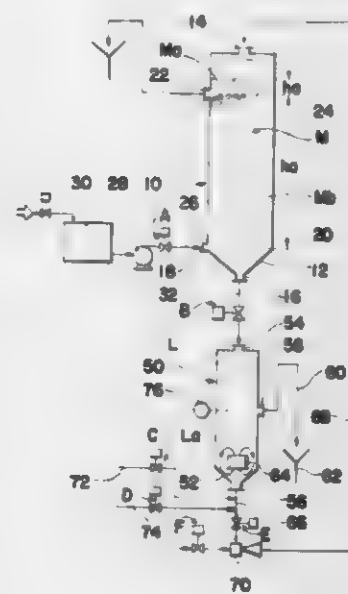
8. A method of substantially purifying a liquid by counter-current liquid-solid contact and of regenerating a purifying material used to purify the liquid, said method comprising: passing liquid to be purified upwardly through a bed of purifying material which is in the form of a mass of purifying particles filled within a liquid treating column and thereby purifying said liquid to form purified liquid; withdrawing said purified liquid from said purifying bed through a liquid collector located within said liquid treat-

ing column at a position adjacent an upper portion thereof and below the top of said purifying bed;

maintaining said liquid collector at a position within said purifying bed such that an upper portion of said purifying bed, which is situated above the level of said liquid collector, alone acts on the remaining lower portion of said purifying bed below the level of said liquid collector and presses said lower portion downwardly, thereby avoiding any possible fluidization and/or expansion of said purifying particles forming said remaining lower portion of said purifying bed during upward passage therethrough of said liquid;

maintaining said liquid collector free of connection to the interior of said liquid treating column at a position above the upper surface of said purifying bed;

transferring a soiled lower portion of said purifying material within said liquid treating column, which has been soiled by suspended solids contained in said liquid being purified, from the bottom of said liquid treating column into a regenerating column by way of connecting piping extending between said bottom of said liquid treating column and the top of said regenerating column, said connecting piping having therein transfer valve means adapted to be opened to allow the transfer of said soiled lower portion of said purifying material toward said regenerating column;



supplying compressed air for a predetermined period of time into said regenerating column and thereby fluidizing the soiled purifying particles which have been transferred from said liquid treating column;

supplying a washing liquid for a predetermined period of time into said regenerating column from said bottom thereof and thereby flowing said washing liquid upwardly through the bed of said soiled purifying particles and washing said soiled particles within said regenerating column and thereby increasing the fluidization of said soiled purifying particles;

withdrawing said washing liquid and suspended solids separated from said soiled purifying particles out of said regenerating column through a liquid outlet defined in said regenerating column at an upper portion thereof; interrupting the supply of said compressed air and said washing liquid into said regenerating column and discharging regenerated purifying material from the bottom of the regenerating column; and

transporting the thus regenerated purifying material so discharged from said regenerating column toward the top of said liquid treating column and onto the top of said purifying bed within said liquid treating column.

4,229,293

DEWATERING OF SLIMES FROM PHOSPHATE ORES

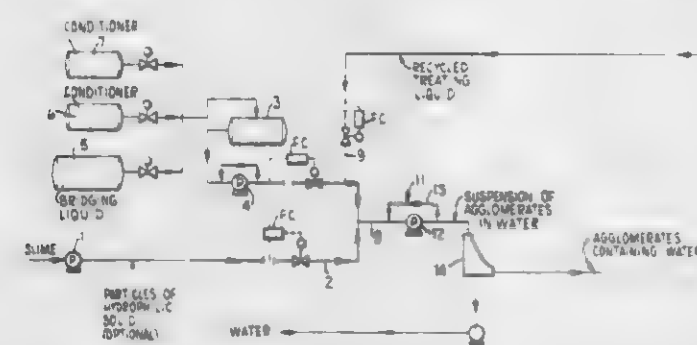
Bruce F. Caswell, Whitmore Lake, Mich., and Ira E. Puddington, Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jan. 2, 1979, Ser. No. 194

Int. Cl.² B01D 21/01; C02B 1/20

U.S. Cl. 210—727

5 Claims



1. A process for dewatering an aqueous slime waste product of phosphate ore mining and beneficiation, said aqueous slime waste product containing from about 1 to 5 percent by weight of solid phosphate ore particles having a particle size of less than 150 mesh and the balance is essentially water, which consists essentially of the steps of: adding to said aqueous slime waste product (a) from 3 to 15 percent by weight, based on the weight of said solid particles in said aqueous slime waste product, of a hydrophobic organic bridging liquid which is immiscible with water, said hydrophobic organic bridging liquid being selected from the group consisting of liquid hydrocarbons, nitrobenzene and chlorinated liquid hydrocarbons, and (b) from 0.1 to 5 percent by weight, based on the weight of said solid particles in said aqueous slime waste product, of a liquid conditioning agent effective to render the surfaces of said solid particles hydrophobic to form a two-phase liquid system, said liquid conditioning agent having a balanced hydrophilic-hydrophobic molecular structure and capable of being adsorbed by said solid particles with the hydrophobic portion oriented outwardly, said liquid conditioning agent being selected from the group consisting of tall oil, xanthates, alcohols having a large hydrocarbon nucleus and primary amines having the formula RNH₂ wherein R is alkyl having 8 to 15 carbon atoms; agitating the two-phase liquid system to effect repeated collisions of said solid particles and thereby forming in said system a dispersion of agglomerates in said liquid system, said agglomerates consisting essentially of agglomerates of said solid particles wherein said solid particles are bound together by said hydrophobic organic bridging liquid; discontinuing said agitating; and separating said agglomerates from water, said hydrophobic organic liquid and said liquid conditioning agent.

4,229,294

HYDROXYPROPYLENE-AMINO-PHOSPHONIC-SULFONIC ACIDS FOR INHIBITING SCALE FORMATION

Derek Redmore, Ballwin, and Frederick T. Welge, Affton, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 966,249, Dec. 4, 1978, which is a continuation of Ser. No. 582,862, Jun. 2, 1975, abandoned. This application May 24, 1979, Ser. No. 42,178

Int. Cl.² C02B 5/06

U.S. Cl. 210—700

13 Claims

1. A process of inhibiting scale formation which comprises treating a water-carrying system with at least a threshold amount of a compound containing one to five of each of the following nitrogen-bonded groups:



where R' and R'' are hydrogen or alkyl and M is hydrogen or a salt ion selected from alkali metal, ammonium, alkaline earth metal and the ammonium form of triethanolamine and diethanolamine, the nitrogen to which said groups are bonded being at least one amino nitrogen of a moiety which, with hydrogen replacing said nitrogen bonded groups (I) and (II), is an amine which contains hydrogen attached to nitrogen and is selected from the group consisting of monoamines of the formula RNH₂, where R is alkyl or cycloalkyl, alkanolamines, polyamines selected from alkylene polyamines and polyalkylene polyamines and said polyamines substituted in a terminal nitrogen by alkyl, cycloalkyl, aryl or aralkyl, furfurylamine, ethylenebisoxypyrrolamine, and cyclic amidines having an amino side chain.

4,229,295

SOLIDIFICATION OF AQUEOUS SLUDGE

David Krofchak, 160 Torbay Rd., Markham, Ontario, Canada (L3R 1G6)

Continuation-in-part of Ser. No. 804,426, Jan. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 539,125, Jan. 7, 1975, abandoned. This application Mar. 23, 1979, Ser. No. 23,104

Claims priority, application United Kingdom, Jan. 10, 1974, 1205/74

Int. Cl.² C02C 3/00

U.S. Cl. 210—723

9 Claims

1. A process for treating tailings sludge from the recovery of bitumen from a source selected from the group consisting of oil sands and oil shales by a hot water separation method, said sludge comprising a slurry of clay minerals and silica in water and having a solids content of at least about 25%, said process consisting essentially of rapidly dispersing throughout the sludge at least one additive compound selected from the group consisting of sulphuric acid, hydrochloric acid, nitric acid, calcium oxide, magnesium oxide, calcium chloride, calcium hydroxide and magnesium hydroxide, said additive being provided in an amount sufficient to cause formation in said sludge of large silicate molecules with resultant solidification of the sludge by gelling and setting into an inert solid material.

4,229,296

WET OXIDATION SYSTEM EMPLOYING PHASE SEPARATING REACTOR

Robert B. Wheaton, St. Joseph, Mich., and James W. Van Kirk, Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 3, 1978, Ser. No. 930,492

Int. Cl.² C02C 5/04

U.S. Cl. 210—758

7 Claims

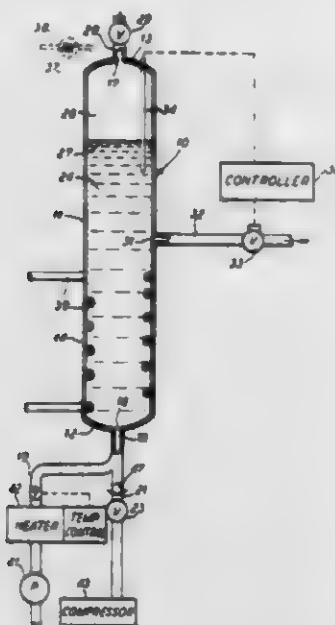
1. A process for accomplishing wet oxidation comprising the steps of simultaneously and continuously

(A) charging a waste water composition containing entrained organic matter to a bottom region of a first vertically elongated reaction zone at a first flow rate.

(B) charging an oxygen-containing gas to a bottom region of said reaction zone at a second flow rate, the amount of oxygen so charged in said gas being at least sufficient to accomplish at least about a 90% COD removal from said entrained organic matter, each of said waste water and said oxygen containing gas having been pre-heated to said zone temperature before said respective chargings.

(C) maintaining said reaction zone at a zone temperature in the range from about 350° to 600° F. and at a zone pressure in the range from about 800° to 2200 psig.

- (D) separating in said first reaction zone a lower liquid phase from an upper gas phase,
 (E) removing gaseous effluent including spent gas from a top region of said reaction zone for increased reaction efficiency at a controlled rate sufficient to maintain said zone pressure,



- (F) removing aqueous liquid effluent from a middle region of said reaction zone at a controlled rate sufficient to maintain the level of said aqueous liquid effluent in said reaction zone within narrow, fixed limits above said middle region and below said top region, and
 (G) pre-pressurizing each of said waste water and said oxygen containing gas to said zone pressure before said respective chargings.

4,229,297

METHOD OF SEPARATING OIL FROM OIL-CONTAINING LIQUID

Takashi Nohmi, Takao Yamada, both of Fuji, and Yoshinao Doi, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 9, 1979, Ser. No. 2,028

Claims priority, application Japan, Jan. 10, 1978, 53/863; Dec. 13, 1978, 53/153009

Int. Cl.² B01D 37/00, 13/0

U.S. Cl. 210—654

10 Claims

1. A method of selectively permeation-separating an oil from an oil-containing liquid which comprises: contacting an oil-containing liquid selected from a water-in-oil type emulsion comprising an oil and a liquid other than the oil and an oil-in-water type emulsion comprising an oil and a liquid other than the oil

with the surface of a polymeric porous membrane having pores which form passages running through the membrane from one surface thereof to the other surface thereof,

said porous membrane having at its surface a critical surface tension (γ_c) of less than 35 dynes/cm to not less than 20 dynes/cm, and having an average pore diameter ($2r$) of 0.03 μ m to 5 μ m, a pore radius distribution (r_4/r_3) of not more than 1.5 and a porosity of 1 to 85%, the average pore radius of the porous membrane (r) and the average particle radius (r_E) of particles dispersed in the water-in-oil type emulsion or the oil-in-water type emulsion having therebetween a relationship represented by the formula $2r_E \geq r$,

thereby causing said oil to permeate through said porous membrane.

METHOD AND APPARATUS FOR DETERMINING THE THICKNESS OF A CHARGE WALL FORMED IN A CENTRIFUGAL BASKET

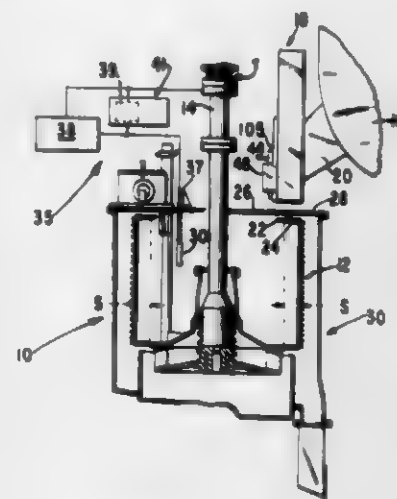
Joseph B. Bange, Hamilton, Ohio, assignor to The Western States Machine Company, Hamilton, Ohio

Filed Feb. 5, 1979, Ser. No. 9,154

Int. Cl.² B01D 33/00

U.S. Cl. 210—787

25 Claims



1. The method of determining the thickness of a charge wall being formed in a charge space against the side wall of a rotating centrifugal basket by a flow of charge material into the basket, which comprises establishing a capacitance across the charge space of the basket between two spaced capacitor plates, one of said plates being spaced inwardly of said charge space, and sensing a change of said capacitance which results as the inner surface of said charge wall approaches said one capacitor plate when the thickness of said charge wall formed in said charge space is increased by said flow.

4,229,299

PERISTALTIC DIALYSATE SOLUTION PUMP

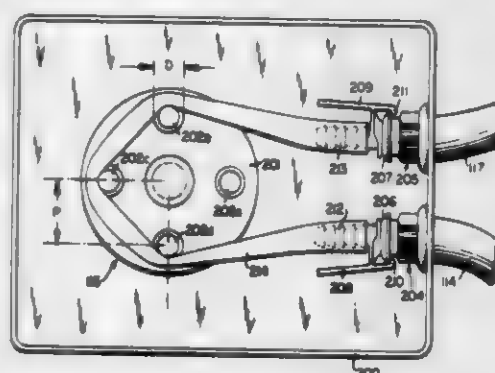
Steven R. Savitz, Astoria, and James A. Drago, Brewster, both of N.Y., assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 22, 1978, Ser. No. 888,858

Int. Cl.² B01D 31/00

U.S. Cl. 210—85

18 Claims



5. Hemodialysis apparatus for treatment of blood to remove waste impurities therefrom, including: dialyzer means through which waste impurity-containing blood and a dialysate solution are passed in indirect mass transfer dialyzing relationship for transfer of said waste impurities from said blood to said dialysate solution; means for transferring waste impurity-containing blood from a patient to said dialyzer means including a flexible resilient tubing pumping section through which blood is pumped and means for returning waste impurity-depleted blood to said patient forming a blood flow circuit; means for transferring dialysate solution from a negative pressure dialysate solution source to said dialyzer means and means for

discharging waste impurity-enriched dialysate solution from said dialyzer means forming a dialysate solution flow circuit including a flexible resilient tubing pumping section through which dialysate solution is pumped; peristaltic blood pump means disposed in said blood flow circuit and peristaltic dialysate pump means disposed in said dialysate solution flow circuit each pump means comprising a rotatable pump head assembly including a base member positioned for rotation about a fixed axis with a plurality of circumferentially spaced apart rollers mounted thereon for independent rotation about respective axes parallel to the base member fixed axis, at least said peristaltic dialysate pump means having four spaced apart rollers mounted on the base member thereof; means for anchoring the end segments of the flexible resilient tubing pumping section in said blood flow circuit and means for anchoring the end segments of the flexible resilient tubing pumping section in said dialysate solution flow circuit such that the tubing in each circuit is tensionally extended around the pump head assembly of a respective one of said peristaltic pump means and is simultaneously engaged and compressed by at least two of said circumferentially spaced apart rollers of the respective peristaltic pump means, the rollers of each peristaltic pump means being mounted for longitudinal movement of the points of compression along the associated tubing during rotation of said pump head assembly to advance fluid through said tubing; each of said four rollers in at least the peristaltic dialysate pump means having a generally convex surface profile, for only partial closure of the tubing at the points of compression by the rollers, with a maximum diameter between 0.25 and 0.75 inch and circumferentially spaced 90° apart from adjacent rollers with a radial distance between the roller axis and said base member fixed axis of from 0.50 to 1.50 inches; said flexible resilient tubing pumping section in the dialysate flow circuit having a length, as measured longitudinally along the tubing between the anchored end segments thereof, of from 6.75 to 11.0 inches, a wall thickness of from 0.07 to 0.125 inch, and an internal diameter of from 0.18 to 0.35 inch; and drive means coupled to the pump head assembly of the peristaltic dialysate pump means for rotation thereof at a speed in the range of from 150 to 400 rpm.

- between the outlet line of said collecting means and the inlet line of said reaction chamber;
 (D) a level sensor for said reaction chamber;
 (E) at least two containers for reaction solutions having means for supplying a dosed quantity of said reaction solutions to said reaction chamber, said means including an electrically operating metering pump in an outlet line of each container;
 (F) a mixing apparatus in said reaction chamber for mixing of said urine and said quantities of reaction solutions;
 (G) a pressure pump in said reaction chamber for the conveyance of the mixed liquid from said reaction chamber through its outlet line;
 (H) a filtration unit connected releasably to said outlet line of said reaction chamber via a second magnetic valve, said filtration unit having at least one outlet line;
 (I) a catch container having an inlet line releasably connected to said one outlet line of said filtration unit and having at least one outlet line, said one outlet line of said catch container being connectable via a third magnetic valve with a canalization system;
 (J) an electric control unit having at least one control input connected with said level sensor in said reaction chamber and a plurality of control outputs connected with, respectively, with said pump in said outlet line of said collecting means, said first, second and third magnetic valves, said metering pumps, said mixing apparatus and said pressure pump in said reaction chamber; and
 (K) a radioactive radiation detector disposed on said catch container with a control monitor connector thereto, said control monitor being adapted to open said third magnetic valve according to the quantity of liquid in said catch container and to close said third magnetic valve in case of a rise of the measured radioactivity of said quantity of liquid in said catch container beyond a certain permissible value.

4,229,301

MECHANICALLY RAKED BAR SCREEN

Raymond Roberts, Watford, England, assignor to Hawker Siddeley Bracket Limited, Hythe, England

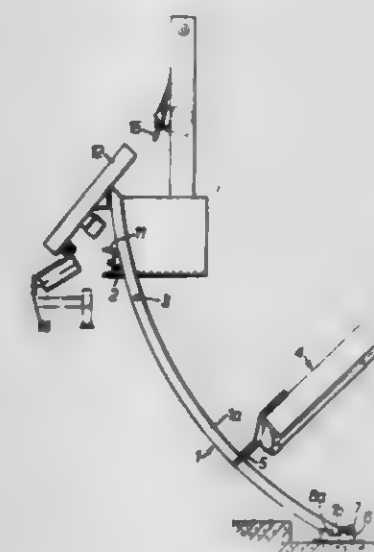
Filed Jun. 16, 1978, Ser. No. 917,023

Claims priority, application United Kingdom, Jun. 23, 1977, 26309/77

Int. Cl.² E02B 5/08

U.S. Cl. 210—159

8 Claims



1. A mechanically raked bar screen for removing solids from liquid flowing therethrough comprising bar mountings on which are removably mounted an array of screen bars in side-by-side spaced-apart relationship, movable rake means having tines extending between adjacent screen bars for raking from the upstream side of the screen bars the solids retained thereby and spacer means fixed to at least one bar of each pair of adjacent bars and arranged to ensure that the spacing between

4,229,300

PROCESS FOR THE REMOVAL OF RADIOACTIVE IODINE FROM A LIQUID, ESPECIALLY URINE, AND APPARATUS TO CARRY OUT THE PROCESS

Ivan Benes, Müllerwis 23, 8606 Greifensee; Wolfgang Müller-Duysing, Niederweg 42, 8907 Wettwil, and Fritz Heinzl, Lindenweg 8, 8142 Uitikon, all of Switzerland

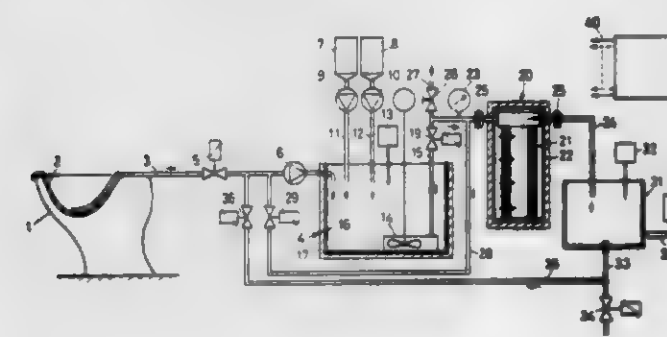
Division of Ser. No. 759,522, Jan. 14, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,586

Claims priority, application Switzerland, Jan. 14, 1976, 430/76

Int. Cl.² C02C 1/40

U.S. Cl. 210—96.1

10 Claims



1. An apparatus for the removal of radioactive iodine from a patient's urine comprising:

- (A) means in a lavatory for collecting the patient's urine said means being provided with an outlet line arranged for removing the urine free from solids;
 (B) a reaction chamber having an inlet line and an outlet line;
 (C) a pump and a first magnetic valve connected in series

the bars of each pair of adjacent bars is not less than a minimum value, each bar being mounted on a first and a second mounting, at least one bar of each pair of adjacent bars being held against lateral movement at the first mounting, and being mounted on the second mounting for permitting lateral movement toward or away from the other bar of the pair in response to the application of force from one or more times during raking of the bar screen.

4,229,302

WASTE TREATMENT APPARATUS WITH FLOATING PLATFORM

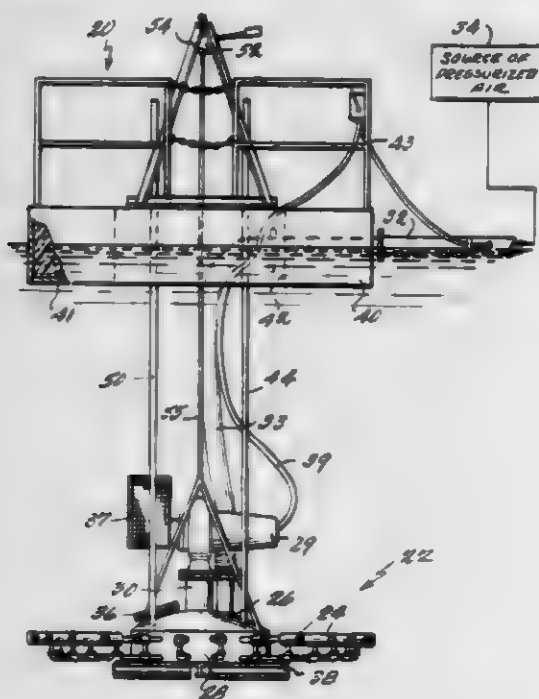
Allen E. Molvar, Barrington, R.I., assignor to Clevepak Corporation, White Plains, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,215

Int. Cl.² C02C 5/10

U.S. Cl. 210—220

14 Claims



1. An apparatus for treatment of waste water in a body of waste water comprising:

means for mixing a gas with said waste water including a water manifold, a gas manifold, a plurality of nozzles extending outward from said water manifold and connected to said gas and water manifolds with water passing through each nozzle from inlet to outlet and gas being mixed with water in said nozzle, means including a pump for pumping said waste water into said water manifold, means for supplying said gas to said gas manifold;

a floating platform including a base closed on all sides and providing buoyancy for floating in a horizontal plane, said base having a central opening between the atmosphere and the surface of said body and exposing said surface to the atmosphere, the distance between the outlets of the most separated nozzles being about no less than the least dimension of the base in said horizontal plane;

means mounted on said platform and extending through said opening for suspending said mixing means from said platform, the cross-sectional area of said opening being sufficient to withdraw said pump therethrough to a position above said platform and being at least as great as the intake area of said pump; and

means for supplying said gas to said mixing means and forming a structural part of said platform, said supplying means comprising a conduit extending into said opening and horizontally through said base between said central opening and a peripheral surface to increase the stability of said platform.

4,229,303

FILTER PRESS WITH CLEANSING SPRAY DEVICE

Hans J. Heinrich, Wilhelmshoeher Str. 129, Ennepetal; Max Oelbermann, Max-von-Laue-Str. 3, Remscheid, and Karl A. Rademacher, Hatzfelder Str. 33, Wuppertal, all of Fed. Rep. of Germany

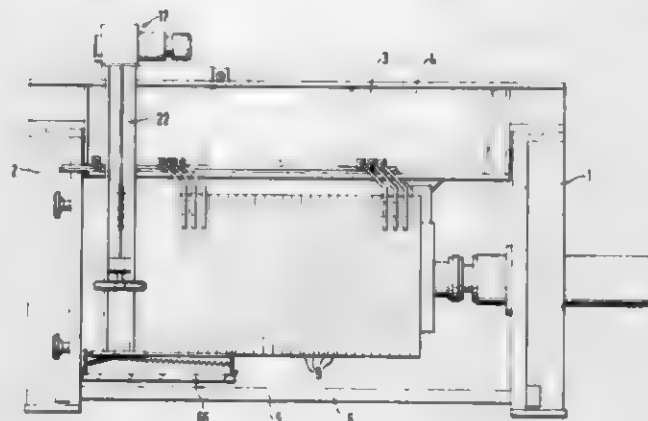
Filed Mar. 23, 1979, Ser. No. 23,383

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 2813236

Int. Cl.¹ B01D 25/12; B08B 3/02

U.S. Cl. 210—225

9 Claims



1. In a filter press having two vertical posts and fitted with a spray washing means for one of a stack of filter plates which are displaceable on horizontal longitudinal guides of said press, said spray washing means comprising a support frame formed of vertical side girders which is movable along the stack of filter plates and surrounds the stack of filter plates together with the guides, a spray pipe with two branch conduits equipped with spray nozzles for guided up and down movement at said vertical side girders of said support frame, said nozzles of said conduits being directed towards each other, and a spray water catch basin mounted to the underside of said support frame, that improvement comprising:

said spray water catch basin having a width larger than twice the lateral spacing between said two branch conduits;

suspension means for said catch basin including securing means for attaching the center portion of the spray water catch basin to the bottom of the vertical side girders thereby permitting movement of said catch basin as a unit with said support frame and spray washing means along the entire longitudinal extent of said horizontal guides of the filter press whereby a width greater than twice the spray spacing prevents unwanted diversion of the water sprayed against the plates; and

said catch basin being movable in a horizontal direction relative to the support frame in such a way, that at least that part of the catch basin projecting at one side of the support frame before the respective branch conduit will be pushed back by the respective one of said vertical posts, when the support frame is moved closely to said one vertical post.

4,229,304

MOLDED THERMOPLASTIC FILTER PLATE

William L. Fisser, Verona, N.J., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Sep. 21, 1979, Ser. No. 77,865

Int. Cl.¹ B01A 25/12

U.S. Cl. 210—231

12 Claims

1. A generally rectangular molded thermoplastic filter plate for use in a filter press of the type used for separating solids from a liquid wherein a plurality of filter plates are brought together in abutting relationship and filtration is accomplished by passing a liquid through filter cloths disposed between adjacent filter plates, comprising:

a. a peripheral rim extending completely around the perime-

4,229,306

HOUSING FOR SINGLE-USE FILTER UNITS

Wolfgang Hein, and Klaus Cosack, both of Dassel, Fed. Rep. of Germany, assignors to Carl Schleicher & Schüll GmbH & Co. KG, Einbeck, Fed. Rep. of Germany

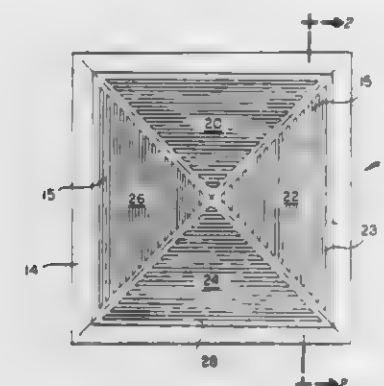
Filed Feb. 23, 1979, Ser. No. 14,365

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809321

Int. Cl.¹ B01D 25/04

U.S. Cl. 210—446

10 Claims



eral rim to an adjacent corner of said peripheral rim, and from said adjacent corner back to the center of said inner drainage face such that each of said sectors includes a corresponding side of said peripheral rim; and
b. a plurality of drainage ribs molded on said inner drainage face in each of said sectors such that a majority of said ribs of a particular sector are parallel to the corresponding side of said peripheral rim in that particular sector.

4,229,305

HAEMODIALYZER

Luciano Fecondini, Bologna, and Andrea Bocchi, Medolla, both of Italy, assignors to Hospal Ltd., Basel, Switzerland

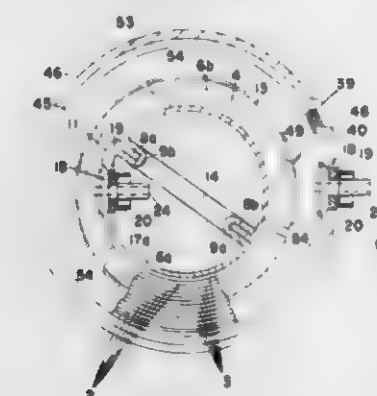
Filed Dec. 11, 1978, Ser. No. 967,901

Claims priority, application Italy, Dec. 15, 1977, 69802 A/77

Int. Cl.² B01D 31/00

U.S. Cl. 210—321 B

14 Claims



1. A haemodialyzer of the type comprising a semipermeable flattened tubular membrane wound in spiral configuration from one end with an interposed insert around a mandrel member, means for connecting the interior of said membrane at its ends to conduits for the admission and discharge of blood, the assembly being housed in a casing, in which said mandrel member comprises at least two elongated elements of identical transverse configuration which are connected together along their opposite longitudinal edges and one corresponding pair of said opposite longitudinal edges sealingly grips said membrane.

4,229,307

APPARATUS FOR PREPARING RED PHOSPHORUS

Edward J. Lowe, Stourton, near Stourbridge, and Frederick A. Ridgway, Stourbridge, both of England, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 703,341, Jul. 8, 1976, abandoned, which is a division of Ser. No. 528,583, Nov. 9, 1974, Pat. No. 4,013,756, which is a division of Ser. No. 188,604, Oct. 12, 1971, Pat. No. 3,861,882, which is a continuation of Ser. No. 599,915, Dec. 7, 1966, abandoned. This application Dec. 13, 1978, Ser. No. 970,495

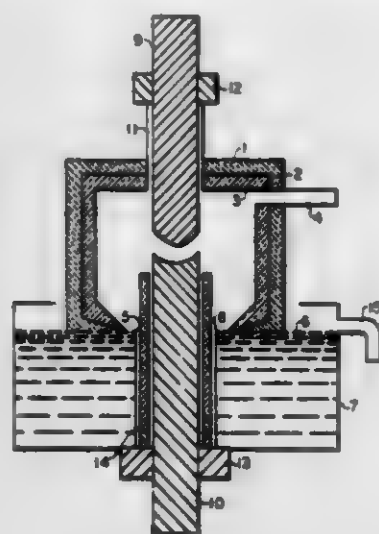
Int. Cl.² B01K 1/00; C25B 1/00, 11/12

U.S. Cl. 250—543

7 Claims

1. An apparatus for converting phosphorus vapor into red phosphorus comprising an arc chamber, a tank containing a cooling liquid in direct communication with said arc chamber, a pair of electrode rods disposed within said arc chamber and adapted to form an arc within said chamber, a phosphorus vapor source, chamber inlet means connected to said source for channeling phosphorus vapor into said chamber, chamber

outlet means in the base of said chamber for removing heated phosphorus vapor from the chamber, said outlet means being



submerged in said tank of cooling liquid, and tank outlet means for removing red phosphorus containing liquid.

4,229,308

POLYMER LUBRICATING OIL ADDITIVES BEARING NITROGEN GROUPS AND THEIR USE AS ADDITIVES FOR LUBRICATING OILS

Daniel Brulet, Claye Souilly, and Bernard Chauvel, Ermont, both of France, assignors to Rhone-Poulenc Industries and Institut Français du Pétrole, both of Paris, France
Filed Jan. 26, 1979, Ser. No. 6,867

Claims priority, application France, Feb. 8, 1978, 78 03462; Feb. 8, 1978, 78 03463

Int. Cl.³ C10M 1/38

U.S. Cl. 252-47

31 Claims

1. A lubricating oil polymer additive produced by subjecting a living polymer of a number average molecular weight M_n of between about 20,000 and 300,000, prepared by anionic polymerization of at least one C_4 - C_6 conjugated diene or a copolymer of a C_4 - C_6 conjugated diene with a vinyl aromatic compound to a functionalization operation by reaction with a nonpolymerizable heterocyclic nitrogen compound having at least two groups of the structure $<C-N+C>$; and to a hydrogenation to hydrogenate at least about 85 percent of the olefin double bonds.

19. A lubricating oil polymer additive according to any of claims 1 to 4, wherein the nonpolymerizable nitrogen compound is a heterocyclic compound selected from among polypyridines having less than 20 pyridyl groups, pyrimidine and its derivatives, pyrazine and its derivatives, 2,4,6-tri(2-pyridyl)-1,3,5-triazine, and dipyridyl sulfide.

30. A lubricating oil improved by the addition of 0.1 to 10 percent of its weight of a polymer additive according to any of claims 1 to 4.

4,229,309

MAGNESIUM-CONTAINING DISPERSIONS

William J. Cheng, and David B. Guthrie, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 18, 1977, Ser. No. 816,626

Int. Cl.³ C10M 1/10, 3/02; C10L 1/12; C01B 13/14

U.S. Cl. 252-25

20 Claims

1. A process of preparing a stable, fluid magnesium oxide-containing dispersion which consists essentially of heating a composition comprising a non-volatile process fluid containing $Mg(OH)_2$ and a dispersant to the dehydration temperature of $Mg(OH)_2$ until all the water has been removed, said non-volatile process fluid being capable of being heated to the dehydration temperature of $Mg(OH)_2$, and said dispersant being capable of retaining the magnesium compound formed by dehydration in stable suspension.

4,229,310

LUBRICANT COMPOSITIONS

Gerassimos Frangatos, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,396

Int. Cl.³ C10M 1/46

U.S. Cl. 252-49.9

16 Claims

1. A reaction product made by the steps of (1) forming a partial ester of a polyhydric alcohol with a monocarboxylic acid, wherein the acid is present to the extent of at least 1 mole thereof per mole of the alcohol, but less than the amount required to react with all the alcohol hydroxyls, and (2) reacting the material of (1) with from about 0.25 mole to about 3.0 moles per mole of (1) of a phosphorus oxyhalide or a trihydrocarbyl phosphate.

9. A lubricant composition comprising a lubricant and an antiwear or demulsifying amount of the product of claim 1.

4,229,311

LUBRICATING OIL ADDITIVES

Franz Wenzel, Darmstadt; Ulrich Schoedel, Rosdorf; Heinz Jost, Messel, and Hans Pilz, Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,620

Int. Cl.³ C10M 1/32; C08K 5/01

U.S. Cl. 252-50

17 Claims

1. A method for making a polymer-in-oil solution, useful for improving the viscosity-temperature relationship and low-temperature properties of lubricating oils when added thereto, which method comprises polymerizing a methacrylic acid ester of an alcohol having 8 to 18 carbon atoms in a solution, in a lubricating oil, of a polyolefin polymer of an olefinic hydrocarbon monomer having two to four carbon atoms, the oil solution of said polyolefin having a viscosity of less than 15,000 centistokes at 100° C., adding further polyolefin polymer of the type defined herein to said solution, and then graft copolymerizing a polymerizable heterocyclic compound having a basic nitrogen atom in the ring thereof onto the resulting mixed polymers as backbone polymers.

4,229,312

METHOD OF MANUFACTURING A PAINT COMPOSITE FOR MAGNETIC FILMS

Waichi Nagashiro, Hachioji; Hajime Fukke, Inagi; Yoshiki Kato; Teruo Tsunoda, both of Tokyo; Teruaki Kobayashi, Hachioji; Yoichi Oba, Hachioji; Katsuyoshi Chiba, Hachioji; Munehisa Mitsuya, Hachioji; Heigo Ishihara, Kokubunji, and Mitsushi Endo, Hadano, all of Japan, assignors to Hitachi, Ltd., Japan

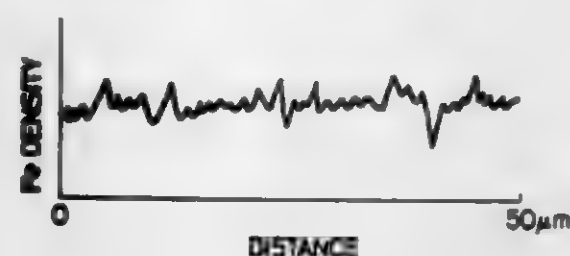
Filed Aug. 13, 1979, Ser. No. 66,234

Claims priority, application Japan, Aug. 11, 1978, 53-97212

Int. Cl.³ H01F 10/02

U.S. Cl. 252-62.54

13 Claims



1. A method of manufacturing a paint composite for magnetic films which comprises a first step of grinding a mixture under a shear stress of 10-400 kg/cm², the mixture comprising 100 parts by weight of a magnetic powder, 1.5-30 parts by weight of at least one polymer selected from the group consisting of polyvinylbutyral polyvinylformal and polyvinyl acetate, and 20-60 parts by weight of a solvent for the polymer, a

second step of adding 40-290 parts by weight of a solvent for the polymer to the ground mixture and then grinding the mixture, and a third step of adding 10-70 parts by weight of an epoxy resin, 10-70 parts by weight of a phenol resin and 0-450 parts by weight of a solvent for the polymer to the resultant mixture and further grinding the resultant mixture.

4,229,313

ALKALI METAL HYPOCHLORITE BLEACHING AND CLEANING COMPOSITIONS THICKENED WITH BRANCH CHAIN AMINE OXIDES

David R. Joy, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 11, 1978, Ser. No. 932,935

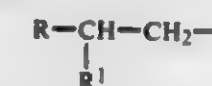
Claims priority, application United Kingdom, Sep. 2, 1977, 36713/77

Int. Cl.³ C11D 7/54, 3/30, 9/42

U.S. Cl. 252-98

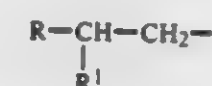
13 Claims

12. A cleaning or bleaching composition comprising:
(1) from 1 to 20 percent by weight of the composition of an alkali metal hypochlorite, measured as available chlorine,
(2) from 0.1 to 5 percent by weight of a mixture of 40 to 60 weight percent straight chain amine oxide and 60 to 40 weight percent branched chain amine oxide, the amine oxide containing a

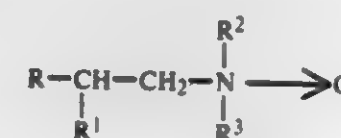


group,

where R is a straight chain C_3 to C_{17} alkyl group and R^1 is a C_1 to C_3 alkyl group, and the group



contains 8 to 20 carbon atoms, the amine oxide in toto having the formula:



where R^2 and R^3 , which may be the same or different, are each alkyl groups containing up to 6 carbon atoms, and (3) balance water.

4,229,314

2-OXABICYCLOOCTANE DERIVATIVES, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

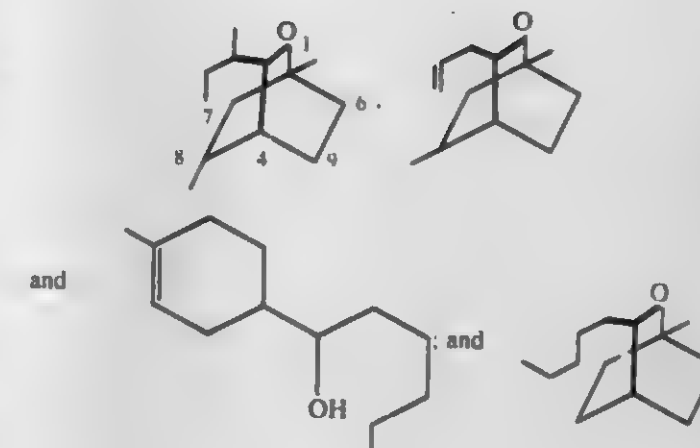
Division of Ser. No. 8,924, Feb. 2, 1979, Pat. No. 4,197,328, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Jun. 27, 1979, Ser. No. 52,333

Int. Cl.³ C11D 3/50, 9/44

U.S. Cl. 252-174.11

6 Claims

1. A process for augmenting or enhancing the aroma of a solid or liquid detergent consisting of the step of intimately admixing with a solid or liquid detergent base from 0.01% up to 0.5% by weight of said detergent base of at least one cyclic chemical compound having a structure selected from the group consisting of:



4,229,315

LIQUID CRYSTALLINE CYCLOHEXANE DERIVATIVES

Joachim Krause; Rudolf Eidenschink, both of Dieburg, and Ludwig Pohl, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jan. 5, 1979, Ser. No. 1,084

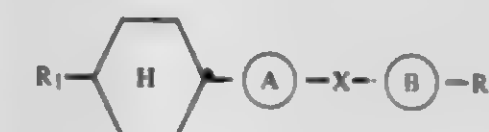
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800553

Int. Cl.³ C09K 3/34; C02F 1/13; C07C 69/76, 69/74, 121/52

U.S. Cl. 252-299

12 Claims

1. A cyclohexane derivative of the formula



wherein

the rings A and B are identical or different and are each a 1,4-disubstituted phenyl or 1,4-trans-disubstituted cyclohexyl ring;

X is $-\text{CO}-\text{O}-$ or $-\text{O}-\text{CO}-$;

R_1 is alkyl of 1-8 carbon atoms;

and R_2 is alkyl of 1-8 carbon atoms, and when the ring B is phenyl, R_2 is alkyl, alkoxy or alkanoyloxy, each of up to 8 carbon atoms, or $-\text{CN}$.

4,229,316

DEVICE FOR THE STORAGE OR DISPOSAL OF RADIOACTIVE WASTES

Henning Baatz, Essen, and Dieter Rittscher, Heiligenhaus, both of Fed. Rep. of Germany, assignors to Steag Kernenergie GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 875,079

Int. Cl.³ G21F 5/00

U.S. Cl. 252-301.1 W

10 Claims

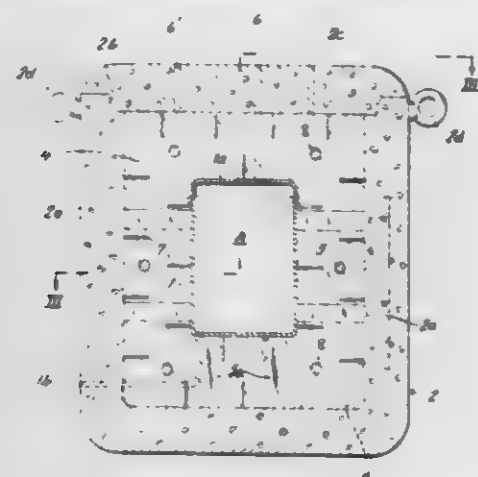
1. A packaging system for the disposal of radioactive wastes of different radiation intensities, comprising:

an outer receptacle of a standard size uniform for all of said intensities and of a predetermined radiation absorbing capacity;

a plurality of inner receptacles of different volumes adapted to receive radioactive waste, a selected one of said inner receptacles being enclosed within said outer receptacle and having a volume determined by the intensity of the radiation emitted by the radioactive waste thereof with a smaller inner receptacle receiving waste of greater radiation intensity and a larger inner receptacle receiving waste of lesser radiation intensity;

spacer means for centering the selected inner receptacle within said outer receptacle so that the space between the outer receptacle and the selected inner receptacle is

greater for the smaller receptacles than for the larger receptacles; and
a radiation-shielding material disposed all around said inner receptacle in said space between the outer wall of said inner receptacle and the inner walls of said outer receptacle;



so that the thickness of the radiation-shielding materials around the selected inner receptacle is greater for the smaller inner receptacles with waste of greater radiation intensity than for the larger receptacles with waste of lesser radiation intensity.

4,229,317

METHOD FOR IMMOBILIZING RADIOACTIVE IODINE
Harry Babad, and Denis M. Strachan, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 966,522

Int. Cl.² G21F 9/16

U.S. Cl. 252-301.1 W

3 Claims

1. A method of incorporating radioactive iodines, present as sodium or potassium iodides or iodates in an aqueous nitrate-free solution, into an inert, solid material suitable for long-term storage comprising:

adding an effective amount of alumina, silica and an alkali metal selected from the group consisting of sodium and potassium to the solution for the formation of a sodalite; stirring the solution to form a homogeneous mixture; drying the mixture to form a powder; and compacting and heating the powder to at least 6.9 mPa at 1073 to 1373 K (800° to 1100° C.) for a time sufficient to form an inert solid sodalite compact suitable for long-term storage.

4,229,318

MANUFACTURE OF A TITANIUM-CONTAINING COMPONENT FOR CATALYSTS OF THE ZIEGLER-NATTA TYPE

Heinz Mueller-Tamm; James F. R. Jaggard, both of Ludwigshafen, and Hans Schick, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 935,948

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739382

Int. Cl.³ B01J 31/02

U.S. Cl. 252-429 B

7 Claims

1. A process for the manufacture of a titanium-containing component of a catalyst for the Ziegler-Natta homopolymerization or copolymerization of α -monoolefins of 3 to 6 carbon atoms, by milling together (a) a titanium-containing compound of the general formula

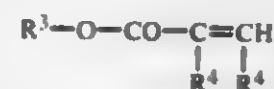


where

n is a number from 0.01 to 1 and (b) an ester of a total of 2 to 34 carbon atoms, having the general formula



or



where

R^3 is (I) alkyl of 1 to 16 carbon atoms or (II) phenylalkyl of a total of 7 to 23 carbon atoms, in which up to 5 hydrogens of the phenyl may be substituted by alkyl of 1 to 4 carbon atoms, and

R^4 is (I) hydrogen, (II) alkyl of 1 to 18 carbon atoms, (III) phenylalkyl of a total of 7 to 23 carbon atoms, in which up to 5 hydrogens of the phenyl may be substituted by alkyl of 1 to 4 carbon atoms, (IV) phenyl or (V) alkylphenyl of a total of 7 to 23 carbon atoms, in which up to 4 hydrogens of the phenyl may be substituted by alkyl of 1 to 5 carbon atoms,

wherein

(1) a vibratory ball mill having a milling acceleration of from 30 to 80 m.sec⁻² is used,

(2) the mill is first charged with the titanium-containing compound (a), after which it is run at from -50° to +100° C. for a period of from 0.5 to 100 hours in the absence of a diluent, thereafter

(3) whilst milling, with the material in the mill at from -50° to +80° C., the amount of the ester (b) which corresponds to a molar ratio of aluminum in the titanium-containing compound (a) to ester (b) of from 1:5 to 1:0.05 is added continuously or in small portions, at a rate of from 0.01 to 200 ml per minute per 2.5 kg of titanium-containing compound (a), in the absence of a diluent, then (4) the material in the mill is brought to from +10° to +100° C. whilst being milled, and is kept in this temperature range for from 5 to 150 hours, after which

(5) the product obtained from stage (4) is washed with at least 0.6 times its amount by weight of a hydrocarbon which is liquid under normal conditions and boils below 150° C., and is dried, and following which

(6) the product obtained from stage (5) is milled for a period of from 5 to 60 minutes at from -50° to -10° C. in the absence of a diluent, next

(7) the product obtained from stage (6) is brought together with at least 0.5 times its amount by weight of a promoter of the general formula



with the proviso that if two or more radicals R^5 are present in the compound, these radicals are identical with one another, or of the general formula



with the proviso that if two or more radicals R^5 are present in the compound, at least two of these radicals are different from one another, or of the general formula



or



with the proviso that if two or more radicals R^5 are present in the compound, these radicals are identical with one another or at least two of these radicals are different from one another,

in which general formulae

x is from 0 to 4,

y is from 0 to 3,

z is from 1 to 3,

X is halogen,

R^5 is (I) hydrogen, with the proviso that in none of the compounds more than three of these radicals are hydrogen, (II) alkyl of 1 to 12 carbon atoms or (III) phenyl, and Ph is phenyl, in which from 0 to 5 hydrogens of the phenyl may be substituted by alkyl or alkoxy of 1 to 5 carbon atoms, phenyl or phenoxy, chlorine or trialkylsilyl, where alkyl is of 1 to 5 carbon atoms, and the batch is kept at from 0° to 250° C. for a period of from 0.2 to 10 hours and is separated into a solid-phase product and a liquid-phase product, and thereafter

(8) the solid-phase product obtained from stage (7) is washed with at least 0.4 times its amount by weight of a hydrocarbon which is liquid under normal conditions and boils below 150° C. or of a promoter listed under (7), and is dried, following which

(9) the product obtained from stage (8) is milled for a period of from 5 to 60 minutes at from -50° to 0° C. in the absence of a diluent.

4,229,319

ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 954,684, Oct. 25, 1978, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Jun. 15, 1979, Ser. No. 48,957

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.³ B01J 27/08, 27/10, 23/66

U.S. Cl. 252-441

16 Claims

1. A catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state, and of a silver component.

6. A catalytic composite as defined in claim 1 wherein the porous carrier material contains a catalytically effective amount of a halogen component.

4,229,320

CATALYST FOR MAKING PARA-XYLENE

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 22, 1979, Ser. No. 5,653

Int. Cl.³ B01J 21/04, 21/08, 23/04, 23/14, 23/36

U.S. Cl. 252-454

6 Claims

1. A catalytic composition which is prepared by a process which consists essentially of impregnating a neutral or weakly acidic support with an aqueous solution of a non-halogen containing water soluble rhenium compound before or after impregnating the support with an alkali metal hydroxide or stannate, with the proviso that the support is calcined after impregnation with said rhenium compound, and then reducing the impregnated support with hydrogen at elevated temperatures sufficient to reduce the rhenium component to its metallic state while leaving the alkali metal hydroxide or stannate largely unreduced.

4,229,321

PROCESS FOR MAKING A SILVER CATALYST

Stanley B. Cavitt, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,510

Int. Cl.³ B01J 23/50

U.S. Cl. 252-476

26 Claims

1. A process for making a highly-active silver catalyst for the

vapor phase epoxidation of ethylene with an oxygen-containing gas which comprises:

contacting a porous, inorganic, catalyst support material with an impregnating solution; and,

heating the impregnated support material at temperatures from about 50° C. to 300° C. to evaporate volatiles and activate said catalyst,

wherein the said impregnating solution comprises:

(a) a silver salt,

(b) an organic amine solubilizing/reducing agent,

(c) a salt of a higher alkali metal selected from the group consisting of cesium and rubidium sufficient to deposit on the said support an effective amount of the said higher alkali metal, and

(d) an aqueous solvent and subsequently abrading the surface of the catalyst to remove about 1 to about 10 weight percent of the catalyst.

4,229,322

CERAMIC COMPONENT FOR ELECTRODES

David D. Marchant, and J. Lambert Bates, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 16, 1978, Ser. No. 961,152

Int. Cl.² F01B 1/06

U.S. Cl. 252-521

2 Claims

1. A ceramic component for an MHD generator electrode having the formula:



where

x=0.9 to 1.05,

y=0.02 to 0.2,

z=0.8 to 1.05 and

w=1.0 to 0.5.

4,229,323

NOR-DEHYDROPATCHOULOL

Paul J. Teisseire, and Pierre Maupetit, both of Grasse, France, assignors to Societe Anonyme Roure Bertrand Dupont, Argenteuil, France

Filed Aug. 23, 1972, Ser. No. 283,152

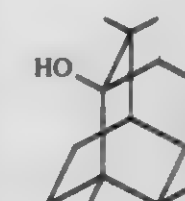
Claims priority, application France, Sep. 1, 1971, 71.31577

Int. Cl.³ C07C 35/37; C11B 9/00, 9/02

U.S. Cl. 252-522 R

5 Claims

1. A solid product, nor-dehydropatchoulol, having a melting point of 180° to 183° C. and having the structural formula



and being substantially free from hydrocarbons, epoxides, alcohols and sesquiterpene ketones occurring in Patchouli Oil.

2. An odoriferous composition in which there has been incorporated the nor-dehydropatchoulol of claim 1.

4,229,324

TRICYCLO- α,β -UNSATURATED ALDEHYDE

Naotake Takaishi, Ichikai; Yoshiaki Inamoto, Utsunomiya, and Masamoto Matsukane, Funabashi, all of Japan, assignors to Kao Soap Company, Limited, Tokyo, Japan

Filed Apr. 26, 1979, Ser. No. 33,511

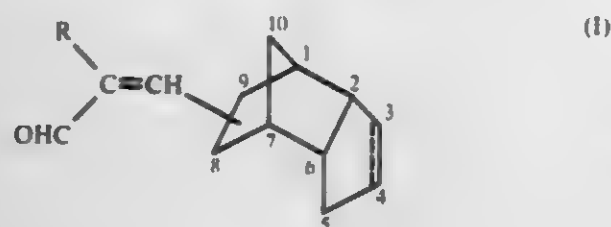
Claims priority, application Japan, May 4, 1978, 53-53620

Int. Cl.² C07C 45/08, 47/34; A61K 7/46

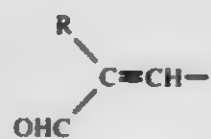
U.S. Cl. 252-522 R

11 Claims

1. An endo-tricyclo- α,β -unsaturated aldehyde represented by the formula (I),

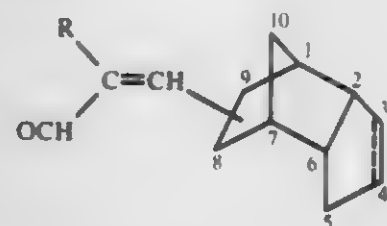


wherein the group

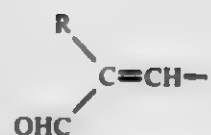


is attached to the exo side of the norbornane ring at the 8- or 9-position, R represents an alkyl group having 1 to 6 carbon atoms, and the dotted line between carbon 3 and carbon 4 represents a saturated or ethylenically unsaturated bond.

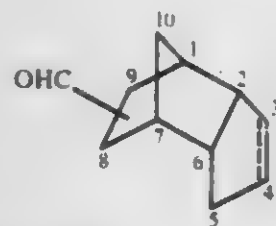
3. A process for producing an endo-tricyclo- α,β -unsaturated aldehyde represented by the formula (I),



wherein the group



is attached to the exo side of the norbornane ring at the 8- or 9-position, R represents an alkyl group having 1 to 6 carbon atoms, and the dotted line between carbon 3 and carbon 4 represents a saturated or ethylenically unsaturated bond, which comprises reacting 8- or 9-exo-formyl-endo-tricyclo[5.2.1.0^{2,6}]deca-3-ene or 8-exo-formyl-endo-tricyclo[5.2.1.0^{2,6}]decane represented by the formula (III),



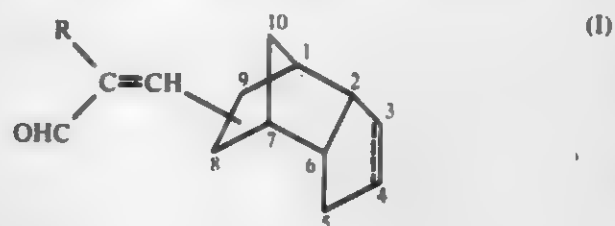
wherein the group OHC— is attached to the exo side of the norbornane ring at the 8- or 9-position, and the dotted line between carbon 3 and carbon 4 represents a saturated or ethylenically unsaturated bond, or a mixture thereof, with an aliphatic aldehyde represented by the formula (IV),



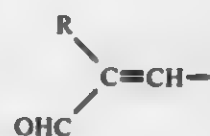
(IV)

wherein R is the same as defined above.

11. A perfume composition comprising an endo-tricyclo- α,β -unsaturated aldehyde represented by the formula (I),



wherein the group



is attached to the exo side of the norbornane ring at the 8- or 9-position, R represents an alkyl group having 1 to 6 carbon atoms, and the dotted line between carbon 3 and carbon 4 represents a saturated or ethylenically unsaturated bond.

4,229,325

HIGH UNSATURATION BUTYL RUBBERS WITH ADDITIVES

Warren A. Thaler, Matawan, N.J.; Donald J. Buckley, Plainfield, N.J., and Kennedy, Joseph P., Akron, Ohio, assignors to Exxon Research & Engineering Co., Florham Park, N.J. Division of Ser. No. 788,504, Apr. 18, 1977, Pat. No. 4,151,343, which is a continuation-in-part of Ser. No. 631,444, Nov. 13, 1975, Pat. No. 4,031,300, which is a continuation-in-part of Ser. No. 457,109, Apr. 1, 1974, Pat. No. 3,928,297, which is a continuation-in-part of Ser. No. 151,038, Jun. 8, 1971, Pat. No. 3,808,177. This application Oct. 11, 1978, Ser. No. 950,417

Int. Cl.² C08C 19/30; C08J 3/24; C08K 5/36

U.S. Cl. 260-5

46 Claims

1. A vulcanizable composition which comprises:

(a) a substantially gel free copolymer consisting of a major portion of one isoolefin having about 4 to about 10 carbon atoms and about 5 to about 45 mole % of one conjugated diene having about 5 to about 9 carbon atoms, said copolymer having an Mn from 90,000 to below 120,000, said one isoolefin being selected from the group consisting of isobutylene, 2-methyl-1-butene, 3-methyl-1-butene or 4-methyl-1-pentene, and said diene being selected from the group comprising isoprene, piperylene or methyl cyclopentadiene;

(b) a vulcanizing amount of a sulfur donor; and

(c) a delayed action accelerator.

22. A vulcanizable composition which comprises:

(a) a substantially gel free terpolymer consisting of a major portion of an isoolefin having about 4 to about 10 carbon atoms and a minor portion of an acyclic conjugated diene having about 5 to about 9 carbon atoms and a cyclic conjugated diene having about 5 to about 9 carbon atoms, a mole % unsaturation of said terpolymer being at least about 8 mole % and an Mn of said terpolymer being from 90,000 to below 120,000, said isoolefin being selected from the group comprising isobutylene, 2-methyl-1-butene, 3-methyl-1-butene or 4-methyl-1-pentene, said acyclic diene being selected from the group comprising isoprene or piperylene, and said cyclic conjugated diene being selected from the group consisting of cyclopentadiene and methylcyclopentadiene;

(b) a vulcanizing amount of sulfur donor; and

(c) a delayed action accelerator.

4,229,326

METHOD FOR PRODUCING GRAFT COPOLYMERS OF CELLULOSE OR PROTEIN FIBER WITH VINYL MONOMERS

Boris P. Morin, ulitsa Novatorov, 40, korpus 19, kv. 13; Galina J. Voinova, ulitsa akademika Petrovskogo, 5, kv. 53; Irina P. Breusova, ulitsa Belovezhskaya, 49, kv. 30; Galina I. Stanchenko, ulitsa Molodogvardeiskaya, 24, kv. 101, and Zakhar A. Rogovin, ulitsa Donskaya, 24, kv. 68, all of Moscow, U.S.S.R.

Filed Feb. 2, 1979, Ser. No. 8,942

Int. Cl.³ C08L 1/02, 89/00

U.S. Cl. 260-8

7 Claims

1. A method for producing graft copolymers of a natural polymer, selected from the group consisting of cellulose and protein fibers, with vinyl monomers, comprising the steps of: impregnating the natural polymer selected from the group consisting of cellulose and protein fibers with an aqueous solution of ferrous salt, removing excessive ions of ferrous iron, and grafting vinyl monomers to said natural polymer from an aqueous solution, aqueous emulsion or aqueous dispersion of a vinyl monomer, containing hydrogen peroxide and a reducing agent which is selected from the group consisting of sodium sulfide, glucose, sodium hypophosphite, sodium bitartrate and hydroquinone, and used in an amount of 0.002 to 0.02 percent by mass.

4,229,327

COATINGS FOR POLYOLEFINIC PRODUCTS AND PRODUCTS COVERED BY SKID COATINGS

Donato Jacobone, Milan, Italy, assignor to Frypan S.p.A., Italy

Filed Jan. 2, 1979, Ser. No. 431

Claims priority, application Italy, Jan. 16, 1978, 19269 A/78

Int. Cl.³ C08L 1/18

U.S. Cl. 260-13

7 Claims

1. A coating composition for polyolefinic products which consists essentially of an organic solution of a dry polymeric system comprising:

- (a) about 50-60 parts by weight of a first component selected from the group consisting of acrylic homopolymers, copolymers and mixtures thereof;
- (b) a second component consisting of a polyester resin obtained by condensation, in a weight percent ratio of about 1-50%; and
- (c) about 10-30 parts by weight of a third component selected from the group consisting of medium viscosity nitrocellulose, low viscosity nitrocellulose and mixtures thereof.

4,229,328

ELECTRICALLY CONDUCTIVE RESIN COMPOSITION

Yoshimi Makino, and Hidetoshi Shimizu, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 964,256

Int. Cl.² C08L 1/14

U.S. Cl. 260-16

13 Claims

1. A resin composition comprising:

- (A) 20 to 70 parts by weight of an unsaturated polyester being radically copolymerizable, having an average molecular weight between 500 and 5000, and having a degree of unsaturation between 150 and 190,
- (B) 1 to 25 parts by weight of a thermoplastic resin having an average molecular weight between 1×10^4 and 1×10^7 ,
- (C) 30 to 70 parts by weight of a liquid of at least one ethylenically unsaturated monomer being radically reactive with said unsaturated polyester and being able to dissolve said unsaturated polyester and said thermo-plastic resin,
- (D) 0.05 to 1.0 parts by weight of an electrically conductive fiber-like material having a length between 1 and 10 millimeters and an aspect ratio between 2 and 10^3 , on the basis of the total amount of said unsaturated polyester, said

thermoplastic resin and said ethylenically unsaturated compound being 100 parts by weight; and (E) not more than 40 parts by weight of an electrically conductive powder material having a diameter between 10 and 300 microns, on the basis of the total amount of said unsaturated polyester, said thermo-plastic resin and said ethylenically unsaturated compound being 100 parts by weight.

9. A resin composition according to claim 1, in which said thermoplastic resin is selected from homopolymers of methylmethacrylate, ethylmethacrylate, butylmethacrylate, methylacrylate and ethylacrylate, a copolymer of methylmethacrylate with lower alkyl ester of acrylic acid and/or methacrylic acid, copolymers of methylmethacrylate with a little of one or more kinds of laurylmethacrylate, isobornylmethacrylate, acryl amide, hydroxyethylmethacrylate, styrene, 2-ethylhexylacrylate, acrylonitrile, methacrylic acid, methacryl amide, methylol acryl amide, and cetyl stearyl methacrylate, styrene-acrylonitrile copolymer, vinyl chloride-vinyl acetate copolymer, cellulose acetate butylate, and cellulose acetate propionate.

4,229,329

FIRE RETARDANT COATING COMPOSITION COMPRISING FLY ASH AND POLYMER EMULSION

Herbert Bennett, 260 Lenox Rd., Apt. 2A, Brooklyn, N.Y. 11226

Continuation-in-part of Ser. No. 831,407, Sep. 8, 1977,

abandoned. This application Feb. 13, 1979, Ser. No. 12,514

Int. Cl.³ C08L 1/28

U.S. Cl. 260-17 R

7 Claims

1. A fire retardant coating composition consisting essentially of:

finely pulverized fly ash	24%-50%
a binder consisting essentially of low viscosity vinyl acrylic type emulsion polymer having the properties of being stable and compatible with fire retardant ingredients and of forming a film which is tough, flexible and resistant to cracking, has outstanding permanence, durability and binding capacity and is flame resistant, smokeless and free of emission of toxic vapors when heated, said binder being selected from the group consisting of UCAR Latex 5000 and RHOPLEX AC-234	7%-31%
Water	8%-48%
Fine Fibreglass Flakes of Fibre	0%-10%
Inorganic Pigment	0%-10%
Low Foaming Dispersing Agent	0%-5%
Water Capable Defoamer	0%-10%
Plasticizer selected from the group consisting of 2,2,4-trimethyl-1,3-pentanediol monoisobutyrate and tricresyl phosphate	0%-1%
Thickener consisting essentially of hydroxyethyl cellulose	0%-1%
Drying Agent	0%-6%
Water Soluble Preservative	0%-1%
Compatible Fungicide	0%-1%
2-amino-2-methyl-1-propanol to control the pH of the composition and inhibit corrosion of metal surfaces to which the composition is applied	0%-1%
Amorphous Silica	0%-32%
Surfactant consisting essentially of nonylphenoxy-poly(ethyleneoxy) ethanol	0%-1%

4,229,330

PROCESS FOR PRODUCING PHENOLIC RESINS

Susumu Konii, Tokyo; Yukio Yoshimura, Saitama-ken; Ken Nanaumi, Shimodate; Kohei Yasuzawa, Shimodate; Takeshi Yoshida, Shimodate, and Toyotaro Shinko, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan
Filed Aug. 28, 1978, Ser. No. 937,114

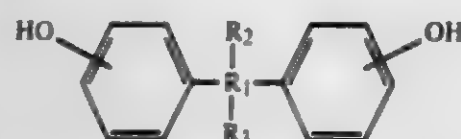
Claims priority, application Japan, Aug. 29, 1977, 52/104035; Aug. 29, 1977, 52/104037

Int. Cl.² C08G 8/32

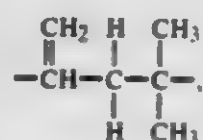
U.S. Cl. 260—19 R

20 Claims

1. A process for producing an internally plasticized phenolic resin which comprises reacting a compound of the formula



wherein R₁ is an alkylene residue having 1 to 3 carbon atoms; and R₂ and R₃ are independently hydrogen or a saturated or unsaturated hydrocarbon group having 1 to 3 carbon atoms, or R₁, R₂ and R₃ together form a group of the formula:



with an epoxidized vegetable oil with heating in the presence of one or more secondary and/or tertiary amines, and adding formaldehyde or one or more phenols and formaldehyde to the reaction system to further proceed the reaction.

4,229,331

PROCESS FOR PRODUCING WATER-EMULSIFIABLE AIR-DRYING BINDERS, THE BINDERS, AND EMULSIONS MADE THEREFROM

Bertram Zückert, Graz, Austria, assignor to Vianova Kunstharz, A.G., Wernsdorf, Austria

Filed Dec. 6, 1978, Ser. No. 966,867

Claims priority, application Austria, Dec. 12, 1977, 8838/77

Int. Cl.² C09D 3/54, 3/56, 3/66

U.S. Cl. 260—20

27 Claims

1. Process for producing water-emulsifiable air-drying paint binders based on modified drying oils, characterized in that in a first reaction step

10–35% by weight of a polyethylene glycol with an average molecular weight of between about 500 and 5000, and 5–25% by weight of a low molecular weight formaldehyde condensate of a mono (C₃–C₉) alkyl phenol and/or aryl phenol obtained through alkaline condensation, are reacted at from about 100° to 160° C., and the reaction product is condensed in a second reaction step at from about 180° to 250° C. with

40–85% by weight of a substantially hydroxy-free ester of unsaturated oil fatty acids and polyols and the obtained product in a third reaction step is processed to provide an alkyd resin or oil binder, the weight ratios and reaction conditions being chosen whereby the final product has a level of from about 4 to 12% by weight of polyethylene glycol and an acid value of from about 10 to 30 mg KOH/g.

4,229,332

AROMATIC COPOLYESTER COMPOSITION

Kayomon Kyo, Kyoto; Yasuhiko Asai, Uji; Isamu Hirose, and Minolu Kishida, both of Kyoto, all of Japan, assignors to Unitika Ltd., Amagasaki, Japan

Filed Dec. 13, 1977, Ser. No. 860,411

Int. Cl.² C08G 63/46, 63/48, 63/76

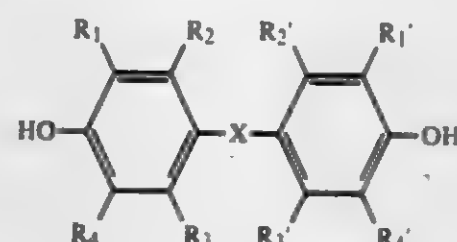
U.S. Cl. 260—22 T

22 Claims

1. An aromatic copolyester composition comprising:

(A) an aromatic copolyester prepared by reacting (a) a mixture of terephthalic acid and/or a functional derivative thereof and isophthalic acid and/or a functional derivative thereof, with the terephthalic acid unit/isophthalic acid unit molar ratio being about 9:1 to about 1:9, and

(b) a bisphenol of the general formula (I)



wherein —X— is a member selected from the group consisting of —O—, —S—, —SO₂—, —SO—, —CO—, an alkylene group containing 1 to 4 carbon atoms and an alkylidene group containing 1 to 4 carbon atoms, and R₁, R₂, R₃, R₄, R₁', R₂', R₃' and R₄', which may be the same or different, each is a member selected from the group consisting of a hydrogen atom, a chlorine atom, a bromine atom and an alkyl group containing 1 to 4 carbon atoms, or a functional derivative thereof, and

(B) a salt of an organic carboxylic acid containing 1 to 22 carbon atoms and a metal of Groups I, II, III or IV of the Periodic Table.

4,229,333

CROSS-LINKABLE RUBBER MIXTURES CONTAINING SILICATE FILLERS AND PROCESS FOR CROSS-LINKING

Siegfried Wolff, Bornheim-Merten, and Ewe H. Tan, Wesseling-Berzdorf, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 835,848, Sep. 22, 1977, abandoned, which is a continuation of Ser. No. 609,815, Sep. 2, 1975, abandoned. This application Apr. 27, 1979, Ser. No. 34,203
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1975, 2536674

Int. Cl.² C08K 3/36, 5/54

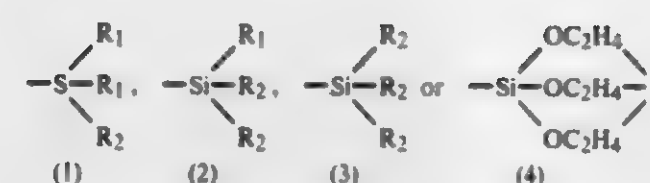
U.S. Cl. 260—23.7 M

83 Claims

1. An elemental sulfur free cross-linkable rubber composition comprising a rubber capable of being cross-linked by sulfur, a siliceous filler in an amount of 1 to 300 parts per 100 parts by weight of the rubber, carbon black in an amount of 0 to 300 parts by 100 parts by weight of the rubber, the total of siliceous filler and carbon black not exceeding about 300 parts per 100 parts by weight of the rubber, a vulcanization accelerator for a sulfur cross-linkable rubber in an amount of 0.02 to 10 parts per 100 parts by weight of the rubber and a sulfur containing organosilicon compound having the formula:



in which Z is:



where R₁ is alkyl of 1 to 4 carbon atoms, cycloalkyl of 5 to 8 carbon atoms or phenyl, R₂ is alkoxy of 1 to 4 carbon atoms, cycloalkoxy of 5 to 8 carbon atoms or phenoxy, Alk is a divalent aliphatic hydrocarbon or a cyclic hydrocarbon group containing 1 to 8 carbon atoms and x is a number from 2 to 6 in an amount of 0.2 to 40 parts per 100 parts of siliceous filler, said sulfur containing organosilane compound being the sole vulcanizing agent.

4,229,334

PLASTIC MODIFIED WRITING COMPOSITIONS

Bedrich Klabacka; Josef Polansky, and Josef Hynek, all of Ceske Budejovice, Czechoslovakia, assignors to Koh-i-noor Hardtmuth, oborovy podnik, Czechoslovakia

Filed Dec. 19, 1978, Ser. No. 971,112

Claims priority, application Czechoslovakia, Dec. 22, 1977, 8718-77

Int. Cl.² C08L 23/06; C09D 13/00, 5/06

U.S. Cl. 260—28.5 A

4 Claims

1. Inscribing composition comprising a solid homogeneous mixture of:

- Polyethylene, and
- A water miscible component selected from the group consisting of polyethyleneglycol, nonionic water soluble waxes, nonionic ethylene adducts of higher fatty acids, and mixtures thereof, and
- Wax, and
- Color Pigment, and
- Filler material.

4,229,335

AQUEOUS DISPERSION OF POLYAMINO POLYHYDROXY POLYETHER RESINOUS ADDUCT AND ACID-FUNCTIONAL AMINOPLAST FOR CATHODIC ELECTROCOATING

Vincent W. Ting, Brunswick, Ohio, and James M. Evans, Lynn Haven, Fla., assignors to SCM Corporation, Cleveland, Ohio
Division of Ser. No. 874,809, Feb. 3, 1978, Pat. No. 4,159,233.

This application Mar. 14, 1979, Ser. No. 20,529

Int. Cl.² C08L 61/28

U.S. Cl. 260—29.4 R

9 Claims

1. A liquid aqueous dispersion suitable for use in cathodic electrocoating art and comprising:

- An aqueous medium having pH from about 3 to 9 and containing an acid with a pK_a not greater than about 5;
- A substantially oxirane-free, non-gelled, resinous adduct of
 - a substantially oxirane-free precursor adduct of a polyether diepoxide having molecular weight from about 300 to 10,000 and a polyamine having molecular weight from about 60 to 600 and
 - a mono-epoxide having molecular weight from about 100 to 500 and having a normal alkyl group of at least about 4 carbon atoms pendant through only hydrolysis-resistant linkages from the epoxy group of said mono-epoxide,

the mole ratio of residues of said mono-epoxide to residues of said diepoxide in said resinous adduct being from about 0.2:1 to 2:1, the mole ratio of residues of said polyamine to residues of said diepoxide in said resinous adduct being from about 1.25:1 to 2:1, and said polyamine having from 2 to 5 amine groups per molecule and at least sufficient amino hydrogens to react with substantially all of the epoxy groups of both said diepoxide and said mono-epoxide; and

(C) from about 0.05 to 0.4 weight parts, per weight part of

said resinous adduct, of an aminoplast resin having at least about 1 gram-equivalent, per 1,000 grams of said aminoplast resin, of carboxylic acid groups with pK_a from about 2 to 6 for catalyzing the heat-induced cure of said resinous adduct with said aminoplast resin.

4,229,336

SELF CROSS-LINKING N-METHYLOL FUNCTIONAL EMULSION POLYMERS USING POLYCARBOXYLIC ACID SURFACTANT

Bruce G. Sicklesteel, Hoffman Estates, and Dale F. Anders, Fox River Grove, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Feb. 1, 1979, Ser. No. 9,397

Int. Cl.² C08L 33/24

U.S. Cl. 260—29.6 NR

14 Claims

1. A self cross-linking aqueous emulsion coating composition comprising water having emulsified therein an emulsion polymer comprised of copolymerized monoethylenically unsaturated monomers including at least about 3 percent by weight of a C₂–C₈ saturated alcohol ether of a monoethylenically unsaturated N-methylol functional monomer, said monomers being emulsified during copolymerization by a polycarboxylic acid emulsifying agent partially neutralized with a base to provide a pH of at least about 4, said polycarboxylic acid emulsifying agent being present at about 0.5 to about 10 percent by weight of said monomers and being an addition copolymer having an average molecular weight in the range of about 600 to about 3000 and containing at least about 25 mole percent of copolymerized monoethylenically unsaturated carboxylic acid, the balance of the monomer in said addition copolymer being monoethylenically unsaturated monomer of hydrophilic character, said addition copolymer chain being terminated with a mercaptan containing at least 8 carbon atoms.

4,229,337

AROMATIC AMIDE PLASTICIZER FOR IONIC POLYMERS

Douglas Brenner, Livingston, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 2, 1978, Ser. No. 947,431

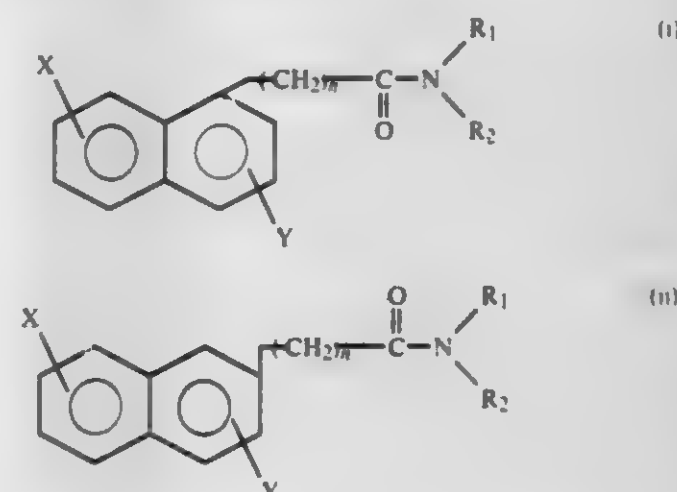
Int. Cl. C08k 5/20

U.S. Cl. 260—32.6 A

18 Claims

1. An elastomeric composition including:

- a neutralized sulfonated elastomeric polymer having about 15 to about 50 meq. sulfonate groups per 100 grams of said neutralized sulfonated elastomeric polymer, said sulfonate groups having metal cations; and
- at least 8 parts by weight of an aromatic organic amide per 100 parts by weight of said neutralized sulfonated elastomeric polymer, said organic amide having a formula selected from the group consisting of:



wherein n equals 0, 1, 2, 3, or 4, R₁ and R₂ are independently selected from the group consisting of hydrogen,

and C, to C₄ straight and branched chain alkyl groups, wherein X and Y are independently selected from the groups consisting of hydrogen, C₁ to C₄ straight and branched chain alkyl groups.

4,229,338

SUEDE-LOOK SHOE SOLES

David R. Hansen, and Glenn R. Himes, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 11, 1979, Ser. No. 38,037

Int. Cl.³ C08K 5/01

U.S. Cl. 260—33.6 AQ

8 Claims

1. A footwear composition having a simulated suede appearance comprising:

- 100 parts by weight of a block copolymer having at least two monoalkenyl arene polymer end blocks A and at least one elastomeric conjugated diene mid block B, each block A having an average molecular weight between about 5,000 and about 125,000 and each block B having an average molecular weight between about 15,000 and about 350,000, said blocks A comprising 8–65% by weight of the copolymer;
- about 5 to about 125 parts by weight of a styrene polymer;
- about 5 to about 175 parts by weight of a hydrocarbon extending oil;
- about 2 to about 150 parts by weight of a finely divided silica filler;
- about 0.1 to about 10 parts by weight of a pigment; and
- about 5 to about 50 parts by weight of a synthetic fiber selected from the group consisting of polyamide fibers, polyester fibers, acrylic fibers, and mixtures thereof; wherein the various components are melt blended at a temperature below the melting point of said synthetic fiber.

4,229,339

PROCESS FOR THE PREPARATION OF POLYMER DISPERSIONS

John Bentley; Morice W. Thompson, both of Maidenhead, and Auguste L. L. Palluel, Windsor, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 9, 1977, Ser. No. 795,307

Claims priority, application United Kingdom, May 12, 1976, 19487/76

Int. Cl. C08k 5/01, 5/03

U.S. Cl. 260—34.2

16 Claims

1. A process for the preparation of a dispersion of a condensation polymer in which the links between the reactants which form the polymer involve atoms other than carbon and in which a low molecular weight by-product is eliminated during the polymerisation reaction by which said polymer is made in an organic liquid medium in which the polymer is insoluble, the process comprising heating in the said liquid medium at the polymerisation temperature one or more condensation polymer-forming reactants, the reactant or at least one of the reactants being present in the liquid disperse phase of an emulsion of which the liquid continuous phase is constituted by the aforesaid liquid medium, said reactant being selected from the group consisting of a reactant which is liquid at normal temperature, a reactant which is melted by heating in the organic liquid medium at a temperature not higher than the polymerisation temperature, and a reactant which is a solid which cannot be melted at the reaction temperature and which is dissolved in a second, inert liquid which is substantially immiscible with the organic liquid medium, there being also present dissolved in the said liquid medium a polymeric material having a single polymer chain of molecular weight between 1000 and 20,000 which carries at least one reactive group capable of taking part in the condensation polymer-forming reaction, said single polymer chain being a homopolymer or a random copolymer but not a block or graft copolymer.

4,229,340 GLASS FIBER-REINFORCED POLYETHYLENE TEREPHTHALATE/POLYAMIDE BLENDS

Melvin L. Druin, West Orange, and John S. Gall, North Haledon, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,223

Int. Cl.³ C08K 7/14; C08L 67/02

U.S. Cl. 260—40 R

6 Claims

1. An improved thermoplastic molding resin comprising a synthetic linear polyamide polymer having a relative viscosity in the range of from about 35 to about 100; from about 5 to about 60 weight percent based on the total composition of glass fiber reinforcing agent; and from about 1.0 to about 50 weight percent based on the total resin weight of polyethylene terephthalate.

4,229,341

METHOD OF MAKING THERMALLY EXPANSIBLE RUBBER TUBES FOR USE IN SELF-CLOSING GAS PIPES AND PIPE JOINTS

Yukio Yamaguchi, Seto; Kenji Ishihara, Nagoya, and Kikuo Yonekura, Tokushima, all of Japan, assignors to Itoh Gasu Kabushiki Kaisha, Nagoya and Kabushiki Kaisha Togowa Gomu Seizosho, Osaka, both of Japan

Division of Ser. No. 877,566, Feb. 13, 1978, This application Feb. 15, 1979, Ser. No. 12,290

Int. Cl.³ C08K 9/04

U.S. Cl. 260—42.16

7 Claims

1. A method of manufacturing thermally expansible rubber tube, comprising:
mixing about 2 to 30 parts by weight of oxidized, thermally expansible graphite powder with 100 parts by weight of raw rubber;
adding a predetermined quantity of a curing agent and a cure accelerator to cure the mixture of said rubber and graphite; and
forming said mixture into a tubular shape, said rubber tube being thermally expansible from 10 to 500 times in size when heated to between 180° C. and 260° C.

4,229,342

PROCESS FOR EXTRACTING PROTEINS FROM MILK USING SILICA AND ANION EXCHANGE RESINS

Bernard Mirabel, Fresnes, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed May 15, 1978, Ser. No. 905,845

Claims priority, application France, May 18, 1977, 77 15320

Int. Cl.³ A23J 1/20

U.S. Cl. 260—120

12 Claims

1. Process for extracting proteins and casein from milk, characterized in that the proteins other than the casein are first extracted by putting skimmed milk into contact first with at least one anion exchanger resin and then in a subsequent and separate step with silica in the absence of an ion exchange resin, or by putting skimmed milk into contact first with silica in the absence of an ion exchange resin then in a subsequent and separate step with at least one anion exchanger resin whereby proteins become fixed on the anion exchange resin and the silica, leaving a solution containing casein mineral salts and lactose and eluting the protein and separating the casein remaining in solution from the mineral salts and lactose.

4,229,343

AZO DYES FROM AN OXADIAZOLYL-SUBSTITUTED ANILINE

Helmut Junge, Wachenheim; Walter Kurtz, Ludwigshafen; Peter Dimroth, Ludwigshafen, and Hans Scherer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 776,222, Mar. 10, 1977, abandoned, which is a continuation of Ser. No. 561,004, Mar. 21, 1975, abandoned. This application Jul. 13, 1978, Ser. No. 924,196

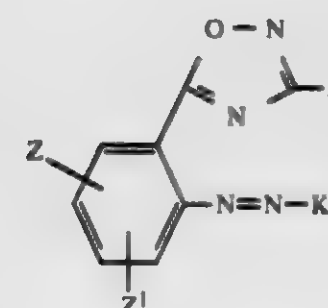
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1974, 2417217; Dec. 6, 1974, 2457687

Int. Cl.³ C09B 29/18

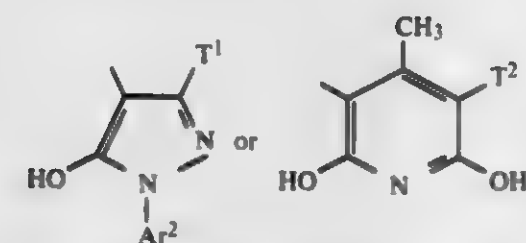
U.S. Cl. 260—156

5 Claims

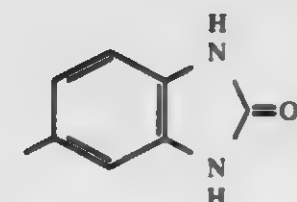
1. A compound of the formula



in which
K is



Ar¹ is phenyl; phenyl substituted by chlorine, methoxy, ethoxy, methyl, acetylamino or benzoylamino; or



Ar² is phenyl; or phenyl substituted by chlorine, methyl or sulfamoyl,

T¹ is methyl or carbamoyl,

T² is cyano or carbamoyl,

Z is hydrogen, chlorine, bromine or trifluoromethyl,

Z¹ is hydrogen, chlorine, or bromine, and

R is phenyl; phenyl substituted by chlorine, bromine, hydroxy, methoxy, ethoxy, C₁ to C₄ alkyl, cyano, carbamoyl, nitro, phenyl, sulfamoyl, N-phenylsulfamoyl, acetylamino or benzoylamino; naphthyl; N-phenylphthalimidyl; or pyridyl.

4,229,344

MONAZO PIGMENTS CONTAINING HYDROXYNAPHTHOYLAMINO BENZIMIDAZOLONE RADICAL

Rolf Müller, Aesch; Armand Roueche, Bottmingen; Paul Müller, Basel, and Karl Ronco, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 30, 1978, Ser. No. 911,002

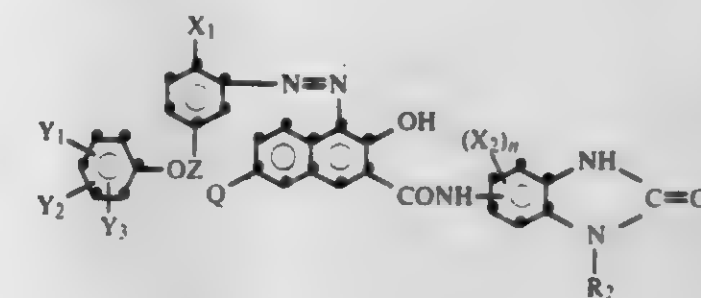
Claims priority, application Switzerland, Jun. 3, 1977, 6868/77

Int. Cl.³ C09B 29/36, 43/12; D06P 1/52, 1/649

U.S. Cl. 260—157

7 Claims

1. A monoazo pigment of the formula



wherein

Z represents —CO— or —SO₂—,

Q represents hydrogen, bromine or methoxy,

Y₁ represents hydrogen, chlorine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,

Y₂ and Y₃ independently represent a hydrogen, chlorine, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkanoylamino of 2 to 4 carbon atoms or the —COOR₁, wherein

R₁ represents alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by halogen, alkoxy of 1 to 4 carbon atoms; cycloalkyl of 5 to 6 carbon atoms; benzyl which is unsubstituted or substituted by halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; or phenyl which is unsubstituted or substituted by halogen, alkyl of 1 to 4 carbon atoms or alkoxy groups of 1 to 4 carbon atoms, or

Y₂ and Y₃ together with the carbon atoms to which they are attached form benzene ring which is unsubstituted or substituted by chlorine,

X₁ represents hydrogen, chlorine, an alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkoxy carbonyl of 2 to 4 carbon atoms or phenoxy,

R₂ represents hydrogen, alkyl of 1 to 4 carbon atoms or phenyl which is unsubstituted or substituted by halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,

X₂ represents hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or a phenoxy, and n is 1 or 2.

with the proviso that if R₂ represents alkyl or phenyl, at least one of Y₁, Y₂ or Y₃ may not represent hydrogen.

4,229,345

(2-CHLORO-4-CYANOPHENYL) (4-DIALKYLAMINOPHENYL)-DIAZINE DYE USEFUL FOR TRANSFER PRINTING

Gunther Lamm, Hassloch, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 643,108, Dec. 22, 1975, abandoned.

This application Oct. 31, 1977, Ser. No. 846,817

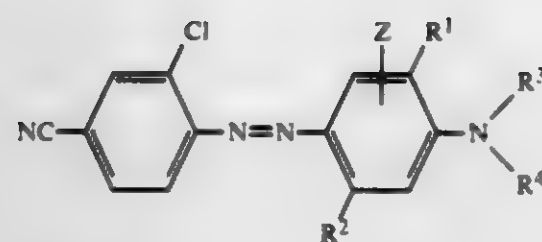
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1975, 2500071

Int. Cl.³ C09B 29/08, 29/26, 29/36; D06P 3/26

U.S. Cl. 260—205

7 Claims

1. A dye of the formula



in which

R¹ is hydrogen,
R² is C₁- to C₄-alkyl,
R³ is C₁- to C₄-alkyl or C₂- to C₄-alkyl substituted by C₁- to C₆-alkoxy, C₁- to C₄-alkanoyl, chloroacetyl, chloropropionyl, methoxyacetyl, ethoxyacetyl or C₁- to C₄-alkoxycarbonyl,
R⁴ is C₁- to C₆-alkyl or C₂- to C₄-alkyl substituted by C₁- to C₄-alkoxy and Z is hydrogen or methyl.

4,229,346

PRODUCTION OF HEXAMETHYLENIMINE

Herbert Toussaint, Frankenthal; Klaus Adelsberger, Neckargemuend, and Herwig Hoffmann, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1975, Ser. No. 556,469

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1974, 2414930

Int. Cl.³ C07D 295/02

U.S. Cl. 260—239 B

12 Claims

1. A process for the continuous manufacture of hexamethylenimine which comprises passing hydrogen and a liquid phase of hexamethylene diamine in an inert liquid solvent through a reaction zone in contact with a hydrogenation catalyst containing, as catalytically active compounds, at least one of the metals selected from the group consisting of nickel, cobalt, iron, manganese, silver, copper and chromium and maintained at 120° to 280° C. and 0.1 to 50 bars pressure, said inert solvent having a boiling point at atmospheric pressure of at least 140° C. and the concentration of said hexamethylene diamine in the reaction mixture being about 3 to 10% and continuously distilling off hexamethylenimine from said reaction zone.

4,229,347

LIQUID DIPHENYLMETHANE DIISOCYANATE COMPOSITIONS

John B. Holt, and Arthur Ibbotson, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 28, 1979, Ser. No. 24,774

Claims priority, application United Kingdom, Apr. 11, 1978, 14130/78

Int. Cl.² C07C 119/048; C07D 229/00

U.S. Cl. 260—239 A

14 Claims

1. A liquid diphenylmethane diisocyanate composition comprising diphenylmethane-4,4'-diisocyanate containing not more than 10% by weight of isomers thereof in which from 10% to 35% of the isocyanate groups have been reacted with a mixture of alkylene glycols containing at least three constituent glycols each having at least three carbon atoms, one of said glycols being dipropylene glycol, tripropylene glycol or a higher polypropylene glycol.

4,229,348

PENICILLANIC ACID DERIVATIVES

Nobuhiro Oi, Hoya; Bunya Aoki, Tama; Teizo Shinozaki, Matsudo; Kanji Moro, Kuki; Isao Matsunaga, Tokyo; Takao Noto, Machida; Toshiyuki Nebashi, Kawagoe; Yusuke Harada, Tokyo; Hisao Endo, Yokohama; Takao Kimura, Chiba; Hiroshi Okazaki, Sayama; Haruki Ogawa, Chofu, and Minoru Shindo, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1979, Ser. No. 5,832

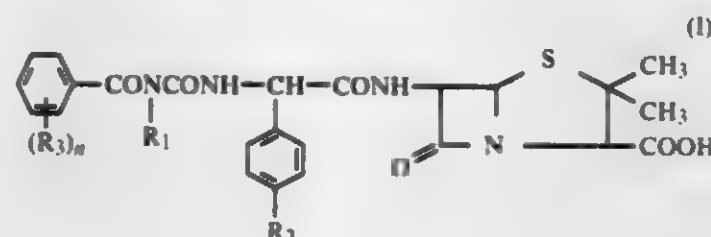
Claims priority, application Japan, May 26, 1978, 53/62164; Jun. 13, 1978, 53/70365; Aug. 11, 1978, 53/97309; Aug. 29, 1978, 53/104362; Sep. 7, 1978, 53/109157

Int. Cl.³ C07D 499/68

U.S. Cl. 260—239.1

19 Claims

1. A compound represented by the formula



wherein R₁ is a hydrogen atom or a lower alkyl group; R₂ is a hydrogen atom or a hydroxyl group; R₃ is a hydroxyl group or a lower alkanoyloxy group; n is 2 or 3; at least two of R₃ are bonded to adjacent carbon atoms, the position of substituent R₃ being selected from 3 to 5 position when R₁ is a lower alkyl group and R₃ is a hydroxyl group, and 2 to 6 position when R₁ and R₃ are other substituents, or a pharmaceutically acceptable salt thereof.

15. 6-[α-{3-(3,4,5-Trihydroxybenzoyl)-3-methyl-1-ureido}-α-phenylacetamido]penicillanic acid according to claim 1.

4,229,349

PRODUCTION OF SEMI-SYNTHETIC β-LACTAM ANTIBIOTICS

Werner Ertel, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 5, 1979, Ser. No. 27,539

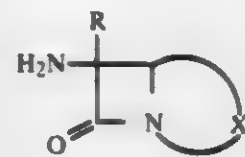
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817228

Int. Cl.² C07D 499/12, 501/06

U.S. Cl. 260—239.1

7 Claims

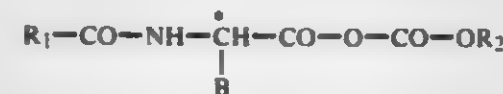
1. In the production of a semi-synthetic β-lactam antibiotic by reacting an amino compound of the formula



in which

X is the remaining members of a ring of a β-lactam antibiotic, and

R is a hydrogen atom or a methoxy group, with an activated carboxylic acid derivative of the formula



in which

R₁ is an organic radical,
B is an optionally substituted phenyl, cyclohexadienyl or heterocyclyl radical and

R₂ is a lower alkyl radical, the improvement which comprises effecting the reaction in an

acetone/water mixture which contains acetone and water in a volume ratio of about 0.5:1 to 3:1.

4,229,350

DIBENZO[4,8][1,3,6]DIOXAZOCINE DERIVATIVES

László Rozsa; Lujza Petöcz; Katalin Grasser; Ibolya Kosóczy; Enikő Kiszelyi, and József Nagy, all of Budapest, Hungary, assignors to Egyt Gyógyszeripari Gyar, Budapest, Hungary

Division of Ser. No. 927,934, Jul. 25, 1978. This application Jul. 26, 1979, Ser. No. 61,042

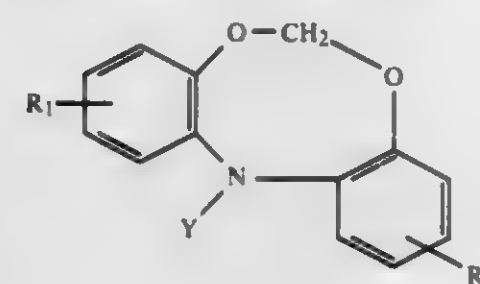
Claims priority, application Hungary, Aug. 2, 1977, EE 2515

Int. Cl.² C07D 413/06

U.S. Cl. 260—243.3

3 Claims

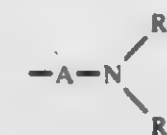
1. Compounds of the general formula I



wherein

R₁ and R₂ independently represent hydrogen or halogen, and

Y stands for a group of formula



wherein

A stands for a straight or branched chained alkylene having from 2 to 5 carbon atoms and

R₃ and R₄ together with the adjacent nitrogen atom form a piperidino or a piperazino group, wherein the heterocyclic ring may have a C₁₋₄ alkyl substituent, and pharmaceutically acceptable acid addition salts thereof formed with an inorganic or organic acid.

4,229,351

PROCESS FOR PRODUCING ALIPHATICALLY N-SUBSTITUTED MALEIMIDES

Jürg Kiefer, Reinach, and Theobald Haug, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,847

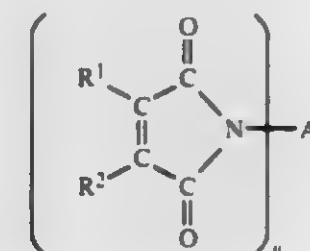
Claims priority, application Switzerland, Apr. 6, 1978, 3706/78

Int. Cl.³ C07D 207/448, 207/452

U.S. Cl. 260—326.26

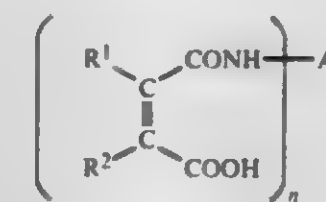
6 Claims

1. An improved process for producing maleimides of formula I



in which n is one of the numbers 1, 2 or 3, R¹ and R² are independently hydrogen or methyl, A is an n-valent aliphatic, cycloaliphatic, aliphatic-cycloaliphatic or aliphatic-aromatic

radical having up to 30 carbon atoms by means of the cyclizing dehydration at a temperature range of 40° to 100° C. of a maleamic acid of the formula II



in which the acid amide group is attached to aliphatic or cycloaliphatic C atoms in the presence of a low-molecular weight dehydrating carboxylic anhydride in an organic solvent and in the presence of a catalyst wherein the improvement comprises employing an effective amount of a catalyst which is an organic or inorganic compound of a metal selected from the group consisting of Li, Mg, Ni, Co, Cu, Mn, Zn, Sn, Ti, Tl, Fe, Pb, V and La, and

carrying out the reaction in a sufficient amount of a polar aprotic solvent selected from the group consisting of dimethylformamide, dimethylacetamide, diethylacetamide, tetramethylurea, hexamethyl phosphoric acid triamide, N-methylcaprolactam, N-methylpyrrolidone and mixtures thereof, to give at least a partial solution of the starting materials.

4,229,352

BENZYLPIRROLIDYMETHYL ESTERS OF CYCLOPROPANE CARBOXYLIC ACIDS

Clive A. Henrick, Palo Alto, Calif., assignor to Zeecon Corporation, Palo Alto, Calif.

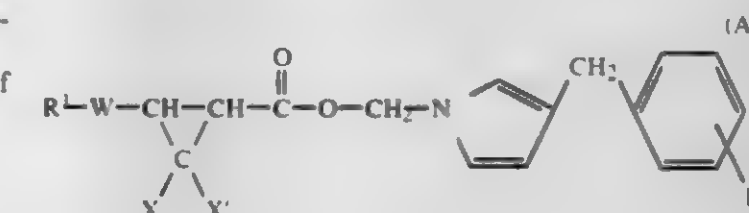
Continuation-in-part of Ser. No. 942,509, Sep. 15, 1978. This application Aug. 13, 1979, Ser. No. 66,263

Int. Cl.³ C07D 207/32

U.S. Cl. 260—326.43

17 Claims

1. A compound of the formula (A):



wherein,

W is oxygen or sulfur;

X is lower alkyl or halogen;

X' is hydrogen, lower alkyl or halogen;

R¹ is lower alkyl, lower haloalkyl, lower alkenyl, lower haloalkenyl, or the group



in which

t is zero, one, two, three or four;

Y is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyl, lower alkoxy carbonyl, lower acyloxy, halogen, cyano, nitro and lower haloalkylthio;

Z is independently selected from the values of Y, cycloalkyl and lower haloalkoxy; or together with Y forms a methylenedioxy group; and

R is hydrogen, fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio.

4,229,353

(2,2-DISUBSTITUTED VINYL)- γ -BUTYROLACTONES

Per D. Klemmensen, Lemvig; Hans Kolind-Andersen, Harboor, and Hans B. Madsen, Lemvig, all of Denmark, assignors to A/S Cheminova, Denmark

Division of Ser. No. 922,552, Jul. 7, 1978, abandoned, which is a continuation of Ser. No. 756,906, Jan. 4, 1977, abandoned. This application Apr. 3, 1979, Ser. No. 26,746

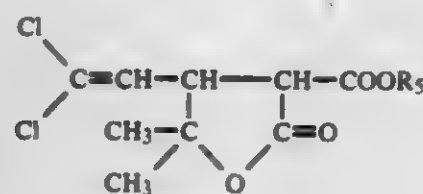
Claims priority, application United Kingdom, Jan. 21, 1976, 02380/76; May 25, 1976, 21631/76

Int. Cl.³ C07D 307/32

U.S. Cl. 260—343.6

3 Claims

1. A (2,2-Disubstituted Vinyl)- γ -butyrolactone of the formula:



in which R₅ is C₁ or C₂ alkyl.

4,229,354

METHOD OF PREPARING ALKALI METAL COMPLEX COMPOUNDS

Borislav Bogdanovic, Mülheim/Suki, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Mülheim/Suki, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,489

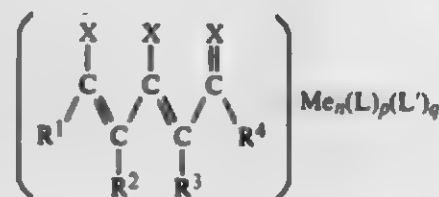
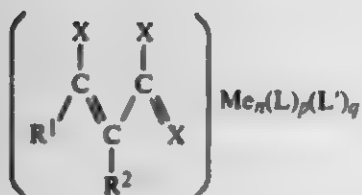
Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722221

Int. Cl.³ C07D 307/06

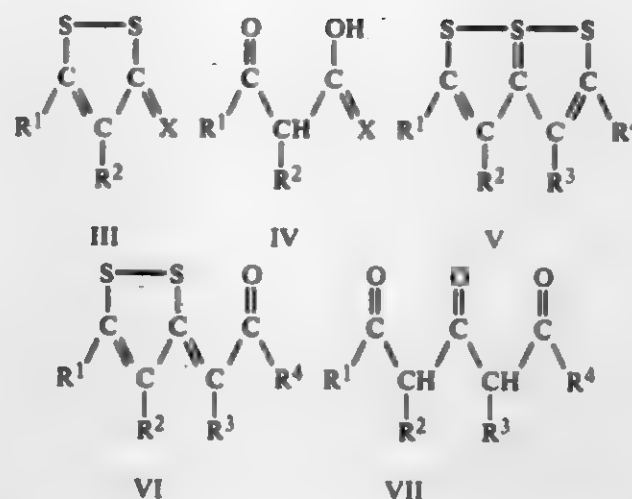
U.S. Cl. 260—347.2

10 Claims

1. A method of preparing an alkali metal complex compound of the Formulas I and II



wherein Me represents an alkali metal, each X represents sulphur or oxygen, n represents a whole number from 3 to 20, L and L' represents a mono- or polyfunctional ether or amine, respectively, p and q are whole numbers from 0 to 4, R¹, R², R³, R⁴ are each hydrogen, alkyl, cycloalkyl, aralkyl or aryl moieties and/or two or more such moieties closed to form an aliphatic or aromatic ring system, which comprises reacting an appropriate compound of the following general formulas III, IV, V, VI or VII,



with an alkali metal in the above-named mono- or polyfunctional ether and/or amine at a temperature between -100° and +100° C. and with the exclusion of air, said ether component or amine component being added to the reaction mixture during or after the end of the reaction of the alkali metal.

4,229,355

9-DEOXY-9,10-EPOXIDE-DAUNOMYCINONE

Sergio Penco, Viale delle Legioni Romane, 18/4; Fausto Gozzi, Viale Etiopia, 3; Francesco Angelucci, Via Marostica, 29, all of Milan, and Federico Arcamone, Via 4 Novembre, 26, (Milan), all of Italy

Division of Ser. No. 941,847, Sep. 13, 1978. This application Apr. 27, 1979, Ser. No. 33,995

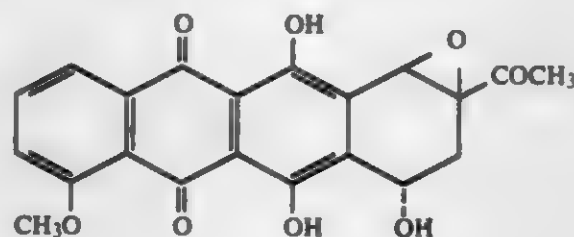
Claims priority, application Italy, May 9, 1978, 23151 A/78

Int. Cl.² C07D 303/32

U.S. Cl. 260—348.52

1 Claim

1. The compound having the formula:



(XIII)

4,229,356

PRODUCTION OF VITAMIN K₁ AND VITAMIN K₂

Iwao Tabushi, Kyoto; Hiroyuki Sugimoto, and Akira Yazaki, both of Hiroshima, all of Japan, assignors to Wakunaga Yakuhin Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1979, Ser. No. 15,868

Claims priority, application Japan, Mar. 4, 1978, 53-24057; Mar. 4, 1978, 53-24058

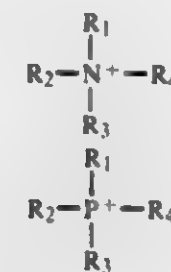
Int. Cl.² C07C 49/62, 39/14

U.S. Cl. 260—396 K

10 Claims

1. A process for producing a hydro-precursor for vitamin K₁ or vitamin K₂ which comprises reacting (A) 2-methylhydronaphthoquinone-1,4 with (B) a compound selected from the group consisting of phytol bromide, isophytol bromide, geranyl bromide, farnesyl bromide, geranylgeranyl bromide and the corresponding chlorides in a reaction system which comprises an emulsion of (1) an aqueous phase comprising an aqueous solution of an alkali based on an alkali metal and (2) an oily phase comprising a hydrophobic organic solvent which is able to at least partially dissolve said hydro-precursor,

said reaction being carried out in the presence of at least a catalytic quantity of a salt having a quaternary ammonium ion represented by the formula (I) or a tetraalkyl phosphonium ion represented by the formula (II):



(I)

R₆ is hydrogen or lower alkyl.

(II)

4,229,358

FLUOROVITAMIN D COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Hector F. DeLuca; Heinrich K. Schnoes; Joseph L. Napoli, Jr., and Bruce L. Onisko, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

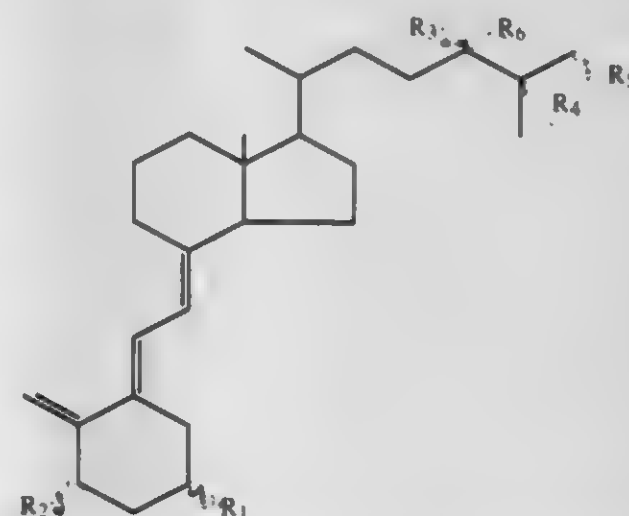
Division of Ser. No. 928,279, Jul. 26, 1978, abandoned. This application Aug. 3, 1979, Ser. No. 64,211

Int. Cl.² C07J 9/00

U.S. Cl. 260—397.2

9 Claims

1. Compounds having the formula



where R₁ is selected from the group consisting of hydrogen, hydroxy, O-acyl and O-lower-alkyl.

R₂, R₃, R₄, and R₅ are each selected from the group consisting of hydrogen, hydroxy, O-acyl, O-lower-alkyl and fluoro, except that at least one of R₂, R₃, R₄, and R₅ must be fluoro, and

R₆ is hydrogen or lower alkyl.

4,229,359

DERIVATIVES OF 25-HYDROXYCHOLECALCIFEROL

Hector F. DeLuca; Heinrich K. Schnoes; Yoko Tanaka, all of Madison, and Joseph B. Alper, Waunakee, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

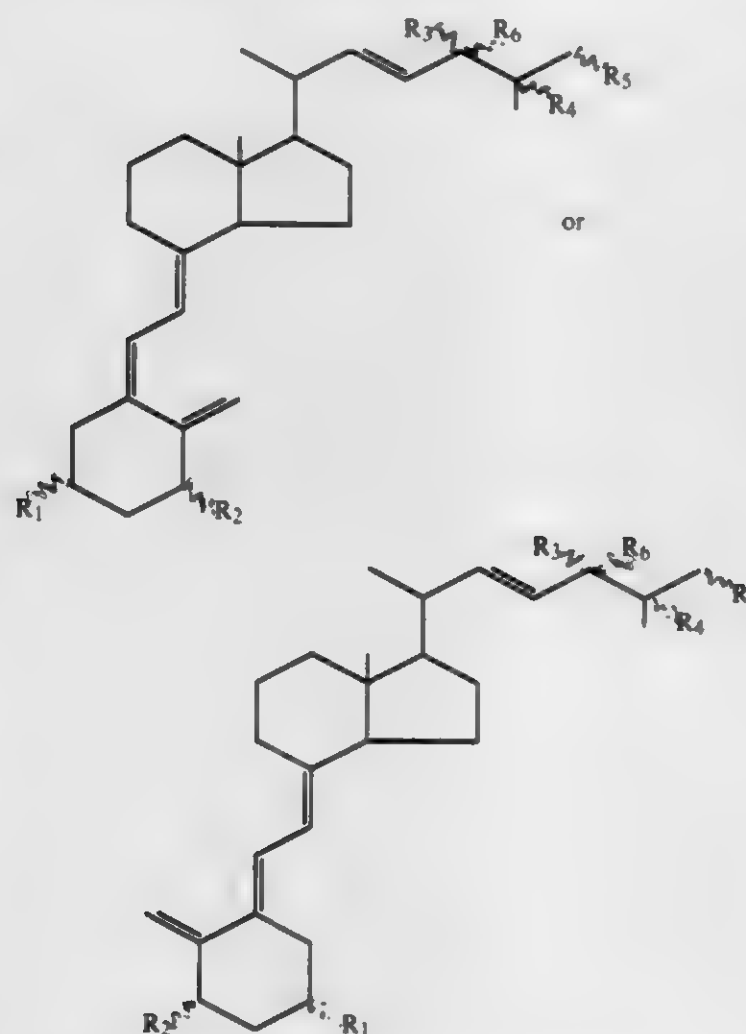
Filed Sep. 4, 1979, Ser. No. 71,973

Int. Cl.² C07J 9/00

U.S. Cl. 260—397.2

2 Claims

1. Compounds having the formula



where

R₁ is hydrogen, hydroxy, O-acyl or O-lower alkyl, R₂, R₃, R₄, and R₅ are each selected from the group consisting of hydrogen, hydroxy, O-acyl, O-lower alkyl and fluoro, except that at least one of R₂, R₃, R₄, and R₅ must be fluoro, and

where X is a group selected from keto or hydroxy.

4,229,360

PROCESS FOR THE DEHYDRATION OF A COLLOIDAL DISPERSION OF LIPSOMES

Michel Schneider, Grand-Lancy, and Bernard Lamy, Carouge, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Aug. 4, 1978, Ser. No. 931,243

Claims priority, application Switzerland, Aug. 5, 1977, 9615/77

Int. Cl.³ A23J 7/00; C07F 9/02; C11C 3/00

U.S. Cl. 260—403

5 Claims

1. A process for the dehydration of a colloidal dispersion of liposomes in an aqueous liquid medium, which comprises mixing a hydrophilic compound with the liposome dispersion and dehydrating the mixture to form a stable liposome containing powder which can be stored and reconstituted in an aqueous medium as a liposome dispersion.

4,229,361

HYDROGENATION CATALYST AND HYDROGENATION PROCESS

Raymond M. Cahen, Brussels, Belgium, assignor to Labofina S.A., Brussels, Belgium

Filed Jul. 31, 1978, Ser. No. 929,539

Claims priority, application Luxembourg, Dec. 2, 1977, 78622

Int. Cl.² C11C 3/12; B01J 31/02

U.S. Cl. 260—409

6 Claims

1. A process for partially and selectively hydrogenating a natural oil which comprises the step of treating said natural oil in the presence of a nitrogen-containing nickel catalyst comprising activated nickel and having incorporated therein by absorption an amount of a nitrogen-containing basic compound equivalent to from about 5 to about 40 atoms of nitrogen per 100 atoms of nickel with hydrogen at a hydrogen pressure and a reaction temperature sufficient to obtain a substantially liquid hydrogenation product rich in monoene compounds and low in saturated compounds, trans-isomers and conjugated dienes.

4,229,362

ESTERIFICATION PROCESS

Paula R. Norman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1979, Ser. No. 30,395

Int. Cl.³ C09F 5/08; C11C 3/00; C07C 67/02, 69/76

U.S. Cl. 260—410.6

13 Claims

1. A process for esterifying terminal hydroxyl group(s) of a polyoxyalkylene compound bearing one or more terminal hydroxyl, said compound comprising at least one oxyalkylene unit represented by the formula



where R represents a tert.-butyl or a tert.-amyl group, without removing a significant portion of the R groups therein, said process comprising contacting, in the liquid phase, said compound with an organic, carboxylic acid or anhydride in the presence of a small but catalytically effective amount of a Lewis base.

4,229,363

4-HYDROXY-3-(SUBSTITUTEDMETHYL)-BENZENEACETIC ACIDS

Abraham Nudelman, Rehovot, and Abraham Patchornik, Ness-Ziona, both of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 858,725, Dec. 8, 1977,

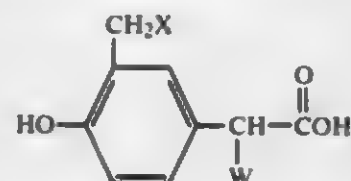
abandoned. This application Sep. 7, 1978, Ser. No. 940,727

Int. Cl.² C07C 161/03

U.S. Cl. 260—454

9 Claims

1. A compound selected from the formula



wherein W is hydrogen; hydroxy; SO₃H or —COOR₁ wherein R₁ is selected from hydrogen, phenyl or 5-indanyl, or a 1 to 4 carbon alkyl group; —NHR₂ wherein R₂ is hydrogen, tert-butyloxycarbonyl,



wherein R₃ is hydrogen, a lower alkyl group of from 1 to 4 carbon atoms or a phenyl group; X is an alkoxy group of from 1 to 4 carbon atoms; X is —SCN; or an acceptable salt thereof.

4,229,364

SYNTHESIS OF 1,4-BIS(DICYANOMETHYLENE) CYCLOHEXANE

Robert J. Crawford, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 14, 1979, Ser. No. 38,594

Int. Cl.³ C07C 120/00, 121/48

U.S. Cl. 260—464

6 Claims

1. A process for the preparation of 1,4-bis(dicyanomethylene)cyclohexane, comprising the steps:

- I. hydrogenating hydroquinone to provide 1,4-cyclohexanediol;
 - II. oxidizing the 1,4-cyclohexanediol from Step (I) in the presence of a ruthenium catalyst to provide 1,4-cyclohexanedione; and
 - III. condensing the 1,4-cyclohexanedione from Step (II) with two equivalents of malononitrile
- said steps (I), (II) and (III) each being carried out in water as the reaction solvent.

4,229,365

MANUFACTURE OF SUBSTITUTED FLUOROBENZENES

Heinz-Guenter Oeser, Ludwigshafen; Karl-Heinz Koenig, Frankenthal, and Dietrich Mangold, Neckargemuend, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 907,912

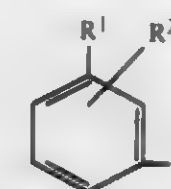
Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724366; May 28, 1977, 2724367

Int. Cl.² C07C 121/52, 79/12

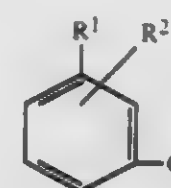
U.S. Cl. 260—465 G

9 Claims

1. A process for the manufacture of a substituted fluorobenzene of the formula



where R¹ is nitro or cyano and R² is hydrogen, an aliphatic radical or halogen, by reacting a substituted chlorobenzene of the formula



where R¹ and R² have the above meanings, with potassium fluoride in the presence of a solvent and in the presence of from 0.001 to 0.1 mole of cesium fluoride per mole of starting material II, or in the absence of cesium fluoride and in the presence of an N,N-disubstituted carboxylic acid amide, nitrobenzene, nitrile, aliphatic sulfone and/or aliphatic sulfoxide as the solvent.

4,229,366

PROCESS FOR HETEROGENEOUS NUCLEOPHILIC SUBSTITUTION REACTIONS

Laszlo Töke; Gabor T. Szabo; Gabor Szabo, all of Budapest; Lajos Nagy, Szentendre, and Istvan Rusznak, Budapest, all of Hungary, assignors to Chinoin Gyógyszer és Vegyszeti Termékek Gyára Rt., Budapest, Hungary

Filed Oct. 20, 1978, Ser. No. 953,164

Claims priority, application Hungary, Oct. 20, 1977, CI 1779

Int. Cl.² C07C 69/14, 120/04

U.S. Cl. 260—465 F

11 Claims

1. A process for carrying out a nucleophilic substitution reaction which comprises the step of conducting the reaction in a heterogeneous system containing a nucleophilic reagent selected from the group consisting of alkali metal, alkali earth metal or ammonium cyanides and carboxylates and a benzyl halide substrate wherein one of said nucleophilic reagent and said benzyl halide substrate is in a solid state and the other is in a dissolved state, a water-immiscible solvent, water, and a phase transfer agent selected from the group consisting of a polymerizate of a lower alkylene glycol, a polymerizate of a lower alkylene glycol with a dilower alkylamine group or 1-piperidyl group terminally substituted thereon, a mixture of a polymerizate of a lower alkylene glycol and a triloweralkyl amine, and mixtures thereof.

4,229,367

PREPARATION OF**TRANS-4-ALKYL-CYANOARYLCYCLOHEXANES**

Bernhard Granwehr, Zofingen, and René Gnehm, Künigoldingen, both of Switzerland, assignors to Siegfried Aktiengesellschaft, Switzerland

Filed May 15, 1979, Ser. No. 39,134

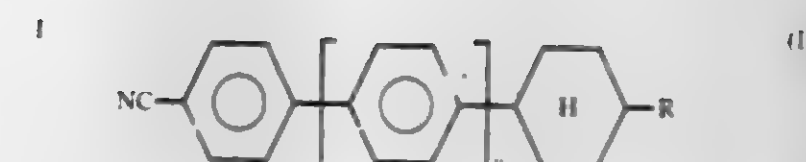
Claims priority, application Fed. Rep. of Germany, May 23, 1978, 2822504

Int. Cl.³ C07C 121/64

U.S. Cl. 260—465 R

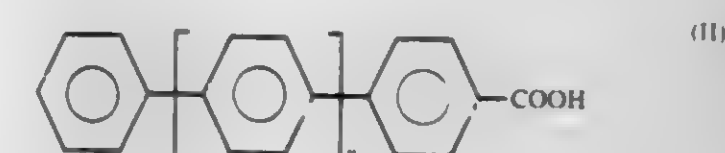
10 Claims

8. Process for the preparation of a stereospecifically substantially pure trans isomer of aryl cyclohexane-4-carboxylic acid alkyl ester useful in the production of a stereospecifically substantially pure trans-4-alkyl-cyanoarylcyclohexane having the formula:



in which R is an unbranched or singly branched alkyl radical of 1 to 12 carbon atoms and n is an integer in the range from 0 to 2, which comprises

(a) hydrogenating an arylcarboxylic acid of the formula:



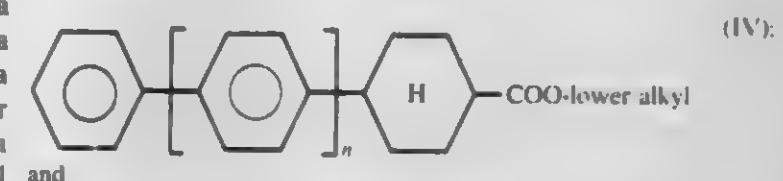
wherein n is the same as in Formula (I) above at a temperature below —20° C. by reaction with a solution of sodium or potassium in anhydrous liquid ammonia as a source for providing solvated electrons in the presence of absolute anhydrous ethanol as a proton donor whereby a mixture of both the corresponding cis and trans isomers of aryl substituted cyclohexa-2,5-diene-4-carboxylic acid is obtained having the formula:



wherein n is the same as in Formula (I) above, and recovering said mixture of arylcyclohexadiene carboxylic acid isomers having the formula (III);

(b) esterifying said mixture of arylcyclohexadiene carboxylic acid isomers by reaction with a lower alkanol whereby a mixture of the corresponding arylcyclohexadiene carboxylic acid alkyl ester isomers is formed.

(c) hydrogenating the mixed ester isomers with molecular hydrogen in anhydrous lower alkanol in the presence of a Pd/activated carbon catalyst whereby a mixture comprising the corresponding cis and trans isomers of 1-aryl substituted cyclohexane-4-carboxylic acid alkyl ester is formed having the formula:



(d) heating the mixture of said cis and trans isomers of the aryl substituted cyclohexane-4-carboxylic acid alkyl ester to its boiling point under reflux under anhydrous conditions under an inert gas in a lower alkanol in the presence of sodium or potassium whereby the cis ester present in the isomeric mixture is isomerized to the corresponding trans alkyl ester and a reaction mixture substantially free from said cis ester isomer is formed, and recovering substantially pure trans alkyl ester from said reaction mixture.

4,229,368

ESTERS AND THIOLESTERS OF UNSATURATED ACIDS

Richard J. Anderson, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zeecon Corporation, Palo Alto, Calif.

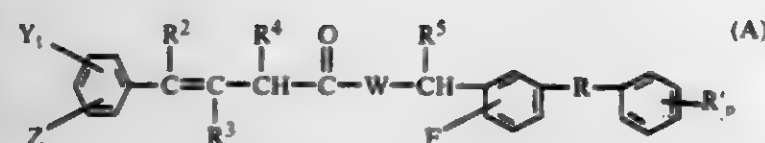
Filed Jun. 4, 1979, Ser. No. 45,037

Int. Cl.³ C07C 69/76, 121/70, 153/11

U.S. Cl. 260—465 D

18 Claims

1. A compound of the following formula (A):



wherein:

R is oxygen, sulfur, methylene or carbonyl;
 R' is hydrogen, fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio;
 each of R² and R³ is independently selected from hydrogen, chloro, fluoro, bromo, lower alkyl, lower alkenyl, lower alkoxy, cycloalkyl, and lower haloalkyl;
 R⁴ is lower alkyl of 2 to 5 carbon atoms, lower alkenyl of 2 to 5 carbon atoms, or cyano;
 R⁵ is hydrogen, cyano, ethynyl or methyl;
 W is oxygen or sulfur;
 t is zero, one, two, three or four;
 Y is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyl, lower alkoxy carbonyl, lower acyloxy, halogen, cyano, nitro, and lower haloalkylthio; and
 Z is independently selected from the values of Y, cycloalkyl, and lower haloalkoxy; or
 Y and Z form a methylenedioxy group.

4,229,369

TRIS (HYDROXYMETHYL) AMINOMETHANE SALT OF 2-MERCAPTOSUCCINIC ACID

Stanley E. Green, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Division of Ser. No. 849,790, Nov. 9, 1977, Pat. No. 4,189,536. This application Apr. 25, 1979, Ser. No. 33,105

Int. Cl.² C07C 149/20

U.S. Cl. 260—501.19

1 Claim

1. The tris(hydroxymethyl)aminomethane salt of 2-mercaptosuccinic acid.

4,229,370

UREYLENE PHENYLENE ANIONIC NAPHTHALENESULFONIC ACIDS

Gerald J. Siuta, Yonkers; Ransom B. Conrow, Pearl River; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

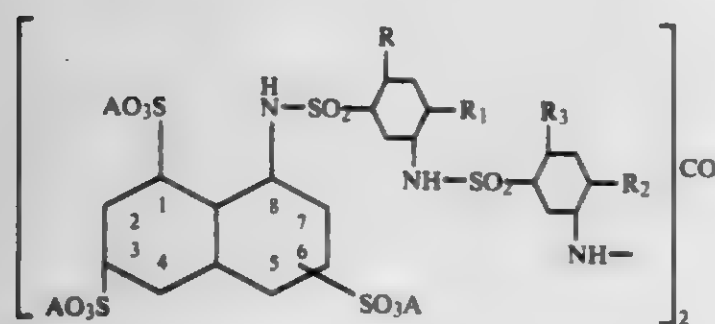
Division of Ser. No. 923,742, Jul. 11, 1978, Pat. No. 4,155,930. This application Mar. 5, 1979, Ser. No. 17,205

Int. Cl.² C07C 143/30

U.S. Cl. 260—506

9 Claims

1. A compound of the formula:



wherein R, R₁, R₂ and R₃ are selected from the group consisting of hydrogen and methyl; and A is a pharmaceutically acceptable salt cation.

4,229,371 UREYLENE NAPHTHALENE SULFONIC ACID INTERMEDIATES

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

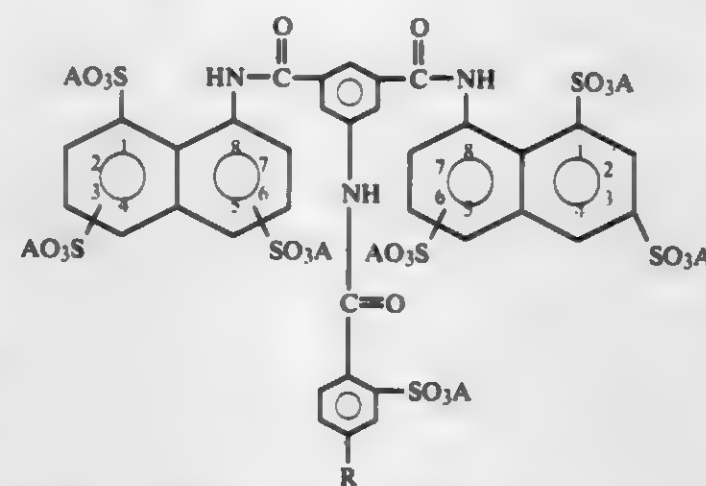
Division of Ser. No. 820,276, Jul. 29, 1977, Pat. No. 4,132,730. This application Oct. 13, 1978, Ser. No. 951,414

Int. Cl.² C07C 143/60

U.S. Cl. 260—507 R

3 Claims

1. A compound of the formula:



wherein R is selected from the group consisting of nitro and amino; and A is selected from the group consisting of alkali metal.

4,229,372

UREYLENE PHENYLENE ANIONIC NAPHTHALENESULFONIC ACIDS

Gerald J. Siuta, Yonkers; Ransom B. Conrow, Pearl River; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

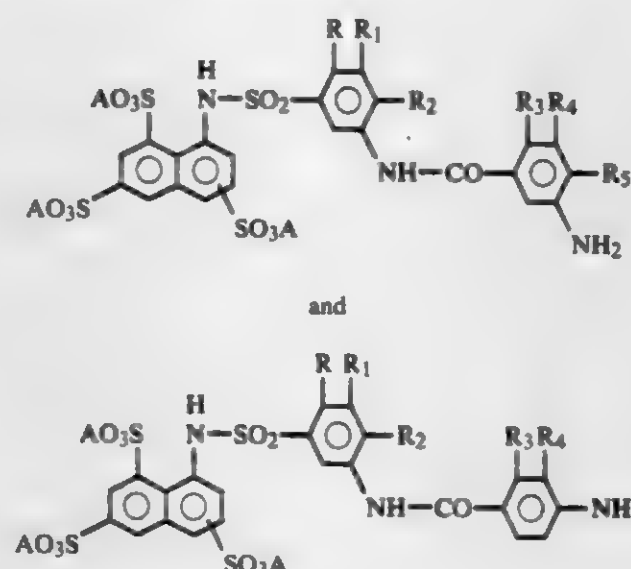
Division of Ser. No. 923,746, Jul. 11, 1978, Pat. No. 4,155,931. This application Mar. 5, 1979, Ser. No. 17,206

Int. Cl.² C07C 143/30

U.S. Cl. 260—507 R

8 Claims

1. A compound of the formulae:



wherein R and R₂ are selected from the group consisting of hydrogen and methyl; R₁ and R₄ are selected from the group consisting of hydrogen and —COOB, wherein B is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; R₃ is selected from the group consisting of hydrogen and —SO₃A, wherein A is a pharmaceutically acceptable salt cation; R₅ is selected from the group consisting of hydrogen and methyl; with the proviso that R₁, R₃ and R₄ may not all be hydrogen; with the second proviso that R₂ and

R₅ may not both be hydrogen; with the third proviso that neither phenyl moiety can contain both —SO₃A and —COOB.

4,229,373

PROCESS FOR PRODUCING DIMETHYL FORMAMIDE

Kozo Sano; Hidetaka Kiga, and Takeo Ikarashi, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,627

Claims priority, application Japan, Jun. 1, 1978, 53-66151

Int. Cl.³ C07C 102/00, 103/36

U.S. Cl. 260—561 R

16 Claims

1. In a process for producing dimethyl formamide by reacting: (a) monomethylamine and trimethylamine, or (b) monomethylamine, trimethylamine and dimethylamine with carbon monoxide in the presence of metallic iron or an iron compound as a catalyst, the improvement comprising adding free water to the reaction system.

4,229,374

AMINE PROCESS USING CU-SN-NA CATALYST

Lynn H. Slauch, and Galeon W. Schoenthal, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 28,030, Apr. 9, 1979, abandoned, which is a continuation of Ser. No. 844,093, Oct. 17, 1977, abandoned. This application Jun. 28, 1979, Ser. No. 53,119

Int. Cl.³ C07C 85/06, 85/08; B01J 23/72

U.S. Cl. 260—563 R

18 Claims

8. In the process for preparing tertiary amines by reacting aliphatic, cycloaliphatic or araliphatic alcohols, aldehydes or ketones having up to twenty-five carbon atoms with ammonia, primary or secondary amines having from one to eight carbon atoms in a reducing atmosphere at a temperature of from about 160° C. to about 350° C. wherein the alkyl moiety of the alcohol, aldehyde or ketone replaces the hydrogen(s) on the ammonia primary or secondary amine, the improvement which comprises carrying of the reaction in the presence of a catalyst comprising from about 0.05 to about 50 percent by weight of copper, from about 0.05 to about 50 percent by weight of tin and from about 0.003 to about 30 percent by weight of an alkali metal supported on a porous carrier.

4,229,375

1-AMINOMETHYLTRICYCLO[4.3.1.1^{2,5}]UNDECANE AND ACID-ADDITION SALTS THEREOF

Koji Aigami; Yoshiaki Inamoto; Motoyoshi Ohsugi; Yoshiaki Fujikura, all of Wakayama, and Naotake Takaishi, Sakura, all of Japan, assignors to Kao Soap Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 920,967, Jun. 30, 1978, abandoned. This application Feb. 28, 1979, Ser. No. 15,916

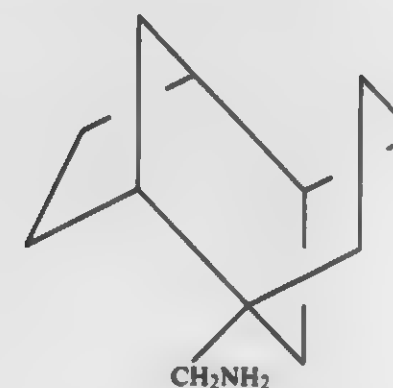
Claims priority, application Japan, Jul. 4, 1977, 52-79752

Int. Cl.² C07C 83/00

U.S. Cl. 260—563 P

2 Claims

1. 1-Aminomethyltricyclo[4.3.1.1^{2,5}]undecane represented by the formula (I) and acid-addition salts thereof.



4,229,376

POLYCYCLIC POLYAMINES

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

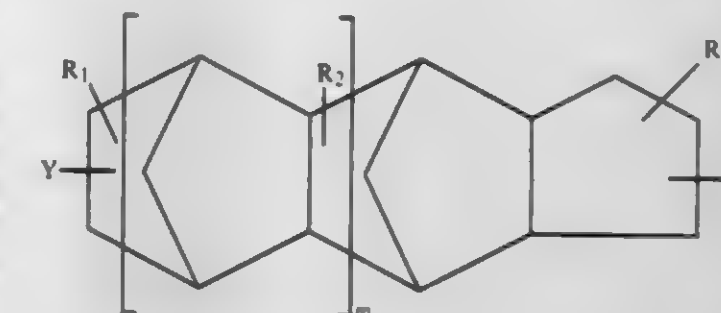
Filed Sep. 10, 1979, Ser. No. 74,368

Int. Cl.² C07C 87/40

U.S. Cl. 260—563 P

10 Claims

1. A polyamine of the formula:



-continued



wherein R_3 and R_4 are hydrogen or fluoro, being the same or different;

wherein g is one, 2, or 3; and
wherein m is one to 5, inclusive;

with the proviso that at least one of R_3 and R_4 is fluoro.

4,229,378

PROCESS FOR THE PRODUCTION OF 1-PHENYL-3-(3-TRIFLUOROMETHYLPHENYL)-2-PROPANONE

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 14, 1979, Ser. No. 38,766

Int. Cl.¹ C07C 45/16

U.S. Cl. 568—313

8 Claims

1. A method of making 1-phenyl-3-(3-trifluoromethylphenyl)-2-propanone comprising the steps of:

- condensing 3-trifluoromethylbenzaldehyde with acetophenone under basic conditions to produce a substituted chalcone,
- epoxidizing said substituted chalcone to produce the corresponding epoxide,
- converting the epoxide to a chlorohydrin,
- hydrogenating said chlorohydrin to produce a diol and subsequently converting said diol into the corresponding alcohol, and
- oxidizing said alcohol to produce 1-phenyl-3-(3-trifluoromethylphenyl)-2-propanone.

4,229,379

PROCESS FOR THE PREPARATION OF BENZALDEHYDE

Friedrich Brühne, and Karl-August Lipper, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 6, 1978, Ser. No. 958,240

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752612

Int. Cl.¹ C07C 45/43

U.S. Cl. 568—437

3 Claims

1. In a process for the preparation of benzaldehyde by the hydrolysis of benzal chloride, the improvement which comprises carrying out the hydrolysis at a temperature of 100° to 200° C. under normal pressure or under increased pressure in the presence of aqueous hydrochloric acid such that the amount of water in the hydrochloric acid is 10 to 25 times the stoichiometric amount required for the saponification of benzal chloride, the hydrochloric acid having a concentration of 10 to 35 percent by weight, the process being carried out in the absence of another catalyst.

4,229,380

PREPARATION OF 3-PHENOXYBENZALDEHYDE

Edgar J. Smutay, and Thomas H. Colby, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 17, 1978, Ser. No. 925,011

Int. Cl.¹ C07C 45/42, 45/43

U.S. Cl. 568—435

2 Claims

1. A process for preparing 3-phenoxybenzaldehyde, which comprises adding a mixture of a 3-phenoxybenzyl halide and a 3-phenoxybenzaldehyde to a mixture of hexamethylenetetramine, water and acetic acid, at a temperature below about 60° C., then heating the resulting mixture over a period of about 30 to 60 minutes to a temperature of about 105° to about 120° C., and maintaining the mixture at that level for a period of from about 3.0 to about 4.5 hours, and separating 3-phenoxybenzaldehyde from the resulting mixture, the amount of water

used being from about 5 to about 16 moles per mole of the mixture of halides, the amount of acetic acid used being at least about 3.5 moles per mole of the mixture of halides and the amount of hexamethylenetetramine used being at least 1.7 moles per mole of the 3-phenoxybenzyl halide.

4,229,381

PROCESS FOR PREPARATION OF ALDEHYDES

Ikuei Ogata; Yasuziro Kawabata, both of Tokyo; Masato Tanaka, Murayami, and Teruyuki Hayashi, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

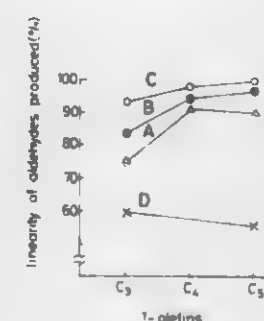
Filed Mar. 9, 1979, Ser. No. 18,879

Claims priority, application Japan, Mar. 9, 1978, 53-26824

Int. Cl.¹ C07C 45/08, 45/10

U.S. Cl. 568—454

22 Claims



1. A process for preparing an aldehyde having 3-21 carbon atoms by hydroformylating an olefin having 2-20 carbon atoms, said process comprising contacting said olefin at 40°-200° C. with an amount of an admixture of hydrogen and carbon monoxide effective for forming said aldehyde and under a pressure effective for forming said aldehyde, the molar ratio of hydrogen to carbon monoxide being 0.1 to 10, in the presence of (1) a platinum catalyst, (2) an assistant catalyst selected from the group consisting of halides of metals selected from Group IVb of the periodic table, and (3) a bidentate ligand, said catalyst, said assistant catalyst and said bidentate ligand being present in amounts effective for forming said aldehyde, said bidentate ligand having the general formula:



wherein:

- R and R' , which may be the same or different, are selected from the group consisting of (i) an alkyl group having 1-12 carbon atoms, (ii) a cycloalkyl group having 6-7 carbon atoms, (iii) an aryl group having 6-10 carbon atoms, and (iv) an aralkyl group having 7-8 carbon atoms;
- X is phosphorus, arsenic or antimony;
- Y is an alkylene group having 1-3 carbon atoms, a phenylene group, a naphthylene group, or an alicyclic group having a 3- to 6-membered ring, with the proviso that the number of atoms constructing the shortest linkage chain of $-Z-Y-Z-$ inclusive of Y is 3 to 5; and
- Z is a methylene group or oxygen.

4,229,382

GLYCEROL PHOSPHITES ESTERIFIED WITH PHENOLCARBOXYLIC ACIDS

Norbert Mayer, Gablingen; Gerhard Pfahler, Augsburg; Franz Scheidl, and Hartmut Wiezer, both of Gersthofen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,785

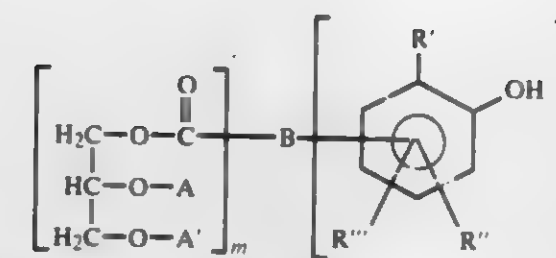
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811667

Int. Cl.¹ C07F 9/145

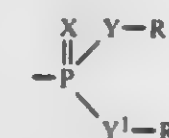
U.S. Cl. 260—930

3 Claims

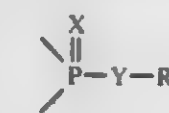
1. Compounds of the formula



in which A and A' each are a monovalent radical of the structure

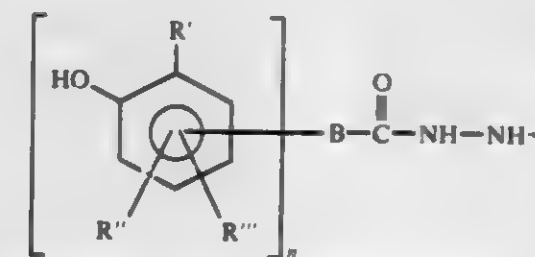
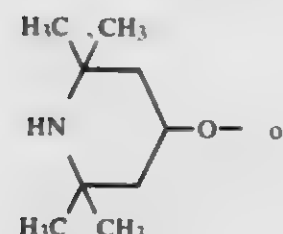


or, together, represent a monovalent radical of the structure



in which radicals

X is oxygen or no substituent;
 Y is $-O-$, $-S-$ or $-NR'''-$ ($R'''=H$ or C_1 to C_{20} -alkyl);
 R is a linear alkyl group having from 12 to 30 carbon atoms or, in the case of $Y=-O-$, alternatively a linear β -hydroxyalkyl group having from 12 to about 30 carbon atoms, or a 3-thia-5-hydroxyalkyl group having from 12 to about 32 carbon atoms, or a mono- or di- C_{12} to C_{30} -fatty acid ester of the dihydroxypropyl radical;
 $-Y^1-R^1$ is either $-Y-R$ or a radical of the structures



R' , R'' and R''' , independently from each other, are H or C_1 to C_4 -alkyl;

B is a chemical bond or (a) the radical of a linear or branched, unsubstituted or phenylsubstituted alkane having from 1 to 20 carbon atoms or (b) of an unsubstituted or C_1 - C_5 -alkylsubstituted cycloaliphatic alkane having from 5 to 12 carbon atoms, or (c) of an unsubstituted or C_1 - C_{12} -alkylsubstituted aromatic hydrocarbon having 6 or 10 carbon atoms, or (d) a $-B'-O-B''$ group, or (e) a



group; B' being a chemical bond or the radical of a linear, branched or cyclic, unsubstituted or phenylsubstituted alkyl having from 1 to 20 carbon atoms or of an unsubstituted or alkylsubstituted phenyl radical, and B'' being a chemical bond

or a linear or branched alkyl radical having from 1 to 6 carbon atoms; and

m and n each are either 1 or 2.

4,229,383

PROCESS FOR THE PREPARATION OF PHOSPHORAMIDATES

Goro Asato, Titusville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

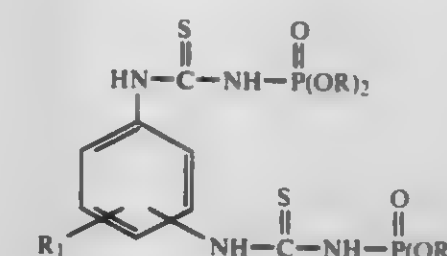
Filed Jun. 11, 1979, Ser. No. 47,543

Int. Cl.¹ C07F 9/24

U.S. Cl. 260—968

5 Claims

1. A method for the preparation of a phosphoramidate having the formula:



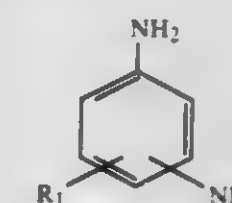
wherein R is alkyl C_1 - C_4 and R_1 is hydrogen, alkyl C_1 - C_4 , halogen or alkoxy C_1 - C_4 , comprising: reacting a chlorophosphate of the formula:



where R is alkyl C_1 - C_4 , with approximately an equimolar amount of an alkali metal thiocyanate or ammonium thiocyanate in the presence of a water-immiscible solvent, at a temperature between about 0° and 35° C., to form a cyanatide of the formula:



wherein R is alkyl C_1 - C_4 , and further reacting at a temperature ranging from about 20° C. to about 40° C. said cyanatide with an aqueous mixture comprising approximately an equimolar amount of a phenylenediamine of the formula:



wherein R_1 is hydrogen, alkyl C_1 - C_4 , halogen or alkoxy C_1 - C_4 , whereby the desired phosphoramidate is formed in good yield and purity.

4,229,384

CARBURETOR WITH STARTING MEANS

Kimiji Karino; Masami Nagano, and Masakichi Momono, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed May 9, 1978, Ser. No. 904,323

Claims priority, application Japan, May 13, 1977, 52-54315

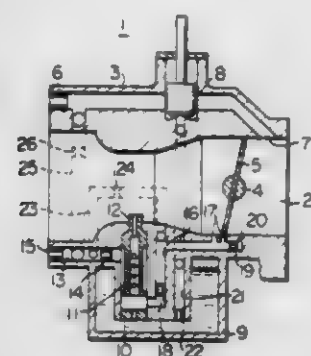
Int. Cl.¹ F02M 1/06

U.S. Cl. 261—39 D

3 Claims

1. A carburetor comprising:
a main suction conduit
a control throttle mounted in said main suction conduit;
a main fuel passage for said main suction conduit;

a main air bleed passage having a main air bleed for said main fuel passage;
 a starting suction conduit;
 a starting fuel passage for supplying a fuel to said starting suction conduit; and
 a valve mounted in said starting suction conduit for controlling intake air;
 wherein the improvement comprises:



means for preventing excess leaning of a fuel-air mixture supplied to an engine when said control throttle is opened prior to completion of engine warm-up comprising:
 a communication passage provided to communicate a portion of said starting suction conduit which is disposed upstream of said valve with a portion of said main air bleed passage which is disposed upstream of said main air bleed.

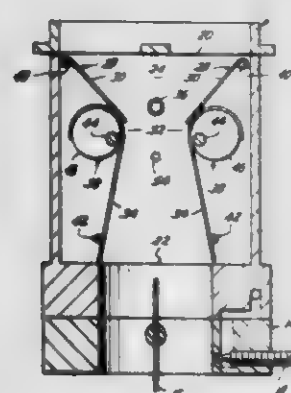
4,229,385

VARIABLE VENTURI CARBURETOR

Russel B. Leibfreid, P.O. Box 207, Highlands, Tex. 77562
 Continuation of Ser. No. 863,175, Dec. 22, 1977, abandoned.
 This application Jun. 1, 1979, Ser. No. 44,675
 Int. Cl.³ F02M 9/10

U.S. Cl. 261-44 H

4 Claims



1. A variable venturi carburetor, comprising a housing having an inlet, an outlet and a passageway therethrough connecting the inlet with the outlet, said passageway including generally parallel end walls, and side walls having first portions which converge from the inlet to a rectangularly shaped throat intermediate the inlet and outlet and second portions which diverge from the throat to the outlet, said first side wall portions being swingable about axes adjacent the inlet and said second side wall portions being swingable about axes adjacent the outlet so as to adjust the size of the throat, a pair of shafts each mounted within the ends of the housing and for rotation about an axis parallel to the axes about which the side wall portions are swingable, and extending within the housing intermediate the outer side of each side wall of the passageway, cams rotatable with the shafts in one direction to move the adjacent ends of the side wall portions toward one another to narrow the throat and in the opposite direction to permit said portions to move away from one another to widen the throat, a port in the end wall of the passageway for sensing pressure

therein downstream but immediately adjacent the throat, means including a chamber having a diaphragm therein and a conduit connecting the chamber with the port so that the diaphragm reciprocates in response to the sensed pressure, means connecting the diaphragm to the ends of the shafts which extend from one end of the housing so as to rotate them in said one direction as the speed of the engine decreases and in said opposite direction as the speed of the engine increases, an elongate fuel nozzle extending parallel to the throat just upstream thereof and providing the only restriction in the passageway, a fuel bowl at the other end of the housing, a conduit connecting the fuel bowl with the nozzle, a valve element movable in the connection of the conduit to the bowl for controlling the flow of fuel from the bowl into the conduit, and means on the end of one of the shafts which extends from the other end of the housing for moving the valve element to a position to increase the flow of fuel as the speed of the engine increases and to permit the valve element to move to a position to decrease the flow of fuel as the speed of the engine decreases.

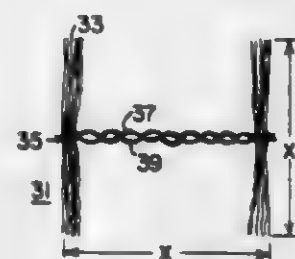
4,229,386

MASS OR HEAT TRANSFER OR SEPARATION OF SOLID OR IMMISCIBLE COMPONENTS FROM FLUIDS

Bernard J. Lerner, 727 Orchard Hill Dr., Pittsburgh, Pa. 15238
 Continuation-in-part of Ser. No. 480,702, Jun. 19, 1974,
 abandoned. This application Aug. 4, 1976, Ser. No. 711,525
 Int. Cl.³ B01F 3/04

U.S. Cl. 261-98

18 Claims



1. A packed column for mass and/or heat transfer between a gas and a liquid flowing counter-current to each other, said column comprising a bed of fibrous bodies, disposed at random in said column, the fibers of each of contiguous of said bodies being interlocked with the fibers of other of said bodies contiguous to it, each of said bodies having an axial support from which a plurality of said fibers, secured to said support, extend radially, whereby the number of fibers per unit volume of said column varies spatially in all directions from point-to-point of said bed throughout said bed, whereby the liquid is dispersed by the region of the bed where the number of fibers per unit volume is high and flows along the fibers from fiber to fiber where the fibers interlock.

16. The method of separating from a fluid undesired components which comprises conducting said fluid including said components through a bed of bodies, each body comprising an axial support from which bristles extend radially and said bodies being positioned in said bed randomly with the bristles of each of contiguous of said bodies interlocked with the bristles of the others of said bodies contiguous to it, dispersing and deflecting said fluid through said bed and along said bristles thus initially causing said undesired components of smaller dimensions to adhere to said bristles and deposit substantially uniformly on said bristles, by said dispersion and deflection of said fluid along said bristles also inducing agglomeration and coalescence of said undesired components to form aggregates of said undesired components, depositing said aggregates on the downstream sides of said bristles, and disposing of the resulting fluid after passing it through said bed.

4,229,387
CARBURETOR FUEL FLOW CONTROL VALVE ASSEMBLY

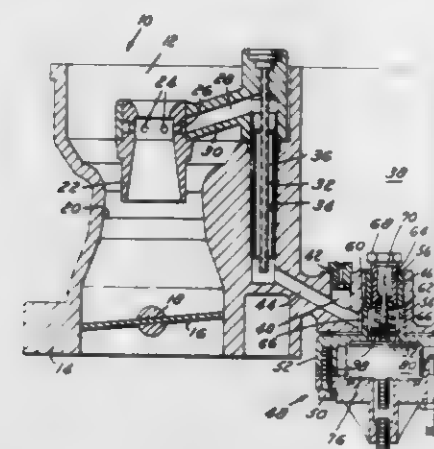
Jerry B. Rogerson, Dearborn, Mich.; Robert F. Connin, Toledo, Ohio, and Harold E. Benedix, Jr., Troy, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1978, Ser. No. 973,049

Int. Cl.³ F02M 7/20

U.S. Cl. 261-66

3 Claims



1. An electro-mechanical cartridge type fuel flow control valve assembly for attachment to the float bowl of a carburetor for projection of the valve portion thereof into the carburetor float bowl, comprising, in combination, a unitary assembly consisting of an outer housing having an upstanding fuel well open at the top to the fuel in the float bowl and having an opening adjacent its other lower end connected to the carburetor main fuel supply line for the flow of fuel therebetween at all times, a removable fuel metering flow control orifice means integral with the well between the openings, a fuel metering needle type valve mounted in the orifice means for an axial transitory movement relative thereto to selectively control fuel flow volume from the bowl to the main supply line, a reversible electrical stepper motor fixedly received in an integral manner within the housing and having a central core surrounding and threadably engaging the needle valve for moving the valve axially in discrete steps as a function of electrical impulse input signals to the stepper motor rotating the motor, and electrical connection means to connect the stepper motor to a selectively operable, selective impulse type source of electrical energy.

4,229,388

LIQUID DISTRIBUTION SYSTEM FOR CONTACT BODIES AND THE LIKE

Håkan Lignell, Handelsvägen, Sweden, assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden

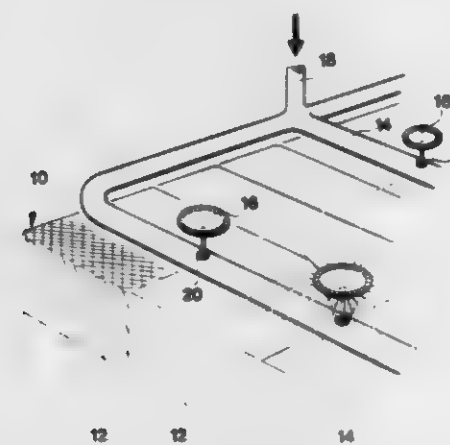
Filed Aug. 22, 1978, Ser. No. 935,862

Claims priority, application Sweden, Aug. 31, 1977, 7709810

Int. Cl.³ B01F 3/04

U.S. Cl. 261-111

7 Claims



1. A spraying system for the distribution of liquid over the

upper surface of a contact bed which is formed of a plurality of thin layers of vertically positioned folded and corrugated sheet material that is adapted to promote contact between said liquid and a gas flowing through said bed, said system comprising in combination with said bed at least one liquid distribution pipe seated on and supported by the upper layers of said bed defined by the upper edges of said layers of sheet material and having at least one liquid flow opening in the top thereof and a deflector plate positioned above said opening and having a generally conical lower surface confronting said liquid flow opening to promote distribution of said liquid over said surface of said bed.

4,229,389

GAS DIFFUSER, AERATOR, OR SPARGER APPARATUS

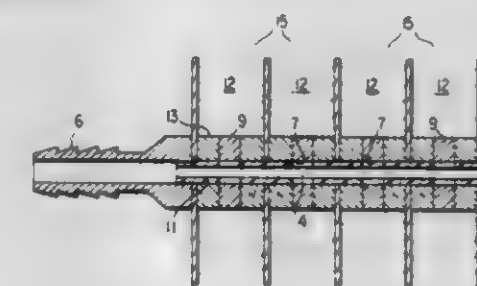
Steven T. Granger, Falls Church, Va., assignor to Thompson Marine Corporation, Arlington, Va.

Filed Mar. 16, 1979, Ser. No. 21,323

Int. Cl.³ B01F 3/04

U.S. Cl. 261-122

10 Claims



1. A diffuser for discharging gas into a body of liquid comprising, in combination, a first gas chamber, inlet means for gas in communication with the interior of said gas chamber, outlet means for gas from said chamber comprising at least one perforation located in an end wall of said chamber opposite said inlet means, a second magnetic chamber defined by spaced apart opposed sidewalls made of material magnetizable or conductive to lines of magnetic flux, magnetic means for inducing magnetic poles in said opposed sidewalls of said magnetic chamber and constructed and arranged to provide essentially horizontal magnetic flux lines across the upper portion of said magnetic chamber, the sidewalls of said magnetic chamber being constructed and arranged so that gas from said gas chamber perforation is discharged into said magnetic chamber between said sidewalls at an open bottom of said magnetic chamber and permitted to rise and leave said chamber through an open top of said chamber when said diffuser apparatus is located beneath the surface of a body of liquid, the sidewalls being further constructed and arranged to permit liquid from said liquid body to enter said magnetic chamber to replace liquid vertically lifted from said magnetic chamber and intersecting said flux lines simultaneously with the gas vertically lifting the liquid and also intersecting said magnetic flux lines.

4,229,390

METHOD OF MAKING CAST ASPHERIC LENSES

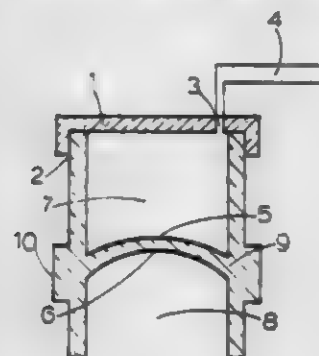
Charles W. Neefe, P.O. Box 429, Big Spring, Tex. 79720
 Continuation-in-part of Ser. No. 5,598, Jan. 22, 1979, Pat. No. 4,188,353. This application Jul. 16, 1979, Ser. No. 58,027
 Int. Cl.³ B29D 11/00

U.S. Cl. 264-1

1 Claim

1. A method of casting and removing from a resinous lens mold an aspheric optical lens of polymeric material, said mold of resinous material having at one end a cup-like molding cavity with a spherical optical surface and at the other end an opening, heating the resinous mold to a working temperature below the glass transition temperature of the resinous mold material, applying sufficient air pressure against the optical surface to change the spherical optical surface to an aspheric optical surface, allowing the resinous mold to cool before

removing the applied air pressure, casting a liquid monomer in the molding cavity, polymerizing the monomer to form a rigid solid, having a first aspheric optical surface adhering to the aspheric optical surface of the resinous mold with sufficient adhesive strength to allow cutting and polishing of a second



optical surface, cutting and polishing on the side opposite the first aspheric optical surface to form a second optical surface while the rigid solid is held by the resinous mold, and then removing the thus formed aspheric lens by applying pressure against the mold to distort the shape of the optical surface of the mold to release the aspheric lens from the mold.

4,229,391

PROCESS FOR THE MANUFACTURING OF COLORED CLAY PRODUCTS

James W. Procter, Southport, England, assignor to Ravenhead Brick Company Limited, Tyne and Ware, England
Filed Dec. 21, 1977, Ser. No. 862,788

Claims priority, application United Kingdom, Dec. 22, 1976, 53596/76

Int. Cl.² C04B 35/56

U.S. Cl. 264—29.5

15 Claims

1. A process for the production of colored, fired, shaped clay products which comprises firing shaped, dried, iron-containing clay objects in a kiln, depositing carbon on and into the resulting fired clay objects by heat treating the said fired objects in a carbon-containing atmosphere to produce a colored, fired, shaped clay product and thereafter cooling said colored product in an atmosphere of nitrogen to prevent loss or reduction of the color produced by the carbon deposition step.

4,229,392

PROCESS OF PRODUCING A FOAMED PLASTIC INSULATED CONDUCTOR AND AN APPARATUS THEREFOR

Takashi Shimano; Yoshimasa Masukata, and Hiromitsu Sato, all of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

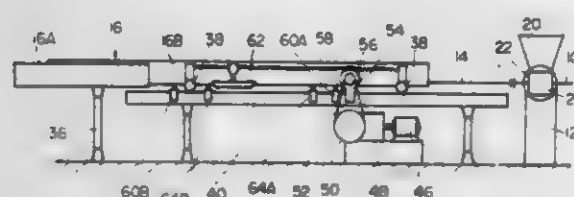
Filed Feb. 21, 1979, Ser. No. 13,215

Claims priority, application Japan, Feb. 28, 1978, 53/22551

Int. Cl.² B29D 27/00

U.S. Cl. 264—40.1

8 Claims



1. A process of producing a foamed plastic insulated conductor comprising the steps of injecting a foaming gas into a molten resin in an extruder; extruding an insulation of said molten resin on a conductor wire travelling through a head of said extruder, said insulation extruded out of said head being foamed to form a foamed plastic insulated conductor; passing said foamed plastic insulated conductor through cooling

trough means including a movable trough which is movable axially of said foamed plastic insulated conductor toward and away from said head of said extruder in a range of movement between first and second limit positions; detecting a value of a capacitance of said foamed plastic insulated conductor by means of a capacitance monitor; and when there is a difference between the detected value and the specified capacitance for said foamed plastic insulated conductor, adjusting the position of said movable trough so as to correct said detected value of said capacitance to that of said specified capacitance thereof, characterized by further comprising the steps of detecting the positions of said movable trough adjacent to the limit positions thereof; adjusting the injection rate of said foaming gas to a selected value so as to return said movable trough toward the middle portion of the range of movement thereof; said rate adjusting step being effected at every selected value thereof, and wherein after adjusting the injection rate of said foaming gas to a selected value, the selected value of the injection rate is retained for a given time period.

4,229,393

METHOD OF PRODUCING SAND-LIME BRICKS WITH A LOW BULK DENSITY

Karlhans Wesche, Lohmühlenstrasse 5a; Peter H. Schubert, Königshügel 34, and Horst W. Glitz, Westend 15, all of Aachen, Fed. Rep. of Germany (5100)

Continuation of Ser. No. 692,747, Jun. 4, 1976, abandoned. This application Aug. 22, 1978, Ser. No. 935,758

Int. Cl.² C04B 35/14

U.S. Cl. 264—42

15 Claims

1. A method for producing a sand-lime building brick of low bulk density comprising the steps of:

- preparing a mixture of sand, lime, water and cement, said mixture consisting essentially of sand, lime and water and also including a relatively small amount of cement as a binder, said cement being present in relatively small amount in relation to the total amount of said sand, lime and water, said cement being present in an amount in excess of 1% by weight to provide said mixture with a green strength of at least 1 kg/cm² subsequent to compaction of said mixture;
- compacting said mixture in a mold at a pressure of less than 150 kg/cm² to form green brick;
- removing said green brick from said mold;
- transporting said green brick to an autoclave; and
- curing said green brick in the autoclave to form said building brick.

4,229,394

MULTI-LAYER PRODUCTS

Ole-Bendt Rasmussen, Topstykke 7, 3460 Birkerød, Denmark
Division of Ser. No. 607,695, Aug. 25, 1975, Pat. No. 4,125,581, which is a continuation of Ser. No. 421,270, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 75,229, Sep. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 871,688, Nov. 19, 1969, abandoned, which is a continuation of Ser. No. 694,433, Dec. 29, 1967, abandoned, and Ser. No. 694,660, Dec. 29, 1967, Pat. No. 3,547,761, and Ser. No. 751,205, Aug. 8, 1968, abandoned, and Ser. No. 757,237, Aug. 8, 1968, abandoned. This application Jul. 20, 1978, Ser. No. 926,244
Claims priority, application United Kingdom, Dec. 30, 1966, 58429/66; Aug. 9, 1967, 36531/67

The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.

Int. Cl.² B32B 31/30

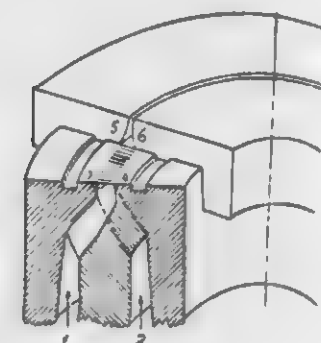
U.S. Cl. 264—46.1

14 Claims

1. A method of producing fibrous products, including single fibers, yarn and fibrous webs, of improved fineness from extruded sheet material which comprises the steps of extruding in the form of a sheet-like, multi-layer composite stream a plurality of extrudable materials, at least one of which is a synthetic thermoplastic fiber-forming polymer and another of which is

expandable or swellable, said layers extending generally parallel to the faces of said stream, some of such layers containing said fiber-forming polymer and others said expandable or swellable extrudable material with the different layers being interspersed in said composite stream, solidifying said compos-

earlier than immediately before completing said injection step for expanding the injected foamable resin material to fill said mold cavity; and
(e) cooling said mold means at least during said injection step.



ite stream into a multi-layer sheet, subjecting the multi-layer sheet not earlier than during such solidification to a swelling or expanding treatment to aid in its mechanical disruption, and then mechanically disrupting the swollen or expanded sheet to produce a fibrous product of increased fineness.

4,229,395

METHOD FOR INJECTION MOLDING THICK-WALLED ARTICLES

Tadashi Nagumo, Kamakura; Akio Yasuie, Yokohama, and Hiroshi Kataoka, Tokyo, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

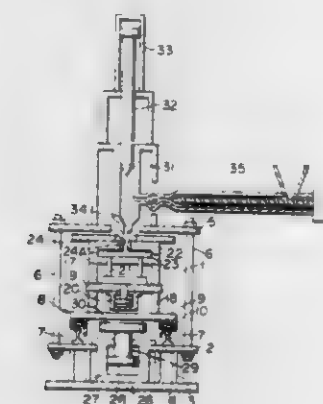
Continuation-in-part of Ser. No. 776,886, Mar. 11, 1977, abandoned. This application Jun. 23, 1978, Ser. No. 918,694

Claims priority, application Japan, Mar. 13, 1976, 51-27447; May 17, 1978, 53-57513

Int. Cl.² B29D 27/00; B29F 1/06

U.S. Cl. 264—51

3 Claims



1. A method for the production of foamed articles having an average wall thickness of between 3.5 mm and 100 mm by injecting a molten synthetic resin material with a foaming agent contained therein from an injection cylinder means into a cavity of a mold means, said method comprising the steps of:

- clamping said mold means by a relatively low clamping force having a coefficient in the range of between 10 and 40, said coefficient being represented as a ratio of clamping force (ton) to maximum injection shot volume (liter);
- pre-pressurizing the cavity of said mold means by supplying thereto a gas which has such a pressure at least above 3 kg per square centimeter so that the diffusion of the blowing gas produced from said foaming agent will be substantially prevented;
- injecting an amount of molten synthetic resin material that is insufficient to fill the cavity and which contains a foaming agent in an amount about 0.05% by weight to about 5% by weight into said pre-pressurized cavity from the injection cylinder means for a predetermined time in the range of between 3 and 20 seconds;
- releasing said pressurized gas from said mold cavity no

4,229,396

METHOD OF EXTRUDING THERMOPLASTIC RESIN FOAMS HAVING ENLARGED CELL-SIZES

Kyung W. Suh, Granville, Ohio, and Charles R. Amos, Auburn, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 21, 1979, Ser. No. 22,579

Int. Cl.² B29D 27/00

U.S. Cl. 264—53

6 Claims

1. A process for the preparation of a synthetic resinous thermoplastic extruded foam wherein a heat-plastified synthetic resinous gel containing a volatile fluid foaming agent, the gel being at a foaming temperature, the gel at the foaming temperature being expressed from a die into a region of reduced pressure, the reduced pressure being sufficient to permit the gel to expand into cellular form and cooling the gel to a temperature at which the gel is self-supporting, the improvement which comprises incorporating within the heat-plastified unfoamed gel, a cell-size enlarging agent, the cell-size enlarging agent being an organic compound which is liquid at the foaming temperature and atmospheric pressure and generally soluble in the gel at the foaming temperature, the cell-size enlarging agent being present in an amount of from about 0.01 to 5 parts by weight per hundred based on the weight of the thermoplastic resin in the foamable gel.

4,229,397

METHOD FOR FORMING FIBER-REINFORCED COMPOSITE MATERIAL

Kenji Fukuta, Yokohama; Ryuzo Ono-Oka, Kanagawa; Masatoshi Yoshida; Kazuhisa Saito, both of Mishima, and Hiroyuki Kosuda, Numazu, all of Japan, assignors to Agency of Industrial Science & Technology and Toho Beslon Co., Ltd., both of Tokyo, Japan

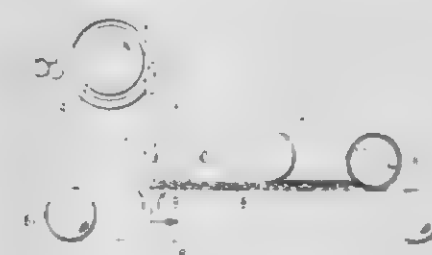
Filed Dec. 12, 1977, Ser. No. 859,634

Claims priority, application Japan, Dec. 10, 1976, 51-148561

Int. Cl.² D04H 1/16

U.S. Cl. 264—113

26 Claims



1. A method for producing a uniformly mixed fibrous mat, comprising:

- supplying to a rotating rotor which has projections on the surface thereof
 - at least one continuous high tensile modulus reinforcing fibrous material, with
 - at least one pre-cut thermoplastic fibrous material,
 - wherein said thermoplastic fibrous material has a lower melting or softening point than the temperature at which the reinforcing fibrous material melts or is damaged, and said reinforcing fibrous material has a lower ultimate elongation than the thermoplastic fibrous material,
- thereby cut said continuous reinforcing fibrous material, and pluck said pre-cut thermoplastic fibrous material,
- dispersing said reinforcing fibrous material and said

thermoplastic fibrous material into an air flow in a slit by centrifugal force and by the air flow produced by the rotation of the rotor, to thereby mix said fibrous materials uniformly.

(c) collecting the mixed fibrous materials together on a continuously moving net and applying a vacuum beneath the net to yield said uniformly mixed fibrous mat.

4,229,398

METHOD AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF A BLOCK OF RECONSTITUTED FOAM MATERIAL

Richard G. Harvey, Buckinghamshire, England, assignor to Dunlop Limited, London, England

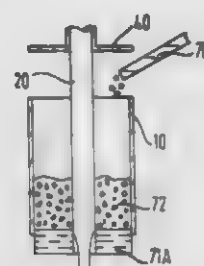
Filed Feb. 23, 1979, Ser. No. 14,616

Claims priority, application United Kingdom, Mar. 3, 1978, 1483/78

Int. Cl.² B29C 29/00; B29D 27/00

U.S. Cl. 264—113

7 Claims



1. A method for the continuous stepwise production of a cylindrical block of reconstituted foam material from foam crumb comprising:

- Placing in an open-ended moulding cavity a mixture of foam crumb and a binder compatible with said mixture;
- Compressing the mixture to a height of about 1 foot;
- Heating the mixture to cure the binder and form a solid product layer;
- Lowering said solid product layer from the moulding cavity and supporting said solid product layer relative to the cavity to provide a solid product layer surface at one end of said cavity for the reception of and binding to of a further mixture of foam crumb and binder;
- Placing a further mixture of foam crumb and binder on the solid product layer surface;
- Repeating steps (b) (c) (d) and (e) to create successively connected solid product layers until a block of the required length is obtained.

4,229,399

PROCESS FOR PELLETIZING AND NEUTRALIZING SOLID MIXTURES OF METAL CHLORIDES

Donald G. Cole; Achim Hartmann, both of Pulheim; Achim M. Kulling, and Hermann B. Trüb, both of Leverkusen, all of Fed. Rep. of Germany, assignors to NL Industries, Inc., New York, N.Y.

Filed Aug. 10, 1978, Ser. No. 932,551

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736622

Int. Cl.³ C09C 1/28

U.S. Cl. 264—117

5 Claims

1. A process for treating a solid mixture containing chlorides of iron, vanadium and chromium, obtained in the chlorination of titaniferous raw materials which comprises forming a granulate by mixing in a dry state said solid mixture with an alkaline reacting substance selected from the group consisting of calcium oxide, calcium hydroxide, calcium carbonate, and mixtures thereof, whereby the chlorides of vanadium and chromium form compounds substantially insoluble in water, and thereafter granulating the resulting mixture by adding water at

a quantity of 35 to 70 percent by weight, and forming pellets thereof.

4,229,400

MOLD COMPONENT COMPRISING A MAT IMPREGNATED WITH A REACTION PRODUCT OF AN AMINOPLAST RESIN AND A POLYALKYLENE GLYCOL

William A. Laurie, Winona, Minn., assignor to Fiberite Corporation, Winona, Minn.

Filed Sep. 18, 1978, Ser. No. 943,133

Int. Cl.² B29C 1/02; B32B 27/42; B41D 3/00

U.S. Cl. 264—225

19 Claims

1. The method for making printing plates comprising, forming a carrier containing a reactive resin comprising the reaction product of an aminoplast and a resin selected from the group consisting of polyethylene glycol and polypropylene glycol under heat and pressure against a master printing plate so as to produce a cured negative of said master printing plate, inserting said cured negative into a molding device so as to provide a mold insert therein, and flowing a plastic material against said molded negative insert and curing said plastic to produce a copy of said master printing plate.

6. A negative printing plate against which a plastic material may be molded under heat and pressure to produce a positive printing plate comprising a reaction product of an aminoplast and a resin selected from the group consisting of polyethylene glycol and polypropylene glycol in a cured condition on a carrier therefor.

8. A printing plate matrix capable of being shaped under heat and pressure and then being used as a part of a mold for imparting a portion of its shape to a plastic material under heat and pressure comprising,

a carrier having a porous characteristic, and a curable resin carried by said carrier capable of receiving very sharply defined impressions upon molding and being cured, said surface being able to be used as a mold against which another plastic material may be shaped, said resin including a reaction product of the components of an aminoplast resin and resin selected from the group consisting of polyethylene glycol and polypropylene glycol.

4,229,401

METHOD OF MAKING GOLF BALLS

Terence W. Pocklington, Tupelo, Miss., assignor to Colgate-Palmolive Company, New York, N.Y.

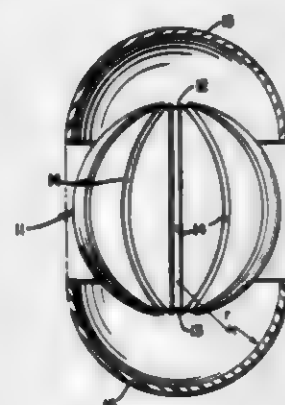
Division of Ser. No. 919,381, Jun. 26, 1978, Pat. No. 4,173,345.

This application May 29, 1979, Ser. No. 43,014

Int. Cl.² B29C 27/18

U.S. Cl. 264—248

5 Claims



1. A method of making a golf ball comprising the steps of providing a preformed homogeneous spherical core of elastomeric material having a multiplicity of relatively shallow surface channels all lying on the paths of great circles passing

through opposite poles on said core surface and compression molding preformed hemispherical cover shells of thermoplastic or thermoformable material upon and about said core under heat and pressure, said shells being substantially centered with said poles as they are brought together to integrally weld around a generally transverse equatorial seam.

4,229,403

METHOD OF ASSEMBLING A FAULT LIMITER BY MOLDING A RIGID HOUSING ABOUT A NON-RIGID SUBASSEMBLY

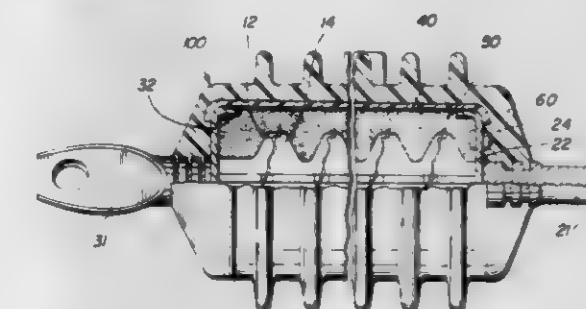
John E. Guleserian, Prairie View, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Feb. 1, 1979, Ser. No. 8,424

Int. Cl.¹ B29C 6/04

U.S. Cl. 264—263

8 Claims



4,229,402

FIBER OPTIC CONNECTION METHOD

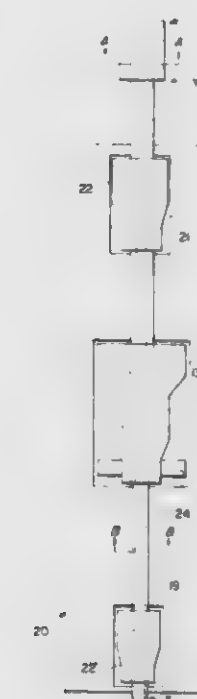
Carl A. Villarruel, Alexandria, and Thomas G. Giallorenzi, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 18, 1978, Ser. No. 925,727

Int. Cl.³ B29H 9/12; B32B 31/06

U.S. Cl. 264—262

1 Claim

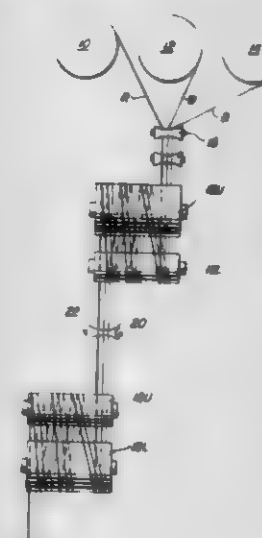


1. A method for attaching a connector to an optical fiber having a plastic-covered optical core, said connector having an inside diameter which is slightly smaller than the diameter of the covered core of the fiber and slightly greater than the diameter of the core alone, said method comprising the steps of:

- forming a section of fiber containing only the fiber core;
- forming an adjoining section of fiber containing the core and its covering;
- threading the core of the fiber through said connector until the fiber is stopped at the covered section;
- placing the fiber and connector in an attachment means so that the fiber is retained centrally of the connector and in a substantially straight position;
- heating the connector so that the covering is softened;
- extruding the softened covered fiber through the connector so that the softened covering extends at least to the far end of the connector opposite to that at which it was stopped and fills the space between the core and the connector wall;
- allowing the covering to cool off;
- cutting off the fiber flush with the far end of the connector.

1. A method for cold drawing a plurality of yarns comprising:

- withdrawing said yarns from an equal number of supply sources by winding said yarns about driven feed roll means in parallel spaced relationship with one another and in a predetermined order;
- advancing said yarns in a single, normal plane deter-



mined by the surface of said feed roll means and in said predetermined order;

- (c) urging said yarns into a concave arc whose tangent at the midpoint of said arc forms an angle of approximately 45° with said normal plane, whereby said yarns are urged into substantial contiguous side-by-side relationship and maintained in said predetermined order; and
- (d) stretching said yarns by winding said yarns about draw roll means, driven at a speed greater than the speed of said feed roll means, in said contiguous side-by-side relationship and in said predetermined order.

4,229,405

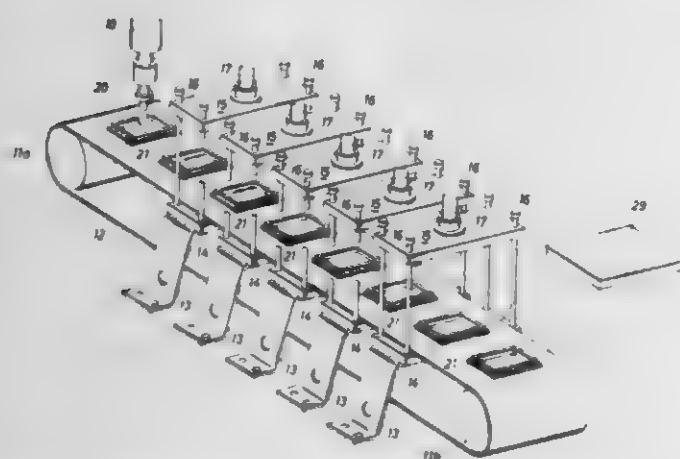
CONTINUOUS METHOD FOR FORMING THERMOPLASTIC SLAB STOCK

Paul M. Coffman, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 11, 1978, Ser. No. 968,250
Int. Cl.² B29C 3/00

U.S. Cl. 264—313

5 Claims



1. A continuous method for forming thermoplastic polymer slabs which comprises:

providing a multiplicity of deformable heat insulating mold rings; a polymer melt dispensing means; a continuous heat-transmitting movable belt; multiple compression and heat exchange stations, each comprising a lower platen adapted to support a mold ring resting on said belt and an upper platen adapted to place said mold ring and its contents under mechanical pressure; and

forming said polymer slabs by moving said belt at staged intervals to successively:

- fill a mold ring from said melt dispensing means while the ring is resting on said belt;
- place said filled mold ring under compression between heated platens at at least one station;
- subsequently placing said filled mold ring under compression between cooled platens at a multiplicity of cooling stations; and
- removing the cooled molded article, sufficiently solidified to maintain its shape, from the mold after it leaves the last of said cooling stations.

4,229,406

METHOD FOR PREPARING AN EMBOSSED FOAMED LATEX SHEET

Richard Pollock, Graugemouth, Scotland, assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 525,796, Nov. 21, 1974, abandoned. This application Jan. 22, 1979, Ser. No. 5,109
Int. Cl.² B29D 27/00

U.S. Cl. 264—321

3 Claims

1. A method for preparing embossed foam latex sheet consisting of a foamed styrene-butadiene elastomer latex having dispersed therein from 25 to 100 parts per hundred parts of latex solids of a powdered particulate solid having a softening temperature in the range 90°–200° C., said method comprising:

heating said foamed latex sheet to a temperature sufficient to soften the particulate solid; and

contacting said heated foamed latex sheet with a cold embossing roll to depress the foam and solidify the particulate solid.

4,229,407

TEAR PATH PRODUCTS, METHOD AND APPARATUS

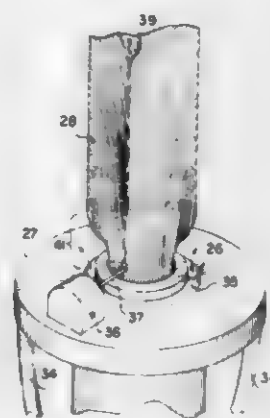
Brian W. Craig, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 23, 1979, Ser. No. 14,702

Int. Cl.² B29F 3/08

U.S. Cl. 264—519

12 Claims



1. A method of forming a tear path within a molded material, comprising:

selecting a material having molecular chains capable of being oriented with respect to each other as the material is solidifying;

shaping said material into a solidified form, said shaping including cooling said material and reorienting said molecular chains, said shaping step including initially orienting said molecular chains generally axially and said reorienting step including changing said generally axial orientation; and

treating a predetermined location on said solidifying material during such shaping, said treating step including dissipating heat at a rate faster than the rate at which said material is cooling, said heat dissipating rate being fast enough to significantly reduce said reorienting of the molecular chains during the shaping step to establish a tear path at said predetermined location, said treating step including rapidly extracting heat from said solidifying material when it is at a temperature between its frost point and the temperature at which the material is molten, said heat dissipating step including touching the surface of said material with a highly thermally conductive narrow contact area.

4,229,408

METHOD AND COMPOSITION FOR TOILET HOLDING TANK

James D. Bennett, Arlington; Jimmy R. Coolidge, and Clifford E. Murphy, both of Fort Worth, all of Tex., assignors to CBM Enterprises, Inc., Arlington, Tex.

Filed Apr. 30, 1979, Ser. No. 34,608

Int. Cl.² A61L 13/02, 1/00, 13/00

U.S. Cl. 422—5

11 Claims

1. A method of controlling odor emission from a toilet system in a toilet holding tank for a prolonged interval of 48 hours and more consisting essentially of adding to the toilet holding tank an effective amount of an additive composition consisting essentially of:

- a quaternary compound selected from the group consisting of alkyl dimethyl benzyl ammonium chlorides and alkyl diethyl benzyl ammonium chlorides, where the alkyl group contains 12 to 18 carbon atoms, inclusive;
- formaldehyde; and

c. an acid buffer in sufficient concentration to buffer said additive composition in the toilet system to a pH in the range of 4–5;

said effective amount being that which is sufficient to maintain a concentration of at least one hundred parts per million of said additive composition throughout the prolonged interval.

4,229,409

METHOD OF INHIBITING CORROSION OF ALUMINUM WITH

2-PHOSPHONO-BUTANE-1,2,4-TRICARBOXYLIC ACID

Rolf Scharf, Monheim; Hans-Joachim Schliessler, Haan, and Friedrich Staschkiewicz, Monheim-Baumberg, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 862,676, Dec. 21, 1977, abandoned. This application Nov. 2, 1978, Ser. No. 956,897
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658475

Int. Cl.² C23F 11/06, 11/16

U.S. Cl. 422—13

6 Claims

1. A method for inhibiting the corrosion of aluminum in contact with aqueous alkaline solutions having a pH at 20° C. of from 10 to 14 consisting essentially of adding to the aqueous alkaline solution in contact with aluminum from 0.05 to 0.4 gm per liter of a corrosion inhibitor selected from the group consisting of 2-phosphono-butane-1,2,4-tricarboxylic acid and water-soluble salts thereof.

4,229,410

BACTERIOSTATIC DEODORANT WATER COLORING TOILET ELEMENT

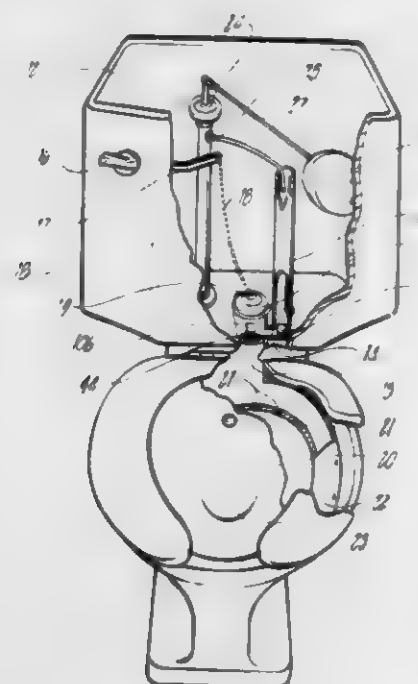
Carl M. Kost, P.O. Box 1777, Troy, Mich. 48064

Filed Feb. 13, 1978, Ser. No. 877,373

Int. Cl.² A61L 9/00, 13/00; E03D 9/02

U.S. Cl. 422—28

4 Claims



1. A method of disinfecting the water in a toilet, said toilet having a water tank, a bowl, and a drain connecting said tank to said bowl, water passing through said drain during flushing only, said drain having an upright drain tube through which water passes during flushing only, said method comprising the steps of:

disposing in said drain a formed, water soluble toilet element comprising a binding agent and an effective amount of bacteriostatic agent;

positioning in said drain a mesh drain basket, said mesh basket being adapted to allow water with dissolved toilet element to pass into said bowl but to otherwise prevent said formed toilet element from passing into said bowl,

whereby the water passing into said bowl is treated but said water soluble element is conserved by dispersing only during flushing; and

introducing said bacteriostatic agent into said bowl during flushing only.

4,229,411

PROCESS AND APPARATUS FOR THE ABSORPTIVE REMOVAL OF POLLUTANTS FROM WASTE GASES

Theodor Kisters, and Alfred Vogler, both of Krefeld, Fed. Rep. of Germany, assignors to Babcock-BSH Aktiengesellschaft vormals Büttner-Schilde-Haas AG, Krefeld-Uerdingen, Fed. Rep. of Germany

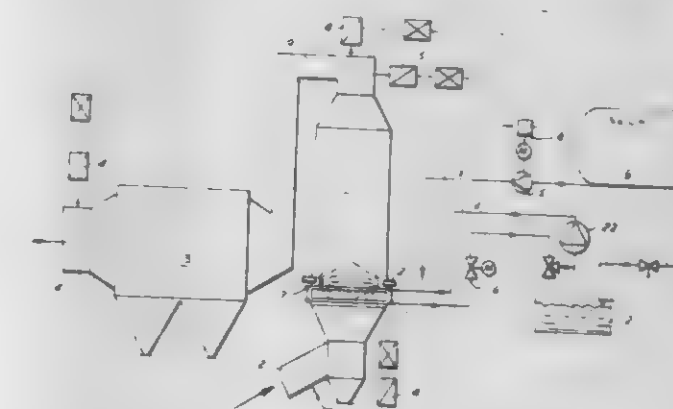
Division of Ser. No. 939,373, Sep. 5, 1978. This application Apr. 10, 1979, Ser. No. 28,927

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739509

Int. Cl.² G01N 21/00; G05D 7/00, 23/00; B01D 50/00

U.S. Cl. 422—62

7 Claims



1. An apparatus for purging by absorption pollutants from waste gases, which comprises: absorption vessel means; inlet duct means communicating with the bottom of said absorption vessel means; means for passing a dispersion or aqueous suspension or solution of a neutralizing agent and additional fresh water into said absorption vessel means; recycle duct means for recycling condensed or excess water from said absorption vessel means into said passing means; an electrofilter disposed following said absorption vessel means; additional duct means communicating with the top of and connecting said absorption vessel means with said electrofilter; means connected to said inlet duct means, for automatically and continuously measuring the concentration of pollutants in the waste gas and adjusting the amount of neutralizing agent according to the measurements; discharge duct means for the release of purified gas from said electrofilter; means connected to said additional duct means; for automatically and continuously measuring the temperature of the gas discharged from said absorption vessel means, and valve means disposed in said recycle duct means, controlled by said temperature measuring means, so as to adjust the amount of recycled water and thereby maintain a constant temperature in said absorption vessel means.

4,229,412

APPARATUS FOR THE DETERMINATION OF BOND FORMS OF GASES

Kurt Orth; Roland Prumbaum, both of Ratingen, and Peter Berger, Düsseldorf-Benrath, all of Fed. Rep. of Germany, assignors to Ströhlein GmbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,004

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755587

Int. Cl.² G01N 31/12, 33/20

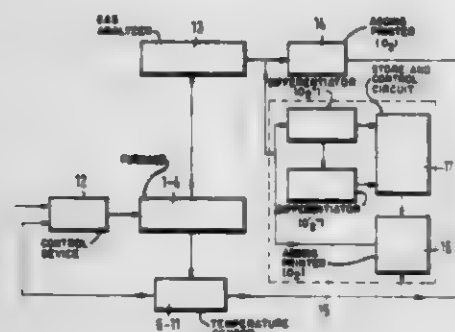
U.S. Cl. 422—80

7 Claims

1. Apparatus for the determination of bond forms of gases,

such as a sample containing oxygen or nitrogen in solid or liquid small metal samples e.g. from 0.8 to 1.2 g comprising:

- a furnace for heating the sample continuously to elevate the temperature thereof to a temperature of about 3000° C. maximum in less than five minutes to release gases from the sample, said furnace comprising a control device for presetting a constant heating rate of the sample for the constant heating thereof at a value between 20° C./sec and 350° C./sec;
- a gas analyzer operatively coupled to said furnace from which the gas released during heating is supplied continuously for picking up the gas released during heating by said furnace, said gas analyzer indicating as a function of this supplied gas the quantities of the gas released in equal periods of time, and
- a computer operatively coupled to said furnace and to said gas analyzer,



said gas analyzer providing as an output, a measured value sequence in the form of an oxide spectrum curve or Evologram characteristic thereof for the gas quantities released per unit time to said computer for the determination of the bond forms of the gases contained in the sample,

said computer detecting the desired values from the characteristic curve and forming a first derivative curve and a second derivative curve from the said measured value curve or Evologram corresponding to the entered measured value sequence, for forming subtotals of these measured values between successive points in a minimum position and/or points which occur as a second inflection point immediately after a first inflection point on the measured value curve or, these positions, minima, inflection point after inflection point being identified from the first and second derivatives of the measured value curve by zero indications and extreme positions.

4,229,413

ADJUSTABLE DEVICE FOR DISTRIBUTING LIQUID SAMPLES

Eric Marteau d'Autry, 69-72 rue Gambetta, 95 Villiers-le-Bel, France

Filed Apr. 21, 1978, Ser. No. 898,548

Claims priority, application France, Apr. 27, 1977, 77 12696

Int. Cl. B01L 3/02; G01N 1/14

U.S. Cl. 422-100

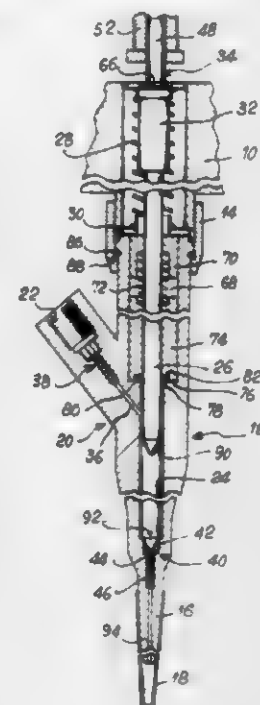
16 Claims

1. An adjustable device for distributing liquid samples, comprising, in combination:

- a casing incorporating a mechanism for adjusting the volume of liquid samples to be distributed, a volume indicator unit coupled with said mechanism;
- a lower tip member terminating in a tapering end, said casing including a lateral supply tube, provided with a first non-return valve and means for allowing tight holding of a reservoir containing said liquid sample to be distributed;
- a measuring chamber arranged in said tip member for receiving, with a slight clearance, a calibrated piston reciprocally mounted in said chamber and in the lower part of the casing, said piston being elastically urged upwardly, the upper end of said piston cooperates with a stop for limiting upward stroke, said piston being adjustable in position

by means of said adjusting mechanism, said chamber communicating near its upper end with an outside medium with the interposition of a second non-return valve;

- a control shaft including a push button at the upper end thereof and the lower end of said control shaft cooperates with said upper end of the piston, said shaft including retaining means for preventing upward escape of said shaft; and
- means for ensuring the tight holding of the measuring chamber, near its upper end and above the inlet of said lateral



4,229,414

ADHERENCE COLUMN

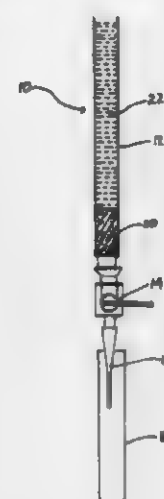
Vera J. Stecher, and George L. China, both of Dobbs Ferry, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,790

Int. Cl. G01N 31/06, 33/16, 21/24

U.S. Cl. 422-101

3 Claims



1. An assembly for determining neutrophil adherence comprising a column, closure and delivery means positioned at the

bottom end thereof and nylon fibers packed into said column approximately adjacent said closure means, said fibers being packed in said column in a density of from about 200-350 g/l.

4,229,415

INDUSTRIAL DEODORIZER

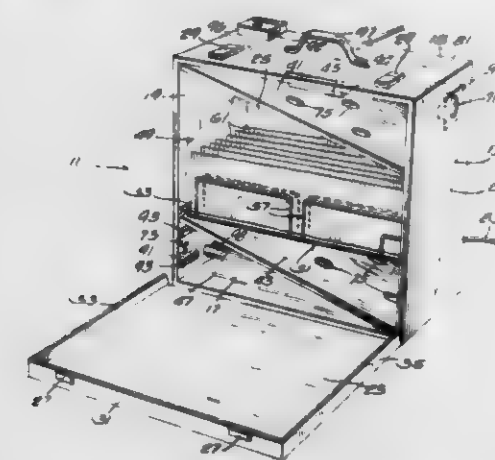
John D. Bryson, Milwaukee, Wis., assignor to Will Ross, Inc., Milwaukee, Wis.

Filed Jun. 12, 1978, Ser. No. 914,422

Int. Cl. A01M 19/00; A61L 9/01, 9/02

U.S. Cl. 422-109

20 Claims



1. A vapor dispenser comprising a rectangular housing including interconnected top and bottom walls, opposed front and back walls, opposed first and second end walls, door means in said front wall for providing an access opening which can be opened and closed, a first partition extending in spaced relation to said top wall and between said end walls and between said front and back walls to define an air intake chamber between said first partition and said top wall, air inlet means communicating with said air inlet chamber, a second partition extending in spaced relation to said bottom wall and in generally parallel relation to said first partition and between said end walls and between said front and back walls to define an air outlet chamber between said second partition and said bottom wall and to define a central chamber between said first and second partitions, air outlet means communicating with said air outlet chamber, aperture means in said first and second partitions for affording air flow from said air inlet chamber to said central chamber and from said central chamber to said air outlet chamber, at least one tray member, means on said first and second end walls for horizontally supporting said tray member in said central chamber and for facilitating at least partial withdrawal of said tray member through said front wall access opening and means on said tray member for removably holding a plurality of relatively thin rectangular envelopes which contain a vaporizable substance to be dispensed as a vapor into the flow of air and which are arranged in parallel vertical relation to each other to permit air flow past said envelopes from said air inlet chamber to said air outlet chamber.

4,229,416

DUAL REACTOR APPARATUS FOR POLYMERIZING ETHYLENE

Charles R. Donaldson, and Claude J. Stiles, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,801

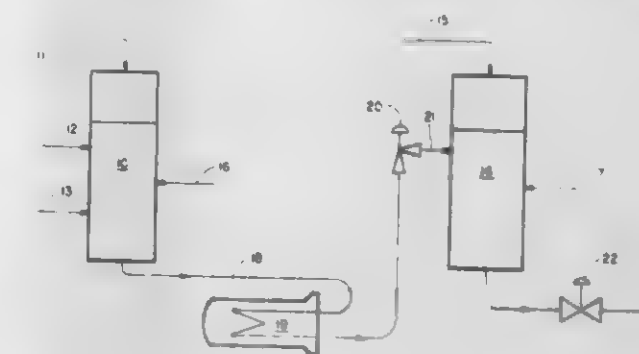
Int. Cl. B01J 1/00

U.S. Cl. 422-134

3 Claims

1. In a two stage, flow reactor system for polymerizing, e.g., ethylene, comprising a first reactor for operation at a high pressure, a second reactor for operation at a pressure lower than said first reactor, and an intercooler; a first conduit connecting said first reactor to said intercooler; a second conduit connecting said intercooler to said second reactor; and a pressure reducing valve located in said flow system between said

first and said second reactors for reducing the operating pressure of the system between said first and said second reactors,



the improvement comprising said pressure reducing valve being located in said second conduit.

4,229,417

GAS-LIQUID CONTACTING APPARATUS

Toshio Kanai, Hiroshi Yanagioka, both of Yokohama; Hideo Idemura, Tokyo; Hiroshi Sugiyama, Yokohama; Yoshio Kogawa, Fujisawa; Michihiro Yoshida, Tokyo; Mitsugu Kitamura, Yokohama, and Teruo Sugiyama, Kawasaki, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Kanagawa, Japan

Division of Ser. No. 772,779, Feb. 28, 1977, Pat. No. 4,156,712.

This application Jul. 29, 1977, Ser. No. 820,333

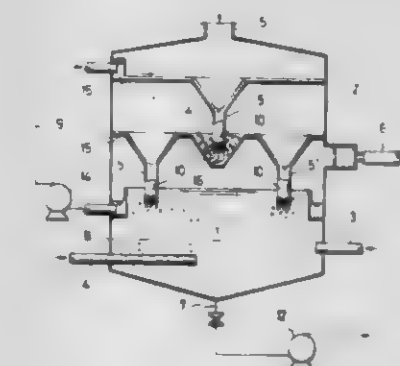
Claims priority, application Japan, Feb. 28, 1976, 51-20608;

Feb. 28, 1976, 51-20609; Nov. 18, 1976, 51-137821

Int. Cl. F01C 1/00; F03C 2/00

U.S. Cl. 422-176

3 Claims



1. A gas-liquid contacting apparatus for removing sulfur dioxide from a flue gas, which comprises:

- (a) a vessel for receiving therein a liquid aqueous absorbent in a continuous phase;
- (b) funnel-shaped gas sparger means for concurrently introducing the gas and aqueous absorbent, said gas sparger means having a large open end, a small open end, and an opening means at one end thereof, said gas sparger means extending vertically with said large open end above the surface of the aqueous absorbent liquid and said gas sparger means extending through the surface such that said opening means is positioned below the surface wherein said opening means comprises notch means formed in the side walls of said small open end of said gas sparger means;
- (c) air sparger means in said aqueous absorbent, below said gas sparger means;
- (d) outlet means for the gas after it contacts the aqueous absorbent, the outlet means being located above the level of said aqueous absorbent;
- (e) reactant inlet means into the vessel;
- (f) aqueous absorbent inlet means into the vessel;
- (g) outlet means for the reaction products and spent aqueous absorbent; and
- (h) circulation means for circulating aqueous absorbent from

below the surface of said aqueous absorbent liquid to said large open end.

4,229,418 APPARATUS FOR THE CATALYTIC TREATMENT OF HYDROCARBONS

Joannes B. Wijffels; Abraham A. Pegels, and Arnold Wezenberg, all of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

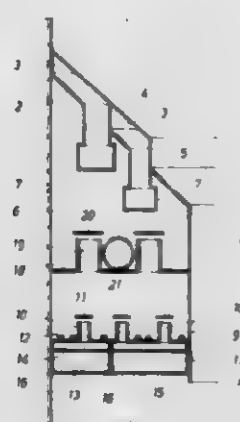
Filed Oct. 3, 1978, Ser. No. 948,353

Claims priority, application Netherlands, Oct. 7, 1977, 7711019

Int. Cl.¹ B01D 39/00; B01J 8/04

U.S. Cl. 422-191

5 Claims



1. An upright apparatus for the catalytic treatment of hydrocarbons comprising a reactor containing at least two tray means, and containing catalyst supporting means for at least one catalyst bed, said supporting means being permeable to liquid and gas and impermeable to catalyst particles, said supporting means being attached to the inner wall of the reactor and being at least partly in the shape of a conical surface of a truncated cone converging downwardly to an aperture permeable to catalyst particles; said reactor having at least one supporting means-filter unit attached to said supporting means to obtain impermeability of the supporting means to the catalyst particles; disposed beneath each said supporting means is a first cooling tray means, impermeable to liquid and gas, for cooling liquid accumulated on said cooling tray means during catalytic hydrotreatment of hydrocarbons, said cooling tray means having an aperture permeable to catalyst particles, and a plurality of walled apertures permeable to liquid and gas, each of said walled apertures having upright cylindrical walls protruding above said cooling tray means for accumulating liquid on the upper surface of said cooling tray means, and spaced above each said walled aperture is a liquid impermeable cover plate for preventing direct bypassing of liquid between said supporting means and a second, hereafter described distribution tray means; disposed on said cooling tray means is at least one cooling conduit, adapted to be connected to a source of cooling fluid, for cooling liquid accumulated on said cooling tray means; located beneath each said cooling tray means is a second, distribution tray means which is permeable to liquid and gas, for effecting redistribution of liquid flowing out of the catalyst bed and impermeable to the catalyst particles and having an aperture permeable to catalyst particles; and at least one distribution tray means filter unit disposed underneath said distribution tray means to prevent access of catalyst particles to the underside of said distribution tray means, said distribution tray means filter unit having the same or coarser filtering effect than said supporting means filter unit.

4,229,419 TUBE REACTOR FOR ENDOTHERMIC GAS REACTIONS

Egon Haese, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

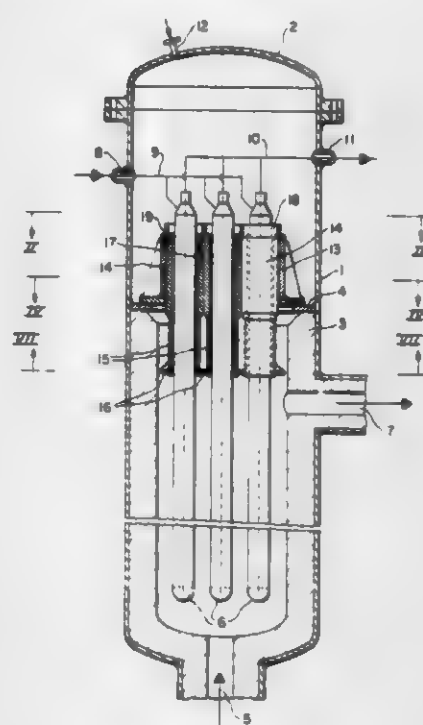
Filed Dec. 2, 1977, Ser. No. 856,705

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656726

Int. Cl.² B01J 8/00, 3/04

U.S. Cl. 422-197

5 Claims



1. In a tube-type reactor receiving a pressurized noble gas at a temperature within the range of approximately 600° C. and 1000° C. after heating in a nuclear reactor for carrying out an endothermic chemical reaction with a gas, said tube-type reactor including a pressure jacket with internal insulation, reactor tube assemblies, containing a catalyst when required, extending vertically within said pressure jacket, mounting plate means permanently secured to top end portions of said reactor for support by the upper part of said pressure jacket, noble gas feed means to introduce said pressurized noble gas into the bottom portion of said pressure jacket, and noble gas discharge means in the upper part of said pressure jacket below said mounting means for discharging the noble gas from the pressure jacket, the combination therewith of the improvement comprising cover tubes each surrounding a portion of one of said reactor tube assemblies, each cover tube extending within the space between the bottom surface of said mounting plate means and a point in elevation which is slightly above said noble gas discharge means, a reinforced closure member extending only from the lower end portion of each cover tube to limit the flow of noble gas beyond the closure members into the space above the closure members between the cover tubes and the inner wall of said pressure jacket while allowing the flow of noble gas between said feed means and discharge means, and sealing container means including end members supported by said mounting plate means to form a gas-tight seal between the top side of said mounting plate means and said reactor tube assemblies.

4,229,420 SURGICAL INSTRUMENT RACK

Galyn F. Smith, Schaumburg, and Thomas P. Zwierszowski, Niles, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 26, 1979, Ser. No. 23,886

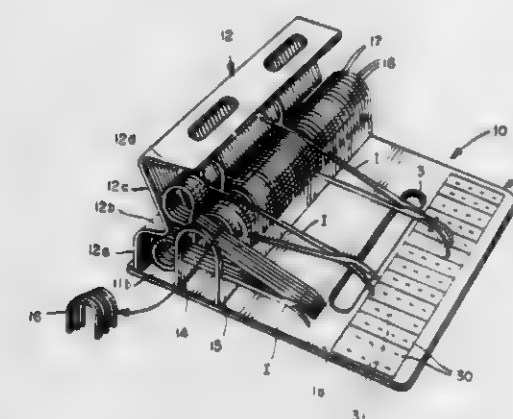
Int. Cl.² A61L 3/02

U.S. Cl. 422-310

26 Claims

1. A rack for supporting a multiplicity of ring-handled surgical instruments, comprising a support member having a sub-

stantially flat surface and being provided with an upstanding wall dividing said member into front and rear portions; a plurality of spaced partitions projecting upwardly from said wall, whereby, a plurality of ring-handled instruments may be supported with each instrument oriented in a generally vertical plane with its handles extending between a pair of partitions and with a lower handle ring thereof disposed directly above said rear portion and behind said wall; and a retaining member



engaging said rear portion of said support member; said retaining member having a cover section spaced above said rear portion to limit upward movement of the lower handle rings of instruments carried by said support member and also having a sloping cam section engagable with the upper rings of such instruments to cam the handles thereof into partially opened condition and to limit movement of said instruments rearwardly away from said upstanding wall.

4,229,421 PURIFICATION OF PLUTONIUM

Edward S. Chapman, and William Smith, both of Whitehaven, England, assignors to British Nuclear Fuels Limited, Cheshire, England

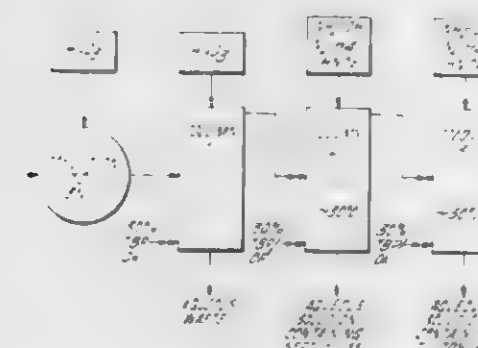
Filed Sep. 6, 1978, Ser. No. 940,010

Claims priority, application United Kingdom, Sep. 16, 1977, 38786/77

Int. Cl.² C01G 56/00

U.S. Cl. 423-10

1 Claim



1. A process for the purification of a plutonium-containing aqueous phase during the reprocessing of irradiated nuclear fuel in which the aqueous phase also contains some uranium and neptunium includes the steps of bringing the plutonium-containing aqueous phase into contact with an organic solvent, which solvent comprises a solution of an alkyl ester of phosphoric acid in an organic diluent, to extract plutonium, uranium and neptunium into solution in the organic solvent, bringing the organic solution into contact with a first aqueous phase containing a reductant for neptunium selected from the group consisting of hydroxylamine salts, hydrazine salts and mixtures of hydroxylamine and hydrazine salts at about 30° to 35° C. to extract neptunium into the aqueous phase, separating the organic solution from the aqueous phase, bringing the organic solution into contact with a further aqueous phase containing a reductant for plutonium selected from the group consisting of hydroxylamine salts, hydrazine salts and mixtures of hydroxyl-

amine and hydrazine salts at about 50° C. to extract plutonium into the further aqueous phase and separating the organic solvent from the further aqueous phase.

4,229,422 METAL EXTRACTION

James W. Covington, Stevenage, and Robert G. Whittemore, Shefford, both of England, assignors to Interco Chemicals Limited, London, England

Filed Apr. 17, 1978, Ser. No. 897,128

Claims priority, application United Kingdom, May 3, 1977, 18510/77

Int. Cl.² B01D 12/00

U.S. Cl. 423-20

8 Claims

1. A process for the extraction of uranium from its ore comprising the step of leaching the ground ore with an aqueous acidic solution containing peroxomonosulphuric acid.

4,229,423 METHOD OF PRODUCING MAGNESIUM HYDROXIDE

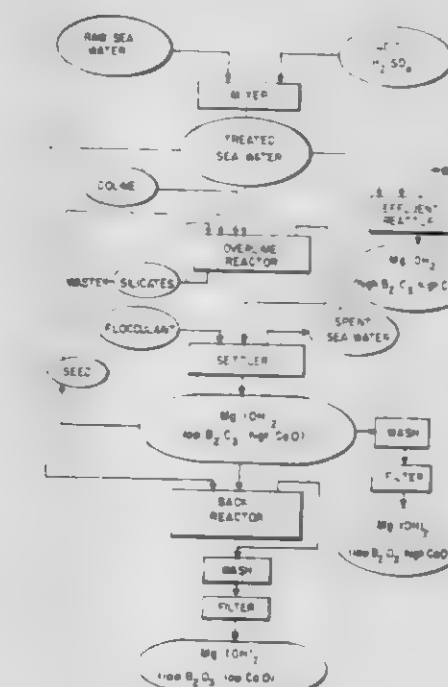
Lloyd M. Housh, Santa Clara, and William R. Alder, Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 9, 1979, Ser. No. 10,577

Int. Cl.² C01F 5/22

U.S. Cl. 423-164

7 Claims



1. Method of producing magnesium hydroxide by (1) treating a brine containing Mg⁺⁺ ions and at least 1 ppm boron (on a B₂O₃ basis) so as to reduce its CO₂ content to less than 15 ppm, (2) reacting, in a first reaction stage, the treated brine with an amount of calcined lime in excess of that needed to convert the Mg⁺⁺ ion content thereof to magnesium hydroxide, (3) separating the high-lime magnesium hydroxide so produced from the spent brine, (4) recycling part of the high-lime magnesium hydroxide from the first reaction stage back to the first reaction stage as seed, and (5) reacting, in a second reaction stage, the remainder of the high-lime magnesium hydroxide produced in the first reaction stage with brine treated as in step (1), whereby a magnesium hydroxide is produced which contains, on the ignited basis, less than 1% CaO and less than 0.1% B₂O₃, all percentages being by weight.

4,229,424

CRYSTALLINE ZEOLITE PRODUCT CONSTITUTING ZSM-5/ZSM-11 INTERMEDIATES

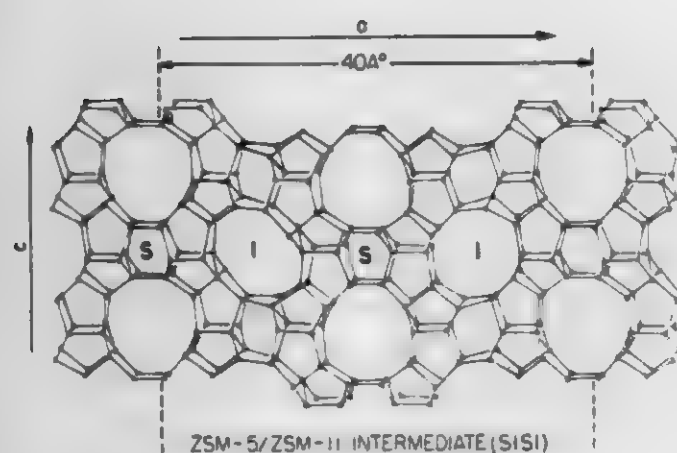
George T. Kokotailo, Woodbury, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,482

Int. Cl.¹ C01B 33/20, 33/28

U.S. Cl. 423—328

10 Claims



1. A crystalline porous tectosilicate characterized by a structure intermediate that of ZSM-5 and ZSM-11, having in its sodium form, an X-ray diffraction pattern substantially as shown in Table 1 and having a unit cell parameter of at least about 40 Angstroms.

2. The crystalline porous tectosilicate of claim 1 further characterized, in its anhydrous state, by the formula:

$$0.9 \pm 0.3 \frac{M_z}{n} : Al_2O_3 : SiO_2$$

where M is a cation, n is the valence of said cation and z is at least 5.

4,229,425

PROCESS FOR MAKING HOLLOW CARBON MICROSPHERES

Robert G. Shaver, Alexandria, and William R. Leake, Reston, both of Va., assignors to Versar, Inc., Springfield, Va.

Filed Feb. 9, 1979, Ser. No. 10,867

Int. Cl.² C01B 31/02

U.S. Cl. 423—449

4 Claims

1. A batch process for manufacturing hollow carbon microspheres from hollow microballoons made of heat carbonizable material and having microporous walls, including the steps of:

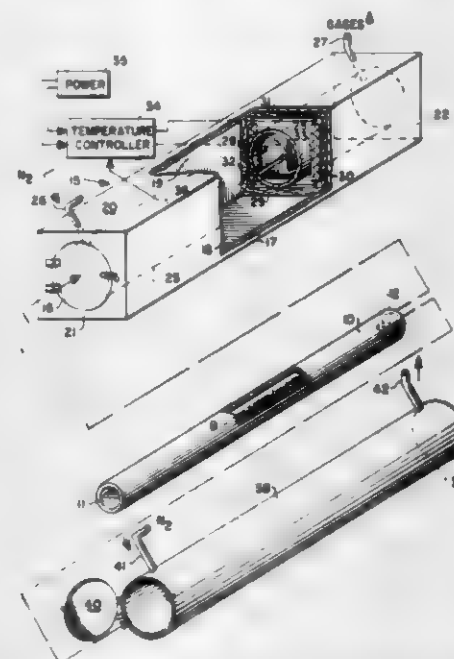
(a) heating a first chamber to a temperature which is above the carbonizing temperature of said microballoon material and within the range of 2000 to 3000 degrees F., and continuously maintaining the temperature;

(b) enclosing a batch of microballoons within a protective graphite boat which substantially surrounds the microballoons except for small openings sufficient to pass gases through the boat;

(c) confining and heating the boat and batch in the heated first chamber for about four hours and until the batch is carbonized to form microspheres while flushing the chamber with an inert gas, the enclosing of the batch in the carbon of the boat and the heat insulating properties of the enclosing boat being sufficient to slow the rate of heat transfer from the first chamber to the batch and prolong it over an interval of time sufficient to allow the expanding

gases within the microballoons to diffuse through their micropores without rupturing the microballoons;

(d) then removing the heated batch from the first chamber and immediately confining it in a second unheated chamber, and flushing the second chamber with an inert gas



until the batch cools below its self-ignition temperature in air; and

(e) confining in the first chamber another batch of microballoons within another protective boat according to step (b), and repeating the heating and cooling steps (c) and (d) for said other batch.

4,229,426

BREAST CYST FLUID PROTEIN ASSAY

Darrow E. Haagensen, Jr., Durham, N.C., assignor to Duke University, Inc., Durham, N.C.

Filed Feb. 22, 1978, Ser. No. 880,257

Int. Cl.² G01N 33/16; A61K 39/00, 43/00

U.S. Cl. 424—1

12 Claims

1. A method for determining the concentration of the glycoprotein gross cystic disease fluid protein-15 (GCDFP-15) in a biological fluid sample which method comprises conducting an immunoassay for said glycoprotein in said sample utilizing as reagents a GCDFP-15 selective antibody and GCDFP-15 labelled with a unique and detectable label to produce an antigen-antibody reaction product, separating said product from the said reagents and determining the concentration of GCDFP-15 in said sample by detecting the quantitative value of said label in either said reaction product or said reagents and comparing said label value to a standard curve wherein said GCDFP-15 is further characterized as follows:

(a) a glycoprotein having a calculated monomer size of about 15,000 daltons as determined by sodium dodecyl sulfate acrylamide gel analysis; and

(b) immunologically not identical to any components of plasma as determined by Ouchterlony analysis; and

(c) immunological cross identity with a component of human milk and human saliva.

4,229,427

RADIOACTIVE SCANNING AGENTS WITH HYDROQUINONE STABILIZER

Harry S. Whitehouse, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 28, 1978, Ser. No. 920,081

Int. Cl.² A61K 43/00, 29/00

U.S. Cl. 424—1

21 Claims

1. A stable composition, useful in the preparation of technetium-99 m-based radiographic scanning agents, comprising: a pertechnetate reducing agent; and a stabilizing amount of a

quinone stabilizer selected from hydroquinone and quinonoid species thereof.

17. A composition useful in the preparation of technetium-99 m-based radiographic scanning agents, comprising: an oxidized pertechnetate solution having dissolved therein a stabilizing amount of a quinone stabilizer selected from hydroquinone or a quinonoid species thereof.

4,229,428

GALENICAL FORM OF ADMINISTRATION OF BETAHISTINE AND ITS DERIVATIVES

Jean S. Cherqui, 55, Rue Pergolèse, 75016 Paris, and Alain C. Djiane, 105, Avenue du Roule, 92200 Neuilly sur Seine, both of France

Filed Apr. 5, 1979, Ser. No. 27,351

Int. Cl.² A61K 9/22, 9/32

U.S. Cl. 424—19

6 Claims

1. A therapeutically useful and pharmacologically acceptable oral depot medicament in the form of substantially uniformly sized spheroidal particles containing 2-methylaminoethyl pyridinemethanesulfonate as the active ingredient thereof comprising:

(a) an inactive core of pharmaceutically acceptable carrier material;

(b) at least two sets of sequential bipartite layers on said core comprising an inner layer of the active ingredient and an outer layer of a dialysis membrane, said membrane being substantially insoluble in neutral or acid environments but soluble above pH 7.

4,229,429

PROCESS FOR PREPARING ALCOHOL SOLUBLE CONDENSATES OF ABIETIC ACID AND A PROTEIN HYDROLYSATE

Vernon L. Johnsen, La Grange, and Elaine S. Stern, Evanston, both of Ill., assignors to Ialox Corporation, Chicago, Ill.

Division of Ser. No. 761,668, Jan. 24, 1977, Pat. No. 4,128,543.

This application Sep. 20, 1978, Ser. No. 944,182

Int. Cl.² A61K 7/11

U.S. Cl. 424—47

6 Claims

1. A process for making a solution for the treatment of hair comprising:

forming a solution in absolute alcohol at a concentration in the range of about 0.5 percent to about 5 percent by weight of a portion of an abietic acid condensate of a protein hydrolysate having complete solubility in absolute alcohol at a concentration of about 2 percent, said portion having been separated from said condensate by acidifying an aqueous solution of about 5 to about 25 percent by weight of a water soluble salt of a condensate with abietic acid of a protein hydrolysate having an average molecular weight in the range of about 300 to about 600 from a pH above about 6 to a pH in the range of about 4 to about 5 to precipitate a portion of the condensate while leaving another portion thereof in solution; and separating the precipitated portion of the condensate from the acidified aqueous solution as a product of the process.

4,229,430

ORAL COMPOSITION FOR IMPROVING ORAL HEALTH

Mostafa S. Fahim, 500 Hulen Dr., and Ercell L. Miller, 3424 Woodrail Ter., both of Columbia, Mo. 65201

Filed Aug. 21, 1978, Ser. No. 935,247

Int. Cl.² A61K 7/16, 31/365, 33/30

U.S. Cl. 424—49

10 Claims

1. A therapeutic composition for topical oral administration for stimulating production of collagen consisting essentially of about 0.5 to about 2.0 percent by weight/volume of a pharmaceutically acceptable, water soluble zinc salt and about 0.5 to about 2.0 percent by weight/volume of ascorbic acid or sodium ascorbate.

4,229,431

METHOD OF APPLYING SELF CURING ARTIFICIAL NAILS

Henry L. Lee, Jr., Pasadena, and Jan A. Orlowski, Altadena, both of Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

Continuation of Ser. No. 834,265, Sep. 19, 1977, abandoned, which is a division of Ser. No. 665,214, Mar. 9, 1976, abandoned, which is a continuation of Ser. No. 527,221, Nov. 26, 1974, abandoned. This application Feb. 5, 1979, Ser. No. 9,687

Int. Cl.¹ A61K 7/04, 7/043

U.S. Cl. 424—61

23 Claims

1. A method of coating a human nail comprising:

(1) applying to the nail a flowable composition that comprises by weight based on the total weight of the composition:

(a) from about 5% to about 80% of a first addition polymerizable monomer that can form a cross-linked polymer upon polymerization during self-curing of the composition, which monomer contains in its molecule at least two groups that are capable of being addition polymerized upon contact with a peroxide-type free radical initiator and a tertiary amine-type accelerator, the polymerizable groups being selected from the group consisting of allyl, acryloyl, methacryloyl, and mixtures thereof;

(b) an amount up to about 60% of an acrylic or methacrylic monoacrylate ester monomer that copolymerizes with the first monomer upon self-curing of the composition to form a copolymeric structure that is cross-linked;

(c) a peroxide-type initiator;

(d) a tertiary amine-type accelerator, the composition being formulated and the initiator and the accelerator being present in quantities such that curing is caused to occur within about 120 to about 400 seconds after mixing of the components to form the composition,

(2) permitting the composition to cure and to harden in situ on the nail, the monomers (a) and (b) copolymerizing upon curing to form a copolymeric structure that is cross-linked.

4,229,432

ANTIPERSPIRANT STICK COMPOSITION

Navin Geria, Elizabeth, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,888

Int. Cl.¹ A61K 7/34, 7/38

U.S. Cl. 424—68

9 Claims

1. In an antiperspirant stick composition consisting essentially of, based on the total weight of the composition:

(a) from about 16% to about 35% by weight of a low melting wax selected from the group consisting of a fatty acid containing from about 8 to 22 carbon atoms, a fatty alcohol containing from about 8 to about 22 carbon atoms, a silicone wax and glycerol monostearate;

(b) from about 20% to 60% of an emollient; and

(c) from about 10% to 50% of an antiperspirant material; the improvement which comprises:

(d) from about 0.5% to about 10.0% of the additional waxy agent FT-300 Wax incorporated in said stick composition, said FT-300 Wax being characterized in that it is a saturated, synthetic hard paraffin of formula $CH_3(CH_2)_nCH_3$ and is chemically neutral, colorless and high melting; is free from aromatic and unsaturated compounds and contains neither sulfur nor any halogens; has a structure that is characterized as fine crystalline; appearance in the solid state is white and opaque; and forms a clear solution in the common wax solvents at elevated temperature it is practically insoluble and has the following properties:

Molecular weight, osmometric

-continued

approx.	730
Congealing point, (°C. ASTM (D-938))	96-98
Drop Point (°C., ASTM D-127)	107-111
Penetration (25° C., ASTM D-1321)	1
Ball Pressure Hardness kg/cm ² DIN 51 579	355/344
Kinetic Viscosity, cstks. 120° C. (Vogel-Ossag)	12
Iodine No.	0.1
Acid Value, Saponification Value	nil
Color	white
Form	flakes

said FT-300 Wax serving to prevent the settling of said antiperspirant material.

4,229,433

METHOD FOR CONTROLLING VIRAL DISEASES IN PLANTS

Taichiro Shigematsu, Machida; Tetsuya Shibahara, Yamato, and Tetsuo Nakajima, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed May 17, 1979, Ser. No. 40,077

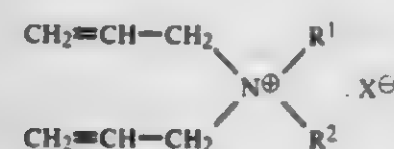
Claims priority, application Japan, May 30, 1978, 53-64743; Feb. 20, 1979, 54-18794

Int. Cl.¹ A01N 43/84, 43/86, 43/40, 43/36

U.S. Cl. 424-78

17 Claims

1. A method for preventing viral diseases in plants comprising applying to said plants an antiviral effective amount of a polymer produced by the polymerization of one or two compounds expressed by the following general formula:



wherein R¹ and R², which may be the same or not, represent a hydrogen atom or an alkyl group having 1-5 carbon atoms which may be substituted by a halogen atom, a hydroxyl group or a cyano group, or together form a pyrrolidine, piperidine, or morpholine ring with the nitrogen to which they are attached, and X is a halogen atom.

4,229,434

VACCINE FOR PROPHYLAXIS OF TRICHOPHYTOSIS IN HORSE AND METHOD OF PREPARING SAME

Arntjun K. Sarkisov, and Svyatoslav V. Petrovich, both of Moscow, U.S.S.R., assignors to Vsesojuzny Institut Experimentalnoi Veterinari, Moscow, U.S.S.R.

Continuation of Ser. No. 719,976, Sep. 2, 1976, abandoned. This application Jan. 30, 1979, Ser. No. 7,683

Int. Cl.¹ A61K 39/00

U.S. Cl. 424-88

9 Claims

1. A vaccine for prophylaxis of trichophytosis in the horse, comprising a suspension of microconidia of the immunogenic strain No. L-2251/70 (USSR) of *Trichophyton equinum* in sterile physiological salt solution at a pH of 6.2 to 7.0, the concentration of the microconidia ranging from 30 to 45 million per 1 milliliter of the sterile physiological salt solution.

4,229,435

PREPARATION OF BLOOD FRACTION

Birger E. G. Blombäck, 31 Tomtebgatan S-113 38, Stockholm, and Dagny B. Hessel, 139 Rådisvagen, S-162 41 Vällingby, both of Sweden

Filed Jan. 23, 1979, Ser. No. 5,877

Claims priority, application Sweden, Jan. 25, 1978, 7800902 Int. Cl.¹ A61K 35/14

U.S. Cl. 424-101

10 Claims

1. A process for the preparation of a blood component selected from the group consisting of a concentrate of at least one of the coagulation factors II, V and VIII and mixtures thereof and plasma free from one of the factors VII, IX, X, XI and XII and mixtures thereof, said process comprising:

- (1) adding a reducing agent selected from the group consisting of dithiothreitol, dithioerythritol, lipoic acid, mercaptoethanol and borohydrides to blood or plasma, the reducing agent added in an amount and for a reaction time sufficient to isolate the desired blood component, and
- (2) fractionating the blood and plasma, respectively, to isolate said blood component.

4,229,436

ANTIBIOTIC G-6302

Akira Imada, Nishinomiya; Kazuaki Kitano, Sakai, and Mitsuko Asai, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 15, 1978, Ser. No. 971,089

Claims priority, application Japan, Dec. 30, 1977, 52/160308 Int. Cl.¹ A61K 35/00

U.S. Cl. 424-117

3 Claims

1. A member selected from the group consisting of Antibiotic G-6302 having the following characteristics, and a metal or ammonium salt thereof:

- (1) Melting point: 120° C. (sintering), 130° C. (decomp.)
- (2) Appearance: white powder
- (3) Elemental analysis: (%) C 34.99, ±0.5; H 5.58, ±0.5; N 13.30, ±0.5; O 38.13, ±0.5; S 7.70, ±0.5 (as dried at 40° C. for 6 hours over phosphorus pentoxide under reduced pressure)
- (4) Ultraviolet absorption spectrum: No characteristic absorptions over 210 nm
- (5) Infrared absorption spectrum [KBr, dominant absorptions (wave-numbers, cm⁻¹): 1770, 1650, 1530, 1240, 1043
- (6) Specific rotation: $[\alpha]_D^{23} + 94 \pm 10^\circ$ (c=0.35, H₂O)
- (7) Solubility: Insoluble in petroleum ether, hexane, diethyl ether, benzene, ethyl acetate and chloroform; sparingly soluble in ethanol, pyridine and acetone; soluble in methanol and dimethylsulfoxide; and readily soluble in water
- (8) Basicity, neutrality or acidity: Acid
- (9) Molecular weight: 400±20 (by titrometry)
- (10) Color reactions: Positive: ninhydrin and potassium permanganate reactions; negative: ferric chloride-potassium ferricyanate, Sakaguchi and Molisch reactions; doubtful positive: Ehrlich reaction.

4,229,437

PASTE OR DOUGH-LIKE SALVE FOR TREATING SKIN

Jonas S. Likens, deceased, late of Lafayette, Tenn. (by Ruby L. Ford, Jessie W. Likens, Mary F. L. Coulter, Pauline L. Coulter, heirs), and Lucille L. Filson, heir, Rte. 1, Hartsville, Tenn. 37074, assignors to Lucille Likens Filson, Hartsville, Tenn.

Filed Jul. 18, 1978, Ser. No. 873,087

Int. Cl.¹ A61K 33/30, 35/78

U.S. Cl. 424-145

2 Claims

1. A paste or dough-like salve for treating skin topically which is substantially homogeneous and consists essentially of an admixture of a minor volumetric effective proportion of zinc chloride crystals with a major volumetric effective proportion of dried and ground bark of roots from *Solanum dulcamara*.

4,229,438

NONAPEPTIDES

Masahiko Fujino, Takarazuka; Osamu Nishimura, Toyonaka, and Muneo Takaoki, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 7, 1979, Ser. No. 36,988

Claims priority, application Japan, May 12, 1978, 53/57007 Int. Cl.¹ A61K 37/00; C07C 103/52

U.S. Cl. 424-177

11 Claims

1. A nonapeptide of the formula:



wherein X is Ala or (D)-Ala; Y and Z are the same or different and each is the residue of a D-amino acid selected from the group consisting of alanine, leucine, isoleucine, phenylalanine, valine, 2-amino-n-butyric acid, serine, threonine, norleucine, methionine, norvaline and tyrosine, or Gly; and at least one of X, Y and Z is the residue of D-amino acid.

4,229,439

METHOD OF TREATMENT OF ATHEROMA

Bernard Majole, Dijon, France, assignor to Societe de Recherches Industrielles (SORI), Paris, France

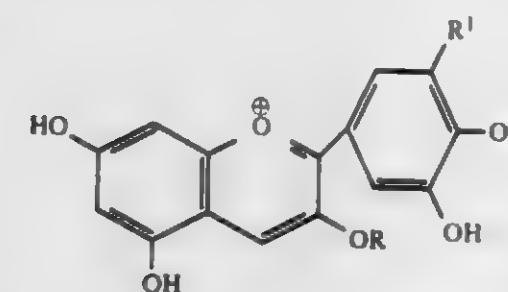
Filed Nov. 21, 1977, Ser. No. 853,422

Int. Cl.¹ A61K 31/70; C07H 17/06

U.S. Cl. 424-180

6 Claims

1. A method for reducing retention of cholesterol in arteries which comprises administering to a patient in need of such a treatment, a therapeutically effective amount of at least one anthocyanidin compound which is a salt of the cation of the formula



wherein R represents a glycosyl group and R¹ represents H, OH or OCH₃; and a non-toxic anion.

4,229,440

PHARMACEUTICAL COMPOSITION CONTAINING THE POLYSACCHARIDE KGF-C AS ACTIVE INGREDIENT

Mitsugu Murofushi; Kuniaki Sasaki, both of Yokohama; Michio Shiomi, Isehara; Yoshio Uchida, Hiratsuka; Tokihisa Hattori, Mishima, and Keniti Takeda, Machida, all of Japan, assignors to Fujiya Confectionery Company Limited, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,967

Int. Cl.¹ A61K 31/735; C08B 37/00

U.S. Cl. 424-180

1 Claim

1. A composition effective for the treatment of sarcoma-180 and Ehrlich carcinoma tumors, comprising a physiologically acceptable excipient and an effective amount of KGF-C having the following physical and chemical properties:

- (1) Appearance: tasteless and odorless white powder having a little hygroscopicity;
- (2) Solubility: soluble in water and pyridine and insoluble in alcohol, glacial acetic acid, acetone, benzene, carbon tetrachloride, chloroform, ether and tetrahydrofuran;
- (3) The pH of 1% aqueous solution is 6.89;
- (4) Sugar qualitative reaction: with respect to the 1% aqueous solution and liquid hydrolyzate thereof, Molish tests are positive in both 1% aqueous solution and 0.1% liquid hydrolyzate and Tollens reaction test is negative in 1%

aqueous solution but is positive in 0.1% liquid hydrolyzate;

- (5) Specific optical rotation: $(\alpha)_D^{20} = +62.0^\circ$ C. (C=1, water);
- (6) Sugar content: 99% is shown by phenol sulfuric acid method: KGF-C is composed of polysaccharide as principal component, and a very small amount of nitrogenous component;
- (7) Sugar composition: when KGF-C is hydrolyzed by 0.5% H₂SO₄ at 110° C. for 5 hours and the sugar composition is determined by thin layer chromatography and gas chromatography, the results show that it is composed of glucose and galactose in the ratio of 1:1;
- (8) Ultraviolet absorption spectrum: no particular absorption is observed;
- (9) Infrared absorption spectrum: the spectrum is shown in the drawing; and
- (10) Elemental analysis: C: 41.83%, H: 6.19%, N: 0.20%, S: below 0.2% and P: below 0.2%.

4,229,441

IMMUNOLOGIC ADJUVANT

Robert L. Bugianesi, Colonia; Mitree M. Ponpipom, Branchburg, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 1, 1978, Ser. No. 965,559

Int. Cl.¹ A61K 31/705; C07G 79/08

U.S. Cl. 424-182

4 Claims

1. A compound selected from the group consisting of: 6-(5-cholesten-3 β -yloxy)hexyl 1-thio- β -L-fucopyranoside; 6-(5-cholesten-3 β -yloxy)hexyl 1-thio- β -D-glucopyranoside; 6-(5-cholesten-3 β -yloxy)hexyl 2-acetamido-2-deoxy-1-thio- β -D-glucopyranoside; 6-(5-cholesten-3 β -yloxy)hexyl 2-acetamido-2-deoxy-1-thio- β -D-galactopyranoside; 6-(5-cholesten-3 β -yloxy)hexyl 1-thio- β -D-xylopyranoside; 6-(5-cholesten-3 β -yloxy)hexyl 1-thio- α -L-arabinopyranoside; 6-(5-cholesten-3 β -yloxy)hexyl 1-thio- β -lactoside, and 2-S-[6-(5-cholesten-3 β -yloxy)hexyl]-2-thio- β -D-N-acetyl-neuraminic acid.
3. A composition comprising an antigenic material and a compound of claim 1.

4,229,442

METHOD FOR THE TREATMENT OF TREES OR SHRUBS AFFECTED WITH DECLINE SYMPTOMS WITH TREATED COTTON GIN WASTE

Joseph A. Plackard, Inglis, Fla., assignor to The Ekok Corporation, Ocala, Fla.

Division of Ser. No. 887,963, Mar. 20, 1978, Pat. No. 4,164,405, and a continuation-in-part of Ser. No. 544,669, Jan. 27, 1975, abandoned. This application Apr. 24, 1979, Ser. No. 34,913

Int. Cl.¹ A01N 9/08

U.S. Cl. 424-195

9 Claims

1. A method for the treatment of trees or shrubs affected with symptoms of Young Tree Decline symptoms which comprises placing about the locus of the roots of said trees or shrubs, in an amount sufficient to suppress the symptoms of Young Tree Decline a horticultural medium having been produced by the process of aerobically fermenting cotton gin waste to biodegrade the waste at a temperature of at least 125° F. with water in an amount ranging from 1 to 5 times the dry weight of the gin waste, said gin waste being in a pile at least 10 feet wide and 8 feet high to conserve self-generated heat in the interior of the pile, and systematically turning the exterior of the pile to the interior so that all particles of the gin waste are heated to a temperature of from 125° to 180° F. for at least several hours, whereby the gin waste is freed of any soil borne plant diseases, weed seeds, insects or nematodes present therein.

4,229,443

DERIVATIVES OF PENICILLANIC ACID

Ernst T. Biederup, Tastrup, Denmark, assignor to Leo Pharmaceutical Products, Ltd. A/S, Ballerup, Denmark

Filed Jun. 14, 1977, Ser. No. 806,358

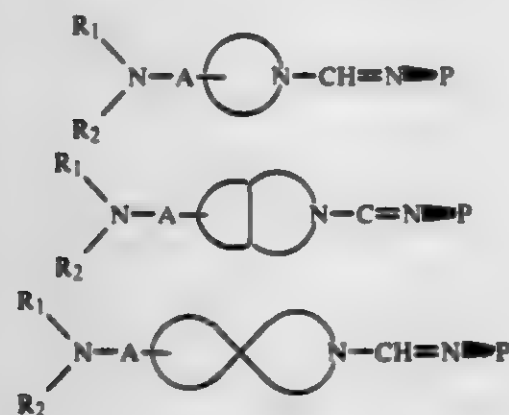
Claims priority, application United Kingdom, Jun. 29, 1976, 27107/76; Jul. 27, 1976, 31331/76; Feb. 9, 1977, 5436/77; Feb. 15, 1977, 6348/77

Int. Cl.² A61K 31/675, 31/425, 31/43; C07D 499/02

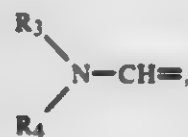
U.S. Cl. 424-200

55 Claims

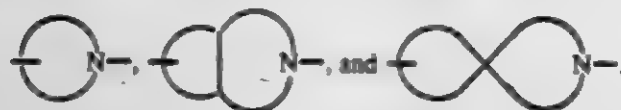
1. An antibiotic compound of the general formulae I, II, and III



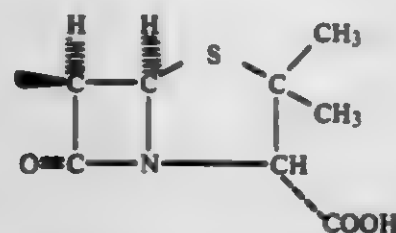
in which -A- stands for a straight or branched, saturated or unsaturated aliphatic hydrocarbon radical, having from 1 to 6 carbon atoms, which radical optionally can be substituted with an amino radical; R₁ stands for hydrogen, or a lower alkyl radical having from 1 to 4 carbon atoms; R₂ stands for hydrogen, a lower alkyl radical having from 1 to 4 carbon atoms, or a monacyl radical derived from a mono- or dibasic carboxylic acid, sulphuric acid, a sulphonic acid, a sulphinic acid, phosphoric acid, or a phosphonic acid, and R₂ can represent an unsubstituted or a lower alkyl or phenyl substituted radical selected from the group consisting of carbamoyl, guanlyl and guanlylcarbamoyl radicals; R₁ and R₂ together with the nitrogen atom can form a monocyclic, saturated ring having from 4 to 8 carbon atoms; furthermore R₁ and R₂ together can represent a radical of the formula



in which R₃ and R₄ each stands for hydrogen, lower alkyl, phenyl or phenyl-lower alkyl, or in which R₃ and R₄ together with the nitrogen atom form a monocyclic, saturated ring having from 4 to 7 carbon atoms; the groupings:



represent saturated, monocyclic, bicyclic or spirocyclic ring systems, respectively, having from 4 to 11 carbon atoms in total; P stands for the penicillanic acid radical of the formula IV:



and salts of the compounds of the formulae I, II, and III with pharmaceutically acceptable, non-toxic organic and inorganic acids or bases, and easily hydrolyzable pharmaceutically ac-

ceptable, non-toxic esters of the penicillanic acid derivatives of formulae I, II, and III.

53. A method of treating patients suffering from bacterial infection, which comprises administering to said patients a compound as claimed in claim 1 in daily doses from 0.2 to 30 g calculated as the free acid.

4,229,444

PESTICIDAL

O-ALKYL-O-(1,5-DISUBSTITUTED-1,2,4-TRIAZOLYL-(3)-THIONO-PHOSPHORIC (PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES

Helmut Hoffmann, Wuppertal; Ingeborg Hamann, Cologne; Wolfgang Behrenz, Overath-Steinenbrück; Bernhard Homeyer, Opladen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 645,971, Jan. 2, 1976, abandoned, which is a division of Ser. No. 430,435, Jan. 3, 1974, abandoned. This application May 18, 1978, Ser. No. 907,388

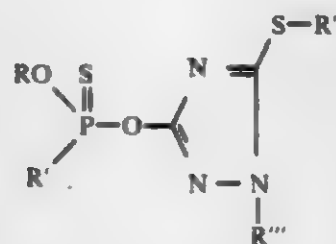
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1973, 2301400

Int. Cl.² A01N 9/36; C07F 9/65

U.S. Cl. 424-200

5 Claims

1. An O-triazolylthionophosphoric acid ester of the formula



in which

R is alkyl of 1 to 6 carbon atoms, R' is alkoxy of 1 to 6 carbon atoms, R'' is a cyanoalkyl of 1 to 4 carbon atoms, and R''' is alkyl of 1 to 6 carbon atoms.

3. An insecticidal or acaricidal composition containing an insecticidally or acaricidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,229,445

SYNERGISTIC ARTHROPODICIDAL COMPOSITIONS AND METHODS OF USE

Volker Mues, Wuppertal, and Wolfgang Behrenz, Overath, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,872

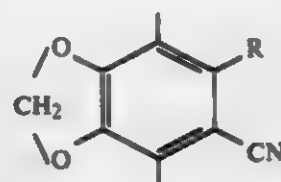
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734108

Int. Cl.² A01N 9/36, 9/28, 9/02, 9/12

U.S. Cl. 424-200

6 Claims

1. A synergistic arthropodicidal composition comprising an arthropodicidally effective amount of (a) at least one compound selected from the group consisting of (A) carbamates, (B) carboxylic acid esters, (C) phosphoric and phosphonic acid esters and (D) halogenoalkanes, and an approximately equal weight of (b) a benzodioxole derivative of the formula



in which R represents alkyl with 1 to 6 carbon atoms, alkenyl

with 2 to 8 carbon atoms, alkynyl with 2 to 8 carbon atoms, phenyl or benzyl.

4,229,446

ALUMINUM ACETYSALICYLATE GLUTAMINATE

Yoshinori Takemoto, Yokkaichi; Toshihiro Yasui; Kyoichi Fujii, both of Sakai; Hiroshi Tanaka, and Tatsuyuki Hirayama, both of Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Japan

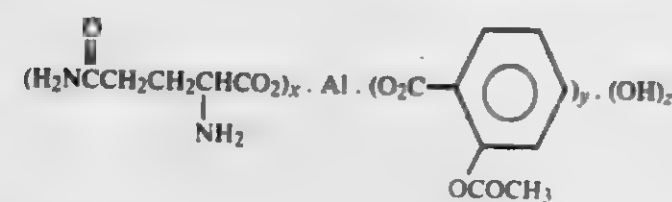
Filed Mar. 13, 1979, Ser. No. 20,244

Int. Cl.² A01N 37/36; A61K 31/60

U.S. Cl. 424-230

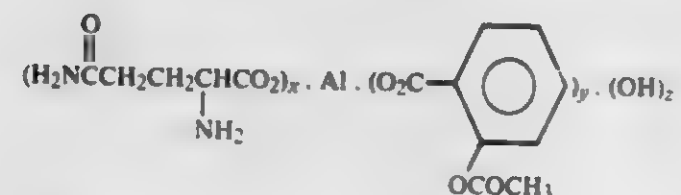
6 Claims

1. An aluminum acetylsalicylate glutamate represented by the general formula:



wherein x is 1 or 2, y is 1 or 2, z is 0 or 1 and x+y+z=3, and hydrates thereof.

5. An antipyretic, analgesic and anti-inflammatory composition which comprises an effective amount of an aluminum acetylsalicylate glutamate represented by the general formula:



wherein x is 1 or 2, y is 1 or 2, z is 0 or 1 and x+y+z=3, and hydrates thereof and a pharmaceutically acceptable non-toxic carrier or excipient.

4,229,447

INTRAORAL METHODS OF USING BENZODIAZEPINES

William R. Porter, Etobicoke, Canada, assignor to American Home Products Corporation, New York, N.Y.

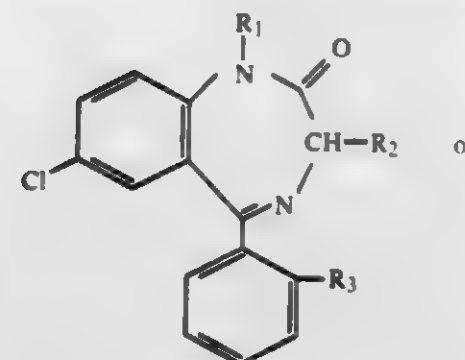
Filed Jun. 4, 1979, Ser. No. 44,430

Int. Cl.² A61K 31/33

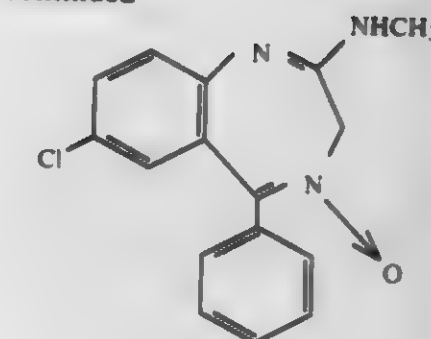
U.S. Cl. 424-244

8 Claims

1. A method for affecting the human central nervous system by the administration of a benzodiazepine having the formula:



-continued



wherein R₁ is hydrogen or lower alkyl, R₂ is hydrogen or hydroxy, and R₃ is hydrogen or chlorine, which comprises sublingually or buccally administering to a human a therapeutically effective amount of said benzodiazepine.

4,229,448

5-SUBSTITUTED PICOLINIC ACID DERIVATIVES AND AN ANTI-HYPERTENSIVE COMPOSITION CONTAINING THE SAME

Yasuharu Sekizawa, Tokyo; Takashi Tsuruoka; Mitsugu Hachisu, both of Kawasaki; Masaji Sezaki, Tokyo; Masashi Miyamoto, Tokyo; Uichi Shibata, Tokyo; Kazuko Mizutani, Yokohama; Shigeharu Inouye, Yokohama; Takemi Koeda, Yokohama; Keizo Shimomura, Tokyo, and Taro Niida, Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Filed Mar. 23, 1979, Ser. No. 23,504

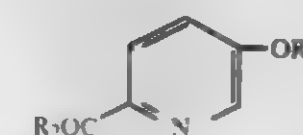
Claims priority, application Japan, Mar. 24, 1978, 53-32967; Jul. 4, 1978, 53-80485

Int. Cl.² A61K 31/455; C07D 213/79

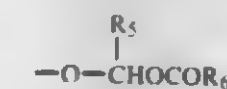
U.S. Cl. 424-245

10 Claims

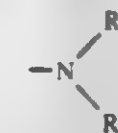
1. 5-Substituted picolinic acids and the salts, esters and acid amides thereof represented by the formula (I):



wherein R₁ represents a straight or branched chain halogen-substituted alkyl group having 2 to 6 carbon atoms; and R₂ represents an -OM group wherein M represents a hydrogen atom, a sodium atom, a potassium atom, a calcium atom, an aluminium atom or a magnesium atom, a straight or branched chain or cyclic alkoxy group having 1 to 6 carbon atoms, an aminoalkoxy group, a phenoxy group, a substituted phenoxy group, a 5-indanyloxy group, an acyloxyalkyloxy group of the formula



wherein R₃ represents a hydrogen atom or a methyl group and R₆ represents a lower alkyl group having 1 to 6 carbon atoms, a phenyl group or a substituted phenyl group, or an amino group represented by the formula



wherein R₇ and R₈, which may be the same or different, each represents a hydrogen atom, a lower alkyl group or a phenyl group.

4,229,449

SUBSTITUTED MORPHOLINE DERIVATIVES AND COMPOSITIONS

Piero Melloni, Bresso; Arturo D. Torre, Gallarate; Giovanni C. Carniel, and Alessandro Rossi, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy

Filed Jan. 8, 1979, Ser. No. 1,604

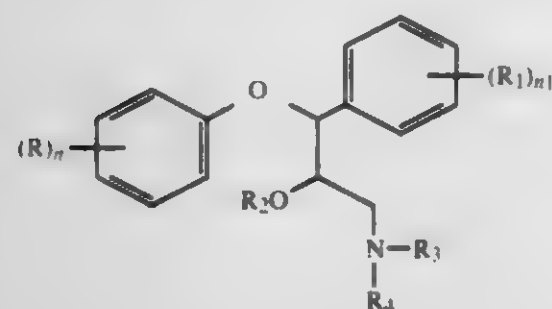
Claims priority, application Italy, Jan. 20, 1978, 19449 A/78; Jan. 20, 1978, 19450 A/78; Dec. 5, 1978, 30533 A/78; Dec. 5, 1978, 30534 A/78; Dec. 5, 1978, 30535 A/78

Int. Cl.³ C07D 265/30; A61K 31/535

U.S. Cl. 424—248.58

9 Claims

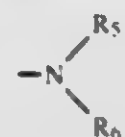
1. A compound having the following formula (I)



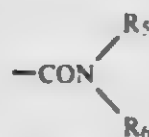
wherein

n and n₁ are independently 1, 2 or 3;

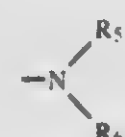
each of the groups R and R₁, which may be the same or different, is hydrogen; halogen; halo-C₁-C₆-alkyl; hydroxy; C₁-C₆ alkoxy; C₁-C₆ alkyl unsubstituted or substituted by one or more substituents chosen from the group consisting of hydroxy, C₁-C₆ alkoxy



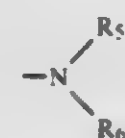
wherein R₅ and R₆ are independently hydrogen or C₁-C₆ alkyl and



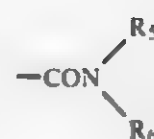
where R₅ and R₆ are as defined above; phenyl-C₁-C₆-alkyl or phenyl-C₁-C₆-alkoxy in which the phenyl groups may be unsubstituted or substituted by one or more substituents chosen from the group consisting of C₁-C₆ alkyl, halogen, C₁-C₆ alkoxy, hydroxy, halo-C₁-C₆-alkyl and



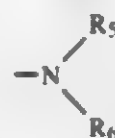
wherein R₅ and R₆ are as defined above; R₃ is hydrogen; C₁-C₆ alkyl unsubstituted or substituted by one or more substituents chosen from the group consisting of halogen, hydroxy, C₁-C₆ alkoxy,



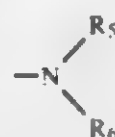
and



where R₅ and R₆ are as defined above; C₂-C₄ alkenyl, C₂-C₄ alkynyl, phenyl-C₁-C₆-alkyl in which the phenyl group may be unsubstituted or substituted by one or more substituents chosen from the group consisting C₁-C₆ alkyl, halogen, halo-C₁-C₆-alkyl, hydroxy, C₁-C₆ alkoxy and



where R₅ and R₆ are as defined above; C₃-C₇ cycloalkyl unsubstituted or substituted by one or more C₁-C₆ alkyl, halogen, halo-C₁-C₆-alkyl, hydroxy, C₁-C₆ alkoxy; and



where R₅ and R₆ are as defined above;

R₂ and R₄, taken together, from the —CH₂—CH₂— radical, as well as the pharmaceutically acceptable salts thereof

9. An antidepressant composition comprising an antidepressant effective amount of a compound according to any one of claims 1-8 and a pharmaceutically acceptable carrier and/or diluent.

4,229,450

CARBAMATES OF HOMOLYSERGOLS (8β-HYDROXYETHYLERGOLINES) AND COMPOSITIONS THEREOF

Giorgio Ferrari, and Vittorio Vecchiotti, both of Milan, Italy, assignors to Simes Società Italiana Medicinali e Sintetici S.p.A., Milan, Italy

Filed Jan. 16, 1979, Ser. No. 3,931

Claims priority, application United Kingdom, Jan. 26, 1978, 3262/78

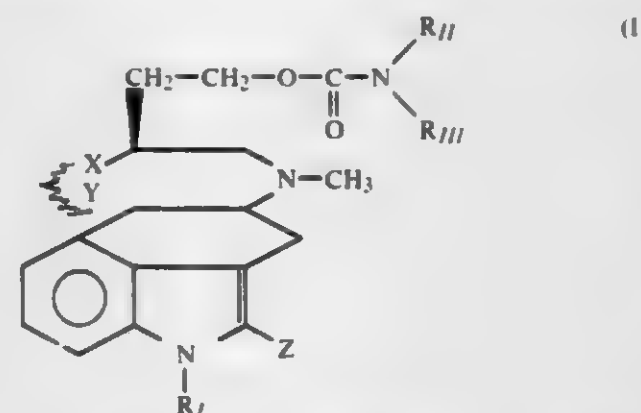
The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.³ C07D 457/02; A61K 31/48

U.S. Cl. 424—248.52

27 Claims

1. Novel ergoline derivatives having the general formula (I)

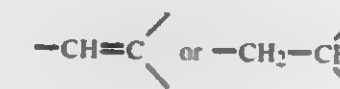


wherein R₁ is hydrogen, an alkyl radical (C₁ to C₄) either straight or branched chain.

Z is hydrogen, bromine, S-R₁₁ (in which R₁₁ is an alkyl of from C₁ to C₄).

R₁₁ is equal to R₁₂ and is an alkyl of from C₁ to C₆, or R₁₁

united with R₁₁₁ form pyrrolidine, piperidine, hexamethyleneimine, morpholine or piperazine unsubstituted or N-substituted by C₁ to C₄ alkyl or phenyl, the x-y bridge being a



bond.

20. A pharmaceutical composition having antihypertensive activity, antiasthmatic activity or anti-depressant activity, characterized in that it contains a pharmaceutical carrier and as active principle in an amount effective for said activity a compound according to claim 1, or a pharmaceutically acceptable salt thereof.

4,229,451

ERGOPEPTINE DERIVATIVES

Theodor Fehr, Dornach, and Paul Stadler, Biel-Benken, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland Continuation of Ser. No. 626,782, Oct. 29, 1975, abandoned, which is a continuation of Ser. No. 525,780, Nov. 21, 1974, abandoned. This application Jun. 29, 1978, Ser. No. 920,480

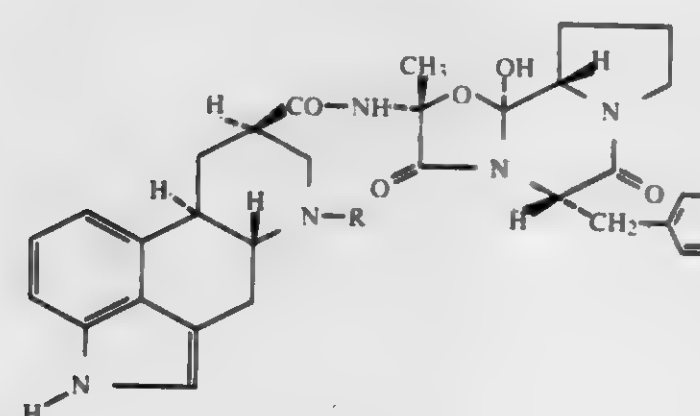
Claims priority, application Switzerland, Nov. 28, 1973, 16698/73

Int. Cl.³ A01K 31/495; C07D 519/02

U.S. Cl. 424—250

1. A compound of the formula I,

7 Claims



wherein R is a branched chain alkyl of 3 to 6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

4. A pharmaceutical composition useful in treating vascular disorders comprising a therapeutically effective amount of a compound of claim 1 in association with a pharmaceutical carrier or diluent.

4,229,452

TREATMENT OF INFLAMMATORY DISORDERS WITH 4-TRIFLUOROMETHYLIMIDAZO[1,2-a]QUINOXALINE

Paul L. Warner, Jr., Clarence, and Edward J. Luber, Jr., Williams, both of N.Y., assignors to Westwood Pharmaceuticals, Inc.

Continuation-in-part of Ser. No. 858,511, Dec. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 757,640, Jan. 7, 1977, abandoned. This application Jul. 12, 1979, Ser. No. 56,768

Int. Cl.³ C07D 487/04, 233/61; A61K 31/495

U.S. Cl. 424—250

7 Claims

1. A method for treating inflammatory disorders in mammals which comprises administering to a mammal having an inflammatory disorder a therapeutically effective amount of 4-trifluoromethylimidazo[1,2-a]quinoxaline in combination with a pharmaceutically acceptable carrier therefor.

4,229,453

SUBSTITUTED 5,6-DIMETHYLPYRROLO[2,3-d]PYRIMIDINE COMPOUNDS, THEIR PRODUCTION AND THEIR MEDICINAL USE

Hermann J. Roth, Bad Honnef; Kurt Eger, Bonn-Endenich; Sedika Issa, Leverkusen, and Haidreddin Jacobi, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 6, 1979, Ser. No. 28,028

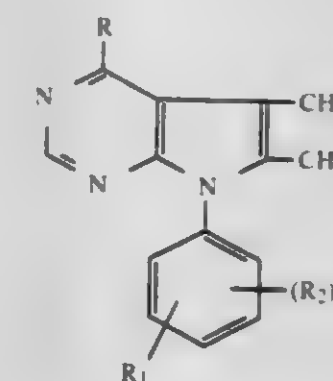
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818676

Int. Cl.³ A61K 31/495; C07D 487/04

U.S. Cl. 424—251

13 Claims

1. A 5,6-dimethylpyrrolo[2,3-d]pyrimidine compound of the formula



or a physiologically acceptable acid-addition salt thereof, in which

R denotes amino or hydroxyl,

R₁ denotes halogen, nitro,

C₁ to C₆ alkyl or trifluoromethyl, and in the case where R is hydroxyl, also denotes hydrogen,

R₂ in each case denotes hydrogen,

halogen or C₁ to C₆ alkyl or alkoxy and

n is 1 or 2.

4,229,454

INSECTICIDAL 5-PHENYLCARBAMOYL-BARBITURIC ACID

Ernst Beriger, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 870,242, Jan. 17, 1978, abandoned, which is a continuation of Ser. No. 791,268, Apr. 27, 1977, abandoned. This application Dec. 22, 1978, Ser. No. 972,588

Claims priority, application Switzerland, May 6, 1976, 5687/76; Nov. 3, 1976, 13850/76; Mar. 30, 1977, 3981/77

Int. Cl.³ C07D 239/62

U.S. Cl. 424—254

23 Claims

1. 5-(4-Chlorophenyl)-carbamoyl-1,3-dimethyl-barbituric acid.

18. A method of controlling insect pests at a locus, which method comprises applying to said locus an insecticidally effective amount of a compound selected from the group consisting of: 5-(4-chlorophenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(2,4-dichlorophenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(4-chloro-3-trifluoromethylphenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(4-trifluoromethylphenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(3,5-bis-trifluoromethylphenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(4-bromophenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(4-iodophenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(4-fluorophenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(4-chlorophenyl)-carbamoyl-1,3-diethyl-barbituric acid; 5-(4-bromophenyl)-carbamoyl-1,3-diethyl-barbituric acid; 5-(4-bromophenyl)-carbamoyl-1-methyl-3-isopropylbarbituric acid; 5-(4-trifluoromethylphenyl)-carbamoyl-1,3-diethyl-barbituric acid; 5-(3,5-bis-trifluoromethylphenyl)-carbamoyl-1,3-diethyl-barbituric acid; 5-(3-trifluoromethylphenyl)-carbamoyl-1,3-dimethyl-barbituric acid; 5-(2,4-dichlorophenyl)-carbamoyl-

1,3-diethyl-barbituric acid; 5-(4-chloro-3-trifluoromethyl-phenyl)-carbamoyl-1-methyl-3-ethyl-barbituric acid; and 5-(2,4-dichlorophenyl)-carbamoyl-1-methyl-3-ethyl-barbituric acid.

4,229,455

IMINO-BRIDGED BENZOCYCLOHEPTAPYRIDINES
Kenneth L. Shepard, Ambler, and Wasyl Halczenko, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

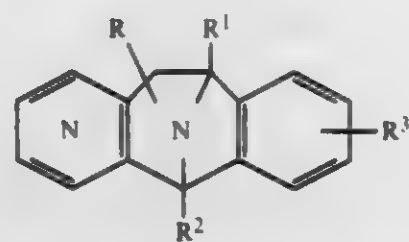
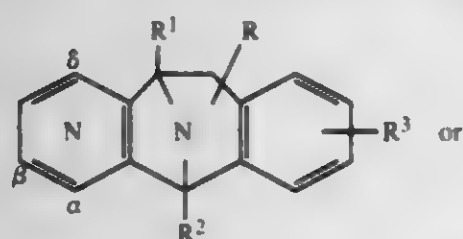
Continuation-in-part of Ser. No. 944,431, Sep. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 860,666, Dec. 15, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,354

Int. Cl.² C07D 471/08; A61K 31/44

U.S. Cl. 424—256

6 Claims

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof, wherein R¹ and R² are independently

- (1) hydrogen,
- (2) lower alkyl,
- (3) lower alkenyl,
- (4) phenyl-lower alkyl,
- (5) lower cycloalkyl, or
- (6) lower(cycloalkyl-alkyl),

with the proviso that only one of R¹ and R² is other than hydrogen;

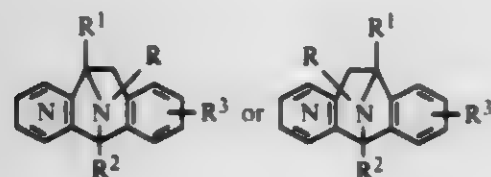
R is

- (1) R²,
- (2) phenyl, or
- (3) di(lower alkyl)amino-lower alkyl; and

R³ is

- (1) hydrogen,
- (2) halogen,
- (3) lower alkoxy,
- (4) trifluoromethylthio,
- (5) cyano, or
- (6) carboxy.

5. A pharmaceutical composition comprising a pharmaceutical carrier and an effective amount of a compound of formula:



or a pharmaceutically acceptable salt thereof, wherein R¹ and R² are independently

- (1) hydrogen,
- (2) lower alkyl,
- (3) lower alkenyl,
- (4) phenyl-lower alkyl,
- (5) lower cycloalkyl, or
- (6) lower(cycloalkyl-alkyl),

with the proviso that only one of R¹ and R² is other than hydrogen;

R is

- (1) R²,
- (2) phenyl, or
- (3) di(lower alkyl)amino-lower alkyl; and

R³ is

- (1) hydrogen,
- (2) halogen,
- (3) lower alkoxy,
- (4) trifluoromethylthio,
- (5) cyano, or
- (6) carboxy.

4,229,456

SUBSTITUTED NAPHTHYRIDINONES AND PROCESSES FOR THEIR PREPARATIONS

William A. Bolhofer, Frederick; Edward J. Cragoe, Jr., Lansdale, and Jacob M. Hoffman, Jr., North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 816,617, Jul. 18, 1977, Pat. No. 4,133,885.

This application Oct. 23, 1978, Ser. No. 954,388

Int. Cl.² C07D 403/02; A61K 31/44

U.S. Cl. 424—256

7 Claims

1. A compound having the formula:



wherein

X is oxygen;

n is an integer of from 2 to 6 such that the length of the carbon chain connecting the two nitrogen atoms is not less than 2;

R₁, R₂, R₃, R₄ and R₅ are independently hydrogen, loweralkyl, loweralkoxy, amino, haloloweralkyl, or phenyl; or any two adjacent substituents may be joined to form a benzo substituent;

R₆ and R₇ are independently N-loweralkylthiocarbamoyl; or R₆ and R₇ may be joined to form a morpholino ring or R₆ and R₇ may be an alkylene linkage of 4 or 5 carbon atoms to form a pyrrolidine or piperidine group which may be substituted with loweralkyl, oxo or benzo substituents; and the broken line in the 3,4 position of the naphthyridine molecule indicates that the bond may be either a single or a double bond;

and the acid addition and quaternary ammonium salts thereof;

and those compounds wherein

X is sulfur,

n is an integer of from 2 to 6 such that the length of the carbon chain connecting the two nitrogen atoms is not less than 2;

R₁, R₂, R₃, R₄ and R₅ are independently hydrogen, loweralkyl, loweralkoxy, amino, haloloweralkyl, or phenyl; or any two adjacent substituents may be joined to form a benzo substituent;

R₆ and R₇ are independently hydrogen, phenylloweralkyl, N-loweralkylcarbamoyl, N-loweralkylthiocarbamoyl; or R₆ and R₇ may be joined to form a morpholino ring or R₆ and R₇ may be an alkylene linkage of 4 or 5 carbon atoms to form a pyrrolidine or piperidine group which may be substituted with loweralkyl, oxo or benzo substituents; and the broken line in the 3,4 position of the naphthyridine

molecule indicates that the bond may be either a single or a double bond;

and the acid addition and quaternary ammonium salts thereof.

7. A method for the suppression of gastric acid secretions which comprises administering to an animal with excess gastric acid secretions, an effective amount of a compound of claim 1.

4,229,457

3-(3-SUBSTITUTED ARYLOXY)-2-YRIDINECARBONITRILES, PHARMACEUTICAL COMPOSITIONS AND METHODS FOR THEIR PRODUCTION

Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

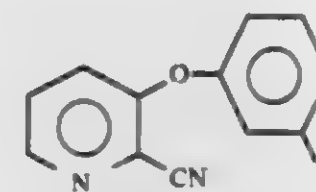
Division of Ser. No. 960,212, Nov. 13, 1978, abandoned. This application Sep. 27, 1979, Ser. No. 79,408

Int. Cl.² A61K 31/44

U.S. Cl. 424—263

2 Claims

1. A pharmaceutical composition for treating senility comprising an effective amount of compound of the formula



and pharmaceutically-acceptable salts thereof wherein Y is methoxy, methyl, chloro or fluoro and a pharmaceutical carrier.

4,229,458

METHOD OF PICKLING PIECES OF MEAT
Claude Dreano, Guiliers, and André Noyelle, Muizon, both of France, assignors to Armor-Inox S.A., Maunon, France

Filed Apr. 26, 1978, Ser. No. 900,244

Claims priority, application France, Apr. 27, 1977, 77 13471

Int. Cl.² A23B 4/02; A23L 1/27, 1/31

U.S. Cl. 426—264

5 Claims

1. A pickling method comprising the steps of:

- a. placing in a container pieces of meat to be pickled, said container being mounted for turning about a horizontal axle whereby said meat tumbles into and out of any fluid which may be in the bottom of said container;
- b. adding to the said container a quantity of liquid brine which corresponds to the mass of the pieces of meat to be pickled, whereby said meat and brine rest on the bottom of said container when said container is stationary and tumble while said container rotates about said horizontal axle;
- c. pressurizing the container with an inert nitrogen gas to a pressure greater than atmospheric pressure and less than 3 bars, whereby space within said container which is not filled with said brine is a pressurized atmosphere of nitrogen;
- d. rotating the container;
- e. applying a vacuum to the interior thereof;
- f. sweeping the container with an inert nitrogen gas; and
- g. reestablishing atmospheric pressure in the container after a predetermined time and stopping said rotation before opening the container.

4,229,459

COMBATING FUNGI WITH

1-AZOL-1-YL-1-PHENOXY-2-ALKANE ETHERS

Wolfgang Krämer; Karl H. Büchel, both of Wuppertal; Wilhelm Brandes, Leichlingen; Paul-Ernst Frohberger, Leverkusen, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 26, 1978, Ser. No. 900,401

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720949

Int. Cl.² A01N 9/22; C07D 233/60, 249/08

U.S. Cl. 424—269

7 Claims

1. A compound selected from the group consisting of 1-(4-chlorophenoxy)-2-methoxy-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-butane, 1-(4-biphenyloxy)-2-ethoxy-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-butane, 1-(4-chlorophenoxy)-2-ethoxy-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-butane and 1-(4-biphenyloxy)-2-methoxy-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-butane.

4,229,460

HETEROCYCLIC DERIVATIVES OF

1-(1,3-DIOXOLAN-2-YLMETHYL)-1H-1,2,4-TRIAZOLES HAVING ANTIFUNGAL AND ANTIBACTERIAL PROPERTIES

Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

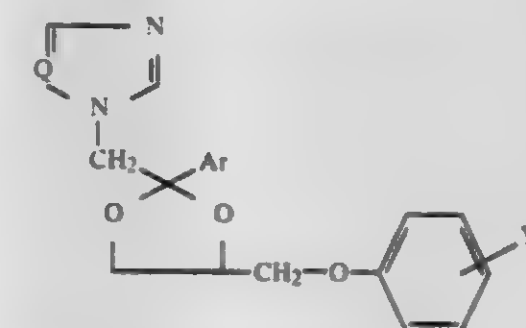
Division of Ser. No. 853,726, Nov. 21, 1977, Pat. No. 4,160,841, which is a continuation-in-part of Ser. No. 764,265, Jan. 31, 1977, abandoned. This application Jun. 20, 1979, Ser. No. 50,371

Int. Cl.² A01N 9/22, 9/12; C07D 407/14

U.S. Cl. 424—269

3 Claims

1. A chemical compound selected from the group consisting of an azole derivative having the formula:



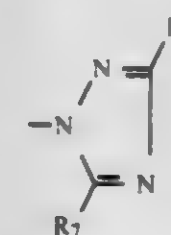
and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:

Q is N;

Ar is a member selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl and lower alkyloxy; and

the radical Y is a member selected from the group consisting of:

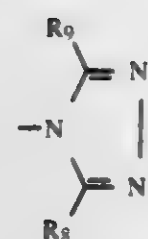
a 1H-1,2,4-triazol-1-yl radical of the formula



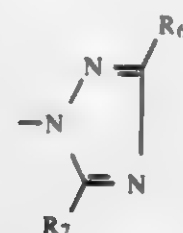
(d)

wherein R₆ is selected from the group consisting of hydrogen and lower alkylthio, and, R₇ is selected from the group consisting of hydrogen, lower alkyl and phenyl;

a 4H-1,2,4-triazol-4-yl radical of the formula

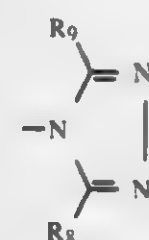


- (e) from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl and lower alkyloxy; and the radical Y is a member selected from the group consisting of:
a 1H-1,2,4-triazol-1-yl radical of the formula



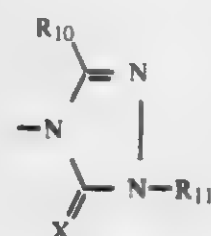
(d)

- wherein R₆ is selected from the group consisting of hydrogen and lower alkylthio, and, R₇ is selected from the group consisting of hydrogen, lower alkyl and phenyl;
a 4H-1,2,4-triazol-4-yl radical of the formula



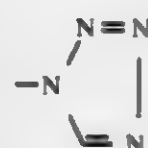
(e)

- wherein R₈ is selected from the group consisting of hydrogen lower alkyl, lower alkyloxy, lower alkylthio, lower alkylsulfinyl and lower alkylsulfonyl, and, R₉ is selected from the group consisting of hydrogen and lower alkyl;
a 2,3-dihydro-4H-1,2,4-triazol-4-yl radical of the formula



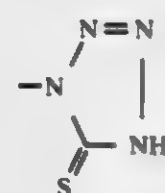
(f)

- wherein X is selected from the group consisting of O and S, and, R₁₀ and R₁₁ are each independently selected from the group consisting of hydrogen and lower alkyl, provided that
when said X is S then said R₁₁ is hydrogen;
a 1H-1,2,3,4-tetrazol-1-yl radical of the formula



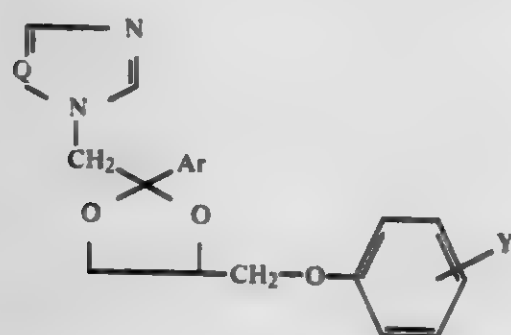
(g)

- and
a 4,5-dihydro-5-thioxo-1H-1,2,3,4-tetrazol-1-yl radical of the formula



(h)

3. A composition for combatting the growth of a microorganism selected from the group consisting of fungus and bacterium comprising an inert carrier material and as an active ingredient an effective amount of a compound selected from the group consisting of an azole derivative having the formula:



and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:
Q is N;

Ar is a member selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having

4,229,461

FUNGICIDAL

6-(3,5-DICHLOROPHENYL)PERHYDROIMIDAZO[5,1-b]THIAZOLE DERIVATIVES

Taichiro Shigematsu, Machida; Kenji Yoshida, Yokohama; Makoto Nakazawa, Sagami; Hiroshi Kasugai, Yokohama, and Masataka Tsuda, Machida, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan
Filed Jun. 18, 1979, Ser. No. 49,620

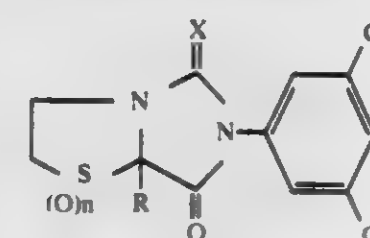
Claims priority, application Japan, Jun. 30, 1978, 53-79442; Sep. 20, 1978, 53-115372

Int. Cl. C07D 277/60

U.S. Cl. 424-270

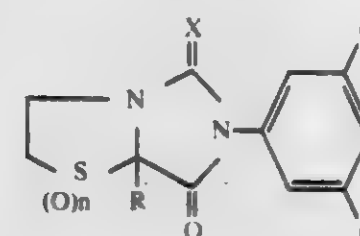
9 Claims

1. 6-(3,5-dichlorophenyl)-perhydroimidazo[5,1-b]thiazole compound represented by the formula (I)



wherein, R represents hydrogen atom or an alkyl group of 1 through 4 carbon atoms, X represents an oxygen atom or a sulfur atom and n represents 0, 1 or 2.

6. A method of controlling fungal infection on plants which comprises applying to said plants an antifungal effective amount of a compound of the formula



wherein, R represents hydrogen atom or an alkyl group of 1 through 4 carbon atoms, X represents oxygen atom or sulfur atom and n represents 0, 1 or 2.

4,229,462

METHOD FOR CONTROLLING HYPERTENSION AND COMPOSITIONS

Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

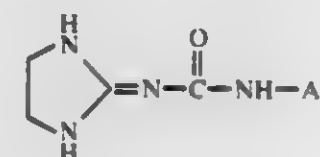
Filed Dec. 22, 1978, Ser. No. 972,579

Int. Cl. A61K 31/415

U.S. Cl. 424-273 R

17 Claims

1. A method which comprises administering to a hypertensive animal, a therapeutically effective antihypertensive amount of a compound selected from the group consisting of (a) an N-aryl-N'-(2-imidazolidinylidene)urea having the formula:



wherein Ar is phenyl substituted with from 0 to 3 substituents independently selected from the group consisting of fluoro, chloro, bromo, methyl, ethyl, methoxy, ethoxy, trifluoromethyl, methylthio, methylsulfonyl, methylsulfinyl and cyano, and (b) a pharmaceutically acceptable salt thereof.

4,229,463

UNSATURATED FATTY ACID HYDRAZIDES

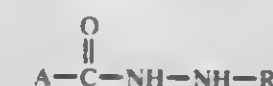
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Feb. 27, 1978, Ser. No. 881,780

Int. Cl. A01N 9/22; A61K 31/40; C09F 5/00; C07D 209/12
U.S. Cl. 424-274

29 Claims

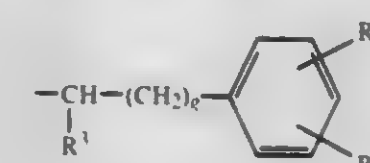
1. A compound which is a hydrazide of the formula:



wherein

A is the residue of an unsaturated fatty acid minus the carboxylic function and has from 7 to 23 carbon atoms and has from 1 to 4 ethylenically unsaturated positions; and
R is:

(a) an aralkyl radical of the structure



wherein

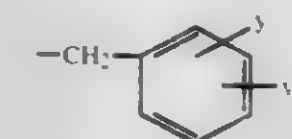
g is 0 or 1;

wherein

R¹ is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms; or alkyl having from 1 to 3 carbon atoms;

R² is a hydrogen atom, alkyl having from 1 to 3 carbon atoms, alkoxy having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; and

R³ is a benzyl radical of the formula (iii)



(iii)

wherein

y is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms; or alkyl having from 1 to 3 carbon atoms; and

y' is a hydrogen atom, alkoxy having from 1 to 3 carbon atoms, alkyl having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36;

or R is:

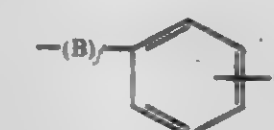
(b) a phenyl radical of the structure



wherein

R² is as defined above, and

R⁰ is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms; alkoxy having from 1 to 3 carbon atoms; or a radical of the structure R/:



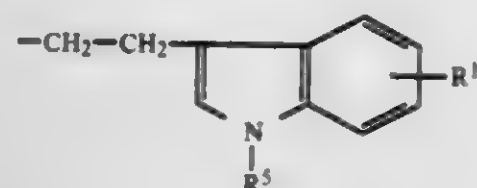
in which

B is $-\text{CH}_2-$ or $-\text{O}-$;

f is 0 or 1; and

Q is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms; or R is:

(c) an indolyl radical of the structure:

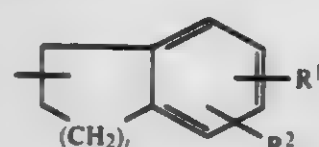


wherein

R¹ is as defined above, and

R⁵ is a hydrogen atom, alkyl having from 1 to 8 carbon atoms or benzyl (unsubstituted);

or R is (d) a benzocycloalkyl nucleus of the structure:

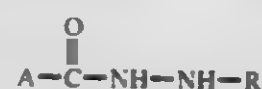


wherein

R¹ and R² are as defined above; and

j is a whole integer of from 1 to 4; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

21. A method of reducing the cholesterol ester content of an arterial wall in a mammal in need of such treatment, comprising administering to said mammal a cholesterol ester-reducing amount of a compound which is a hydrazide of the formula:

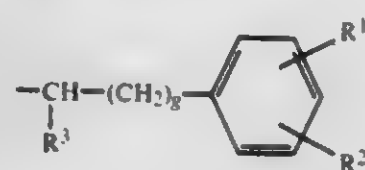


wherein

A is the residue of an unsaturated fatty acid minus the carboxylic function and has from 7 to 23 carbon atoms and has from 1 to 4 ethylenically unsaturated positions; and

R is:

(a) an aralkyl radical of the structure



wherein g is 0 or 1;

wherein

R¹ is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms; or alkyl having from 1 to 3 carbon atoms;

R² is a hydrogen atom, alkyl having from 1 to 3 carbon atoms, alkoxy having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; and

R³ is (i) a hydrogen atom, a phenyl radical of the structure (ii):



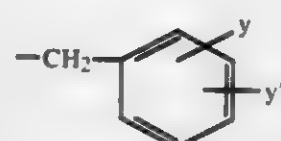
wherein

y is a hydrogen atom, halo having an atomic weight of from

about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms; and

y' is a hydrogen atom, alkoxy having from 1 to 3 carbon atoms, alkyl having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; or

a benzyl radical of the formula (iii)



wherein y and y' are as defined above; or iv) alkyl having from 1 to 8 carbon atoms; or R is:

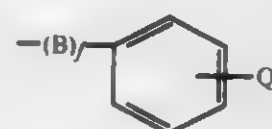
(b) a phenyl radical of the structure



wherein

R² is as defined above, and

R⁰ is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms; alkoxy having from 1 to 3 carbon atoms; or a radical of the structure R¹:



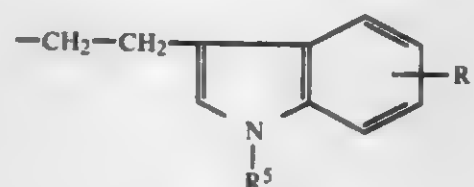
in which

B is $-\text{CH}_2-$ or $-\text{O}-$;

f is 0 or 1; and

Q is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms; or R is:

(c) an indolyl radical of the structure:

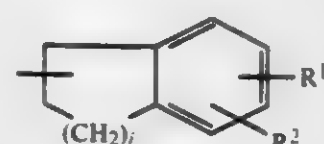


wherein

R¹ is as defined above, and

R⁵ is a hydrogen atom, alkyl having from 1 to 8 carbon atoms or benzyl (unsubstituted); or

R is (d) a benzocycloalkyl nucleus of the structure:



wherein

R¹ and R² are as defined above; and

j is a whole integer of from 1 to 4; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,229,464

AMINOPROPANOL SUBSTITUTED INDOLE COMPOUNDS AND COMPOSITIONS FOR THE TREATMENT OF CARDIAC AND CIRCULATORY DISEASES

Wolfgang Kampe, Heddeshheim, Fed. Rep. of Germany; Kurt Stach, deceased, late of Mannheim-Waldhof, Fed. Rep. of Germany; by Werner Plattner, administrator, Linz, Austria; Max Thiel, Mannheim, Fed. Rep. of Germany; Wolfgang Bartsch, Viernheim, Fed. Rep. of Germany; Karl Dietmann, Mannheim-Vogelstang, Fed. Rep. of Germany; Egon Roesch, Mannheim, Fed. Rep. of Germany, and Wolfgang Schaumann, Heidelberg, Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 805,558, Jun. 10, 1977, Pat. No. 4,152,446, which is a division of Ser. No. 626,512, Oct. 28, 1975, Pat. No. 4,076,829. This application Sep. 18, 1978, Ser. No. 943,512

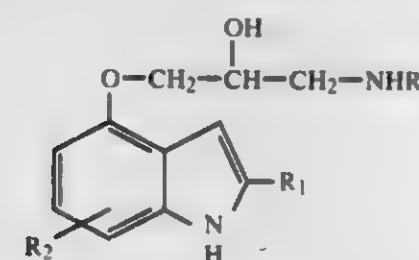
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1974, 2454406; Feb. 11, 1975, 2505681; Feb. 26, 1975, 2508251; Jun. 27, 1975, 2528771

Int. Cl.² A61K 31/40; C07D 209/18, 209/20

U.S. Cl. 424-274

11 Claims

1. Amino propanol of the formula



wherein

R is lower alkyl or cycloalkyl of from 3 to 6 carbon atoms

R¹ is pivaloyloxyalkyl, and

R² is hydrogen, lower alkyl, hydroxyalkyl, alkoxyalkyl or pivaloyloxyalkyl;

wherein the alkyl moieties contain up to 6 carbon atoms each; and the pharmacologically acceptable salts thereof.

7. Method of combatting or preventing cardiac and circulatory infirmities which method comprises applying to a subject in amounts effective for treatment or prophylaxis of cardiac or circulatory diseases an aminopropanol compound selected from

4-(2-hydroxy-3-tert-butylamino-propoxy)-2-pivaloyloxymethyl-indole, and

4-(2-hydroxy-3-isopropylamino-propoxy)-2-pivaloyloxymethyl-indole.

4,229,465

CYANOPYRROLE DERIVATIVES

Kazuhiko Ohkuma; Hideo Takagi; Akira Nakata, all of Kanagawa, and Shogo Kosaka, Hatano, all of Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,321

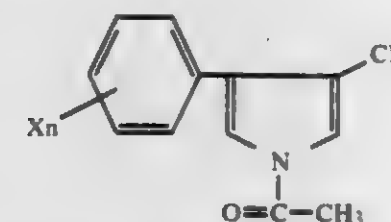
Claims priority, application Japan, Jul. 10, 1978, 53/83671

Int. Cl.² C07D 207/44; A61K 31/40

U.S. Cl. 424-274

9 Claims

1. A compound of the general formula



wherein X is chlorine, bromine, methyl or trifluoromethyl, and n is 0, 1 or 2.

7. A method for the control of fungi comprising applying to

the locus to be protected an effective amount of a compound of claim 1.

4,229,466

SESQUITERPENE DERIVATIVES HAVING ANTI-COMPLEMENTARY ACTIVITY

Wasei Miyazaki; Hirotsugu Kaise; Yoshimasa Nakano; Taketoshi Izawa; Yasuo Oshiro, all of Tokushima, and Masanao Shinohara, Naruto, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 15, 1978, Ser. No. 906,300

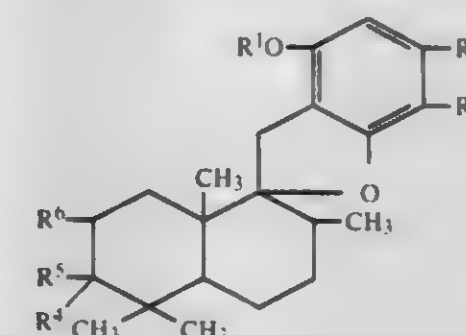
Claims priority, application Japan, Jun. 30, 1977, 52-78641; Dec. 29, 1977, 52-158959; Feb. 10, 1978, 53-14674

Int. Cl.² A61K 31/335; C07D 307/77, 307/92; A61K 31/34

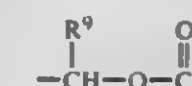
U.S. Cl. 424-279

6 Claims

1. A sesquiterpene derivative expressed by the general formula (I):



wherein R¹ represents a hydrogen atom, a lower alkyl group or a lower alkanoyl group; R² and R³, which may be the same or different, each represents a formyl group, a hydroxymethyl group, a hydroxyl group, a carboxyl group, a lower alkanoyloxymethyl group, or a group having the formula $-\text{CH}=\text{CR}^7\text{R}^8$ in which R⁷ and R⁸, which may be the same or different, each represents a hydrogen atom, a cyano group, a lower alkoxy carbonyl group or a carboxyl group, or R² and R³ may combine and form a lactone ring of the formula



in which R⁹ represents a hydrogen atom or a hydroxyl group; R⁴ and R⁵, which may be the same or different, each represents a hydroxyl group or a lower alkanoyloxy group; R⁶ represents a hydrogen atom; R⁴ and R⁵ may together form an oxo group; and R⁴ and R⁶ may combine to form a lower alkylidenedioxy group; or the pharmaceutically acceptable salts thereof.

4. A pharmaceutical composition having anticomplementary activity in animals comprising a therapeutically effective amount of the sesquiterpene derivative or the pharmaceutically acceptable salt thereof according to claim 1 and a pharmaceutically acceptable carrier.

6. A method for treating nephritis, which comprises administering a pharmaceutical composition containing the sesquiterpene derivative or the pharmaceutically acceptable salt thereof according to claim 1 and a pharmaceutically acceptable carrier to a nephritic patient in a daily dose of about 0.5 to about 20 mg/kg of body weight per day based on the sesquiterpene derivative.

4,229,467

ALKOXY BENZOFURAN CARBOXYLIC ACIDS AND SALTS AND ESTERS THEREOF AS HYPOLIPIDEMIC AGENTS

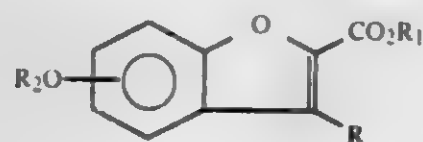
Roger A. Parker, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Aug. 16, 1979, Ser. No. 67,243

Int. Cl.² A61K 31/335; C07D 307/85

U.S. Cl. 424—285

1. A compound of the formula



wherein R is H or C₁₋₄ alkyl; R₁ is H or C₁₋₄ alkyl; and R₂ is straight or branched chain alkyl of 10-20 carbon atoms, straight or branched chain alkenyl of 10-20 carbon atoms, straight or branched chain alkadienyl of 10-20 carbon atoms or straight or branched chain alkatrienyl of 10-20 carbon atoms, and the pharmaceutically acceptable salts thereof.

10. A method of lowering serum lipids in a mammal which comprises administering thereto an amount of a compound of claim 1 effective to lower significantly the serum lipids thereof.

4,229,468

SKIN TREATMENT COSMETIC COMPOSITION

Kohel Miyao, Kokubunji; Yoshitaka Ito, Chigasaki, and Tsuneo Wachi, Tokyo, all of Japan, assignors to Asai Germanium Research Institute, Tokyo and Pola Chemical Industries, Inc., Shizuoka, both of Japan

Filed Oct. 26, 1978, Ser. No. 954,825

Claims priority, application Japan, Nov. 22, 1977, 52/139427

Int. Cl.² A61K 31/28

U.S. Cl. 424—287

9 Claims

1. A process for treating the skin to remove abnormal pigmentation and wrinkles and smooth the skin which comprises applying to the skin of patients a cosmetic preparation containing from 0.01 to 5 wt. % thereof of a compound selected from the group consisting of carboxyethyl germanium sesquioxide of the formula (Ge₂CH₂COOH)₂O₃, and its alkali metal, or ammonium salts.

4,229,469

INSECTICIDAL
ALKADIENYL CYCLOPROPANECARBOXYLATES

Toshio Mizutani, Toyonaka; Nobushige Itaya; Nobuo Ohno, both of Ikeda; Takashi Matsuo, Amagasaki; Shigeyoshi Kitamura, and Yositosi Okuno, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Division of Ser. No. 265,494, Jun. 23, 1972, Pat. No. 3,954,814.

This application Dec. 22, 1975, Ser. No. 642,920

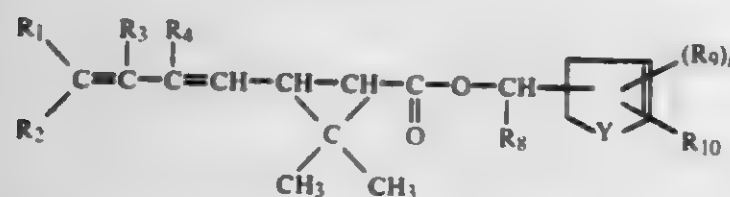
Claims priority, application Japan, Jun. 28, 1971, 46-47444

Int. Cl.² A01N 9/20; C07C 121/75

U.S. Cl. 424—304

18 Claims

1. A compound of the formula,



wherein R₁, R₂, R₃ and R₄ are respectively hydrogen atom or methyl, R₈ is cyano, R₉ is hydrogen atom, a halogen atom or methyl, R₁₀ is a halogen atom, methyl, allyl, propargyl, benzyl, phenoxy, methyl-, methoxy- or chlorine-substituted phenoxy or phenylthio, or R₉ and R₁₀ are bonded at the ends to form

trimethylene or tetramethylene, Y is —CH=CH— and n is 1 or 2.

16. A process for controlling insects, characterized by contacting the insects with an effective amount of the compound according to claim 1.

4,229,470

COMPOUNDS HAVING A TRICHLOROMETHYLIC END GROUP HAVING A JUVENILE HORMONE ACTION ON INSECTS AND ACARICIDE ACTIVITY

Paolo Piccardi, and Angelo Longoni, both of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Division of Ser. No. 731,047, Oct. 8, 1976, Pat. No. 4,140,794.

This application Jan. 17, 1979, Ser. No. 4,263

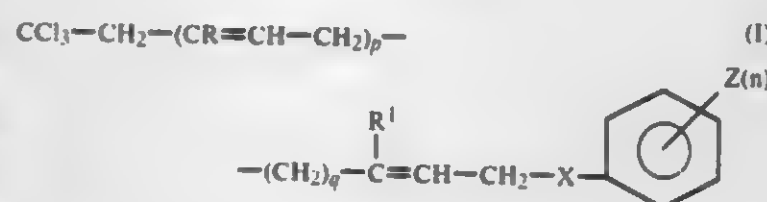
Claims priority, application Italy, Oct. 9, 1975, 28116 A/75

Int. Cl.² A01N 9/20, 9/24; C07C 43/28, 121/75

U.S. Cl. 424—304

13 Claims

1. Compounds of the general formula:



wherein:

R = H; CH₃

R¹ = CH₃; C₂H₅

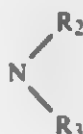
p = 0; 1

q = 1; 2 (when p = 1, q must be 1);

X = O; S

n = 1; 2; 3

Z = H; halogen; alkyl containing 1-5 carbon atoms; alkoxy containing 1-5 carbon atoms; C₁-C₅ thioalkyl; C₁-C₅ carboalkyl; C₁-C₅ carboxyalkyl; NO₂; phenyl;



(wherein R₂ and R₃, the same or different, are H or a C₁-C₅ alkyl); or CN.

12. The method of combatting noxious insects, which comprises spreading a composition comprising a carrier and the essential constituent of which is at least one compound of formula (I) of claim 1, in an amount of at least 0.01 p.p.m., or in an amount of at least 0.002 g/insect, on the insects, the habitat thereof, the food thereof, the eggs thereof, the pupae or larvae, or the food of the pupae or larvae.

4,229,471

N-(2-ETHYLHEXYL)-CROTONAMIDES

Atsushi Ichikawa, Takatsuki; Kenkichi Tomita, Kyoto; Taku Horiuchi, Ninomiya; Shin-ichi Suzuki, Shizuoka, and Akira Sakuma, Kamakura, all of Japan, assignors to The Lion Dentrifrice Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,815

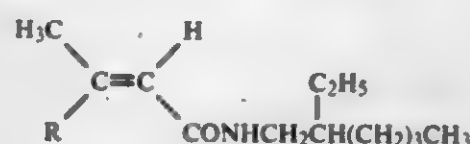
Claims priority, application Japan, Aug. 11, 1978, 53-97889

Int. Cl.² C07C 103/56; A61K 31/16

U.S. Cl. 424—320

4 Claims

1. A compound represented by the formula:



wherein R is selected from the group consisting of hydrogen and methyl.

4,229,472

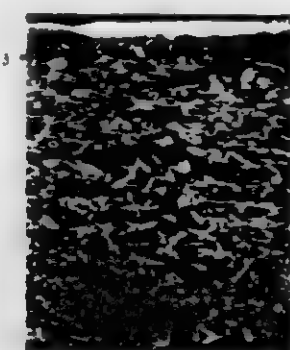
SHEET MATERIAL

Stuart P. Suskind, Montclair, and Stanley G. Sova, Clifton, both of N.J., assignors to Iamont Corporation, New York, N.Y. Division of Ser. No. 616,714, Sep. 9, 1974, Pat. No. 4,076,879, which is a continuation-in-part of Ser. No. 512,265, Oct. 4, 1974, abandoned. This application Feb. 24, 1978, Ser. No. 881,102 The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.

Int. Cl.¹ B32B 5/12, 7/02

U.S. Cl. 428—113

10 Claims



1. A sheet comprising criss-crossing fibers, of elastomeric polyurethane, running parallel to the surfaces of the sheet, said sheet containing a polymeric binder of elastomeric polyurethane adhered to said fibers within said sheet, the weight ratio of said binder to said fibers being in the range of about 1:10 to 6:10, said fibers being bonded together at their points of contact, the pores of said sheet constituting about 2/5 to 182 of the volume of said sheet, the proportion and position of said binder being such that the interior of said sheet has a structure of said criss-crossing fibers running parallel to the surfaces of the sheet with open pathways between intersecting fibers and there are bodies of said binder which each surround, and are firmly bonded to, a plurality of overlying intersecting fibers in the interior of said sheet.

4,229,473

PARTIAL INTERLAMINAR SEPARATION SYSTEM FOR COMPOSITES

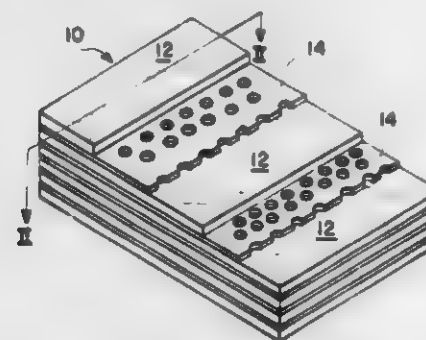
Wolf Elber, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 24, 1978, Ser. No. 889,671

Int. Cl.¹ B32B 3/10, 5/12, 27/12

U.S. Cl. 428—113

6 Claims



1. A composite laminate having improved fracture resistance comprising:

a plurality of prepreg tape segments vertically stacked with controlled fiber orientation in each stacked layer and cured into a composite laminate;

at least one layer of a thin perforated polyester foil film disposed between two adjacent layers of prepreg tape and

wherein the adjacent prepreg tape layers are permanently bonded to each other through the perforations in said polyester foil film when the laminate is cured, said laminae being otherwise essentially unbonded.

4,229,474

BREAKAGE RESISTANT V-GROOVED <100> SILICON SUBSTRATES

Alan L. Harrington, Glendale, Calif., assignor to TRW Inc., Los Angeles, Calif.

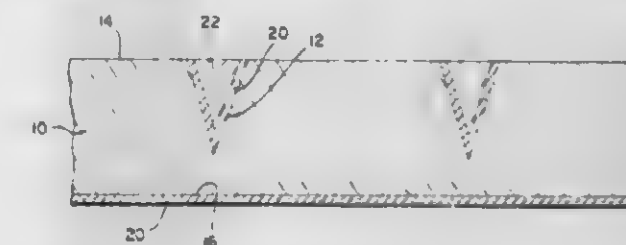
Division of Ser. No. 959,519, Nov. 13, 1978, Pat. No. 4,191,988.

This application May 25, 1979, Ser. No. 42,983

Int. Cl.¹ H01L 21/302, 21/314

U.S. Cl. 428—162

4 Claims



1. A crystalline semiconductive wafer comprising a plurality of V-grooves which are aligned to enable the separation of semiconductive crystals by breaking of the wafer along the V-grooves;

a thin polycrystalline intrinsic silicon layer, of approximately 7 to 10 microns in thickness, applied onto the top and bottom sides of the substrate; and

a thick polycrystalline intrinsic silicon layer, sufficient to fill the grooves, applied over the thin polycrystalline intrinsic silicon layer on the top, the grooved side, of the substrate

4,229,475

PERMEABLE DRYER CYCLE FABRIC SOFTENER SHEET

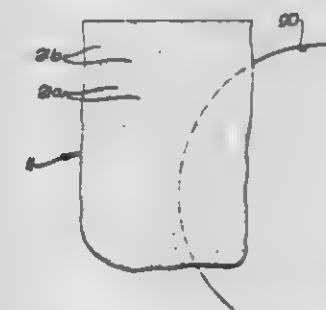
John H. Barrett, La Mirada, and Brian P. Flynn, Long Beach, both of Calif., assignors to Purex Corporation, Lakewood, Calif.

Continuation of Ser. No. 840,102, Oct. 6, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,698

Int. Cl.² B32B 3/10

U.S. Cl. 428—196

6 Claims



1. A fabric conditioning means adapted for use in a clothes dryer to allow substantially unrestricted hot airflow to the dryer exhaust duct in all positions of said means in the dryer, said means comprising

(a) a continuous and interstitially impregnable air-permeable carrier sheet.

(b) a fabric conditioner composition on the sheet.

(c) said conditioner defining local substantially regularly distributed concentrations thereof impregnating and occluding interior interstitial spaces in certain regions of the sheet interior to block airflow therethrough, the sheet with said conditioner characterized as having greater air permeability at other sheet interior regions located adjacent to and between said concentrations than at said con-

centrations, said other regions of the sheet characterized by interstitially open spaces,

(d) said interstitially open spaces in said other sheet regions characterized as relatively larger spaces from which said conditioner has been removed by fluid streams, there being additional interstitial spaces in said other regions which are relatively smaller and which contain remanent conditioner.

4,229,476

THIN FILM STRUCTURE ON A RIBBON SUBSTRATE FOR ELECTRIC COMPONENTS AND MANUFACTURE THEREOF

Herbert Förster, Remshalden, and Dieter Bayer, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 832,350, Sep. 12, 1977, abandoned. This application Mar. 20, 1979, Ser. No. 22,375

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1976, 2641232

Int. Cl.¹ B32B 3/10

U.S. Cl. 428—201

4 Claims

1. A thin film electric circuit component having a carrier substrate of insulating material, a film of vapor-deposited oxide on at least one surface of said substrate and a film of metal thereover and having the improvement consisting in that:

said substrate is a ribbon or tape of a material selected from the group consisting of paper and synthetic resin;

said oxide is directly deposited on said substrate in contact therewith and is selected from the group consisting of the oxides of elements aluminum, magnesium, bismuth, antimony, lead, cadmium, tungsten, molybdenum, beryllium, indium, titanium, barium, chromium, zircon, nickel, cobalt, manganese, silicon and boron and mixed oxides of a plurality of said elements;

said metal film is directly deposited on said oxide film wherever the latter covers said substrate and is a film of metal selected from the group consisting of aluminum, zinc, cadmium and mixed zinc and cadmium; and said metal oxide only partly covers, in patches or islands thereon, the surface or surfaces of said substrate on which it is overlain by said metal film, whereas said metal film fully covers said substrate surface or surfaces.

4,229,477

PHARMACEUTICAL COMPOSITIONS CONTAINING BROMHEXINE AND METHOD OF TREATING DIABETIC NEPHROPATHY THEREWITH

Julian H. Shelley, Newbury; John R. Clamp, and Martin Hartog, both of Bristol, all of England, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,286

Claims priority, application United Kingdom, May 26, 1978, 23189/78

Int. Cl.¹ A61K 31/135

U.S. Cl. 424—330

3 Claims

1. The method of treating diabetic nephropathy in a human patient, which comprises administering to said patient an effective amount of N-(2-amino-3,5-dibromo-benzyl)-N-methyl-cyclohexylamine or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

4,229,478

NAPHTHAQUINONE ANTI-PSORIATIC AGENTS

Gordon H. Jones, Cupertino, and John Young, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 5, 1978, Ser. No. 912,697

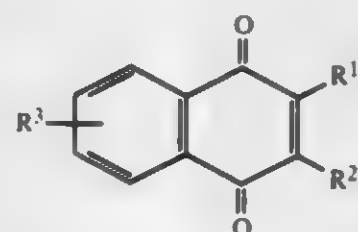
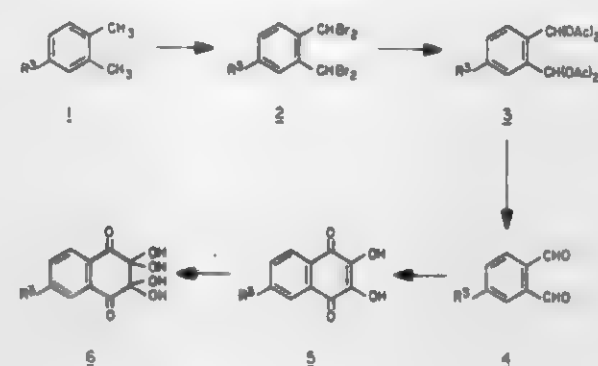
Int. Cl.² A61K 31/12

U.S. Cl. 424—331

8 Claims

1. A method for relieving the condition of psoriasis which

comprises topically administering to mammals in need thereof an amount of a compound of the formula



(1)

where R^1 and R^2 are the same or different and are hydrogen, hydroxy or C_1 to C_{18} linear or branched alkoxy and R^3 is hydrogen, halo, cyano or C_1 to C_{18} linear or branched alkoxy, with the proviso that R^1 and R^2 are not both hydrogen, sufficient to relieve the condition of psoriasis in mammals in combination with a pharmaceutically acceptable, non-toxic carrier suitable for said administration form.

4,229,479

FLUORACYLRESORCINOLS AS INGREDIENTS IN PHARMACEUTICAL, COSMETIC AND PESTICIDAL COMPOSITIONS

Rolf Brickl; Hans Eberhardt; Karl-Richard Appel, all of Biberach; Uwe Lechner, Ummendorf, and Walter Merk, Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 786,266, Apr. 11, 1977, abandoned.

This application Aug. 30, 1978, Ser. No. 937,991

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616478

Int. Cl.¹ A01N 35/00; A61K 31/12

U.S. Cl. 424—331

1 Claim

1. The method of inhibiting the growth of bacteria and fungi, which comprises contacting said bacteria and fungi with an effective amount of a composition consisting essentially of an inert pharmaceutical carrier and from 1 to 10% by weight, based on the total weight, of at least one compound selected from the group consisting of 2,4-dihydroxy-trifluoroacetophenone, 5-ethyl-2,4-dihydroxy-trifluoroacetophenone and 3-ethyl-2,4-dihydroxy-trifluoroacetophenone.

4,229,480

EMULSIFIERS FOR BAKED GOODS

James L. Suggs, Greenville, and Dan F. Buck, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 889,474, Mar. 28, 1978, abandoned. This application Dec. 29, 1978, Ser. No. 974,286

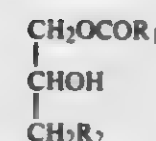
Int. Cl.² A21D 2/16

U.S. Cl. 426—24

16 Claims

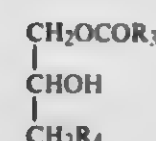
1. A free-flowing wettable powder, substantially all of the particles of which consist essentially of esters of fatty acids in solid solution, said esters consisting essentially of

(a) from about 25% to about 75% by weight of at least one saturated ester of the formula



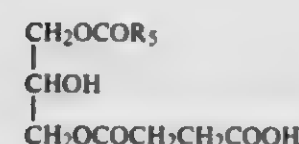
wherein R_1 is the residue of an (even numbered) straight chain saturated fatty acid having from 8 to 22 carbon atoms and R_2 is OH or H.

(b) from about 10% to about 75% by weight of at least one unsaturated ester of the formula



wherein R_3 is the residue of an (even numbered) straight chain unsaturated fatty acid having from 8 to 22 carbon atoms and R_4 is OH or H, and

(c) from 0 to about 65% by weight of a succinylated monoglyceride of the formula



wherein R_5 is the residue of an even numbered straight chain saturated fatty acid having from 8 to 22 carbon atoms,

said esters being at least 40% monoesters and having an iodine value of from about 5 to about 33.

4,229,481

PROCESS AND MEANS TO MAKE AROMATIC INFUSIONS

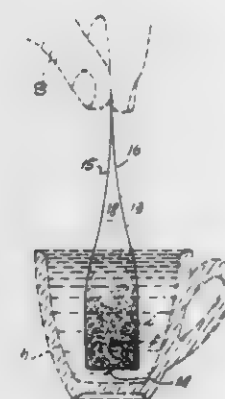
Hector C. Fornari, 615 Mexico St., Buenos Aires, Argentina

Continuation-in-part of Ser. No. 725,453, Sep. 22, 1976, abandoned. This application Jun. 16, 1978, Ser. No. 916,302

Int. Cl.² B65B 29/02

U.S. Cl. 426—77

12 Claims



2. A sachet package for preparing infusions of particulate aromatic substances such as coffee and tea comprising an elongated closed water permeable supporting and filtering container of predetermined dimensions which in a state of immersion has a flat bottom, and a predetermined quantity of an infusible aromatic substance within said container, the infusible aromatic substance becoming a saturated and self-compacted infusible mass upon immersion; the volume relationship between the inside of the container and said saturated self-compacted infusible mass is such that the volume of said infusible mass is not greater than one half of the total volume of the container in an operating immersed state so that the container contains, in a state of immersion, in a vessel containing liquid to be infused, a liquid mass of not less than double the

volume which the infusible mass achieves when it is saturated and self-compacted inside the container, the infusible substance being provided in such a quantity that, in a state of saturated mass and spontaneously compacted in the infusion liquid and inside the container it is capable of achieving a smaller thickness than its minimum critical thickness in height of irreversible self-compactness, such smaller thickness, which is of reversible self-compactness, corresponding to all spontaneous states of thickness at or under which the mass of infusible substance maintains its natural capacity for the state of saturation and immersion in the infusion liquid and allows the particles of the substance to separate as a result of the dynamic action of the infusion liquid when the liquid enters into the container through the walls and bottom of the container upon the container being immersed in the liquid in said vessel.

4,229,482

LOLLIPOP AND METHOD OF MAKING SAME

Alvin Kreske, Jr., Rte. 5, Box 407, Valparaiso, Ind. 46383

Filed Jan. 19, 1978, Ser. No. 916,568

Int. Cl.² A23G 3/00

U.S. Cl. 426—134

9 Claims



1. A method of making a lollipop comprising: providing a hollow elongated liquid tight rigid stick member open at both ends and having an enlarged hollow portion at one end thereof providing a cavity; covering the entire exterior surface of the enlarged hollow end portion and opening at said one end with a hard candy body, dissolvable in the mouth, thereby sealing the opening at said one end with said body to make the cavity liquid tight;

thereafter displacing the air from the cavity and interior of the stick member with liquid comestible flavoring material by flowing such material through the open other end of the stick member and into the interior of the stick member including the cavity, said stick member and cavity being constructed of a material impermeable to the liquid flavoring material; and

then sealing the open other end of the stick member.

4,229,483

COLORING MATTER FOR FOODS

Maremi Oura, Takaishi; Haruo Tsumura, Osaka, and Hayato Kubota, Izumi, all of Japan, assignors to Fuji Oil Company, Ltd., Osaka, Japan

Filed Dec. 14, 1978, Ser. No. 969,261

Claims priority, application Japan, Jan. 10, 1978, 53-1813

Int. Cl.² A23L 1/275

U.S. Cl. 426—250

8 Claims

1. A coloring matter for foods consisting essentially of shea nut meal having a particle size of not more than 100 microns, which is produced by treating shea nut meal with a medium selected from the group consisting of water and 10-99% (W/V) aqueous ethanol solution at 10°-80° C., said water and aqueous ethanol solution being used in an amount of more than

2.5 times and 0.05 to 5 times, respectively, as much as the volume of the shea nut meal to be treated.

4,229,484

PROCESS FOR THE PRODUCTION OF CENTER-FILLED BARS OF CONFECTIONERY

Gordon Steels, Peterborough, and Raymond G. Dacey, Hemel Hempstead, both of England, assignors to Baker Perkins Holdings Limited, Hertfordshire, England

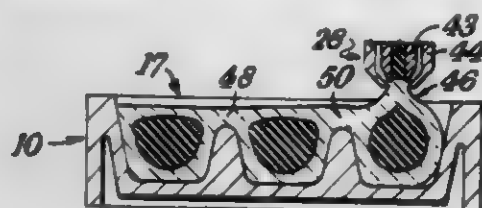
Filed Mar. 27, 1979, Ser. No. 24,451

Claims priority, application United Kingdom, Apr. 11, 1978, 14178/78

Int. Cl.¹ A23G 3/00

U.S. Cl. 426-279

2 Claims



1. A process for the production of bars of centre-filled confectionery, each of said bars having a flat base of shell material and a number of protuberances all of shell material, said protuberances being separated by thin portions of said base and each protuberance containing a filling of material different from the shell material which is completely enclosed by the shell material, which process comprises moving in succession into position beneath a depositor the cavities of a mould containing a plurality of aligned cavities separated by webs and having side and end walls which are higher than said webs, and delivering from said depositor into each of said cavities without relative movement between the depositor and the cavity a globular deposit, consisting of filling material totally enclosed by shell material, in an amount sufficient to cause shell material only of said deposit to overflow from said cavity onto the web separating said cavity from an adjoining unfilled cavity, successive deposits being made in sufficiently rapid succession for the overflowing portions of shell material on said webs to join together to form the flat base of a bar.

4,229,485

GLAZED LIVER COATED BISCUIT OR KIBBLE FOR PETS

Bruce W. Brown, Virgil E. Copple, and Carroll K. Wilson, all of El Paso, Tex., assignors to Jerky Treats, Inc., El Paso, Tex.

Filed Jul. 25, 1978, Ser. No. 927,798

Int. Cl.² A23K 1/00

U.S. Cl. 426-305

14 Claims

1. The method of making a pet food product, comprising: heating a dry, solid edible core, formed of at least 40 weight percent of farinaceous material to a temperature of at least 200° F.;

applying to said core while at a temperature of at least 200° F., a slurry of comminuted liver at a substantially lower temperature, containing, on a dry weight basis, at least 50% by weight of liver, to form a coating containing at least 50% by weight of liver, on said core; and

baking said coated core at a temperature of at least 350° F. to reduce the moisture content thereof to a range of between 8% and 18% by weight to form a continuous glaze of said coating encapsulating said core.

4,229,486

METHOD OF DEGERMING MAIZE

Roman Muller, Niederuzwil, Switzerland, assignor to Gebrueder Buehler AG, Switzerland

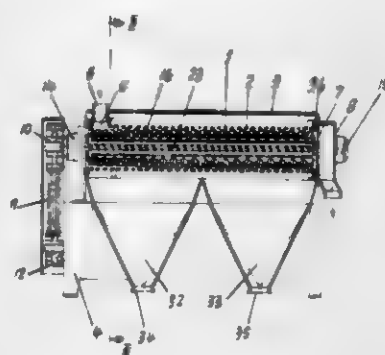
Filed Sep. 21, 1978, Ser. No. 944,321

Claims priority, application Switzerland, Sep. 30, 1977, 11958/77

Int. Cl.¹ A23L 1/172

U.S. Cl. 426-483

17 Claims



1. The method of degerming maize which comprises the steps of:

(a) introducing maize into one end of a generally annular working chamber which is defined by a spinning rotor which is contained within a perforated housing;

(b) subjecting the maize to the whirling action of not less than about 60 blades carried by the rotor, the blades having two sides which extend along the blades from the vicinity of the housing in the direction of the rotor and having a flattened profile at their outer end and of sufficient thickness to provide two degerming edges on each side of the blade;

(c) allowing the maize to remain in the annular working chamber for a time sufficient to permit the blades to separate the germ from the endosperm of at least a portion of the maize, wherein the separated germ passes out of the working chamber through the perforated housing; and

(d) recovering the degermed maize and the remaining portion of the maize which was not degermed in the annular working chamber at the other end of the working chamber.

4,229,487

METHOD AND APPARATUS TO MAKE COOKIES

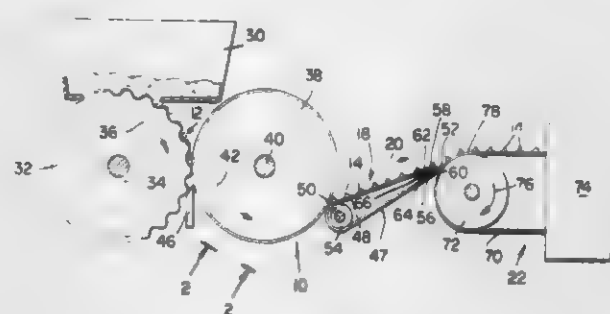
William G. Crothers, Princeton, N.J., assignor to Deer Park Baking Co., Hammon, N.J.

Filed May 2, 1979, Ser. No. 35,313

Int. Cl.² A21D 6/00

U.S. Cl. 426-496

18 Claims



17. A process for making a cookie comprising:

(a) forming dough into individual cookie bits;

(b) transferring the bits by a transfer conveyor means for moving the bits between a first location where the bits are received on a transfer surface to a second location above said first location where said bits are removed from the transfer surface; and

(c) transferring the bits to an oven conveyor means directly adjacent to and extending above said transfer conveyor

means where said bits are received directly from said transfer conveyor means so that said bits are at the height of the second location as the bits are received on said oven conveyor means.

4,229,488

PASTA CONDITIONER

James L. Suggs, Greenville, and Dan F. Buck, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 939,301, Sep. 5, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,669

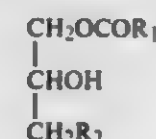
Int. Cl.² A23L 1/16, 1/216

U.S. Cl. 426-557

16 Claims

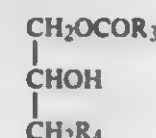
1. A water dispersible powder adapted for use as a starch complexing agent in pasta and potato product, the particles of which consist essentially of,

(a) from about 85 to about 95% of at least one saturated monoester of the formula



wherein R₁ is the residue of a vegetable oil even numbered straight chain saturated fatty acid having from 8 to 22 carbon atoms and R₂ is OH or H, and

(b) from about 15% to about 5% of at least one saturated monoester of the formula



wherein R₃ is the residue of a vegetable oil even numbered straight chain unsaturated fatty acid having from 8 to 22 carbon atoms and R₄ is OH or H, the percentages of which are based on the total monoglyceride content of the powder.

4,229,489

COLD-WATER DISPERSIBLE, GELLING STARCH

Chung W. Chiu, Princeton, and Morton W. Rutenburg, North Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 29, 1979, Ser. No. 43,040

Int. Cl.² A23L 1/195

U.S. Cl. 426-578

9 Claims

1. A cold-water dispersible, modified tapioca starch with gelling properties, prepared by drum-drying a tapioca starch which has been reacted with a crosslinking agent such that the crosslinked starch has a peak Brabender viscosity of from about 250 to about 850 B.U. and reaches peak viscosity from 50° C. in about 22 to 65 minutes, the crosslinked starch being thereafter converted such that the crosslinked, converted starch has a Brabender Viscosity Differential, measured between 80° and 95° C., of from about -40 to about +55% and has a minimum Brabender viscosity at 80° C. of about 100 B.U., said starch after drum drying being capable of forming a gel having a Bloom strength of at least 50 grams.

4,229,490

NOVEL METHOD FOR CATALYST APPLICATION TO A SUBSTRATE FOR FUEL CELL ELECTRODES

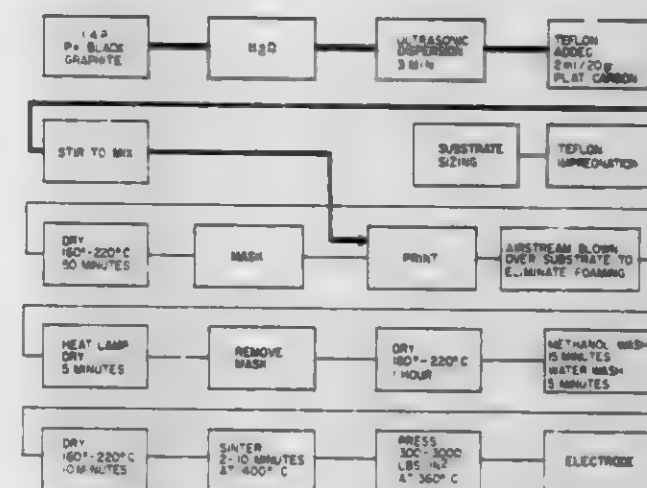
Steven N. Frank, McKinney, and James G. Frank, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 1, 1978, Ser. No. 938,748

Int. Cl.² B05D 5/12

U.S. Cl. 427-113

9 Claims



1. The method of making an improved fuel cell electrode comprising the steps of selecting and sizing a thin porous graphitized carbon member, impregnating said member with Teflon, drying said member, mixing platinum black and minute particles of graphite in a ratio of about one part platinum black to four parts graphite, adding a solution in the ratio of about 44 milliliters of Triton X-100 (Octyl phenoxy polyethoxy ethanol) and 20 milliliters of water for each 20 grams of the platinum black/graphite to produce a first mix, adding about 12 milliliters of Teflon 30 to each 20 grams of said first mix to produce a second mix, blending said second mix, screen printing said second mix upon a major surface of the member to produce a coating comprising platinum black catalytic material and finely divided graphite, drying said coating and sintering said coating.

4,229,491

PROCESS FOR PRODUCING CADMIUM STANNATE LAYERS

Helmut Dislich, Budenheim; Paul Hinz, and Günther Wolf, both of Mainz, all of Fed. Rep. of Germany, assignors to Jenaer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,077

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755468

Int. Cl.² B05D 1/18, 3/02, 3/04

U.S. Cl. 427-160

9 Claims

1. In a dipping process for the production of cadmium stannate layers on a substrate, the improvement which comprises:

(a) dipping said substrate into an alcoholic solution of a reaction product containing cadmium and tin derived from a cadmium compound and a tin compound, said solution consisting essentially of compounds having hydrolyzable and pyrolyzable residues;

(b) withdrawing the substrate from said solution in an atmosphere sufficiently humid for the subsequent hydrolysis; and

(c) gradually heating the coated substrate to 650° C., whereby hydrolysis and pyrolysis removes said residues from the coated substrate to form a coated substrate in which the molar ratio Cd:Sn corresponds to that of said alcoholic dipping solution.

4,229,492

CONTROL OF AUTODEPOSITION BATHS

Harry M. Leister, Ambler; Joseph C. Donovan, Drexel Hill, and Wilbur S. Hall, Plymouth Meeting, all of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Dec. 30, 1977, Ser. No. 866,053

Int. Cl.² B05D 1/40, 1/18

U.S. Cl. 427—345

4 Claims

1. In an autodepositing coating process wherein an aqueous acidic coating composition having dispersed therein a coating forming resin and a surfactant, wherein said surfactant is modified in the course of the coating operation, the improvement which comprises extracting the modified surfactant with a water immiscible organic solvent.

4,229,493

BALED WASTEPAPER PRODUCT CONTAINING A DEINKING CHEMICAL

Bernard Bendiner, Richland Township, Kalamazoo County, Mich., and Barry I. Margolis, Highland Park, Ill., assignors to Fibre-Chem Corporation, Highland Park, Ill.

Filed Apr. 30, 1979, Ser. No. 34,685

Int. Cl.² B65D 71/00

U.S. Cl. 428—2

11 Claims

1. A bale of wastepaper containing incorporated therein an effective amount of water-soluble or water-dispersible deinking chemical for deinking said wastepaper, said deinking chemical consisting essentially of synthetic organic surface active agent effective to disperse ink present on the wastepaper in the form of very small ink particles when the bale of wastepaper is deinked and pulped in an aqueous alkaline bath.

4,229,494

CERAMIC UTENSILS

William B. Crandall, Alfred Station, and Linda J. Wasserstein, Rockville Centre, both of N.Y., assignors to Alfred University Research Foundation, Inc., Alfred, N.Y.

Division of Ser. No. 874,141, Feb. 1, 1978, Pat. No. 4,155,788.

This application Jan. 31, 1979, Ser. No. 7,951

The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.

Int. Cl.² A21D 8/06; A23L 1/00; C04B 35/14

U.S. Cl. 428—35

6 Claims



1. A ceramic utensil having a non-sticking food-contacting surface for use in the preparation and/or serving of foodstuffs, comprising a shaped, fired body having a non-porous, fired Alfred shale terra sigillata coating on at least the food-contacting surfaces thereof, said body having been prepared by firing a green clay composition comprising a shale having approximately the following chemical analysis:

Ingredient	Ave. % by Weight
SiO ₂	61.2
Al ₂ O ₃	19.6
Fe ₂ O ₃	7.4
MgO	1.3
CaO	0.4
TiO ₂	1.0
Na ₂ O	1.4
K ₂ O	3.7
Loss on ignition	4.0
	100.0

and said Alfred shale terra sigillata coating having been prepared by firing on said body a coating composition which has approximately the following formulation:

pared by firing on said body a coating composition which has approximately the following formulation:

Ingredient	% by Weight
Alfred shale (ground)	20 to 40
Dispersing agent	0.01 to 1.0
Water	60 to 80

5. In a method for cooking a foodstuff, the improvement wherein said foodstuff is cooked in a non-sticking cooking utensil comprising a fired body of Alfred shale having at least the food-contacting surface of said utensil coated with a non-porous dried layer of Alfred shale terra sigillata, said Alfred shale terra sigillata coating of said utensil having been prepared by firing on said body a coating composition having approximately the following formulation:

Ingredient	% by Weight
Alfred shale (ground)	20 to 40
Dispersing agent	0.01 to 1.0
Water	60 to 80

4,229,495

COATING METHOD AND ARTICLE PRODUCED THEREBY

Minora Takahashi, Uji; Osamu Ishii, Takatsuki; Masanori Naito; Yoshinobu Kusuha, both of Mishima, and Naofumi Imahigashi, Takatsuki, all of Japan, assignors to Seikisui Kagaku Kogyo Kabushiki Ltd., Osaka, Japan

Division of Ser. No. 825,855, Aug. 18, 1977, Pat. No. 4,172,734.

This application Dec. 20, 1978, Ser. No. 971,301

Claims priority, application Japan, Aug. 23, 1976, 51-100796

Int. Cl.² F16L 58/06, 58/10

U.S. Cl. 428—36

14 Claims

1. A coating method which comprises applying a primer dispersion to the surface of a metallic substrate to be coated, the primer dispersion being a dispersion of a mixture of aluminum powder and zinc powder the weight ratio of the aluminum powder to the zinc powder being 95:5 to 70:30 in a solution of at least one organic solvent-soluble C₁₋₄-alkyl silicate in an organic solvent, the weight ratio of the metal powder to the alkyl silicate being 60:40 to 95:5; baking the coating; coating a finishing powder paint on the resulting primer; and then baking the finish coating.

4,229,496

DECORATIVE LINKWORK

Oskar Striegel, Illingen-Schützlingen, Fed. Rep. of Germany, assignor to Friedrich Münch Silber-und Alpacawarenfabrik, Mühlacker, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,649

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1978, 2818021

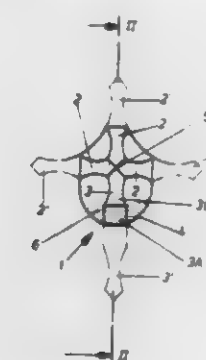
Int. Cl.² B32B 3/00, 7/08

U.S. Cl. 428—53

4 Claims

1. Decorative linkwork or mesh sheet formed of plates having outwardly extending arms, each of said outwardly extending arms being formed into U-shaped hook formations with the inner end of each arm extending inwardly of the outer edges of the plate, a separate interconnecting ring means engaging each of the U-shaped hook configurations of the arms of each of said plates, at least one of said outwardly extending arms being folded back inwardly from the edge of the plate and in contiguous

ous contact with the rear surface of the plate for a predetermined length to form a spacing between the edge of the plate



and the hook configuration of the respective arm, in order to permit an overlapping relationship of adjacent plates.

4,229,497

COMPOSITE MODULE WITH REINFORCED SHELL

Matthew R. Piazza, Nichols, Conn., assignor to Maso-Therm Corporation, Bridgeport, Conn.

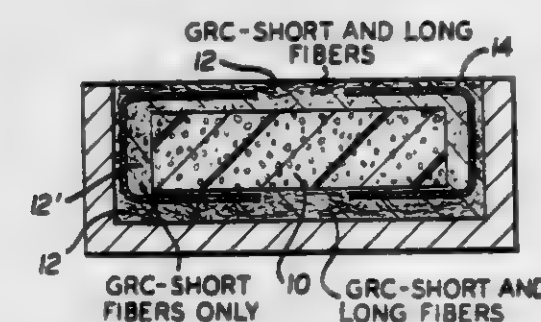
Continuation-in-part of Ser. No. 754,877, Dec. 27, 1976, abandoned. This application Nov. 3, 1977, Ser. No. 848,411

The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.

Int. Cl.² E04C 1/40, 2/06

U.S. Cl. 428—71

25 Claims



1. Composite panel-like building module comprising a rigid foam core encapsulated in a fiber-reinforced shell of cementitious material having edge portions and major surface portions:

(i) said major surface portions being reinforced with a first fibrous reinforcing material in discrete fiber form distributed in an interconnected random matrix in the major surface portions of the shell;

(ii) said edge portions being reinforced with two further fibrous reinforcing materials, one being in discrete fiber form which is premixed with the cementitious material forming the edge portions and the other being in scrim form which extends from the edge portions into the major surface portions of the shell, said premixed fibers being shorter than the first fibrous reinforcing material in the major surface portion of the shell.

15. Composite module such as a highway barrier comprising a rigid foam core encapsulated in a shell of reinforced cementitious material which is formed in situ around the core by

(a) providing a mold having a bottom and side walls; (b) lining said mold with a scrim reinforcing materials (c) suspending a rigid foam core member wrapped in a scrim reinforcing material in said mold leaving a free space between the wrapped core member and the mold bottom and side walls (d) filling said free space with a premix of wet cementitious material and fibers; and (e) curing said cementitious material and removing the thus formed module from the mold.

16. Process for making a composite panel-like building mod-

ule having a rigid foam core encapsulated in a shell of reinforced cementitious material which comprises:

(a) providing a mold having a bottom and side walls; (b) successively applying wet cementitious material and individual fibers in the mold, the fibers being applied by chopping rolls of continuous fibers and spraying the chopped fibers into the mold;

(c) distributing the fibers into the wet cementitious material in a random interconnected matrix to form a bottom layer; (d) placing scrim reinforcing material on top of the bottom layer and which extends therefrom up over the top of the mold side walls;

(e) placing a rigid foam core member on said bottom layer, said core member having a peripheral shape smaller than the mold interior leaving a free space between the core member and the mold side walls, said core member having a thickness less than the height of the mold side walls;

(f) depositing wet cementitious material premixed with fibers in the free space between the core member and the mold side walls;

(g) folding the scrim material extending over the top of the mold side walls in over the core member;

(h) successively applying wet cementitious material and individual fibers in the mold, the fibers being applied by chopping rolls of continuous fibers and spraying the chopped fibers into the mold;

(i) distributing the fibers into the wet cementitious material applied in (h) in a random interconnected matrix to form a top layer over the core and folded scrim material to encase the core in an integral fiber reinforced shell of cementitious material; and

(j) curing the wet cementitious shell surrounding the core and removing the thus formed module from said mold.

25. Process for forming a composite module such as a highway barrier having a rigid foam core encapsulated in a shell of reinforced cementitious material which comprises

(a) providing a mold having a bottom and side walls; (b) lining said mold with a scrim reinforcing material; (c) suspending a rigid foam core member wrapped in a scrim reinforcing material in said mold leaving a free space between the wrapped core member and the mold bottom and side walls;

(d) filling said free space with a premix of wet cementitious material and fibers; and

(e) curing said cementitious material and removing the thus formed module from the mold.

4,229,498

LIGHT-POLARIZING FILM

Hajime Suzuki; Hiroyuki Hamada, and Rinjiro Ichikawa, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Mar. 29, 1979, Ser. No. 25,233

Int. Cl.² B32B 27/32; G02F 1/17; G02B 5/30

U.S. Cl. 428—212

14 Claims

1. A light-polarizing film comprising a polymer mixture of (a) a polymer having polyene chains formed by partial dehydrohalogenation of a halogenated vinyl polymer or a halogenated vinylidene polymer and (b) at least one polymer selected from the group consisting of acrylate polymers and methacrylate polymers; said film having said polyene chains oriented by stretching at least 1.2 times its length and said film having substantially improved heat stability as compared to a similar film absent (b).

4,229,499

ACID PHTHALATE CRYSTAL

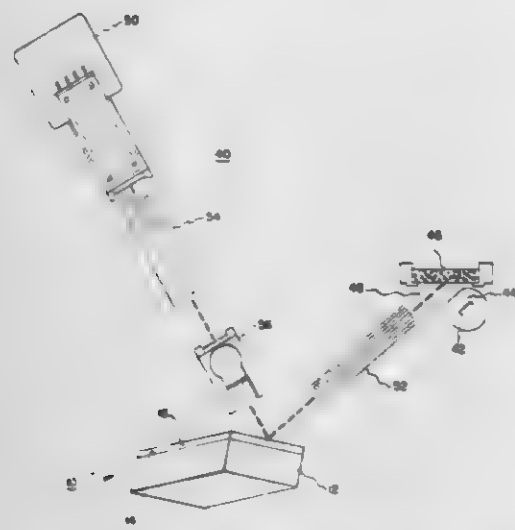
Ronald Jenkins, Peekskill, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,674

Int. Cl.² B32B 5/16, 9/00

U.S. Cl. 428—336

15 Claims



6. An X-ray analyzing crystal exhibiting good deterioration resistant qualities, comprising:

- (a) an acid phthalate crystal having a first surface and
- (b) a layer disposed at at least said first surface and having a thickness not exceeding about 2,000 Å, said layer consisting essentially of a material selected from the group consisting of aluminum, gold, and carbon being substantially chemically inert to the ambient atmosphere.

4,229,500

POLYAMIDE MULTIFILAMENT YARN

Teruhiko Adachi, and Hitoshi Ikeda, both of Mihara, Japan, assignors to Teijin Limited, Osaka, Japan

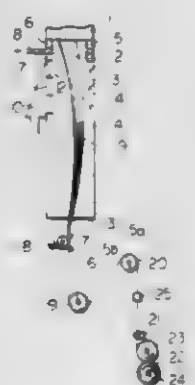
Filed Jan. 3, 1978, Ser. No. 866,542

Claims priority, application Japan, Jan. 13, 1977, 52-1870

Int. Cl.¹ D02G 3/00

U.S. Cl. 428—373

8 Claims



1. A polyamide yarn which comprises a plurality of multifilaments consisting essentially of polycapramide, characterized in that the individual filaments in said yarn have a birefringence (Δn) of from 0.045 to 0.055, a denier from 0.4 to 0.8 and an X-ray diffraction intensity ratio satisfying the following relationship (I):

$$0.50 \leq I_{23}/I_{21} \leq 1.00$$

wherein I_{23} represents the X-ray diffraction intensity at a Bragg reflection angle (2θ) of 23.2 degrees and I_{21} represents the X-ray diffraction intensity at a peak formed at a Bragg reflection angle (2θ) of around 21 degrees.

4,229,501

STEEL RODS, ESPECIALLY REINFORCING OR TENSIONING RODS

Georg Kern, Munich, Fed. Rep. of Germany, assignor to Dyckerhoff & Widman Aktiengesellschaft, Munich, Fed. Rep. of Germany

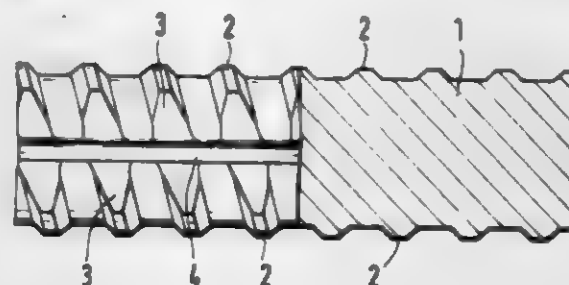
Filed May 4, 1979, Ser. No. 36,139

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821902

Int. Cl.² D02G 3/00; E04C 3/30

U.S. Cl. 428—399

5 Claims



1. A steel rod of the type of a generally circular configuration comprising a core body, with at least two spaced longitudinal series or aligned ribs thereon extending beyond the core body which series together provide parts of a spiral winding of the core body, the improvement comprising at least one continuous longitudinal groove extending into the core body in a region between two of said series of spaced ribs.

4,229,502

LOW-RESISTIVITY POLYCRYSTALLINE SILICON FILM

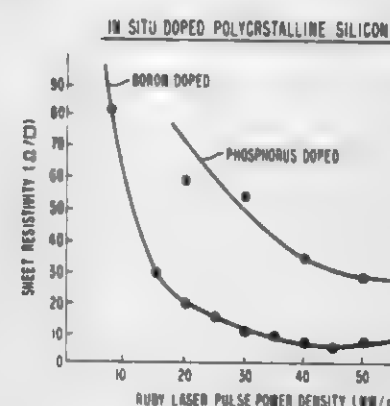
Chung P. Wu, Mercerville, and Ronald K. Smeltzer, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,437

Int. Cl.³ B05D 3/06

U.S. Cl. 428—446

11 Claims



1. In a method of fabricating a low-resistivity polycrystalline silicon film including the step of depositing said film on a substrate, the improvement in said method comprising the steps of:

- doping said polycrystalline silicon film with boron in situ during said depositing step to a concentration greater than 1×10^{20} atoms/cm³ and then
- irradiating said film with a laser pulse.

4,229,503

COATING UNCURED CEMENTITIOUS ROOFING TILES
Henry Day, Sydney, Australia, assignor to Monier Limited, Chatswood, Australia

Filed Jul. 5, 1977, Ser. No. 812,969

Claims priority, application Australia, Jul. 5, 1976, PC6533; Oct. 20, 1976, PC7799

Int. Cl.² D06N 7/04; B05D 3/02; B32B 13/12

U.S. Cl. 428—451

8 Claims

1. A method of coating an uncured cementitious roofing tile

comprising applying to said tile an aqueous emulsion of a filmforming polymeric material; wherein said emulsion contains at least one soluble soap, in addition to an emulsifier, in an amount from about 0.2 to about 10 parts per hundred parts by weight of polymer in the emulsion.

4,229,504

POLYOLEFIN COMPOSITION HAVING HIGH IMPACT RESISTANCE AND HIGH TEMPERATURE FLOW RESISTANCE

Armand E. Brachman, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jul. 31, 1978, Ser. No. 929,611

Int. Cl.² B32B 27/20, 27/32

U.S. Cl. 428—461

21 Claims

1. As a new composition of matter, a resin blend of polyolefin and an elastomer to which a filler is added characterized by having rigidity, a high level of impact resistance and high temperature flow resistance, consisting essentially of:

- (a) about 30 to 90 weight percent of a resin containing
 - (i) greater than 50 to less than 75 weight percent of at least one polyolefin selected from the group consisting of isotactic crystalline polypropylene, high density crystalline polyethylene, low density polyethylene and propylene-ethylene copolymers in which propylene is present in 85-95% by weight and which has a tensile yield elongation no greater than 20%, and
 - (ii) greater than 25 to less than 50 weight percent of elastomer and
- (b) about 10 to 70 weight percent of an inorganic filler selected from the group consisting of calcium carbonate, talc, clay, silica, quartz, mica, and barytes.

4,229,505

ACRYLATE-UREADIACETOACETAMIDE-DIACETOACETAMIDE COPOLYMERS

John S. Heckler, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 942,189, Sep. 14, 1978. This application

Aug. 13, 1979, Ser. No. 65,856

Int. Cl.² B32B 27/34; C08G 6/00, 12/28

U.S. Cl. 428—474.4

14 Claims

1. A thermoplastic floor covering coated with a wear layer composition comprising a cross-linked random acrylate-ureadiacetoacetamide-diacetoacetamide copolymer produced by the reaction of at least one polyfunctional acrylate with at least one ureadiacetoacetamide and at least one diacetoacetamide in the presence of a catalyst capable of promoting the reaction between the polyfunctional acrylate, the ureadiacetoacetamide, and the diacetoacetamide.

8. A thermoplastic floor covering coated with a wear layer composition comprising a cross-linked acrylate-ureadiacetoacetamide copolymer produced by the reaction of at least one polyfunctional acrylate with at least one ureadiacetoacetamide in the presence of a catalyst capable of promoting the reaction between the polyfunctional acrylate and the ureadiacetoacetamide.

4,229,506

PIEZOELECTRIC CRYSTALLINE FILM OF ZINC OXIDE AND METHOD FOR MAKING SAME

Hiroshi Nishiyama, Mukou; Toshio Ogawa, and Tasuku Mashio, both of Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Sep. 14, 1978, Ser. No. 942,351

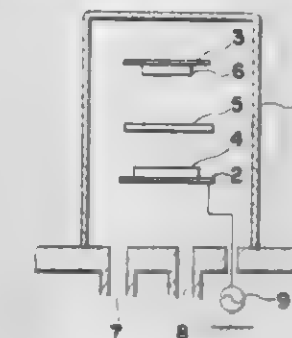
Claims priority, application Japan, Sep. 17, 1977, 52/111761

Int. Cl.³ H01L 41/18; C23C 15/00; B32B 9/00

U.S. Cl. 428—539

7 Claims

1. A piezoelectric crystalline film disposed on a substrate,



substrate surface, characterized in that said crystalline zinc oxide film contains 0.01 to 20.0 atomic percent of uranium.

4,229,507

METHOD FOR DRYING WOOD MATERIAL

Tamotsu Kai, Saitama, Japan; Michio Tsurumi, Midland, Mich.; Takashi Sakakiyama, Yokohama, and Kunihiro Horiuchi, Chiba, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,590

Claims priority, application Japan, Feb. 17, 1978, 53-16613; Feb. 17, 1978, 53-16614; Nov. 24, 1978, 53-144244

Int. Cl.¹ B27K 5/02

U.S. Cl. 428—541

22 Claims

15. A wood material controlled in the rate of evaporation of water from the surface thereof, comprising an undried wood material having a water content of from 50 to 200 wt.% and a barrier layer provided on the surface of said wood material in an amount of 10 to 200 g (dry weight) per square meter of the surface area, said barrier layer being a continuous polymeric film having a water vapor permeability in the range from 10 to 100 g/m².day (as measured under the condition of the relative humidity of 90% at 37.8° C.).

4,229,508

RESTORATION OF NICKEL-CADMIUM BATTERIES

George K. Mussler, 11 Beech Ct., Malverne, N.Y. 11565

Filed Dec. 12, 1979, Ser. No. 102,680

Int. Cl.³ H01M 6/50

U.S. Cl. 429—49

4 Claims

1. A process for the restoration of rechargeable nickel-cadmium batteries comprising:

- providing a reasonable clean expended nickel-cadmium battery;
- submersing said battery in boiling water and maintaining same in the boiling water for a period of time within the approximate range of from 15 to 20 minutes;
- removing the heated battery from the boiling water and immediately cooling same to approximately room temperature and then electrically recharging the cooled battery.

4,229,509

NON-AQUEOUS PRIMARY BATTERY HAVING A BISMUTH (III) SULFIDE CATHODE

Nehemiah Margalit, Levittown, Pa., assignor to ESB Technology Company, Yardley, Pa.

Filed Apr. 9, 1979, Ser. No. 28,402

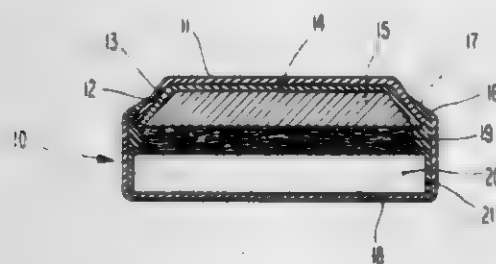
Int. Cl.² H01M 4/06

U.S. Cl. 429—194

6 Claims

1. A non-aqueous primary battery having
(a) a light metal anode selected from the group consisting of lithium, magnesium, aluminum, beryllium, calcium, sodium, and potassium;

- (b) an electrolytic solution comprised of an organic solvent and a light inorganic salt dissolved therein;
(c) a separator; and



- (d) a cathode consisting of bismuth (III) sulfide without binder or conductors added.

4,229,510

PHOTOCONDUCTIVE POLYMER MATERIAL OF N-ALKYLPHENOTHIAZINE AND FORMALDEHYDE
Syu Watarai, Kenichi Sawada, and Takeshi Saida, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

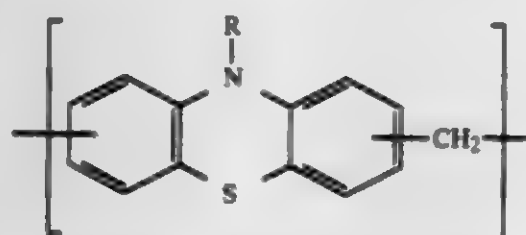
Filed Apr. 26, 1979, Ser. No. 33,630

Claims priority, application Japan, Apr. 26, 1978, 53/49459
Int. Cl.² G03G 5/07

U.S. Cl. 430—38

2 Claims

1. An electrophotographic element comprising a substrate having thereon a conductive surface and a layer of a polymer having a repeating unit of the formula:



wherein R represents an alkyl group having from 1-14 carbon atoms.

4,229,511

ELECTROPHOTOGRAPHY WITH UNIFORM EXPOSURE FOR RESIDUAL POTENTIAL

Tatuya Katoh, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,158

Claims priority, application Japan, Oct. 22, 1977, 52/126944
Int. Cl.² G03G 13/22, 5/14

U.S. Cl. 430—55

5 Claims

1. An electrophotographic copying process, using an electrophotographic element consisting essentially of a light-transmitting electroconductive support, a charge carrier generating layer on said support and a charge carrier transport layer on said charge carrier generating layer, which process consists essentially of the steps of: applying a uniform electrostatic charge of one polarity to said electrophotographic element; then imagewise exposing said electrophotographic element by applying a light image onto one outer surface of said electrophotographic element to form an electrostatic latent image on said electrophotographic element; simultaneously with or after said imagewise exposing step, uniformly exposing said electrophotographic element by applying light onto the entirety of the opposite outer surface of said electrophotographic plate to substantially eliminate the residual potential in said electrophotographic element, the amount of exposure, measured as lux-sec, applied in said step of uniformly exposing being from 1/20 to 1/2 the amount of exposure, measured as lux-sec, applied in said step of imagewise exposing; after said step of uniformly

exposing, then developing said latent image and transferring the developed image to another substrate.

4,229,512

TONERS FOR COLOR FLASH FUSERS CONTAINING A PERMANENT COLORANT AND A HEAT SENSITIVE DYE

Myron J. Lenhard, Penfield; James D. Rees, Pittsford, both of N.Y., and Xerox Corporation, 02, Stamford, Conn.

Division of Ser. No. 754,807, Dec. 27, 1976, Pat. No. 4,126,565.

This application Oct. 6, 1978, Ser. No. 949,165

Int. Cl.² G03C 9/08

U.S. Cl. 430—106

5 Claims

1. Electrostatic toner particles for utilization in flash fusing systems, such particles being comprised of resins, permanent colorant, and heat sensitive and light sensitive dye, wherein the dyes upon heating, and upon exposure to light decomposes to form substantially colorless products.

4,229,513

LIQUID ELECTROGRAPHIC DEVELOPERS CONTAINING POLYMERIC QUATERNARY SALTS

Stewart H. Merrill, Rochester; Alec N. Mutz, Kodak Park, and Frederick A. Stahly, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 824,132, Aug. 12, 1977, abandoned. This application May 29, 1979, Ser. No. 43,860

Int. Cl.² G03G 9/12

U.S. Cl. 430—115

11 Claims

1. A negatively charged electrographic developer comprising an electrically insulating carrier liquid having stably dispersed therein (1) a halogenated polymer, and having dissolved therein (2) a copolymer of a quaternary ammonium salt monomer and a solubilizing monomer, said copolymer being free of cations of alkali metals and alkaline earth metals, and (3) a copolymer of a polar monomer and a solubilizing monomer, the amounts of solubilizing monomer units in each copolymer being sufficient to make the copolymer soluble in the carrier liquid.

4,229,514

PHOTOSENSITIVE COMPOSITION

Yoshio Kurita, Hino, and Akio Iwaki, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo

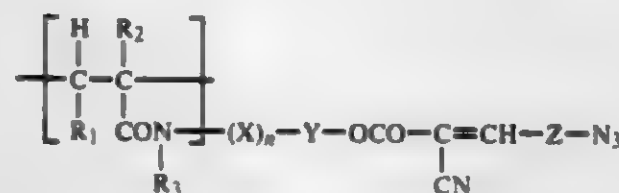
Continuation of Ser. No. 818,728, Jul. 25, 1977, abandoned. This application Dec. 29, 1978, Ser. No. 974,431

Int. Cl.² G03C 1/52, 1/68

U.S. Cl. 430—195

13 Claims

1. A photosensitive composition containing as active ingredient a polymer which has, in the molecular structure, a structural unit represented by the general formula (I):



wherein R₁ represents hydrogen, an alkyl group or carboxyl; R₂ represents hydrogen, halogen or an alkyl group; R₃ represents hydrogen, an alkyl group, an aryl group or an aralkyl group; Y and Z individually represent an arylene group; X represents a divalent organic group connecting the adjacent nitrogen atom and the aromatic ring carbon atom of Y; and n represents 0 or 1, the structural unit of said polymer being present in said polymer in an amount not less than 10 mole percent and said polymer having a molecular weight of from about 2,000 to about 1,000,000.

4,229,515

POLYMERS FOR USE IN DYE IMAGE-RECEIVING LAYERS OF IMAGE TRANSFER FILM UNITS

Karel L. Petrak, North Harrow, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,213

Int. Cl.² G03C 5/54, 1/40, 1/76; C08S 5/20

U.S. Cl. 430—213

34 Claims

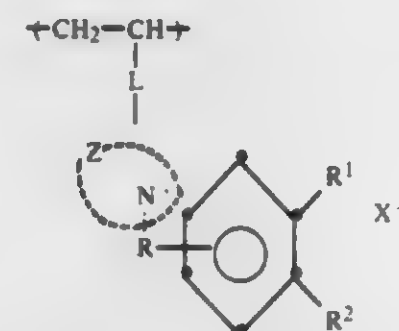
18. In an image transfer film unit comprising:

(1) a support having thereon at least one layer containing a photosensitive silver halide emulsion having associated therewith a chelating dye or chelating dye-forming material;

(2) a dye image-receiving layer; and

(3) an alkaline processing composition and means for discharging same within said film unit in contact with said photosensitive layer;

said film unit containing a silver halide developing agent, the improvement wherein the dye image-receiving layer contains a water-soluble polymer comprising a recurring unit of the formula:



wherein:

L is selected from the group consisting of a single bond and a bivalent linking group;

Z represents the atoms necessary to complete a heterocyclic nucleus;

R is selected from the group consisting of a single bond and alkylene;

R¹ and R² are independently chelating groups; and

X⁻ is an anion,

said polymer having associated therewith a source of metal ions.

4,229,516

PHOTOGRAPHIC MATERIAL WITH TEMPORARY BARRIER LAYER COMPRISING A MIXTURE OF VINYLIDENE CHLORIDE TERPOLYMER AND POLYMERIC CARBOXY-ESTER-LACTONE AND PHOTOGRAPHIC TRANSFER PROCESS THEREFOR

Edward P. Abel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,062

Int. Cl.² G03C 1/40, 5/54, 7/00

U.S. Cl. 430—215

29 Claims

1. In a photographic element comprising a support, at least one silver halide emulsion layer, a dye image-providing layer, a dye image-receiving layer and a neutralizing layer, said element containing a single temporary barrier layer coated from an organic solvent coating solution, said barrier layer having an activation energy of penetration by an aqueous alkaline solution of greater than 18 kcal/mole and being between said neutralizing layer and said silver halide emulsion layer, said neutralizing layer providing a pH of 11 or less to the silver halide emulsion layer upon breakdown of said barrier layer, the improvement wherein said barrier layer comprises a mixture of (1) from 5 to 95 percent by weight of a copolymer comprising from 55 to 85 percent by weight of vinylidene chloride, 5 to 35 percent by weight of an ethylenically unsaturated monomer, which is different from the other monomers of the copolymer, 0 to 20 percent by weight of an ethylenically unsaturated car-

boxylic acid, and (2) from 5 to 95 percent by weight of a polymeric carboxy-ester-lactone.

6. In a photographic film unit comprising:

(a) a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing layer;

(b) a dye image-receiving layer;

(c) alkaline processing composition and means for discharging same within said film unit in contact with said photosensitive layer;

(d) a neutralizing layer for neutralizing said alkaline processing composition; and

(e) a single barrier layer coated from an organic solvent coating solution, said barrier layer having an activation energy of penetration by an aqueous alkaline solution of greater than 18 kcal/mole and being which is permeable by said alkaline processing composition after a predetermined time located between said neutralizing layer and said photosensitive silver halide emulsion,

said film unit containing a silver halide developing agent, said neutralizing layer providing a pH of 11 or less to the silver halide emulsion layer upon breakdown of said barrier layer, the improvement wherein said barrier layer comprises a mixture of (1) from 5 to 95 percent by weight of a copolymer comprising from 55 to 85 percent by weight of vinylidene chloride, 5 to 35 percent by weight of an ethylenically unsaturated monomer, which is different from the other monomers of the copolymer, 0 to 20 percent by weight of an ethylenically unsaturated carboxylic acid, and (2) from 5 to 95 percent by weight of a polymeric carboxy-ester-lactone.

26. In a process of producing a photographic transfer image in a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material, a receiving layer, a single barrier layer coated from an organic solvent coating solution, said barrier layer having an activation energy of penetration by an aqueous alkaline solution of greater than 18 kcal/mole and being associated with the neutralizing layer being permeable by said alkaline processing composition after a predetermined time, and which is located between said photosensitive silver halide emulsion layer and said neutralizing layer, said neutralizing layer providing a pH of 11 or less to the silver halide emulsion layer upon breakdown of said barrier layer, said process comprising:

(a) imagewise exposing said photographic element;

(b) treating said element with alkaline processing composition in the presence of a silver halide developing agent to effect development of each of said exposed silver halide emulsion layers;

(i) an imagewise distribution of dye image-providing material being formed as a function of development; and

(ii) at least a portion of said imagewise distribution of said dye image-providing material diffusing to said dye image-receiving layer; and

(c) neutralizing said alkaline processing composition by means of said neutralizing layer associated with said photographic element after said predetermined time;

the improvement wherein said barrier layer comprises a mixture of (1) from 5 to 95 percent by weight of a copolymer comprising 55 to 85 percent by weight of vinylidene chloride, from 5 to 35 percent by weight of an ethylenically unsaturated monomer, which is different from the other monomers of the copolymer, and 0 to 20 percent by weight of an ethylenically unsaturated carboxylic acid, and (2) from 5 to 95 percent by weight of a polymeric carboxy-ester-lactone.

4,229,517

DOT-ETCHABLE PHOTOPOLYMERIZABLE ELEMENTS

Martin D. Bratt, Parsippany, and Abraham B. Cohen, Springfield, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 802,512, Jun. 1, 1977, abandoned, which is a division of Ser. No. 741,039, Nov. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,726, Nov. 17, 1975, abandoned. This application May 10, 1979, Ser. No. 37,947

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651864; Australia, Nov. 16, 1976, 019666/76; Belgium, Nov. 17, 1976, 172416; Brazil, Nov. 17, 1976, PI 7607672; Canada, Nov. 17, 1976, 265899; France, Nov. 17, 1976, 76 034572; Japan, Nov. 17, 1976, 76/139041; United Kingdom, Nov. 17, 1976, 047954/76; Fed. Rep. of Germany, Feb. 17, 1978, 2660103

Int. Cl.¹ G03C 1/68

U.S. Cl. 430—271

25 Claims



1. A high contrast, dot-etchable solvent-processable lithographic film element comprising a support bearing a very thin actinic radiation photopolymerizable layer no more than 0.010 mm thick and having an optical density of at least 3.0 to the actinic radiation, the photopolymerizable layer comprised of an ethylenically unsaturated compound capable of forming a high polymer by free radical initiated, chain propagating, addition polymerization, an organic polymeric binder, a free radical generating addition polymerization initiator system activatable by actinic radiation in the spectral region of 300 nm or above, and optionally containing an actinic radiation absorber, the photopolymerizable layer being the outermost layer of the element or being contiguous to a removable cover sheet or an overcoat layer which is at least partially soluble in or permeable to a developer solvent for the photopolymerizable layer.

4,229,518

PHOTOHARDENABLE ELEMENTS WITH A NON-TACKY MATTE FINISH

Russell H. Gray, Rumson, N.J., and August D. Kuchta, Sayre, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 342,262, Mar. 16, 1973, abandoned. This application Jul. 8, 1976, Ser. No. 703,537

Int. Cl.¹ G03C 1/78

U.S. Cl. 430—273

4 Claims

1. A photosensitive element comprising, in order, (1) a sheet support, (2) at least one toned, image-bearing photohardenable layer, and (3) a photohardenable protective layer having on its surface a non-tacky matte finish comprising a particulate oil-absorbing material selected from the group consisting of diatomaceous silicas and cellulose acetates having an average particle size of 1 to 25 microns, which absorbs at least 100% by weight of oil based on the weight of particulate material in the photohardenable protective layer as determined by the Gardner-Coleman Method, A.S.T.M. D-1483-60 and which does not absorb incident light to a degree that the color or appearance of the image-bearing layer contiguous thereto is changed from the normal, said photohardenable layers being comprised of a material selected from photopolymerizable, photocross-linkable, and photodimerizable materials.

4,229,519

PHOTO-POLYMERIZABLE WATER-DEVELOPABLE COMPOSITION AND ELEMENTS

Gerald B. Sharp, Harrow; Karel L. Petrak, North Harrow; John H. Boiello, Tring; Hans M. Wagner, Stanmore, and John F. Langford, Berkhamsted, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1979, Ser. No. 44,273

Claims priority, application United Kingdom, May 31, 1978, 25437/78

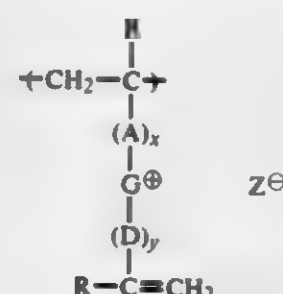
Int. Cl.² G03C 1/68, 5/00

U.S. Cl. 430—287

10 Claims

1. A water-developable, radiation-sensitive composition comprising

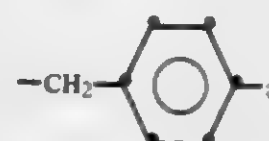
(a) a polymer containing a recurring unit with the structure



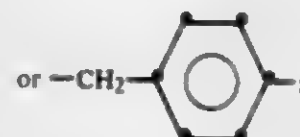
wherein G is a 5-membered ring containing a quaternized nitrogen;

each R independently represents —H or —CH₃;

A is alkylene; oxyalkylene;



—COO(CH₂)_aOOCCH₂—; or —CONH(CH₂)_bHNOCCH₂—; D is alkylene; oxyalkylene; —CH₂COOCH₂CH₂OOC—; —CH₂CONH(CH₂)_bHNOC—; —(CH₂)_bOOC—;



a represents 1, 2 or 3;

b represents 2 or 3;

x represents 2 or 3;

y represents 0 or 1;

Z[⊖] is an anion; and

(b) a photoinitiator comprising a trihalomethane derivative and a metal carbonyl compound or a metallocene.

4,229,520

PHOTO-POLYMERIZATION AND DEVELOPMENT PROCESS WHICH PRODUCES DOT-ETCHABLE MATERIAL

Martin D. Bratt, Old Bridge, and Abraham B. Cohen, Springfield, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 741,039, Nov. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,726, Nov. 17, 1975, abandoned. This application Jun. 18, 1979, Ser. No. 49,314

Int. Cl.² G03C 5/00, 1/68

U.S. Cl. 430—322

16 Claims

1. A process of image reproduction which comprises image-wise exposing to actinic radiation a photopolymerizable element which comprises a support bearing a photopolymerizable layer containing actinic radiation absorbing material and hav-

ing a maximum thickness of 0.015 mm and an optical density in the actinic region of at least 3.0, said photopolymerizable layer being the outermost layer of the element or being contiguous to a removable cover sheet or an overcoat layer which is at least partially soluble in or permeable to a solvent for the photopolymerizable layer, said exposure being through the



outermost surface of the photopolymerizable layer or removable cover sheet or overcoat layer, when present, and wherein said exposure produces image areas having a hardened upper skin which rests on a softer undervolume having a lesser degree of polymerization or hardening, and then developing by removing the unexposed areas of the layer to form an image.

4,229,521

METHOD OF PROCESSING PHOTOGRAPHIC MATERIALS

Karl Frank, Leverkusen, and Hans-Dieter Block, Cologne, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,675

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2732153

Int. Cl.² G03C 5/32, 7/00

U.S. Cl. 430—372

6 Claims

1. A process for producing color photographic images by imagewise exposure of a color photographic material containing at least one silver halide emulsion layer, color development, bleaching, after-treatment with an acid compound capable of discoloration prevention, in a bath and fixing,

wherein the improvement comprises the photographic material is first treated with a bleaching bath containing an iron III salt and then is treated with a bath which contains an effective amount of an acid discoloration preventative compound corresponding to the following general formula:



wherein A denotes hydroxyl or an alkyl group having from 1 to 6 C atoms which is substituted with at least one carboxyl group.

4,229,522

METHOD FOR FORMING COLOR IMAGES

Shigeru Nakamura; Isao Shimamura; Taku Nakamura; Shinji Sakaguchi; Takushi Miyazaki; Masatoshi Sugiyama, and Akio Mitsui, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 954,950, Oct. 26, 1978, abandoned. This application Apr. 13, 1979, Ser. No. 30,045

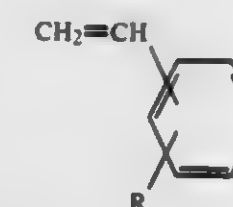
Claims priority, application Japan, Oct. 26, 1977, 52-128389

Int. Cl.² G03C 7/00

U.S. Cl. 430—390

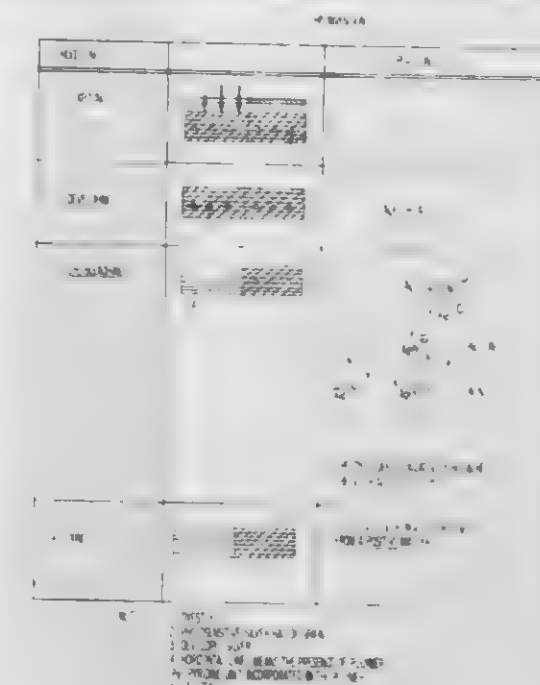
16 Claims

1. A method for forming color images which comprises exposing a color photographic light-sensitive element containing a dye, a polymer containing at least 30 mol% of a vinylpyridine represented by the formula:



wherein R is a hydrogen atom or an alkyl group and silver halide, forming developed silver imagewise by development

processing and then processing with an aqueous solution con-



taining peroxoic acids or salt thereof to thereby oxidatively bleach said dye.

4,229,523

METHOD OF UNDERCOATING TREATMENT OF POLYESTER FILMS FOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Hideyasu Ohta; Jun Shirasaki; Masaru Kanbe; Naoto Abe; Takahiro Uozumi, and Masayoshi Mayama, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 832,725, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 608,273, Aug. 27, 1975, abandoned. This application Mar. 30, 1979, Ser. No. 25,395

Claims priority, application Japan, Aug. 31, 1974, 49-100445

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.¹ G03C 1/78

U.S. Cl. 430—532

7 Claims

1. A method of coating a polyester film of a light-sensitive photographic material comprising

(a) treating a side of said film by the method selected from the group consisting of corona discharge, ultraviolet irradiation, or flame treatment whereby the contact angle between said side and water is below 58°;

(b) applying to said treated side a layer of an aqueous dispersion containing no organic solvent acting as a solvent or swelling agent, said dispersion containing a copolymer having, as repeating units, 20 to 60% by weight of glycidyl methacrylate and 25 to 60% by weight of ethyl methacrylate, the sum of said glycidyl methacrylate and said ethyl methacrylate, being at least 76% by weight based on the weight of said copolymer whereby a coated side is formed, and

(c) subjecting said coated side to a temperature of between 60° C. and 150° C. whereby said coated side is dried and said layer has a weight of 0.05 to 5.0 g/m², and

(d) applying to said dried coated side a silver halide emulsion layer.

4,229,524

PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL WITH ANTISTATIC PROPERTY

Masakazu Yoneyama, and Shinzo Kishimoto, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

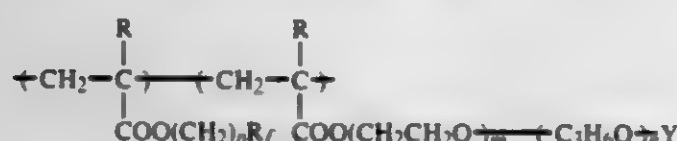
Filed Jun. 4, 1979, Ser. No. 45,482

Claims priority, application Japan, Jun. 2, 1978, 53-66516
Int. Cl.² G03C 1/78, 1/96

U.S. Cl. 430-536

9 Claims

1. A photographic light-sensitive material containing, in at least one layer of copolymer having a repeating unit represented by the following general formula (I):



wherein R_f represents a perfluoroalkyl group having 2 to 12 carbon atoms which may contain one hydrogen atom at the ω -position or a perfluoroalkenyl group; R represents a hydrogen atom or a methyl group; p represents an integer of 1 to 5; m represents an integer of 5 to 50; n represents 0 or an integer of 1 to 20; and Y represents a hydrogen atom, an alkyl group having 1 to 24 carbon atoms, an alkenyl group, a phenyl group, an alkylphenyl group or one of the groups represented by R_f .

4,229,525

PROCESS FOR IMPROVING IMAGE-SHARPNESS OF PHOTOGRAPHIC SILVER HALIDE MATERIAL

Hirozo Ueda, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 589,995, Jun. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 346,387, Mar. 30, 1973, abandoned, which is a continuation of Ser. No. 118,488, Feb. 24, 1971, abandoned. This application Nov. 29, 1976, Ser. No. 745,893

Claims priority, application Japan, Feb. 24, 1970, 45/15705
Int. Cl.³ G03C 1/02

U.S. Cl. 430-568

4 Claims

1. A process for improving image-sharpness of a photosensitive material comprising a support having thereon at least one layer containing a negative working photographic emulsion containing randomly dispersed light-sensitive silver halide grains having an average grain size of from 0.3 to 3.0 microns in diameter, as the main silver halide image-yielding component thereof in a photographically compatible dispersing medium, which process comprises incorporating at random in said emulsion prior to adding any sensitizing dye to said emulsion super-fine grains of silver halide having an average grain size of less than 0.2 microns in diameter in said emulsion in an amount of from 10 g to 50 g per 100 g of said dispersing medium, said super-fine grains of silver halide co-existing with said light-sensitive silver halide grains and being substantially transparent to visible rays and contributing very little to the formation of an image directly, whereby said emulsion exhibits increased image sharpness without a significant decrease in speed and/or gradation.

4,229,526

LIGHT-SENSITIVE PHOTOGRAPHIC RECORDING MATERIAL

Hans Öhlschlager, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,737

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833137

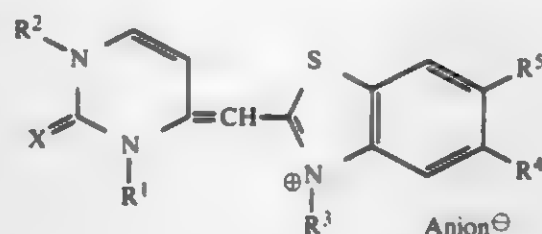
Int. Cl.² G03C 1/16

U.S. Cl. 430-583

2 Claims

1. Light-sensitive photographic recording material comprising at least one negative silver halide emulsion layer which is

spectrally sensitized with a monomethine cyanine dye of the following formula



in which

R^1 and R^2 which may be the same or different represent each a saturated or unsaturated aliphatic hydrocarbon group; R^3 represents a saturated or unsaturated, substituted or unsubstituted hydrocarbon group;

R^4 and R^5 which may be the same or different represent hydrogen or saturated or unsaturated hydrocarbon groups, alkoxy groups or halogen; X represents O or S and

Anion⁻ represents any photographically inert anion, and is absent when R^3 contains an acid group in the anionic form so that a betaine is present.

4,229,527

PROCESS AND REAGENT FOR THE KINETIC DETERMINATION OF ENZYME SUBSTRATES

Joachim Ziegenhorn, Unterpfaffenhofen; August W. Wahlefeld, Weilheim; Alexander Hagen, Tutzing; Wolfgang Grüter, Tutzing-Unterzeismering, and Hans U. Bergmeyer, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 751,777, Dec. 16, 1976, abandoned.

This application Oct. 23, 1978, Ser. No. 954,139

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558536

Int. Cl.² C12Q 1/50, 1/54, 1/48, 1/44

U.S. Cl. 435-11

5 Claims

1. Process for the kinetic determination of an enzyme substrate which process comprises subjecting the substrate to at least two enzymatic part reactions in a sequence of reactions to yield an indicating substance, selecting the part reaction which exhibits the greatest specificity with regard to the starting substance of the reaction, overdosing the enzyme or enzymes of the other part reaction or reactions by an amount at least twice as large as the amount normally necessary for the reaction so that said most specific part reaction becomes rate-determining and follows first or pseudo first order kinetics, and measuring a change in the indicating substance during a preselected time interval.

4,229,528

FLUORESCENCE METHOD FOR ENZYME ANALYSIS WHICH COUPLES AROMATIC AMINES WITH AROMATIC ALDEHYDES

Robert E. Smith, 557 Escondido Cir., and Frank A. Dolbeare, 5178 Diane La., both of Livermore, Calif. 94550

Division of Ser. No. 828,394, Aug. 29, 1977, Pat. No. 4,155,916.

This application Nov. 13, 1978, Ser. No. 959,555

Int. Cl.² G01N 31/14

U.S. Cl. 435-23

5 Claims

1. A method of assaying for enzymes that hydrolyse an arylamide bond comprising:

(a) adding to an unknown to be tested for an enzyme that hydrolyzes an arylamide bond an amino acid-containing, water dispersible, aromatic amine substrate which is selected so that when hydrolyzed by the enzyme, it produces an aromatic amine from the group consisting of 4-methoxy-2-naphthylamine, 2-naphthylamine, aminoisophthalic acid dimethyl ester, p-nitroaniline, 4-methoxy-1-aminofluorene and 7-amino-4-methylcoumarin;

(b) incubating the mixture for a time sufficient to allow reaction of the enzyme with the substrate;

(c) adding to the unknown, either before or after incubating, a water dispersible aromatic aldehyde, selected from the group consisting of benzaldehyde, p-nitrobenzaldehyde and 5-nitrosalicylaldehyde, suitable for coupling to the hydrolyzed aromatic amine to produce a fluorescent complex with the aromatic amine;

(d) exposing the aldehyde-containing, incubated mixture to ultraviolet light; and

(e) sensing the fluorescence of said exposed mixture for a time sufficient.

4,229,529

PROCESS FOR DETERMINING FORMATE AND REAGENT THEREFOR

Gerhard Michal, Tutzing; Rolf Laube, Weilheim; Albert Röder, Seeshaupt, and Walter Schneider, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,823

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2712004

Int. Cl.² G01N 31/14

U.S. Cl. 435-26

14 Claims

1. Process for the determination of a formate compound selected from formate, or a compound convertible into formate, which process comprises reacting said formate compound in the presence of formate dehydrogenase from *Candida boidinii* DSM 941 and a hydrogen acceptor, and then measuring the NADH formed as a measure of the formate compound initially present.

4,229,530

METHODS AND MEDIA FOR RAPID DETECTION OF PATHOGENIC NEISSERIA

Richard A. Finkelstein, Dallas, Tex., and Shelley M. Payne, Albany, Calif., assignors to Board of Regents, University of Texas System, Austin, Tex.

Filed Aug. 29, 1978, Ser. No. 937,881

Int. Cl.² C12Q 1/12

U.S. Cl. 435-37

12 Claims

1. A medium for enhancing the growth and rapid detection of pathogenic *Neisseria*, which includes at least about 5 micrograms of iron in the form of an iron-dextran complex.

4,229,531

PRODUCTION OF TUMOR ANGIOGENESIS FACTOR BY CELL CULTURE

William R. Tolbert, Manchester; Joseph Feder, University City, and Mau-Jung Kuo, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1978, Ser. No. 974,404

Int. Cl.² C12P 1/00

U.S. Cl. 435-41

7 Claims

1. Process for the production of human TAF in vitro comprising growing the human colon adenocarcinoma cell line HT-29 in agitated, liquid suspension of nutrient culture medium at about 35°-38° C. for a sufficient time to elaborate TAF and isolating the resulting TAF from the cells or cell product.

4,229,532

PRODUCTION OF TUMOR ANGIOGENESIS FACTOR BY CELL CULTURE

William R. Tolbert, Manchester, and Joseph Feder, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1978, Ser. No. 974,406

Int. Cl.² C12P 1/00

U.S. Cl. 435-41

6 Claims

1. Process for the production of human TAF in vitro comprising growing the human osteosarcoma cell line MG-63 in

agitated, liquid suspension of nutrient culture medium at about 35°-38° C. for a sufficient time to elaborate TAF and isolating the resulting TAF from the cells or cell product.

4,229,533

METHOD FOR PRODUCING ANTIBIOTIC C-15003 P-4

Eiji Higashide, Takarazuka; Kazunori Hatano, and Mitsuko Asai, both of Takatsuki, all of Japan, assignors to Takeka Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,471

Claims priority, application Japan, Nov. 18, 1977, 52-139384
Int. Cl.¹ C12P 17/18

U.S. Cl. 435-119

3 Claims

1. In a method for producing Antibiotic C-15003 P-4 by cultivating a microorganism belonging to the genus *Nocardia* and being capable of producing Antibiotic C-15003 P-4 in a culture medium containing assimilable carbon sources and digestible nitrogen sources, wherein the improvement comprises incorporating about 0.01 to 1% by weight based on the volume of the culture medium of leucine, α -ketoisocaproic acid or its salt, or an ester, amide or salt of leucine as additive substances into the culture medium.

4,229,534

ACETYLTHIENAMYCIN PRODUCTION

Jean S. Kahan; Frederick M. Kahan, both of Rahway; Robert T. Goegelman, Linden; Edward O. Stapley, Metuchen, all of N.J., and Sebastian Hernandez, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 827,503, Aug. 25, 1977, Pat. No. 4,165,379, which is a continuation of Ser. No. 634,301, Nov. 21, 1975, abandoned. This application Apr. 5, 1979, Ser. No. 27,531

Int. Cl.² C12P 17/18

U.S. Cl. 435-119

2 Claims

1. A process for the production of N-acetyl thienamycin which comprises cultivating *Streptomyces cattleya* in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic salts under submerged aerobic conditions and recovering the N-acetyl thienamycin so produced.

4,229,535

METHOD FOR PREPARING MULTHIOMYCIN

Eisuke Ishihara, Miyakonishi; Hiroshi Yonehara, Tokyo; Katsuyuki Akasaki, Shimizu; Masao Minowa, and Katsumi Kobayashi, both of Shizuoka, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 681,198, Apr. 28, 1976, abandoned.

This application Apr. 3, 1978, Ser. No. 892,917

Claims priority, application Japan, Oct. 28, 1975, 50-128910
Int. Cl.¹ C12P 13/00

U.S. Cl. 435-128

5 Claims

1. The method for preparing multithiomycin which comprises cultivating a multithiomycin producing strain belonging to the genus *Streptomyces* in a sulfur-containing carboxylic acid-containing liquid culture medium, said acid being selected from the group consisting of cystine and methionine which is present in an amount of 0.01-5 weight percent and isolating said multithiomycin.

4,229,536

PROCESS FOR PREPARING IMMOBILIZED ENZYMES

Louis J. DeFilippi, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 28, 1978, Ser. No. 974,198

Int. Cl.¹ C12N 11/14, 11/08, 11/06

U.S. Cl. 435-176

15 Claims

1. A process for increasing the activity and stability of an immobilized enzyme which comprises the steps of:

(a) treating an inorganic porous support material which possesses pore diameters of from about 100 to about

55,000 Angstroms and a surface area of from about 1 to about 500 m²/g with a solution of a first water soluble bifunctional monomer;

- (b) removing unadsorbed monomer;
- (c) contacting the treated support material with a solution containing an excess of a second bifunctional monomeric material of from about 2 to about 50 moles of said bifunctional monomer per mole of said first water soluble bifunctional monomer wherein said second bifunctional monomeric material reacts with said first bifunctional monomer adsorbed on said support material to form a polymeric material and to provide pendent terminally functionalized groups for covalent bonding thereto of an enzyme;
- (d) removing unreacted bifunctional monomeric material;
- (e) treating the resultant inorganic-organic support matrix with an enzyme to covalently bind said enzyme to said support matrix;
- (f) treating the resultant immobilized enzyme-support matrix complex with an additional amount of said second bifunctional monomeric material to provide pendent terminally functionalized groups for covalent bonding thereto of additional enzymes;
- (g) removing excess bifunctional monomeric material;
- (h) adding a substrate for said enzyme to the complex;
- (i) treating said complex with an additional amount of said enzyme at a temperature in the range of from about 0° to about 20° C.;
- (j) removing excess substrate and enzyme; and,
- (k) treating said complex with a mixture of said substrate and bifunctional monomeric material.

4,229,537

PREPARATION OF TRICHLORO-S-TRIAZINE ACTIVATED SUPPORTS FOR COUPLING LIGANDS
Leonard T. Hodgins, New York, N.Y.; Thomas H. Finlay, Ridgewood, N.J., and Alan J. Johnson, New York, N.Y., assignors to New York University, New York, N.Y.

Filed Feb. 9, 1978, Ser. No. 876,240
Int. Cl.² C07G 7/00, 7/02

U.S. Cl. 435—177

16 Claims

1. In a method for coupling substances selected from the group consisting of protein ligands and non-protein affinity ligands by covalent chemical bonds to insoluble solid supports for the preparation of solid phase catalysts and biospecific adsorbents comprising the steps of reacting the insoluble solid support material with trichloro-s-triazine to produce an activated support and thereafter, coupling the ligand to the activated support, the improvement wherein the production of the activated support is carried out by the steps comprising:

- (a) reacting a water-free insoluble solid support material with trichloro-s-triazine in a non-aqueous medium comprising an organic solvent which is compatible with the support material and is also a solvent for trichloro-s-triazine;
- (b) neutralizing the HCl generated during the reaction with a tertiary amine which is soluble in said organic solvent and which does not form an insoluble complex with trichloro-s-triazine in said organic solvent; and
- (c) washing the obtained dichloro-s-triazine activated support with an additional amount of said organic solvent.

4,229,538

PROCESS FOR PREPARING ACYL-COA SYNTHETASE LCF-18

Hideaki Yamada; Sakayu Shimizu, and Yoshiki Tani, all of Kyoto, Japan, assignors to Amano Pharmaceutical Co. Ltd., Nagoya, Japan

Filed Apr. 9, 1979, Ser. No. 28,604

Claims priority, application Japan, May 15, 1978, 53-56604; Jan. 26, 1979, 54-7244

Int. Cl.¹ C12N 9/10

U.S. Cl. 435—193

2 Claims

1. A process for preparing acyl-CoA synthetase LCF-18

comprising cultivating an acyl-CoA synthetase LCF-18 producing strain selected from the group consisting of *Glucophyllum*, *Trametes*, *Daedalea*, *Lactiporus*, *Flammulina*, *Lentinus*, *Lenzites*, *Pycnoporus*, *Tyromyces*, *Coriolus* and *Schizophyllum*, and then isolating the enzyme of acyl-CoA synthetase LCF-18 from the thus cultured cells.

4,229,539

β-GALACTOSIDASE AND PRODUCTION THEREOF
Tan Miwa; Reisuke Kobayashi, both of Shizuoka, and Kiyoshi Takita, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,575

Claims priority, application Japan, Feb. 6, 1978, 53/12102

Int. Cl.² C12N 9/38

U.S. Cl. 435—207

7 Claims

1. A powdery β-galactosidase isolated from the culture medium of *Penicillium multicolor* and having the following characteristics:

- a. having a relative β-galactosidase activity of 224% for o-nitrophenyl-β-D-galactopyranoside and of 186% for p-nitrophenyl-β-D-galactopyranoside when assumed that the relative β-galactosidase activity is 100% for lactose;
- b. having a molecular weight of about 120,000 as determined according to the gel-filtration method;
- c. being active at pH of 2.5 to 7, the optimum pH being at 4.5;
- d. said β-galactosidase activity being lost by heating at pH 6 and at 75° C. for 15 minutes, the optimum temperature being at 55° C.;
- e. said β-galactosidase activity being stable in a pH range of 2.5 to 8.0 when standing at 4° C. for 24 hours;
- f. said β-galactosidase activity being stable at 100% at 60° C. and reduced to 60% at 65° C., to 25% at 70° C. and to 0% at 75° C. when standing at pH 6 for 15 minutes;
- g. said β-galactosidase activity being inhibited by about 20% by the presence of mercuric ion (Hg⁺⁺) but being not substantially inhibited by the presence of ferrous ion (Fe⁺⁺) and cupric ion (Cu⁺⁺) at a metal ion concentration of 10⁻³M; and
- h. having an iso-electric point of 5.37 when measured according to an electrophoresis method.

4,229,540

HYDROLASE PURIFIED FROM HUMAN PLASMA
Michael H. Coan, El Cerrito, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Jul. 2, 1979, Ser. No. 54,127

Int. Cl.¹ C12N 9/48, 9/50, 9/14

U.S. Cl. 435—219

3 Claims

1. An enzyme preparation comprising a substantially homogeneous hydrolytic enzyme characterized by being obtainable from human plasma, having a molecular weight of about 70,000 daltons as determined by comparative polyacrylamide gel electrophoresis, having a K_m for the substrate H-D-Phe-Pip-Arg-PNA of about 0.057 mM, having a K_i for benzamidin of about 1.1 × 10⁻⁵ M, being bindable to and elutable from insoluble barium salts, and, in vitro, capable of activating and degrading human Factor VIII, activating human Factor V, and inhibiting platelet aggregation induced by epinephrine, ADP, or collagen.

4,229,541

IN VITRO CULTIVATION OF HORSESHOE CRAB AMEBOCYTES

Frederick C. Pearson, Lake Zurich, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 6, 1978, Ser. No. 949,009

Int. Cl.¹ C12N 5/02

U.S. Cl. 435—241

4 Claims

1. A culture medium for cultivating *Limulus* amebocytes,

comprising glucose, L-cystine, salts, vitamins, amino acids and horseshoe crab serum.

4,229,542

APPARATUS FOR THE MEASURING OF THE CONCENTRATION OF LOW-MOLECULAR COMPOUNDS IN COMPLEX MEDIA

Ulf T. G. Nylén, and Lars A. G. Qvarnström, both of Lund, Sweden, assignors to Gambro AB, Sweden

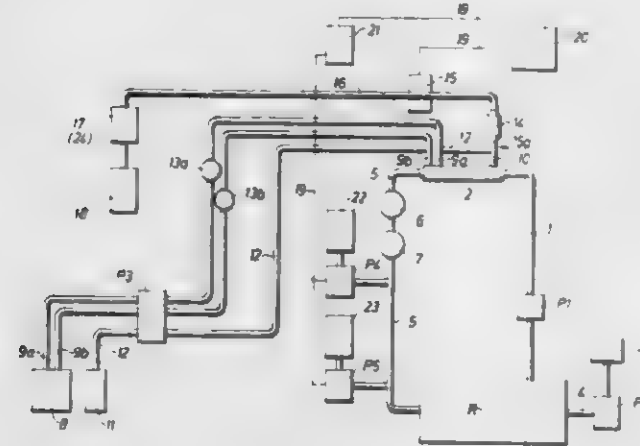
Filed Dec. 30, 1976, Ser. No. 755,977

Claims priority, application Sweden, Jan. 2, 1976, 7600024

Int. Cl.² C12M 1/34

U.S. Cl. 435—291

17 Claims



1. Apparatus for sampling and measuring the content of a low-molecular weight compound in a complex fluid medium to be sampled, comprising:

- a dialyzer having one or more semipermeable membranes having inlet and outlet means to be disposed within said complex fluid medium to form therein one or more passageways for the passage of dialysis fluid, said passageways being substantially smaller in volume than the volume of said complex fluid medium surrounding said passageways for dialyzing only a fractional portion of said complex fluid medium,

means for supplying said dialysis fluid through said passageways in said complex fluid medium such that only a fractional portion of said surrounding complex fluid medium is acted on by said dialysis fluid and dialyzed whereby a fractional portion of the low-molecular weight compound diffuses into said passageways containing said dialysis fluid to produce a dialysate in said passageways, means for maintaining the pressure of said dialysis fluid within said passageways higher than the pressure of said complex fluid medium to substantially reduce ultrafiltration from said complex fluid medium to said dialysis fluid, a reaction zone connected to said passageways including means for supplying enzyme under conditions sufficient for the enzyme to react with the dialysate, and means connected to said reaction zone for measuring a property of said enzymatically reacted dialysate.

4,229,543

PROCESS FOR CULTURING METHANOL-UTILIZING YEASTS

Kenzo Tonomura, Chiba, and Teizi Urakami, Niigata, both of Japan, assignors to Agency of Industrial Science & Technology; Ministry of International Trade and Industry and Mitsubishi Gas Chemical Company, Inc., all of Tokyo, Japan
Continuation of Ser. No. 638,264, Dec. 8, 1975, abandoned, which is a continuation of Ser. No. 468,866, May 10, 1974, abandoned. This application Sep. 12, 1978, Ser. No. 941,641
Claims priority, application Japan, May 11, 1973, 48-53005

Int. Cl.² C12N 1/36, 1/32, 1/16

U.S. Cl. 435—245

10 Claims

1. A process for shortening the growth induction period of methanol-utilizing yeasts which comprises preculturing a yeast capable of utilizing methanol in a seed culture medium contain-

ing methanol as a main carbon source in a concentration higher than 0.1 weight % and not more than 6 weight % and additionally containing nutrient nitrogen sources and inorganic compounds to obtain a seed yeast, inoculating the seed yeast into an aqueous nutrient fermentation medium containing methanol as a main carbon source, the methanol concentration in the seed culture liquor being within said range of higher than 0.1 weight % and not more than 6 weight % at the time of inoculation thereof into the fermentation medium, and cultivating the yeast in the fermentation medium in a continuous manner.

9. A process for shortening the growth induction period of the microorganism *Candida alcomigas* NRRL Y-8023 which comprises pre-culturing said microorganism in a seed culture medium containing methanol as a main carbon source in a concentration higher than 0.1 weight % and not more than 6 weight % and additionally containing nutrient nitrogen sources and inorganic compounds to obtain a seed yeast, and then inoculating and cultivating said seed yeast in an aqueous nutrient fermentation medium containing methanol as a main carbon source, the methanol concentration in the seed culture liquor being within said range of higher than 0.1 weight % and not more than 6 weight % at the time of inoculation thereof into the fermentation medium.

10. A process for shortening the growth induction period of the microorganism *Torulopsis methanofloat* NRRL Y-8028 which comprises pre-culturing said microorganism in a seed culture medium containing methanol as a main carbon source in a concentration higher than 0.1 weight % and not more than 6 weight % and additionally containing nutrient nitrogen sources and inorganic compounds to obtain a seed yeast, and then inoculating and cultivating said seed yeast in an aqueous nutrient fermentation medium containing methanol as a main carbon source, the methanol concentration in the seed culture liquor being within said range of higher than 0.1 weight % and not more than 6 weight % at the time of inoculation thereof into the fermentation medium.

4,229,544

LIVING ORGANISM PACKAGING

Robert W. Haynes, and William H. Rasmussen, both of East Grand Forks, Minn., assignors to Payfer Laboratories Inc., East Grand Forks, Minn.

Filed Aug. 8, 1978, Ser. No. 931,947

Int. Cl.² C12N 1/20, 1/00

U.S. Cl. 435—253

24 Claims

1. A method of packaging living organisms consisting essentially of the steps of mixing the living organisms with a carrier comprising substantially granular material suitable for maintaining the organisms in a viable condition over a long period of time, disposing the organism-carrier mixture in a package, providing a gaseous atmosphere in the package effective to induce and maintain substantial nonvegetative state formation of the organisms, and sealing the package to prevent contamination of the atmosphere therein until breakage of the seal just before use of the organisms.

4,229,545

MATRIX AMPHOTERIC THERMALLY REGENERABLE ION EXCHANGE RESINS

Kurt H. Eppinger, Bentleigh, and Mervyn B. Jackson, West Brunswick, both of Australia, assignors to ICI Australia Limited, Victoria, Australia

Filed Feb. 12, 1979, Ser. No. 11,667

Claims priority, application Australia, Feb. 27, 1978, PD3526

Int. Cl.² B01D 15/04

U.S. Cl. 521—38

15 Claims

1. A process for the preparation of an amphoteric ion exchange resin comprising acidic and basic ion exchange components wherein particles comprising a polymeric acidic ion exchange material are suspended in a liquid phase comprising

a precursor material capable of being converted into a matrix of polymeric basic ion exchange material, and wherein the said precursor material which is monomeric or partially polymerized is caused to form a matrix which encapsulates the said particles characterised in that the matrix formation step is carried out in the presence of an inhibiting agent, said inhibiting agent being selected from the group consisting of a salt of a metal selected from the group of metals consisting of those defined in Groups 2A, 2B, 3A, 4A, 6B and 7B of the periodic table of elements and, a weakly basic organic material.

4,229,546

VISCOUS, FLOWABLE, PRESSURE-COMPENSATING FITTING COMPOSITIONS HAVING THEREIN BOTH GLASS AND RESINOUS MICROBEADS

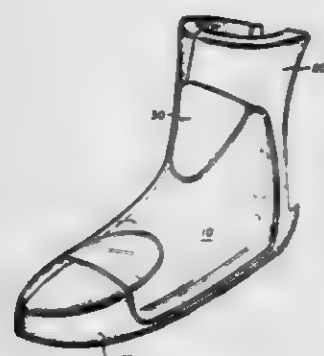
Jack C. Swan, Jr., Boulder, Colo., assignor to Hanson Industries Incorporated, Boulder, Colo.

Division of Ser. No. 882,644, Mar. 2, 1978, which is a continuation-in-part of Ser. No. 723,912, Sep. 16, 1976, Pat. No. 4,108,928, which is a continuation-in-part of Ser. No. 663,213, Mar. 2, 1976, abandoned. This application Jul. 27, 1978, Ser. No. 928,563

Int. Cl. C08J 9/32; C08L 91/06

U.S. Cl. 521-55

39 Claims



1. A viscous, flowable, pressure-compensating composition, which essentially consists of:

a substantially homogeneous, substantially stable, viscous, flowable, continuous phase formed of the combination of wax and oil, and, in combination therewith a discontinuous, microbead phase of particles of discrete, lightweight, sturdy, glass microbeads and lightweight, sturdy, resilient, resin microbeads which impart selected characteristics which are different than those associated with said glass microbeads, said glass and resin microbeads being substantially uniformly distributed in and having a lower density than said continuous phase with the combination of wax and oil;

said wax and oil phase being present in an amount sufficient

(a) to more than merely thinly coat substantially the entire outer surface of essentially each of said microbeads or to more than merely form a film over the surface of essentially each of said microbeads, and (b) to provide a volume that is substantially more than the volume of the interstitial space of the quantity of microbeads alone;

said composition being characterized by being a viscous, flowable and thus deformable, and pressure-compensating composition having a specific gravity in the vicinity of about 0.8, or less, having a substantially homogeneous consistency and not substantially changing in volume responsive to ambient temperatures or ambient temperature changes, being resistant to sag, flowing in response and conformance to continuously applied pressure, flowing under shear stress after its yield point is reached, and, when confined during conditions of use, being resistant to flow in response to instantaneously applied pressure, having resilient characteristics in that it is momentarily or slowly, at least in part, recoverable from deformation upon or following the relief of deforming pressure loads,

and undergoing flow and deformation away from areas of highest pressure loads.

4,229,547

METHOD OF PREPARING SPHERICAL POROUS BEAD-TYPE POLYMERS

Louis Cohen, Avon Lake, and Pijus K. Basu, Brecksville, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 19, 1979, Ser. No. 21,399

Int. Cl. C08F 2/20; C08J 9/00

U.S. Cl. 521-69

24 Claims



QUIESCENT CONTROL



SUSPENSION PVC



QUIESCENT + HLB (-17)

1. In a process for polymerizing one or more vinylidene monomers having a terminal $\text{CH}_2=\text{C}<$ grouping in the form of discrete droplets containing a monomer-soluble free radical-type catalyst while suspended in an aqueous mucilage having plastic flow properties, said droplets being polymerized while moving under plastic flow in the substantial absence of shear forces, and said mucilage comprising a water-insoluble, water-swelling lightly cross-linked polymer of one or more olefinically unsaturated carboxylic acid monomers containing sufficient water to form a flowable plastic mass, the improvement comprising conducting said polymerization in the presence of a nonionic surfactant having a Hydrophile-Lipophile Balance in the range of about 1 to about 17, thereby producing spherical beads of polymer having high porosity and high bulk density.

4,229,548

PROCESS FOR THE PREPARATION OF ORGANOPOLYSILOXANE MOULDING COMPOSITIONS WHICH GIVE FINE-PORED ELASTOMERIC FOAM MOULDINGS

Hans Sattlegger, Odenthal; Hermann Schmidt, Linz, and Karl Schnurrbusch, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,765

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834119

Int. Cl. C08J 9/30

U.S. Cl. 521-110

10 Claims

1. In a process for the production of a plastic organopolysiloxane molding composition which can be stored under pressure and with exclusion of moisture, and which, on release of the pressure and under the action of water or atmospheric moisture, is converted into an elastomeric, fine-pored foam molding or foam coating, which comprises forming a mixture of an α,ω -dihydroxypolydiorganopolysiloxane with a

silicon-containing crosslinking agent, introducing the mixture into the inner container of a two-container pack which consists of a rigid outer container and a flexible inner container located within the outer container and provided with a dispensing valve which extends to the exterior, and placing the mixture under a moisture-free inert gaseous pressure of about 2 to about 30 bar.

4,229,549

THERMOPLASTIC RESIN COMPOSITION COMPRISING A RIGID THERMOPLASTIC RESIN AND A GRAFT COPOLYMER

Seiji Usami; Masanori Oota, both of Iwaki; Hitoshi Takita, Tokyo, and Hideyuki Hashizume, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1978, Ser. No. 889,116

Claims priority, application Japan, Apr. 8, 1977, 52-40074; Apr. 15, 1977, 52-43202

Int. Cl. C08L 51/00

U.S. Cl. 525-76

8 Claims

1. A thermoplastic resin composition, which comprises: 97 to 70 parts per weight of a rigid thermoplastic resin and 3 to 30 parts by weight of a graft copolymer which is produced by graft-polymerizing onto 50 to 80 parts by weight of an elastic trunk polymer, by a one step or multistep process, from 50 to 20 parts by weight of a monomer mixture comprising 10 to 95 wt. % of a $\text{C}_1\text{-C}_4$ alkyl methacrylate, 0 to 80 wt. % of a vinyl aromatic monomer, 0 to 50 wt. % of an unsaturated nitrile, 0 to 30 wt. % of a monomer selected from the group consisting of acrylic acid, acrylic acid esters, acrylamide, methacrylic acid, methacrylic acid esters excluding $\text{C}_1\text{-C}_4$ alkyl methacrylates, methacrylamide, alkylvinyl ethers, and alkylvinyl esters and 0 to 5 wt. % of a polyfunctional monomer containing at least two olefinic groups, said elastic trunk polymer comprising 60 to 99.5 wt. % of a $\text{C}_2\text{-C}_{12}$ alkylacrylate component, 0.1 to 10 wt. % of a polyfunctional monomer component being an alcohol, ester, ether or hydrocarbon compound having at least one conjugated double bond and at least one non-conjugated double bond and 0 to 35 wt. % of a comonomer component selected from the group consisting of 1, 3-butadiene, isoprene, chloroprene, an aromatic vinyl compound, an alkylmethacrylate, acrylic acid, methacrylic acid, glycidyl esters of acrylic acid and methacrylic acid, an unsaturated nitrile, a vinyl ether, a vinyl halide, a vinylidene halide, a vinyl ester, a polyvinyl compound, a polyhydric alcohol acrylate, a polyhydric alcohol methacrylate and an allyl compound.

4,229,550

FLEXIBILIZED VINYL POLYBUTADIENE MALEIMIDE RESINS

Robert J. Jones, Hermosa Beach; Robert W. Vaughan, Manhattan Beach; Robert A. Buyny, Redondo Beach, and Michael K. O'Rell, Manhattan Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 11, 1978, Ser. No. 968,331

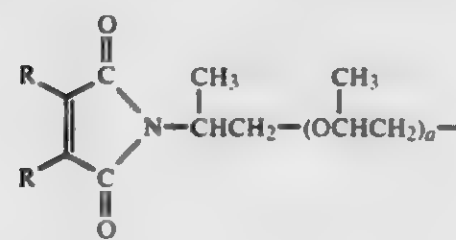
Int. Cl. C08f 279/02

U.S. Cl. 525-282

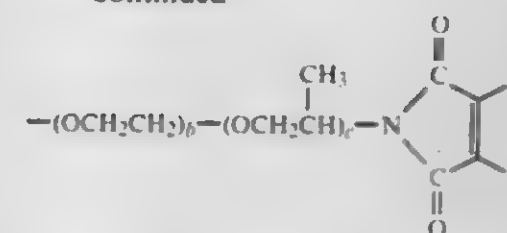
33 Claims

1. A peroxide curable composition comprising the reaction product of a vinyl polybutadiene reactant having pendant vinyl groups capable of high temperature peroxide cure and a maleimide reactant selected from the group consisting of:

(i) an aliphatic bismaleimide of the general formula:

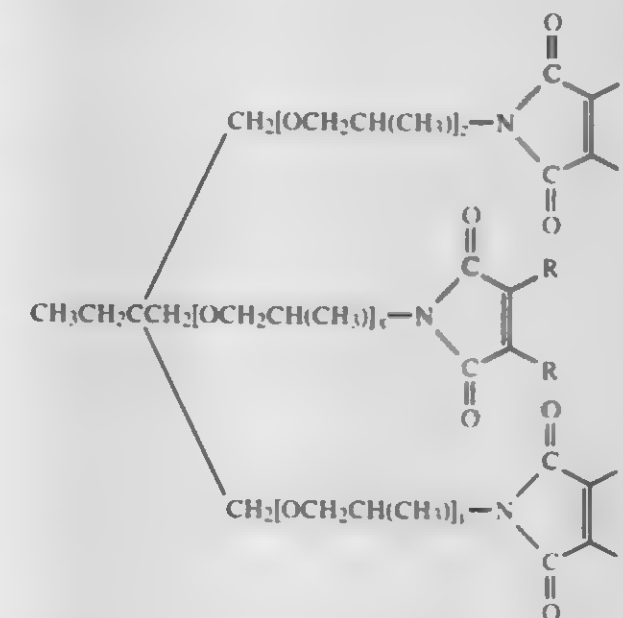


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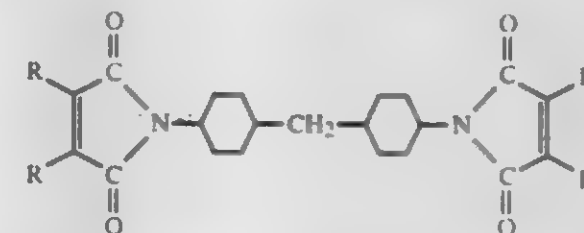
wherein a+c is from about 1 to about 5 and b is from about 13.5 to about 45.5;

(ii) an aliphatic trismaleimide of the general formula:

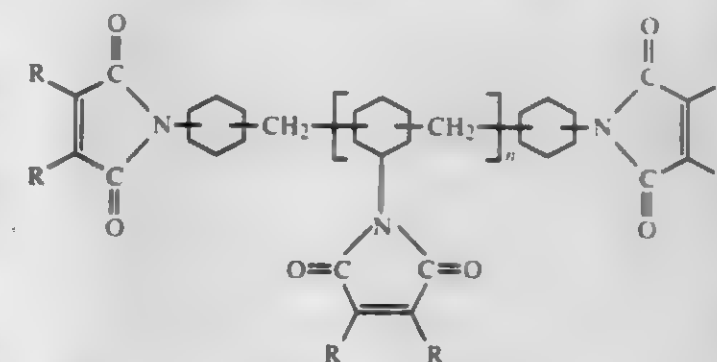


wherein the sum of x, y and z is about at least 1;

(iii) a cycloaliphatic maleimide of the general formula:

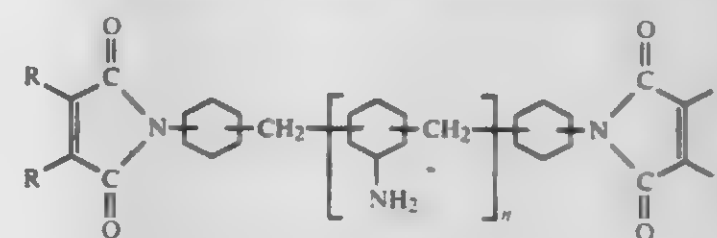


(iv) a cycloaliphatic maleimide of the general formula:



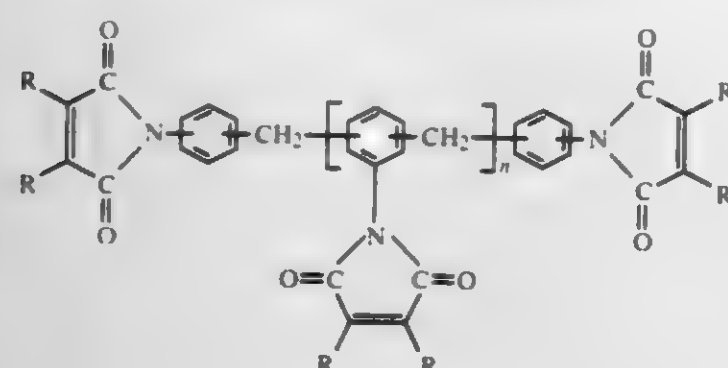
where n is a number from about 0.1 to about 5;

(v) a cycloaliphatic maleimide of the general formula:

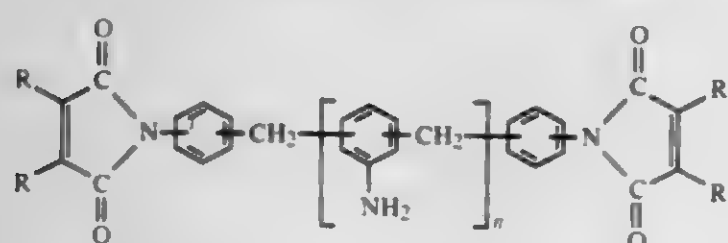


where n is a number from 0.1 to about 5;

(vi) an aromatic maleimide of the general formula:



where n is a number from 0.1 to about 5;
(vii) an aromatic maleimide of the general formula:



where n is a number from 0.1 to about 5; and where R in each of the above formulas is independently selected from the group consisting of hydrogen, an aliphatic group containing 1 to 2 carbon atoms, a benzenoid radical, and a halogen

4,229,551

PREPARATION OF MODIFIED POLYMERS OF N-VINYLPYRROLID-2-ONE AND THEIR USE FOR THE PREPARATION OF POLYMERS INTERRUPTED BY BRIDGE MEMBERS

Ferdinand Straub, Hockenheim; Herbert Spoor, Limburgerhof, and Claus Cordes, Weisenheim am Berg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 56,136

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831335

Int. Cl. C08f 8/04, 8/42, 8/00

U.S. Cl. 525—337

5 Claims

1. A process for the preparation of a modified poly-N-vinylpyrrolid-2-one which carries 2 identical reactive groups in the molecule, wherein a polymer obtained by free radical polymerization of N-vinylpyrrolid-2-one in the presence of hydrogen peroxide as the free radical initiator is treated with a complex hydride derived from hydrides of boron and aluminum and an alkali metal ion.

4,229,552

FIRE-RETARDANT POLYESTER COMPOSITIONS

Masahiro Shiozaki, Yokohama; Kiyoshi Nawata; Kiyokazu Tsunawaki, both of Matsuyama; Kazumi Tsubaki, Ichihara; Akira Yanagimoto, Ichihara, and Shunichi Kumazawa, Ichihara, all of Japan, assignors to Teijin Limited, Osaka and Nissan Chemical Industries Ltd., Tokyo, both of Japan

Filed Dec. 1, 1978, Ser. No. 965,396

Claims priority, application Japan, Dec. 6, 1977, 52-145704

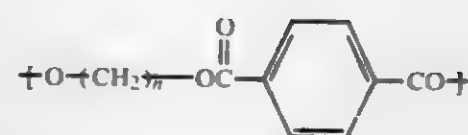
Int. Cl. C08L 67/02

U.S. Cl. 525—437

6 Claims

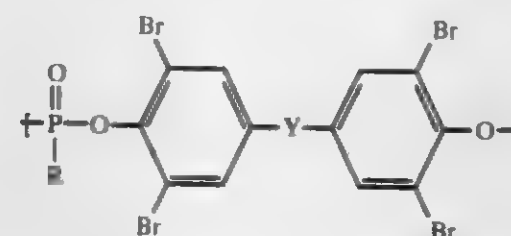
1. A fire-retardant polyester composition comprising a fiber-forming linear polyester and a fire retardant containing phosphorus and bromine, wherein at least 70 mole% of the polyester consists of a recurring unit of the formula

[I]



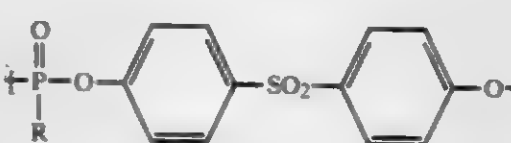
wherein n represents an integer of 2 to 6, and the fire retardant is a copolyphosphonate composed of 1 mole of a recurring unit of the formula

[II]



wherein Y represents an isopropylidene or sulfonyl group, and R represents a phenyl or benzyl group, and 0.25 to 10 moles of a recurring unit of the formula

[III]



wherein R represents a phenyl or benzyl group, the proportion of the fire retardant being 1 to 20 parts by weight per 100 parts by weight of the polyester.

4,229,553

STABILIZED POLY(ALKYLENE TEREPHTHALATE) MOLDING MATERIALS

Hans-Josef Sterzel, Dannstadt-Schauernheim; Rolf Wurmb, Heidelberg; Franz Schmidt, Mannheim, and Erhard Seiler, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,130

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834032

Int. Cl. C08L 63/00

U.S. Cl. 525—438

6 Claims

1. A poly(alkylene terephthalate) molding material which contains, as the stabilizer, from 0.1 to 3.0 percent by weight of a diepoxide of molecular weight from 200 to 2,000, as well as a catalyst, wherein the catalyst consists of from 0.001 to 0.5 percent by weight, based on the molding material, of an alkali metal salt of a chelating agent which possesses one or more $-N(CH_2-COO^-)_2$ groups in the molecule.

4,229,554

FLAME RETARDANT ANTISTATIC ADDITIVES AND ANTISTATIC FIBERS

David D. Newkirk, Southgate; Robert B. Login, Woodhaven, and Basil Thir, Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 2, 1976, Ser. No. 746,723

Int. Cl. C08F 283/02; C08G 63/76, 69/44

U.S. Cl. 525—438

7 Claims

1. A flame-retardant antistatic polymer comprising the reaction product of
(a) a polyoxyalkylene compound containing oxyethylene and oxypropylene groups with
(b) a halogenated polyester reactant derived from the reaction of an aliphatic or aromatic diacid, anhydride or derivative thereof and a diol, wherein either or both the diacid, the anhydride or the diol is halogenated and wherein said polyoxyalkylene compound is a conjugated po-

lyoxyalkylene compound, obtained by block polymerization or heteric polymerization and having as a nucleus a nitrogen containing reactive hydrogen compound.

4,229,555

LINEAR POLYESTER COIL COATING COMPOSITIONS

Michael A. Tobias, Bridgewater, and Conrad L. Lynch, Edison, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 914,640, Jun. 12, 1978. This application Jul. 26, 1979, Ser. No. 61,145

Int. Cl. C08G 63/76

U.S. Cl. 525—443

15 Claims

1. A linear thermosettable polyester resin derived from a reaction mixture comprising:

- between about 38 and 43 percent by weight of a short chain alkylene diol component;
- between about 11 and about 17 percent by weight of an alkyl dicarboxylic acid having 4 to 7 carbon atoms in the primary carbon chain between the two carboxylic acid groups;
- between about 40 and 47 percent by weight of a benzenedicarboxylic acid component; and
- said polyester resin having a number average molecular weight of from about 1,500 to about 5,000 and a combined acid and hydroxyl number of about 20 to about 60 milligrams of KOH per gram of polyester.

9. A coating composition comprising the polyester resin of claim 1, between about 5 and about 35 weight percent of an aminoplast cross-linking agent on resin solids, between about 0.1 and about 1.0 weight percent of an acid catalyst on resin solids, and an inert organic solvent in an amount sufficient to provide a solids content of between about 25 weight percent and about 55 weight percent, based on the weight of the composition.

4,229,556

REACTIVE OLIGOMERS AS CURING AGENT FOR UNSATURATED POLYESTER

Dietrich Braun, Darmstadt-Arheilgen, and Klaus Titzschkau, Darmstadt, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,770

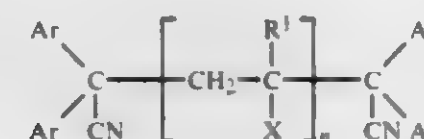
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803494; Feb. 13, 1978, 2805904

Int. Cl. C08L 67/06

U.S. Cl. 525—445

7 Claims

1. In the process of curing a solution of an α - β ethylenically unsaturated polyester in at least one vinyl or vinylidene compound which is copolymerizable therewith, in the presence of a non-peroxidic initiator at a temperature of from 60°–200° C., said α - β ethylenically unsaturated polyester being the polycondensation product of at least one α - β ethylenically unsaturated dicarboxylic acid or ester-forming derivative thereof and at least one polyhydroxy compound, the improvement which comprises initiating polymerization with an oligomer of the formula



wherein Ar is aryl, R¹ is alkyl, X is CN or COOR² wherein R² is hydrogen or alkyl having 1 to 12 carbon atoms and n is a number from 1 to 20.

4,229,557

PROCESS FOR THE PRODUCTION OF WHITE MELAMINE-PHENOL-ALDEHYDE RESINS WHICH ARE RESISTANT TO YELLOWING

Dieter Feinauer, Lampertheim, and Ludwig Streinz, Mannheim, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,216

Claims priority, application Switzerland, Sep. 6, 1978, 9364/78

Int. Cl. C08G 14/10

U.S. Cl. 525—480

16 Claims

1. A process for the production of melamine-phenol-aldehyde resins which are substantially white and resistant to yellowing, by the polycondensation of unsubstituted or alkyl-substituted melamine with mono- or polyhydric, unsubstituted or alkyl-substituted phenols and an aldehyde, in an aqueous basic reaction medium at a pH value between 8 and 11, which comprises adding to the reaction mixture or to the isolated dry resin one or more water-soluble ammonium or alkali phosphates or ammonium or alkali borates in an amount of at least 0.05% by weight, based on the reaction mixture or the dry resin, and subsequently isolating the resulting resin by dehydration at a temperature of at least 70° C. or heating the dry resin to at least 70° C.

4,229,558

PROCESS FOR PREPARING POLYOLEFIN

Genjiro Kakugawa, Masayoshi Hasuo; Yoshinori Suga, all of Yokohama, and Hisashi Kitada, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 855,683, Nov. 29, 1977, abandoned.

This application Aug. 30, 1979, Ser. No. 71,388

Claims priority, application Japan, Dec. 13, 1976, 51-149529

Int. Cl. C08F 4/02, 10/06

U.S. Cl. 526—125

7 Claims

1. A process for preparing polyolefins by polymerizing an α -olefin or a mixture of α -olefin in the presence of a catalytic system prepared by combining:

- an aluminum-free, titanium-containing, solid catalytic component prepared by contacting an ether suspension of amorphous magnesium hydroxyhalide prepared by reacting (a) water with (b) a Grignard reagent having the formula R'MgX wherein R' is a hydrocarbon moiety and X is a halogen atom at a temperature of from 20° to 200° C. and (d) a carboxylic ester with (c) titanium tetrachloride at a temperature of from 60° to 200° C.; with
- an organoaluminum compound.

4,229,559

NOVEL BIS(HALF ESTER) AND COMPOSITIONS CONTAINING THE SAME

Robert J. Cotter, Bernardsville, and Hugh C. Gardner, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

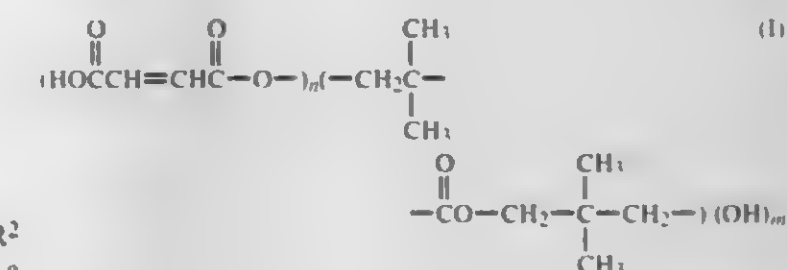
Filed May 1, 1979, Ser. No. 34,996

Int. Cl. C08F 222/12; C07C 69/34

U.S. Cl. 526—271

6 Claims

1. A half ester characterized by the following empirical formula:



wherein n is a number having an average value of 1.7 to 2 and m is equal to 2— n .

4,229,560

THERMOSTABLE NITROGEN CONTAINING HETEROCYCLIC POLYMERS AND PROCESS FOR PRODUCING

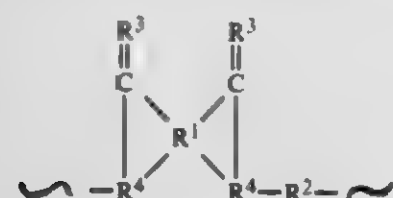
Alexei Y. Chernikhov, prospekt Vernadskogo, 93, kv. 64; Mikhail N. Yakovlev, ulitsa Amurskaya, 8, kv. 93, both of Moscow; Valentina B. Lysova, ulitsa Juzhnaya, 22, kv. 59, Moskovskaya oblast, Pavlovsky posad; Evgeny L. Gifter, B. Dorogomilovskaya ulitsa, 56, kv. 60, and Nina N. Shmagina, ulitsa Moldogulovoi, 8, korpus 1, kv. 66, both of Moscow, all of U.S.S.R.

Filed May 30, 1978, Ser. No. 910,298
Int. Cl.² C08G 73/06

U.S. Cl. 528—4

8 Claims

1. A thermostable heterocyclic polymer, consisting essentially of units having the general formula

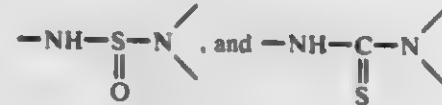
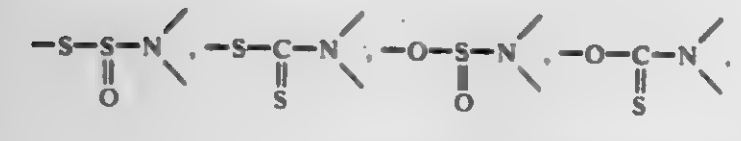
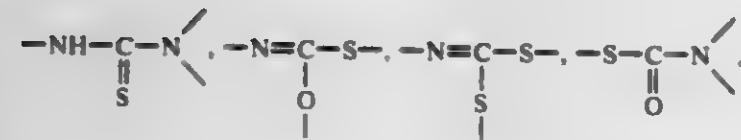
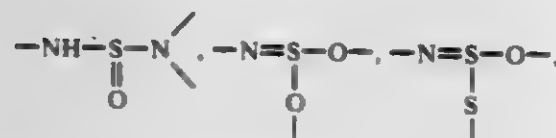
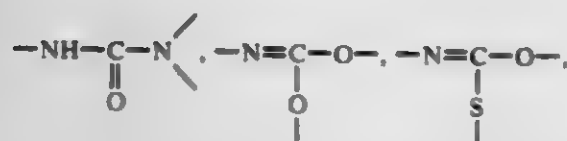


where R^1 and R^2 denote an organic radical selected from the group consisting of radicals which incorporate from 2 to 1000 carbon atoms and;

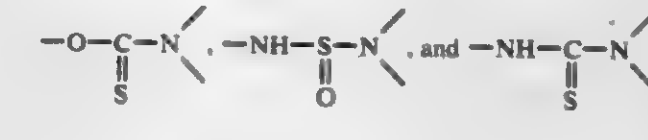
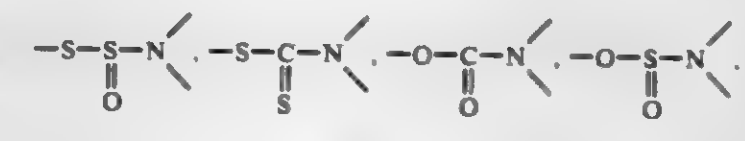
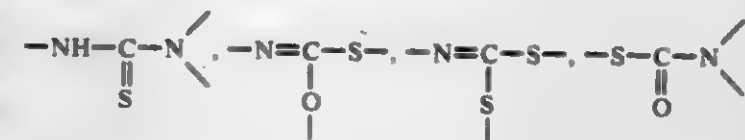
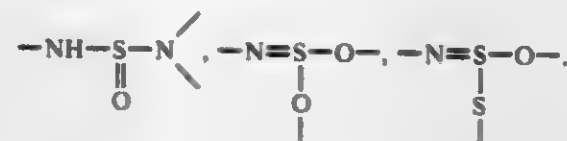
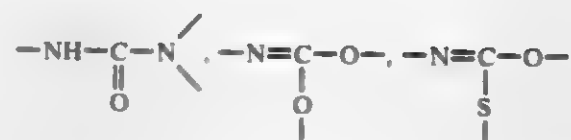
a radical selected from the group consisting of radicals which have from 2 to 1000 carbon atoms; said radical containing at least one of the following elements: Si, F, Cl, Br, N, S, P, B, O, each of said elements being present in an amount of from 1 to 1000 atoms;

R^3 is a radical selected from the group consisting of NH and CH_2 ;

R^4 is a radical which (with $R^3=NH$) is selected from the group, consisting of



while with $R^3=CH_2$ said radical is selected from the group consisting of



4,229,561

POLYUREA POLYMER PREPARED FROM POLYETHERS HAVING HETEROCYCLIC GROUPS AND TERMINAL AMINO GROUPS

Oskar Schmidt, Kittsee, and Walter Sibrat, Tulln, both of Austria, assignors to Lim-Holding, S.A., Luxembourg, Luxembourg

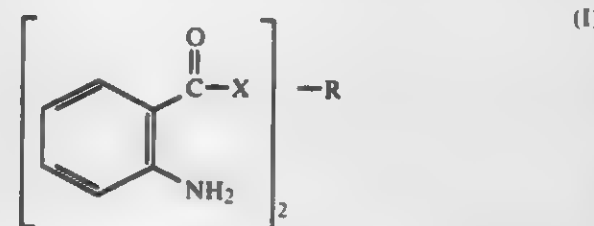
Continuation-in-part of Ser. No. 965,140, Nov. 29, 1978, which is a division of Ser. No. 735,282, Oct. 26, 1976, Pat. No. 4,139,706. This application Apr. 13, 1979, Ser. No. 29,961

Int. Cl.² C08G 18/32

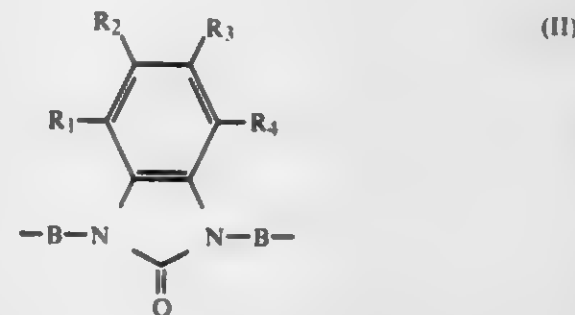
U.S. Cl. 528—68

20 Claims

1. Plastic materials produced according to the isocyanate polyaddition process by reacting compounds having terminal amino groups, said compounds being of the general formula



wherein X is oxygen or sulfur and R represents a group of the formula



wherein R_1 and R_4 are hydrogen and halogen and B stands for a divalent polyalkylene ether group or a polyalkylene thioether group obtained by removal of the hydroxyl or mercapto groups from a polyalkylene ether diol or from a po-

lyalkylene thioether dithiol of a molecular weight of 100 to 15000, with a polyisocyanate.

4,229,562

POLYURETHANES BASED ON HIGH MOLECULAR WEIGHT FORMYL ALCOHOLS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Apr. 4, 1979, Ser. No. 26,856

Int. Cl.² C08G 18/14, 18/64

U.S. Cl. 528—85

19 Claims

1. The urethane linked reaction product of a gem-bis(hydroxymethyl) alcohol of the formula:



and from about 80% to about 120% on a hydroxyl-isocyanate equivalent basis of a polyisocyanate wherein n , q and s are integers the sum of which is from 1 to 3, and m through t are integers the sum of which is from 12 to 20.

4,229,563

AROMATIC AMIDOAMINES

Raymond E. Foscano, Yorba Linda; Albert P. Gysegem, Monrovia, and Pamela J. Martinich, Long Beach, all of Calif., assignors to Ameron, Inc., Monterey Park, Calif.

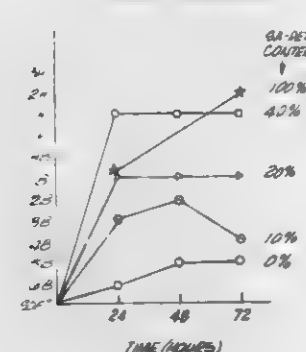
Continuation of Ser. No. 835,145, Sep. 21, 1977, abandoned. This application Aug. 3, 1979, Ser. No. 63,190

Int. Cl.² C08G 59/44

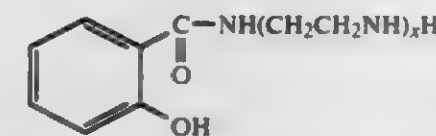
U.S. Cl. 528—99

24 Claims

SA-DETA COMPARISON

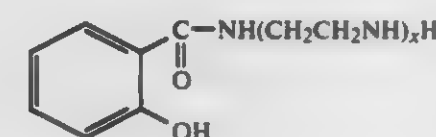


1. An amine adduct of orthohydroxybenzoic acid of the formula:



where x is from 2 to about 8, and the hydroxyl group is in the ortho position.

7. A method for preparing a polymeric product comprising the step of curing an epoxy resin with a curing agent having the formula:



where x is from 2 to about 8.

4,229,564

FRIEDEL-CRAFTS POLYMERIZATION OF MONOMERS IN THE PREPARATION OF POLYKETONES AND POLYSULFONES

Klaus J. Dahl, Atherton, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 597,496, Jul. 21, 1975, Pat. No. 4,111,908, and Ser. No. 451,521, Mar. 15, 1974, Pat. No. 3,953,400, which is a continuation-in-part of Ser. No. 218,465, Jan. 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 115,824, Feb. 17, 1971, abandoned, said Ser. No. 597,496, is a division of Ser. No. 366,326, Jun. 4, 1973, Pat. No. 3,914,298, which is a division of Ser. No. 218,466, Jan. 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 115,824. This application Apr. 26, 1976, Ser. No. 680,068

The portion of the term of this patent subsequent to Apr. 27, 1993, has been disclaimed.

Int. Cl.² C08G 67/00, 75/20

U.S. Cl. 528—175

29 Claims

1. A process for producing a polymer comprising polymerizing at least one monomer under Friedel-Crafts conditions, said monomer having both an electrophilic and a nucleophilic reaction center under said Friedel-Crafts conditions, the electrophilic center on one monomer molecule reacting with the nucleophilic center on another to propagate said polymer, in the presence of a molecular weight control agent that reacts only as a nucleophile under the reaction conditions.

4,229,565

PREPARATION OF POLYARYLATES FROM DIHYDRIC PHENOLS, AROMATIC DICARBOXYLIC ACID AND A CHLORINATING AGENT

Hugh C. Gardner, Somerville, and Markus Matzner, Edison, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 911,526, Jun. 1, 1978, abandoned. This application May 14, 1979, Ser. No. 37,991

Int. Cl.² C08G 63/18

U.S. Cl. 528—176

13 Claims

1. A method for preparing polyarylates which comprises: (a) mixing at least one aromatic dicarboxylic acid having 8 to about 20 carbon atoms with a stoichiometric excess of a chlorinating agent, (b) heating the mixture from (a) at a temperature of about 25° to about 180° C., until essentially all of the dicarboxylic acid groups are reacted, (c) removing unreacted chlorinating agent, (d) determining the amount of active chlorine in the resultant mixture, (e) adding an approximately stoichiometric amount of at least one dihydric phenol, based on the amount of active chlorine present, and (f) polymerizing the mixture from step (e) until a polyarylate having a reduced viscosity of at least 0.4 in p-chlorophenol at 49° C. at a concentration of 0.2 g/dl. forms.

4,229,566

ARTICULATED PARA-ORDERED AROMATIC HETEROCYCLIC POLYMERS CONTAINING DIPHENOXYBENZENE STRUCTURES

Robert C. Evers, Dayton; Fred E. Arnold, Centerville, and Thaddeus E. Helminiak, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 24, 1979, Ser. No. 69,476

Int. Cl.² C08G 73/18, 73/22, 75/32

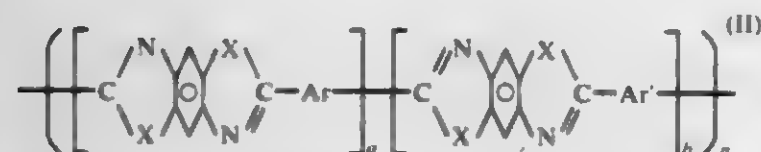
U.S. Cl. 528—185

13 Claims

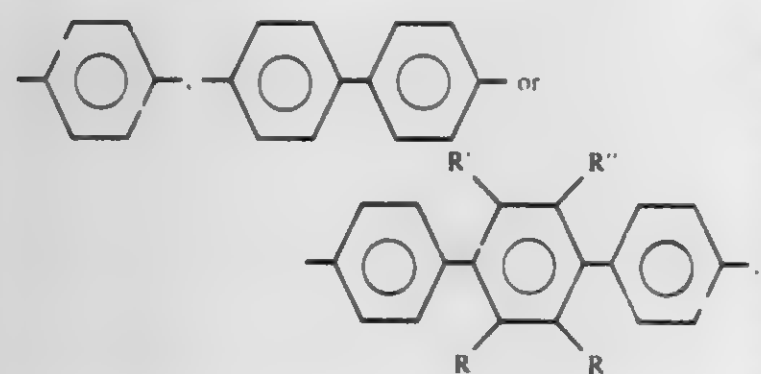
1. A para-ordered aromatic heterocyclic polymer consisting essentially of repeating units having a structure as represented by one of the following formulas:



or



wherein X in each formula is O, S or NH; Ar is



where R is a monovalent aromatic radical and R' and R'' are individually selected from the group consisting of hydrogen, a monovalent aromatic radical, a monovalent aliphatic radical, a monovalent cycloaliphatic radical, and a monovalent heterocyclic radical; Ar' is



a ranges from about 0.75 to 0.97, b ranges from about 0.03 to 0.25, and the sum of a and b equals 1; and n is an integer equal to the number of repeating units.

4,229,567

COPOLYAMIDE RESINS FROM PIPERAZINE AND POLYOXYALKYLENE DIAMINE HAVING IMPROVED CREEP RESISTANCE

Hubert J. Sharkey, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Feb. 8, 1979, Ser. No. 11,456

Int. Cl.² C08G 69/26

U.S. Cl. 528—338

9 Claims

1. A thermoplastic copolyamide adhesive resin having improved creep resistance consisting essentially of the polymeric reaction product of essentially stoichiometric amounts of:

(a) a mixture of saturated aliphatic dicarboxylic acids containing a short-chain dicarboxylic acid having from 2 to 7 carbon atoms and a long-chain dicarboxylic acid having from 8 to 14 carbon atoms;

(b) piperazine; and

(c) a polyoxyalkylene diamine of the general formula



where R is hydrogen or a methyl group and m is a positive integer such that the average molecular weight of the polyoxyalkylene diamine is between about 200 and 800; the equivalents ratio of the long- to short-chain dicarboxylic acids ranging from 0.5:0.5 to 0.9:0.1 and the equivalents ratio of the

piperazine to polyoxyalkylene diamine ranging from 0.7:0.3 to 0.95:0.05.

4,229,568

METHOD OF DISCHARGING GASEOUS VINYL CHLORIDE MONOMER FROM A POLYMERIZATION REACTOR

Norinobu Wada, Ibaragi, and Yoshihiro Shiota, Yokohama, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Continuation of Ser. No. 830,066, Sep. 2, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,570

Claims priority, application Japan, Sep. 16, 1976, 51-111215 Int. Cl.² C08F 6/24

U.S. Cl. 528—500

3 Claims

1. Method for the production of a polymerize of vinyl chloride monomer or a monomer mixture mainly composed thereof by polymerization in an aqueous medium contained in polymerization reactor which comprises the successive steps of (a) equilibrating the pressure inside said reactor and a receiver tank connected to said reactor after completion of the polymerization reaction, (b) removing most of the unreacted gaseous vinyl chloride monomer vapors out of said reactor, (c) transferring the aqueous dispersion of polymerize from said reactor into said receiver tank, (d) opening said reactor to ambient atmosphere, and (e) blowing steam into said reactor from the top of the reactor prior to the step (d) of opening said reactor to ambient atmosphere at a linear velocity of steam blown into said polymerization reactor which does not exceed 150 m/second as determined at a blowing nozzle, and further at a rate of steam blown into said polymerization reactor which does not exceed 300 kg/hour per square meter of the horizontal cross sectional area of said reactor, whereby any unreacted gaseous monomer still remaining in said reactor is pushed downward and moved out from the bottom of said reactor.

4,229,569

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM AQUEOUS SLURRIES OF VINYL CHLORIDE POLYMERS

Martin L. Feldman, East Brunswick; Donald Goodman, Flemington; Marvin Koral, Warren; Robert S. Miller, Bridgewater, and Robert J. Stanaback, Gladstone, all of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 482,112, Jun. 24, 1974,

abandoned. This application Feb. 5, 1979, Ser. No. 9,328

Int. Cl.² C08F 6/24, 14/06

U.S. Cl. 528—501

4 Claims

1. The process for removal of vinyl chloride from an aqueous slurry prepared by the suspension polymerization of a monomer component selected from the group consisting of vinyl chloride and mixtures of vinyl chloride with up to 35% by weight of at least one monomer copolymerizable therewith, said slurry containing from 5% to 50% by weight of vinyl chloride polymer particles ranging in size from about 25 microns to 500 microns, from 1000 parts to 15,000 parts by weight of vinyl chloride per million parts by weight of polymer in the slurry, and not more than 0.1% by weight of surfactant, that comprises the steps of heating said aqueous slurry at a temperature between 70° C. and the boiling point of water at a pressure in the range of 300 mm Hg absolute to 3 atmospheres and removing the vinyl chloride that is evolved until the slurry contains less than 0.1 ppm of vinyl chloride, based on the weight of polymer in the slurry.

4,229,570

METHOD OF PRODUCING NITROGEN-CONTAINING POLYSACCHARIDES

Saburo Ueno, Tokyo; Chikao Yoshikumi, Kunitachi; Fumio Hirose, Tokyo; Yoshio Omura, Tanashi; Toshihiko Wada, Mibu; Takayoshi Fujii, Tokyo, and Eiichi Takahashi, Kawaguchi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,991

Claims priority, application Japan, Jul. 7, 1976, 51-80665

Int. Cl.² A61K 31/73; C07H 1/08

U.S. Cl. 536—18

4 Claims

1. A method of providing a nitrogen-containing polysaccharide substantially free from units having a molecular weight below about 5000 which comprises extracting said nitrogen-containing polysaccharide from a fungus of the genus *Coriolus* of the family Polyporaceae of the class Basidiomycetes at a temperature of 50° to 100° C. wherein:

- a first extraction step is conducted with water or a dilute aqueous alkaline solution;
- a second extraction step is conducted in an alkaline medium having a normality higher than said first extraction step and below about 2.0; and
- a third extraction step is conducted at a normality higher than said second extraction step and below about 2.0.

4,229,571

GLUCOCORTICOID SPARING FACTOR AND PROCESS FOR THE PRODUCTION OF THE SAME

Nobuhiko Katsunuma, No. 1-78, Shōmachi, Tokushima-shi, Tokushima-ken, Japan

Filed Aug. 10, 1978, Ser. No. 933,083

Claims priority, application Japan, Aug. 16, 1977, 52-98110

Int. Cl.² A61K 31/70

U.S. Cl. 536—18

8 Claims

1. A glucocorticoid sparing factor characterized in that:

it is a colorless and acidic substance produced in a culture broth of a microorganism of the Family Enterobacteriaceae and is easily soluble in water and in diluted aqueous acid or alkali;

it is positive to 1,10-phenanthroline reaction, Orcinol reaction and Anthrone reaction and negative to Folin-Thiocalt reaction and Elson-Morgan reaction;

it has a molecular weight between about 800 and about 1,500;

it is an oligosaccharide having N-acetylneuraminic acid, pentose, hexose and a primary amine as constructing moieties;

it indicates in vivo an amplifying action in the induction of tyrosine transaminase and leucine transaminase by glucocorticoid in the liver of adrenalectomized rat, with said amplifying action being deactivated by the action of α-glucosidase, but not being affected by the action of α-amylase, neuraminidase, hyaluronidase, lysozyme, chymotrypsin, trypsin, pepsin, proteinase, papain, collagenase, aminopeptidase M, carboxypeptidases A and B, leucine-aminopeptidase, deoxyribonuclease 1, ribonuclease T₁ + A, acid phosphatase or alkali phosphatase;

it does not influence induction of liver tyrosine transaminase in adrenalectomized rat when administered alone nor does it influence such induction by glycagon or insulin;

it indicates an amplifying action on the induction of tyrosine transaminase by glucocorticoid in an in vitro system using the liver of an adrenalectomized rat under the perfusion method when added to the system prior to or at the same time as the administration of glucocorticoid;

it is stable for more than 6 months at -20° C.;

it is stable for minimum 48 hours in a buffer solution having a pH of 4.2-9 at 37° C.;

it is deactivated to form reducing sugar when heated at 105° C. for 12 hours in 6N hydrochloric acid;

it has shoulder at 265 nm in ultraviolet absorption spectrum

and, after purification in a proper manner, a sharp peak appears at the same wavelength; and it has an Rf of about 0.16 as measured by ascending method using filter paper and acetic acid-n-butanol-water (3:12:5, v/v) as a developing agent.

4,229,572

PURIFICATION OF CELLULOSE ETHER REACTION PRODUCT

Maurice L. Zweigle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1979, Ser. No. 17,520

Int. Cl.² C08B 11/20

U.S. Cl. 536—89

17 Claims

1. A method for reducing the content of alkali metal, in salt or hydroxide form, in an organosoluble cellulose ether, said method comprising

- preparing a solution of the cellulose ether, which cellulose ether contains alkali metal, and an organic solvent;
- converting the alkali metal hydroxide present in the solution to an alkali metal salt;
- heating the resulting solution at conditions such that (1) any water present in the solution is removed therefrom and (2) the alkali metal salt particles grow; and
- separating the cellulose ether from the enlarged salt particles.

4,229,573

7α-METHOXYCEPHALOSPORIN DERIVATIVES

Chisei Shibuya, Hirataka Itoh, Kunihiko Ishii, Torao Ishida, and Mitsuru Shibukawa, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

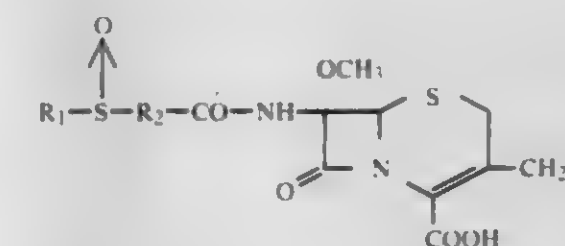
Filed Jun. 21, 1977, Ser. No. 808,631

Int. Cl.² C07D 501/20

U.S. Cl. 544—21

10 Claims

1. A 7α-methoxycephalosporin or its pharmacologically acceptable salts of the formula



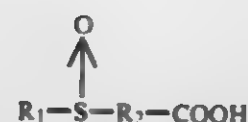
wherein

R₁ is selected from the group consisting of 2-thienyl, 3-thienyl, 4-pyridyl, N-oxo-2-pyridyl, N-oxo-4-pyridyl, 5-methyl-1,3,4-thiadiazol-2-yl, 1,3,4-thiadiazol-2-yl, 1-methyl-1H-tetrazol-5-yl, 6-methyl-1-oxopyridazin-3-yl, benzimidazol-2-yl, 2-furyl and 2-thienylmethyl;

R₂ is methylene; and

X is selected from the group consisting of acetoxy, carbamoyloxy, methoxy, methylthio, 1-methyl-1H-tetrazol-5-ylthio, 5-methyl-1,3,4-thiadiazol-2-ylthio, 1H-tetrazol-5-ylthio, 3-methyl-1,2,4-thiadiazol-5-ylthio, 1,3,4-thiadiazol-2-ylthio, 1,3,4-oxadiazol-2-ylthio, 1H-1,3,4-triazol-2-ylthio, 1H-1,2,3-triazol-5-ylthio, 1-ethyl-1H-tetrazol-5-ylthio, N-oxopyridin-2-ylthio, 1-carboxymethyl-1H-tetrazol-5-ylthio, 5-(N,N-dimethylamino)-1,3,4-thiadiazol-2-ylthio and 6-methyl-1-oxopyridazin-3-ylthio; and

wherein said R form means an optical isomer having stereochemically the same structure in the sulfinyl group as that optical isomer of the two sulfinyl group stereoisomers of a compound of the formula (II) which has a positive specific rotation in ethanol:



wherein R₁ and R₂ are the same as defined above.

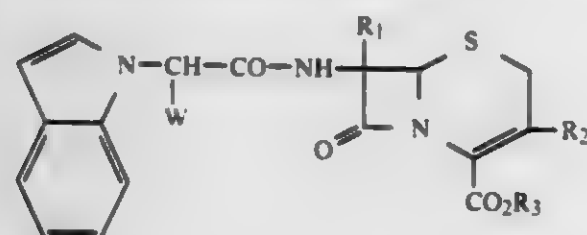
4,229,574

INDOLE CEPHALOSPORIN DERIVATIVES

Abraham Nudelman, Rehovot, and Abraham Patchornik, Ness-Ziyona, both of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel
Division of Ser. No. 947,541, Oct. 2, 1978, which is a division of Ser. No. 858,630, Dec. 8, 1977, Pat. No. 4,139,703. This application Aug. 23, 1979, Ser. No. 68,888
Int. Cl.² C07D 501/56

U.S. Cl. 544-21

1. A compound selected from the formula



wherein W is hydrogen, a $-\text{CO}_2\text{R}_4$ group wherein R₄ is hydrogen, a straight or branched 1 to 4 carbon alkyl group, a straight or branched alkanoyloxymethyl group in which the alkanoyl group has from 2 to 5 carbon atoms; R₁ is hydrogen or methoxy; R₂ is chloro, bromo or methoxy; R₃ is hydrogen, a straight or branched alkyl group of from 1 to 4 carbon atoms, a straight or branched alkanoyloxymethyl group in which the alkanoyl moiety has from 2 to 5 carbon atoms and is straight or branched, an alkanoylamino group in which the alkanoyl moiety is straight or branched and has from 2 to 5 carbon atoms and the amino nitrogen is substituted with a straight or branched alkyl group having 1 to 4 carbon atoms or is unsubstituted; an alkoxy carbonylaminomethyl group in which the alkoxy moiety is straight or branched and has from 1 to 4 carbon atoms and the amino nitrogen is substituted with a straight or branched alkyl group of from 1 to 4 carbon atoms or is unsubstituted, p-(alkanoyloxy)benzyl group in which the alkanoyl moiety is straight or branched and has from 2 to 5 carbon atoms; an aminoalkanoxyloxymethyl group in which the alkanoyl moiety has from 2 to 15 carbon atoms and the amino nitrogen is mono- or di-substituted with a straight or branched alkyl group having from 1 to 4 carbon atoms or is unsubstituted; or pharmaceutically acceptable salts thereof.

4,229,575

7-(2,3-DIHYDROBENZO-5-FURANYL)-ACETAMIDO CEPHALOSPORIN DERIVATIVES

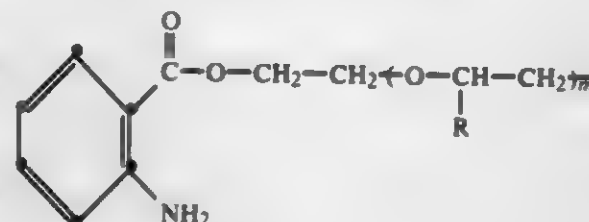
Ekkehard H. Böhme, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Feb. 27, 1978, Ser. No. 881,611

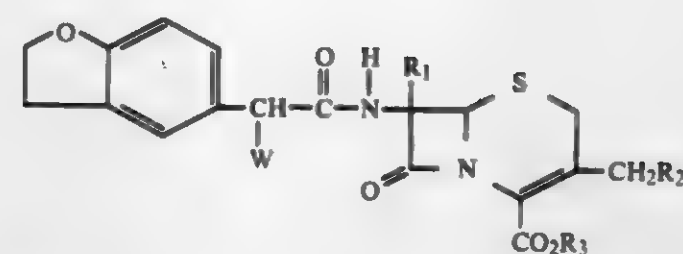
Int. Cl.² C07D 501/56

U.S. Cl. 544-27

1. A compound selected from the formula



11 Claims



wherein W is selected from the group consisting of H, $-\text{NHR}_4$, $-\text{OH}$, $-\text{CO}_2\text{R}_5$ and $-\text{SO}_3\text{R}_5$, wherein R₄ is hydrogen, a straight or branched 2 to 5 carbon alkanoyl group or an alkoxy carbonyl group in which the alkoxy moiety is straight or branched and has from 1 to 4 carbon atoms and R₅ is hydrogen or a straight or branched alkyl group of from 1 to 4 carbon atoms; R₁ is hydrogen or methoxy, R₂ is selected from the group consisting of hydrogen, an alkanoyloxy group in which the alkanoyl moiety is straight or branched and has from 2 to 5 carbon atoms and a heterocyclic thio group selected from the group consisting of 1,3,4-thiadiazol-2-ylthio, 5-methyl-1,3,4-thiadiazol-2-ylthio, 1,3,4-oxadiazol-2-ylthio, 5-methyl-1,3,4-oxadiazol-2-ylthio, tetrazol-5-ylthio, 1-methyltetrazol-5-ylthio, 1,2,3-triazol-5-ylthio and 1-methyl-1,2,3-triazol-5-ylthio; R₃ is selected from the group consisting of hydrogen, a straight or branched alkyl group of from 1 to 4 carbon atoms, an alkanoyloxymethyl group in which the alkanoyl moiety is straight or branched and has from 2 to 5 carbon atoms, an alkanoylamino group wherein the alkanoyl moiety is straight or branched and has from 2 to 5 carbon atoms and the amino nitrogen is substituted with hydrogen or a straight or branched alkyl group of from 1 to 4 carbon atoms, an alkoxy carbonylaminomethyl group wherein the alkoxy moiety is straight or branched and has from 1 to 4 carbon atoms and the amino nitrogen is substituted with hydrogen or a straight or branched alkyl group of from 1 to 4 carbon atoms, a p-(alkanoyloxy)benzyl group in which the alkanoyl moiety has from 2 to 5 carbon atoms and is straight or branched, and an aminoalkanoxyloxymethyl group wherein the alkanoyl moiety is straight or branched and has from 2 to 15 carbon atoms and the amino nitrogen is hydrogen, mono- or di-substituted with a straight or branched alkyl group of from 1 to 4 carbon atoms; and non-toxic pharmaceutically acceptable salts and individual optical isomers thereof.

4,229,576

ANTHRANILATES OF OXYALKYLATED CYANURIC ACID

Jürgen Habermeier, Pfeffingen; Roland Moser, Basel, and Wolfgang Seiz, Pfeffingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,426

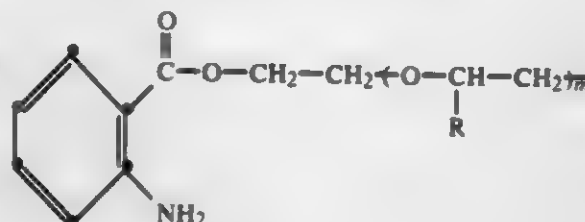
Claims priority, application Switzerland, Dec. 9, 1977, 15122/77

Int. Cl.² C07D 251/34

U.S. Cl. 544-222

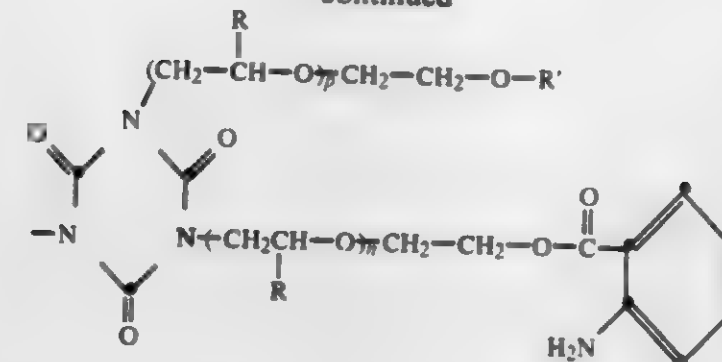
1. An anthranilate of the formula I

5 Claims



(I)

-continued



in which each R is hydrogen, methyl or phenyl R' is a hydrogen or anthranoyl and m, n and p are each nought or a number from 1 to 10.

4,229,577

YELLOW PHOTOGRAPHIC COLOR COUPLERS CONTAINING 3-IMINO-1,3,4-THIADIAZOLYL-4 GROUPS

Graham Evans, Chelmsford, England; Mario Fryberg, Praroman-le-Mouret, Switzerland; Thomas Stauner, Marly, Switzerland; Paul Tschopp, Düringen, Switzerland, and David G. Leppard, Marly, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 782,798, Mar. 20, 1977, Pat. No. 4,115,121.

This application Apr. 27, 1978, Ser. No. 900,675

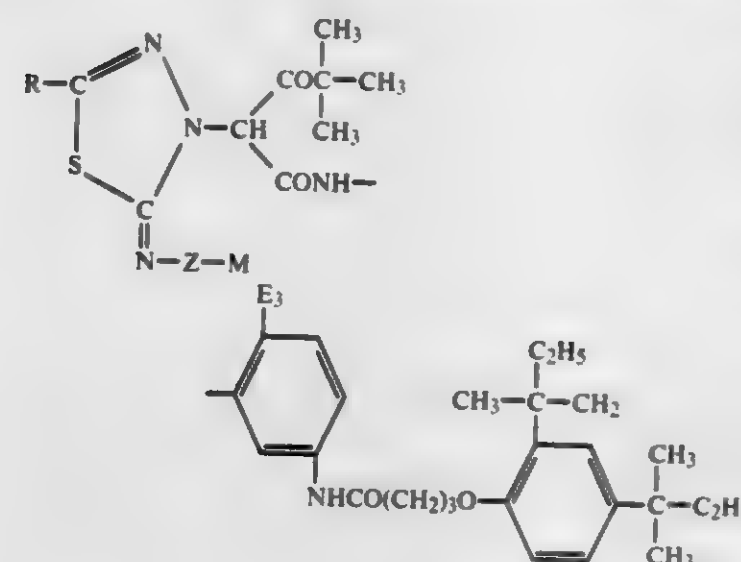
Claims priority, application Switzerland, Apr. 14, 1976, 4751/76

Int. Cl.² C07D 285/12, 401/12, 401/14, 409/04

U.S. Cl. 548-138

13 Claims

1. A yellow coupler which corresponds to the formula



in which E₃ is chlorine or alkyl or alkoxy with 1 to 4 carbon atoms, M is alkyl with 1 to 13 carbon atoms, optionally substituted by halogen, alkoxy with 1 to 5 carbon atoms or phenoxy optionally substituted by alkyl with 1 to 5 carbon atoms; alkoxy with 1 to 5 carbon atoms; benzyl, cyclohexyl or 1-adamantyl, phenyl or phenyl substituted by alkyl or alkoxy with 1 to 5 carbon atoms, halogen, nitro or $-\text{NHCOC}_n\text{H}_{2n+1}$, in which n is 1 to 5; pyridyl, phenylamino or dialkylamino with, in each case, 1 to 5 carbon atoms in the alkyl part, R is hydrogen, alkyl with 1 to 12 carbon atoms, benzyl, phenyl, thienyl, cyclohexyl or 1-adamantyl, alkoxy with 1 to 5 carbon atoms, alkylmercapto with 1 to 4 carbon atoms, halogen, benzoyl, benzoyloxyalkyl with 1 to 5 carbon atoms in the alkyl part, benzoylamino, mono- or dialkylamino with 1 to 5 carbon atoms in the alkyl part, SO_2NH_2 , N,N-dialkylsulphonamide with, in each case, 1 to 5 carbon atoms in the alkyl part, or $-\text{NHCOC}_n\text{H}_{2n+1}$, in which n is 1 to 5, and Z is $-\text{CO}-$ or $-\text{SO}_2-$.

4,229,578

PROCESS FOR PREPARING THIOESTERS

John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

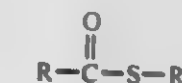
Filed Sep. 29, 1978, Ser. No. 946,983

Int. Cl.² C07D 277/68; C07C 153/07

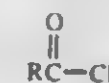
U.S. Cl. 548-165

7 Claims

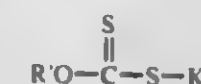
1. A process for the preparation of thioesters having the formula



wherein R represents 2-oxo-3-benzothiazolylmethyl; phenoxymethyl wherein said phenyl ring is substituted by two chloro radicals; or phenyl substituted by three radicals independently selected from the group consisting of chloro and methoxy; R' represents methyl, ethyl or benzyl as the principal product which consists essentially of reacting in an inert solvent an acid chloride having the formula



with a xanthate having the formula



4,229,579

3-(HALOPYRAZOLYL)-7-TRIAZOLYL-COUMARIN COMPOUNDS

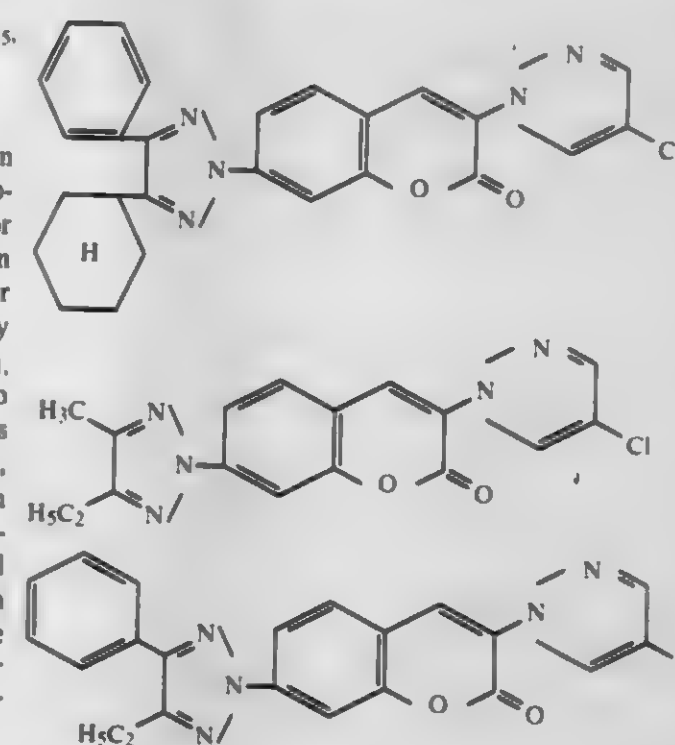
Alfons Doriars, Leverkusen, and Carl-Wolfgang Schellhammer, Opladen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 167,859, Jul. 30, 1971, abandoned, which is a continuation of Ser. No. 443,722, Feb. 19, 1974, Pat. No. 4,144,243. This application Apr. 17, 1978, Ser. No. 896,503
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1970, 2037854

Int. Cl.² C07D 407/14; C09K 1/02

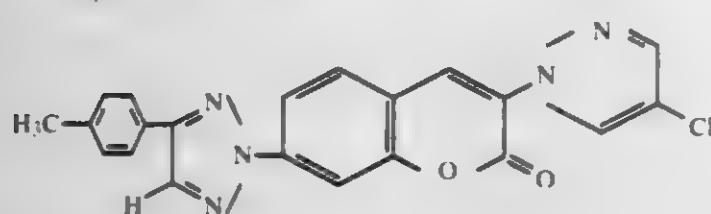
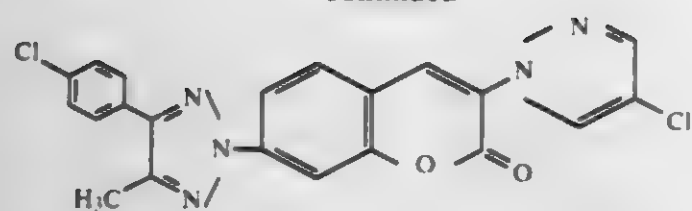
U.S. Cl. 548-256

7 Claims

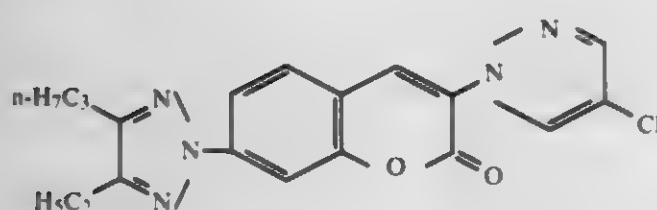
1. An optical brightener selected from the group consisting of



-continued



and



4,229,580

PREPARATION OF

1-AZOLYL-3,3-DIMETHYL-1-PHENOXY-BUTAN-2-ONES
Hermann Arold; Hans-Ludwig Elbe; Eckart Kranz; Wolfgang Krämer; Jörg Stetter; Claus Stölzer; and Rudolf Thomas, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 9, 1978, Ser. No. 885,053

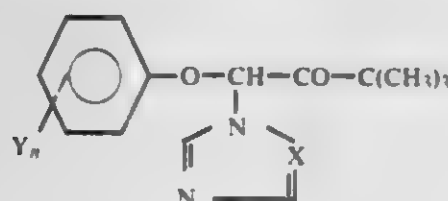
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713777

Int. Cl.² C07D 233/60, 249/08

U.S. Cl. 548—262

16 Claims

1. A process for the preparation of a 1-azolyl-3,3-dimethyl-1-phenoxybutan-2-one of the formula



in which

X is N or CH,

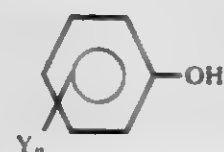
n is an integer from 0 to 4, and

Y each independently is halogen, phenyl, phenoxy, nitro, alkyl, alkoxy or cycloalkyl,

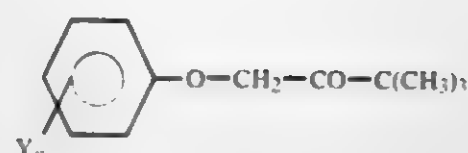
comprising in a first step reacting 1-chloro-3,3-dimethylbutan-2-one of the formula



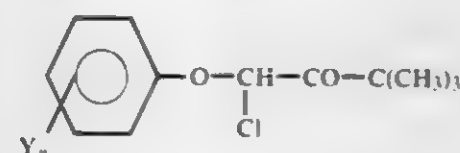
with a phenol of the formula



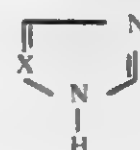
in the presence of an aromatic hydrocarbon or chlorinated aliphatic or aromatic hydrocarbon as solvent, and in the presence of an acid acceptor, at a temperature of about 60° to 150° C. thereby to form an ether-ketone of the formula



without isolation in a second step reacting the ether-ketone with a chlorinating agent in the presence of the same solvent at a temperature of about 20° to 60° C. thereby to form a chloroether-ketone of the formula



and without isolation in a third step reacting the chloroether-ketone with an azole of the formula



in the presence of the same solvent and in the presence of an acid acceptor at a temperature of about 20° to 120° C.

4,229,581

HYDRAZINE CARBOXAMIDE DERIVATIVES OF 1-(1,3-DIOXOLAN-2-YLMETHYL)-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

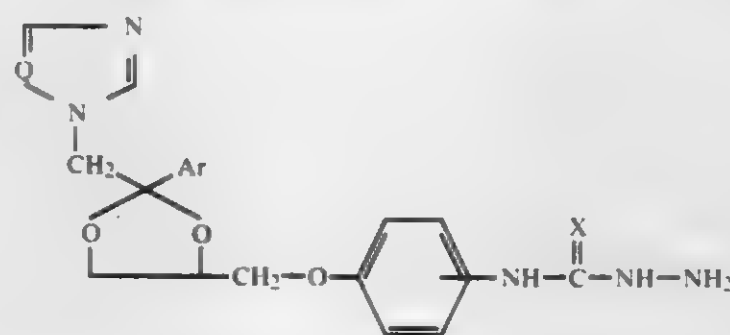
Division of Ser. No. 853,726, Nov. 21, 1977, Pat. No. 4,160,841, which is a continuation-in-part of Ser. No. 784,265, Jan. 31, 1977, abandoned. This application Jun. 20, 1979, Ser. No. 50,374

Int. Cl.² C07D 407/06

U.S. Cl. 548—262

2 Claims

1. A chemical compound having the formula:



and the stereochemically isomeric forms thereof, wherein:

Q is N;

Ar is a member selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl being phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl and lower alkoxy; and

X is a member selected from the group consisting of O and S.

4,229,582

PROCESS FOR THE PREPARATION OF STERICALLY UNIFORM, NATURAL 6-THIATETRACYCLINE DERIVATIVES

Richard Kirchlechner, Hähnlein, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,207

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746044

Int. Cl.² C07D 335/04

U.S. Cl. 549—25

8 Claims

1. A process for the preparation of racemic sterically uniform 6-thiatetracycline derivatives of "natural" configuration which comprises treating a mixture of epimers of corresponding 1,4,4a,5,5a,6,11,12a-octahydro-3,12-dihydroxy-1,11-dioxo-6-thia-naphthacene-2-carboxamides with a saturated heterocyclic amine having a total of 4 to 12 carbon atoms and one ring N atom at a temperature of about 15°–120° C. for a length of time effective to produce said racemic sterically uniform derivatives of "natural" configuration.

4,229,583

PROCESS FOR PREPARING THIO-INDIGO DYESTUFFS

Ernst Spietschka, Idstein, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 655,102, Feb. 4, 1976. This application Nov. 13, 1978, Ser. No. 959,446

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1975, 2504935

Int. Cl.² C09B 7/00

U.S. Cl. 549—52

6 Claims

1. In a process for preparing a thioindigo compound by oxidation of a corresponding 3-hydroxy-thionaphthene or benzothionaphthene with an aqueous alkaline solution of an ammonium or alkali metal peroxo-disulfate, the improvement comprising performing the oxidation at a temperature of –20° to +50° C.

4,229,584

UREYLENEBIS(ANIONIC SUBSTITUTED PHENYLENE CARBONYL)IMINO NAPHTHALENE SULFONIC ACIDS AND NAPHTHALENE CARBOXYLIC ACIDS AND THEIR SALTS

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 778,398, Mar. 17, 1977, Pat. No. 4,129,590. This application Oct. 2, 1978, Ser. No. 948,178

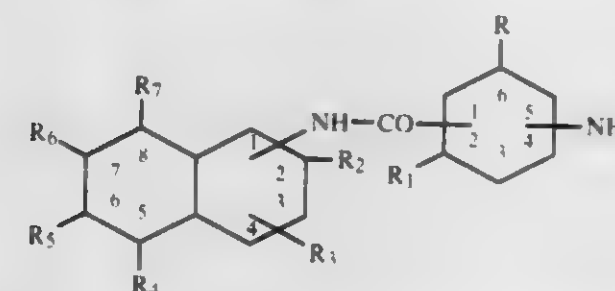
Int. Cl.² C07C 143/60, 143/525

U.S. Cl. 560—13

29 Claims

U.S. Cl. 560—98

1. A compound of the formula:



wherein R is selected from the group consisting of SO₃X and COOY, wherein X is selected from the group consisting of hydrogen and alkali metal and Y is selected from the group consisting of hydrogen, alkali metal and C₁–C₆ alkyl; R₁, R₄, R₅ and R₆ are selected from the group consisting of hydrogen and SO₃X, wherein X is as previously defined; R₂ is selected from the group consisting of hydrogen and acetamido; with the proviso that there is no R₁ or R₂ substituent when the

bridgehead carbonylimino is attached at the carbon 2-position of the respective ring; with the further proviso that each naphthalene moiety must contain two or three SO₃X substituents, wherein X is as previously defined; R₃ is selected from the group consisting of hydrogen; SO₃X and COOY, wherein X and Y are as previously defined; and R₇ is selected from the group consisting of hydrogen, hydroxy and SO₃X as previously defined.

4,229,585

FLUORO-PROSTAGLANDINS

Renato Pellegata, and Carmelo Gandolfi, both of Milan, Italy, assignors to Farmitalia Carlo Erba, Milan, Italy
Division of Ser. No. 895,280, Apr. 11, 1978, which is a division of Ser. No. 779,632, Mar. 21, 1977, abandoned, which is a continuation of Ser. No. 667,261, Mar. 15, 1976, abandoned.

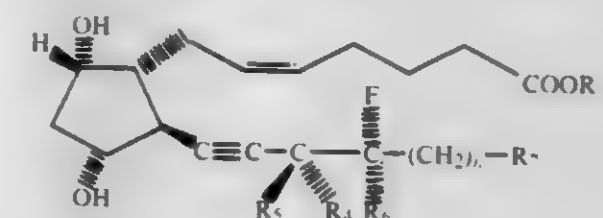
This application Apr. 27, 1979, Ser. No. 34,188

Claims priority, application Italy, Mar. 21, 1975, 21493 A/75
Int. Cl.² C07C 177/00

U.S. Cl. 560—55

8 Claims

1. A 16-fluoro prostaglandin analog of the formula:



wherein

R is hydrogen, a C₁–C₁₂ alkyl group or a cation of a pharmaceutically acceptable base;

one of R₄ and R₅ is hydroxy and the other is hydrogen; R₆ is a member selected from the group consisting of hydrogen, methyl and fluorine;

n is zero, or an integer of 1 to 6;

R₇ is a member selected from the group consisting of phenyl and phenyl substituted by at least one substituent selected from the group consisting of halogen, C₁–C₆ alkoxy and trihalomethyl.

4,229,586

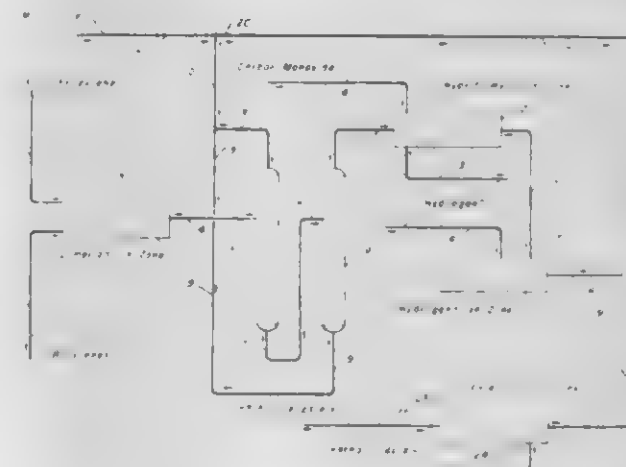
PROCESS FOR PRODUCTION OF MOTOR FUEL AND PHTHALATE ESTERS OR ACYCLIC ALCOHOLS

Dennis J. Ward, South Barrington, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 2,504, Jan. 10, 1979. This application Jun. 7, 1979, Ser. No. 46,282

Int. Cl.² C07C 67/08, 3/16

6 Claims



1. A process for the production of an aromatic ester which comprises the steps of:

(a) passing a feed stream comprising a C₃ and a C₄ olefin into an oligomerization zone operated at oligomerization-pro-

moting conditions and effecting the production of an oligomerization zone effluent stream comprising C₆ to C₁₀ hydrocarbons including C₇ to C₉ acyclic olefinic hydrocarbons;

(b) fractionating the oligomerization zone effluent stream into a light fraction comprising C₆ hydrocarbons, an intermediate fraction comprising C₇ to C₉ acyclic olefinic hydrocarbons and a heavy fraction comprising C₁₀ hydrocarbons;

(c) contacting the intermediate fraction with a hydroformylation catalyst at hydroformylation conditions in admixture with carbon monoxide and hydrogen and effecting the production of a hydroformylation zone effluent stream comprising C₈ to C₁₀ acyclic aldehydes, C₈ to C₁₀ acyclic alcohols and at least 20 mole percent C₇ to C₉ acyclic olefinic hydrocarbons, with the hydroformylation conditions being effective to result in less than 60 mole percent of any dialkyl olefins present in the feed stream from being converted in said hydroformylation zone;

(d) passing the entire hydroformylation zone effluent stream through a hydrogenation zone operated at aldehyde hydrogenation conditions and effecting the formation of a hydrogenation zone effluent stream;

(e) fractionating the hydrogenation zone effluent stream into a light fraction comprising C₇ to C₉ acyclic olefinic hydrocarbons and a heavy fraction comprising C₈ to C₁₀ acyclic alcohols;

(f) contacting the heavy fraction of the hydrogenation zone effluent stream with a monocyclic aromatic carboxylic acid or an aromatic anhydride in an esterification zone maintained at esterification-promoting conditions and effecting the production of an esterification zone effluent stream comprising an aromatic ester; and,

(g) recovering the aromatic ester from the esterification zone effluent stream.

4,229,587

PROCESS FOR PREPARING AROMATIC ESTERS

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,498

Int. Cl.² C07C 67/05

U.S. Cl. 560—131

8 Claims

1. A process for the preparation of esters which comprises reacting benzene or an aryl alkyl compound wherein the alkyl group is about C₁ to C₄ with a C₂ to C₈ carboxylic acid and oxygen in the vapor phase at an elevated temperature in the presence of a catalytically effective amount of a catalyst consisting essentially of an oxide of uranium and at least one oxide selected from the group consisting of arsenic, antimony and bismuth oxides.

4,229,588

PREPARATION OF DIALKYL DITHIODIALKANOATES

Rector P. Louthan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 19, 1978, Ser. No. 943,892

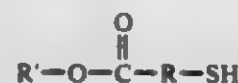
Int. Cl.² C07C 148/00, 149/20

U.S. Cl. 560—147

6 Claims

1. A method for preparing dialkyl dithiodialkanoate comprising:

(a) contacting in an inert hydrocarbon solvent, a halogen with a mercaptoalkyl ester of the formula



wherein R is an alkylene radical having from 1 to 12 carbon atoms and R' is an alkyl radical having from 1 to 12 carbon atoms, the mole ratio of halogen to mercaptoalkyl ester being between 0.4:1 to 0.6:1, to produce (1) a first

liquid phase of dialkyl dithiodialkanoate having the formula



and (2) a separate, second liquid phase of hydrocarbon solvent,

and (b) separating liquid phases thereby obtaining (1) dialkyl dithiodialkanoate and (2) hydrocarbon solvent.

4,229,589

PROCESS FOR PREPARING A DIESTER OF OXALIC ACID

Kenji Nishimura; Shinichiro Uchiumi; Kozo Fujii; Keigo Nishihira; Masayoshi Yamashita, all of Ube, and Hiroshi Itatani, Ichihara, all of Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Aug. 31, 1978, Ser. No. 938,343

Claims priority, application Japan, Sep. 7, 1977, 52/106790

Int. Cl.² C07C 67/36, 69/36

U.S. Cl. 560—193

6 Claims

1. A process for preparing a diester of oxalic acid which comprises contacting carbon monoxide with an ester of nitrous acid in the liquid phase in the presence of metallic palladium or a salt thereof under a partial pressure of carbon monoxide of 5 to 200 atm. at a temperature of 20° to 150° C., said ester of nitrous acid being an ester of nitrous acid with an alcohol having 1 to 20 carbon atoms selected from the group consisting of a saturated monohydric aliphatic alcohol, a saturated dihydric aliphatic alcohol, an alicyclic alcohol and an aralkyl alcohol, to produce said diester of oxalic acid containing the same ester group as that of said ester of nitrous acid.

4,229,590

PREPARATION OF ALKYL PYRUVATES

Christian Dudeck, Limburgerhof; Gunter Lehmann, Ludwigshafen; Bernd Meissner, Heidelberg; Hans Diem, Mannheim; Werner Fliege, Otterstadt; Norbert Petri, Frankenthal, and Karl-Heinz Ross, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,725

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809421

Int. Cl.² C07C 67/30, 67/42, 69/67

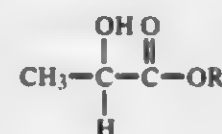
U.S. Cl. 560—174

11 Claims

1. A process for the preparation of an alkyl pyruvate of the formula



where R is an alkyl radical, by oxidizing a lactic acid ester in the presence of a metal catalyst at an elevated temperature, wherein an alkyl lactate of the formula



where R has the above meaning, is reacted with free oxygen in the presence of a catalyst of silver crystals having a particle size of from 0.01 micrometer to 2.5 millimeters, at from 450° to 700° C.

4,229,591

PROCESS FOR PREPARING A DIESTER OF OXALIC ACID IN THE GASEOUS PHASE

Kenji Nishimura; Kozo Fujii; Keigo Nishihira; Masaoki Matsuda, and Shinichiro Uchiumi, all of Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Aug. 31, 1978, Ser. No. 938,358

Claims priority, application Japan, Jan. 25, 1978, 53-6150

Int. Cl.² C07C 67/36, 69/36

U.S. Cl. 560—193

3 Claims

1. A process for preparing a diester of oxalic acid which comprises contacting an ester of nitrous acid with carbon monoxide in the gaseous phase under ambient or reduced pressure in the presence of a solid catalyst containing metallic palladium or a salt thereof at a temperature of 50° to 200° C., and ester of nitrous acid being an ester of nitrous acid with an alcohol having 1 to 8 carbon atoms selected from the group consisting of a saturated monohydric aliphatic alcohol and an alicyclic alcohol, to produce the diester of oxalic acid containing the same ester group as that of said ester of nitrous acid.

4,229,592

INTERMEDIATE FOR PROSTAGLANDINS AND PROCESS FOR PREPARING THE INTERMEDIATE

Lester A. Mitscher; George W. Clark, III, and Paul B. Hudson, all of Lawrence, Kans., assignors to Kansas University Endowment Association, Lawrence, Kans.

Filed Feb. 6, 1978, Ser. No. 875,064

Int. Cl.² C07C 67/08, 67/28, 69/145

U.S. Cl. 560—231

4 Claims

1. 4α-acetoxy-2-cyclopentenone-3-carboxyaldehyde.
2. The method of preparing 4α-acetoxy-2-cyclopentenone-3-carboxyaldehyde consisting essentially in acetylating terrein in the 5-position with acetic anhydride and sodium acetate at a temperature below 65° C., removing the acetoxy group of the formed 5-acetylterrein with chromous chloride, acetylating the formed 5-deoxyterrein with acetic anhydride and sodium acetate and cleaving the side chain of the formed 5-deoxy-4α-acetylterrein through oxidation of the side-chain double bond to said aldehyde in the named stereoconfiguration.

4,229,593

METHOD TO PREPARE

(+)-CIS-3-(2,2-DICHLOROETHENYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLIC ACID

Kiyoshi Kondo, Kanagawa, and Minoru Suda, Sagami Hara, both of Japan, assignors to FMC Corporation, Philadelphia, Pa.

Filed May 29, 1979, Ser. No. 43,599

Int. Cl.² C07C 61/40

U.S. Cl. 562—401

4 Claims

1. A method to prepare 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid containing at least 50% (+)-cis isomer which comprises neutralizing racemic cis, trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid containing at least 40 percent cis isomers with an alkaloid base selected from 1-ephedrin or quinine in a solvent selected from ethyl acetate or acetonitrile, cooling the resulting solution, isolating the precipitated salt, and hydrolyzing the salt to produce the enriched acid.

4,229,594

PREPARATION OF META-PHENOXYTOLUENE

Thomas H. Colby, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 891,951, Mar. 31, 1978, abandoned.

This application May 14, 1979, Ser. No. 38,601

Int. Cl.² C07C 41/01

U.S. Cl. 568—635

3 Claims

1. A process for preparing meta-phenoxytoluene which comprises treating a mixture of sodium and potassium meta-cresylates containing at least fifty mole percent of potassium meta-cresylate, with from 1.1 to about 1.5 moles of chloroben-

zene per mole of said cresylates, under essentially anhydrous conditions, in the presence of from about 0.5 to about 0.9 mole of meta-cresol and from about 0.01 to about 0.035 mole of cuprous chloride per mole of said cresylates, at a temperature within the range of from about 150° C. to about 170° C.

4,229,595

METHOD OF PRODUCING NITRO-PHENOLS

Erik Bengtsson, and Boris Holm, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

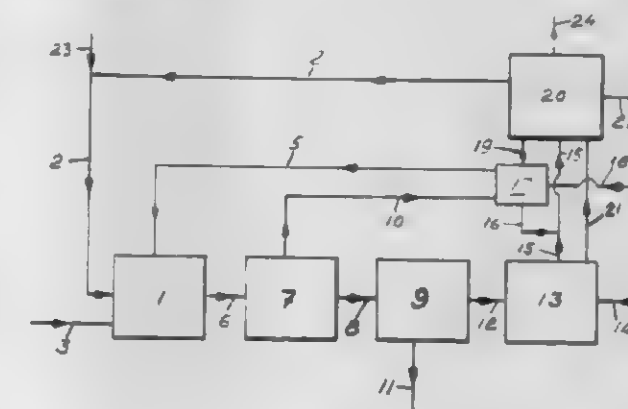
Filed Sep. 25, 1978, Ser. No. 945,367

Claims priority, application Sweden, Oct. 7, 1977, 7712088

Int. Cl.² C07C 79/26

U.S. Cl. 568—706

22 Claims



1. A method of producing mono-nitro compounds of monohydric phenol and alkyl substituted derivatives of monohydric phenol which comprises nitrosating said phenol or alkyl substituted derivative of phenol in a nitric acid solution through treatment with nitrogen oxides at temperatures of between +10° and -30° C.;

oxidizing the nitroso compound at a temperature of between 20° and 45° C. after an increase of the temperature of the nitric acid;

separating off nitrogen oxides during said oxidizing;

separating the nitro compound from the reaction mixture through cooling and filtering;

subjecting the mother liquor and washing liquids to destructive oxidation with nitric acid at a temperature exceeding 130° C. and an increased pressure so that the mother liquor and washing liquids after emitting at least nitrogen oxides and carbon dioxide will substantially contain only nitric acid and water;

and returning the nitric acid and nitrogen oxides from both the oxidation stage and the destruction stage and using them for new nitrosation and destruction, whereby from the reaction system, is formed said nitro compounds and in addition, substantially only water, carbon dioxide and possibly nitrogen will be emitted.

4,229,596

PROCESS FOR THE CONTINUOUS ISOLATION OF DIHYDRIC PHENOLS

Ward J. Burkholder, Houston; Glenn E. Miller, Pasadena, and Fritz J. Nagel, Houston, all of Tex., assignors to The Good-year Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 16,658, Mar. 5, 1970, Pat. No. 3,968,171.

This application Apr. 8, 1976, Ser. No. 674,964

Int. Cl.² C07C 37/08

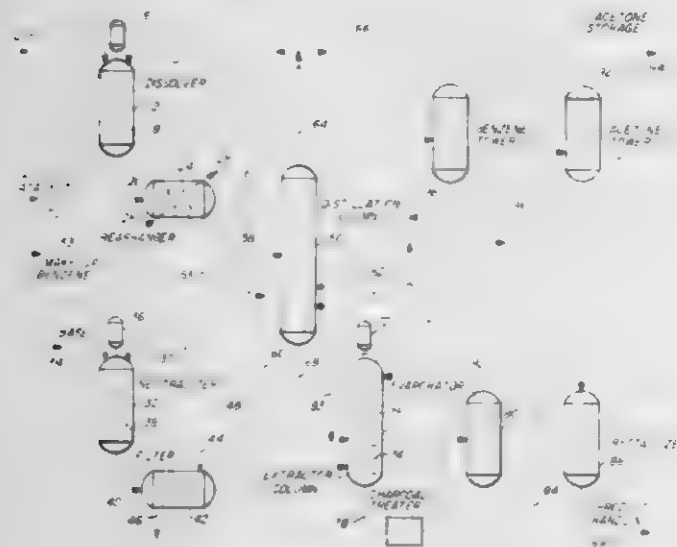
U.S. Cl. 568—768

2 Claims

1. A process for manufacturing a dihydric phenol selected from the class consisting of hydroquinone and resorcinol comprising the combined steps of:

(a) dissolving a dialkylbenzene dihydroperoxide selected from the class consisting of para and meta dialkylbenzene dihydroperoxides in a ketone solvent;

- (b) introducing an acid catalyst for rearranging said dihydroperoxide into a ketone solvent;
- (c) rearranging and decomposing the dihydroperoxide by acid catalysis to form said dihydric phenol product and said ketone by-product, the ketone solvent being selected to be the same ketone as is produced as a by-product of the hydroperoxide rearrangement and decomposition reaction;
- (d) introducing the liquid rearrangement effluent and a hydrocarbon into a distillation column;
- (e) introducing an aqueous feed into said column, said aqueous feed introduced into said column being sufficient to dissolve all of said dihydric phenol present in said column;
- (f) removing the ketone as overhead from said column;
- (g) removing a bottoms phase comprising impurity-containing hydrocarbon and dihydric phenol-containing water from said column;



- (h) feeding said bottoms phase to an extractor vessel;
- (i) adding water to said extractor vessel near the top thereof;
- (j) adding a stream of said hydrocarbon to said vessel near the bottom thereof;
- (k) intimately intermixing said product with said water and said hydrocarbon countercurrently in said extractor vessel;
- (l) recovering from said extractor vessel, a hydrocarbon phase containing substantially all of said by-products and said impurities and substantially none of said dihydric phenol;
- (m) recovering as bottoms from said extractor vessel an aqueous phase containing said phenol substantially free of said by-products or impurities; and
- (n) recovering said dihydric phenol from said aqueous phase by crystallization.

4,229,597

PROCESS FOR THE PREPARATION OF RESORCIN
Thoru Taguchi, Waki; Tokinori Ago, Ohtake, and Isao Hashimoto, Waki, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Oct. 3, 1978, Ser. No. 948,630

Claims priority, application Japan, Oct. 8, 1977, 52-120507
Int. Cl.³ C07C 37/08, 39/08

U.S. Cl. 568-768

6 Claims

1. In a process for the preparation of resorcin by decomposing meta-diisopropylbenzene dihydroperoxide in the presence of a synthetic silica-alumina catalyst, the improvement comprising feeding said meta-diisopropylbenzene dihydroperoxide and water under agitation into a reaction vessel filled with a dispersion of said synthetic silica-alumina catalyst in a mixed solvent comprising a major amount of acetone and a minor amount of an aromatic hydrocarbon, and decomposing said meta-diisopropylbenzene dihydroperoxide under reflux conditions in the presence of 0.4 to 0.9% by weight of water based on the total starting mixture.

4,229,598

CHEMICALS FOR TREATMENT OF PVC

Dean R. Weimer, and Charles M. Starks, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Dec. 14, 1978, Ser. No. 969,742

Int. Cl.³ C07C 39/06

U.S. Cl. 568-792

1 Claim

1. A free radical inhibitor for terminating polyvinyl chloride polymerizations, said inhibitor prepared by a process comprising

- (1) methylating phenol with methanol in vapor phase at pressures of from about 110 to about 200 pounds per square inch gauge, temperatures of from about 400° C. to about 700° C. and a liquid hourly space velocity of from about 1 to about 15 and recovering a product stream therefrom;
- (2) distilling said product stream into desired fractions and retaining the fraction obtained at temperatures of from about 205° C. to about 230° C. at one atmosphere, and then;
- (3) alkylating the retained fraction with an alkylating agent selected from the group consisting of isobutylene, isopentylene, isohexene, isooctene, cyclohexene or cyclopentene in the presence of a catalyst selected from the group consisting of sulfuric acid, sulfonic acids, sulfonated polystyrene resins crosslinked with divinylbenzene, and boron trichloride etherates at temperatures of from about 10° C. to about 110° C. and pressures of at least atmospheric while at a product fraction/alkylating agent weight ratio of from about 1/0.23 to about 1/1.85 respectively, then;
- (4) fractionally distilling the product of (3) and retaining the fraction obtained at temperatures of from about 110° C. to about 200° C. at 30 mm of mercury.

4,229,599

PREPARATION OF A CARYOPHYLLENE ALCOHOL MIXTURE

Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 947,186

Int. Cl.³ C07C 29/15, 35/23

U.S. Cl. 568-819

5 Claims

1. The process for rearranging a caryophyllene derivative selected from the group consisting of caryophyllene oxide and dihydro caryophyllene oxide using an aluminum isopropylate catalyst and a toluene solvent comprising the steps of (i) intimately admixing aluminum isopropylate, toluene and the caryophyllene derivative to form a mixture; (ii) heating the resulting mixture at a temperature of from 100° C. up to 150° C. for a period of time of from about 1 up to about 5 hours; and (iii) recovering the rearranged caryophyllene oxide or dihydro caryophyllene oxide, a mixture of alcohols, from the reaction mass; the concentration of aluminum isopropylate catalyst in the reaction mass varying from about 0.025 molar up to about 0.75 molar; and the concentration of caryophyllene oxide or dihydro caryophyllene oxide in the reaction mass varying from about 0.25 molar up to about 1.00 molar.

4,229,600

NORBORNANE AND NORBORNENE DERIVATIVES
Toyohiko Kobayashi; Haruki Tsuruta, and Toshio Yoshida, all of Yokohama, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1978, Ser. No. 929,055

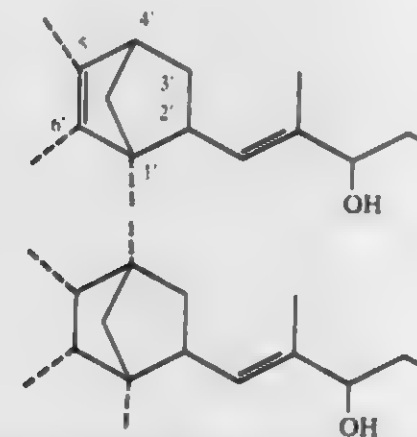
Claims priority, application Japan, Jul. 28, 1977, 52/90846; Nov. 14, 1977, 52/136547

Int. Cl.³ C07C 31/13, 33/05

U.S. Cl. 568-820

3 Claims

1. A norbornane or norbornene compound of the formulae:



wherein one methyl group is present at one of the 1', 4', 5' or 6' positions of the nucleus of said compound.

4,229,601

CONVERTING ETHYLENE AND PROPYLENE TO THE GLYCOL USING T-BUTYL HYDROPEROXIDE IN A TWO-PHASE LIQUID REACTANT

Ching-Yong Wu, O'Hara Township, Allegheny County, and Thaddeus P. Kobylinski, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 26, 1978, Ser. No. 972,949

Int. Cl.³ C07C 31/20

U.S. Cl. 568-860

11 Claims

1. A method of preparing ethylene or propylene glycol in high yield which comprises contacting t-butyl hydroperoxide with ethylene or propylene at an elevated pressure in a heterogeneous two-phase liquid reaction system comprising an organic polar solvent, a catalytic quantity of osmium tetroxide, about 0.1 to about ten weight percent cesium hydroxide, rubidium hydroxide or potassium hydroxide and about one to about 40 weight percent water at a moderate temperature and at a pH of about 14.

4,229,602

DEHYDROCYCLIZATION PROCESS

Francis M. Brinkmeyer, and Donald M. Haskell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 4, 1978, Ser. No. 966,457

Int. Cl.³ C07C 5/36; C10G 35/04

U.S. Cl. 585-407

8 Claims

1. A process for producing aromatics from aliphatic hydrocarbons which comprises the steps of

- (a) contacting a feed comprising aliphatic hydrocarbons with steam and a dehydrocyclization catalyst under steam-active dehydrocyclization conditions sufficient to form a vapor stream comprising aromatics, nonaromatics, and hydrogen,
- (b) separating at least a portion of said vapor stream and increasing the pressure thereof by compressing same and then heating the compressed vapor to approximately the dehydrocyclization temperature and pressure, and
- (c) recycling said compressed and heated vapor stream to the dehydrocyclization reaction in step (a) at a gradually

increased rate such that the amount of steam diluent used in (a) is gradually reduced after startup of the process to a



point where the steam is replaced or substantially replaced with said recycle as the diluent for the process.

4,229,603

METHOD OF DEHYDROGENATION OF ALKYL AROMATICS TO ALKENYL AROMATICS

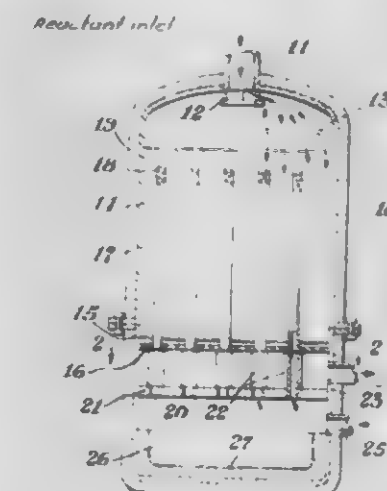
George W. Lyon, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 406,443, Oct. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 202,375, Nov. 26, 1971, Pat. No. 3,787,188. This application Apr. 26, 1977, Ser. No. 791,073

Int. Cl.³ C07C 5/38

U.S. Cl. 585-444

5 Claims



1. A method for dehydrogenating an alkylbenzene compound having from 1 to 3 alkyl groups attached to a benzene nucleus of which 1 to 2 alkyl groups contain 2-3 C atoms comprising feeding said alkylbenzene compound at a temperature of 450°-500° C. through the inlet port of a reactor, feeding stream at a temperature of 650° to about 1000° C. into the interior of a fixed bed of dehydrogenation catalyst, said stream flowing in a countercurrent manner to said flow of alkylbenzenes in heat exchange relationship in said bed prior to introduction into said bed, said point of introduction being just below the point of introduction of the alkylbenzene compound into said bed, said steam being supplied in sufficient quantity to maintain the mixture, at a temperature of about 575° to 675° C. upon mixing the alkylbenzene and steam in said catalyst bed, passing the mixture through said catalyst bed and withdrawing reacted effluent from the reactor, the total steam to hydrocarbon ratio weight to weight basis, being less than about 3 to 1, to about 0.7 to 1 each respectively.

4,229,604

PROCESS FOR PRODUCING UNSATURATED HYDROCARBONS

Dzantemir N. Tmenov, Prazhskaya ulitsa, 3, kv. 222; Nikolai I. Svintsov, ulitsa Vernadskogo, 63, kv. 38; Lidia P. Shapovalova, Kharkovskoe shosse, 12, kv. 43; Albert V. Tabakov, ulitsa Boichenko, 17, kv. 38; Mikhail L. Dvoretzky, ulitsa Bereznyakovskaya, 26, kv. 64, all of Kiev; Gavril I. Vasiliev, ulitsa Kommunisticheskaya, 38, kv. 40; Gennady P. Zhesovskiy, ulitsa Chernyshevskogo, 27, kv. 15, both of Novokuibyshevsk Kuibyshevskoi oblasti; Valentina D. Kandalo, Pervomaiskaya ulitsa, 51/23, kv. 33, Moscow; Boris S. Korotkevich, Fortunatovskaya ulitsa, 31/35, kv. 71, Moscow; Anatoly I. Lukashov, Palekhskaya ulitsa, 9, korpus 1, kv. 65, Moscow; Valery P. Lukyanenko, Garmotnaya ulitsa, 22, kv. 20; Roman I. Polataiko, Volgogradskaya ulitsa, 39, kv. 96, both of Kiev; Evgeny A. Malov, ulitsa Repina, 1, kv. 18, Novokuibyshevsk Kuibyshevskoi oblasti, and Jury A. Shmuk, Leninsky prospekt, 13, kv. 3, Moscow, all of U.S.S.R.

Filed Feb. 5, 1979, Ser. No. 9,522

Int. Cl.² C07C 15/10; B01J 23/84, 29/16

U.S. Cl. 585—445

9 Claims

1. A process for producing unsaturated hydrocarbons comprising contacting compounds selected from the group consisting of paraffin, monoolefin and alkylaromatic hydrocarbons at a temperature within the range of from 400° to 700° C. in the presence of an inert component selected from the group consisting of an inert gas and steam, and in the presence of oxygen in an amount up to 0.1 mole per mole of the hydrocarbon feed, with a catalyst consisting essentially of oxides selected from the group consisting of cobalt, nickel, iron and manganese deposited on a carrier in an amount of from 3.7 to 15% by weight of the catalyst; said catalyst also including an oxide of molybdenum in an amount of from 5 to 35% by weight of the catalyst, also deposited on the carrier; said carrier being selected from the group consisting of granulated porous crystalline silica modified with magnesia in an amount of 1 to 20% by weight of the carrier, granulated magnesium-titanium oxides consisting of 50 to 95% by weight of MgO and 50 to 5% by weight of TiO₂ and granulated magnesium-aluminum oxides consisting of 70 to 95% by weight of MgO and 5 to 30% by weight of Al₂O₃; passing an oxygen-containing gas through the spent catalyst at a temperature within the range of from 400° to 700° C. to restore catalytic activity of the catalyst.

4,229,605

1,7-OCTADIENE PROCESS

Kenzie Nozaki, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 13, 1978, Ser. No. 968,882

Int. Cl.² C07C 11/12

U.S. Cl. 585—509

9 Claims

1. A process for preparing 1,7-octadiene which comprises hydrodimerizing butadiene in the presence of formic acid or a salt of formic acid, optionally a solvent, a catalytic amount of palladium and a tertiary organophosphorus ligand having the formula:



wherein R is aryl, alkyl, aralkyl or alkaryl with less than about 20 carbon atoms where the Rs attached to the phosphorus and oxygen atoms are the same or different, O is oxygen, a+b equals 3 and b is 1 or 2.

4,229,606

1,7-OCTADIENE PROCESS

Kenzie Nozaki, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 13, 1978, Ser. No. 968,883

Int. Cl.² C07C 11/12

U.S. Cl. 585—509

8 Claims

1. A process for preparing 1,7-octadiene which comprises

hydrodimerizing butadiene in the presence of formic acid or a salt thereof, optionally a solvent, a catalytic amount of palladium and a mixture of tertiary organo phosphorus ligands comprising a first ligand having the formula (RO)_aPR_b and a second ligand having the formula (RO)_{a'}PR_{b'} wherein a+b equal 3, a is 0, 1 or 2, a'+b' equal 3, a' is 0, 1, 2 or 3, a is not the same as a', R is aryl, alkyl, aralkyl or alkaryl with less than about 20 carbon atoms wherein the Rs attached to the phosphorus and oxygen are the same or different and with at least one R of said first ligand being a sterically hindering moiety selected from benzyl or branched alkyl, aralkyl, alkenyl and cycloalkyl having from 3 to about 10 carbon atoms with branching occurring at a carbon atom no more than two carbon atoms from the phosphorus atom.

4,229,607

PROCESS FOR RECOVERY OF ETHYLENE OLIGOMERS

Clarence R. Gum, and Albert T. Kister, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 21, 1979, Ser. No. 50,904

Int. Cl.² C07C 3/10

U.S. Cl. 585—520

8 Claims

1. In the process for the oligomerization of ethylene to linear alpha-olefins wherein ethylene is oligomerized by contact in liquid phase at elevated pressure with a solution of an oligomerization catalyst composition comprising catalytically active nickel complex in an aliphatic diol solvent to afford a reaction product made up of (1) a liquid solvent phase containing dissolved catalyst, (2) a liquid hydrocarbon phase comprising ethylene oligomers containing dissolved ethylene, catalyst, diol solvent and a minor amount of diol solvent decomposition products and (3) a gaseous ethylene phase, said ethylene oligomers being recovered by separating the liquid hydrocarbon phase from the gaseous ethylene and at least part of the liquid solvent phase under pressure after which the separated liquid hydrocarbon phase is sequentially washed with sufficient aliphatic diol solvent to remove any residual amount of active catalyst, subject to reduced pressure to flash off dissolved ethylene and scrubbed with water to remove residual solvent; the improvement which comprises, contacting the liquid hydrocarbon phase, immediately after water scrubbing, with sufficient aqueous acid at elevated temperature to hydrolyze and extract the diol solvent decomposition products, said aqueous acid having a pH below about 5, and recovering therefrom a liquid hydrocarbon phase substantially free of diol solvent decomposition products.

4,229,608

HEAT BALANCED CYCLIC PROCESS FOR MANUFACTURE OF LIGHT OLEFINS

Nai Y. Chen, Titusville; Werner O. Haag, Lawrenceville, both of N.J., and Rudolph M. Lago, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,718

Int. Cl.² C07C 1/00

U.S. Cl. 585—640

10 Claims

1. A heat balanced cyclic process for converting a charge consisting essentially of methanol, dimethyl ether or mixtures thereof to a hydrocarbon product rich in ethylene and propylene which comprises contacting said charge with a fluidized catalyst comprising a crystalline aluminosilicate zeolite characterized by pores, the major dimension of which is less than 6 Angstroms, further characterized by pore windows of about a size such as would be provided by 8-membered rings of oxygen atoms and the capability, under the hereinafter specified conditions, of producing less than 20 weight percent methane in said hydrocarbon product, said contacting taking place in a riser reactor at an inlet temperature between about 800 and 1000° F. and an increased outlet temperature between about 900° and about 1150° F. with a weight ratio of catalyst to charge between about 5 and about 12 and a residence time between

4,229,610

OLEFIN DOUBLE BOND ISOMERIZATION

John W. Myers, and Dean P. Montgomery, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 3, 1978, Ser. No. 957,607

Int. Cl.² C07C 5/24, 5/30

U.S. Cl. 585—664

5 Claims

1. A process for shifting an internal double bond of a monoolefin having 4-20 carbon atoms to yield terminal olefin which comprises heating said monoolefin under isomerization conditions at an isomerization temperature in the approximate range 260°-650° C. (500°-1200° F.) sufficient to cause shifting of the double bond while avoiding substantial cracking or skeletal isomerization in presence of a catalyst or contact mass essentially comprising an activated alumina having a surface area in the approximate range of from about 300 to about 400 square meters per gram and containing sodium oxide in the approximate range 0.13-0.39 milliequivalents of Na₂O per gram of catalyst, and silica in the approximate range 0.5-6.3 weight percent of the catalyst, the sodium oxide having been supplied in the catalyst composition using a compound of sodium which on calcination yields the oxide.

4,229,611

ISOMERIZATION ALKYLATION SYSTEMS

George M. Kramer, Berkeley Heights, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 889,033, Mar. 22, 1978, Pat. No. 4,162,233.

This application Apr. 11, 1979, Ser. No. 28,989

Int. Cl.² C07C 3/52

U.S. Cl. 585—728

13 Claims

1. A hydrocarbon conversion process which comprises contacting a hydrocarbon feedstock in the presence of a catalyst composition comprising a Lewis acid characterized as having a "Selectivity Parameter" (I/E)_{MCP} greater than about 0.5, a non-reactive aprotic solvent selected from the group consisting of halogenated C₁-C₃ alkanes, halogenated cyclopropane, halogenated C₂-C₃ alkenes, wherein the C₂ and C₃ compounds contain at least 2 halogen atoms per mole of compound and an alkyl halide at a temperature ranging from about -100° C. to about 50° C. and forming a reaction product.

4,229,612

DECOLORIZATION OF NORBORNADIENE DIMERS

Lewis W. Hall, Jr., Chadds Ford, Pa.; David L. Kerr; Elmer J. Hollstein, both of Wilmington, Del.; Harry K. Myers, Jr., Aston Township, Chester County, and Abraham Schneider, Overbrook Hills, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

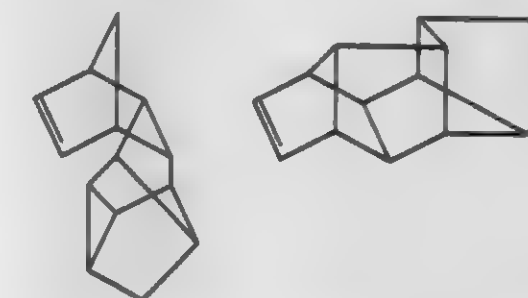
Filed Jan. 29, 1979, Ser. No. 7,112

Int. Cl.² C07C 13/28

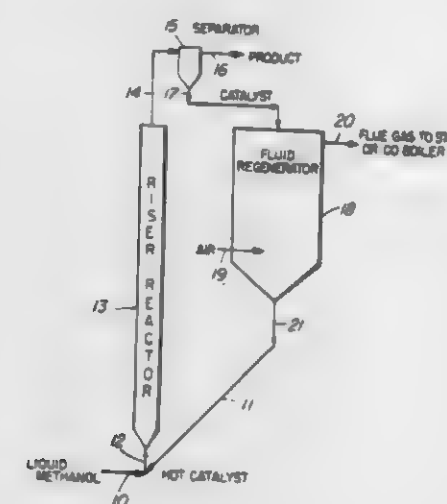
U.S. Cl. 585—823

13 Claims

1. Process for the decolorization of an olefinic hexacyclic dimer of norbornadiene comprising contacting a dimer selected from a group consisting of isomers having the following structures or a mixture thereof:



with a natural or synthetic serpentine clay and continuing the contacting until decolorization occurs.



taining catalyst, conducting the latter to a regenerator, maintained at a temperature within the approximate range of 1200° to 1400° F., wherein said carbonaceous deposit is removed by combustion in air, recycling the resulting hot regenerated catalyst to further contact with a fresh stream of said charge and repeating the above cycle.

4,229,609

PROCESS FOR DEHYDROGENATING HYDROCARBONS

Thomas Hutson, Jr., and Francis M. Brinkmeyer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 8, 1979, Ser. No. 18,689

Int. Cl.² C07C 5/36

U.S. Cl. 585—660

15 Claims

1. A process for dehydrogenating a dehydrogenatable hydrocarbon feed using a bed of steam active dehydrogenation catalyst and repetitively regenerating said catalyst with steam and oxygen-containing gas wherein the flow rate of steam through the catalyst bed is maintained constant comprising, passing dehydrogenatable hydrocarbon feed through the catalyst bed under dehydrogenation conditions for a predetermined period of time, then stopping the flow of dehydrogenatable hydrocarbon to the catalyst bed, then after the steam has purged at least part of the dehydrogenatable hydrocarbon from the catalyst bed passing oxygen-containing gas through the catalyst bed under regeneration conditions for a period of time, then stopping the flow of oxygen-containing gas to the catalyst bed, then after the steam has purged at least part of the oxygen from the catalyst bed passing dehydrogenatable hydrocarbon through the catalyst bed under dehydrogenation conditions wherein more than one catalyst bed is employed and wherein dehydrogenation is conducted in one catalyst bed while regeneration is conducted in another and wherein the dehydrogenated hydrocarbon that is supplied to each catalyst bed is preheated by being passed in indirect heat exchange with the effluent from a catalyst bed that is being regenerated.

ELECTRICAL

4,229,613 MONO-HOSE WITH ELECTRICAL CONDUCTORS AND END CONNECTOR MEANS

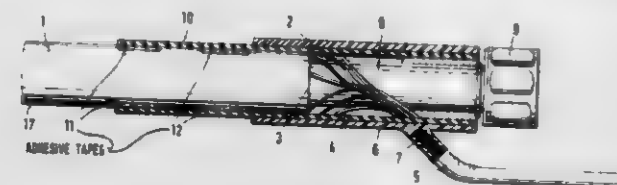
Siegfried V. Braun, Eschborn, Fed. Rep. of Germany, assignor to
Gummi-Roller GmbH & Co., Eschborn, Fed. Rep. of Germany
Filed Feb. 14, 1978, Ser. No. 877,727

Claims priority, application Fed. Rep. of Germany, May 4,
1977, 2719851

Int. Cl. F16L 11/12

U.S. Cl. 174-47

11 Claims



1. A flexible pressure hose comprising:
a hose member of a flexible material for conveying a pressurized medium;
an outer layer of flexible material surrounding said hose member;
a plurality of electrically conductive, stranded metal wires separately embedded in the outer layer of flexible material and extending substantially the length of the hose member, said stranded metal wires extending out of said outer layer at an end area thereof;
a connector means attached to at least one end of the hose member comprising a first protective cover circumferentially surrounding the hose member in said end area where the stranded metal wires extend out of the outer layer and providing an area for the attachment of the hose member to a passageway for pressurized medium, a second protective cover integral with said first protective cover circumferentially surrounding the stranded metal wires and providing an area for attachment of the stranded metal wires to a means for conducting electric current, a metal connector fitting attached to the end of the hose member and a shrunk-on sleeve within the first protective cover and substantially surrounding the hose member and extending to contact at least a portion of the metal connector fitting.

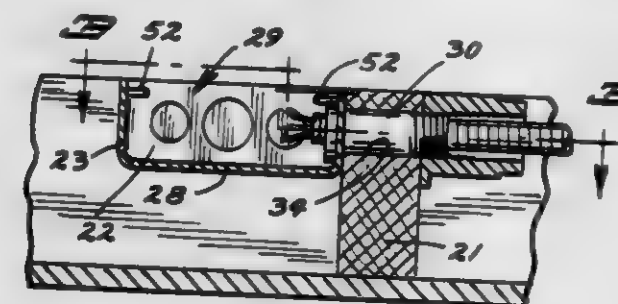
4,229,614 ELECTRICAL RECEPTACLE BOX AND METHOD OF INSTALLATION

Robert A. Smolik, 670 W. Seventh St., St. Paul, Minn. 55102
Filed Mar. 7, 1979, Ser. No. 18,144

Int. Cl. H02G 3/10

U.S. Cl. 174-58

10 Claims



1. An electrical receptacle mounting box mountable to an upright wall stud having a transverse, horizontal mounting hole and having a front face for installation of wallboard, said mounting box comprising:
a housing having a back wall and side walls connected to the back wall with forward edges defining a planar front housing opening;
a hollow tubular mounting stem open to the interior of the housing connected at one end to a first housing side wall and extending away therefrom in perpendicular relation-

ship to the first side wall adapted to be inserted through the transverse hole formed in the wall stud with the outer end of the mounting stem extending from a side of the wall stud opposite the housing, said tubular member connected to said first side wall at a location to locate the planar front housing opening substantially coplanar with the front face of the wall stud when inserted in the transverse hole formed in the wall stud, said outer end of the mounting stem having a first threaded portion, said tubular stem adapted to carry a length of electrical conduit for introduction of electrical wiring into the housing;

- a tubular coupler having a second threaded portion for assembly to the outer end of the mounting stem when the mounting stem is inserted through the transverse hole in the wall stud to secure the housing with respect to the wall stud;
- a plurality of coplanar ears in said housing extended inwardly from the side walls of said housing and recessed relative to the housing front opening an amount sufficient to be cleared by a cutting tool being used to form an opening in a wallboard installed on the front face of the stud in covering relationship to the housing in substantial conformance with the planar front housing opening; and means on the housing for mounting an electrical receptacle including a mounting ring at least partially insertable in said planar front housing opening, said mounting ring comprising an open frame and a plurality of legs, said legs adapted to bear upon the ears in the housing when the mounting ring is assembled to the housing, and means for fixing the mounting ring to the housing.

4,229,615 ROUND/FLAT WOVEN MULTI-CONDUCTOR CABLE

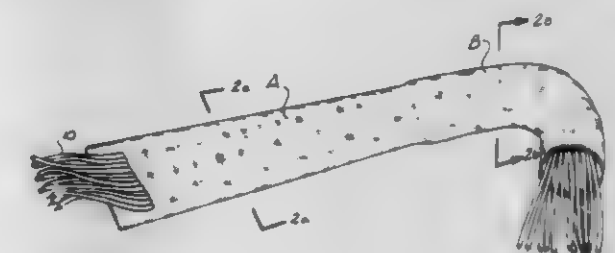
Lawrence W. Orr, Jr., Simpsonville, and Edgar A. Rose, Greenville, both of S.C., assignors to Southern Weaving Company, Greenville, S.C.

Filed Jul. 13, 1978, Ser. No. 924,366

Int. Cl. H01B 7/04

U.S. Cl. 174-117 M

4 Claims



1. A woven electrically conductive cable comprising:
a plurality of elongated conductors arranged longitudinally extending in said cable;
a continuous fill strand woven about said conductors;
a plurality of warp strands interwoven with said fill strand;
a first longitudinal section of said cable including said warp strands interwoven with said fill strands forming a cover loosely and randomly harnessing said conductors affording a high degree of flexibility for omnidirectional routing of said cable in said first section; and
a second longitudinal section of said cable being continuously woven from said first section and having a generally flat configuration with said fill strand woven across the top and bottom thereof in alternating runs including at least a portion of said warp strands of said first section interwoven as warp binders between top and bottom runs of said fill strand and between conductors fixing the location of said conductors and binding said second section in said flat configuration and affording unidirectional flexibility.

4,229,616

CABLE CONNECTOR COVER

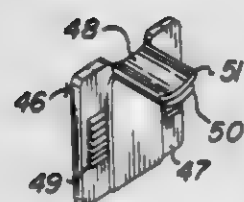
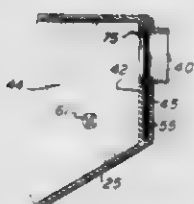
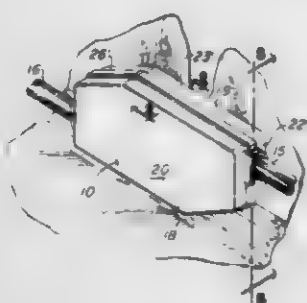
Kenneth W. Hotchkiss, Rte. 1, Blue Mountain, Golden, Colo. 80401

Filed Aug. 10, 1978, Ser. No. 932,469

Int. Cl.¹ H01R 13/52

U.S. Cl. 174-138 F

8 Claims



1. A cable connector cover, comprising:

- a body means for containing a cable connector therein and having a cable passage opening formed therein, said opening having an arcuate side on at least one edge thereof, the body means comprising separably joined together first and second body portions having a joining line dividing the cable passage opening and arcuate side thereof;
- sliding door means associated with said cable passage opening and having an arcuate edge substantially opposed to the arcuate side of the opening;
- guide means for directing the sliding door means in a path toward the arcuate edge of the opening to cover a substantial portion of the opening; and
- directionally biased friction means for retaining the door in a given position along said path toward the arcuate edge of the opening while permitting the door to be moved normally thereto substantially in the plane of the opening when said first and second body portions are separated at said joining line.

4,229,617

ASSEMBLY FOR PROCESSING PUNCHED PAPER TAPE
Joseph A. Bellino, Arlington Heights; Edmund C. Feldy, Evanston; Richard E. LaSpesa, Chicago, and Robert J. Ramig, Jr., Niles, all of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Nov. 1, 1978, Ser. No. 956,836
Int. Cl.¹ H04L 15/32; G06K 7/14

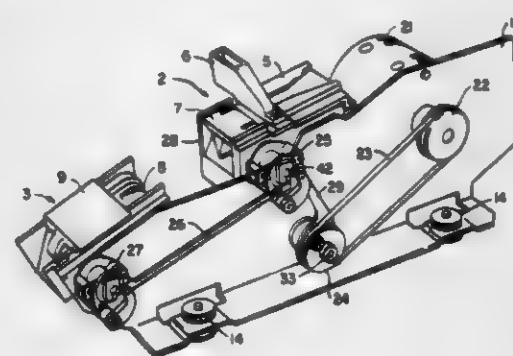
U.S. Cl. 178-92

3 Claims

1. A paper tape punch and reader assembly comprising: a housing comprising: a base member adapted to be placed on a planar surface and a complementary cover, said housing having a length, width and height; an assembly mounting means resiliently secured to said base member, said mounting means comprising a plane surface extending upwardly at a right angle from said base mem-

ber and extending substantially the said length of said housing;

a reader assembly means, a punch assembly means, and motor means mounted serially on and extending through said plane surface of said mounting means, said reader assembly means and said punch assembly means each comprising tape drive means adapted to advance punched paper tape through the respective assembly, means in said punch assembly and in said reader assembly for generating timing signals for controlling the operation of said tape drive means; adjustable eccentric means coupled to one of



said tape drive means for imparting selected periodic motion to said drive means, belt means coupling an output pulley of said motor means to said eccentric means, and a rigid link for coupling said tape drive means to provide the application of identical periodic motion to both of said tape drive means; said paper tape drive means of said reader assembly means and of said punch assembly means, said eccentric means and said output pulley of said motor means being mounted substantially in line along but spaced apart from one face of said plane surface of said mounting means.

4,229,618

HIGH-FIDELITY SPEAKER WITH NEGATIVE FEEDBACK

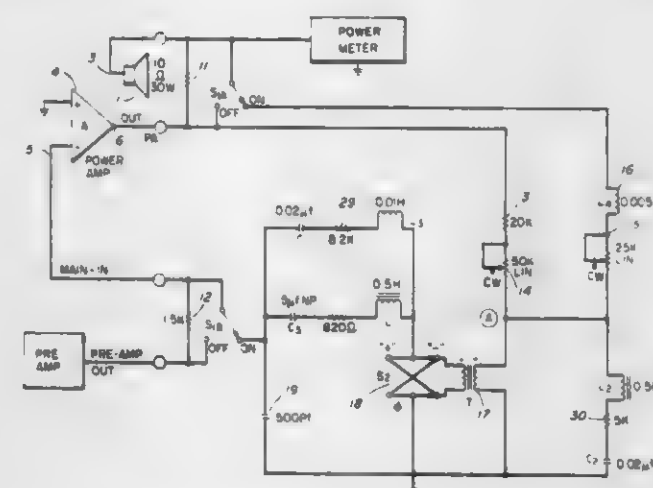
George W. Gamble, One Phlox Ln., Acton, Mass. 01720

Filed Oct. 30, 1978, Ser. No. 955,534

Int. Cl.¹ H04R 3/00

U.S. Cl. 179-1 F

7 Claims



1. High-fidelity speaker system comprising in combination a moving-coil loudspeaker having a voice coil and a coil input terminal an audio amplifier associated therewith, said audio amplifier having an input terminal and an output terminal, an output resistance connected between said output terminal and said coil input terminal, an input resistance, means for applying an audio voltage signal to said input terminal via said input resistance, whereby a current i_i is produced in said input resistance, an impedance network connecting said input terminal to said

output terminal and being so related to said input resistance that the desired amplification is obtained and having components such that there is a point in said network at which the voltage is proportional to $di/dt + i$, and means for causing the voltage at said coil input terminal to track the voltage at said point.

4,229,619

METHOD AND APPARATUS FOR DRIVING A MULTI WAY SPEAKER SYSTEM

Nobuaki Takahashi; Eichi Funasaka; Masanobu Shinozaki, and Yasuo Kaizu, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

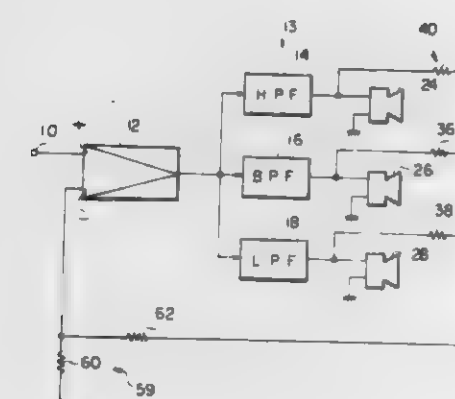
Filed Oct. 31, 1978, Ser. No. 956,265

Claims priority, application Japan, Nov. 1, 1977, 52/131010; Nov. 1, 1977, 52/131011; Nov. 1, 1977, 52/131012; Nov. 1, 1977, 52/131013; Nov. 10, 1977, 52/134967; Nov. 14, 1977, 52/136523

Int. Cl.¹ H04R 3/00

U.S. Cl. 179-1 D

23 Claims



1. A method of driving a multi way speaker system comprising the steps of:

- amplifying an audio signal;
- dividing the amplified audio signal into a plurality of frequency ranges;
- driving a plurality of speakers the frequency characteristics of which respectively correspond to said frequency ranges, by the divided audio signals respectively;
- producing a composite signal by combining at least two of the divided audio driving signals with each other; and
- feeding said composite signal back to a stage which carries out said step of amplifying said audio signal so as to establish a negative feedback loop.

4,229,620

MOBILE RADIOTELEPHONE STATION TWO-WAY RANGING SYSTEM

Clifford W. Schaible, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1978, Ser. No. 959,095

Int. Cl.¹ H04Q 7/04

U.S. Cl. 179-2 EB

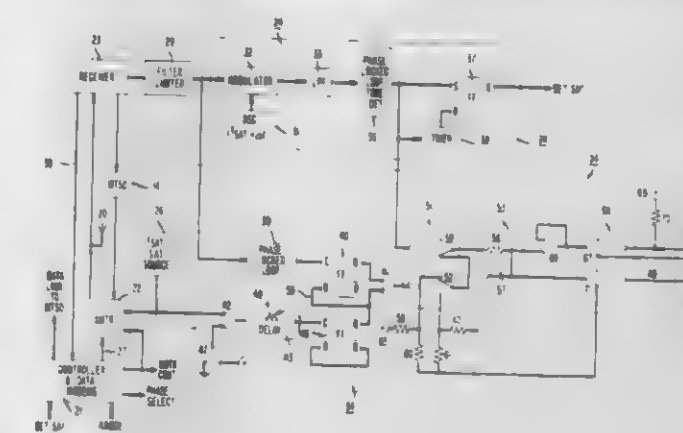
14 Claims

1. In a system for communication of radio signals including a predetermined tone and other information signal frequencies and including means for comparing (41) the phases of transmitted and transponded versions of said predetermined tone and integrating (53) the output of the comparing means to indicate range between transmitting and transponding stations of the system, the phase comparing means being CHARACTERIZED IN THAT they comprise

means for processing (46) said transmitted tone to produce a wave at a fraction of the frequency of said transmitted tone,

means for processing (40) said transponded tone to produce a wave at a frequency which is a fraction of the frequency of said transponded tone, and

means for providing (41) a binary indication in a first state when said fractional-frequency waves are of the same



polarity and in a second state when they are of different polarities.

4,229,621

TRANSMITTING MEANS FOR USE IN A HIGH SPEED, LOW NOISE DIGITAL DATA COMMUNICATION SYSTEM

Floyd W. Looschen, 696 Cliff Dr., Laguna Beach, Calif. 92651

Division of Ser. No. 883,302, Mar. 3, 1978. This application

Mar. 13, 1978, Ser. No. 885,945

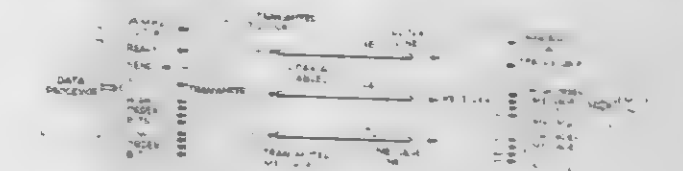
The portion of the term of this patent subsequent to Jan. 30,

1996, has been disclaimed.

Int. Cl.¹ H04J 3/06

U.S. Cl. 370-84

5 Claims



1. In a digital data transmission system for communicating digital data over a plurality of individual transmission lines, the combination comprising:

transmitting means for transmitting digital data over at least first and second ones of said transmission lines; said transmitting means including means for transmitting digital data over said first transmission line in a manner such that a first type of data is transmitted during first time periods and a second type of data is transmitted during second time periods occurring between said first time periods, said first type of data being a message and said second type of data being message identifying data which identifies the type of message transmitted;

said transmitting means also including means for transmitting a clock over said second transmission line concurrently with transmission of said first and second types of data over said first transmission line and in a manner such that said clock has a first repetition rate during said first time periods and a second repetition rate during said second time periods.

4,229,622

MULTIPLEXING SPEECH SIGNALS

Peter Cochrane, Ipswich, England, assignor to The Post Office, London, England

Filed Mar. 14, 1978, Ser. No. 886,550

Claims priority, application United Kingdom, Mar. 15, 1977, 10846/77

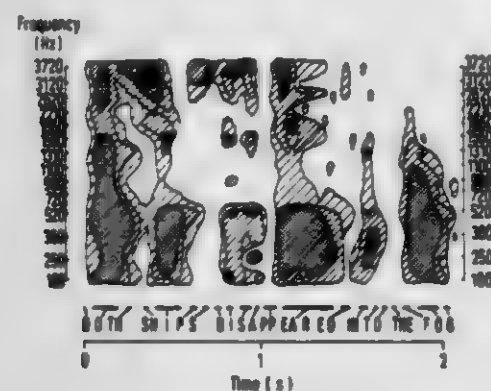
Int. Cl.¹ H04B 1/66

U.S. Cl. 370-81

8 Claims

1. Speech signal multiplexing apparatus comprising, for each input channel, a multiplicity of frequency subchannel filter

circuits; a sensor for determining the level of speech activity in each of the selected frequency subchannels for each of the speech channels and means for forming a composite output signal having frequency sub-channels each of which contains speech subchannel signals from two or more of the individual input speech channels, by allocating each frequency subchannel of a speech channel, while that subchannel is active, to an empty subchannel of the composite signal, the subchannels of



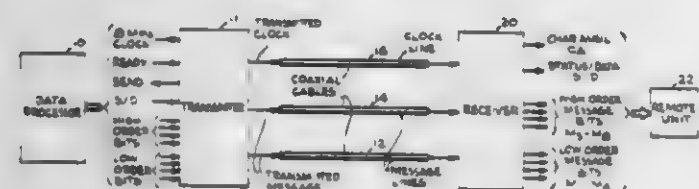
any given input signal being at least sometimes assigned to output signal subchannels which are noncontiguous and separated by output signal subchannels corresponding to subchannels of another input signal whereby the frequency subchannels of the composite speech signal are more fully occupied than those of the individual speech signals, and means for including in the composite signal a coding signal indicative of the contents of the said subchannels of the composite output signal.

4,229,623

RECEIVING MEANS FOR USE IN A HIGH SPEED, LOW NOISE DIGITAL DATA COMMUNICATION SYSTEM
Floyd W. Looschen, 696 Cliff Dr., Laguna Beach, Calif. 92651
Division of Ser. No. 883,302, Mar. 3, 1978. This application
Mar. 17, 1978, Ser. No. 887,720
Int. Cl.³ H04J 3/06

U.S. Cl. 370-4

8 Claims



1. Receiving means for use in a digital data transmission system in which digital data is transmitted over a plurality of individual transmission lines in a manner such that first and second types of data are transmitted over a first transmission line during respective first and second time periods and a clock is concurrently transmitted over a second transmission line in a manner such that said clock has respective first and second repetition rates during said first and second time periods, said receiving means comprising:

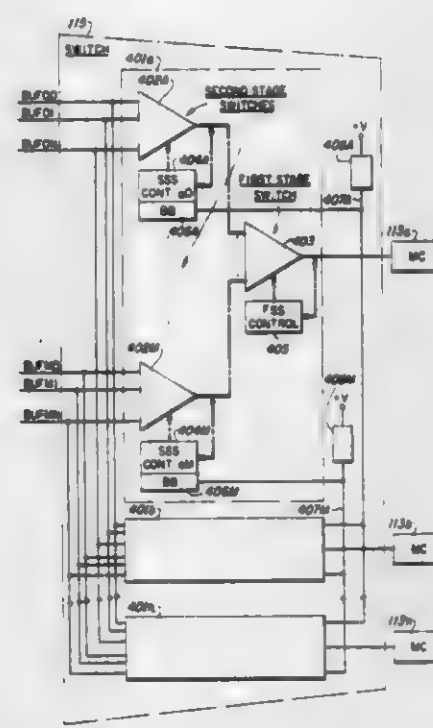
- first input means for receiving said first and second types of data transmitted over said first transmission line;
- second input means for receiving said clock transmitted over said second transmission line;
- strobe generation means responsive to a clock received by said second input means for generating a plurality of strobe pulses occurring at times dependent upon the repetition rate of said clock; and
- extracting means responsive to said strobe pulses and to first and second types of data received by said first input means for individually extracting each of said first and second types of data from the signal received by said first input means and for providing separate output representations thereof.

4,229,624

SWITCHING NETWORK CONTROL ARRANGEMENT
Dale E. Haben, Aurora; Garry D. Keypley, and Gordon L. Vander Molen, both of Wheaton, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 21, 1978, Ser. No. 972,073
Int. Cl.³ H04Q 3/42

U.S. Cl. 179-18 E

7 Claims



4. A switching network comprising an input terminal and a plurality of interconnecting switching stages wherein a first stage includes control means connected to said input terminal and each of the other stages includes control means connectable to said input terminal via switching connections previously established through a preceding switching stage;

CHARACTERIZED IN THAT

said control means of said first switching stage is responsive to defined control signals applied to said input terminal for performing a first operation on switching connections in said first switching stage and said control means of at least one of said other stages is responsive to said defined control signals applied to said input terminal for performing a second operation on switching connections in said one of said other switching stages.

4,229,625

REPEATER LEVEL CONTROL CIRCUIT
Jeffrey H. Derby, New York, N.Y., and Tadikonda N. Rao, Morris Township, Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 29, 1978, Ser. No. 974,380
Int. Cl.³ H04B 3/38

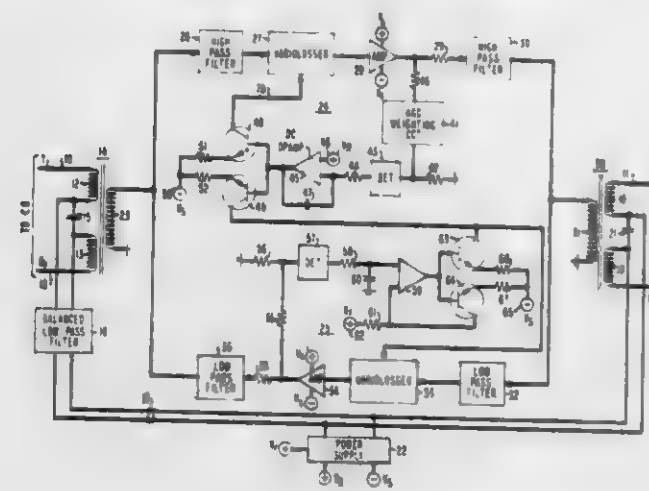
U.S. Cl. 179-170 R

9 Claims

1. A bilateral repeater for amplifying carrier signals in different frequency bands traveling in opposite directions on a common transmission line, signals in each direction of transmission being separated from signals in the other direction by filters, and a separate carrier amplifier for each direction of transmission characterized by

an automatic gain adjusting circuit in at least one direction of transmission connected to said carrier amplifier in the corresponding direction of transmission,

means for deriving gain control signals from the outputs of both of said carrier amplifiers, and



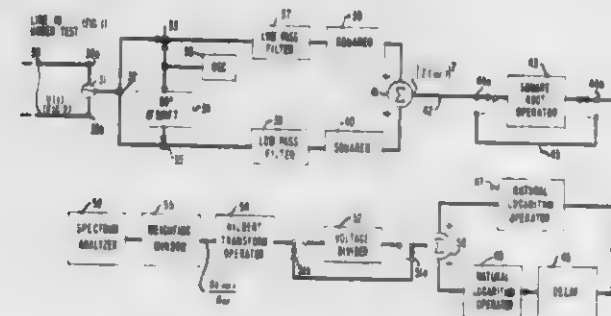
means for combining said gain control signals to continuously control said gain adjusting circuit.

4,229,626

LOOP FAULT SECTIONALIZATION
John T. Peoples, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 1, 1979, Ser. No. 62,773
Int. Cl.³ H04B 3/46

U.S. Cl. 179-175.3 F

9 Claims



1. Apparatus for determining distances to impedance irregularities along a nonloaded communications cable from the input terminals thereof, having connected to such input terminals a swept-frequency signal source and a spectrum analyzer for displaying the frequencies of the maxima of the power spectrum of the derivative with respect to frequency of the phase angle of the complex impedance manifested at such input terminals, wherein the distances to impedance irregularities are proportional to the frequencies of these maxima characterized in that

means responsive to said swept-frequency signal source measures the magnitude of the input impedance of said communications cable, and
means for Hilbert transforming the difference between natural logarithms of a direct and delayed impedance magnitude from said measuring means yields the equivalent of said derivative with respect to frequency of the phase angle of said impedance.

4,229,627

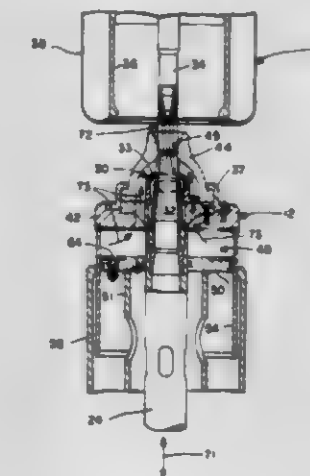
GAS PUFFER TYPE CURRENT INTERRUPTER AND METHOD
Joseph R. Rostrom, Murrysville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Oct. 4, 1978, Ser. No. 948,390
Int. Cl.³ H01H 33/00

U.S. Cl. 200-144 R

17 Claims

1. A method of current interruption for use in a current interrupter having a pair of relatively movable contacts including a first said contact disposed in a nozzle formed of electrically insulating material having a nozzle throat and a second

said contact extending into said nozzle throat and engaging said first contact to complete a current path, said method comprising the steps of: separating said contacts to interrupt current flow such that an arc arises between said contacts, including causing the withdrawal of said second contact from said nozzle throat whereby the arc extends through said nozzle throat substantially filling said nozzle throat, directing dielec-



tric gas into said nozzle under pressure, clogging said nozzle throat with the arc arising between said contacts to restrict escape of said dielectric gas from said nozzle, and continuing the clogging of said nozzle throat to an extent sufficient to raise the temperature within said nozzle such that significant ablation of said nozzle material occurs within said nozzle thereby producing a significant increase in pressure within said nozzle to rapidly extinguish said arc.

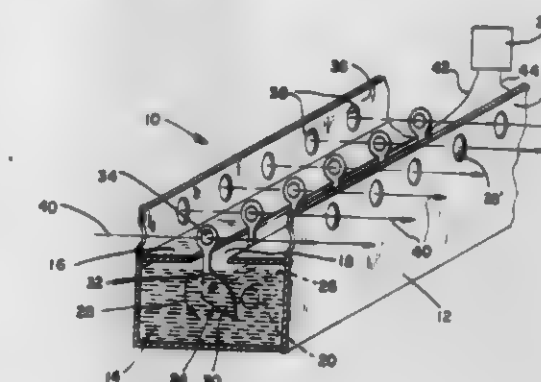
4,229,628

COMBINED DAMPER AND THREAD BREAKAGE SENSOR FOR TEXTILE MACHINES
Bogdan Bogucki, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany
Filed Aug. 7, 1978, Ser. No. 931,779
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2736979

U.S. Cl. 200-61.18

Int. Cl.³ B65H 25/14

9 Claims



1. A combined damper and thread breakage sensor for textile machines, comprising:

- (a) a housing having means for retaining an electrically non-conducting liquid;
- (b) first contact means disposed within said non-conducting liquid adapted to be coupled to an electrical circuit means;
- (c) second contact means, disposed within said non-conducting liquid, said second contact means extending beyond said housing and having means for guiding thread in a first position, said second contact means moving about a pivot point to a second position upon breakage of said thread and coming into electrical contact with said first contact means, said second contact means being adapted to be

coupled to said electrical circuit means, said first and second contact means completing an electrical circuit path of said electrical circuit means when in intimate contact.

4,229,629

MINIATURE PNEUMATIC SWITCH ACTUATOR

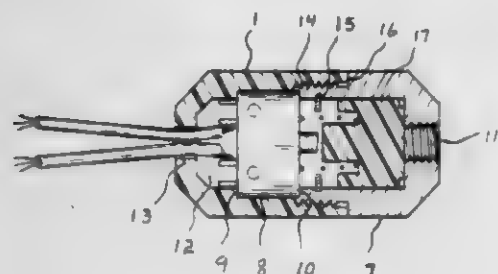
Eugene J. Pawlowski, 10621 Bloomfield Ave., Unit 32, Los Alamitos, Calif. 90720

Filed Mar. 1, 1979, Ser. No. 17,065

Int. Cl.¹ H01H 35/38

U.S. Cl. 200—82 R

1 Claim



1. A miniature pneumatic switch device having a two-piece capsule-shaped housing connected by a thread means, a first half of said housing having an internal thread and a bore with a shoulder of predetermined depth in which a switch with wires attached is retained on centerline, said wires protruding beyond said shoulder through an aperture at the end of said housing, the other half of said housing having an external thread of predetermined length extending from a shoulder to provide an assembly means of said two-piece housing and a means of retaining said switch in position, said other half of housing having a smaller bore with a flat bottom of predetermined depth, said bottom having a threaded inlet port to allow pressure to enter therein, said smaller bore having a spring-biased free-floating piston limited in axial movement toward said switch by a retaining ring, whereby said piston causes actuation of said switch when pressure is applied to said inlet port.

4,229,630

CIRCUIT BREAKER UTILIZING IMPROVED ARC CHAMBERS

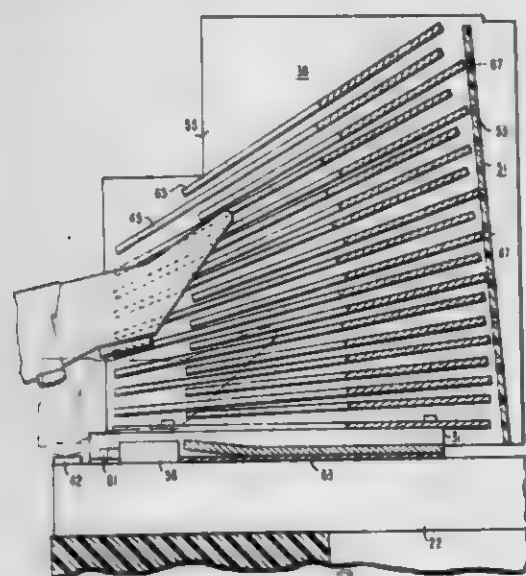
John A. Wafer, Beaver, and Alfred E. Maier, Chippewa, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 17, 1980, Ser. No. 887,894

Int. Cl.¹ H01H 33/12

U.S. Cl. 200—144 B

10 Claims



1. A circuit breaker comprising: first and second spaced apart stationary contacts; a plurality of pivotally operable movable contacts electri-

cally secured to said first stationary contact and operable between open and closed positions with respect to said second stationary contact;

a pivotally operable arcing contact electrically secured to said first stationary contact and operable between open and closed positions with respect to said second stationary contact, said arcing contact extending outwardly beyond said movable contacts;

an arc chamber disposed adjacent said second stationary contact, said arcing contact, and said movable contacts and comprising:

a frame including a back and first and second parallel sides;

a plurality of deionization plates supported by said frame, each of said deionization plates having an opening therein at the plate end distal said frame back, said deionization plate openings being aligned with each other, said arcing contact being disposed within said deionization plate aligned openings, said deionization plates being of first and second differing lengths, said deionization plates being supported by said frame with alternate deionization plates being of the same length;

a generally U-shaped arc runner secured to one of said deionization plates, said arc runner being secured to said second stationary contact at locations adjacent said movable contacts and on opposite sides of said arcing contact, said arc runner having an opening therein aligned with said deionization plate openings; and an insulating member disposed intermediate said arc runner and said second stationary contact such that said arc runner is electrically insulated from said second stationary contact except at locations wherein said arc runner is secured to said second stationary contact; and movement effecting means for effecting movement of said movable and arcing contacts between said open and closed positions.

4,229,631

VACUUM-TYPE CIRCUIT BREAKER

Hideo Arakawa; Takashi Namekawa; Keiichi Kuniya, and Hiroyuki Sugawara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 626,921, Oct. 29, 1975, abandoned.

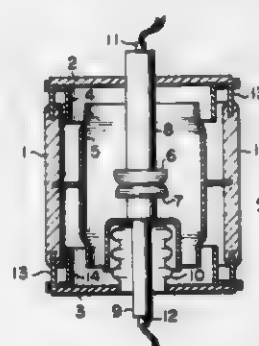
This application Jul. 6, 1978, Ser. No. 922,368

Claims priority, application Japan, Nov. 1, 1974, 49-126782

Int. Cl.¹ H01H 33/66

U.S. Cl. 200—144 B

12 Claims



1. A vacuum-type circuit breaker comprising an evacuated container, and a pair of contacts disposed in said container and adapted to be moved between an open position and a closed position to permit a circuit breaking arc to be generated across the contacts, said contacts consisting substantially of a copper alloy which is cast from a melt, said alloy containing an intermetallic compound of manganese and a metal selected from the group consisting of aluminum, silicon, zirconium, nickel, titanium and chromium, such that said contacts have a high initial dielectric strength, which dielectric strength is not substantially reduced as said contacts are repeatedly moved between

an open position and a closed position to permit a circuit breaking arc to be generated across the contacts.

4,229,632

COMPRESS GAS CIRCUIT BREAKER

Walter Hertz; Jan Stroh, both of Erlangen, and Heinz Schwalme, Markt Erlbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

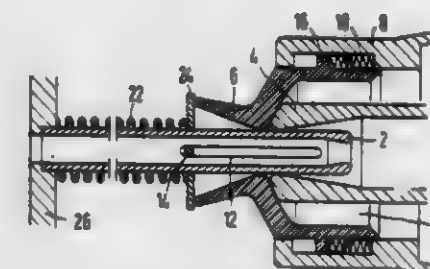
Filed Jul. 18, 1978, Ser. No. 925,795

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1977, 2733551

Int. Cl.¹ H01H 33/70

U.S. Cl. 200—148 A

4 Claims



1. A compressed gas circuit breaker comprising:

(a) first and second contacts disposed coaxially, and movable in their axial direction with respect to each other;

(b) a nozzle-like insulator body supported for movement with respect to one of said contacts between a first position where it forms, with said one contact, a flow canal for directing compressed gas to the area of an arc which is drawn between said contacts and a second position where it abuts against said one contact to close off said flow canal;

(c) means for holding said insulating body in said second position; and

(d) means responsive to relative movement of said contacts for releasing said means for holding during separation of said contacts always as soon as the minimum quenching distance of said contacts is reached whereby said insulating body may move to said first position to open said flow canal to quench an arc drawn between said contacts.

4,229,633

PROGRAMMABLE SWITCH

Edward L. Gillilan, 3251 Cypress Creek Rd., Pompano Beach, Fla. 33062

Filed Mar. 27, 1978, Ser. No. 890,123

Int. Cl.¹ H01H 13/52, 13/06

U.S. Cl. 200—159 B

4 Claims

1. An indelibly inscribable programmable switch assembly for use with an electrical circuit, comprising:

at least one switch body, each said switch body; and

at least one indelibly inscribable switch means operable by indelibly inscribing on said inscribable switch, said inscribable switch connected to said switch body;

said switch body including a carrier means connected to said body adjacent said inscribable switch;

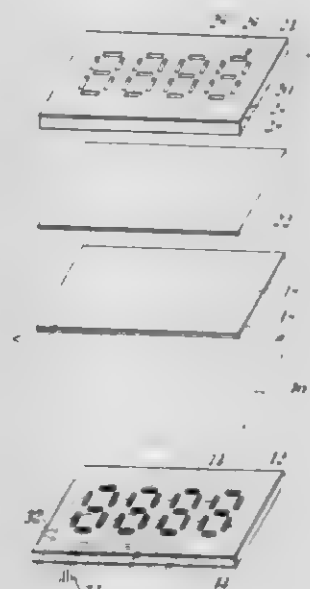
said inscribable switch including an indelibly inscribable means, a first conductive means and a second conductive means, said first conductive means positioned between said inscribable means and said second conductive means; said first conductive means and said second conductive means for providing switching elements;

said second conductive means connected to said carrier means, said first conductive means and said inscribable means connected to said switch body, said second conductive means positioned for electrical switching relative to said first conductive means, said inscribable means for indelibly inscribing indicia thereon by deforming said inscribable means and moving said first conductive means

to provide a switched marking when switching said inscribable switch means,

said inscribable means positioned to be accessible through said switch body for movement of said first conductive means relative to said second conductive means for switching;

said first conductive means and said second conductive means form an electrical circuit when said first conductive means is in electrical contact with said second conductive means;



said second conductive means including at least one electrical contact surface;

each said contact surface separately connectable to separate terminal means;

said first conductive means separately connectable to a separate terminal means; and insulation means located between said first conductive means and said second conductive means when in an open position.

4,229,634

INSULATED SWITCH ARRANGEMENT FOR ELECTRIC MOTOR

Clarence J. Hickman; Donald W. Ruehmann, and Christopher W. Elkins, all of Fort Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.

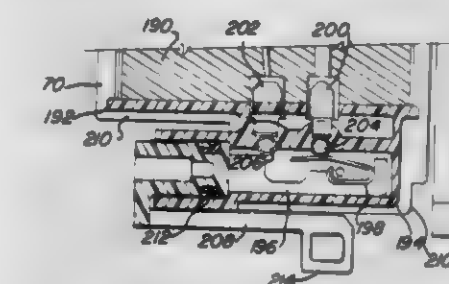
Division of Ser. No. 764,280, Jan. 31, 1977, Pat. No. 4,108,167.

This application Feb. 21, 1978, Ser. No. 879,498

Int. Cl.¹ H01H 9/04

U.S. Cl. 200—302

11 Claims



1. In an electric motor assembly which includes a rotor, a structure for concentrating a magnetic field delivering energy to said rotor, a switch for supplying electrical power to said motor and having electrical terminals, an electrical winding on said structure and responsive to said electrical power for inducing said magnetic field, and a contact element included in said switch for selectively conductively bridging said terminals, the improvement comprising:

an insulated carrier of said contact element for enabling

movement of said element into and out of bridging connection of said terminals;
 means for mounting said winding;
 an insulated housing within which said carrier is movably disposed and which is joined in fixed relationship to said mounting means;
 means, including a sealing element commonly embracing said mounting means and said housing, for effecting an hermetic sealing entirely of said winding and said housing;
 and means for moving said carrier within said housing to effect movement of said contact element.

4,229,635

CONTROL OF AN ELECTRO-DISCHARGE MACHINE TOOL

Raymond Dinsdale, Nelson, England, assignor to Rolls-Royce Limited, London, England

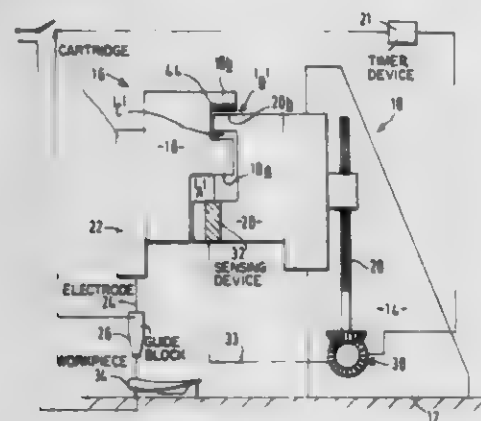
Filed Sep. 12, 1978, Ser. No. 941,578

Claims priority, application United Kingdom, Oct. 8, 1977, 41961/77

Int. Cl.¹ B23P 1/12

U.S. Cl. 219—69 G

5 Claims



1. Electro-discharge machining apparatus for machining a workpiece comprising:

a first movable member for carrying an electrode;
 servo control means for controlling the speed of said first movable member in response to the voltage between said electrode and a surface of said workpiece;
 a second movable member against which said first member is located in relative sliding engagement;
 said first and second movable members having overlapping portions for limiting the motion of said first movable member in a direction toward said workpiece and with respect to said second movable member by causing abutting engagement;
 sensing and signalling means coupled to said second movable member for sensing the relative position of said first movable member with respect to said second movable member and generating a position signal related thereto;
 and

drive means responsive to said position signal for moving said second movable member toward said workpiece at a speed relative to the speed of said first movable member so as to control the abutting of said overlapping portions, whereby after the abutting of said overlapping portions, the speed of said first movable member toward said workpiece and the speed of said electrode are controlled by the speed of said second movable member toward said workpiece.

4,229,636

SPARK EROSION MACHINING PROCESS

Gerard Izari, Montreuil Juigne, France, assignor to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

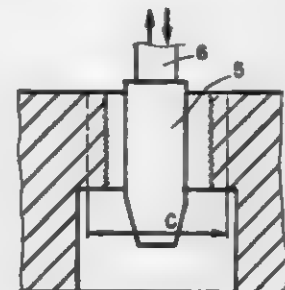
Filed May 22, 1979, Ser. No. 41,297

Claims priority, application France, Jun. 1, 1978, 78 17224

Int. Cl.¹ B23P 1/12

U.S. Cl. 219—69 M

12 Claims



1. A process for the spark erosion machining of a workpiece having a cylindrical orifice of any given cross-section, the process being effected by means of a single electrode which is displaced relative to the workpiece, the process sequentially comprising the steps of:

making a first rapid rough pass relative to the workpiece by causing the electrode to descent through the orifice parallel to the generatrices of the orifice to spark erode surfaces of the orifice;
 raising the electrode;
 translating the electrode perpendicularly to the generatrices by a distance r so that a point is located at P_1 on the surfaces of the orifice;
 lowering the electrode into the rough orifice parallel to the generatrices;
 raising the electrode;
 translating the electrode to a point located at P_2 on the surfaces of the orifice;
 lowering the electrode parallel to the generatrices;
 raising the electrode; and
 repeating the translation, lowering, and raising steps n times until the translation has made a complete revolution.

4,229,637

SPOT WELDING ASSEMBLY FOR ELECTRICAL RESISTANCE WELDING

Günter Dederer, Germering, and Helmut Mierkl, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

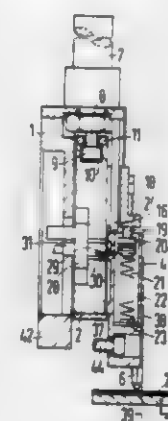
Filed Aug. 14, 1978, Ser. No. 933,413

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738854

Int. Cl.¹ B23K 11/10

U.S. Cl. 219—86.25

11 Claims



1. A first spot welding assembly for electrical resistance welding comprising: a base carrier fixture, a feed slide block

linearly movably carried by said base, ball bearing slides interposed between the feed slide block and said base, an electrode slide block linearly movably carried by the feed slide block, ball bearing slides interposed between the feed slide block and the electrode slide block, spring means between the feed slide block and electrode slide block biasing the electrode slide block linearly of the feed slide block, the electrode slide block terminating in a welding electrode clamp, adjusting means accessible from the exterior of the electrode slide block for adjusting a biasing face of the spring means.

4,229,638

UNITIZED ROTARY ROCK BIT

Carl L. Lichte, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

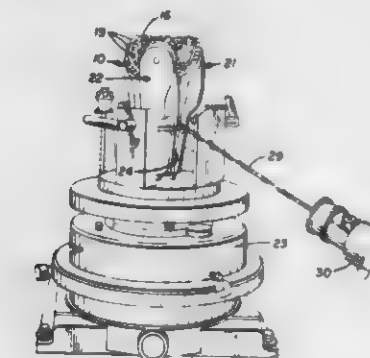
Division of Ser. No. 409,207, Oct. 24, 1973, abandoned. This application Apr. 1, 1975, Ser. No. 564,014

The portion of the term of this patent subsequent to Sep. 23, 1992, has been disclaimed.

Int. Cl.² B23K 15/00

U.S. Cl. 219—121 EM

3 Claims



1. A reliable method for repeatedly constructing three cone rotary rock bits that will have a gate diameter of an accurate gage size, comprising the steps of:

providing each of said segments with substantially plane faces and a gage cutting structure;
 positioning said three individual segments together with a plane face of each segment abutting a plane face on another segment so that said abutting faces are slightly out of alignment and not precisely coterminous, placing said gage cutting structure at said gage diameter thereby providing said rotary rock bit with an accurate gage size, said three individual rock bit segments being in the proper position for the final assembled bit with seams between the individual segments;
 aligning said seams with an electron beam gun so that the plane of each seam is aligned with a beam of electrons produced by said electron beam gun;
 directing said beam of electrons into said seams; and
 causing relative movement of said beam of electrons and said individual segments in the plane of said seams to join said individual segments together by an electron beam weld.

4,229,639

ENERGY BEAM WELDING METHOD

Johannes Koy, Germering; Franz Rappold, and Erwin Kappelsberger, both of Munich, all of Fed. Rep. of Germany, assignors to Steigerwald Strahltechnik GmbH, Fed. Rep. of Germany

Filed Aug. 16, 1977, Ser. No. 826,395

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1976, 2637371

Int. Cl.¹ B23K 15/00

U.S. Cl. 219—121 EM

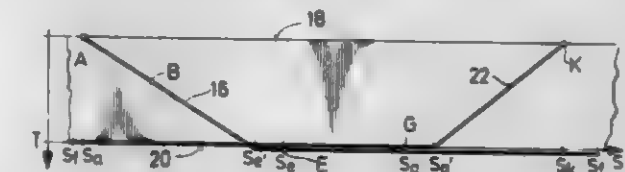
17 Claims

1. A method for producing an elongated weld seam in a workpiece by means of a beam of charged particles, said method comprising the steps:

(a) producing a beam of charged particles directed to a point of impingement on said workpiece; said beam having a selected beam current and a selected accelerating voltage

and being focused by a focussing field of selected field strength;

(b) producing a relative motion of said beam with respect to said workpiece to move said point of impingement along said workpiece, said relative motion having a selected instantaneous velocity;
 (c) changing at least one parameter selected from a first group consisting of
 (c1) beam current, and
 (c2) velocity of relative motion to change the depth penetration of the beam into said workpiece;
 said method further characterized by the step



(d) changing, by active direct control, concurrent with said first parameter group change, at least one parameter selected from a second group consisting of:

(d1) strength of focussing field;
 (d2) amplitude of periodic beam deflection in a direction parallel to said relative motion;
 (d3) amplitude of periodic beam deflection in a direction transverse to said relative motion;
 (d4) frequency of periodic beam deflection in a direction parallel to said relative motion;
 (d5) frequency of periodic beam deflection in a direction transverse to said relative motion.

4,229,640

WORKING PIECES BY LASER BEAM

Massimo Castellani Longo, Turin, Italy, assignor to R.T.M.-Istituto per le Ricerche di Tecnologia Meccanica, Vico Canavese (Turin), Italy

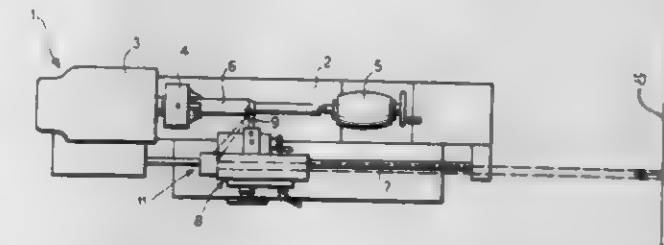
Filed Jan. 17, 1979, Ser. No. 4,128

Claims priority, application Italy, Jan. 18, 1978, 67089 A/78

Int. Cl.¹ B23K 27/00

U.S. Cl. 219—121 LJ

4 Claims



1. Process for machining a workpiece by the use of a cutting tool having a cutting edge and an adjacent leading face which lifts shavings from the workpiece material, the process including the localized heating of the workpiece material about to be removed by means of a laser beam arranged to heat two distinct local areas of the workpiece adjacent the cutting tool: a first area immediately in front of the cutting edge of the tool and a second area adjacent the leading face of the cutting tool in a part of the workpiece material which is deformed plastically by the tool in the formation of a shaving.

4,229,641

AUTOMATIC WELDING APPARATUS

Yasushi Ihara, Takarazuka, Japan, assignor to Shin Meiwa Industry Co., Ltd., Nishinomiya, Japan

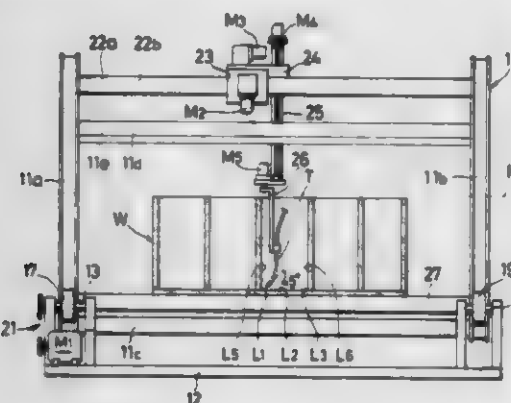
Filed Sep. 1, 1978, Ser. No. 939,151

Claims priority, application Japan, Sep. 1, 1977, 52-105706

Int. Cl.² B23K 37/02

U.S. Cl. 219-125.1

19 Claims



1. An automatic welding apparatus for welding the interior joint portions of long box-like or tubular workpieces, said welding apparatus comprising a pair of spaced-apart, but interconnected, turn frames swingable in unison around a horizontal axis passing through the two frames, said turn frames having three members mounted therebetween, said three members being slidable in respectively said horizontally axial direction, a second direction orthogonal to said horizontally axial direction and a third direction orthogonal to said second direction; a workpiece-fixture means for holding said box-like or tubular workpieces; a welding torch; and a fixture means for holding said welding torch, wherein said workpiece-fixture means is mounted on said turn frames to move in unison therewith and said torch fixture means is mounted on one of said sliding members for rotation around an axis in said second direction or said third direction, so that said workpiece-fixture means and said torch fixture means can be respectively positioned relative to one another in three dimensions and so that the attitudes of both of these members can be changed in unison relative to the earth, for welding the interior joint portions of long box-like or tubular workpieces.

4,229,642

AUTOMATIC WELDING APPARATUS FOR LONG WORKPIECES

Hajime Sakurai, Kobe, and Yoshinori Higuchi, Osaka, both of Japan, assignors to Shin Meiwa Industry Co., Ltd., Nishinomiya, Japan

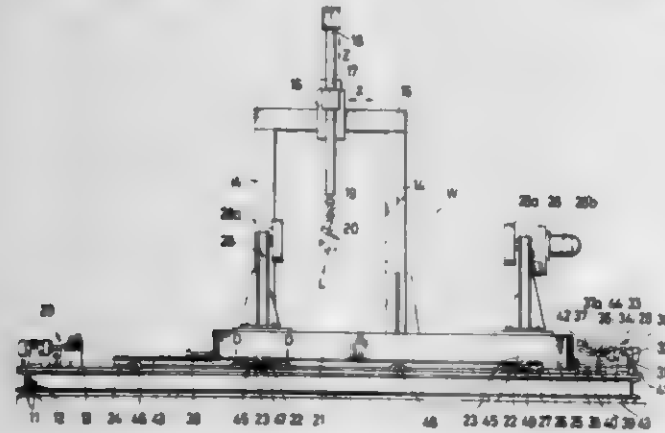
Filed Aug. 31, 1978, Ser. No. 938,541

Claims priority, application Japan, Aug. 31, 1977, 52-105356

Int. Cl.² B23K 37/04

U.S. Cl. 219-125.1

5 Claims



1. An automatic welding apparatus comprising:
a welding torch;
a composite frame adapted to movably mount said torch

such that said torch may be located at a predetermined position within a work space;
said composite frame adapted to move said torch in a longitudinal direction, a lateral direction, and a vertical direction as well as being rotatable around a vertical axis;
a workpiece holder for securing a workpiece thereto such that said workpiece or portions thereof are located within the limits of said work space;
said workpiece holder including a pair of spaced apart fixtures which are rotatable around a horizontal axis;
means for controlling the angular position of said pair of spaced apart fixtures;
a movable base for supporting either said frame or said workpiece holder such that said frame and said holder are movable with respect to one another along a longitudinal axis;
said movable base including a truck provided with a reversible motor adapted to drive said truck along a pair of spaced apart, parallel tracks;
positioning means for positioning said truck along said longitudinal axis such that all portions of said workpiece may be brought within the limits of said work space of said automatic welding apparatus;
said positioning means capable of locating said truck at a plurality of work stations situated at predetermined points along said tracks;
said positioning means including a plurality of locating means positioned along said longitudinal axis for selectively engaging said truck only when said truck is in the vicinity of the respective predetermined positions and moving said truck to said predetermined positions and thereafter locking said truck at said predetermined positions.

4,229,643

CONSUMABLE WELDING ELECTRODE

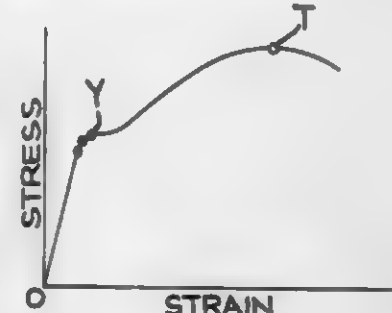
Robert A. Caldwell, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 12, 1978, Ser. No. 914,360

Int. Cl.² B23K 35/30

U.S. Cl. 219-146.24

2 Claims



1. A consumable welding electrode having the following alloying constituents by percent weight of the total electrode:

About 1.90%	to about	2.10% manganese
About 0.30%	to about	0.45% silicon
About 0.5%	to about	1.5% nickel;

and in which the weight of the carbon content of said welding electrode does not exceed about 0.05% of the total electrode weight; and in which the respective weights of the following elements do not exceed the following percentages of the weight of the total electrode:

Phosphorus:	about 0.02%
Sulfur:	about 0.02%

-continued

Chromium:	about 0.03%
Molybdenum:	about 0.01%
Aluminum:	about 0.01%
Copper:	about 0.03%
Titanium:	about 0.01%

and in which the hydrogen content of said electrode does not exceed about 10.0 parts per million and the oxygen content of said electrode does not exceed about 1500 parts per million; and in which substantially the entire balance of the weight of said electrode is iron.

4,229,644

HEAT PIPE ROLLER

Ryoichi Namiki, Hino, and Yasuro Hayashi, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Japan

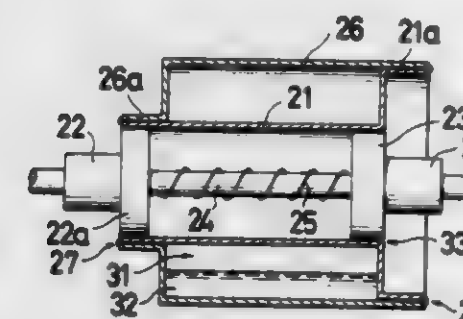
Filed Oct. 14, 1977, Ser. No. 842,099

Claims priority, application Japan, Oct. 20, 1976, 51/125914; Nov. 30, 1976, 51/143794

Int. Cl.² F28D 11/02; F28F 5/02

U.S. Cl. 219-469

4 Claims



1. A heating roller for fixing an image in a copying apparatus comprising, a one piece inner cylinder having one small diameter end portion and one opposite large diameter end portion, heating means disposed within said inner cylinder, a one piece outer cylinder having a small diameter end portion and a large diameter end portion disposed around said inner cylinder which is inserted onto said inner cylinder in the axial direction of said inner cylinder with said outer cylinder large diameter end portion inserted first onto said inner cylinder small diameter end portion, said outer cylinder large and small end portions airtightly fixed to said large and small end portions of said inner cylinder respectively along two sealing areas of mutual surface contact therebetween, with a space defined in an uncontacting portion between said outer cylinder and said inner cylinder, heating medium which is evaporated under application of heat by said heating means held in said space, and stop means which is disposed in an end wall which forms said space, said stop means being for reducing the pressure within said space in order to place and seal said heating medium in said space.

4,229,645

DETECTOR AND RECORDER OF HOLES AND DISRUPTIONS IN PLASTIC MATERIAL SHEETS AND WEBS

Carlo Viganò, Cavarà; Francesco Quattrone, Milan, and Erio Toffanetti, San Donato Milanese, all of Italy, assignors to Anic S.p.A., Palermo and Costruzioni Elettriche Automatiche Impianti (C.E.A.I.), Busto Arsizio, both of Italy

Filed May 15, 1978, Ser. No. 906,219

Claims priority, application Italy, May 20, 1977, 23804 A/77

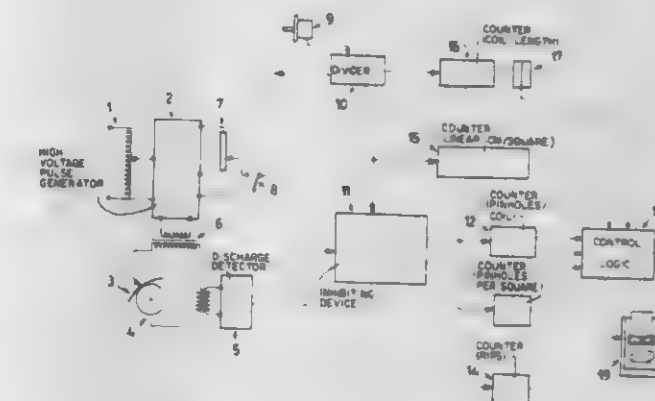
Int. Cl.² G06M 7/00

U.S. Cl. 235-92 QC

4 Claims

1. A device for detecting pin holes on moving films or webs of plastic materials comprising:

a high voltage electrode and a grounded roller between which the web passes during coiling;
means coupled to the roller for detecting pin holes in the web based on electrical discharges; and
means for counting rips in the web, said rip counting means including an inhibiting device coupled to said detecting means and comprising a flip-flop, a first counter for recording pin holes by counting discrete electrical discharges, a second counter for recording consecutive elec-



trical discharges indicative of a rip, gating means responsive to said flip-flop for coupling signals of said detecting means to said first and said second counters, said gating means including means responsive to a rate of occurrence of consecutive discharges to set said flip-flop for switching signals of said detecting means to the second counter, and means for resetting the flip-flop to signal discrete discharges after a preselected length of film having no defects has run past.

4,229,646

ELECTRONIC COUNTER FOR INCREMENTAL MEASURING DEVICE

Horst Burkhardt, Truchtlaching; Ernst Schwefel, Traunreut; Alfons Baumgartner, Grassau; Anton Mayer, Fridolfing, and Michael Rauth, Traunreut, all of Fed. Rep. of Germany, assignors to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

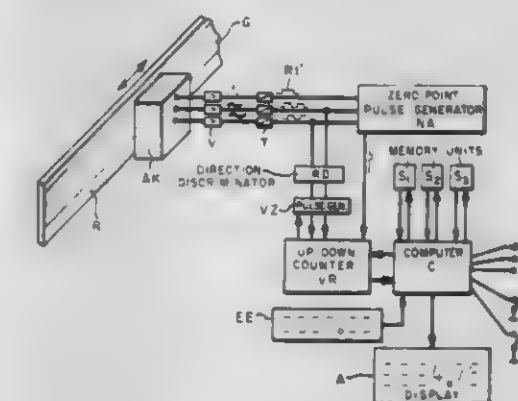
Filed Jul. 12, 1978, Ser. No. 923,807

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732954

Int. Cl.² G06M 3/14

U.S. Cl. 235-92 GC

21 Claims



1. An apparatus for a measuring device for measuring the position of a first object relative to a second object, said apparatus comprising:
counter means for storing a position value representatives of the position of the first object;
at least one memory means for storing a predetermined reference point value;
means for selectively designating the memory means, including switch means having at least a first state and a second state;

ing the thickness of a coating on a strip of substrate material moving at a predetermined speed from a feed supply to a take-up location comprising:

a probe means for irradiating a portion of the coating on the strip of substrate material and detecting the backscatter radiation from such portion during a measurement period; a probe holder moveable with the moving strip of substrate material for holding the probe means in adjacent stationary relation with such portion of the coating on the strip of substrate material during the measurement period; and counting and measurement means connected to the probe means for counting the backscatter radiation during the measurement period and determining the thickness of the coating of such portion in accordance with the backscatter count.

4,229,653

METHOD AND APPARATUS FOR MONITORING PARTICULATE MASS CONCENTRATION OF EMISSIONS FROM STATIONARY SOURCES

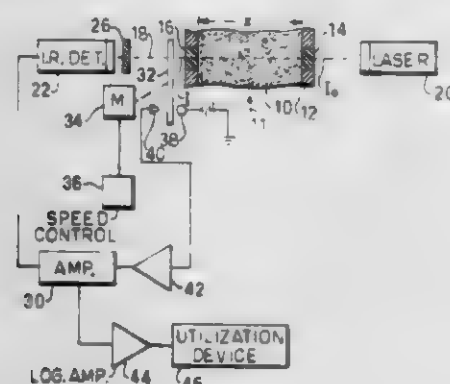
Edward E. Urhe, Los Altos, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Mar. 30, 1979, Ser. No. 25,732

Int. Cl.² G01J 1/00

U.S. Cl. 250-339

10 Claims



1. A system for use in monitoring mass concentration of a stream of particulate material for which the particle size distribution may vary, said system comprising, a source of electromagnetic radiation for directing a beam of radiation through the particulate stream, radiation receiver means for measuring radiation from said radiation source transmitted through said particulate stream, said radiation source being operated at substantially a single wavelength at which the extinction coefficient-to-mass concentration ratio of the particulate material stream is substantially independent of variations in particle size for the range of particle sizes in the stream whereby the output from the receiver means provides a measure of mass concentration of the particulate material stream.

4,229,654

DETERMINING FISSILE CONTENT OF NUCLEAR FUEL ELEMENTS

Satya P. Arya, Wilmington; Leonard N. Grossman, Wrightsville Beach, and Frederick C. Schoenig, Jr., Wilmington, all of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 7, 1978, Ser. No. 931,669

Int. Cl.² G01N 23/00; G01T 1/20; G21C 17/00

U.S. Cl. 250-358 R

14 Claims

1. Method for determining the fissile fuel content of nuclear fuel in a fuel element which may also contain a burnable poison mixed with selected portions of the fuel therein, said fuel element including an elongated cladding tube containing the fuel material, comprising the steps of:

(1) determining a plurality of sequential zones of said fuel material in said fuel element;

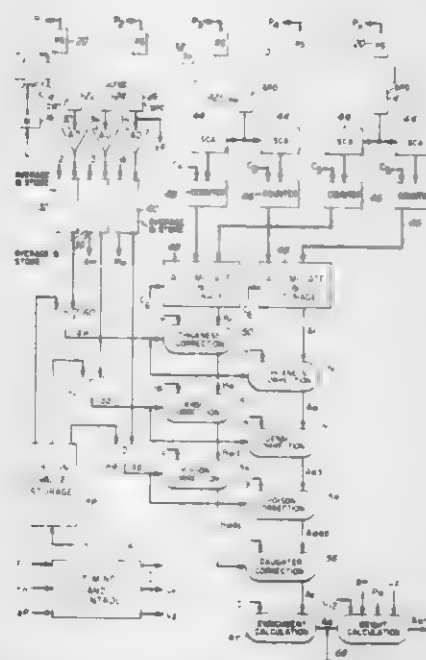
(2) detecting the gamma ray emission due to the natural

radioactive decay of said fuel material in each of said zones in sequence;

(3) analyzing the gamma ray signals from each of said zones and determining a first gamma ray count of gamma rays within a predetermined range of energies primarily attributable to said fissile fuel and determining a second gamma ray count of gamma rays of energy greater than said predetermined range of energies;

(4) determining for each zone the thickness of the cladding adjacent the zone;

(5) correcting said first and second gamma ray counts in accordance with the cladding thickness adjacent each zone;



(6) determining the density of the fuel material in each zone;

(7) further correcting said first and second gamma ray counts in accordance with the density of the fuel material in the zone;

(8) determining the weight percent of burnable poison in each of the zones;

(9) further correcting said first and second gamma ray counts for each zone in accordance with the weight percent of burnable poison in the zone;

(10) further correcting said first gamma ray count in accordance with the corrected second gamma ray count; and

(11) determining from the thus corrected first gamma ray count the weight percent of fissile fuel in each zone.

4,229,655

VACUUM CHAMBER FOR TREATING WORKPIECES WITH BEAMS

Geoffrey Ryding, Manchester, Mass., assignor to Nova Associates, Inc., Beverly, Mass.

Filed May 23, 1979, Ser. No. 41,888

Int. Cl.² A61K 27/02; B01K 1/08

U.S. Cl. 250-400

24 Claims

1. Apparatus for directing a beam at a workpiece, said apparatus including a support member for carrying said workpiece and an evacuated region surrounding said support member and the path of said beam, the source of said beam and the support member for said workpiece being relatively movable in a direction transverse to said beam, there being a sealing means accommodating said relative motion while maintaining the evacuated condition,

said sealing means comprising a slide member defining a planar sliding surface extending in said direction of relative motion,

a seal support member generally parallel to and spaced from said surface by a gap,

aligned apertures in said members, one of which is larger in the direction of relative motion than the other enabling said relative motion while maintaining said alignment,

a plurality of resilient seals bearing with sliding sealing contact against said planar surfaces, said seals each spanning said gap and extending throughout with said contact in successive loops fully around said first and second apertures in all relative positions of said apertures,



said loops being such that outer loops wholly surround inner loops, and between-seal pumping means for pumping the region radially intermediate two of said seals.

4,229,657 γ-RAY IRRADIATION HEAD FOR PANORAMIC IRRADIATION

André Bensussan, and Guy Azam, both of Paris, France, assignors to CGR-MeV, Paris, France

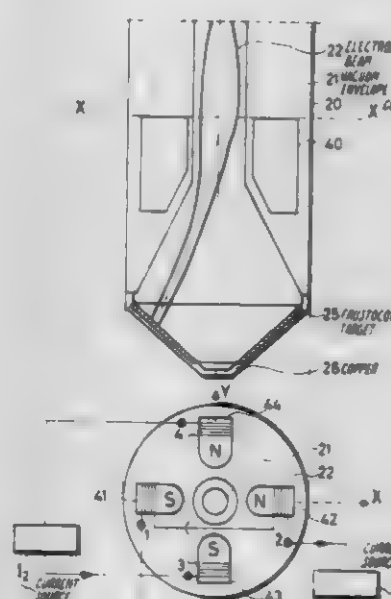
Filed Mar. 30, 1978, Ser. No. 891,647

Claims priority, application France, Apr. 1, 1977, 77 09949

Int. Cl.² G21G 4/00

U.S. Cl. 250-493

6 Claims



4,229,656 X-RAY ORIENTING APPARATUS

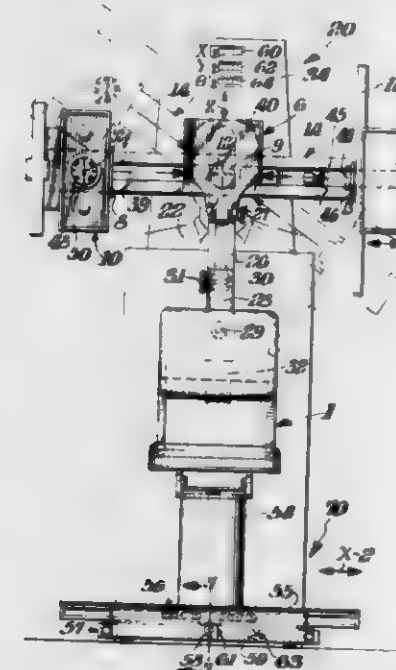
Arthur Iversen, and John Magyar, both of New York, N.Y., assignors to Pfizer Inc., New York, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,327

Int. Cl.² G01N 21/00; G21K 5/10; H01J 35/16

U.S. Cl. 250-447

10 Claims



10. An x-ray orienting apparatus having an x-ray source and film cassette mounted on opposite ends of a C-shaped arm which has a central pivot axis vertically movable on a support post comprising an inclinometer mounted on the C-shaped arm, and movable indicia on the inclinometer whereby it may be set to the zero position when the C-arm is adjusted to a basic setting from which sequential positions are adjusted.

1. A γ-ray irradiation head for panoramic irradiation using a beam of charged and accelerated particles, said irradiation head having a longitudinal axis along which said particles propagate in the absence of deflection, said head comprising an electromagnetic deflection device for deflecting said charged particles and a target having an active surface revolving about the axis of the irradiation head, said deflection device separating the paths of the particles from said axis in such a way that the particles impinge upon the revolving target; said deflection device comprising a multipolar magnetic device, and a feed circuit, to deflect the beam of charged particles in its entirety and to make it converge on said target in a small impinging zone, the magnetic device being fed by said feed circuit such that the magnetic field rotates about the axis of the irradiation head, the mean deflection of the deflected beam being variable and the impinging zone moving correlatively on said target; said multipolar magnetic device being a quadrupolar magnetic device, and the windings of pole pieces of said quadrupolar magnetic device being fed in pairs and in series by two sinusoidal currents in quadrature delivered by the feed circuit for periodic scanning of the target by the beam of particles.

4,229,658

XENON LIGHT APPARATUS FOR SUPPLYING ULTRAVIOLET AND VISIBLE SPECTRA

Donald I. Gonser, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Continuation-in-part of Ser. No. 806,316, Jun. 13, 1977, Pat. No. 4,112,335, which is a continuation of Ser. No. 560,290, Mar. 20, 1975, abandoned. This application Aug. 18, 1978, Ser. No. 934,912

The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.² G01J 1/00

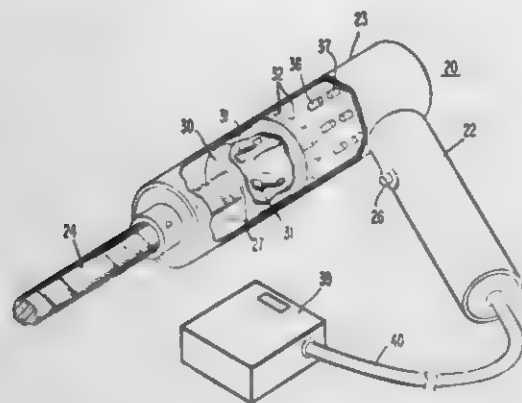
U.S. Cl. 250-504 H

22 Claims

1. Light source apparatus for delivering a substantial continuum of radiation within a range of about 300 to 500 nanometers to a restricted surface area, comprising:

a light source means containing xenon at greater than 3 atmospheres and less than 10 atmospheres pressure, and including a filter assembly to cut off wavelengths below about 300 nanometers;

- b. a housing, adapted to contain said light source means and suitable for handheld operation;
c. means for pulsing of said light source means; and



- d. light delivery means in operative association with said light source means for delivering radiation within said range from said light source means to the restricted surface area.

4,229,659

OXIDIZER BURN THROUGH DETECTOR WITH MAJORITY VOTING NETWORK

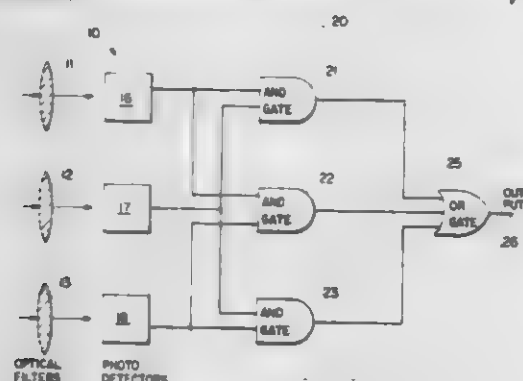
Raymond A. Vasilich, and John Dixon, Jr., both of Fredericksburg, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 17, 1978, Ser. No. 961,807

Int. Cl.³ G02B 27/00

U.S. Cl. 250-554

7 Claims



1. A system for detecting fires resulting from the escape or burn through of oxidizer from a piping system for handling the same comprising:

- a plurality of photodetectors, to be positioned adjacent the oxidizer piping system and responsive to the light resulting from an oxidizer fire, for producing output signals indicating the sensing of a fire; and
- a majority voting network for receiving the output signals from said photodetectors and for producing an output signal which may be used to initiate corrective action, said network producing an output only when a majority of said photodetectors simultaneously sense a fire.

4,229,660

TURBINE ELECTRIC GENERATOR WITH SOLAR HEATING AND SPACE COOLING

Harold A. Adler, 1457 Eastwind Cir., Westlake Village, Calif. 91361

Filed Apr. 23, 1979, Ser. No. 32,657

Int. Cl.³ B60L 1/02; F03G 7/02; F03C 5/00

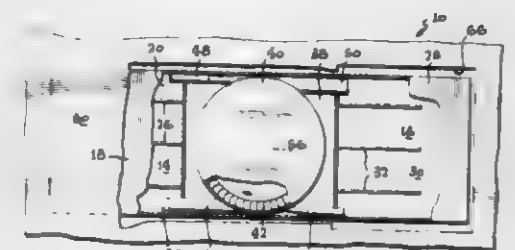
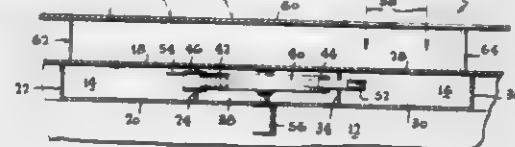
U.S. Cl. 290-2

16 Claims

1. A turbine electric generator unit with solar heating and space cooling comprising:

- a first vessel;
- a second vessel;

- a turbine casing having a turbine wheel therein; nozzle means connected to both said first vessel and said second vessel for conducting vapor flow from one of said vessels into said turbine casing to impinge upon said turbine wheel to turn said turbine wheel; exhaust header means connected between said turbine casing and both of said vessels for conducting exhaust vapor from said casing to one of said vessels; and



- means for first selectively heating said first vessel so that thermodynamic fluid therein is heated and raised in pressure for delivering vapor under pressure to said turbine wheel and for cooling said second vessel to maintain a lower exhaust pressure in said second vessel than the vapor pressure in said first vessel so that exhaust vapor flow flows through said exhaust header into said second vessel, and said means for heating being also for selectively heating said second vessel and cooling said first vessel.

4,229,661

POWER PLANT FOR CAMPING TRAILER

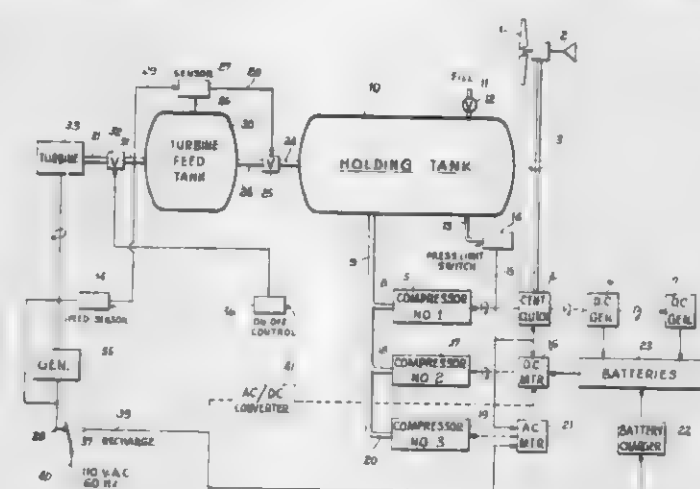
Claude F. Mead, 5072 Mt. Etna Dr., San Diego, Calif. 92117, and William F. Holmes, 5515 Shasta La. #1, La Mesa, Calif. 92041

Filed Feb. 21, 1979, Ser. No. 13,044

Int. Cl.³ F03D 9/02

U.S. Cl. 290-44

10 Claims



1. A power plant which comprises:

- (a) first rotating means responsive to movement of a fluid;
- (b) first fluid compressor driven by the first rotating means;
- (c) first means for coupling the first rotating means to the first fluid compressor;
- (d) first electrical energy generator driven by the first rotating means;
- (e) second means for coupling the first rotating means to the first generator;

- (f) means for accumulating electrical energy generated by the first generator;
- (g) second rotating means responsive to said accumulated energy;
- (h) second fluid compressor driven by the second rotating means;
- (i) means for storing compressed fluid;
- (j) fluid conduit means for connecting the outputs of the first and second fluid compressors to the means for storing;
- (k) means responsive to fluid pressure within the means for storing for controlling the operation of the first and second fluid compressors;
- (l) third rotating means responsive to the expansion of compressed fluid;
- (m) means for connecting the means for storing to the third rotating means;
- (n) second electrical energy generator driven by third rotating means; and
- (o) means for coupling the third rotating means to the second electrical energy generator.

4,229,662

WIRING OF ELECTRICAL EQUIPMENTS FOR MOTORCYCLES

Ryo Nashimoto, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

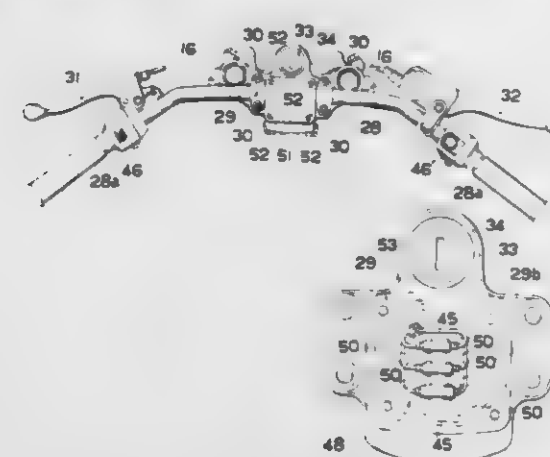
Filed Oct. 11, 1978, Ser. No. 950,274

Claims priority, application Japan, Oct. 13, 1977, 52-122887

Int. Cl.³ H01H 85/20; B60L 3/04

U.S. Cl. 307-9

8 Claims



1. An electrical wiring system for a motorcycle, comprising:
- an electrical battery;
 - a main switch;
 - electrical conductors operably and electrically connecting said main switch to said electrical battery;
 - a plurality of electrical equipments;
 - a plurality of sub-switches operably and electrically connected to each of said electrical equipments, respectively; said sub-switches being disposed adjacent to the handlebars of said motorcycle;
 - a plurality of sub-fuses operably and electrically connected between said main switch and each of said sub-switches respectively;
 - said plurality of sub-fuses being substantially concentratedly arranged above a top bridge supporting a steering handlebar and a front fork assembly of said motorcycle proximal a steering stem of said motorcycle;
 - a steering handlebar upper-holder member which fixes said steering handlebar on said top bridge; and
 - said plurality of sub-fuses being substantially horizontally arranged on said upper-holder member.

4,229,663

APPARATUS FOR SENSING VEHICULAR MECHANICAL MOTION

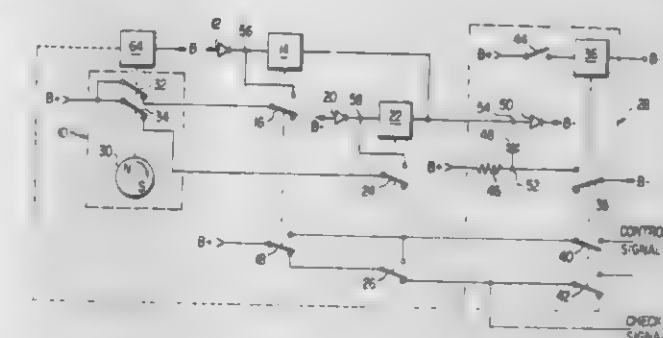
Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Jan. 11, 1979, Ser. No. 2,766

Int. Cl.³ B60N 5/00

U.S. Cl. 307-9

5 Claims



1. An apparatus for sensing vehicular mechanical motion, comprising:

motion transducer means for sensing vehicular displacement and for generating plural groups of transducer signals based on the sensed displacements, with the transducer signals of each group bearing a predetermined relative phase relationship with respect to the transducer signals of the other groups;

a plurality of latching switch circuits, each having applied thereto a particular one of said groups of signals produced by said transducer means, each latching switch circuit capable of being set to a first motion sensitive output state and subsequently latched to a second output state upon the application thereto of a signal from the respective group of signals;

first means for setting each of said latching switch circuits to said first output state upon initiation of a motion sensitive operation; and,

second means connected to said latching switching circuits for detecting when each of said latching switching circuits is in said second output state, said second means then generating a motion detected signal.

4,229,664

PHOTO ELECTRIC METHODS AND APPARATUS FOR REGULATING ELECTRICAL POWER CONSUMPTION IN STORES

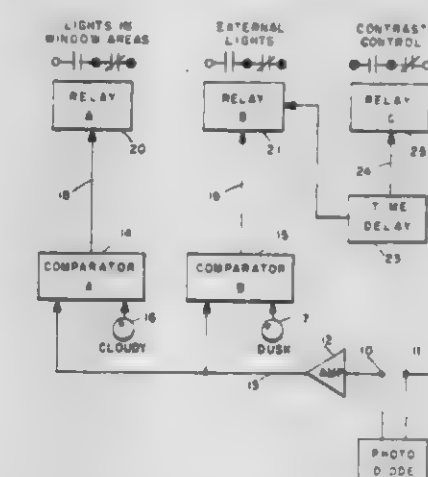
Frederick H. Blake, 226 W. Edith Ave., No. 28, Los Altos, Calif. 94022, and Manfred K. Dittmann, 2544 Sun Mor Ave., Mountain View, Calif. 94040

Filed Mar. 15, 1979, Ser. No. 20,755

Int. Cl.³ H05B 37/02; H01H 47/24

U.S. Cl. 307-117

5 Claims



1. A controller for automatically regulating the consumption

of electrical energy in a store, said controller being comprised of:

- photo diode means for placement external to said store to form electrical impedances representative of the ambient light intensity;
- amplifier means having inputs connected to said photo diode and being responsive to the impedance thereof for generating an analog signal having a magnitude indicating said ambient light intensity;
- means for manually selecting first and second reference voltage respectively corresponding to those magnitudes of said analog signal produced by cloudiness and dusk;
- first comparator means having inputs coupled to simultaneously receive said analog signal and said first reference voltage for generating a first control signal indicating when said ambient light intensity corresponds to cloudy weather;
- second comparator means having inputs coupled to simultaneously receive said analog signal and said second reference voltage for generating a second control signal indicating when said ambient light intensity corresponds to dusk;
- timer means for generating a third control signal after a manually selectable time delay in response to the initial occurrence of said second control signal to indicate full darkness; and
- a first electromagnetic switch operable in response to said first control signal for energizing lights near windows in said store, a second electromagnetic switch operable in response to said second control signal for energizing electric signs and parking lot lights for said store, and a third electromagnetic switch operable in response to said third control signal for de-energizing a uniformly distributed portion of all interior overhead lighting in said store.

4,229,665

PROGRAMMABLE POWER SUPPLY SYSTEM

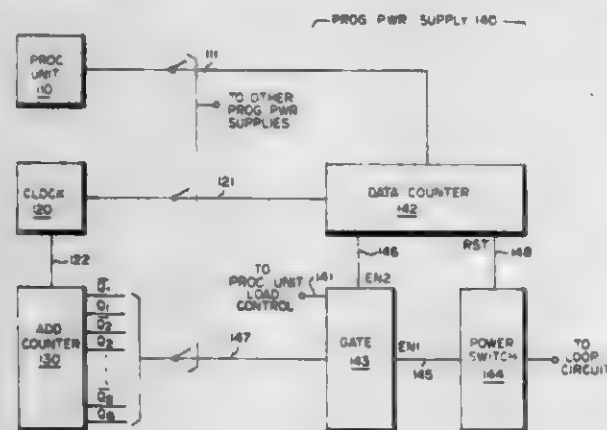
Larry M. Tiedt, Glendale Heights, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 22, 1978, Ser. No. 944,826

Int. Cl.² H02J 7/00

U.S. Cl. 307—150

10 Claims



1. A programmable power supply system for use in a digital telecommunication switching system, including a processing unit periodically operated to generate at least one loading signal and digital data representative of a selected voltage to be applied to a selected telecommunication loop circuit, said programmable power supply system comprising:
 - pulsing means periodically operated to generate a plurality of clock pulses;
 - addressing means connected to said pulsing means operated in response to said clock pulses to generate at least one address signal;
 - decoding means connected to said addressing means operated in response to said address signal and said loading signal to generate at least one data transfer signal;
 - counting means connected to said processing unit, to said

pulsing means and to said addressing means operated in response to said data transfer equal to accept said digital data from said processing unit and further operated in response to a predetermined number of said clock pulses to count down from an initial count represented by said digital data to a reset position and generate a reset signal; storage means connected to said counting means and to said addressing means operated to initiate generation of a power control signal in response to said address signal and further operated to terminate generation of said power control signal in response to said reset signal; and power switching means connected between said selected telecommunication loop circuit and said storage means, operated to generate power of a first characteristic in response to said power control signal and to generate power of a second characteristic in response to an absence of said power control signal and further operated to apply power equivalent to an average of said first and second characteristics, to said telecommunication loop circuit.

4,229,666

AUDIO DETECTOR CIRCUIT

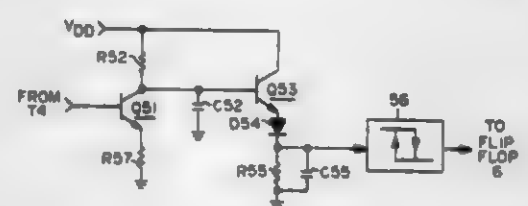
Zachariah H. Milburn, Jr., Amherst, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 27, 1978, Ser. No. 946,254

Int. Cl.¹ H03K 3/29

U.S. Cl. 307—290

18 Claims



1. A detector circuit comprising: input means coupled to a source of input signals; first switching means having an input coupled to the input means;
 - A TURNOFF time constant coupled to the output of the first switching means, said TURNOFF time constant for determining the time delay between the removal of an input signal and the corresponding change in detector output;
 - second switching means having an input coupled to the output of the first switching means and to the TURNOFF time constant;
 - a TURNON time constant, said TURNON time constant for determining the time delay between the reception of an input signal and the corresponding change in the detector output; and
 - a unidirectional conducting device having a first electrode coupled to the output of the second switching means and a second electrode coupled to the TURNON time constant whereby the TURNON time constant is effectively disconnected from the second switching means during the reception of an input signal and effectively connected during the removal of an input signal.

4,229,667

VOLTAGE BOOSTING SUBSTRATE BIAS GENERATOR

Gary L. Heimbigner, Anaheim, and Robert K. Booher, El Toro, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 23, 1978, Ser. No. 937,038

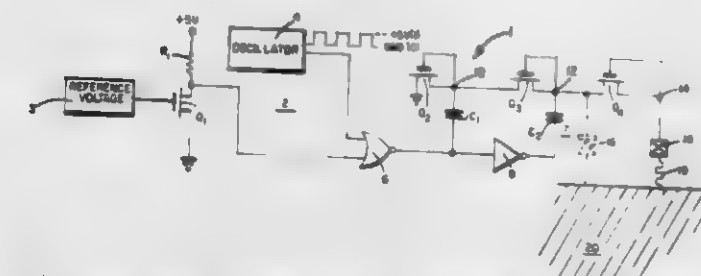
Int. Cl.³ H03L 1/00; H03K 3/00

U.S. Cl. 307—297

5 Claims

1. A substrate bias generator circuit to develop a wide range of bias voltage to compensate for threshold variations in semiconductor devices that are formed on a substrate, said bias generator circuit comprising:

transmission gate means; level detector means responsive to an input reference voltage signal, an output terminal of said level detector means connected to an input terminal of said transmission gate means; clock means for supplying a clock signal having first and second signal levels to another input terminal of said transmission gate means; signal level boosting means connected between an output terminal of said transmission gate means and the substrate, said signal level boosting means increasing the output signal level of said transmission gate means to be fed back to the semiconductor devices via the substrate;



said signal level boosting means comprising first and second unidirectional current conducting means connected together in electrical series between a source of supply voltage and an electrical junction, inverter means, the output terminal of said transmission gate means connected to an input terminal of said inverter means, and first and second charge storage capacitance means, said first capacitance means connected between the output terminal of said transmission gate means and a point between the connection of said first and second unidirectional current conducting means, and said second capacitance means connected between an output terminal of said inverter means and said electrical junction.

4,229,668

TRANSISTOR CIRCUIT HAVING A PLURALITY OF CMOS CIRCUITS

Heihachiro Ebihara, and Fukuo Sekiya, both of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

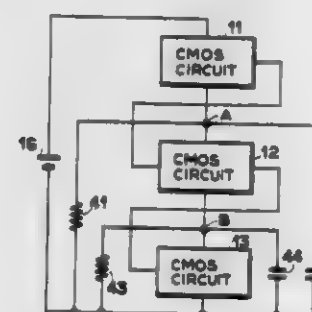
Filed Jun. 16, 1978, Ser. No. 916,071

Claims priority, application Japan, Jun. 24, 1977, 52-74513

Int. Cl.² H03K 3/353; H02J 1/00

U.S. Cl. 307—304

8 Claims



1. A complementary metal oxide semiconductor (CMOS) circuit for timepieces comprising:
 - (a) a first CMOS circuit having an oscillator circuit;
 - (b) a second CMOS circuit having a frequency divider circuit and connected to said first CMOS circuit;
 - (c) a power supply source, said first and second CMOS circuits connected in series to said power supply source;
 - (d) a smoothing capacitor connected between a junction of said first and second CMOS circuits and said power supply source; and
 - (e) a D. C. current circuit connected between the junction of

said first and second CMOS circuits and said power supply source.

4,229,669

TIGHT TOLERANCE ZERO CROSSING DETECTOR CIRCUIT

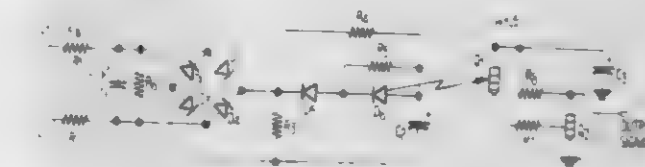
Gerald L. Smith, Broomfield, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,706

Int. Cl.² H03K 5/153

U.S. Cl. 307—354

15 Claims



1. A zero crossing circuit for producing a signal with a transition in the vicinity of, but no later than, the zero crossing point of an AC voltage comprising:
 - rectifying means with an input and an output coupled to said AC voltage providing at said output a rectified replica of a voltage applied at said input;
 - impedance means with an input coupled to the output of said rectifying means, and an output, said impedance means providing at said output a voltage lagging a voltage applied to said impedance means input, and
 - switching means comprising a diode coupled across said output and input of said impedance means for producing said signal as said diode is biased into conduction prior to a minimum in the output of said rectifying means by a difference in potential between said impedance means output and input said switching means producing a signal when and so long as said impedance means output exceeds said impedance means input.

4,229,670

INTEGRATED CIRCUIT HAVING FIRST AND SECOND INTERNAL CIRCUITS CONTROLLED BY A COMMON INPUT TERMINAL

Werner F. Thommen, Hausen; Werner Fehr, and Arpad Korom, both of Zurich, all of Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

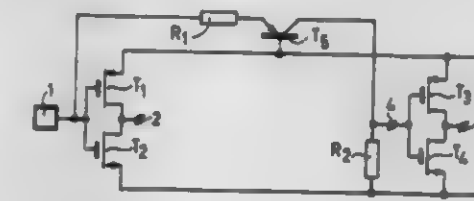
Filed Feb. 17, 1978, Ser. No. 878,665

Claims priority, application Netherlands, Apr. 13, 1977, 7704005

Int. Cl.² H03K 5/18, 3/353, 19/40

U.S. Cl. 307—360

12 Claims



1. An integrated circuit comprising an input terminal for the application of signals to a first circuit, first and second supply lines for supplying power to said first circuit, a first transistor having first and second main electrodes that define a current path in the transistor and a control electrode for controlling the current flow in said transistor current path, means connecting the control electrode to one of the supply lines, the first main electrode to an input of a second circuit which is coupled between said first and second supply lines, and the second main electrode to said input terminal, the conductivity type of said transistor being such that the transistor cannot conduct when the voltage level at said input terminal lies between the voltages on said first and second supply lines.

4,229,671

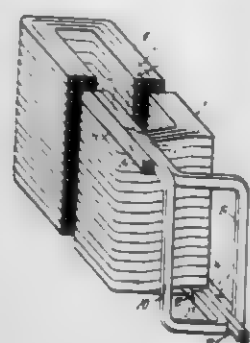
MULTITURN COIL FOR FIELD POLES OF
DYNAMOELECTRIC MACHINE

Albert Z. Lesokhin, ulitsa Chekhova, 8, kv. 22; Evelina A. Daik-hovskaya, ulitsa Basseinaya, 85, kv. 202, and Ilya Z. Bogus-lavsky, ulitsa Ordzhonikidze, 33, kv., all of Leningrad, U.S.S.R.

Filed Apr. 22, 1977, Ser. No. 789,976
Int. Cl.² H02K 3/00

U.S. Cl. 310-196

3 Claims



1. A multiturn coil assembly comprising: outer, intermediate and inner electrically interconnected windings, having conduit means for passing of a cooling fluid therethrough, each winding occupying a single vertical row of turns over the entire coil height, being wound with an equal number of turns stacked in the same direction as the other windings, and having first and second terminals; said windings being concentrically arranged so that the inner peripheral dimension of said outer winding is substantially equal to the outer peripheral dimension of said intermediate winding, and the inner peripheral dimension of said intermediate winding is substantially equal to the outer peripheral dimension of said inner winding; each winding being oriented so that said first terminals of all the windings are positioned adjacent one another and adjacent one end surface of said coil assembly, while said second terminals of all the windings are positioned adjacent one another and adjacent the other end surface of said coil assembly; all the terminals of all the windings being directed towards only one side of the coil assembly and electrically interconnected adjacent the outer surface of said one side of the coil by means of non-intersecting connectors; said connectors also serving as conduits for passing a cooling fluid therethrough.

4,229,672

SPARK PLUG WITH LOW EROSION ELECTRODE TIP

Edward R. Trancik, Highland Township, Oakland County, Mich., assignor to Ford Motor Company, Dearborn, Mich.

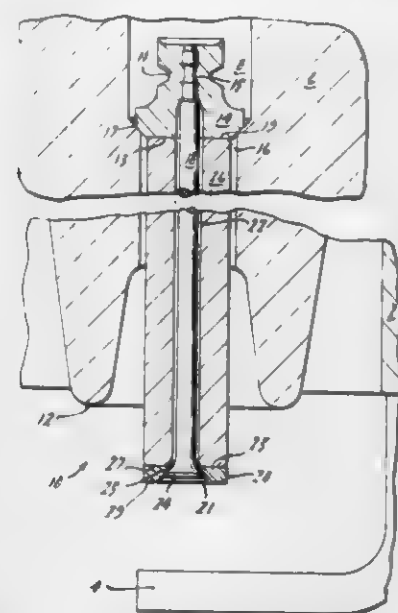
Filed Jan. 4, 1979, Ser. No. 1,040
Int. Cl.³ H01T 13/20, 13/34

U.S. Cl. 313-139

6 Claims

1. In a spark plug comprising: an insulating core having an axial bore therethrough, a center electrode mounted in said bore, an outer grounding shell surrounding said insulating core and a ground electrode electrically connected to said outer shell, an improvement, including: a thermal energy conducting sheath surrounding said center electrode within said bore; and, an iridium disc in intimate contact with bore said sheath and said center electrode, oppositely positioned across an air gap from said ground electrode, wherein said iridium disc has a frusto-conical aperture with a smaller diameter closest to said center electrode and said center electrode

has an enlarged end that extends into said aperture and is larger than said smaller diameter of said aperture to pro-



vide an electrical conduction path between said disc and said center electrode.

4,229,673

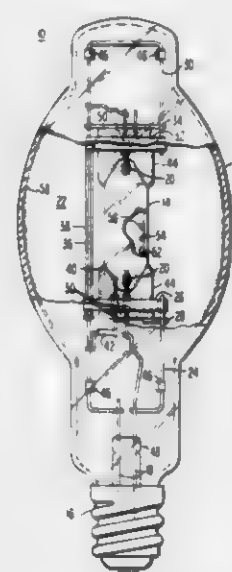
MERCURY METAL-HALIDE LAMP INCLUDING
NEODYMIUM IODIDE, CESIUM AND SODIUM IODIDE

William A. McAllister, Morris Township, Morris County, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 18, 1979, Ser. No. 4,259
Int. Cl.² H01J 61/22

U.S. Cl. 313-225

1 Claim



1. In combination with a mercury metal-halide high-intensity-discharge lamp comprising a protective light-transmitting envelope, a sealed elongated radiation-transmitting arc tube supported within said protective envelope, base means secured to said protective envelope for connecting said lamp to a source of power, and lead-in means sealed through said protective envelope for connecting said arc tube to said base means, said arc tube having electrodes spaced apart a predetermined distance and operatively positioned within said arc tube proximate the ends thereof and electrically connecting to said lead-in means, the improvement comprising:

- (a) said arc tube having as a discharge-sustaining filling a small charge of inert ionizable starting gas; mercury in predetermined amount as required, when fully vaporized as the sole discharge-sustaining constituent, to provide an operating mercury vapor pressure of about 3.8 atmospheres as calculated on the basis of an average mercury vapor temperature of 2000° K.; neodymium iodide in amount of about 5×10^{-6} gram mol/cm of spacing be-

- tween said electrodes; cesium iodide in amount of about 5×10^{-6} to 7.2×10^{-6} gram mol/cm of spacing between said electrodes; and the gram mol ratio of said neodymium iodide to cesium iodide being about 1:1;
- (b) said arc tube also including sodium iodide in amount of about 6×10^{-6} gram mol/cm of spacing between said electrodes; and
- (c) finely divided phosphor carried as a coating on the inner surface of said protective envelope, said phosphor substantially comprising calcium sulfide activated by europium and sensitized by tin or lead.

4,229,674

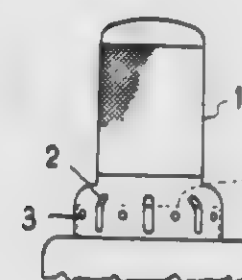
GRID OF PYROLYTIC GRAPHITE FOR A HIGH-POWER
ELECTRON TUBE AND A METHOD FOR THE
ASSEMBLY OF SAID GRID

Roger Hoet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 18, 1979, Ser. No. 49,126
Claims priority, application France, Jun. 23, 1978, 78 18834
Int. Cl.³ H01J 1/46, 9/14

U.S. Cl. 313-348

6 Claims



2. An electron tube grid of pyrolytic graphite which is intended to be mounted on a metal ring, the lower end of said grid being formed by a thin-walled cylindrical sleeve, wherein the sleeve is provided with a series of longitudinal slots located at uniform intervals around the periphery of said sleeve as well as a series of fixing holes located at uniform intervals between said slots, said slots being adapted to terminate at a short distance from the edge of said sleeve so as to leave a retaining portion of small height between the ends of said slots and said edge.

4,229,675

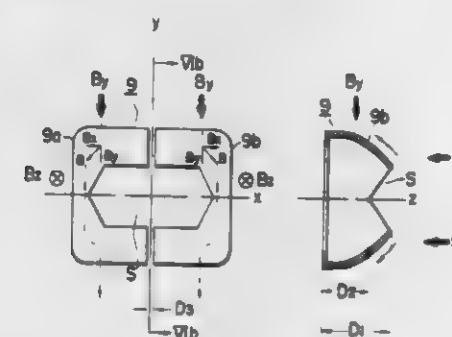
COLOR PICTURE TUBE WITH INTERNAL FUNNEL
SHAPED MAGNETIC SHIELD

Takeshi Matsuki, Mobara; Koichi Maruyama, Chiba; Kuniharu Osakabe, Mobara, and Sakae Kunitoh, Chiba, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 27, 1978, Ser. No. 919,608
Claims priority, application Japan, Jul. 1, 1977, 52-77914
Int. Cl.² H01J 29/06

U.S. Cl. 313-402

10 Claims



1. An in-line stripe type color picture tube comprising: a bulb including a neck portion, a funnel portion and a panel portion for hermetically sealing a large diameter opening of the funnel portion,

an electron gun assembly disposed in the neck portion of the bulb, a fluorescent screen formed on the inner surface of the panel portion, a shadow mask disposed in the bulb and opposing the fluorescent screen with a predetermined spacing, a magnetic shield member in the form of a funnel opposing the shadow mask and extending along the curvature of the funnel portion for surrounding a travel region of electron beams emitted from the electron gun assembly, said magnetic shield member having a transverse cross-sectionally central portion defining an area of a predetermined, substantially constant width and a higher reluctance than that of the magnetic shield member, said higher reluctance area perpendicularly intersecting a scanning direction of the electron beams.

4,229,676

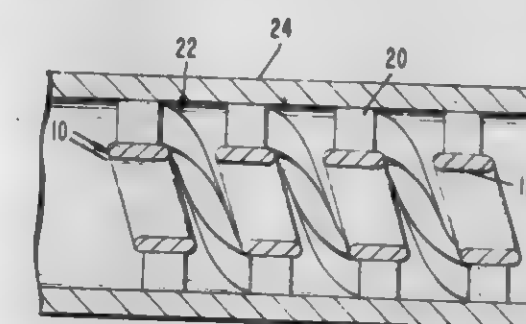
HELICAL SLOW-WAVE STRUCTURE ASSEMBLIES AND
FABRICATION METHODS

Arthur E. Manoly, Palos Verdes, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 16, 1979, Ser. No. 21,146
Int. Cl.³ H01J 25/34

U.S. Cl. 315-3.5

11 Claims



1. A method for fabricating a helical slow-wave structure assembly comprising: winding a first ribbon of an electrically conductive material unsuceptible to etching by a predetermined etchant on a cylindrical mandrel to form a first helix having a predetermined spacing between successive turns thereof; winding a second ribbon of a material susceptible to etching by said predetermined etchant and having a width greater than said predetermined spacing about said first helix over the helical space between turns of said first helix and in overlapping relationship with portions of adjacent turns of said first helix to form a second helix; depositing dielectric material unsuceptible to etching by said predetermined etchant over the exposed surfaces of said first and second helices; grinding the deposited dielectric material to a predetermined radial dimension; removing said mandrel from the resulting assembly; removing said second helix from the resulting assembly by chemical etching using said predetermined etchant; and mounting the resulting assembly within a tubular housing with the circumferentially outer surface of the dielectric material firmly contacting the inner surface of said housing.
2. A helical slow-wave structure assembly comprising: a first helix of electrically conductive material coaxially disposed within a tubular housing; a second helix of dielectric material coaxially disposed about and wound in the same sense as said first helix, said second helix being bonded to the outer circumferential surface of said first helix and extending radially outwardly therefrom into firm contact with said tubular housing; and the width of at least a portion of said second helix varying gradually as a function of axial distance along said helices.

4,229,677

HIGH-POWER HYPERFREQUENCY EMISSION TUBE
Georges Mourier, Paris, France, assignor to Thomson-CSF, Paris, France

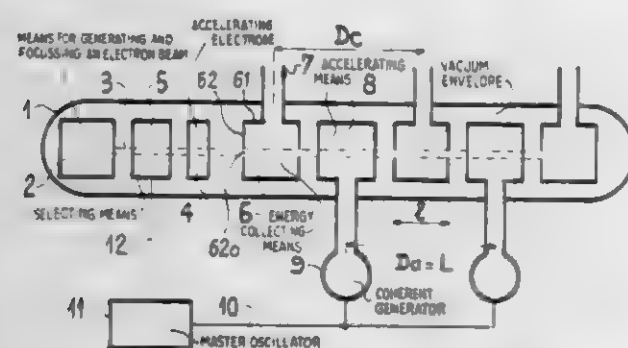
Filed Apr. 20, 1978, Ser. No. 898,154

Claims priority, application France, Apr. 26, 1977, 77 12539

Int. Cl.³ H01J 25/34

U.S. Cl. 315—3.6

11 Claims



1. A tube for emitting high power electromagnetic waves which comprises, in a vacuum envelope:
 - means for generating and focussing an electron beam;
 - a plurality of energy collecting means formed by circuits of the hyperfrequency type which modulate the electron beam and extract the useful energy in the form of a signal of very high frequency F;
 - a plurality of means for accelerating the electrons of the beam formed by hyperfrequency circuits comprising a resonant cavity with an input to which is applied in operation an hyperfrequency signal of frequency f such that $f/F = \Omega/\omega = \phi/\theta - 1/ND_c$,

where:

$$\Omega = 2\pi f;$$

$$\omega = 2\pi F;$$

 ϕ is the transit angle existing between two consecutive accelerating means; θ is the interaction angle existing between the electron beam and the useful signal of frequency F; D_c is the spatial period of the collecting means uniformly distributed with the accelerating means, of spatial period D_a , along the path of the electron beam and in its direction of propagation; N is the number of collecting means comprised between two accelerating means;the spatial period D_a of the accelerating means being equal to a whole multiple k of the spatial period D_c of the collecting means and the accelerating means restoring to the electron beam the energy lost at the level of the collecting means.

4,229,678

SAFETY SWITCH WHICH RENDERS HID LAMP INOPERATIVE ON ACCIDENTAL BREAKAGE OF OUTER ENVELOPE

John Petro, Belleville, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 7, 1976, Ser. No. 748,351

Int. Cl.³ H01J 7/44, 13/46, 19/78, 23/16

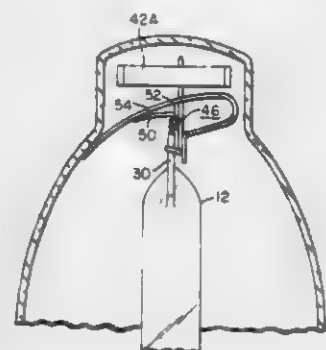
U.S. Cl. 315—73

3 Claims

1. In combination with a high-intensity discharge lamp comprising an elongated radiation-transmitting arc tube having pressed-end portions which is longitudinally disposed and supported within an elongated light-transmitting protective envelope having a neck portion, a bulb portion having an inner surface and an outer surface, and a dome portion and which envelope is opaque to short wavelength ultraviolet radiations, said arc tube enclosing a discharge-sustaining filling and having electrodes operatively positioned therein proximate the ends thereof, electrical lead-in members sealed through said arc tube and connected to said electrodes, electrical adaptor means affixed to the neck portion of said envelope to facilitate electrical connection of said lamp to a source of electrical

power, electrical conductor means electrically connecting said electrical adaptor means to said electrical lead-in members, said electrical conductor means including an arc tube supporting frame comprising an elongated rigid supporting means longitudinally disposed within said protective envelope and including rigid metallic members disposed generally transversely within said protective envelope and in supportive relationship with respect to the pressed-end portions of said arc tube, the improvement which comprises:

switch means having a normally open position in which said switch means is electrically non-conducting and a closed position in which said switch means is electrically conducting, said switch means included in series circuit arrangement intermediate said arc tube supporting frame and one of said lead-in members, said switch means including an electrical conductive contact member affixed to said one lead-in member which is positioned nearest said dome portion of said protective envelope, said electrical conductive contact member comprising an elongated resilient metallic member initially extending toward said



dome portion and then toward the inner surface of said bulb portion, a resilient elongated conductive contact having one end affixed to one of said rigid metallic members of said frame which is positioned nearest said dome portion, said resilient contact initially extending toward said dome portion and then retroverted toward the opposite inner surface of said bulb portion to contact the opposite inner surface of said bulb portion, said elongated metallic member and said resilient retroverted conductive contact both ultimately extend generally collinearly, and the contact of said resilient retroverted conductive contact with the inner surface of said bulb portion forces both said elongated metallic member and said resilient retroverted conductive contact into electrical contact against their resiliencies, and breakage of said protective envelope freeing said retroverted contact and permitting said retroverted contact to be moved by its resiliency out of electrical contact with said electrical conductive contact member, thereby to render said lamp inoperative.

4,229,679

PLASMA CONTROL SYSTEM

Tenny D. Lode, 3270 Cherryridge Rd., Englewood, Colo. 80110

Filed Jun. 5, 1974, Ser. No. 476,530

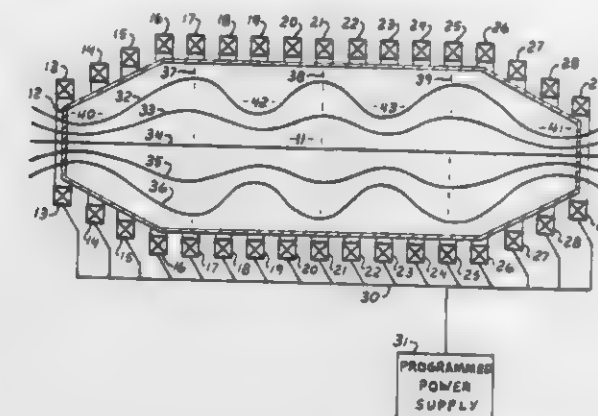
Int. Cl.³ H05H 1/10

U.S. Cl. 315—111.7

13 Claims

1. In a system for the confinement of a diamagnetic fluid, means defining a confinement space which extends generally along a central line, means generating a magnetic field at least partially parallel to said central line, means generating a plurality of local strong magnetic field confinement regions, and pumping means for pumping said diamagnetic fluid generally

along said central line relative to said local strong magnetic field confinement regions, said central line being closed upon



itself to form an endless path for movement of said diamagnetic fluid.

4,229,680

LAMP LIFE EXTENDER

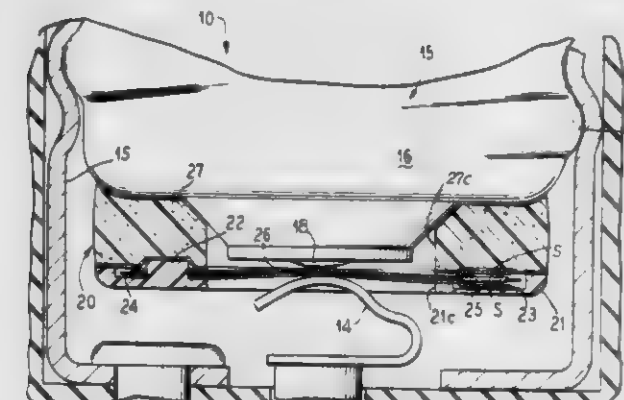
Donald M. Berlin, Jr., McHenry; Clifford E. Mensing, Glen Ellyn, both of Ill., and Ole K. Nilssen, 1984 Caesar Dr., Rte. 4, Barrington, Ill. 60010, assignors to Ole K. Nilssen, Barrington, Ill.

Filed May 23, 1979, Ser. No. 41,649

Int. Cl.³ H05B 37/02

U.S. Cl. 315—200 R

23 Claims



7. A device mountable about the base end of an incandescent light bulb for movement with the same into and out of a lampholder socket and operable to provide a voltage reducing circuit between the central base contacts of the light bulb and its cooperating lampholder comprising: a thin, disc-like laminated contact assembly providing the voltage reducing circuit and comprising first and second coextensively superposed, thin metal contact plates; insulator means disposed between and electrically isolating said plates, and a leadless silicon rectifier chip mounted between and facially connected to registeringly superposed, and oppositely off-set areas formed in corresponding peripheral margins of said plates; an annular mounting base of insulator material having a recessed cavity extending inwardly of one face thereof and formed to substantially registeringly mount said contact assembly therewithin; an annular, compressible mounting gasket of insulator material disposed registeringly over and connectively secured to said base and contact assembly; said gasket having an adhesive coating over an outer end face thereof for bonding the device concentrically about the base of the light bulb so that the central base contact thereof is positioned within the open center of said gasket for operating engagement with said first contact plate.

4,229,681

FREQUENCY/SENSITIVE SWITCHING CIRCUIT

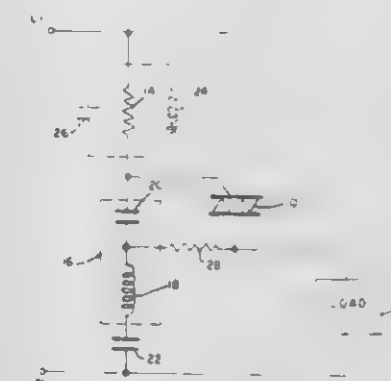
John L. Plumb, Danvers, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 29, 1978, Ser. No. 974,300

Int. Cl.³ H05B 37/02; H04Q 1/44

U.S. Cl. 315—244

8 Claims



1. A frequency sensitive switching circuit for controlling the energization of a load in response to a control signal imposed on power circuit conductors carrying operating power for the load, said control signal having a first frequency and said operating power being alternating current of a second frequency, said switching circuit comprising:

a bidirectional switching device having first and second main terminals and a control gate for controlling conductance between the terminals;

means for connecting the first main terminal of said switching device to a first one of said power circuit conductors, and means for connecting the second main terminal of said switching device to one side of said load;

an impedance means connected between the control gate and the first main terminal of said switching device;

a series resonant circuit tuned to pass the control signal and block the operating power and comprising a first capacitor means and an inductor means, said first capacitor means being connected between the control gate of said switching device and one side of said inductor means;

a second capacitor means having one terminal connected to a second side of said inductor means and having a capacitance value selected to pass the control signal and block the operating power; and

means for connecting a second terminal of said second capacitor means to both a second side of said load and a second one of said power circuit conductors, whereby said impedance means, first capacitor means, inductor means and second capacitor means are serially connected in that order across said first and second power conductors;

said control signal being developed across said impedance means and applied to the gate of said switching device to activate the same into conduction at the end of each half cycle of operating power, and the conduction of operating power through said switching device being operative to effectively short out said first capacitor means and cause said first inductor means to block said control signal for the remainder of the operating power half cycle, thereby reducing the consumption of control signal power;

wherein the improvement comprises a first resistor connected between the second main terminal of said switching device and the junction of said first capacitor means and said inductor means, said first resistor having a value selected sufficiently high to limit the current flowing in the gate of said switching device when said switching device is activated into conduction and sufficiently low to facilitate said shorting out of the first capacitor.

4,229,682

ELECTRONICALLY COMMUTATING MOTOR

Bernardus H. A. Goddijn, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

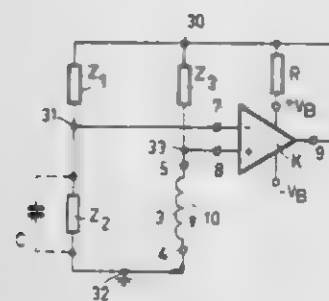
Filed Jun. 7, 1978, Ser. No. 913,305

Claims priority, application Netherlands, Aug. 30, 1977, 7709518

Int. Cl.⁷ H02K 29/02

U.S. Cl. 318—254

15 Claims



1. An electronically commutating motor comprising, a bridge circuit having a first impedance connected between a first point and a second point, a second impedance connected between the second point and a third point, a third impedance connected between the third point and a fourth point, and a fourth impedance connected between the fourth point and the first point, and comparator means having a first and a second input connected to the second and the fourth points, respectively, for comparing the voltages at the second and the fourth points, and having an output for energizing the bridge circuit between the first and the third points as a function of an output signal at said output of said comparator means, and wherein at least one of the first and third impedances comprises a stator phase winding of the motor.

4,229,683

DEVICE FOR CONTROLLING THE MOVEMENT OF A MOVABLE MEMBER

Kikuo Watanabe, Mitsutaka Kazino, and Hisashi Yamazaki, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

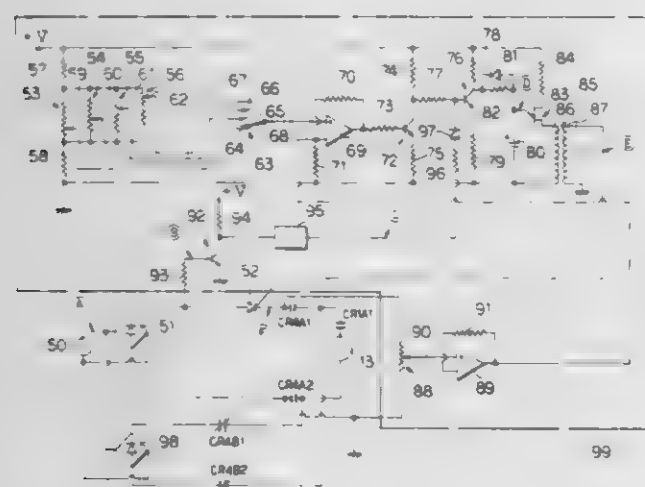
Filed Apr. 2, 1979, Ser. No. 26,551

Claims priority, application Japan, Apr. 14, 1978, 53/44640

Int. Cl.¹ G05G 5/00

U.S. Cl. 318—466

5 Claims



1. A device for controlling the movement of a movable member on a frame comprising:

a fluid pressure means associated with the movable member for reciprocating the member in forward and backward directions;

a rack movably mounted on the frame so as to be engaged with the movable member at a predetermined position during the movement of the member in the forward direc-

tion and to be movable with the member after the engagement with the rack;

a variable speed and reversible motor operatively connected with the rack through an intermediate mechanism;

the intermediate mechanism including elements which transmit the force from the motor to the rack and interrupt the transmission of the force from the rack to the motor;

a first means for generating a signal when the movable member arrives at the predetermined position during the movement of the member in the forward direction;

a first driving circuit responsive to the signal from the first generating means for driving the motor in a predetermined direction in order to move the rack in the forward direction at a predetermined speed;

a second means for generating a signal when the movable member arrives at the end position in the forward direction;

means responsive to the signal from the second generating means for changing the operating direction of the fluid pressure means in order to move the movable member in the backward direction;

a second driving circuit responsive to the signal from the second generating means for reversing the motor in order to return the rack; and

a third means for generating a signal to make the second driving circuit de-effective when the rack returns to the predetermined position.

4,229,684

METHOD AND APPARATUS FOR TIME-OPTIMIZED POSITIONING OF AT LEAST ONE BODY IN A DESIRED TARGET POSITION

Marco Saglini, Muralto, and Walter Meier, Losone, both of Switzerland, assignors to A.G. für Industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

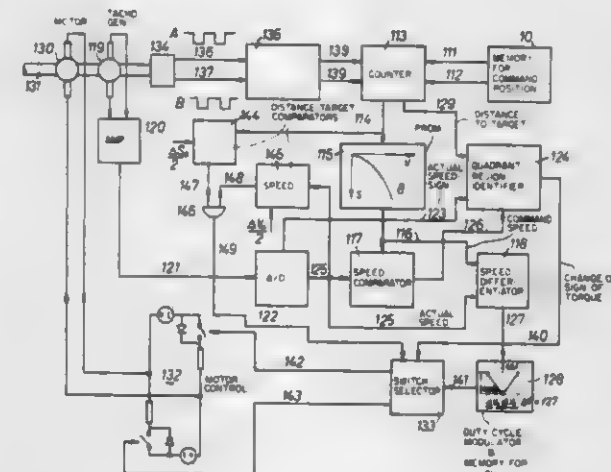
Filed Jul. 7, 1978, Ser. No. 922,688

Claims priority, application Switzerland, Aug. 9, 1977, 11028/77

Int. Cl.¹ G05B 13/00

U.S. Cl. 318—561

4 Claims



1. Apparatus for time-optimizing positioning of a body at a target position (3) having a motor (130) driving the body with predetermined torque from a start position (2, 12) to the target positions (3) comprising

means (10) storing an identification of the target position (3);

means (134, 135) providing identification of an actual position of the body;

means (113) comparing the actual and target position and providing a distance-to-target signal;

means (119, 120, 122) furnishing a motor speed signal; quadrant identification means (124) responsive to the distance-to-target signal and the motor speed signal to determine, in a Cartesian coordinate system, the direction and distance of movement of the motor;

speed-distance relation memory means (PROM, 115) storing

a curve representative of the loci on a speed-distance curve at which the motor must reverse torque, while the body is being moved to the target and requiring only a single torque reversal;

means (117, 126) coupled to the speed-distance relation memory means (115) and the motor speed furnishing means (119, 120, 122) and providing an output signal coupled to the quadrant region identification means (124) when, upon operation of the motor, the position of the body intersects the speed-distance curve stored in said speed distance relation memory means (115), said quadrant region identification means then providing a torque-reversal command signal;

motor control means (132, 133) responsive to the distance-to-target signal as well as to the torque reversal command signal and controlling the motor to provide output torque first in the direction required to bring the body to the target and then, upon receiving the torque reversal command signal, to reverse the motor torque to brake approach of the body to the target;

means (144) defining a target accuracy range (Δs_0) and representative of the maximum tolerance distance of positioning of the body from the target position, and furnishing a tolerance range signal;

means (145) defining a target speed approach range (Δv_0) representative of maximum deviation of speed of the body when its movement is controlled by the motor from a commanded speed and furnishing an approach range signal;

and means (146, 122) connected to and responsive to the tolerance range signal and the approach range signal additionally controlling the motor control means to de-energize the motor when the body is within the target accuracy range and moving at the approach range speed.

4,229,685

ELECTRICAL CIRCUIT FOR REGULATING THE CURRENT IN THE WINDINGS OF CERTAIN STEP MOTORS

Walter Meier, Losone, Switzerland, assignor to A.G. für Industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

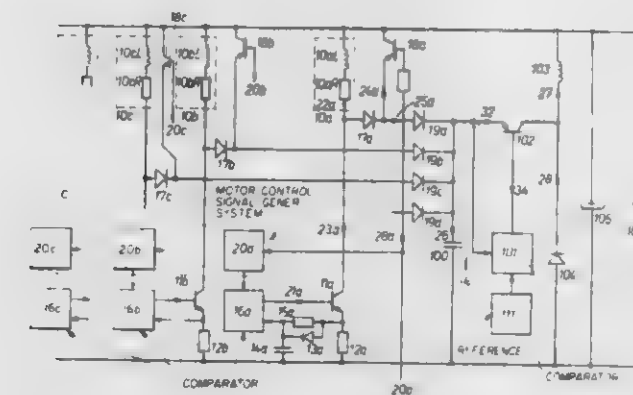
Filed Apr. 18, 1978, Ser. No. 897,513

Claims priority, application Switzerland, Apr. 19, 1977, 4832/77

Int. Cl.¹ G05B 19/40

U.S. Cl. 318—696

9 Claims



tively connected to said respective windings and to the buffer capacitor to transfer stored electromagnetic energy in the respective windings to the buffer capacitor when, after energization of a respective winding, the respective switch means is controlled to open;

and a storage circuit (103, 104, 105) including a main storage capacitor,

with charge sensing means (101, 111) connected to the buffer capacitor (106) and sensing when the charge accumulated thereon has reached a predetermined value;

and connecting circuit means including transfer switch means (102) controlled by the charge sensing means, interconnecting the buffer capacitor (100) and the storage circuit (103, 104, 105),

the charge sensing means controlling the transfer switch means (102) to close when the charge on the buffer capacitor (100) has reached the predetermined value to transfer at least a portion of the charge thereon to the main storage capacitor (105), the charge sensing means controlling the transfer switch means to open when the charge level in the buffer capacitor has dropped, so that the buffer capacitor can then receive additional energy from the respective windings while being isolated from the storage circuit.

4,229,686

BATTERY CHARGER ADAPTER SYSTEM

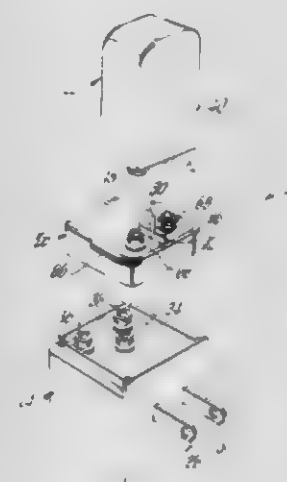
Ferdinand H. Mullersman, and Billy E. Stillwell, both of Gainesville, Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Feb. 13, 1978, Ser. No. 877,297

Int. Cl.¹ H01M 10/46

U.S. Cl. 320—2

19 Claims



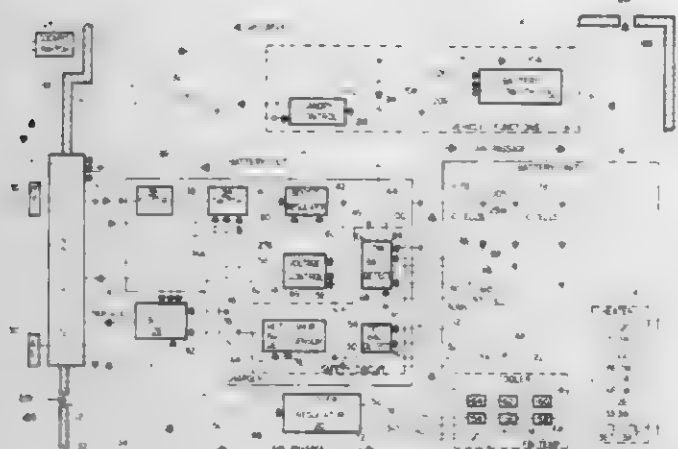
1. In a charging system for secondary batteries having a housing containing a source of charge current including a secondary winding with first, second and third source terminals, said first and third source terminals connected to said winding, said second source terminal connected to said winding at a point intermediate of the connections of said first and third source terminals to said winding; and a secondary battery having positive and negative terminals, the improvement comprising: an adapter module comprising housing means having first and second terminals removably connectable to said first and third source terminals and having third and fourth terminals removably connectable to said positive and negative battery terminals, means electrically interconnecting said first and second adapter terminals with said third and fourth adapter terminals, respectively, and means for detachably securing said adapter housing means to said source housing and said battery.

4,229,687

TEMPERATURE MAINTAINED BATTERY SYSTEM
William A. Newman, Salt Lake City, Utah, assignor to Utah Research & Development Corporation, Salt Lake City, Utah
Filed May 7, 1979, Ser. No. 36,363
Int. Cl. H02J 7/00; H05K 7/20

U.S. Cl. 320—2

25 Claims



1. A battery system comprising:

a chassis;

a battery positioned within said chassis and removably conductively connectable to an external direct current load;
a battery charger positioned within said chassis and removably conductively connectable to an external source of direct current power and conductively connected to said battery, said charger having means to automatically selectively charge said battery when said battery is in a preselected state of discharge;

heater means positioned within said chassis and removably conductively connectable to an external source of power, said heater means including heater element means and switch means, said switch means being conductively connected to said external AC source and said heater element means and operative between conductive and nonconductive conditions to activate and deactivate said heater element means in accordance with preselected temperature conditions within said chassis;

cooling means positioned within said chassis comprising:

a cooler regulator removably conductively connectable to receive power from an external source,
first temperature sensing means conductively connected to said cooler regulator to supply chassis interior temperature reflective signals thereto,
at least one peltier effect cooler element positioned within said chassis and conductively connected to said cooler regulator, wherein

said cooler regulator activates and deactivates said cooler element in accordance with preselected temperature conditions within said chassis sensed by said temperature sensing means, and

heat removal means associated with said cooler element to transfer heat from interior to exterior said chassis.

4,229,688

BATTERY DISCHARGE INDICATOR
Raymond L. Knox, Bluefield, Va., and Charles D. Lindsay, Mansfield, Ohio, assignors to A-T-O Inc., Willoughby, Ohio
Filed Sep. 5, 1978, Ser. No. 939,403
Int. Cl. H02J 7/00; H01M 10/48

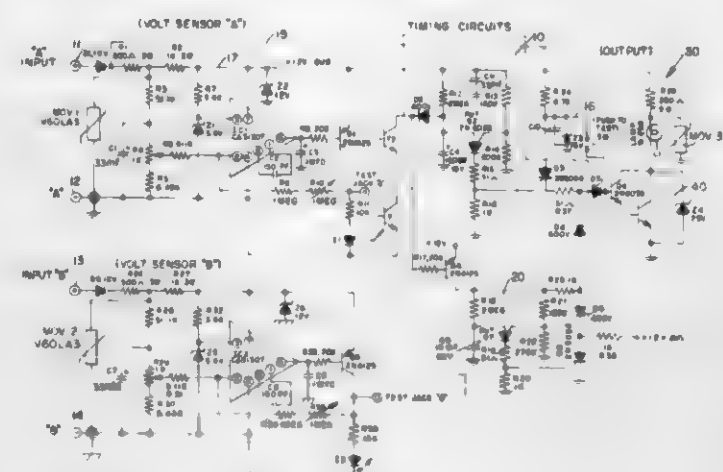
U.S. Cl. 320—48

18 Claims

1. A battery charge condition indicator circuit for a plurality of battery supply sources for an electrically powered mining vehicle, comprising:

(a) circuit means for automatically and separately monitoring the charge condition of said plurality of battery supply sources, said circuit means having a first monitoring operation for determining when any of said plurality of battery

supply sources discharge to a predetermined discharge level and a second monitoring operation for determining when said plurality of battery supply sources are charged to a predetermined charge level; and



(b) indicating circuit means including means responsive to said first monitoring operation to provide a continuously flashing indication and further including means responsive to said second monitoring operation to provide a momentary flashing indication.

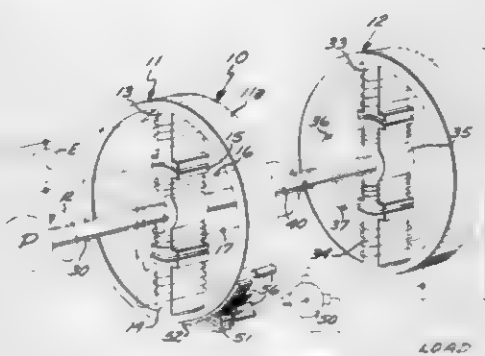
4,229,689

AC SYNCHRONIZED GENERATOR

Leo G. Nickoladze, 91969 Kalapu St., Ewa Beach, HI. 96706
Filed Nov. 5, 1979, Ser. No. 88,161
Int. Cl. H02P 9/42, 9/48

U.S. Cl. 322—32

1 Claim



1. A generator referenced to the frequency of the alternating current of a public utility comprising:

an annular exciter stator including a plurality of exciter electromagnetic poles connected for excitation by said alternating current for producing a first magnetic vector therebetween at an angle rate corresponding to the frequency of said alternating current, said exciter stator including a rotary mounting for the angular alignment thereof and an arcuate rack formed on the exterior;

an exciter rotor mounted for rotation on the interior of said exciter stator, said exciter rotor including a plurality of electromagnet exciter inductors conformed for inductive coupling with said exciter poles for producing an excited current thereon of a phase and frequency corresponding to the summation of said angular rate of said first magnetic vector and the rotational rate of said exciter rotor;

a generating rotor connected for common rotation with said exciter rotor, said generating rotor including a plurality of electromagnetic generating inductors corresponding to said exciter inductors and connected in opposite alignment therewith, said generating inductors being displaced in angle relative said exciter inductors whereby a second magnetic vector of opposite angular rate to that of said exciting current is produced by said generating inductors; an angular generating stator mounted in surrounding relationship around said generating rotor, said generating

stator including a plurality of electromagnetic generating poles aligned for electromagnetic induction by the advance of said magnetic vector on the interior thereof; power means connected for angular advancement of said exciter and generating rotor;
a servo motor connected for engagement with said rack for angular advancement of said stator; and,
phase comparing means connected to said alternating current, and the signal induced on said generating poles for advancing said servo motor in rotation according to the phase difference therebetween.

4,229,690

SINGLE PHASE POWER CONTROL CIRCUIT

Benjamin Avidan, Bat Yam, Israel, assignor to Techno-Instruments Ltd., Tel-Aviv, Israel

Filed Apr. 3, 1978, Ser. No. 892,695

Claims priority, application Israel, Apr. 20, 1977, 51917

Int. Cl. G05F 5/00

U.S. Cl. 323—24

9 Claims



1. A closed loop single phase continuous A.C. power control circuit for controlling the power to a load comprising an input connectable to a source of A.C., a power level output control, a load power factor signal producing means and a power storage unit connected in parallel across said A.C. source, said power storage unit being controlled in use to provide power to a load in accordance with the setting of said power level output control and the load power factor signal.

4,229,691

ELECTRICAL TESTING OF CORDS TERMINATED WITH MODULAR PLUGS

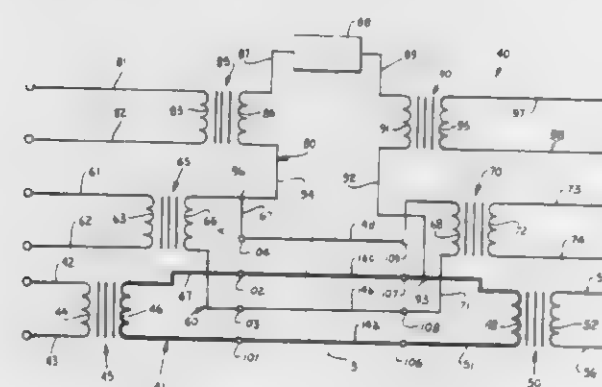
Robert P. Loesch, Omaha, Neb., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,632

Int. Cl. G01R 31/02

U.S. Cl. 324—51

16 Claims



1. A method of testing electrical characteristics of a cable having a plurality of conductors, said method comprising the steps of:

establishing a first series loop to include one of said conductors;

establishing a second series loop which is isolated from said first loop to include another one of said conductors which is adjacent said one conductor that is included in said first loop;

connecting one side of a test voltage source transformer to the first loop and the other side of said test voltage source transformer to a detector transformer and then to said second series loop; and

causing a test voltage to be impressed across the source transformer and between the conductor in said first loop and the conductor in said second loop with test voltage breakdown between adjacent conductors in the first and second loops causing current to flow through the detector transformer to provide an output reading which is indicative of a breakdown between said adjacent conductors.

4,229,692

LINEAR LOW DRIFT BRIDGE AMPLIFIER

Jerald G. Graeme, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Oct. 25, 1978, Ser. No. 954,341

Int. Cl. G01R 27/02

U.S. Cl. 324—62

10 Claims



1. A bridge amplifier circuit for linearly amplifying a transducer deviation signal produced by variations in resistance of a transducer of a transducer bridge, said transducer bridge including first, second, third, and fourth nodes, said transducer being connected between said second and third nodes, first resistance means being connected between said second and fourth nodes, second resistance means being connected between said fourth node and said first node, third resistance means being connected between said first node and said third node, a power supplying conductor being connected to said fourth node, said bridge amplifier circuit comprising in combination:

a. first amplifier means having a positive input, a negative input, and an output coupled to said first, second, and third nodes, respectively, for producing an increased or decreased current through said third resistance means in response to a positive variation in said transducer resistance or a negative variation in said transducer resistance, respectively, said increased or decreased current in said third resistance means acting to maintain said transducer bridge in a balanced voltage condition; and

b. constant current maintaining means coupled between said first node and said fourth node for maintaining constant current in said first and second resistance means, whereby current flowing into or out of said bridge amplifier circuit through said first node is linearly related to said variations in resistance of said transducer.

4,229,693

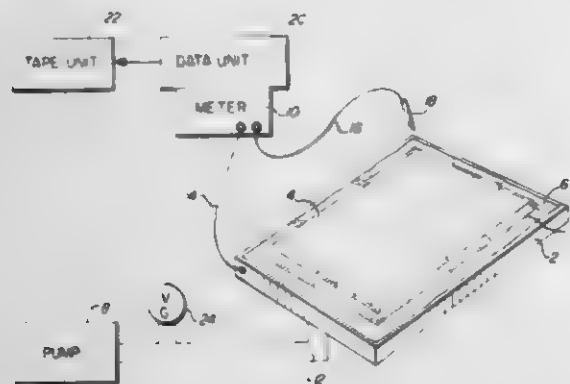
METHOD AND APPARATUS FOR CAPACITANCE TESTING PRINTED CIRCUIT BOARDS

Dan F. Irick, Glendale, and Roger F. Zollinger, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Nov. 24, 1978, Ser. No. 963,638
Int. Cl. G01R 15/12

U.S. Cl. 324-73 PC

9 Claims



1. An apparatus for testing printed circuit boards having electrical interconnects therein, comprising:
 - a metal base for supporting the printed circuit board to be tested;
 - a plastic film disposed over said printed circuit board and coupled to said metal base;
 - first means coupled to said metal base via said aperture for creating a vacuum in the region between said plastic film and said metal base for securely positioning said printed circuit board; and
 - second means for measuring the capacitance between said metal base and the electrical interconnects on said printed circuit board.

4,229,694

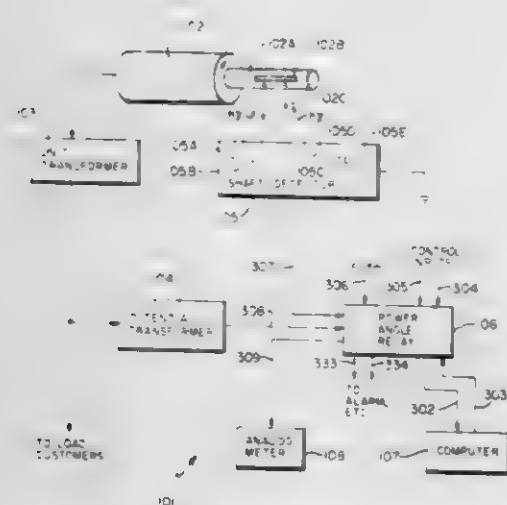
POWER ANGLE RELAY TO MEASURE AND RESPOND TO THE POWER ANGLE OF A SYNCHRONOUS GENERATOR

Gerald L. Wilson, 29 Highgate Rd., Wayland, Mass. 01778, and David M. Otten, 50 Playstead Rd., Newton, Mass. 02166

Filed Aug. 7, 1978, Ser. No. 931,739
Int. Cl. G01R 31/00; H02H 7/06

U.S. Cl. 324-158 MG

43 Claims



1. A power angle relay to protect a synchronous alternator, that comprises, in combination, means to receive a reference voltage from some point in the power system to which the alternator is normally synchronized and an electric signal representative of the angular position of the shaft of the synchronous alternator and operable to combine the two to provide a power-angle signal representative of the power angle between the direct axis of the synchronous alternator and the

reference voltage, means to process said power-angle signal to derive therefrom a measure of the power angle, means to compare the power angle with predetermined limits thereof, and means to provide an indication only in the event that the power angle exceeds the predetermined limits a plurality of successive times.

4,229,695

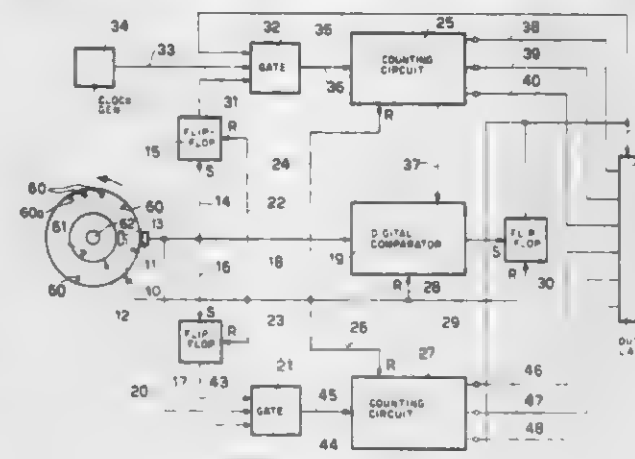
ROTATIONAL SPEED TRANSDUCER HAVING GREATER LOW SPEED DISCRIMINATION

Aldo Bassi, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Mar. 14, 1978, Ser. No. 886,438
Claims priority, application Italy, Mar. 16, 1977, 21309 A/77
Int. Cl. G01P 3/48; G04F 10/04

U.S. Cl. 324-166

5 Claims



1. A transducer of the speed of rotation of a shaft rotated at a speed which can vary within a determined range of values intended to be subdivided into a preselected number of zones represented by respective zone limit values having increments which increase according to a predetermined function as the magnitude of the speed increases, each zone being further subdivided into a preselected number of intervals represented by respective interval limit values having increments which increase according to another predetermined function as the magnitude of the speed increases, so that the transducer has a degree of discrimination which is greater at low speed values than at high speed values, said transducer comprising:

- first pulse generating means, operatively connected to the rotary shaft, for generating, at every revolution of the shaft, a train of first pulses in number at least equal to the number of the zones into which is subdivided the range of variation of the speed and having spacings which increase as according to said first predetermined function as the increments of said zone limit values increase and are also variable with the speed of rotation of the same shaft;
- second pulse generating means for generating second constant frequency pulses;
- first pulse counting means for counting said first pulses;
- second pulse counting means for counting said second pulses;
- comparing means, actuated by each pulse in said first pulse train for comparing the number of second pulses counted by said second counting means with a predetermined succession of reference numbers comprised between a minimum number and a maximum number, said comparing means providing an output signal if said counted number of second pulses is equal to any reference number, said output signal being capable of acting on said first and second counting means so as to stop their counting operation and to cause delivering of a first digital signal corresponding to the number of first pulses counted by said first counting means and representative of the zone of the speed of the shaft in which the instantaneous speed value of the rotary shaft is comprised and, respectively of a second

4,229,697

MAGNETOMETER INSTRUMENTATION WITH DIGITALLY CONTROLLED RANGE CHANGING

Kenneth J. Petrosky, Glen Burnie, and James H. Wilson, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 20, 1978, Ser. No. 962,508
Int. Cl. G01R 15/08; 33/00; G01V 3/00

U.S. Cl. 324-244

14 Claims



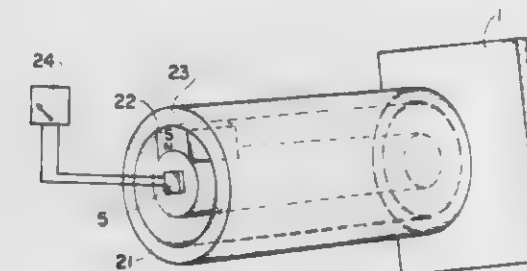
SENSOR FOR MEASURING MAGNETIC FIELD CHANGES

Adolf G. Gustafson, Musseronvägen 18, 141 46 Huddinge, Sweden

Continuation-in-part of Ser. No. 839,901, Oct. 6, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,807
Claims priority, application Sweden, Oct. 12, 1976, 7611326
Int. Cl. G01B 7/14; G01R 33/06

U.S. Cl. 324-207

20 Claims



1. Sensor for measurement of a distance to a magnetically conductive object comprising:
 - means (2; 22; 19; 20) for generating a substantially constant magnetic flux, said magnetic flux generating means including a permanent magnet having north and south poles which are disposed on an axis substantially parallel to the surface of an object (1) the distance to which is to be measured;
 - magnetic flux guiding means including at least two magnetically conductive magnetic flux guiding members (3; 4; 21; 23) magnetically coupled to said magnetic flux generating means (2; 22) and arranged in the vicinity of said object (1), said magnetic flux guiding means having an end at least adjacent said object (1) and an end remote from said object (1);
 - said magnetic flux generating means being arranged to provide a first magnetic field passing through said object (1) and a second magnetic field which is directed away from the object (1) and which does not pass through said object (1), said magnetic flux guiding means guiding said first and second magnetic fields in two directions which are mutually opposed by substantially 180°;
 - an outer magnetically conductive member (15; 23; 25) surrounding said magnetic flux generating means and at least one of said magnetic flux guiding members to shield said sensor against environmental electric fields, said at least one magnetic flux guiding member being an integral uninterrupted elongated member; and
 - a single magnetic field measuring means (5) located in said second magnetic field and in an air gap positioned close to the end of the magnetic flux guiding means which is located remote from said object (1) so as to substantially not be influenced by heat generated in the vicinity of said object, said first and second magnetic fields varying in mutually inverse relationship as a function of variation in the distance between said object and said sensor;
- said permanent magnet being slideably mounted between said at least two magnetic flux guiding members, whereby the position of said permanent magnet relative to said magnetic flux guiding members determines the measuring sensitivity of the sensor.

1. A magnetometer instrumentation for an array of magnetometer assemblies, each having a magnetometer detector and a compensation coil comprising:
 - a signal processing circuit for each said assembly and including a signal processing channel for processing the detector output signal;
 - said signal processing channel including first and second amplifier means;
 - said first amplifier means being operatively connected to receive said detector output signal and including means for changing the gain of said first amplifier means;
 - said second amplifier means being operatively connected to receive (i) the output signal of said first amplifier means and (ii) a digital input signal and being operative to modify said first amplifier signal as a function of said digital input signal;
 - first digital memory means for providing said digital input signal and having a plurality of addressable storage locations;
 - first means for addressing specific memory locations in said first digital memory means to provide specific ones of said digital input signals in accordance with a particular desired gain range of said signal processing channel; and
 - circuit means for supplying said compensation coil with a current to create a magnetic field in opposition with the earth's magnetic field at the assembly location so as to null said detector.

4,229,698

TUNING INDICATOR

James A. Scharfe, Jr., 1960 La France, South Pasadena, Calif. 91030

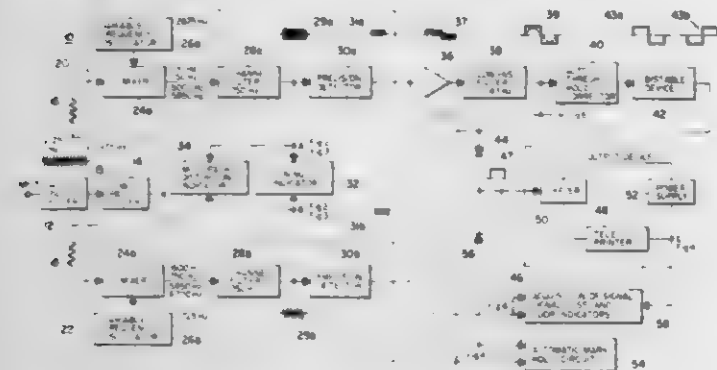
Filed Mar. 26, 1979, Ser. No. 24,264
Int. Cl. H04B 1/16

U.S. Cl. 375-88

49 Claims

1. An indicator for visually displaying a pulsating DC signal comprising:
 - means for selectively generating a plurality of separate output signals each in response to the pulsating DC signal, each output signal being generated so long as the magnitude of the pulsating DC signal is within one of a plurality

of corresponding segments of a predetermined range of signal level;
a plurality of discrete display devices which emit light when energized by an electrical signal, said plurality of display devices positioned in a row to form a meter; and
means for coupling each output signal from said generating means to a pair of said discrete display devices, each said



pair of display devices which are driven by the same output signal being positioned in said row substantially equidistant from the center of said row of display devices, said plurality of display devices being energized by said single generating means outwardly in opposite directions from the center of said hargraph meter in response to an increase in the magnitude of said pulsating DC signal.

4,229,699

MULTIPLE CLOCK SELECTION SYSTEM

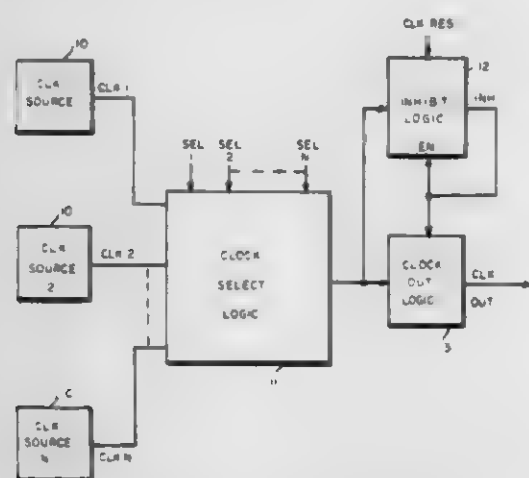
John M. Frissell, Dracut, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed May 22, 1978, Ser. No. 908,115

Int. Cl.² H03K 1/17

U.S. Cl. 328—63

10 Claims



1. Clock signal selection circuitry comprising means for providing at least two input clock signals, each having a different clock rate;
means for selecting one of said at least two input clock signals;
means responsive to said selected input clock signal for supplying an output clock signal corresponding to said selected input clock signal;
single delay means responsive to said selected input clock signal for inhibiting the supplying of said output clock signal for a selected time period after a different one of said at least two input clock signals has been selected by said selecting means;
said output clock signal supplying means being responsive to a newly selected input clock signal for supplying, after said selected time period, an output clock signal corresponding to said newly selected input clock signal.

4,229,700

BURIED REED, EXTRA-SHORT PULSE WIDTH PULSER

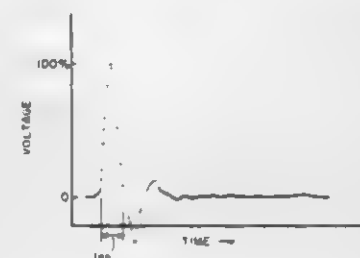
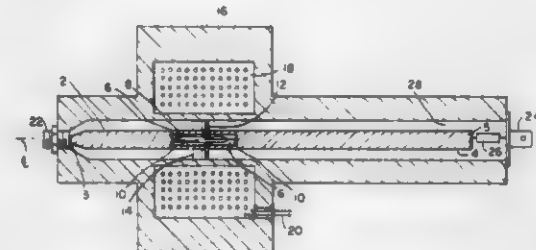
Hugh W. Greene, P.O. Box 8, Somerville, Ala. 35670

Filed Nov. 27, 1978, Ser. No. 964,003

Int. Cl.² H03K 5/06, 3/02, 3/45, 3/53

U.S. Cl. 328—65

9 Claims



1. A buried reed, short pulse width pulser comprising: first and second coaxial conductors disposed coaxially aligned with respective first ends thereof substantially adjacent, coupling means electrically connected between respective first ends of said coaxial conductors for controllably providing an electrical path therebetween, gating means coaxially disposed circumferentially around said coupling means and said conductor ends for controllably activating said coupling means, cylindrical housing means encompassing said gating means, coupling means, and coaxial conductors, said housing means being electrically conductive, first and second connecting means, said first connecting means being coupled to the second end of said second conductor for providing electrical coupling external to said housing, said second connecting means being coupled to the second end of said first conductor for providing output coupling from said conductor external to said housing.

4,229,701

PULSE ORDER RECOGNITION CIRCUIT

Malcolm S. Bourner, Maidstone, England, assignor to Kent County Council, Maidstone, England

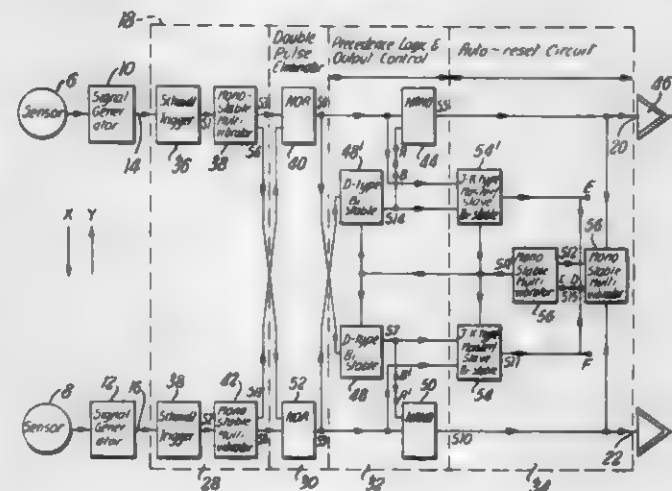
Filed Apr. 27, 1978, Ser. No. 901,012

Claims priority, application United Kingdom, Apr. 29, 1977, 18149/77

Int. Cl.² H03K 5/22

U.S. Cl. 328—10 G

11 Claims



1. A pulse order recognition circuit having a quiescent condition and comprising first and second inputs for receiving when the circuit is in said quiescent condition respective ones

of two electrical pulses displaced relative to each other in time, at least one output, means for providing at said output an output signal in response to the earlier of said pulses being received at said first input and the later of said pulses being received at said second input, means for preventing said output signal from being provided at said output in response to the earlier of said pulses being received at said second input and the later of said pulses being received at said first input, said providing means and said preventing means being adapted to so operate irrespective of whether the two pulses overlap in time, or not, and means responsive to said later pulse for resetting the circuit to said quiescent condition ready to receive a further two said pulses.

4,229,702

CIRCUIT FOR DETECTING THE RELATIVE OCCURRENCE OF ONE SIGNAL AMONG A PLURALITY OF SIGNALS

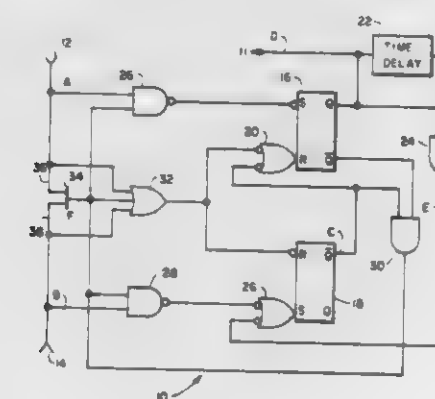
James W. Thomas, Jr., Valparaiso, Ind., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 27, 1978, Ser. No. 955,727

Int. Cl.² H03K 5/20, 5/159

U.S. Cl. 328—110

9 Claims



1. A circuit for detecting the relative time of occurrence of one signal among a plurality of signals and generating a control signal in response to the occurrence first of a first one of the signals, each signal being connected to at least one of a plurality of circuit inputs, the circuit includes means responsive to the level of said first signal for generating the control signal, means responsive to the occurrence of a second one of said plurality of signals for inhibiting the control signal generating means in response to the subsequent occurrence of said first signal, the improvement.

characterized by:

means responsive to the occurrence of either of said first or said second signals for providing a conductive path between said first signal input terminal and said second input terminal.

4,229,703

ZERO REFERENCE AND OFFSET COMPENSATION CIRCUIT

Raphael Bustin, Rockport, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 12, 1979, Ser. No. 11,358

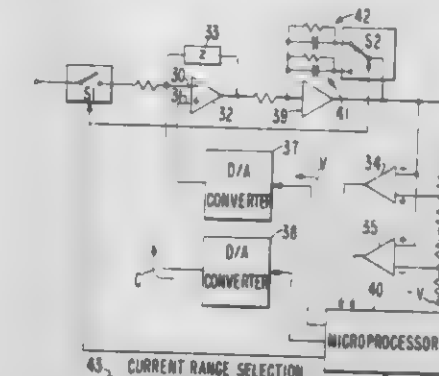
Int. Cl.² H03K 5/00

U.S. Cl. 328—162

6 Claims

1. A zero reference and offset compensation circuit adapted to compensate for zero reference and offset errors in an operational amplifier operating in the inverting mode, comprising: comparison means for comparing the zero condition signal output of said operational amplifier with representations of lower and upper boundary signal levels;
a pair of digital-to-analog converters having their respective analog outputs connected through appropriate scaling networks to the inverting input terminal and to the non-

inverting input terminal of said operational amplifier to correct, respectively, for current drift and voltage drift;
means connected to the output of said comparison means for generating an incremented digital signal whenever said comparison means indicates said zero condition signal output exceeds either boundary signal level, said incremented digital signal being incremented either up or down



to drive an associated D/A converter either up or down to bring said zero condition signal within the boundary which has been exceeded;

and means for selectively connecting the output of said means for generating an incremented digital signal with one or the other of said pair of digital-to-analog converters.

4,229,704

METHOD AND MEANS FOR MEASUREMENT AND CONTROL OF PULSED CHARGED BEAMS

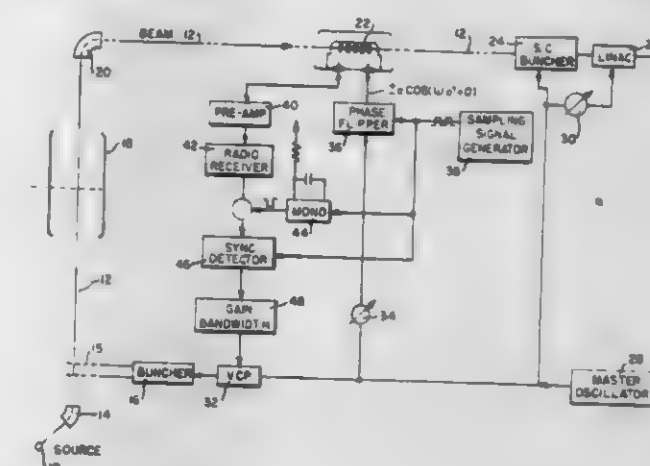
Robert N. Lewis, Clarendon Hills, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 15, 1979, Ser. No. 3,561

Int. Cl.² H01J 23/34

U.S. Cl. 328—233

2 Claims



1. A method of controlling time separation of adjacent bunches of charged particles in a beam of bunched charged particles comprising the steps of:

exciting a resonant circuit in response to passage nearby of a bunch of charged particles to generate a signal voltage;
generating an ac signal at a frequency near resonance of the resonant circuit;
reversing the phase of the ac signal periodically at a low frequency that is below the frequency of the ac signal to generate a phase-flipped reference signal;
adding the phase-flipped reference signal to the signal voltage to obtain a summed voltage;
amplifying the summed voltage;
detecting an envelope of the summed voltage at the low frequency;
gating the envelope to eliminate transient voltages generated by reversing the phase of the ac signal;
detecting the gated envelope to obtain an error signal pro-

portional to phase of the signal voltage with respect to phase of the reference signal, and
applying the error signal to control timing of bunches to maintain a phase of the phase-flipped reference signal, whereby the time separation of adjacent bunches is synchronized to the ac signal.

4,229,705

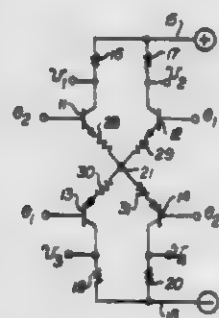
DIFFERENTIAL AMPLIFIERS

Susumu Takahashi, and Tadaaki Chikashige, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1978, Ser. No. 936,905

Claims priority, application Japan, Aug. 31, 1977, 52/103563
Int. Cl.² H03F 3/45, 3/04

U.S. Cl. 330—258

6 Claims



1. A transistor differential amplifier comprising:
first and second transistors of a first conductive type;
third and fourth transistors of a second conductive type, each of said first, second, third and fourth transistors having carrier extraction, carrier injection and control electrodes;
first means for coupling a first electric power supply line to a carrier extraction electrode of each of said first and second transistors;
second means for coupling a second electric power supply line to a carrier extraction electrode of each of said third and fourth transistors;
an electrical resistive coupling circuit connected between said carrier injection electrodes of said first, second, third and fourth transistors wherein the resistance of a circuit path between said first and second transistors is equal to the resistance of a circuit path between said third and fourth transistors, and the resistance of a circuit path between said first and third transistors is equal to the resistance of a circuit path connecting between said second and fourth transistors;
said resistive coupling circuit comprising four resistors connected to a common connection point and connected to said carrier injection electrodes of first to fourth transistors, respectively;
input signal applying circuits coupled with said control electrodes of said first, second, third and fourth transistors; and
at least two output terminals, with one of said output terminals connected to said carrier extraction electrode of said first transistor and the other of said output terminals connected to said carrier extraction electrode of one of said third and fourth transistors whereby a differential signal may be obtained at said output terminals with different DC levels.

4,229,706

AUDIO AMPLIFIER

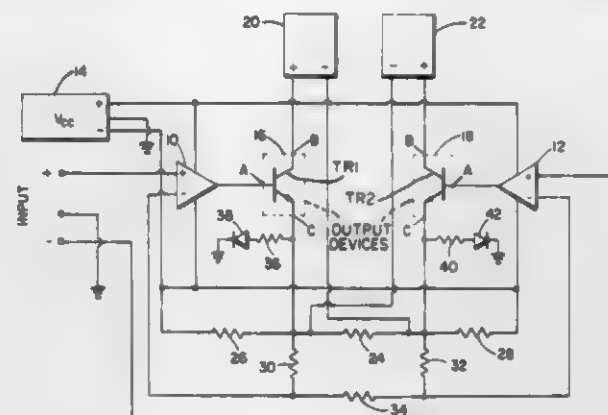
James W. Bongiorno, 1230 N. Horn St., North Hollywood, Calif. 90069

Filed Jan. 5, 1979, Ser. No. 1,225

Int. Cl.² H03F 3/26

U.S. Cl. 330—272

13 Claims



1. A solid-state amplifier, comprising:
driver means for amplifying an input signal, said driver means having two outputs;
first and second solid-state output devices having a control input terminal, a supply terminal and an output terminal, wherein the control input terminal of the first output device is connected to one output of said driver means and the control input terminal of the second output device is connected to the other output of said driver means;
driver power supply means for powering said driver means;
first floating independent supply means for powering said first output device;
second floating independent supply means for powering said second output device; and
passive control means for maintaining the quiescent value of the control input current to said first and second output devices at a constant, predetermined level despite temperature variations in the output devices.

4,229,707

AUTOMATIC GAIN CONTROL CIRCUIT

Hisashi Suganuma, Kawaguchi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

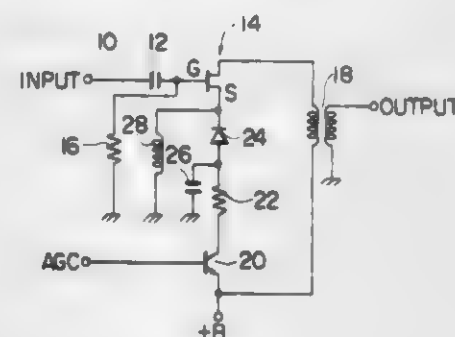
Filed Aug. 1, 1978, Ser. No. 930,116

Claims priority, application Japan, Aug. 1, 1977, 52-81552;
Aug. 10, 1977, 52-95814

Int. Cl.² H03F 3/16; H03G 3/30

U.S. Cl. 330—277

4 Claims



1. An automatic gain control circuit comprising:
(a) preamplifier means having a first active device responsive to a high frequency input signal for amplifying said high frequency input signal and for providing said amplified high frequency input signal as an output signal; and
(b) supply voltage means responsive to an automatic gain control signal for providing a supply voltage in accordance with said automatic gain control (AGC) signal to said first active device having a direct current component

substantially equal to the direct current component of the signal present on the input side of said first active device, said supply voltage means including an inductor connected between said supply voltage provided to said first active device and electric ground so that the direct current component of said supply voltage provided to said first active device is grounded.

4,229,708

X-RAY LASER

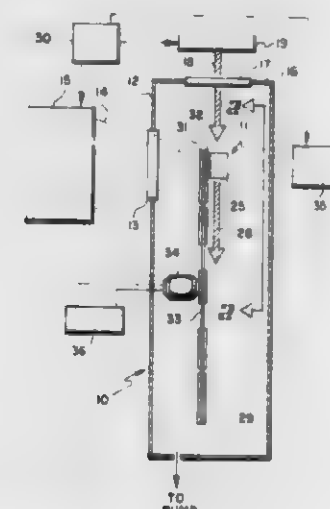
Siva A. Mani, Burlington; Howard A. Hyman, Belmont, and Jack D. Daugherty, Winchester, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Apr. 8, 1977, Ser. No. 785,902

Int. Cl.² H01S 3/22

U.S. Cl. 331—94.5 G

19 Claims



1. A laser comprising:
(a) a vacuum environment;
(b) a working region within said vacuum environment wherein a population inversion may be produced in an active medium;
(c) means for providing within said working region an active medium consisting substantially only of an atomic vapor, the constituents of which have the configuration $1s^2 2s$;
(d) means for photoionizing said active medium to selectively produce a population of ions in an excited $1s 2s$ metastable state; and
(e) laser means having a pumping laser beam directed into said working region effective to antistokes Raman pump said ions, said pumping laser beam producing traveling wave stimulation in said ions to cause said ions to emit photons at a wavelength λ and produce an output laser beam at said wavelength λ substantially only in the direction of said traveling wave stimulation.

4,229,709

LASER DEVICE

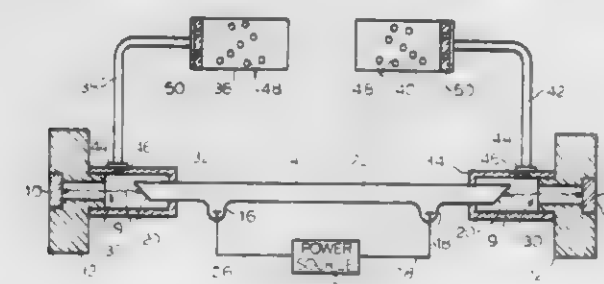
William H. McMahan, 1467 Penrose Dr., Salt Lake City, Utah 84122

Filed Jun. 12, 1978, Ser. No. 915,058

Int. Cl.² H01S 3/00

U.S. Cl. 331—94.5 T

8 Claims



1. In a laser of the type wherein the resonant cavity is char-

acterized by a gap-space between the gain medium and the optical mirror at each end of said cavity and wherein each said gap-space is enclosed by a gap-space chamber subject to fluctuating temperature, the improvement which comprises means for removing gaseous or vaporous contaminants including water vapor, organic vapors and ozone from the areas within a said gap-space chamber with said means being comprised of: at least one canister having its interior interconnected by a tubular conduit with the interior of at least one said gap-space chamber and wherein said canister contains solid particles of a chemical agent capable of removing the gaseous or vaporous contaminants present in the said gap-space chamber, said agent comprising a material having the properties of a molecular sieve adapted to trap and hold said contaminants and with said canister and conduit being adapted to effect in conjunction with said fluctuating chamber temperature a pumping action and flow of said contaminants from said chamber to said canister.

4,229,710

WAVELENGTH SELECTOR FOR TUNABLE LASER

Itamar Shoshan, 7 Maimon St., Haifa, Israel (32584)

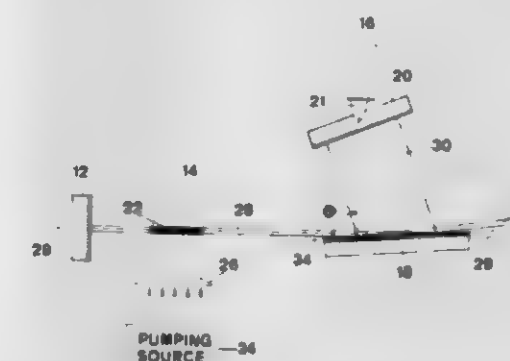
Filed Jul. 3, 1978, Ser. No. 921,830

Claims priority, application United Kingdom, Oct. 21, 1977, 44006/77

Int. Cl.² H01S 3/08

U.S. Cl. 331—94.5 C

15 Claims



1. A wavelength selector comprising:
a diffraction grating disposed at a grazing angle to an incident beam of light; and
first reflecting means disposed so as to receive a dispersive beam of light diffracted from said grating at a non-zero diffraction order along a reflection path angled with respect to said incident beam of light and to reflect it back to said grating in an opposite direction along said reflection path, thereby to provide a second diffraction of said incident beam.

4,229,711

METAL DIHALIDE PHOTODISSOCIATION CYCLIC LASER

Erhard J. Schimitschek; John E. Celto, both of San Diego, and John A. Trias, La Mesa, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1978, Ser. No. 936,289

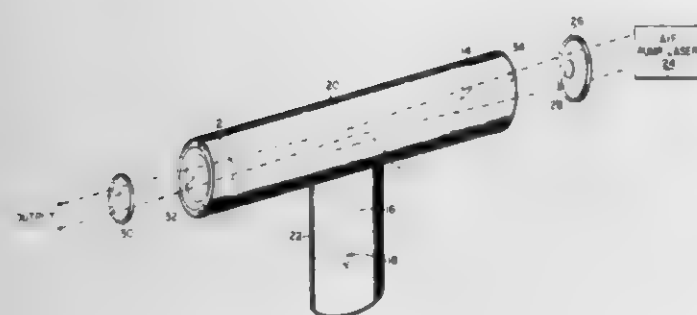
Int. Cl.² H01S 3/091, 3/14

U.S. Cl. 331—94.5 P

15 Claims

1. A pulsed, wavelength tunable, laser producing emitted laser energy by photon impact dissociation of metal dihalides and their cyclic recombination comprising:
a sealed enclosure;
a metal dihalide selected from sub-group II-B of the periodic table of elements and contained within said enclosure;
a source of photon energy disposed in proximity to said sealed enclosure for focusing a photon energy beam on said metal dihalide and for causing dissociation of said metal dihalide;

a heat source for maintaining said metal dihalide in a vaporized state;
an inert buffer gas contained within said sealed enclosure;
and
a reflective surface and a partially reflective surface disposed in alignment with the principal axis of said sealed enclosure



sure for producing optical resonance of the emitted laser energy;
such that following said dissociation of said metal dihalide by said photon energy beam, cyclic recombination of said dissociated metal dihalide occurs to produce said metal dihalide.

4,229,712

MATRIX NOZZLE FOR MIXING LASERS

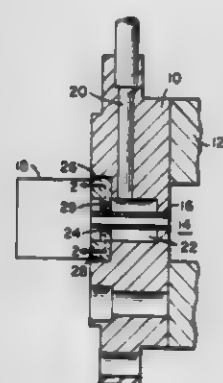
Richard A. Meinzer, Rocky Hill, Conn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 16, 1978, Ser. No. 961,334

Int. Cl.¹ H01S 3/02

U.S. Cl. 331-94.5 D

5 Claims



1. A matrix nozzle for mixing lasers comprising a body having a plenum chamber therein, a housing connected to said body on one side, an optical cavity connected on the other side of said housing, a tube mounted in said housing and having a passage therein, said passage interconnecting said plenum chamber and said optical cavity for directly supplying a pri-

mary gas stream from said plenum chamber to said optical cavity, flow passage means in said housing and surrounding said tube, and an opening in said housing defining a passage surrounding said tube and connecting said flow passage means to said optical cavity, said opening having an axis that is symmetrical with the axis of said tube passage for supplying a secondary gas stream to the optical cavity.

4,229,713

STOICHIOMETRIC RARE EARTH LASER MATERIAL AND LASER BASED THEREON

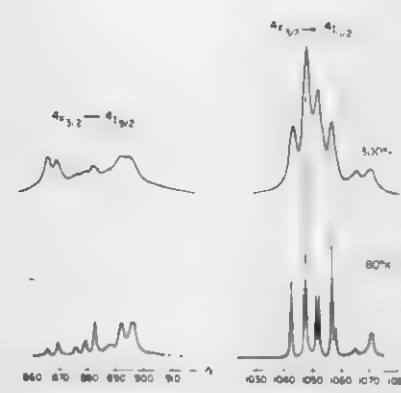
Bill C. McCollum, Marlborough; Alexander Lempicki, Waltham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 14, 1978, Ser. No. 970,054

Int. Cl.³ H01S 3/14

U.S. Cl. 331-94.5

15 Claims



1. An active laser medium comprising a stoichiometric single crystal compound of the general formula:



where M is a metal selected from the group consisting of lanthanum, cerium, and gadolinium.

4,229,714

RF CONNECTOR ASSEMBLY WITH PROVISION FOR LOW FREQUENCY ISOLATION AND RFI REDUCTION

John P. Yu, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,780

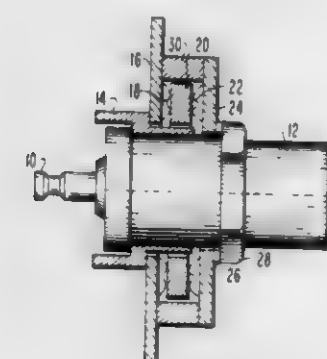
Int. Cl.³ H03H 7/04, 7/14; H04B 3/28

U.S. Cl. 333-12

7 Claims

1. An RF coaxial connector assembly having an inner conductor and an outer conductor and adapted for coupling signals from an RF source to a load, said assembly comprising:

a transformer having a primary and a secondary winding, said transformer primary winding being adapted for connection to said RF source and said secondary winding being adapted for connection between the inner conductor and the outer conductor of said connector assembly; and



means providing a capacitance electrically connected between said primary and said secondary windings, said capacitance means comprising a washer-like capacitor fitted over the outer conductor of said connector assembly.

to the first input terminal of the second modulator, and the first input terminal of the first modulator and the second input terminals of the first and second modulators are capable of receiving a carrier signal and a modulating signal, respectively;

the phase modulator further comprising
an adding means comprising a first and second input terminal coupled to the first input terminal of the first modulator and the output terminal of the second modulator, said adding means being capable of generating an output signal corresponding to the sum of the input signals;

a quadrature coupler capable of combining in quadrature the output signals from the adding means and the first modulator to provide a phase modulated output signal; and

a first, second and third weighting means capable of introducing a separate predetermined weighting factor to the signal being applied to the first and second input terminal of the adding means and the output signal from the first modulator being applied to the quadrature coupler, respectively.

4,229,716

AMPLITUDE EQUALIZER CIRCUIT

Israel Levi, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 16, 1979, Ser. No. 39,257

Int. Cl.¹ H04B 3/04

U.S. Cl. 333-28 R

4 Claims

4,229,715

PRECISION PHASE MODULATORS UTILIZING CASCADED AMPLITUDE MODULATORS

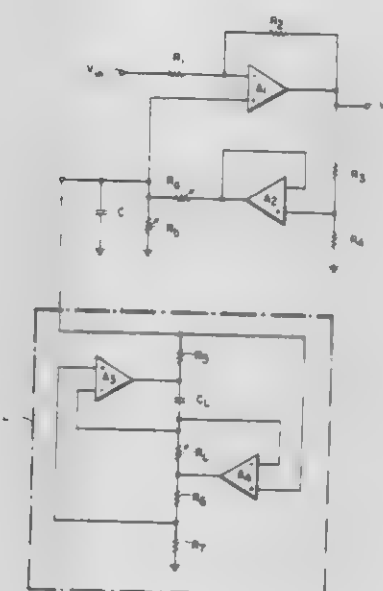
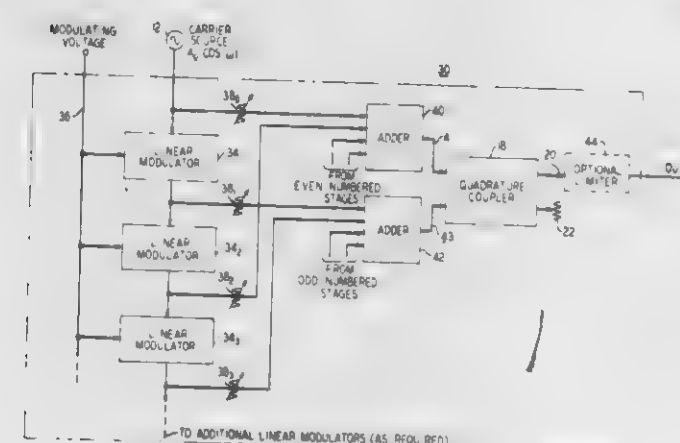
Paul S. Henry, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1978, Ser. No. 969,775

Int. Cl.¹ H03C 3/38

U.S. Cl. 332-18

2 Claims



1. A phase modulator comprising
a first and a second linear suppressed-carrier amplitude modulator, each modulator comprising a first and a second input terminal and an output terminal characterized in that
the first and second modulators are connected in cascade with the output terminal of the first modulator connected

1. A variable amplitude equalizer circuit comprising:
first and second operational amplifiers each having an inverting input, a non-inverting input and an output;
a signal input and signal output coupled respectively to the inverting input and output of the first operational amplifier;
a resistive divider network coupling the output of the first operational amplifier to the non-inverting input of the second operational amplifier;

a first resistor connected in series between the output of the second amplifier and the non-inverting input of the first amplifier for controlling the amplitude of the equalizer circuit;

a second resistor connected in shunt across the non-inverting input of the first amplifier to control the bandwidth of the equalizer circuit;

a parallel resonant network connected in shunt across the non-inverting input of the first amplifier to control the center frequency of the equalizer circuit;

whereby varying the parallel resonant network, the shunt connected resistor and the serially connected resistor in that order enables unidirectional functional tuning of the equalizer circuit.

4,229,717

VOLTAGE CONTROLLED SLOW WAVE TRANSMISSION LINE

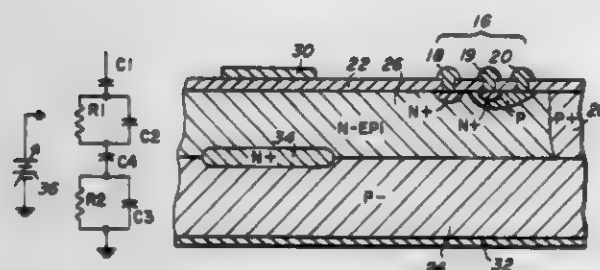
Kenneth T. Krone, Coral Springs, and Quirino Balzano, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1978, Ser. No. 944,117

Int. Cl.³ H01P 1/18, 3/08; H01L 29/92; H01P 1/16

U.S. Cl. 333—156

3 Claims



1. A slow wave transmission line in an integrated circuit comprising in combination:

- a first layer of semiconductor material of a first type;
- a second layer of semiconductor material of a second type, grown on a first surface of said first semiconductor layer;
- an insulating layer formed on the surface of said second semiconductor layer;
- a metallized strip formed on the surface on said insulating layer;
- a heavily doped buried layer of the second type diffused in an area extending laterally under the area of the metallized strip and between the first and second layers of semiconductor material;
- a metallized layer formed on a second surface of said first semiconductor layer;
- means for providing a biasing control voltage coupled between the second layer of semiconductor material and the metallized layer on the second surface of the first semiconductor material; and
- conductive means coupled to said metallized strip and said metallized layer for making connections thereto.

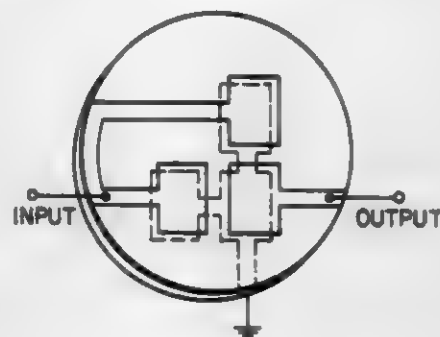
4,229,718
WIDE-BANDWIDTH MONOLITHIC CRYSTAL FILTER
Aristotelis S. Arvanitis, Addison; Thomas W. Re, Wheaton, and Stanley Malinowski, Park Ridge, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 19, 1979, Ser. No. 31,644

Int. Cl.³ H03H 9/04, 9/26, 9/32

U.S. Cl. 333—192

8 Claims



1. A wide-bandwidth two-pole monolithic crystal filter having a predetermined center frequency, comprising:

a piezoelectric substrate having first and second flat, parallel surfaces, the substrate having a predetermined fundamental frequency that is greater than the filter center frequency;

output electrode means disposed on the first surface of the substrate, the output electrode means tuned to the filter center frequency;

a plurality of input electrode means, each input electrode means predeterminedly disposed on the first surface along the crystallographic axes of the substrate in orthogonal relationship with respect to the output electrode means, each input electrode means being tuned to the filter center frequency; and

common electrode means disposed on the second surface of the substrate in opposing relationship with said input and output electrode means.

4,229,719
CONTACTOR

Helmut Lemmer, Marienheide-Kalsbach, Fed. Rep. of Germany, assignor to Starkstrom Schaltgerätefabriken Sprindler Deissler GmbH & Co. KG, Marienheide-Roth, Fed. Rep. of Germany

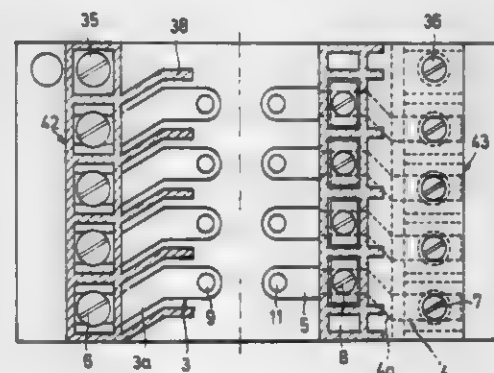
Filed Jul. 20, 1978, Ser. No. 926,339

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732963

Int. Cl.³ H01H 67/02

U.S. Cl. 335—132

7 Claims



1. A contactor, comprising, in combination, a housing having a mounting side for mounting the housing on a switchboard

or the like, the housing being provided with a housing cover section at the side thereof remote from the mounting side, a contact system and a magnet system accommodated within the housing, the magnet system activating the contact system, the contact system comprising contact bars with contact terminal screws and stationary contact pieces and jointly activatable bridging members having movable contact pieces cooperating with the stationary contact pieces to form relay switches, the contact terminal screws comprising at least a first row of contact terminal screws located in a first plane parallel to and spaced a first distance from the mounting side of the housing and a second row of contact terminal screws located in a second plane parallel to and spaced a different second distance from the mounting side of the housing, the contact terminal screws of the first row, when viewed in the direction normal to the first and second planes, being offset relative to the contact terminal screws of the second row in the direction in which the first and second rows extend.

4,229,720

DEFLECTION UNIT FOR A COLOR TELEVISION DISPLAY TUBE

Werner A. L. Heijnenmans; Joris A. M. Nieuwendijk, and Nicolaas G. Vink, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

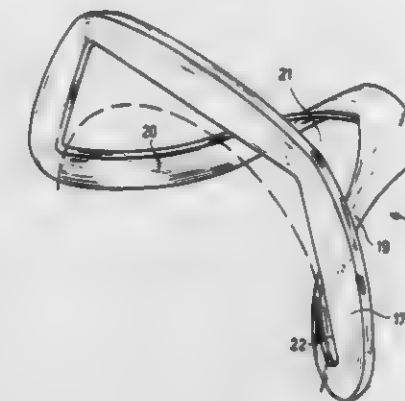
Filed Jan. 10, 1979, Ser. No. 3,431

Claims priority, application Netherlands, Jan. 18, 1978, 7800585

Int. Cl.³ H01F 5/00

U.S. Cl. 335—213

4 Claims



1. A deflection unit for a color television display tube having a neck portion a display screen and a partly flared outer surface portion therebetween, said deflection unit comprising a field deflection coil, a line deflection coil, each of said deflection coils being formed by a pair of diametrically oppositely positioned coil portions, and an annular core of a magnetically permeable material surrounding at least the line deflection coil, each line deflection coil portion being in the form of a saddle coil and having conductors wound to produce first and second side members, a front end and a rear end which together define a window, said front end being in the form of a flange, the front ends of the coil portions of said line deflection coil, when said deflection unit is mounted on a display tube, being closer to the display screen than are the rear ends, with said front ends substantially surrounding a part of the flared portion of the display tube and the plane of the flange-like front ends being at an angle to the longitudinal axis of said display tube, and said first and second side members extending mainly parallel to the tube axis characterized in that the front ends of the line deflection coil portions together define a path whose length is greater than the length of a path around the flared portion of the display tube at which said front ends are intended to surround.

4,229,721

WELDING TRANSFORMER WITH DROOPING VOLTAGE-CURRENT CHARACTERISTICS

Wiktor Koloczek; Edward Dobaj, and Tadeusz Zaremba, all of Gliwice, Poland, assignors to Instytut Spawalnictwa, Gliwice, Poland

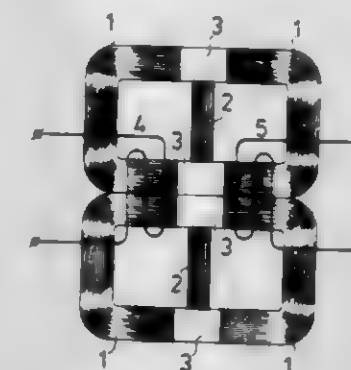
Filed Nov. 15, 1978, Ser. No. 961,034

Claims priority, application Poland, Nov. 30, 1977, 202582

Int. Cl.³ H01F 21/06

U.S. Cl. 336—133

8 Claims



1. A welding transformer with drooping voltage-current characteristic adapted for supplying welding arc, comprising a magnetic core wound from transformer plate, said core having spaced legs defining a window, primary and secondary windings wound on said legs of said core in spaced relation, and a magnetic flux shunt movably inserted into said window between the primary and secondary coils, and spacing blocks in said legs at the junction of said shunt with said legs to reduce eddy currents within the magnetic core.

4,229,722

WIRE COIL ASSEMBLY FOR AN ELECTRICAL CIRCUIT

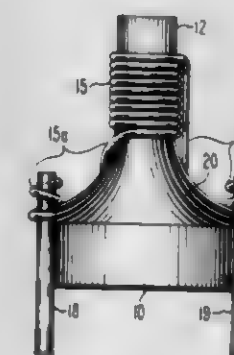
Perry C. Olsen, Noblesville, Ind., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 909,038, May 24, 1978, abandoned. This application Jul. 2, 1979, Ser. No. 54,094

Int. Cl.³ H01F 15/10

U.S. Cl. 336—192

2 Claims



1. A wire coil assembly comprising: a body form about which a wire having end portions is wound; mounting means secured to an end of said body form for providing a mounting base for said body form; fillet means disposed at the juncture of said body form and said mounting means, and overlying a surface of said mounting means which contacts said body form, said fillet means having a plurality of exposed grooves extending in different directions from respective points at the juncture of said mounting means and said body form toward the periphery of said mounting means; a plurality of terminals secured to said mounting means; and wherein said end portions of said wire are routed from respective points in the vicinity of the juncture of said fillet means

and said body form, through respective ones of said grooves, to respective ones of said terminals.

4,229,723

DIAPHRAGM HAVING A PATTERN OF REDUCED THICKNESS IN A HIGH VOLTAGE, CIRCUIT-INTERRUPTING DEVICE

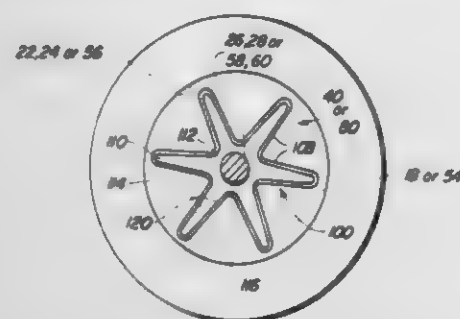
Thomas J. Tobin, Northbrook, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Apr. 4, 1979, Ser. No. 26,842

Int. Cl.¹ H01H 33/915

U.S. Cl. 337-275

24 Claims



24. An improved circuit-interrupting device of the type wherein an arcing rod is moved away from a stationary contact following an overcurrent through the device and pressurized dielectric fluid is directed from a port of a container at an elongating arc formed between the moving arcing rod and the contact; the device having a diaphragm normally contacted by the arcing rod for normally closing the port and for restraining arcing rod movement; wherein the improvement comprises: the diaphragm having a variable cross section so dimensioned that the current density is the same in all portions thereof.

4,229,724

VEHICLE POSITION INDICATOR WITH SELECTABLE POSITION ALARM MEANS

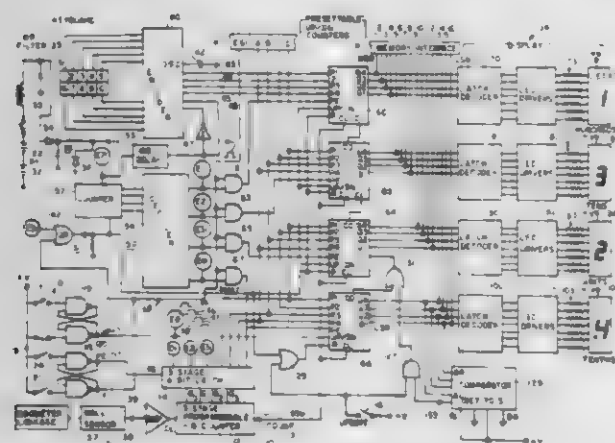
Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Aug. 4, 1977, Ser. No. 821,779

Int. Cl.² G08G 21/00; G06F 15/20

U.S. Cl. 340-23

24 Claims



22. A vehicle mile marker display and alarm system comprising:

circuit means for providing data corresponding to the current mile marker position of a vehicle as it travels along a roadway;

memory circuit means and vehicle operator actuated digital keyboard coupled to said memory circuit means permitting the vehicle operator to enter data corresponding to at least one upcoming mile marker location toward which the vehicle is travelling;

comparator circuit means coupled to said circuit means and to said memory circuit means for providing an output signal when the data corresponding to the current mile

marker location has a predetermined relationship to the data in said memory circuit means; and alarm means coupled to said comparator circuit means for alerting the vehicle operator in response to the receipt of said output signal.

4,229,725

WIND SHEAR WARNING SYSTEM FOR AIRCRAFT

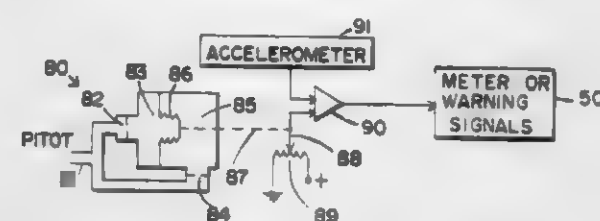
Richard J. Reilly, 1759 Venus, St. Paul, Minn. 55112

Continuation of Ser. No. 662,557, Mar. 1, 1976, abandoned. This application May 12, 1978, Ser. No. 905,377

Int. Cl.² G08B 21/00; G01C 23/00

U.S. Cl. 340-27 SS

4 Claims



1. A system to detect a wind shear condition encountered by an aircraft having a pitot pressure sensing tube for measuring air speed comprising in combination:

pitot pressure sensing means;

pressure change measuring means connected to said pressure sensing means operable to produce a signal proportional to the rate of change of pressure in said pitot tube;

a reference means calibrated to represent the maximum acceleration capability of said aircraft; and

indicating means connected to said pressure change measuring means and said reference means so as to display the signal therefrom relative to the reference means.

4,229,726

PORTABLE ELECTRONIC TRAFFIC EVENT RECORDER

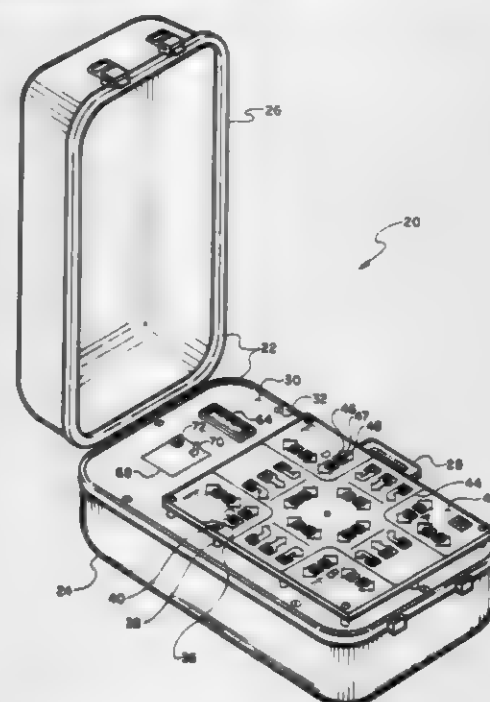
Willis R. Deaton, Huntersville; John I. Clark, Jr., Newell, and Harold M. Raynor, Charlotte, all of N.C., assignors to City of Charlotte, Charlotte, N.C.

Filed Nov. 24, 1978, Ser. No. 963,462

Int. Cl.² H03K 21/32; G06F 15/48; G08G 1/00

U.S. Cl. 340-38 R

5 Claims



1. Apparatus for recording traffic events occurring at a variety of vehicular traffic passageways comprising:

(a) a portable housing unit;

(b) electronic data processing means contained in said housing unit;

4,229,728

TIRE PRESSURE MONITOR

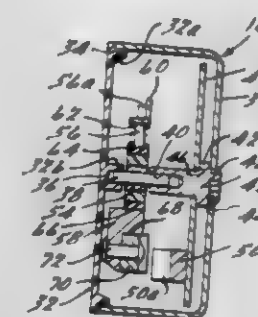
Joseph A. Tremba, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 20, 1978, Ser. No. 970,953

Int. Cl.² B60C 23/04; H02K 21/08

U.S. Cl. 340-58

8 Claims



(c) a plurality of display boards, each such display board displaying different vehicular traffic patterns and symbolic traffic events thereon, and each such display board being selectively and alternately mountable on said portable housing unit;

(d) a plurality of manually operated signaling means disposed at predetermined locations, said locations being selected to cause at least some of said plurality of signaling means to coincide with particular ones of said symbolic traffic events displayed on each said display board when it is mounted on said housing unit, and each said signaling means generating an electrical signal each time it is operated;

(e) electrical means interconnecting said plurality of signaling means and said electronic data processing means; and (f) said electronic data processing means including an electronic memory means for receiving and storing said electrical signals generated by said signaling means.

4,229,727

VEHICLE SPEED ALARM

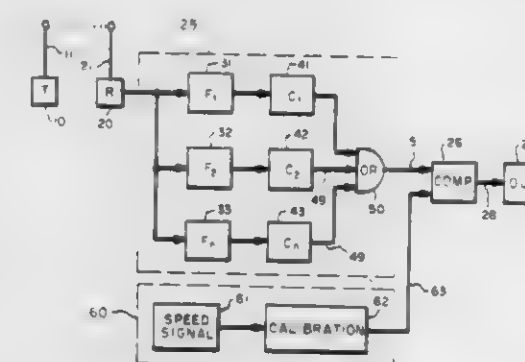
Robert Gilhooley, 1311 Lincoln Ave. South, Highland Park, Ill. 60035

Filed Apr. 23, 1979, Ser. No. 32,532

Int. Cl.² B60Q 1/54

U.S. Cl. 340-53

2 Claims



1. A vehicle speed alarm for use in a vehicle comprising: receiver means for receiving any of a plurality of transmitted signals originating outside said vehicle, each of said transmitted signals containing individualized frequency information corresponding to a different pre-established maximum vehicular speed;

a plurality of filter means, each being tuned to a different frequency, for producing a filtered signal upon receipt of a transmitted signal having frequency information corresponding to the frequency to which said filter means are tuned;

converter means, coupled to said plurality of filter means for producing a predetermined strength signal upon receipt of said filtered signal;

OR gate means coupled to said converter means, for producing a reference signal upon receipt of any predetermined strength signal from said converter means;

generator means for producing a signal corresponding to the instantaneous speed of said vehicle;

calibration means, coupled to said generator means, for producing a speed signal compatible, for comparison purposes, with said reference signal; and

comparator means having a first input coupled to said OR gate means for receiving said reference signal, and a second input coupled to said calibration means for receiving said speed signal; said comparator producing a control signal only when said speed signal exceeds said reference signal, whereby the presence of said control signal indicates that the instantaneous speed of said vehicle exceeds said pre-established maximum vehicular speed.

4,229,729

ANALOG TO DIGITAL CONVERTER UTILIZING A QUANTIZER NETWORK

Don C. Devendorf, and Eugene Baskervitch, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 650,820, Jan. 20, 1976, abandoned. This application May 19, 1978, Ser. No. 907,478

Int. Cl.² H03K 13/175

U.S. Cl. 340-347 AD

11 Claims

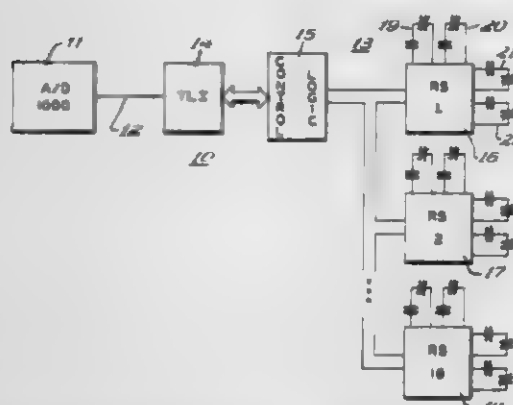
1. An analog to digital converter for quantizing an analog input signal into 2^N quantization levels of increasing significance, adjacent levels being separated by a quantization differential, said converter converting each level into an output code comprising:

a first resistive network for providing said 2^N quantization levels;

a second resistive network coupled to receive said analog input signal;

2^N differential amplifiers, each coupled to said first and second resistive networks, each responsive to said analog input signal for comparing said input signal with one of said 2^N levels to provide a binary output signal for the levels that are exceeded, said differential amplifiers form-

first means for supplying first and second randomly generated signals to said communication line, second means for providing a third signal based upon said first and second randomly generated signals, and third means for comparing said third signal to a fourth signal and for providing an output signal when said third and fourth signals are not in agreement; and,



transponder means connected to said communication line having

fourth means for comparing said first and second randomly generated signal to produce said fourth signal, fifth means connected to said fourth means for supplying said fourth signal to said communication line.

4,229,735

RIP DETECTOR SIGNAL DETECTION CIRCUIT

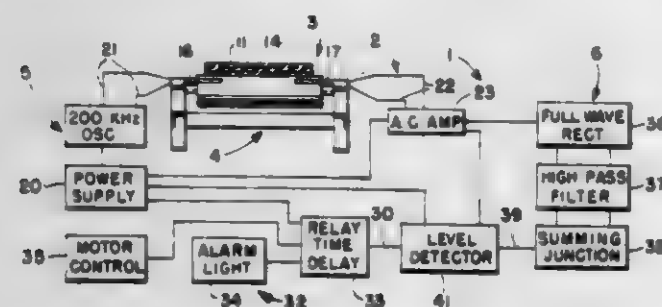
Robert J. Houck, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 23, 1978, Ser. No. 871,664

Int. Cl.² B65G 43/02; G08B 21/00; H04B 1/10

U.S. Cl. 340-676

28 Claims



1. A detection circuit for a conveyor belt rip detector system or the like in which an AC signal is pulse modulated to carry characteristic information indicative of the integrity condition of such conveyor belt or the like, comprising means for producing from such AC signal a substantially DC signal normally at a substantially constant magnitude and carrying such characteristic information as substantially DC pulses, reference means for developing a reference DC signal, comparator means for comparing such substantially DC pulses and such DC reference signal to produce an output indicative of the relative magnitudes thereof as an indication of the integrity of such conveyor belt, and bias means for altering such reference signal to an altered reference signal in proportion to a parameter of such AC signal.

4,229,736 SEMICONDUCTOR DISPLAY APPARATUS

Henri Rougeot, Paris, France, assignor to Thomson-CSF, Paris, France

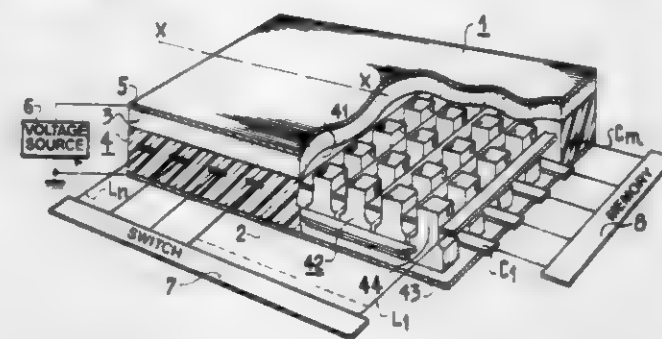
Filed Aug. 8, 1977, Ser. No. 822,637

Claims priority, application France, Aug. 10, 1976, 76 24389

Int. Cl.² G06F 3/14

U.S. Cl. 340-782

7 Claims



1. An analog apparatus for displaying an electrical signal in which the brightness of each part of the display is proportional to the amplitude of the signal comprising a matrix of semiconductor parts, arranged in lines and columns for memorization and amplification of said analog electrical signal; two command grids joined to said matrix, having electrodes parallel respectively to said lines and to said columns, and in contact with the said semiconductor parts; actuation means connected to the first of said grid, which has its electrodes parallel to the said matrix; memory means for receiving said electrical signal, connected in parallel to the electrodes of the second of said grids and for transferring its contents to an activated line of said matrix, the semiconductor parts of the said activated line would then each store a second analog electrical signal proportional to the amplitude of said analog electrical signal and for controlling a flow of current therethrough in accordance with said store signal; display layer means adjacent one extremity of said semiconductor parts for displaying the electrical signals stored by the said semiconductor parts when a current flows through said parts and; means for applying a potential across the display layer and the extremities of each of the semiconductor parts, whereby causing a current flowing through each semiconductor part and the adjacent display layer to be proportional to the second electrical signal stored in the part, and the intensity of the display is proportional to that current.

4,229,737

RANGING SYSTEM AND METHOD FOR DETERMINING THE RANGE OF A VEHICLE FROM A PLURALITY OF REFERENCE POINTS

Carl A. Heldwein, San Diego; Richard N. Jekel, La Mesa; Stephen R. Sampson, and John T. Zupan, both of San Diego, all of Calif., assignors to Cubic Western Data, San Diego, Calif.

Filed Feb. 6, 1978, Ser. No. 875,421

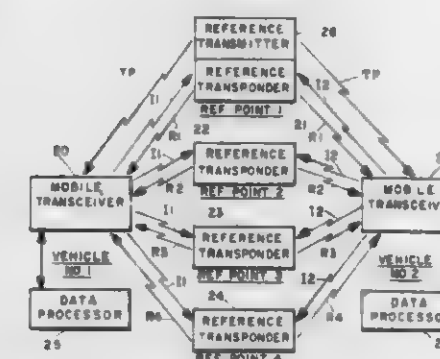
Int. Cl.² G01S 13/87

U.S. Cl. 343-6 R

23 Claims

1. A system for determining the range from a vehicle to a plurality of reference points, comprising
a reference transmitter for transmitting a timing pulse;
a mobile transceiver located on the vehicle for receiving the timing pulse and for transmitting a ranging interrogation signal pulse modulated on an RF carrier having a given frequency in response to the timing pulse, and for receiving ranging response signal pulses modulated on RF carriers having the given frequency;
a plurality of reference transponders, one of which is located at each of the plurality of reference points for receiving the timing pulse and the ranging interrogation signal pulse on a carrier having the given frequency and for responding thereto by transmitting a ranging response signal pulse on a carrier having the given frequency during an interval

that is discrete from the intervals during which ranging response signal pulses are transmitted from the other reference transponders, wherein within a given time slot in relation to the timing pulse, a single ranging interrogation signal pulse is followed by a sequence of the discrete ranging response signal pulses; and



processing means located on the vehicle for determining and processing the phase of the received ranging response signal pulses in relation to the transmitted ranging interrogation signal pulse to determine the range from the vehicle to the individual reference points.

4,229,738

EARLY-LATE GATE

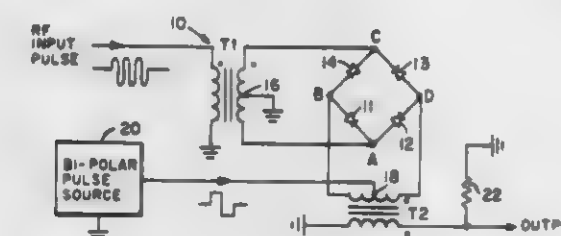
Robert T. Campbell, Acton, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 19, 1979, Ser. No. 4,636

Int. Cl.² G01S 13/70

U.S. Cl. 343-7.3

4 Claims



1. In a range tracking system of a radar a method for providing early-late gating of radio frequency input pulses with a double-balanced mixer and comprising the steps of:
applying bi-polar pulses to the center tap of a first transformer of said double-balanced mixer,
selectively gating a diode bridge of said double-balanced mixer on and off in response to said bi-polar pulses, and
directing radio frequency input pulses to a second transformer of said mixer for coupling through said bridge and first transformer to provide an output signal in accordance with the on-off state of said diode bridge.

4,229,739

SPREAD BEAM COMPUTATIONAL HARDWARE FOR DIGITAL BEAM CONTROLLERS

Winthrop W. Smith, Maitland, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 29, 1978, Ser. No. 964,565

Int. Cl.² H04B 7/00

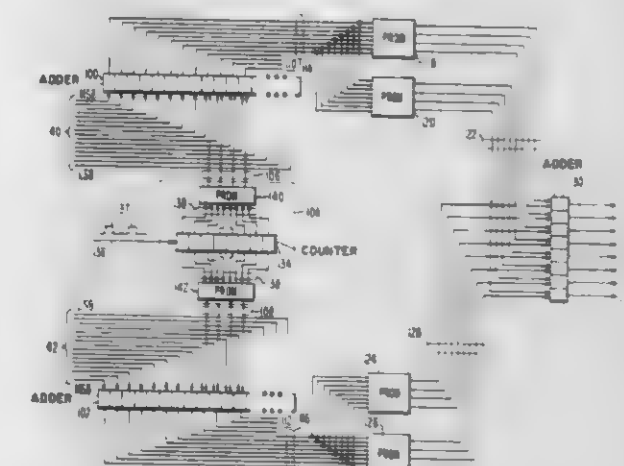
U.S. Cl. 343-100 SA

10 Claims

1. In a spread beam computational section of a digital beam controller for an electronically controlled phased array radar system including a linear computational portion for computing a plurality of groups of a predetermined number of intermediate phase command digital words corresponding to a desired spread beam radar pattern, each intermediate phase command digital word having a predetermined primary number of bits and a predetermined residue number of bits; and a non-linear computational portion for computing a spread beam phase

command digital word from each computed group of said intermediate phase command digital words which have been digitally rounded off, the improvement of an apparatus for digitally rounding off each computed group of intermediate phase command digital words comprising:

a random number generator for randomly generating digital words sized in relation to the predetermined residue number of bits of said computed intermediate phase command digital words;



means for digitally adding a digital word randomly generated from said random number generator to the predetermined residue bits of said computed intermediate phase command digital words in each computed group to generate a corresponding plurality of groups of resultant digital words; and

means for truncating the resultant digital words of each group to said predetermined primary number of bits and for providing each group of truncated resultant digital words to said non-linear computational portion of said beam spreading computational section.

4,229,740

RADIO FREQUENCY SIGNAL DIRECTION FINDING SYSTEMS

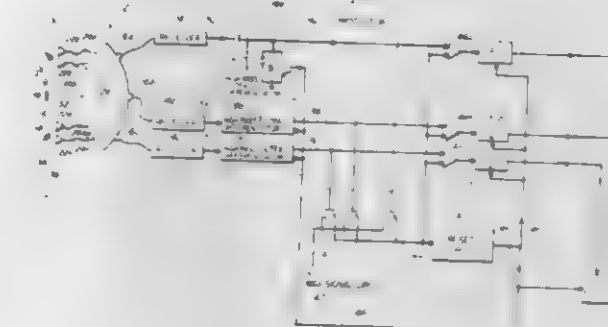
Nicholas J. Krilanovich, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 4, 1978, Ser. No. 966,172

Int. Cl.² G01S 5/02

U.S. Cl. 343-113 R

6 Claims



1. A radio frequency signal direction finding system comprising:

(a) a multi-beam antenna having a plurality of feed ports, each one in such feed ports receiving radio frequency energy from a received radio frequency signal, the levels of such energy received at the feed ports being associated with the angle of arrival of the received signal;
(b) receiver means, coupled to the plurality of feed ports, for producing a plurality of output signals, each one of the plurality of output signals having a level related to the

level of radio frequency energy received at a corresponding one of the plurality of feed ports;

(c) a plurality of high pass filter means, each one fed by a corresponding one of the output signals produced by the receiver means, for differentiating the output signal fed thereto producing a pulse in response to, and having a level related to, a change in level of the output signal fed thereto; and,

(d) means, responsive to the pulse produced by each one of the plurality of high pass filter means, for determining the angle of arrival of the received signal in accordance with the relative levels of pulses produced by each one of the plurality of high pass filter means.

4,229,741

TWO-WAY COMMUNICATIONS SYSTEM AND METHOD OF SYNCHRONIZING

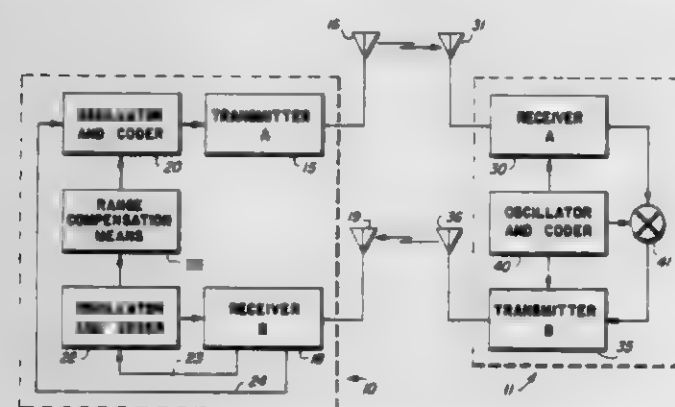
Edward J. Groth, Jr., Scottsdale, Ariz., assignor to Motorola, Inc.

Filed Mar. 12, 1979, Ser. No. 19,378

Int. Cl.² H04J 5/14

U.S. Cl. 370-24

10 Claims



1. A two-way communications system including a control unit and a remote unit, said system comprising:

(a) a transmitter and a receiver in the remote unit with means for sensing errors in frequency between signals received by said remote unit receiver and the operating frequency of said remote unit receiver, and coupling the sensed errors to the remote unit transmitter for transmission thereby;

(b) a receiver in the control unit approximately tuned to receive transmissions from said remote unit transmitter and including variable local oscillator means connected to said control unit receiver in a closed loop for synchronizing the operating frequency of the control unit receiver with the frequency of the remote unit transmitter; and

(c) a transmitter in the control unit having variable local oscillator means coupled thereto and connected to receive transmitted error signals from said control unit receiver for controlling the frequency of operation of said remote unit transmitter so that signals transmitted to said remote unit receiver by said control unit transmitter will be synchronized with the remote unit local oscillator means.

4,229,742

CUBICLE QUAD ANTENNA

Orlando Rotunda, 2132 - 21st Ave., Greeley, Colo. 80631

Filed Jun. 18, 1979, Ser. No. 49,130

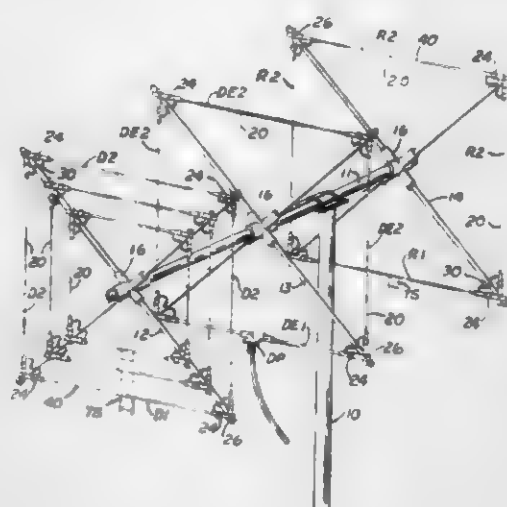
Int. Cl.² H01Q 1/16, 7/00

U.S. Cl. 343-742

3 Claims

1. In combination with a Cubicle Quad antenna having a vertical mast, a horizontal boom secured to the mast, a four spoke radial spider arm secured to the boom, and a cubicle wavelength antenna wire element extending from spider arm to spider arm in a box-like configuration, with each one-fourth portion of said wire element between spider arms being enclosed within a semirigid non-conductive material rod and with each end of said wire extending outwardly of its rod

adjacent its rod end, the combination therewith of a ball-and-socket joint connection means in longitudinal rod extension at each end of each rod, with one of either the ball or the socket of said means being secured to a spider arm and the other thereof being secured to the adjacent end of the rod, and a



loosely spanned braided circuit wire connection extending between each adjacent wire end at each corner of the cubicle element, with said ball-and-socket connecting means comprising pivot means for permitting free pivotal movement of the antenna element when caused by wind.

4,229,743

MULTIPLE BAND, MULTIPLE RESONANT FREQUENCY ANTENNA

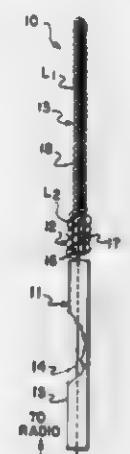
Thang Vo, Columbia, and John R. Lewis, Jr., Newberry, both of S.C., assignors to Shakespeare Company, Columbia, S.C.

Filed Sep. 22, 1978, Ser. No. 945,055

Int. Cl.² H01Q 1/32, 9/27

U.S. Cl. 343-749

6 Claims



1. A self-tuned antenna for use with at least one radio comprising:

a linear radiator connected to the radio;
a spiral radiator; and,

a network connected between said linear radiator and said spiral radiator for optimizing antenna impedance variations with frequency, said network including a first coil and at least one other conductor electrically connected to said first coil at only one end of said first coil, said conductor entwined and in operative association with said first coil throughout the entire range of frequencies of interest, resulting in the antenna having a plurality of natural resonant frequencies, each of said natural resonant frequencies occurring in separate operating bands throughout said range of frequencies of interest.

4,229,744

DIRECTIONAL ANNULAR SLOT ANTENNA

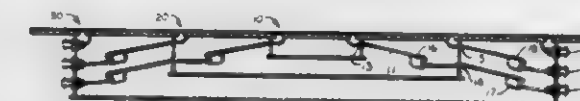
Arthur Luedtke, Marietta, and William F. Bentley, Smyrna, both of Ga., assignors to The United States of America as represented by the Field Operations Bureau of the Federal Communications Commission, Washington, D.C.

Filed Mar. 14, 1979, Ser. No. 20,296

Int. Cl.² H01Q 13/12

U.S. Cl. 343-769

5 Claims



1. A concentric broadband antenna array with regular polyangular directional patterns, in which the sum of all patterns produce an omni directional pattern, this antenna comprising: a support means for a plane conductive sheet with a plurality of concentric narrow annular slots forming an inner conductive sheet and an outer conductive sheet around each slot, having a continuous metallic wall attached to said outer conducting sheet adjacent to each said slot, forming an array of cylinders and being closed at the bottom end of each with a metallic sheet, forming an independent cavity beneath each said annular slot; a feed means, which are symmetrically attached across each said annular slot to carry an RF signal from each respective directional antenna pick up pattern to a coaxial cable for carrying an RF signal to an output means in outer most said wall, said coaxial cable shield is grounded at each said slot wall, and has an isolation means along said coaxial cable between each succeeding said cavity wall.

4,229,745

EDGE SLOTTED WAVEGUIDE ANTENNA ARRAY WITH SELECTABLE RADIATION DIRECTION

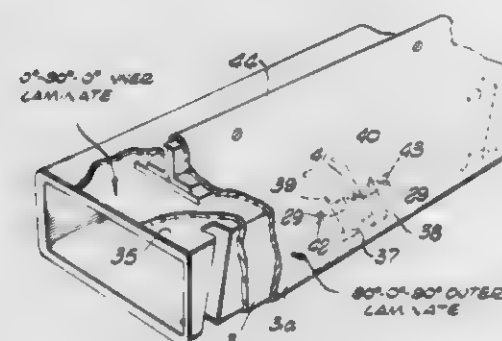
Bradford E. Kruger, Woodland Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,399

Int. Cl.² H01Q 13/10

U.S. Cl. 343-771

10 Claims



1. An antenna array comprising at least one slotted-waveguide having a first predetermined slot pattern in a first of its narrow walls and a second predetermined pattern of slots in its second narrow wall comprising:

means comprising first and second sets of radio frequency diodes, said first set comprising at least one diode for each slot in said first slot pattern and said second set comprising at least one diode for each slot in said second slot pattern; and means for controlling said diodes alternatively into conduction and non-conduction by sets such that said slots in said first pattern are effectively alternatively closed and open while said slots of said other set are contemporaneously alternatively opened and closed, respectively, said diodes each being placed across a corresponding slot so as to provide substantially a radio frequency short-circuit

during its conductive condition and substantially no effect on said slot in said non-conductive conditions.

4,229,746

LOOP COUPLER COMMUTATING FEED FOR SCANNING A CIRCULAR ARRAY ANTENNA

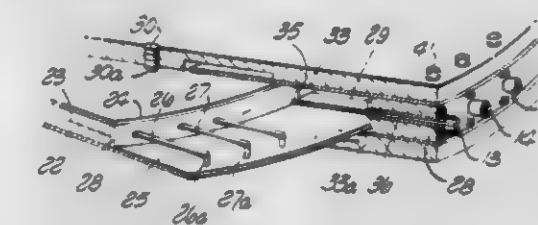
Gregory G. Charlton, Reseda, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,850

Int. Cl.² H01Q 3/24, 3/32

U.S. Cl. 343-854

12 Claims



1. A loop coupler commutating feed for a scanning circular array, comprising:

a stator assembly having a conductive body member in the general shape of an annulus having a cavity therein such that the cross-section of said annulus is generally U-shaped opening radially inward, said stator assembly also comprising a plurality of circumferentially distributed stator loops and each radially elongated within said cavity, each of said stator loops having its elongated leg current paths in a radially extending plane normal to the plane of said annulus;

a rotor assembly including a generally circular, conductive disc rotatable about its center, said center being substantially coincident with the geometric center of said annulus, said rotor assembly also including a plurality of rotor loops circumferentially spaced about an arcuate portion of the radially outward surface of said disc, said rotor loops also being radially elongated and each having its elongated leg current paths radial and in radially extending plane normal to the plane of said disc, the plane of said disc being substantially parallel to a plane through said annulus normal to the axis through the center of said annulus, said disc extending radially into said cavity such that said rotor loops couple to an arc of said stator loops in juxtaposition with said rotor loops about said arcuate portion of said disc, said coupling effecting energy transfer between said rotor and stator loops to a changing arcuate portion of said stator loops as said disc is rotated;

first means for providing RF drive to said rotor loops according to a predetermined phase distribution pattern from a stationary first RF port;

and second means comprising a plurality of stationary second ports, each of said second ports being discretely connected to a corresponding one of said stator loops.

4,229,747

WATER BASED PERMANENT JET PRINTING INK AND METHOD OF USE

Ki-Sup Hwang, Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 1, 1979, Ser. No. 44,738

Int. Cl.² G01D 15/18

U.S. Cl. 346-1.1

10 Claims

1. A jet drop printing process utilizing a water base permanent jet printing ink comprising:

a. ejecting at high speed from an orifice or orifices an ink composition comprising: a water or solvent soluble dye-stuff present in the ink in the range of from about 1 percent to about 10 percent by weight, an alkylene glycol ether as a solvent for said dye-stuff and having from 8 to 12 carbon atoms and present in the ink in the range from about 1

percent to about 6 percent by weight, an ethoxylated higher alcohol amine-amide phosphate as a bridging agent for the dyestuff and glycol ether rendering them soluble in water and present in the ink in the range from about 1 percent to about 6 percent by weight, a hydroxylated aliphatic amide as a humectant and present in the ink in the range from about 10 percent to about 40 percent by weight, and the balance water, so that said ink composition issuing from said orifice or orifices breaks into droplets;

- b. passing said stream of droplets through a charge ring to thereby differentially charge said droplets;
- c. selectively deflecting said differentially charged droplets and directing them toward a substrate positioned so as to receive at least a portion of said differentially charged droplets; and
- d. depositing at least a portion of said droplets in a pattern on said substrate, whereby a permanent, fast drying, smudge and light resistant printed pattern is formed on said substrate.

4,229,748

JET DROP PRINTER

Ted F. Williams, Union, and Charles L. Cha, Xenia, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio
Filed Feb. 16, 1979, Ser. No. 12,590

Int. Cl.³ G01D 15/18

U.S. Cl. 346—75

15 Claims



1. An ink jet printer for depositing a plurality of drops of print fluid on a moving print medium, comprising:
fluid reservoir means defining an elongated fluid receiving reservoir for receiving a print fluid,
orifice plate means extending the length of said fluid receiving reservoir and communicating therewith, said orifice plate means defining a plurality of orifices from which filaments of said print fluid emerge, said orifices being positioned along an orifice line on said orifice plate means which is non-parallel with respect to the center line of said orifice plate means, all of said orifices along said orifice line being positioned to one side of said center line for decreased point-to-point variation in stimulation amplitude, said center line extending in the direction of elongation of said fluid receiving reservoir,
stimulator means for inducing bending waves in said orifice plate means which travel along said orifice plate means in a direction parallel to said center line, said waves imparting mechanical stimulation to each of said fluid filaments to cause break up of said filaments into drop streams,
means for selectively charging said drops in said drop streams,
catcher means, positioned adjacent said drop streams, for catching drops in said drop streams, and
means for deflecting charged drops in said drop streams such that selected ones of said drops are directed to strike said print medium and others of said drops are directed to said catcher means to be caught thereby.

4,229,749

INK DROP COMPENSATION BASED ON PRINT-DATA BLOCKS

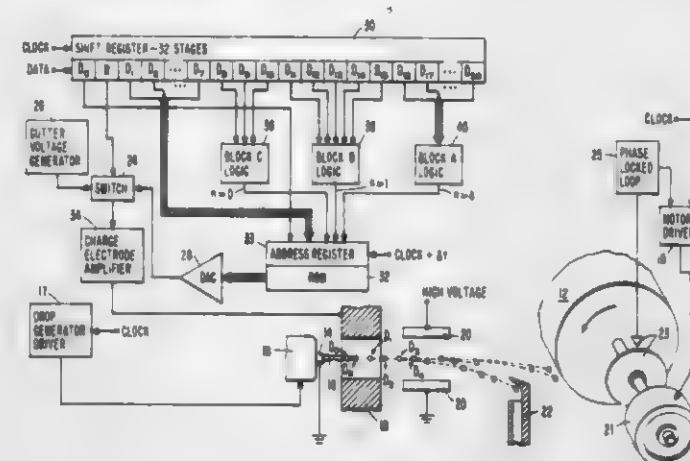
Gary L. Fillmore, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,813

Int. Cl.³ G01D 15/18

U.S. Cl. 346—75

17 Claims



1. In an ink jet printer having a charge electrode and a deflection electrode to control the flight of a reference ink drop to a print media in accordance with print data for the drop, apparatus for correcting the flight path of the ink drop to reduce print position error comprising:

print data buffering means for storing the print data pattern of drops in the ink stream with the reference drop;
memory means for storing a compensation value for each of a plurality of print data patterns in the ink stream, said compensation value, when applied to said printer, compensating the flight path of the reference ink drop based upon the data pattern of the ink drops in the ink stream with the reference drops;
logic means responsive to said buffering means for grouping a portion of the print data into a portion of the address for said memory means;
addressing means responsive to said buffering means and to said logic means for addressing said memory means based upon a portion of the print data directly and the remaining portion of the print data indirectly as grouped by said logic means;
said memory means in response to said addressing means reading the compensation value to said ink jet printer so that said printer can correct the flight path of the reference ink drop.

4,229,750

INFORMATION OUTPUT UNIT

Naoto Kawamura, Inagi; Kiyoshi Iizuka, Kawasaki; Nobuyoshi Tanaka, Yokohama; Tetsuro Kuwayama, Yokohama; Kazuya Matsumoto, Yokohama, and Takeshi Goshima, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 25, 1978, Ser. No. 927,923

Claims priority, application Japan, Aug. 4, 1977, 52/93800

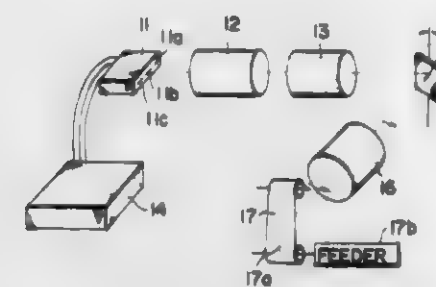
Int. Cl.³ G01D 9/42

U.S. Cl. 346—107 R

20 Claims

1. An information output unit comprising:
m informatic recording means for recording information on a recording medium, said means being disposed in parallel with each other such that their recording positions are spaced from each other by a distance, between centers, of n elements in a predetermined direction;
shifting means for shifting the relative position between said recording positions of said information recording means and said recording medium at least in the predetermined direction by a distance of l elements during a predetermined time, said l being smaller than the number m of information recording means; and
information output means for rearranging the series se-

quence of input signals applied thereto and for applying said rearranged signals to θ of said information recording means at substantially the same time;



wherein m/θ is a natural number, $i \leq m/\theta$ where i is a natural number to which m/θ is prime and mn/θ and $ni+1$ are prime to each other.

4,229,751

INK JET HEAD

Masayoshi Tamai, Ebina, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 30, 1979, Ser. No. 34,835

Claims priority, application Japan, May 4, 1978, 53-53492

Int. Cl.³ G01D 15/18

U.S. Cl. 346—140 R

3 Claims



1. In an ink jet head including a front plate formed with a nozzle, a resilient plate disposed in spaced relation with the front plate so as to form an ink chamber therebetween, an electrostrictive element laminated to the side of the resilient plate which faces away from said front plate for deforming the resilient plate into the ink chamber, the ink jet head characterized in that the resilient plate is fixed to a base member, the base member being disposed at the outer periphery of the electrostrictive element and further characterized in that said ink chamber is formed by a spacer positioned between the front plate and the resilient plate.

4,229,752

VIRTUAL PHASE CHARGE TRANSFER DEVICE

Jaroslav Hynccek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 16, 1978, Ser. No. 906,385

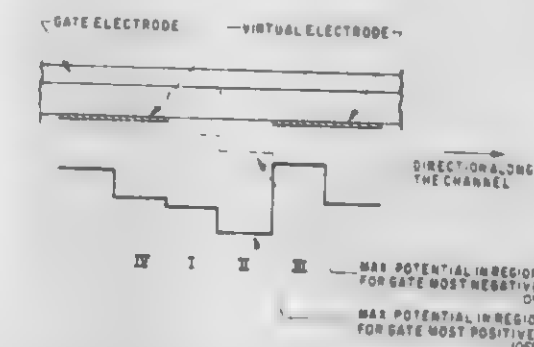
Int. Cl.³ H01L 29/78; G11C 19/28

U.S. Cl. 357—24

5 Claims

1. A charge-transfer device comprising a semiconductor substrate of one conductivity type including therein a buried channel of opposite conductivity type for charge-transfer, an insulating layer on said substrate over said channel, a conductive layer covering said insulating layer for receiving charge transfer clock pulses, said conductive layer being separated from said channel by said insulating layer, said substrate further including input means for inputting charge packets to one end of said channel and output means for extracting charge packets from the opposite end of said channel, and wherein along the length of said channel first storage and transfer regions constituting a clocked phase are separated by second storage and transfer regions constituting a virtual phase, a

transfer region being located between the input means and a corresponding storage region, said virtual phase including a surface layer of said one conductivity type, having a higher impurity concentration than the substrate; a first layer of immobile charge comprised of dopant impurities of opposite



conductivity type from that of said substrate included in said second transfer and storage regions, having a higher concentration in the storage regions than in the transfer regions; a second layer of immobile charge comprised of dopant impurities of said one conductivity type in only the transfer regions of said clocked phase.

4,229,753

VOLTAGE COMPENSATION OF TEMPERATURE COEFFICIENT OF RESISTANCE IN AN INTEGRATED CIRCUIT RESISTOR

David L. Bergeron, Manassas, and Geoffrey B. Stephens, Catlett, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1977, Ser. No. 825,759

Int. Cl.² H01L 23/56, 29/66, 27/02

U.S. Cl. 357—28

4 Claims



1. A temperature compensated integrated circuit semiconductor resistor, comprising:
a first resistor region of a second conductivity type formed in an epitaxial semiconductor layer of a first conductivity type, having electrical contacts on opposing ends, one of said contacts being connected to a reference potential;
said resistor having a positive voltage coefficient of resistance and a predetermined temperature coefficient;
temperature sensing means formed in proximity to said resistor on said integrated circuit, having a voltage output terminal connected to said epitaxial layer and a second terminal connected to said reference potential;
said temperature sensing means having, on said voltage output terminal, a voltage output characteristic with respect to temperature which varies inversely with respect to the temperature coefficient of resistance of said resistor; variations in the resistance of the resistor due to temperature changes being compensated for by corresponding changes in the voltage of the epitaxial layer induced by said temperature sensing means.

4,229,754

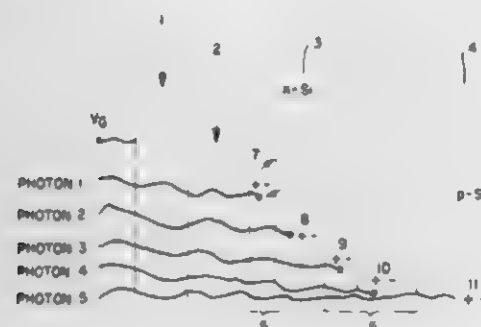
CCD IMAGER WITH MULTI-SPECTRAL CAPABILITY Barry T. French, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 26, 1978, Ser. No. 972,761

Int. Cl.¹ H01L 27/14, 29/78

U.S. Cl. 357—30

7 Claims



1. A multi-spectral charge coupled device for generating a plurality of signals representative of the spectral content of impinging photons comprising:

a plurality of adjacent semiconductor layers arranged to generate a hole and an electron for each of said impinging photons;

first and second collector means arranged to respectively collect said generated holes and electrons and respectively generate first and second signals representative of said generated holes and electrons;

said semiconductor layers having a predetermined optical absorption coefficient and said first and second collector means arranged such that said first and second signals are indicative of the spectral content of the impinging photons.

4,229,755

FABRICATION OF VERY LARGE SCALE INTEGRATED CIRCUITS CONTAINING N-CHANNEL SILICON GATE NONVOLATILE MEMORY ELEMENTS

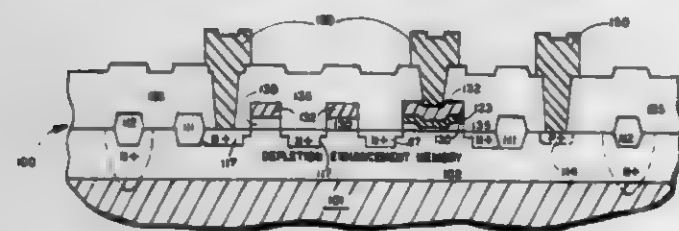
Frank Z. Custode, Norco, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 15, 1978, Ser. No. 934,223

Int. Cl.¹ H01L 27/02

U.S. Cl. 357—41

10 Claims



1. A method of fabricating a very large scale integrated circuit chip comprising at least one silicon gate protected drain-source nonvolatile memory element having a channel of a first conductivity and a two layer silicon dioxide/silicon nitride gate insulator; said chip further comprising at least one insulated gate transistor having single layer silicon dioxide gate insulator; said method comprising the steps of:

(a) providing a silicon wafer including an epitaxial layer of silicon having a second conductivity opposite from said first conductivity;

(b) selectively doping a plurality of regions of the epitaxial layer with dopant ions to change the conductivity of the plurality of regions to the second conductivity, the plurality of regions including at least one first region and one second region respectively corresponding to the source and drain regions of each of at least one protected drain-source non-volatile memory element and at least one third region and one fourth region respectively corresponding

to the source and drain regions of each of at least one insulated gate transistor;

(c) selectively applying a first thick layer of silicon dioxide on the surface of the epitaxial layer in a region corresponding to the fixed threshold gate region of each of at least one protected drain-source nonvolatile memory elements;

(d) selectively applying a second thin layer of silicon dioxide on the surface of the epitaxial layer in a region corresponding to the variable threshold gate region of each of at least one protected drain-source nonvolatile memory elements;

(e) selectively applying a layer of silicon nitride on the surface of the first and second silicon dioxide layers;

(f) selectively applying a third thick layer of silicon dioxide on the surface of the epitaxial layer in a region corresponding to the gate region of each of at least one insulated gate transistor;

(g) selectively applying a layer of one of either polycrystalline silicon or metal on at least the surface of the third silicon dioxide layer and the silicon nitride layer;

(h) selectively applying an insulated passivation layer on the surface of the very large scale integrated circuit chip, the passivation layer including windows therein, whereby regions of the chip to be electrically connected to are left exposed;

(i) selectively applying a conductive layer to the surface of the passivation layer and the exposed regions of the chip, wherein electrical connections to the chip are formed.

6. A very large scale integrated circuit chip fabricated in accordance with the method of claims 1, or 2, or 3, or 4, or 5.

4,229,756

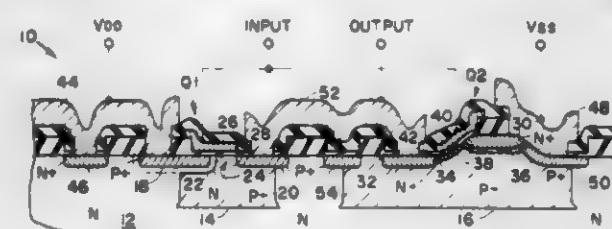
ULTRA HIGH SPEED COMPLEMENTARY MOS DEVICE Shuichi Sato, Beaverton; Tadanori Yamaguchi, Hillsboro, and Jack Sachitano, Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 9, 1979, Ser. No. 10,665

Int. Cl.² H01L 27/02

U.S. Cl. 357—42

8 Claims



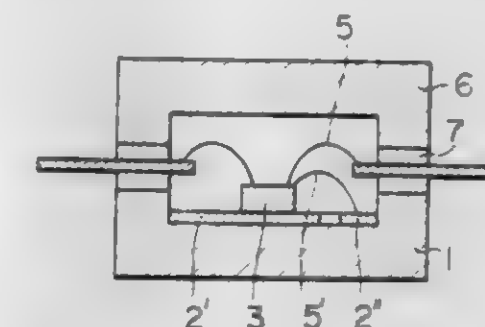
1. A semiconductor device comprising:

a body of semiconductor material having a major surface, a first metal-insulator-semiconductor field effect transistor formed at a location on said body surface that includes portions of relatively higher and lower elevation joined by a slope,

said first transistor including a first region of one conductivity type extending into said body at said higher surface portion and a second region of the same conductivity extending into said body at said lower surface portion, said first and second regions constituting source and drain regions for the transistor, a thin, implanted layer of the opposite conductivity type having an edge that terminates along said slope intermediate said first and second regions and constitutes a channel region for the transistor, an insulating layer disposed over a portion of the body surface including the region thereof extending between said first and second regions, first and second electrodes making electrical contact with said source and drain regions, respectively, and a gate electrode disposed on said insulating layer overlying at least the portion of said slope that includes said channel region,

a second, complementary metal-insulator-semiconductor field effect transistor of the double diffusion self-aligned type formed at an adjacent location on said body surface, the surface at said adjacent location being substantially planar,

said second transistor including a spaced-apart pair of regions of said opposite conductivity type extending into said body and constituting source and drain regions for said second transistor, a narrow region of said one conductivity type surrounding said source region, said narrow region being formed by a double diffusion technique and constituting a channel region for said second transistor, an insulating layer disposed over a portion of the body surface including the region thereof extending between said source and drain regions, third and fourth electrodes making electrical contact with said source and drain regions, respectively, and a gate electrode disposed on said insulating layer overlying at least the portion of said surface that includes said channel region.



metal a good bondability to aluminum metal, which is electrically connected to the first metal layer.

4,229,759

SIGNAL DETECTOR INCLUDING SAMPLE AND HOLD CIRCUIT WITH REDUCED OFFSET ERROR

Leopold A. Harwood, Bridgewater, and Erwin J. Wittmann, North Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 23, 1978, Ser. No. 936,039

Int. Cl.¹ H04N 9/46; H03B 3/04

U.S. Cl. 358—19

13 Claims

4,229,757 **PROGRAMMABLE MEMORY CELL HAVING SEMICONDUCTOR DIODES**

Michel Moussie, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

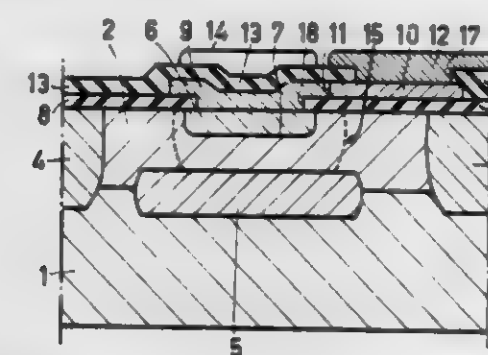
Filed Aug. 31, 1978, Ser. No. 938,470

Claims priority, application France, Sep. 30, 1977, 77 29476

Int. Cl.² H01L 27/10; G11C 17/06; H01L 29/04

U.S. Cl. 357—59

9 Claims

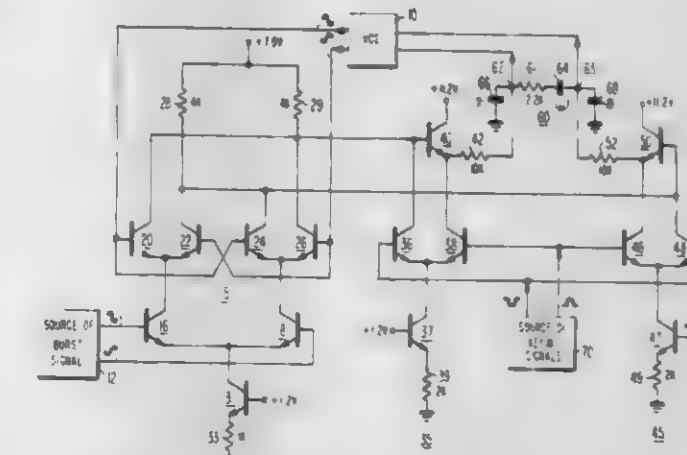


1. An integrated electrically programmable read only memory cell having at least a first and a second semiconductor diode in back-to-back arrangement, wherein

the first diode is a planar p-n junction formed between two superimposed regions of which at least one region extends on the upper part of a semiconductor body and the second diode is a lateral p-n junction formed between two coplanar zones of a thin layer of a semiconductor material extending locally on an insulating layer covering the said body;

a window in the said insulating layer ensuring a contact between the said layer and the said body at the site of the first diode, and

the area of the junction of the second diode being substantially smaller than that of the first.



1. Electronic signal processing apparatus comprising: a first source of reference signals; a second source of signals having a characteristic which is to be sampled; signal multiplier means having first and second inputs coupled to said first and second sources, respectively, and first and second oppositely phased outputs; a filter network; and first and second sampling means operable concurrently between relatively low and high impedance states for alternately coupling said filter network to said multiplier outputs for sampling said characteristic of said signals and for uncoupling said filter network from said multiplier outputs so as to store information representative of said characteristic at said filter network.

4,229,758

PACKAGE FOR SEMICONDUCTOR DEVICES WITH FIRST AND SECOND METAL LAYERS ON THE SUBSTRATE OF SAID PACKAGE

Kouji Ikari, Kokubu, Japan, assignor to Kyoto Ceramic Co., Ltd., Kyoto, Japan

Filed Feb. 9, 1979, Ser. No. 10,623

Claims priority, application Japan, Feb. 8, 1978, 53/15340[U]

Int. Cl.¹ H01L 23/02, 23/12, 39/02

U.S. Cl. 357—74

3 Claims

1. A package for sealing an MOS type semiconductor ele-

4,229,760

VIDEO GAMES COLOR SYNTHESIS

Leslie R. Avery, Leefdaal, Belgium, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,742

Claims priority, application United Kingdom, May 26, 1978, 22986/78

Int. Cl.² H04N 9/535

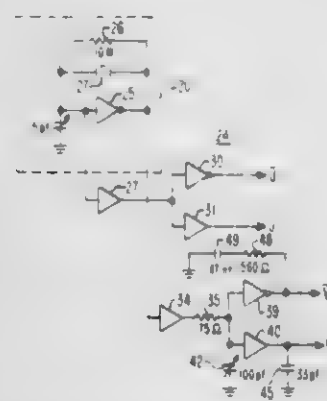
U.S. Cl. 358—22

16 Claims

1. Apparatus for synthesizing color signal information corresponding to color information contained in the chrominance

component of a color television signal also including a color synchronizing chrominance subcarrier component, said apparatus comprising:

- means for providing an alternating signal at the frequency of said subcarrier signal;
- means for deriving a plurality of reference signals in quadrature phase relationship from said alternating signal;
- a plurality of signal gating means each having a signal input terminal, a signal output terminal, and a switching control input terminal;
- a plurality of means for combining said reference signals at respective input terminals of said gating means in selected proportions, said combining means each including first and second signal weighting impedances for coupling said



reference signals to said input terminals, the values of said impedances of each combining means being mutually proportioned such that a combined signal developed at each said input terminal exhibits a resultant phase corresponding to the phase of a desired color signal;

control means coupled to said switching control input terminals of said gating means for selectively enabling said gating means to conduct respective combined color representative signals from said input terminal to said output terminal at appropriate times during intervals corresponding to line scanning display intervals of said television signal; and

utilization means for receiving signals conducted by said gating means.

4,229,761

ILLUSION TRANSMITTER

Valerie L. Thomas, 7001 Kingfisher Ln., Lanham, Md. 20801
Continuation-in-part of Ser. No. 824,516, Aug. 15, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 973,886
Int. Cl.² H04N 9/54, 5/74

U.S. Cl. 358—90

1 Claim



1. A three dimensional illusional television system for transmitting an illusion of an object comprising:

- an image transmitter, said image transmitter including a first concave mirror having a focal point and center of curvature for producing real images of an object, an object field disposed about the principle axis of the concave mirror beyond the center of curvature of the concave mirror, an image field disposed about the principle axis and between the center of curvature and focal point of the concave mirror, and image detection means for generating electronic signals from said reflected real images;
- a facsimile transmitter for receiving said electronic signals

from the image detection means and transmitting said received signals to an image receiver, and;

an image receiver, said image receiver including a second concave mirror having a principle axis, focal point, and center of curvature; a second object field disposed about the principle axis and between the focal point and the center of curvature of said second mirror; and a video image projector disposed in the object field for projecting light rays onto the concave mirror, said projector including means for receiving electronic signals from said facsimile transmitter and producing an image therefrom whereby an illusional image may be viewed beyond the focal point.

4,229,762

OPTICAL VIEWING PORT ASSEMBLY FOR A MINIATURE INSPECTION TV CAMERA

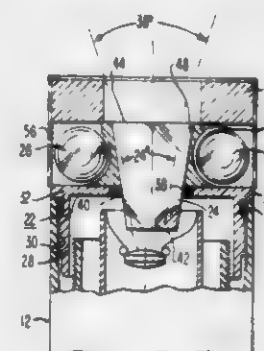
Lawrence G. Healy, Horseheads, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 18, 1979, Ser. No. 4,514

Int. Cl.² H04N 7/18

U.S. Cl. 358—100

6 Claims



1. An optical viewing port assembly for a miniature cylindrical television camera housing having a viewing axis, which assembly comprises:

- (a) a support member including a tubular body portion one end of which is hermetically sealable to the cylindrical camera housing as an extension thereof, an inwardly extending flange portion at the other end of the tubular body portion with a central aperture through the flange portion aligned along the viewing axis, and an annular portion extending from the flange portion in the direction away from the tubular body portion and about the viewing axis;
- (b) a high refractive index light transmissive optical plug passing through the central aperture through the flange portion and through the annular portion, which optical plug is supported from and hermetically sealed to the flange portion of the support member along the camera optical axis, which plug has a radial dimension and a thickness, such that when the assembly is connected to the camera housing which includes a camera focus lens and the plug is closely spaced from the lens, the camera field of view is reduced along the plug without reducing the usable camera image area, which plug extends for a distance along the optical axis sufficient to permit a relatively high power miniature light source to be mounted and spaced radially about the plug so that the light source is not within the camera field of view; and
- (c) at least one relatively high power miniature light source mounted from the support member and disposed about the support member annular portion and the optical plug, with electrical connection means hermetically and insulatingly sealed through the flange portion of the support member to provide electrical connection to one terminal of the light source, and wherein the support member is conductive and is connected to the other terminal of the light source as the electrical return.

4,229,763

OPTICAL HIGH DENSITY FM RECORDING DEVICE WITH CORRECTIVE SIGNAL

Takao Tsuji, Kawasaki; Takeshi Goshima, Tokyo, and Hideaki Sato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 614,184, Sep. 17, 1975, abandoned. This application Jul. 7, 1978, Ser. No. 922,645

Claims priority, application Japan, Sep. 20, 1974, 49-108567

Int. Cl.² G11B 11/00, 7/00; H04N 5/76

U.S. Cl. 358—128.5

7 Claims



1. An optical high density recording device comprising:
 - (a) laser beam modulating means for forming a laser beam modulated in accordance with a modulating signal applied thereto;
 - (b) a recording medium onto which the modulated laser beam obtained from said laser beam modulating means is irradiated, wherein the beam-irradiated portions of said medium are recorded in the form of undulations in accordance with the irradiated beam;
 - (c) means for moving said recording medium and the beam irradiated onto said recording medium relative to one another;
 - (d) a video signal generating means for generating a frequency-modulated video signal;
 - (e) processing means connected to said video signal generating means for generating a corrective signal having a corrective voltage corresponding to the frequency of said frequency-modulated video signal to make the height of said undulations constant when the frequency of said frequency-modulated video signal exceeds a particular frequency; and
 - (f) adding means for adding an output from said video signal generating means and an output from said processing means to form a modulating signal for application to said modulating means.

4,229,764

VISIBILITY EXPANDER

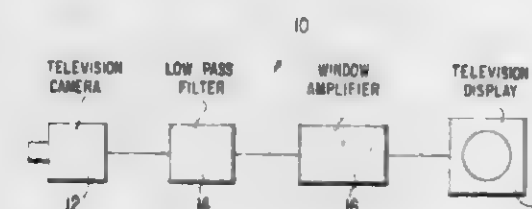
Michael Danos, 407 Muddy Branch Rd., Gaithersburg, Md. 20740

Continuation-in-part of Ser. No. 896,208, Apr. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 751,680, Dec. 17, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,886

Int. Cl.² H04N 7/18

U.S. Cl. 358—160

36 Claims



1. A picture visibility expander system comprising a viewing device for producing signals indicative of that which is viewed thereby, a display device, a low pass filter means connected to receive said signals and filter out high frequency components therefrom, a window amplifier connected to receive filtered signals from said low pass filter, said window amplifier having means for expanding the amplitude differences of those of said filtered signals lying in a predeterminable amplitude range, and

means for supplying said signals processed by said window amplifier to said display device.

4,229,765

REMOTE AUDIO AND BRIGHTNESS CONTROL CIRCUIT FOR TELEVISION

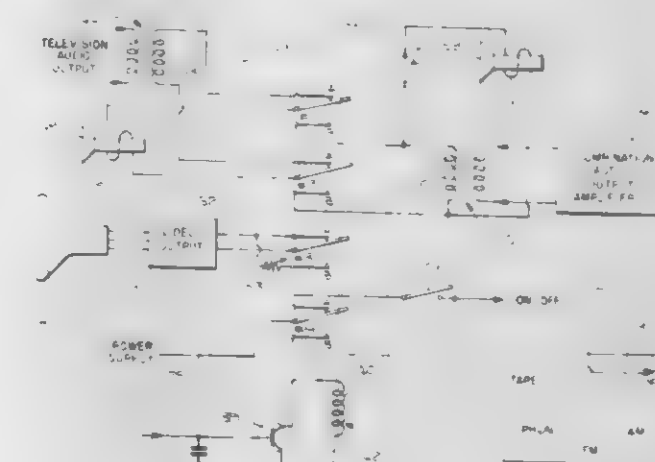
Winston D. Sanger, 12600 Cuddy Valley Rd., Frazier Park, Calif. 93225

Filed Jan. 5, 1979, Ser. No. 1,220

Int. Cl.² H04N 5/44

U.S. Cl. 358—188

7 Claims



1. A switching system for television comprising:
 - a television set having an audio output and a picture tube with an adjustable brightness control circuit;
 - an alternate sound system having an audio output; and
 - bistable switching means having contacts connected to the audio output and the brightness control circuit of said television set and the audio output of said alternate sound system;
 whereby, while said television set is turned on for viewing, said switching means provides for eliminating undesired portions of a broadcast by switching the audio output of said alternate sound system in place of the audio output of said television set, and switching the brightness control circuit of the picture tube so that the picture thereon is just barely discernible.

4,229,766

SCANNING APPARATUS AND METHOD FOR OPERATING THE APPARATUS

Balint Sipos, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

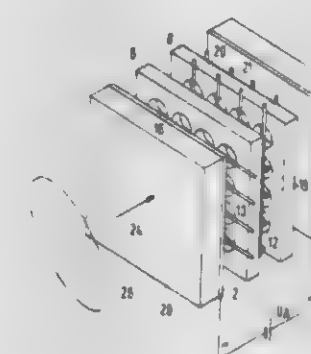
Filed May 5, 1978, Ser. No. 903,111

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720235; May 5, 1977, 2720261

Int. Cl.² H04N 5/30, 5/66

U.S. Cl. 358—209

12 Claims



1. In apparatus which contains a cathode for electron emis-

sion and an anode on which the electrons impinge, an improved scanning system comprising:

- (a) at least one hole matrix having therein a plurality of holes, arranged in rows and columns, disposed between the cathode and the anode for row and column control of the electron stream; and
- (b) at least two separately controllable sets of electrodes disposed in at least two different planes parallel to the plane of said hole matrix for control of the holes in said matrix, with the electrodes in one of said planes arranged in plurality of groups each group comprising electrodes which are at a predetermined spacing from each other, said spacing being at least three rows or three columns, each of said groups being jointly controllable and the electrodes in a further plane grouped in jointly controllable electrode groups which comprise at least three adjacent electrodes.

4,229,767

BEAM CONTROL CIRCUIT FOR DIODE-GUN TYPE CAMERA TUBES

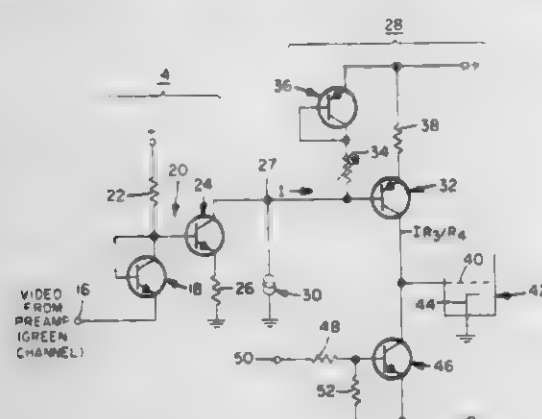
John O. Ryan, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 23, 1979, Ser. No. 23,512

Int. Cl.² H04N 5/197, 9/09

U.S. Cl. 358—219

12 Claims



1. In a camera pickup tube having a substantially linear relationship between the grid current and the beam current thereof, a control circuit for controlling the beam current with respect to a video signal current, comprising the combination of:

- highlight enable means coupled to the video signal current and pre-biased to a given upper limit of a normal video signal current operating range;
- tube grid control means coupled to the grid and including means for pre-calibrating a relationship between the video signal current and any change in the beam current caused thereby; and
- said tube grid control means is responsive to the highlight enable means in the presence of highlights, to generate increases in beam current which maintain a selected margin corresponding to the pre-calibrated relationship.

4,229,768

INFORMATION PROCESSING APPARATUS

Sadasuke Kurahayashi, Tokyo; Yuzo Kato, Yokohama; Asao Watanabe, Higashikurume; Shin Tsuda, Hasuda, and Hakaru Muto, Kamakura, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,082

Claims priority, application Japan, Mar. 30, 1978, 53-37078; Mar. 30, 1978, 53-37079; Mar. 30, 1978, 53-37080; Mar. 30, 1978, 53-37081; Mar. 30, 1978, 53-37082

Int. Cl.² H04N 1/40

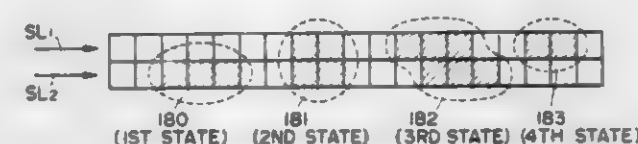
U.S. Cl. 358—261

33 Claims

1. Information processing apparatus, comprising: scanning means for obtaining binary image signals representing two

light levels by scanning an original on which an image is recorded;

- a selective thinning circuit for converting the signals representing either one light level in said binary image signals obtained by scanning operation by said scanning means and having a length in a principal scanning direction



within determined ranges into signals of respectively determined lengths;

- a run-length converting circuit for converting the signals of determined lengths obtained from said selective thinning circuit into signals of other lengths; and
- a one-dimensional coding circuit for encoding the signals thus converted by said run-length converting circuit.

4,229,769

FACSIMILE SYSTEM

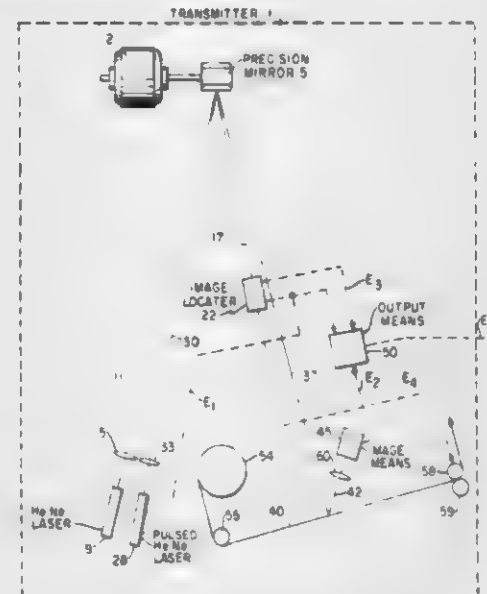
Robert W. Pitts, Jr., Houston, Tex., and Ronald G. Gillespie, Old Tappan, N.J., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,326

Int. Cl.² H04N 1/04, 1/36, 1/00, 1/24

U.S. Cl. 358—285

15 Claims



1. A facsimile system comprising a transmitter including scanning means for scanning an original copy and periodically providing pulses of light impinging the copy during the scan, light responsive means spacially related to the copy for receiving pulses of light from the copy and providing electrical pulses on a one-for-one basis with the received light pulses, sync means for providing synchronization pulses, means connected to the electrical pulse means and to the sync means for providing an output signal in accordance with the electrical pulses from the electrical pulse means and the synchronization pulses, and a receiver including receiver means for receiving the output signal and providing electrical data pulses and synchronization pulses in accordance with the received output signals, light sensitive material, control signal means connected to the receiver means for providing a control signal in accordance with the electrical pulses from receiver means, laser means for scanning the material and providing pulses of light which strike the material in accordance with the control signal, and means for developing the material so as to provide a printed copy of the original copy.

4,229,770

METHOD OF RECORDING ON A MAGNETIC TAPE WHICH IS ATTACHED TO A CARD

Takamasa Ito, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

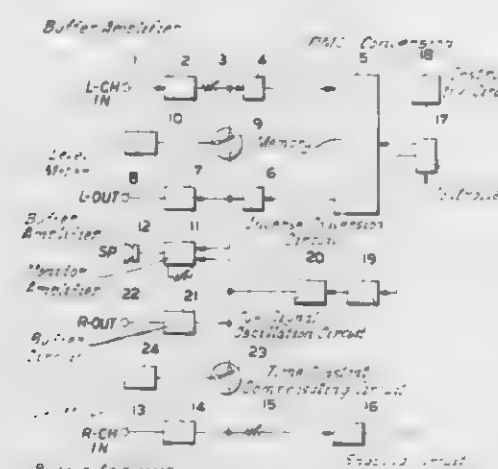
Filed Feb. 2, 1979, Ser. No. 8,767

Claims priority, application Japan, Feb. 10, 1978, 53/13416

Int. Cl.² G11B 5/86

U.S. Cl. 360—15

5 Claims



1. A recording method for a magnetic tape attached to a card, in which an audio signal from a master recorder is pulse coded by a PCM converting circuit and stored in a solid memory of a predetermined capacity, and this stored signal is read out repeatedly by a control signal, again converted into an analog audio signal and recorded on one of the channel tracks of the magnetic tape in each slave side recorder while the cue signal formed at a predetermined timing relative to said audio signal is recorded repeatedly on the other channel track of said magnetic tape.

4,229,771

METHOD OF RECORDING A CONTROL SIGNAL ADJACENT ANOTHER SIGNAL TRACK ON A MAGNETIC RECORDING MEDIUM, AND SYSTEM THEREFOR

Richard Heinz, Pfungstadt, and Bernd Heidel, Dieburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

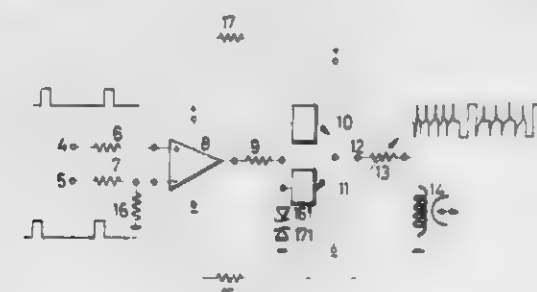
Filed Dec. 12, 1978, Ser. No. 968,729

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827826

Int. Cl.² G11B 5/09, 5/02

U.S. Cl. 360—46

10 Claims



1. In a method of recording electrical pulse-type control signals on a track of a magnetic recording medium, in which at least one other signal is recorded in a track parallel to the control track carrying said control signals, a method to reduce cross talk between the control signals and said adjacent track which comprises

recording the control signals in form of pulse pairs of essentially square wave pulses, in which the pulses of the pairs are immediately adjacent and have respectively opposite polarity, and the pulse pairs are spaced from each other by pulse gaps which are long with respect to the duration of

the individual pulses of the pair to provide control signals which have, in Fourier distribution, a frequency spectrum in which frequencies higher than said control signals form a substantial component of the signal whereby crosstalk between the control signals and said adjacent track is reduced.

4,229,772

TAPE RECORDER HAVING AN AUTOMATIC MODE SWITCHING MECHANISM

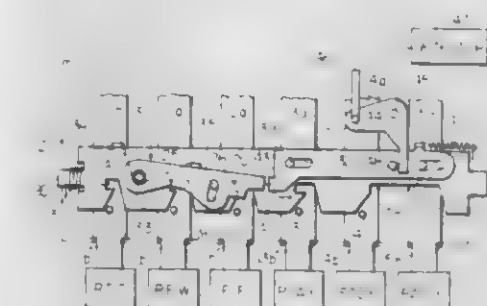
Hiroshi Muramatsu, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 5, 1979, Ser. No. 17,601

Claims priority, application Japan, Mar. 6, 1978, 53/28235[U]

U.S. Cl. 360—69

3 Claims



1. A tape recorder having means for detecting an index signal recorded on a tape, and means for feeding said tape at high and low selectable speeds, comprising:

first and second latch bars each having a pin and longitudinally movable respectively in response to a manually applied pressure from a normal position to an operative position to cause said tape to feed at said low and high speeds respectively;

a crosspiece member intersecting said first and second latch bars and movable in the lengthwise direction thereof and having first and second notches in positions to engage the pins of said first and second latch bars respectively, the first notch having a greater depth of cut in the lengthwise direction of said crosspiece member than that of said second notch, whereby the pins of said first and second latch bars engage respectively the first and second notches of said crosspiece member in response to said manually applied pressure;

a first abutment member on said crosspiece member and movable from a normal position to an operative position in response to the movement of said second latch bar to its operative position; and

a second abutment member on said crosspiece member and movable in the lengthwise direction of said crosspiece member in response to an output signal from said index detecting means to engage said first abutment member in its operative position to cause said crosspiece member to move a distance which is greater than the depth of cut of said second notch and smaller than the depth of cut of said first notch to disengage the pin of the second latch bar from said second notch to thereby cause said second latch bar to return to its normal position causing said first abutment member to return to its normal position and movable in response to a subsequent output signal from said index detecting means to engage said first abutment member in its normal position to cause said crosspiece member to move a distance which is greater than the depth of cut of said first notch to disengage the pin of the first latch bar from said first notch.

4,229,773

VIDEO SIGNAL RECORDING SYSTEM WITH
AUTOMATIC HEAD POSITIONINGHitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation,
Tokyo, Japan

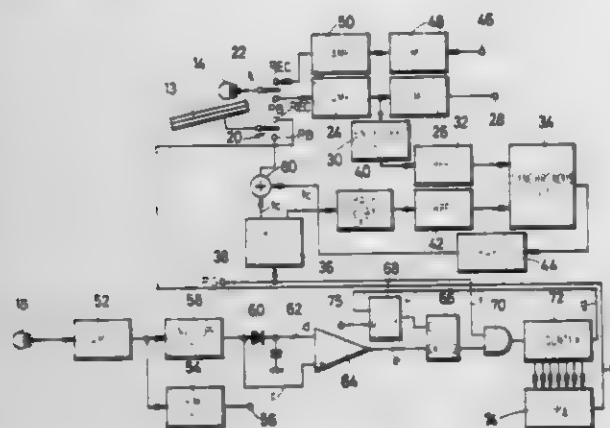
Filed Dec. 7, 1978, Ser. No. 967,100

Claims priority, application Japan, Dec. 12, 1977, 52-148062

Int. Cl.¹ G11B 21/10

U.S. Cl. 360-70

11 Claims



1. An apparatus for recording signals on a recording medium, so that the signals thereby recorded lie in at least one track on said medium, comprising:

- signal recording means moving in one direction generally along the direction of said at least one track for recording said signals on said recording medium;
- deflectable means for deflecting said signal recording means normal to said one direction in response to a control signal;
- means for generating said control signal;
- means for finding, during commencement of the recording of said signals, the value of said control signal which produces substantial coincidence between the deflected position of said signal recording means and an optimum location of said at least one track; and
- means for storing said value of the control signal and applying the same to said deflectable means during recording subsequent to said commencement.

4,229,774

SELF-ADAPTING FLOW RESTRICTORS

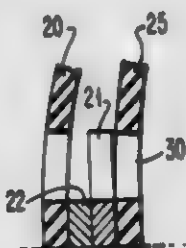
Donovan M. Janssen, Boulder, Colo.; Anton J. Radman, Jr.,
Tucson, Ariz., and William S. Seaward, Boulder, Colo., assignors to International Business Machines Corporation, Armonk,
N.Y.

Filed Jan. 2, 1979, Ser. No. 44

Int. Cl.¹ G11B 5/016, 15/64

U.S. Cl. 360-98

4 Claims



1. The method of operating a record storage apparatus having a plurality of axially spaced apart flexible storage disks with somewhat uniform axial interstices therebetween with transducer access being achieved by axially enlarging one of said axial interstices,

the steps of:

- reducing air flow between storage disks adjacent said transducer accessing enlarged interstice as a function of the axial spacing from said enlarged interstice, the closer the

disk interstice is to said enlarged interstice, the greater the reduction of air flow, and
adjusting said air flow reductions in accordance with environmental atmospheric conditions.

4,229,775

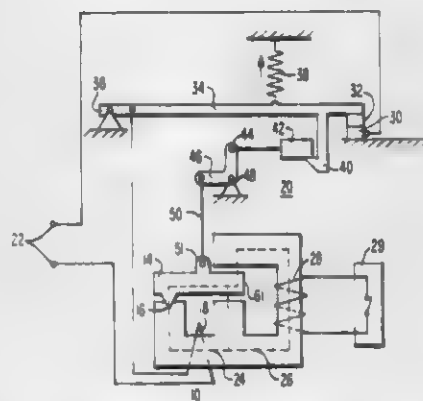
CIRCUIT BREAKER MAGNETIC TRIP DEVICE WITH
TIME DELAYRobert C. Miller, Penn Hills, Pa., assignor to Westinghouse
Electric Corp., Pittsburgh, Pa.

Filed Feb. 9, 1979, Ser. No. 11,020

Int. Cl.¹ H01H 47/18

U.S. Cl. 361-210

14 Claims



1. A tripping device for a circuit interrupter, comprising:
 - a core member of magnetic material;
 - an armature of magnetic material disposed in relationship to said core member to complete first and second magnetic circuits, said armature being movable between normal and tripped positions, movement to the tripped position being operable to trip an associated circuit interrupter;
 - a primary winding coupled to said core member and carrying load current to an associated circuit interrupter, whereby said load current produces magnetic flux in said first and second circuits causing magnetic forces to act on said armature and maintain said armature in the normal position during normal load current conditions;
 - a secondary winding disposed about a part of said second circuit not in common with said first circuit, said secondary winding producing an output proportional to said load current; and
 - means for shunting said secondary winding upon overload current conditions, whereby the magnetic flux in said second circuit is altered so as to unbalance the forces upon said armature and cause said armature to move to the trip position.

4,229,776

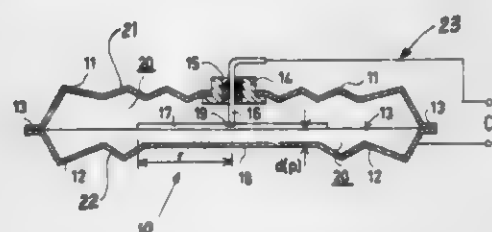
CAPACITIVE CAPSULE FOR ANEROID PRESSURE
GAUGEVeijo Antikainen, and Osmo Reittu, both of Vantaa, Finland,
assignors to Vaisala Oy, Finland, Finland

Filed Nov. 21, 1978, Ser. No. 962,786

Int. Cl.¹ H01G 7/00

U.S. Cl. 361-283

5 Claims



1. An aneroide capsule apparatus for use in a pressure gauge comprising:

4,229,778

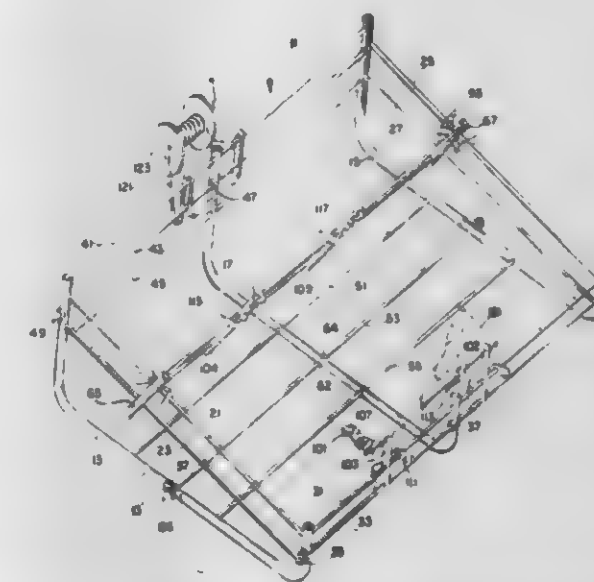
UNIVERSAL CIRCUIT BOARD HOLDING APPARATUS
FOR FACILITATING ASSEMBLY OF COMPONENTSErnest E. Williams, Fullerton, and William M. Brennan, Chino,
both of Calif., assignors to Rockwell International Corporation,
El Segundo, Calif.

Filed Mar. 26, 1979, Ser. No. 24,275

Int. Cl.¹ H05K 13/04

U.S. Cl. 361-399

7 Claims



1. A universal circuit board holding apparatus comprising; in combination:

- a frame;
- side rails and front and rear rails comprising said frame;
- adjustably positionable rails extending across said frame between the side rails and movable in the direction of the front and rear rails;
- means comprising releasable clamping means engaging said side rails and said adjustably positionable rails for permitting movement of the adjustably positionable rails along the side rails when released and for locking the adjustably positionable rails to the side rails when clamping;
- board supports carried by the adjustable rails and one of the rear rails and the front rails, and
- releasable clamps positionably fixing said supports to said rails while permitting movement therealong to accommodate various sized boards.

4,229,777

HIGH VOLTAGE DUAL DIELECTRIC CAPACITOR
ROLLRichard C. Merrill, and Richard G. Conners, both of Glens Falls,
N.Y., assignors to General Electric Company, Hudson Falls,
N.Y.

Filed Dec. 15, 1978, Ser. No. 969,658

Int. Cl.¹ H01G 4/22

U.S. Cl. 361-314

9 Claims



1. A round roll capacitor having a rating from about 250 volts AC to about 440 volts AC comprising:

- (a) a casing;
- (b) a capacitor roll in said casing comprising an elongated sheet of plastic film having a first layer of metallization on a first side thereof, said first layer extending substantially to a first longitudinal edge of said sheet and being spaced from a second longitudinal edge of said sheet, said sheet of film having a second layer of metallization on the second side thereof, said second layer extending substantially to said second longitudinal edge of said sheet and being spaced from said first longitudinal edge;
- (c) one or more sheets of metallization free paper substantially adjacent to said film;
- (d) a round core in said roll on which said sheets of film and paper are tightly rolled to form a capacitor roll wherein the film and the paper are in the dielectric field;
- (e) an impregnant having a dielectric constant above about 3 in said roll; and
- (f) said impregnated roll having essentially a zero space factor after impregnation and the design voltage stress on said paper is above about 500 volts per mil thickness and above about 1000 volts per mil thickness on said film.

4,229,779

LUMINAIRE WITH ARCUATE REFLECTOR

Edward B. Bilson, and Alfred H. Brown, III, both of Memphis,
Tenn., assignors to International Telephone and Telegraph
Corporation, Chicago, Ill.

Filed May 19, 1978, Ser. No. 907,499

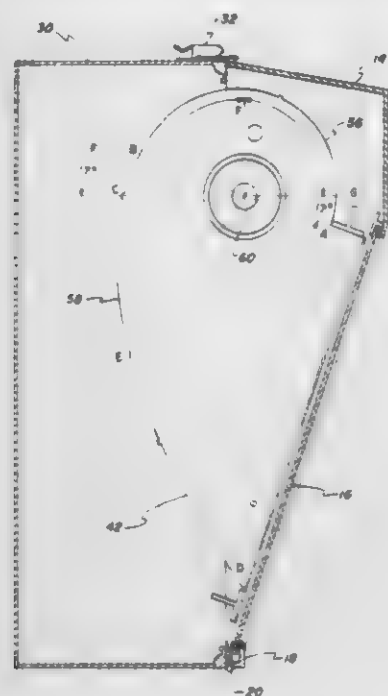
Int. Cl.¹ F21V 7/12

U.S. Cl. 362-217

8 Claims

1. A luminaire adapted to illuminate a surface spaced from an elevated mounting of said luminaire, said luminaire including an elongated substantially horizontal tube light source, a concave, elongated reflector circumposed about said light source for reflecting light from said source, the invention wherein said reflector produces a plurality of parallel beams of light emanating from said light reflected within said luminaire, each said beam encompassing approximately one degree of exit angle to illuminate a portion of the surface, said reflector configured to produce light of substantially uniform intensity across said surface for a distance encompassed by said beams in which said reflector is comprised in profile of a first portion and a second portion, said first portion comprising a smooth continuous curve generated by adjoining cylindrical sections of successively increasing radii in the direction toward said

second portion and said second portion comprising adjoining sections, each having the optical characteristics of a parabola



with each successive parabola being of successively increasing focal length in the direction away from said light tube.

4,229,780

FLUORESCENT LAMP FOR USE IN EXPLOSIVE ATMOSPHERES SUCH AS MINES

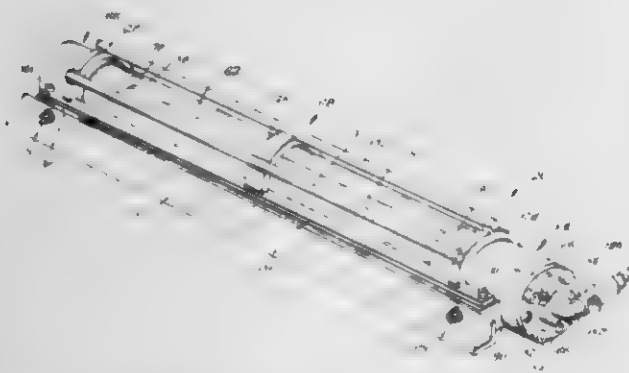
Robert C. Nelson, Bluefield, W. Va., assignor to West Virginia Armature Company, Glen Lyn, Va.

Filed Jun. 27, 1978, Ser. No. 919,662

Int. Cl.² H05B 33/02

U.S. Cl. 362-218

6 Claims



1. A lamp permissible for use in explosive atmospheres such as mines comprising:

an elongated lighting assembly and a guard assembly therefor;

said lighting assembly including an elongated bulb characterized by a luminous envelope having hot luminous regions at the end portions thereof;

said guard assembly including a light-transmitting tube enclosing said bulb, and metal end housings at opposite ends of said tube, each metal end housing having integral therewith a continuous cylindrical sleeve completely surrounding an end portion of said lighting assembly, each said sleeve being located adjacent and axially displaced from the corresponding one of said hot luminous regions to enable said hot luminous regions to transmit light directly outwardly therefrom through end portions of said light-transmitting tube;

said sleeves having first cylindrical bearing surfaces, said light-transmitting tube having heat-conductive metal bushings fastened thereto at opposite ends thereof and in heat-conductive relation therewith, said bushings having second cylindrical bearing surfaces assembled in contiguous, lapping, heat-conductive, telescopically slidable rela-

tionship with said first bearing surfaces to enable relative thermal expansion and contraction of their associated parts; and

said sleeves being located sufficiently closely adjacent said hot luminous regions to act as heat sinks thereby diverting heat from said tube through said metal bushings into the metal end housings to maintain the temperature of the tube at a safe level.

4,229,781

BEAM-ROTARY LAMP

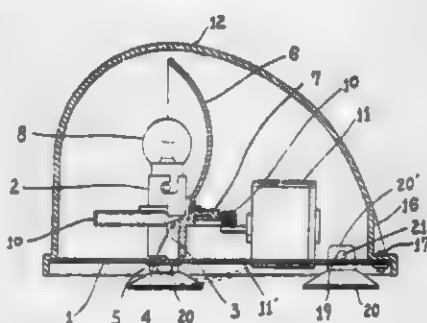
Shozo Hitora, Nara, Japan, assignor to Sasaki Electric Manufacturing Co. Ltd., Osaka, Japan

Filed Jan. 5, 1979, Ser. No. 1,277

Int. Cl.¹ F21V 21/26

U.S. Cl. 362-274

4 Claims



1. A beam-rotary lamp comprising a substantially egg-shaped chassis; a transparent bowl-shaped globe, said globe being fixed to said chassis and defining therewith an enclosed space having a front and a rear portion, said rear portion being of less height and narrower than said front portion; a lamp unit including a lamp, a reflector and a rotor, said reflector being supported by said rotor, said rotor being arranged substantially horizontally and said lamp unit being positioned in said front portion of said space; a power unit located in said rear portion of said space, said power unit including a motor having a horizontally extending drive shaft; a socket, said lamp being set into said socket; a supporting boss projecting vertically downward from said boss and fixed to said chassis, said rotor being slidably, rotatably positioned over said boss for rotation about a vertical axis, said rotor having a round brim; a rubber ring positioned on said brim; and a corrugated spring washer positioned about said boss to maintain said rubber ring in friction contact with said horizontally extending drive shaft.

4,229,782

HIGH EFFICIENCY LIGHTING UNITS WITH BEAM CUT-OFF ANGLE

Alan J. Ruud, West Allis, Wis., and Ian Lewin, Scottsdale, Ariz., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Dec. 20, 1977, Ser. No. 862,579

Int. Cl.² F21V 7/00

U.S. Cl. 362-297

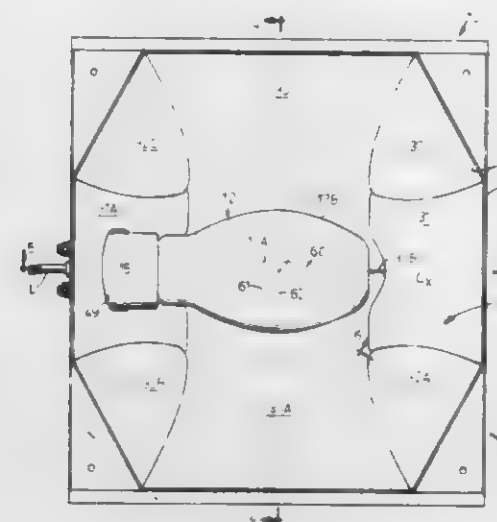
13 Claims

1. In a lighting unit:

an elongated lamp having a longitudinally extending axis; and a lamp reflector comprising at least two reflector surfaces each having first and second spaced ends, the first ends of said reflector surfaces joining each other along a line located in a plane behind and spaced from said lamp, said line of joiner of said first ends of said reflector surfaces extending substantially parallel to the longitudinal axis of said lamp, the second ends of said reflector surfaces extending outwardly and away from said lamp at the front thereof, said second ends being spaced from each other and lying in a plane spaced from the plane in which said first ends of said reflector surfaces lie and defining the reflector opening.

at least one of said reflector surfaces being curved; each point on the curve of said one reflector surface being defined by a plane extending transverse to the longitudinal

axis of said lamp, said points on said curved reflector surface being spaced farther from the longitudinal axis of said lamp than said line of joiner of said first ends of said



reflector surfaces, with some points on said curve being located on the side of said lamp opposite said line of joiner of said first ends of said reflector surfaces.

4,229,783

BACKLIGHT FOR ELECTROOPTIC DISPLAY

Noel Eberhardt, Cupertino, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Mar. 12, 1979, Ser. No. 19,698

Int. Cl.¹ F21V 1/06; G01D 11/28

U.S. Cl. 362-352

3 Claims



1. In an illuminated electrooptic display of the type having a backlight member disposed beneath a passive light transmissive electrooptic display, the improvement in said backlight comprising:

a flat substantially transparent light transmitting member having opposed first and second parallel surfaces and having edge portions, said light transmitting member defining a recess opening in at least one of said surfaces, a thin sheet of translucent material completely enveloping said light transmitting member covering said first and second surfaces and said edges and adhered to by an adhesive, said translucent material comprising a foldable sheet of material selected from the group consisting of polypropylene or polystyrene, and defining a hole adapted to be aligned with said recess when the sheet is folded to envelop the light transmitting member; and a light source disposed in said recess.

4,229,784

LAMPSTAND FOR LAMP SHADE

Isamu Noguchi, 333 E. 69th St., New York, N.Y. 10021

Division of Ser. No. 850,790, Nov. 11, 1974. This application

Apr. 5, 1979, Ser. No. 27,361

Int. Cl.² F21S 1/12

U.S. Cl. 362-414

3 Claims

1. A fixture for supporting a lampshade, said fixture comprising:

A. a vertical pole having a socket attached to its upper end to receive a light bulb;

B. a harp constituted by a symmetrical array of at least three U-shaped wires arranged to encage said bulb, each wire having a vertical arm and horizontally-extending lower and upper legs, the lower legs being joined to a lower ring



attached to said pole at a point below the socket, the upper legs being joined to an upper ring in axial alignment with the pole; and

C. an extension rod anchored in said upper ring and extending upwardly therefrom to provide a mounting for said lampshade.

4,229,785

FLOODLIGHT REFLECTOR MOUNTING

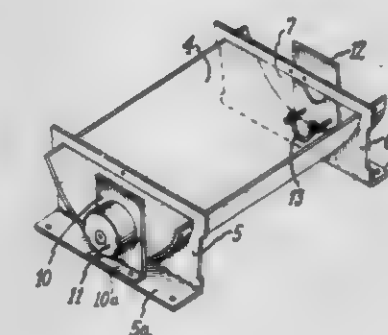
Clarence J. Tuller, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,339

Int. Cl.² F21V 17/06

U.S. Cl. 362-433

7 Claims



1. A lighting fixture comprising, in combination, a housing having a window, a plurality of spaced cradle members mounted in said housing adjacent said window, each cradle member formed with an opening having a portion of predetermined shape, and a flexible reflector member inserted at opposite sides into the openings of said spaced cradle members and arranged facing said window, said cradle members holding said reflector member in said predetermined shape, said openings of said cradle members each being defined by a rear cradle portion for shaping said reflector and front cradle portions for holding said reflector against said rear cradle portion.

4,229,786

FLY-BACK TRANSFORMER WITH A LOW RINGING RATIO

Yutaka Mitani, Nagaokakyō, Katami Tokuda, Nanao, and Saburo Kitao, Kyoto, all of Japan, assignors to Murata Manufacturing Co., Inc., Japan

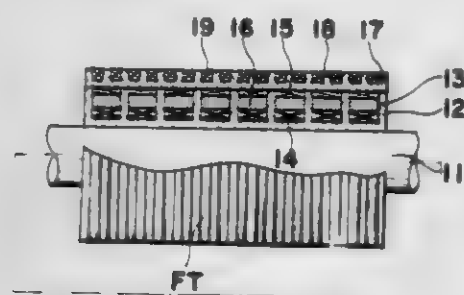
Filed Sep. 19, 1978, Ser. No. 943,678

Claims priority, application Japan, Sep. 26, 1977, 52/115850; Oct. 18, 1977, 52-125625; Nov. 30, 1977, 52-144716; Dec. 13, 1977, 52-150317; Dec. 21, 1977, 52-154707

Int. Cl.¹ H01J 29/70

U.S. Cl. 363—126

23 Claims



1. A fly-back transformer for use in a horizontal deflection circuit of a television receiver, the operation of said deflector circuit being cyclical, and each cycle of said circuit being divided into a scanning period and a retract period, said transformer comprising:

- a core member;
- a first coil bobbin provided on said core member;
- a primary winding for low voltage supply mounted on a second coil bobbin located on said first coil bobbin;
- a secondary winding for producing a high-voltage output responsive to an electromagnetic field generated by said core and located on said second coil bobbin;
- a tertiary winding for generating a low-voltage output responsive to an electromagnetic field generated by said core and located at a position wherein the magnetic coupling of said tertiary winding to said primary winding is small in comparison with the magnetic coupling of said tertiary to said secondary winding, and wherein the leakage flux of said secondary winding with respect to said primary winding interlinks with said tertiary winding; and
- a commutating circuit connected to said tertiary winding so as to commutate the output of said tertiary winding only during said scanning period of said horizontal deflection circuit.

4,229,787

FLYBACK TRANSFORMER

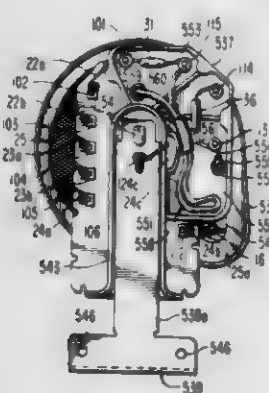
Leslie N. Thibodeau, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,109

Int. Cl.² H02M 7/06

U.S. Cl. 363—126

5 Claims



1. A high voltage structure, comprising:
a high voltage winding adapted for coupling to a source of

alternating current voltage for developing a high voltage in said high voltage winding;

- a first rectifier poled to conduct current;
- high voltage termination means connecting said first rectifier and a high voltage lead of said high voltage winding for providing electrical continuity between said high voltage winding and said first rectifier;
- a second rectifier poled in the same direction as said first rectifier, said first and second rectifiers blocking the DC current path in said high voltage winding during a first polarity interval of said alternating current voltage for developing an intermediate DC voltage in said high voltage winding entirely by means of distributed capacitive voltage division for establishing an AC null point at an intermediate DC terminal of said high voltage winding; and

additional distributed capacity developing structure connecting said second rectifier and a second lead of said high voltage winding for providing sufficient additional distributed capacity to selectively adjust said capacitive voltage division for selectively adjusting the value of said intermediate DC voltage.

4,229,788

INTERFACE UNIT FACILITATING COMMUNICATION BETWEEN DATA PROCESSOR AND PROGRAM-INTERRUPTING PERIPHERAL UNIT

Armando Consigli, Milan, and Roberto Danna, Cinisello Balsamo, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jun. 6, 1978, Ser. No. 913,232

Claims priority, application Italy, Jun. 6, 1977, 24387 A/77

Int. Cl.¹ G06F 3/00

U.S. Cl. 364—200

2 Claims



1. An interface unit for facilitating communication in an electronic data-handling system between a processor having a program memory and one of a plurality of peripheral units adapted to transmit data to said processor, the latter being provided with preferential circuitry for assigning different priority ratings to certain of said peripheral units and being programmed to emit a succession of instructions respectively directed to said peripheral units for inviting the transmission of data available thereat, such data transmission requiring an interruption of the program of the processor, the latter having two output leads carrying a two-bit portion of an input/output instruction generated by said program memory, said interface unit comprising:

- a register for the storage of first, second, third and fourth bit combinations respectively representing a plurality of states including a preparatory state, an intermediate state, an active state and a quiescent state;
- a decoder connected to an output of said register for respectively converting said first, second, third and fourth bit combinations into a first switching signal denoting said preparatory state, a second switching signal denoting said

intermediate state, a third switching signal denoting said active state and a fourth switching signal denoting said quiescent state;

loading means with input connections to said decoder and to said output leads of the processor for entering said first bit combination in said register upon coincidence of said fourth switching signal with an instruction addressing the associated peripheral unit;

first gating means with input connections to said decoder and to the associated peripheral unit for emitting an enabling signal to said register upon coincidence of said first switching signal with a data-ready signal from said associated peripheral unit;

second gating means with input connections to said decoder and to said preferential circuitry for emitting an enabling signal to said register upon coincidence of said second switching signal with an authorization signal indicating the absence of overriding priorities;

third gating means with input connections to said decoder and to the processor for emitting an enabling signal to said register upon coincidence of said third switching signal with a confirmation signal indicative of a program interruption, said third gating means also establishing a path for the transmission of the address of the associated peripheral unit to the processor preparatorily to the initiation of direct communication therebetween;

a binary incrementer connected to the output of said register for converting said first, second and third bit combinations into said second, third and fourth bit combinations, respectively; and

feedback means connecting said incrementer to said register for entering therein the converted bit combinations in response to the enabling signal from any of said gating means, said feedback means including a multiplexer with a first input connected to said incrementer and a second input connected to said output leads of the processor, said multiplexer being switchable by said loading means from said first input to said second input in the presence of said instruction and said fourth switching signal.

4,229,789

SYSTEM FOR TRANSFERRING DATA BETWEEN HIGH SPEED AND LOW SPEED MEMORIES

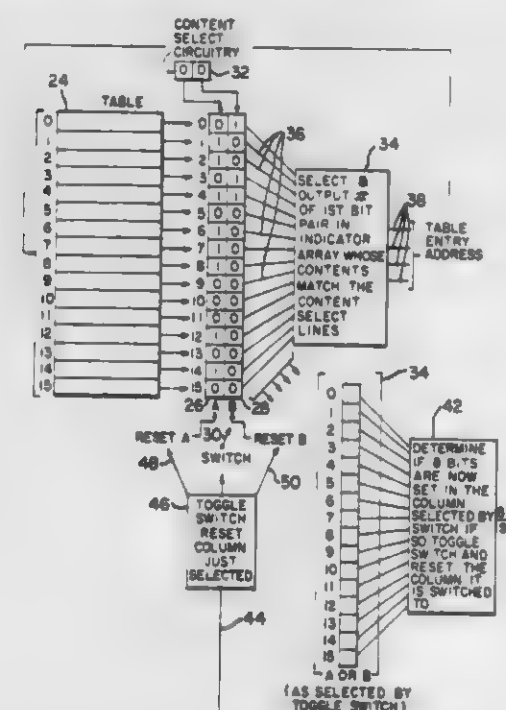
Douglas J. Morgan, Stanford, Calif., and Barry S. Manis, Fairfield, Conn., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 22, 1977, Ser. No. 863,637

Int. Cl.¹ G11C 9/06; G06F 13/00

U.S. Cl. 364—200

5 Claims



1. A data processing system, comprising:
a low speed, large scale store, said low speed store having a

plurality of memory locations for storing blocks of digital information;

a high speed store having memory locations for storing a limited number of the blocks stored in said low speed store;

a high speed data handling apparatus connected to receive information from said high speed store;

means providing an "A" single bit register and a "B" single bit register associated with each block in said high speed store;

means for initially inserting a usage bit in each "A" register as information is accessed from its associated block;

means for sensing when approximately fifty percent of said "A" registers contain usage bits, and in response clearing said "B" registers and thereafter inserting usage bits into said "B" registers;

means for sensing when approximately fifty percent of said "B" registers contain usage bits, and in response clearing said "A" registers and thereafter inserting usage bits into said "A" registers;

means for selecting a block in said high speed store for replacement by sensing the lack of usage bits in said "A" and said "B" registers associated with specific blocks; and means for transferring information between said high speed store and said low speed store into one of the selected blocks in said high speed store.

4,229,790

CONCURRENT TASK AND INSTRUCTION PROCESSOR AND METHOD

Maxwell C. Gilliland; Burton J. Smith, both of Denver, and Gary L. Ferguson, Boulder, all of Colo., assignors to Denelcor, Inc., Denver, Colo.

Filed Oct. 16, 1978, Ser. No. 951,548

Int. Cl.¹ G06F 9/18

U.S. Cl. 364—200

46 Claims



1. A concurrent task and instruction processing device, comprising:

task processing means including control pipeline means and sequencing means connected with said control pipeline means to control the input thereto for sequentially processing tasks by components thereof through said control pipeline means, said sequencing means including memory means and component selection means connected with said memory means to cause selected components to be withdrawn from said memory means and sequenced through said control pipeline means, said memory means including at least one of a task status word memory and a process status word memory, and said component selection means including indicator storage means and selector means connected with said indicator storage means for selecting indicators and coupling the same to said at least one of said task status word memory and said process status word memory for causing an output therefrom to said control pipeline means, whereby said control pipeline means provides multiple sequential output instructions

determined by said task components processed there-through; and
data processing means including data storage means and function execution means, said data processing means being controlled by said output instructions from said task processing means so that said function execution means, responsive to said output instructions, causes data in said data storage means to be withdrawn therefrom and acted upon by said function execution means concurrently with task component processing through said control pipeline means.

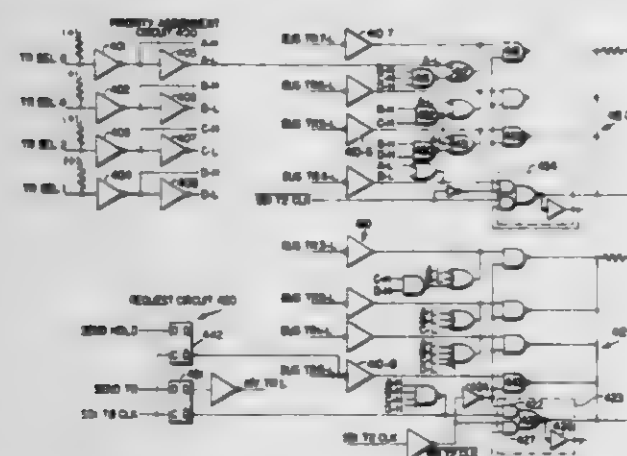
4,229,791

DISTRIBUTED ARBITRATION CIRCUITRY FOR DATA PROCESSING SYSTEM

John V. Levy, Palo Alto, Calif.; David Rodgers, Acton, Mass.; Robert E. Stewart, Stow, Mass.; David Potter, Pepperell, Mass., and Richard J. Casabona, Stow, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Continuation-in-part of Ser. No. 845,415, Oct. 25, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,456
Int. Cl. G06F 9/46

U.S. Cl. 364-200

16 Claims



1. A data processing system including a bus means with arbitration conductor means, timing conductor means and information transfer conductor means and including a plurality of nexus means connected to said bus means, at least one said nexus means comprising:

- timing means connected to said timing conductor means for establishing iteratively a sequence of control states;
- information transfer means connected to said information transfer conductor means for affecting an exchange of information over said information conductor means with another of said nexus means;
- priority assignment means for establishing for said nexus means a priority level that is unique to said nexus means;
- request means connected to said timing means and said information transfer means for generating during a first control state a priority request signal onto said arbitration conductor means when said information transfer means is prepared to affect an exchange of information, said priority request signal having a priority corresponding to the priority level established for said nexus means by said priority assignment means;
- priority receiver means connected to said arbitration conductor means for receiving at least the priority request signals from all said other nexus means having a higher priority than said nexus means; and
- comparison means connected to said priority receiver means, said priority assignment means and said timing means for enabling said information transfer means to affect an information exchange when said nexus means generates a priority request signal having the highest priority level during a given sequence of control states.

4,229,792

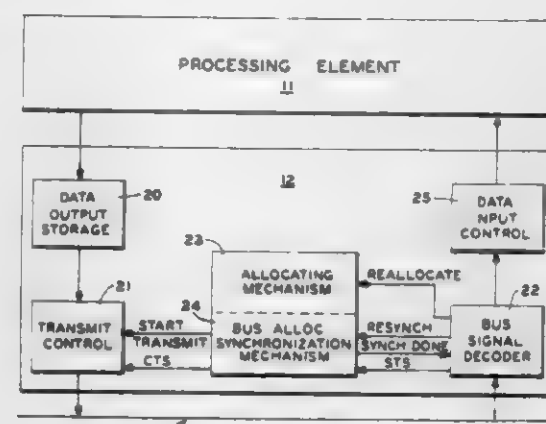
BUS ALLOCATION SYNCHRONIZATION SYSTEM

Earl D. Jensen, Bloomington, and George D. Marshall, North St. Paul, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 9, 1979, Ser. No. 28,147
Int. Cl. G06F 15/16, 11/00

U.S. Cl. 364-200

5 Claims



1. A decentralized bus allocation synchronization system for a plurality of inter-communicating processing devices which share a common data bus in a time multiplexed fashion wherein no single entity controls access to the bus or synchronization of access to the bus comprising:

- a plurality of processing devices adapted to communicate along a common bus;
- a bus interface unit associated with each of said processing devices for controlling the access of that device to said bus, each said bus interface unit further comprising transmitting means for transmitting signals over said bus; receiving means for receiving signals from said bus; enabling means for enabling access to said bus, said enabling means further comprising:
 - allocation vector means for storing a predetermined control schedule sequence of instructions related to the use of the bus;
 - recyclable indexing interface means for indexably addressing said sequence of instructions wherein said indexing is responsive to a command received from said bus;
- synchronization checking means for utilizing allocation and synchronization information from previously received communications and the current communication received by said receiving means, and from said indexing interface means to determine the synchronization state of said enabling means;
- disabling means for disabling said transmitting means if said synchronization checking means fails to determine synchronization state;
- synchronization re-establishing means for re-enabling said transmitter by re-establishing synchronization of said indexing interface means.

4,229,793

METHOD AND APPARATUS FOR CONTROLLING INTERNAL COMBUSTION ENGINES

Hiroshi Yoshida, Aichi; Nobuo Tabara, Chiryu, and Keiji Aoki, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

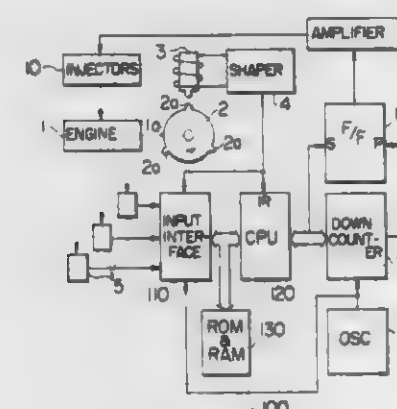
Filed May 16, 1978, Ser. No. 906,666
Claims priority, application Japan, May 25, 1977, 52-61446
Int. Cl. G05B 15/02; G06F 7/38; F02D 5/00

U.S. Cl. 364-431

4 Claims

3. Apparatus for controlling a combustion engine having an output shaft rotated by the combustion of fuel comprising:
a pulse generator communicating with said output shaft for generating reference pulses, one of said reference pulses

being generated each time said output shaft of said combustion engine is rotated to a predetermined rotational reference position;
means for detecting operating parameters of said combustion engine, including means for generating a signal related to the rotational speed of said output shaft;
means, responsive to said detecting and pulse generator means for comparing the rotational speed of said output shaft with a predetermined speed value to discriminate whether the rotational speed of said output shaft is high or low, and for calculating a total value related to the required amount of fuel from the output of said detecting means with a preliminarily established calculating program having first and second portions for determining first and second values, respectively, the combination of said first and second values being related to said total



value, both of said portions being executed and said first and second values being determined in response to each of said reference pulses during the period the rotational speed of said output shaft is discriminated as being low, and said first portion and said second portion being executed alternately, and said first and second values being determined alternately, in response to successive ones of said reference pulses during the period the rotational speed of said output shaft is discriminated as being high, said total value being determined after each of said reference pulses from the most recently calculated first and second values;

means for converting said total value corresponding to said required amount of fuel into a time period each time said reference pulse is generated; and
means for supplying fuel to said combustion engine during said time period.

4,229,794

METHOD AND APPARATUS FOR SUPPLYING A LABEL PRINTER WITH PRODUCT INFORMATION

Colin E. Foster, Bensenville, Ill., assignor to Sanitary Scale Company, Belvidere, Ill.

Filed Apr. 26, 1978, Ser. No. 900,328
Int. Cl. G06K 15/00, 7/08; G01G 23/44

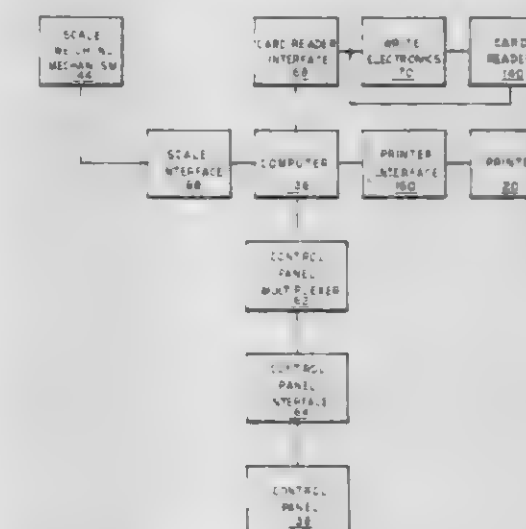
U.S. Cl. 364-466

8 Claims

7. An automatic weighing, computing and printing scale including in combination:

- a product card having product information magnetically stored thereon including product description and product unit price;
- a card reader selectively operative into a read mode for reading the product information on said product card and operative into a write mode for recording product information onto said product card;
- manually operative product unit price switches;
- an encoding switch;
- a scale weighing mechanism for weighing product to develop a total product weight;
- a computer including a storage means and a calculating means wherein, upon actuation, said computer
 - operates said card reader for reading the coded information on the product card and thereafter operates said

scale weighing mechanism to provide a total product weight, and
(b) stores said product description and said product unit price and said total product weight information, and
(c) calculates a total product price, and
(d) transmits said product description and said total product price information to a label printer, and
(e) responsive to the operation of said product unit price switches stores the product unit price information therein in the storage means and responsive to the oper-



ation of said encoding switch operates said card reader into said write mode for recording the product unit price information on said product card; and
a label printer for receiving from said computer said product description and said total product price for printing thereof on a label, said label printer being adapted to print said product description and said total product price information on a label in alpha-numeric form and in machine readable form conforming to the format of the uniform product code.

4,229,795

ELECTRONIC MAXIMUM MEASURING DEVICE

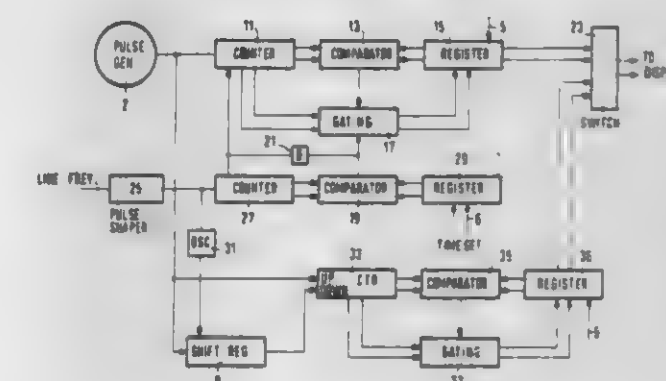
Gunther Vieweg, Nuremberg, and Wilhelm Stürzl, Winkelhaid, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 18, 1978, Ser. No. 952,291

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747406

Int. Cl. G01R 11/64

U.S. Cl. 364-483

2 Claims



1. In a device for measuring maximum energy consumption which includes a computing device for computing the energy consumption over a fixed period of time, a non-volatile memory for storing the maximum value of energy within any one of successive fixed periods and means to store as a new value in said memory any computed value which exceeds that previously stored, said computing device being supplied with pulses

representing energy consumption, the improvement comprising:

- (a) means in said computing device for simultaneously computing the energy consumption over a sliding measuring period in addition to computing the energy consumption over the predetermined fixed period of time comprising:
 - (i) means for generating a clock signal;
 - (ii) a shift register having the pulses representing energy consumption as a data input and the said clock signal as a clock input; and
 - (iii) means for storing a pulse count, responsive to said pulses to increase its count and responsive to the output of said shift register to decrement said count, whereby the stored count will represent a mean value over a sliding period determined by said clock rate and shift register length;
- (b) means in said non-volatile memory for also storing the maximum value of energy within said sliding period, in addition to storing the maximum value of energy within any one of the successive fixed periods; and
- (c) means for also transferring into said non-volatile memory, as a new value of said maximum over said sliding period, any computed value occurring in said means for storing a pulse count during said sliding period which exceeds that previously stored as the maximum during said sliding period.

4.229.796

PROGRAMMED CONTROLLER FOR ULTRASONIC TESTING

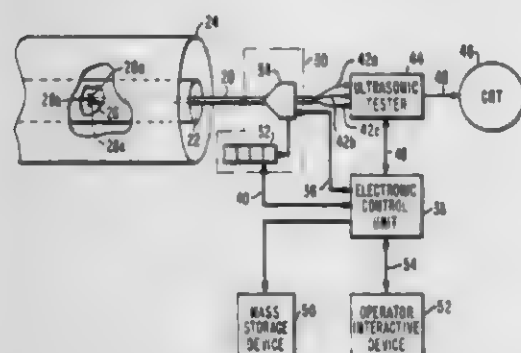
Steven H. Garrett, Charlotte, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 15, 1979, Ser. No. 12,543

Int. Cl.¹ G01N 29/04

U.S. Cl. 364-507

9 Claims



1. In a system for ultrasonically testing the material of a turbine rotor including at least one electronically controlled crystal transducer; a drive unit operative to axially insertably index said at least one crystal transducer within the bore of said turbine rotor under test in predetermined increments while arcuately rotating said at least one crystal transducer about the longitudinal axis of the rotor bore through a predetermined angle for each predetermined incremental index; and an electronic ultrasonic tester for activating said at least one crystal transducer at various indexed axial positions and angular orientations thereof within said rotor bore to transmit ultrasonic signals into said turbine rotor material and for receiving electrical signals from said at least one crystal transducer which are representative of back reflected echo signals corresponding to each transmitted ultrasonic signal, said ultrasonic tester being operative to generate measurable parameter test data signals including a first signal representative of the amplitude of the back reflected echo signal received from the at least one crystal transducer, a second signal which is representative of the depth location within the rotor material concurrently corresponding to an instantaneous amplitude value of said first signal, and at times, an anomaly indication which is representative of said first signal exceeding a preset reference threshold amplitude level, said anomaly indication representing the detection of a potential imperfection in said turbine rotor material.

4,229,797

METHOD AND SYSTEM FOR WHOLE PICTURE IMAGE PROCESSING

Robert S. Ledley, Silver Spring, Md., assignor to National Bio-medical Research Foundation, Washington, D.C.

Filed Sep. 6, 1978, Ser. No. 940.052

Int. Cl.⁷ G06F 15/20; H04N 7/18

U.S. Cl. 364-515

35 Claims

1. A system for analyzing a whole picture relative to a set of predetermined image data corresponding to a whole reference picture, comprising:

- scanning means for scanning said whole picture to derive analog image signals corresponding thereto;
digitizing means for digitizing said analog image signals to produce digital image data representing said whole picture;
first memory means for storing said digital image data representing said whole picture;
second memory means for storing said set of predetermined image data corresponding to said whole reference picture;
first output means for reading out said digital image data representing said whole picture to provide a first output;
second output means for reading out said set of predeter-

4.229.799

METHOD AND APPARATUS FOR MEASURING AREA TRAVERSED BY VEHICULAR IMPLEMENT

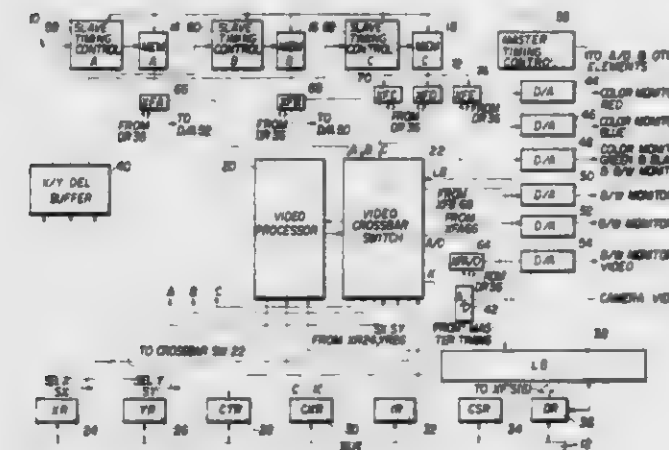
Warren E. Herwig, Wind Lake, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 9, 1979, Ser. No. 27,982

Int. Cl.⁷ G01B 7/32

U.S. Cl. 364-564

14 Claims



said system further comprising video crossbar switch means for routing said digital image data from said digitizing means to said first memory means, and for routing said first output and said second output to said processing means.

4.229.798

LIQUID STORAGE TANK CONTENTS GAUGE

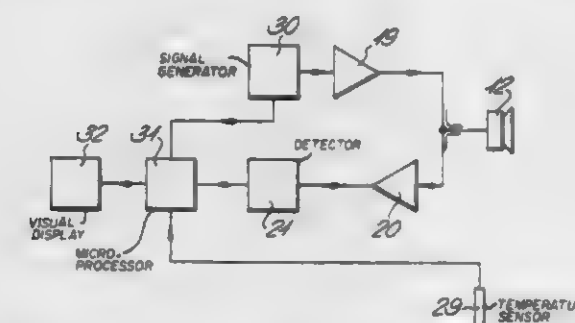
Aeneas M. Rosie, and Colin J. Macleod, both of Helensburgh,
Scotland, assignors to Alistair Francis McDermott, London,
England

Filed Jan. 30, 1978, Ser. No. 873,654

Int. Cl.² G01F 17/00, 23/00

U.S. CI. 364-564

9 Claims



1. A liquid storage tank contents gauge comprising ultrasonic signal means for providing an electrical signal corresponding to the vertical height of the liquid in a tank, electronic means coupled to said signal means for deriving the volume of liquid corresponding to said vertical height, and an output means coupled to said electronic means for providing a usable output of said volume, said ultrasonic signal means including one and only one transducer for both emitting a signal and receiving the same signal when reflected by a liquid-air interface in a tank, said electronic means comprising a plurality of programmable read-only memory units, each containing the value of a liquid volume corresponding to a given vertical height in said tank and means for searching for and finding the read-only memory unit corresponding to the vertical height provided by said signal, and means for passing the output of said read-only memory unit to said output means.

4,229,800

ROUND OFF CORRECTION LOGIC FOR MODIFIED BOOTH'S ALGORITHM

Roubik Gregorian, Sunnysvale, and Kadiri R. Reddy, Santa Clara, both of Calif., assignors to American Microsystems, Inc., Santa Clara, Calif.

Filed Dec. 6, 1978, Ser. No. 966,870

Int. Cl.⁷ G06F 7/52

U.S. Cl. 364-743

2 Claims

1. In a binary digital multiplier implementing a modified Booth's algorithm and having a first stage of a plurality of partial product generators, a second stage of a plurality of summing networks including a first summation network and a second summation network, a third stage including a third summation network, and a fourth stage including a fourth summation network, said multiplier for generating a final product of a series of binary digits, the improvement comprising round off logic circuitry in said multiplier for rounding off to a predetermined *n*th bit least significant binary digit of said final product without generating the least significant binary digits to the right of said *n*th bit of said final product

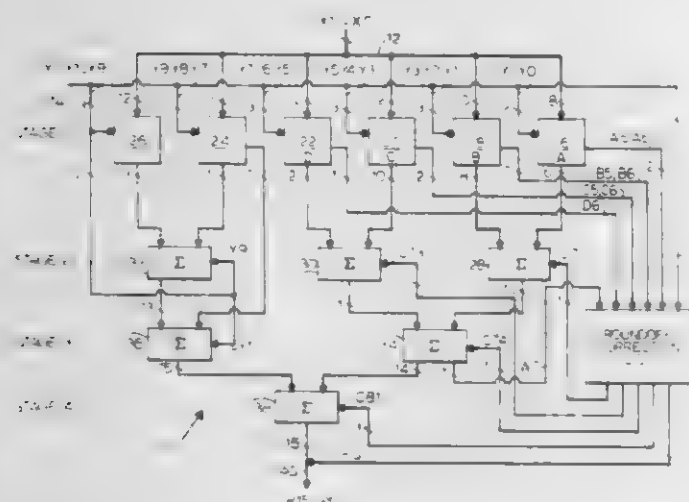
said circuitry including in said first stage a plurality of partial product generators for generating partial products from a multiplicand X and multiplier Y including a first least significant bits multiplier generator A, a second next least significant bits multiplier generator B, a third next least significant bits multiplier generator C and a fourth next least significant bits multiplier generator D (where the numerical subscript following a letter indicates significance of bit position therein);

said circuitry including a first carry signal generator stage connected to said partial product generators A and B for generating a first carry signal $C[n-1]$ defined as equal to $(B[n-2] + A[n-2]) \cdot (A[n-2] + B[n-3] + A[n-3]) \cdot (A[n-3] + B[n-3] + B[n-2])$ and supplying said first carry signal $C[n-1]$ to said first summation network;

said circuitry including a second carry signal generator stage connected to said partial product generators C and D for generating a second carry signal $C[n-1]3$ defined as equal to

$$(C[n-2] + C[n-3] + D[n-2] + Y[n-1]) \cdot (C[n-2] + C[n-3] + Y[n-1]) \cdot (C[n-2] + C[n-3] + D[n-2]) \cdot (C[n-3] + D[n-2] + Y[n-1])$$

and supplying said second carry signal $C[n-1]3$ to said second summation network;



said circuitry including a third carry signal generator stage connected to said partial product generators for generating a third carry signal $C[n-1]4$ defined as equal to $C[n-2] \cdot D[n-2] \cdot Y[n-1] \cdot C[n-3]$ where $Y[n-1]$ is a multiplier bit two bit positions to the right of the nth bit position of the multiplier, and supplying said third carry signal $C[n-1]4$ to said third summation network;

said circuitry including a fourth carry signal generator and least significant bit final rounded product generator stage connected to said partial product generators and to said third summation network for generating a fourth carry signal $C[n]1$ defined as equal to $W[n-1] \cdot (S[n-2]1 + S[n-2]2)$ and a least significant bit rounded product output P_n defined as equal to $W[n-1] + (S[n-2]1 + S[n-2]2)$ where $W[n-1]$ is the least significant bit carry signal from the third summation network, $S[n-2]1$ is defined as equal to $A[n-2] \cdot [B[n-2] + (A[n-3] + B[n-3])] + A[n-2] \cdot [B[n-2] + (A[n-3] + B[n-3])]$ and $S[n-2]2$ is defined as equal to $C[n-2] \cdot [D[n-2] + Y[n-1]] + C[n-3] \cdot [D[n-2] + Y[n-1]] + C[n-3]$ and supplying said fourth summation network with said fourth carry signal and providing said least significant bit rounded product output P_n at the output of said multiplier.

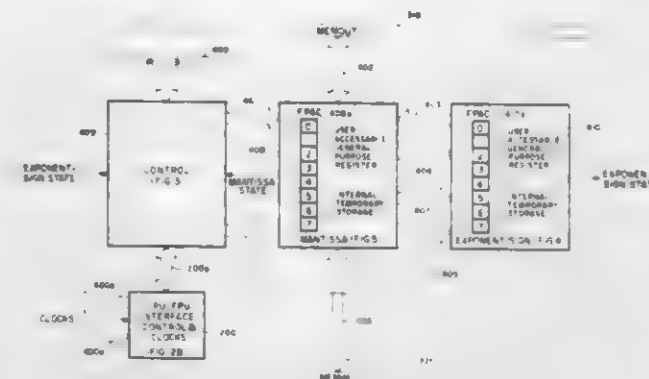
4,229,801 FLOATING POINT PROCESSOR HAVING CONCURRENT EXPONENT/MANTISSA OPERATION

David L. Whipple, Braintree, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed Dec. 11, 1978, Ser. No. 968,227
Int. Cl. G06F 7/48

U.S. Cl. 364-748

20 Claims



1. An FPU for making floating point calculations within a data processing system including processing means for processing said data, memory means for storing said data and for storing instructions which are used in control of operation of said system, input bus for conducting said data and instructions from said processor means to said memory means, output bus for conducting said data and instructions from said memory means to said processor means, said processor means including instruction means arranged to store one of said instructions at a time for controlling and permitting derivation of control of said operation of said system, said FPU comprising:

control means including means for receiving state signals and responsive to both operation of said instruction means and to said state signals, for providing FPU control signals to control operation of said FPU;

mantissa means connected between said input bus and said output bus, including means for conducting certain of said data therebetween, means for receiving certain of said FPU control signals from said control means, means for providing the mantissa means contribution to said state signals to said control means, responsive to said certain of said FPU control signals for manipulating mantissa portions of said certain of said data in a first pre-determined manner; and

exponent/sign means including means for receiving other certain of said FPU control signals from said controls means, means for providing the exponent/sign means contribution to said state signals to said control means, responsive to said other certain of said FPU control signals for manipulating other than said mantissa portions of said certain of said data received from said mantissa means in a second pre-determined manner concurrently with operation of said mantissa means;

whereby the concurrent operation of said exponent/sign means and said mantissa means under control of said control means provides said floating point calculations within said data processing system.

4,229,802 DIGITAL ADDING DEVICE

Ludwig D. J. Eggermont, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,224
Claims priority, application Netherlands, Nov. 10, 1977, 7712367

Int. Cl. G06F 7/50

U.S. Cl. 364-786

2 Claims

1. An improved digital adding device for determining the sum of a plurality of n-bit binary coded numbers, said device comprising:

a digital parallel accumulator, said accumulator comprising:

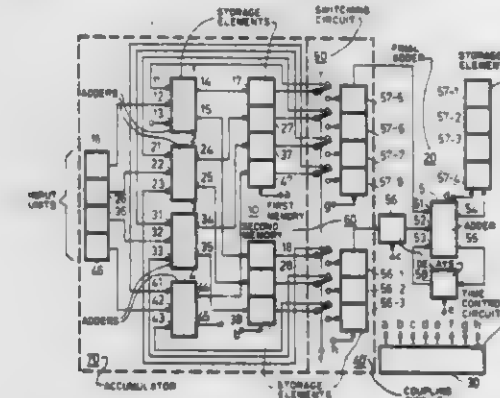
n full adders, each adder corresponding to one of said n-bits, said full adders having inputs to which the bits of the binary coded numbers are transferred and having sum and carry outputs;

a first store having inputs connected to the outputs of said full adders for storing intermediate sums and intermediate carries resulting from the addition and having outputs;

a final adder for determining the sum of each final intermediate sum and final intermediate carry stored in said first store and having inputs;

a coupling circuit for coupling the inputs of said final adder to the outputs of said first store;

a time control circuit having outputs coupled to control inputs of said digital parallel accumulator and said final



adder for controlling said digital parallel accumulator and final adder;

said coupling circuit comprising:

a switching circuit connected to the outputs of said first store and having a first and a second switching state; and a second store having an output coupled to said final adder inputs and having an input coupled to said switching circuit;

said time control circuit also controlling said coupling circuit so that in the first switching state the outputs of the first store are coupled to inputs of said full adders and in the second switching state the outputs of said first store are coupled to said second store inputs for taking over the final intermediate sum and the final intermediate carry.

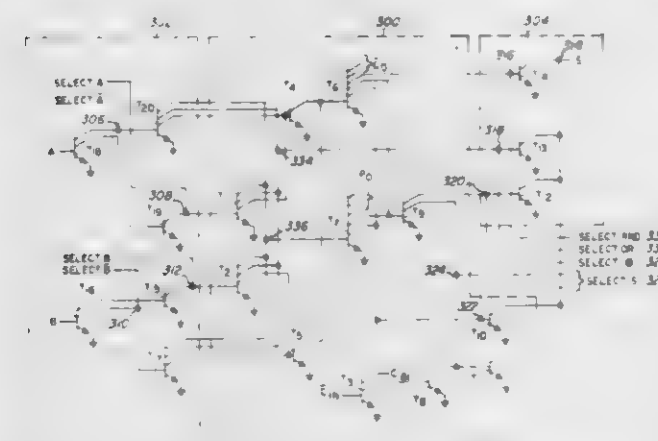
4,229,803 FULL ADDER AND ALU

Clifford C. Rhodes, Stafford, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1978, Ser. No. 911,845
Int. Cl. G06F 7/50

U.S. Cl. 364-787

4 Claims



3. A full adder comprising:

input means for receiving first and second data bits and a carry-in bit, and for providing the received first and second data bits and the carry-in bit, and the logical complements thereof;

first logic means for receiving the first and second data bits,

and for providing the logical AND and NAND of the received first and second data bits;

second logic means for receiving the complements of the first and second data bits, and for providing the logical OR and NOR of the received first and second data bits;

third logic means for receiving the logical NAND and the logical OR, and for providing the logical AND and the logical NAND of the received logical NAND and logical OR, the results being the logical XOR of the first and second data bits, and the complement of the logical XOR, respectively;

sum logic means for receiving the carry-in bit and the complement thereof, and the logical XOR and the complement thereof, for determining the logical NAND of the received carry-in bit and logical XOR, for determining the logical NAND of the received complements of the carry-in bit and logical XOR, and for providing the logical AND of both logical NANDs determined thereby, the result being the arithmetic sum of the first and second data bits; and

carry output means for receiving the carry-in bit and the logical NAND and logical OR of the first and second data bits, for determining the logical NAND of the received carry-in bit and the received logical OR, and for providing the logical AND of the received logical NAND and the logical NAND determined thereby, the result being the carry-out bit from the arithmetic sum of the first and second data bits and the carry-in bit.

4,229,804 NUMERICAL CONTROL UNIT HAVING A CASSETTE TYPE MEMORY

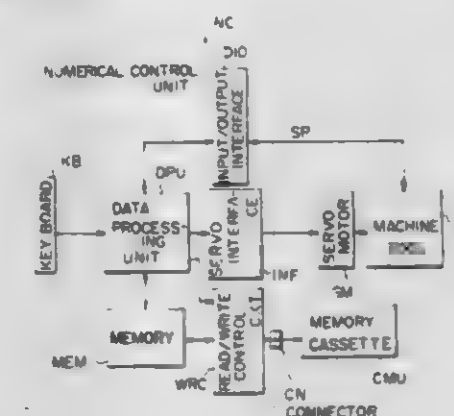
Kengo Kobayashi, Kawasaki, and Ryoji Imazeki, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Jun. 20, 1977, Ser. No. 808,398
Claims priority, application Japan, Jun. 28, 1976, 51-76140; Jun. 28, 1976, 51-76141

Int. Cl. G06F 13/00; G05B 19/18

U.S. Cl. 364-900

4 Claims



1. In a numerical control unit for controlling a machine tool, said numerical control unit comprising an internal memory means for storing program data for controlling said machine tool, a data processing means operatively connected to the said memory means for processing the data stored in said internal memory means, input and output means operatively connected to said data processing means for interfacing with said machine tool, and a manual data input means operatively connected to said data processing means for manually entering program data for controlling said machine tool into said numerical control unit, the improvement comprising a removable external semiconductor memory cassette means operatively connected to said data processing means and said internal memory means through a read/write control means, said read/write control means interfacing said external semiconductor memory cassette means with said internal memory means and said data processing means, said data processing means controlling said numerical control unit to transfer stored data from said external semiconductor memory cassette means to said internal

memory means and from said manual data input means and said internal memory means to said external semiconductor memory cassette means, wherein said read/write control means comprises:

- a clock circuit/timing generator means for providing timing signals for controlling said read/write control means in response to a strobe signal from said data processing means;
- first and second gate circuit means operatively connected to each other and to said clock circuit/timing generator means for transferring a plurality of control signals between said data processing means and said semiconductor memory cassette means;
- an address counter, decoder, and a pair of buffer means operatively connected to said second gate circuit means for controlling the addresses of the data stored in said internal memory means and said semiconductor memory cassette means;
- a pair of data buffer means operatively connected between a data bus from said data processing means and a pair of data busses from said semiconductor memory cassette means for buffering said data transferred between said data processing means and said semiconductor memory cassette means;
- a comparator means, parity generator means, parity checker means, and gating means operatively connected to said semiconductor memory cassette means data busses and said second gate circuit means for insuring the errorless transfer of data between said data processing means and said semiconductor memory cassette means.

4,229,805

MAGNETIC BUBBLE-DOMAIN DEVICE

Dirk J. Breed, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

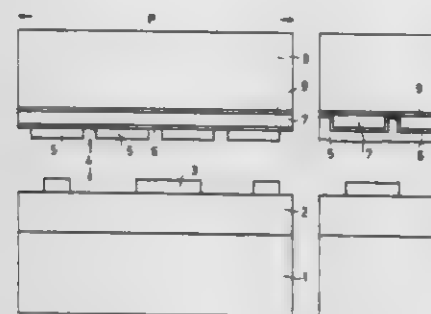
Filed Jan. 5, 1978, Ser. No. 867,149

Claims priority, application Netherlands, Aug. 24, 1977, 7709312

Int. Cl.² G11C 19/08

U.S. Cl. 365-2

20 Claims



1. A magnetic domain device comprising:
 - a plate of magnetic material;
 - means for generating a magnetic field extending transversely in said plate of magnetic material for sustaining magnetic domains therein;
 - at least one current conductor under the control of a current therein for simultaneously producing a plurality of preferred positions for said magnetic domain in said plate of magnetic material and, under control of a sequence of currents in said current conductor, producing a continual sequence of preferred positions for domains thereby determining a domain path;
 - a silicon plate positioned at least substantially parallel to said plate of magnetic material;
 - an insulating layer at least partly covering the silicon plate; wherein at least a part of said current conductor is structurally joined to said insulating layer so as to carry off heat which is developed by said current in said conductor

through heat transfer to and heat conduction in said silicon plate.

4,229,806

CONSECUTIVE BIT BUBBLE MEMORY DETECTOR

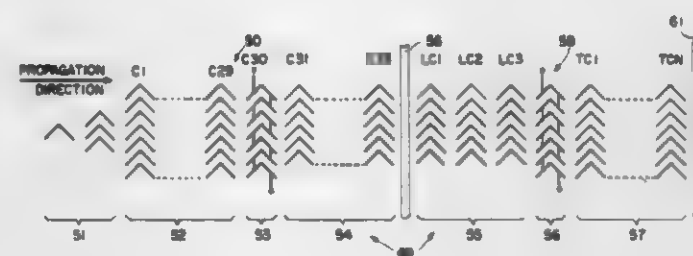
Richard M. Josephs, Willow Grove, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,278

Int. Cl.¹ G11C 19/08

U.S. Cl. 365-8

10 Claims



1. A detector for a consecutive bit bubble memory device of the type having a magnetoresistor detector and a dummy magnetoresistor detector comprising:
 - an expanding stack having a plurality of columns of propagation elements for receiving and expanding consecutive bit bubble stream,
 - a deep stack adjacent said expanding stack having a plurality of columns of propagation elements for receiving and containing said expanded bubble stream,
 - a magnetoresistor detector adjacent said deep stack adapted to change resistance as a bubble is propagated there through,
 - a shallow stack adjacent said detector having a plurality of columns of propagation element,
 - a first guard rail stack adjacent said shallow stack having a plurality of columns of anti-propagation elements for receiving and annihilating said bubble stream,
 - a dummy array comprising,
 - a leading propagation stack having a plurality of propagation columns, the number of said columns in said leading propagation stack being substantially smaller than the number of propagation columns in said deep stack,
 - a dummy magnetoresistor detector adjacent said leading propagation stack,
 - a trailing propagation stack adjacent said dummy detector having a plurality of columns of propagation elements, the number of said columns in said trailing propagation stack being substantially equal to the number of columns in said shallow stack, and
 - a second guard rail stack adjacent said dummy array adapted to prevent stray bubbles from entering said dummy array.

4,229,807

CURRENT CONTROLLED DISK REPLICATOR

Mark H. Kryder, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 4, 1978, Ser. No. 902,649

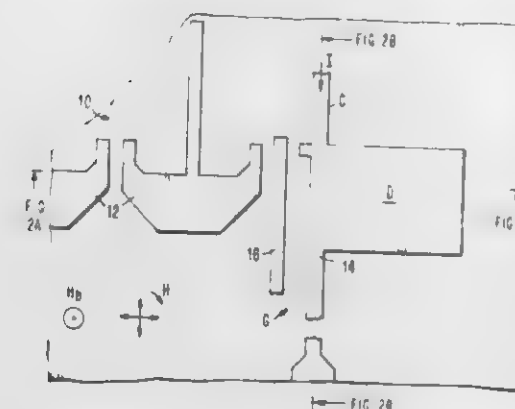
Int. Cl.² G11C 19/08

U.S. Cl. 365-12

17 Claims

1. A magnetic bubble domain chip, comprising:
 - a magnetic medium in which bubble domains can be generated and moved,
 - a patterned first layer of magnetic material along which said bubble domains move in response to the reorientation of a magnetic field in the plane of said first layer,
 - a patterned second layer of non-magnetic electrically conductive material located between said first layer and said magnetic medium,
 - a replicate generator for splitting magnetic domains from a seed domain, said generator including a disk of magnetic material for holding said seed domain as said magnetic

field reorients, said disk being a portion of said magnetic layer and having a leading edge from which said seed domain stretches as said magnetic field reorients, a current carrying conductor for carrying electrical current in a path along said leading edge of said disk, said conduc-



tor including in a first portion thereof said electrically conductive material and in a second portion thereof said magnetic layer, wherein said electrical current flows through said electrically conductive layer in said first portion and through said magnetic disk in said second portion.

4,229,808

METHOD FOR RECORDING MULTIPLE DATA SEGMENTS ON A STORAGE DISC WITH ECCENTRICITY FACTOR

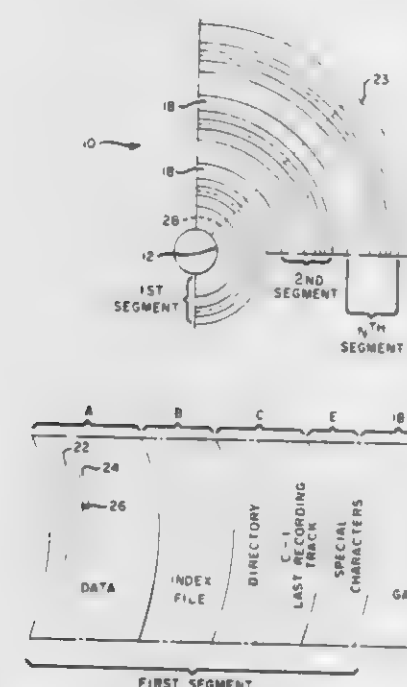
Peter W. Hui, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 21, 1978, Ser. No. 971,975

Int. Cl.² G11C 13/04; H04N 5/76

U.S. Cl. 365-234

5 Claims



1. A method of recording data on a high-density, optical disc having a plurality of tracks therein, comprising:
 - recording first data in a first portion of said tracks on said optical disc;
 - recording at least a first reference file associated with said first data in a second portion of said tracks adjacent to said first portion, said second portion including a last recording track;
 - recording a character which is repeated in a third portion of said tracks adjacent to said last recording track to thereby signify the end of said first data and the associated first reference file;
 - leaving a recording gap on said optical disc between said

third portion and a fourth portion which will subsequently be used for recording second data; and said step of leaving a recording gap comprising determining an eccentricity factor for said optical disc in relation to a means for recording and a means for reading said optical disc and leaving a predetermined approximate number of tracks between said third portion and said fourth portion in conformance with said eccentricity factor.

4,229,809

ACOUSTIC UNDER SEA POSITION MEASUREMENT SYSTEM

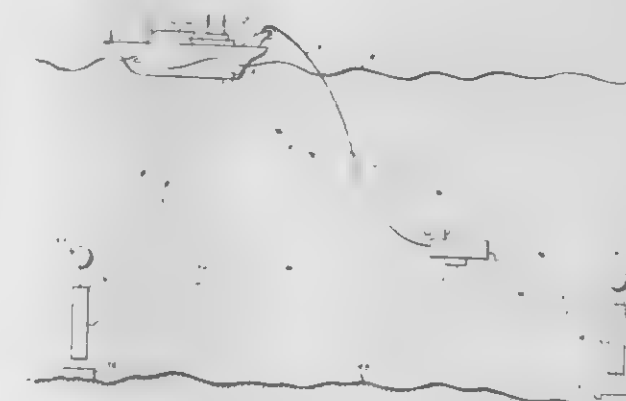
Julian H. Schwalbe, Franklin Square, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,001

Int. Cl.² G01S 9/68, 5/18

U.S. Cl. 367-6

38 Claims



1. In a machine method of establishing positional data with respect to a base line disposed at a marine bottom, the steps of: providing first and second acoustic pulse transponder means one each at the respective ends of said base line, providing third acoustic pulse transponder means at support means disposed intermediate said marine bottom and a location at the associated marine surface, providing pulse interrogator-receiver means at said location for cooperative communication with said first, second, and third acoustic pulse transponder means by providing respective first, second and third pulse responses thereto at said interrogator-receiver means, providing hydrophone means at said support means responsive to said first and second acoustic pulse transponder means for providing respective fourth and fifth pulse responses at said interrogator-receiver means, utilizing said first, second, and third pulse responses at said location for computing the respective magnitudes of the distance vector R_{SA} from said location to said first acoustic pulse transponder means, of the distance vector R_{SB} from said location to said second acoustic pulse transponder means, and of the distance vector R_{SC} from said location to said third acoustic pulse transponder means, utilizing said first and fourth pulse responses at said location for computing the magnitude of the distance vector R_{AC} between said first and third acoustic pulse transponder means, and utilizing said second and fifth pulse responses at said location for computing the magnitude of the distance vector R_{BC} between said second and third pulse transponder means.

4,229,810

SEISMOGRAM DISPLAY AND METHOD

Jay F. Thompson, 1211 Walnut La., Humble, Tex. 77338

Filed Sep. 28, 1978, Ser. No. 946,902

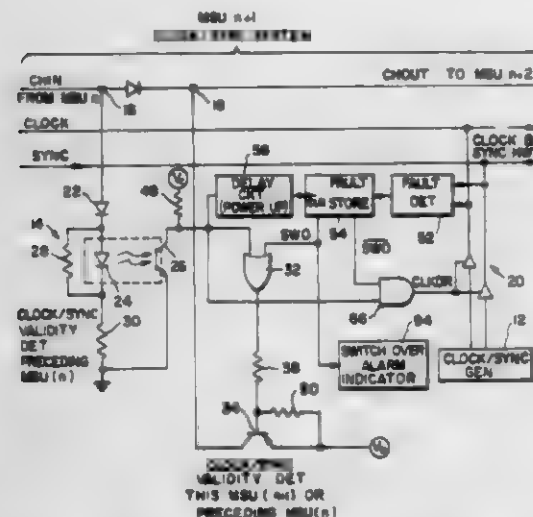
Int. Cl.¹ G01V 1/34

U.S. Cl. 367-68

12 Claims

1. In a two-dimensional seismogram depicting at least one trace having amplitude variations representing the variations in the value of a property of rock layers beneath the earth's

outputs such that said units are connected in succession via said validity lines, each of said units having means for generating said timing signals, said validity signal generation and transmission circuits comprising means responsive to the presence of a validity signal at said input and the valid operation of said



timing signal generating means for providing a validity signal at said output when at least one of said validity signals at said input and valid operation of said generating means is present, and means for applying the timing signals from said generating means to said bus when said validity signal at said input is absent.

4,229,817

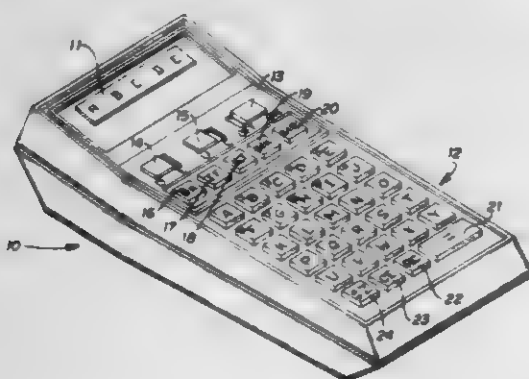
PORTABLE ELECTRONIC CRYPTOGRAPHIC DEVICE
Barrie O. Morgan, Dallas, and Merlon B. Carter, Richardson,
both of Tex., assignors to Datotek, Inc., Dallas, Tex.

Filed Apr. 28, 1978, Ser. No. 901,068

Int. Cl.² H04L 9/00; H04K 1/02

U.S. Cl. 375-2

35 Claims



1. A cryptographic device comprising:

- a housing;
- a keyboard on said housing for inputting a plurality of bits of information;
- a display on said housing for displaying said list of information input through said keyboard;
- circuitry within said housing responsive to said keyboard inputs for controlling said display;
- means in said housing for enciphering said bits of information displayed on said display; and
- said circuitry operable to remove said displayed keyboard inputs and to display said enciphered bits of information; wherein said keyboard comprises:
- a plurality of keys each representative of a different letter of the alphabet;
- shift means for a plurality of normally alphabetic keyboard inputs to provide numeric input capability; and
- circuitry responsive to said shift means and controlling said display to display numeric inputs; and
- means for shifting said display between alphabetic and nu-

meric state to insure validity of deciphered keyboard inputs.

11. A cryptographic device comprising:

- a housing;
- a keyboard on said housing for inputting a plurality of enciphered characters;
- a display on said housing for displaying said bits of information input through said keyboard;
- random code generator circuitry within said housing for receiving a predetermined message key and setting the operation of said random code generator in response thereto;
- means for controlling said random code generator to decipher said keyboard inputs of enciphered characters;
- circuitry operable to remove said displayed keyboard inputs and to display said deciphered characters; and
- means to indicate the entry of information in an improper sequence or in a segment of improper length for inputting through said keyboard and display.

4,229,818

METHOD AND APPARATUS FOR ENCIPHERING BLOCKS WHICH SUCCEED SHORT BLOCKS IN A KEY-CONTROLLED BLOCK-CIPHER CRYPTOGRAPHIC SYSTEM

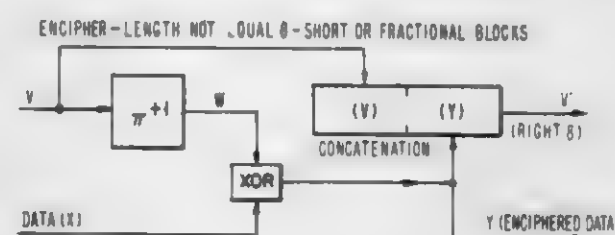
Stephen M. Matyas; Carl H. W. Meyer, both of Kingston, and Louis B. Tuckerman, III, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,596

Int. Cl.¹ H04L 9/02

U.S. Cl. 375-2

10 Claims



1. In a key-controlled block-cipher cryptographic process which includes taking an input data block and cryptographically transforming same into an input data block as a function of a unique user supplied key, initially transforming each new full input data block of length $L^{(i)}$ by a mathematically invertible function which depends on a preexisting data word which existed during a previous cryptographic transformation and using said initially transformed data block as the input block to said key-controlled cryptographic transformation, the improvement which comprises utilizing as the preexisting data word the immediately preceding cryptographically transformed output data string of length $L^{(i)}$ resulting from immediately preceding cryptographic transformations regardless of the length of the preceding encrypted data block.

4,229,819

DATA TRANSMISSION SYSTEM
Joachim Kuhlmann, and Helmut Moser, both of Heilbronn, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 21, 1978, Ser. No. 898,866

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2718226

Int. Cl.¹ H03K 7/06

U.S. Cl. 375-23

8 Claims

1. A data transmission system for transmitting and receiving a digital signal corresponding to a digitalized word having a defined number of logic "1" and "0" bits, comprising a transmitter for modifying said digitalized word to form said digital signal wherein each sequence of n identical bits

of said digitalized word is transmitted as a predetermined number of pulses having a predetermined pulse repetition frequency corresponding to the value of the first bit in said sequence followed by $n-1$ pauses in transmission, each pause having a length corresponding to the interval during which said pulses corresponding to said first bit



were transmitted, each bit representing a logic "1" consisting of a first predetermined number of pulses having a first pulse repetition frequency and each bit representing a logic "0" consisting of a second predetermined number of pulses having a second pulse repetition frequency, and a receiver for receiving said digital signal and converting it to said digitalized word.

4,229,821
SYSTEM FOR DATA TRANSMISSION BY MEANS OF AN ANGLE-MODULATED CARRIER OF CONSTANT AMPLITUDE

Frank de Jager; Cornelis B. Dekker, both of Eindhoven, and Dirk Mulwijk, Hilversum, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

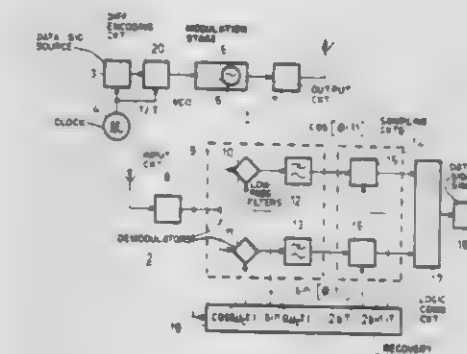
Filed Aug. 23, 1978, Ser. No. 936,035

Claims priority, application Netherlands, Sep. 9, 1977, 7709917

U.S. Cl. 375-53

Int. Cl.² H04L 27/18

9 Claims



4,229,820

MULTISTAGE SELECTIVE DIFFERENTIAL PULSE CODE MODULATION SYSTEM

Hajime Enomoto, Funabashi, Japan, assignor to Kakusai Den-shin Denwa Kabushiki Kaisha, Tokyo, Japan

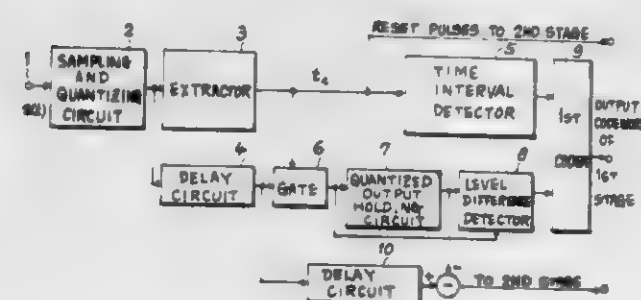
Continuation-in-part of Ser. No. 781,018, Mar. 24, 1977, abandoned. This application Jul. 27, 1978, Ser. No. 928,372

Claims priority, application Japan, Mar. 26, 1976, 51-33321

Int. Cl.² H03K 13/22

U.S. Cl. 375-27

6 Claims



1. A multistage selective differential pulse code modulation system comprising:

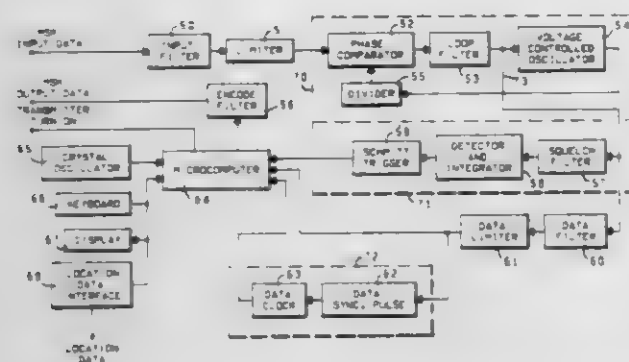
- a first encoding stage for receiving an input signal for approximating the input signal to a stepwise waveform having n level changes at sampling points selected in the order of level magnitude from a predetermined adjacent N samples in the input signal by developing a first coded output indicative of said stepwise waveform and a remainder corresponding to a difference between said input signal and said stepwise waveform;
- a second encoding stage connected to said first stage for receiving said remainder to encode said remainder by delta modulation, which uses a variable step level controlled in accordance with the level variation feature of said remainder so as to provide a second coded output indicative of successive values of said variable step level of said delta modulation; and
- output means connected to said first stage and said second stage to send out said first coded output and said second coded output to indicate said input signal.

1. A system for transmitting binary data signals with a given symbol rate $1/T$ from a transmitter to a receiver over a transmission channel of limited bandwidth, this transmitter comprising a data signal source, a clock signal source coupled to said data signal source for synchronizing the data signal source, a modulation stage comprising a carrier oscillator connected to the data signal source for generating an angle-modulated carrier signal of a substantially constant amplitude and a continuous phase, and an output circuit for supplying the angle-modulated carrier signal to the transmission channel, the receiver comprising an input circuit for obtaining the transmitted angle-modulated carrier signal from the transmission channel, a reference carrier circuit coupled to the input circuit for recovering two reference carriers with a phase difference of $\pi/2$ rad., a demodulation circuit, connected to the input circuit and the reference carrier circuit, for coherently demodulating the transmitted angle-modulated carrier signal by these reference carriers and for generating first and second demodulated signals, a reference clock signal circuit coupled to the input circuit for recovering two reference clock signals of half the symbol rate $1/(2T)$ with a phase difference of π rad., and a regeneration circuit comprising two sampling circuits connected to the demodulation circuit and the reference clock signal circuit for sampling the first and second demodulated signals with these reference clock signals, said receiver further comprising a logic combination circuit for obtaining regenerated binary data signals from the sampled first and second demodulated signals, wherein the modulation stage in the transmitter generates an angle-modulated carrier signal of substantially constant amplitude, whose continuous phase $\phi(t)$ in each symbol interval of length T changes by an amount expressed in rad., from the sequence $-\pi/2, -\pi/4, 0, \pi/4, \pi/2$, this amount being determined for the relevant symbol interval by at least two successive data symbols, the value of the phase $\phi(t)$ for instants t within the relevant symbol interval being determined by a filtered version of at least these two successive data symbols.

4,229,822

DATA DETECTOR FOR A DATA COMMUNICATION SYSTEM

Stephen M. Bench, Huntington Beach, Calif., assignor to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 830531, Sep. 6, 1977, Pat. No. 4,156,867.
This application Jan. 29, 1979, Ser. No. 7,086
Int. Cl.¹ H03D 3/18; H04 7/14
U.S. Cl. 375-81 11 Claims



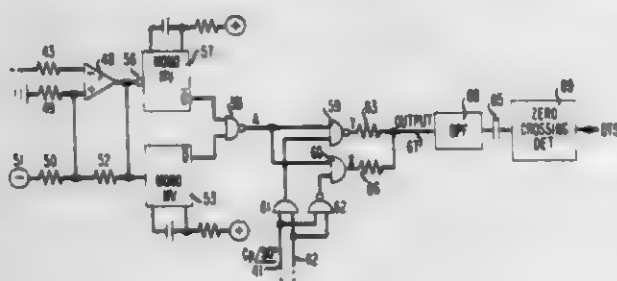
1. A detector for a predeterminedly coded data signal predeterminedly transmitted in a serial bit stream by a clock signal, comprising:

- means for recovering the clock signal from the coded data signal;
- means for multiplying the coded data signal and the recovered clock signal and providing a multiplied output signal;
- bandpass filter means for passing spectral components of the multiplied output signal between a predetermined lower and upper frequency; and
- output means for providing an indication of the presence of the coded data signal when the magnitude of the output of the bandpass filter is less than a predetermined magnitude.

4,229,823

DIGITAL CLOCK PHASE RECOVERY CIRCUITS FOR DATA RECEIVER

David J. Thomson, Murray Hill, and Roland J. Turner, Somerville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jun. 11, 1979, Ser. No. 47,021
Int. Cl.¹ H04L 7/00 6 Claims



1. In a data transmission system for data signals in which there is in each data bit time at least one signal transition between binary information signal levels in a direction that is indicative of the data information bit state, and circuits are provided for recovering from the data signals bit clock phase information, the method for deriving that bit clock phase information which includes the steps of

- generating a pulse of a single predetermined polarity in response to each data signal level transition in either direction between binary signal level states and thereby producing a train of unipolar pulses having a bit-rate frequency component,
- sampling said train periodically approximately midway between information-state-representative transition times, and
- reversing the excursion direction in the train of any pulse

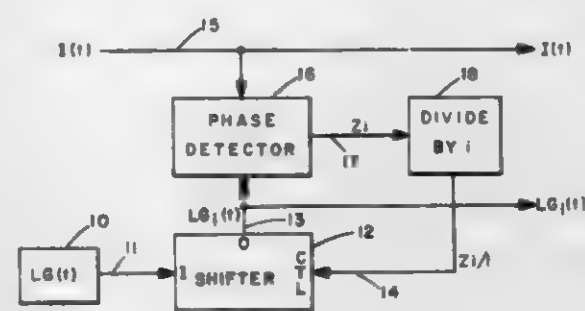
detected in the sampling step for thereby reinforcing the phase of the bit rate frequency component of the train.

4,229,824

METHOD AND APPARATUS FOR SYNCHRONIZING ELECTRICAL SIGNALS

John En, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.
Filed Jul. 21, 1978, Ser. No. 926,670
Int. Cl.¹ H04L 25/36 8 Claims

U.S. Cl. 375-119



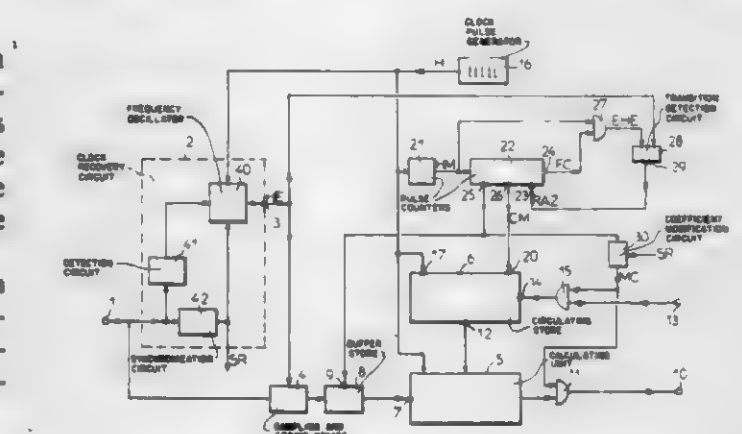
1. A method of synchronizing a local generator signal with an input signal wherein said local generator signal consists of a plurality of nondistorted bits having one predetermined period, and wherein said input signal consists of a plurality of bits which nominally are of said one predetermined period but which actually are distorted therefrom, said method including the steps of:

- initially generating said local generator signal with a phase that is arbitrary with respect to said input signal;
- measuring the phase difference between any two successive bits in said local generator signal and said input signal;
- changing the phase of said local generator signal in a direction which decreases said measured difference by an amount proportional to said measured phase difference divided by the total number of phase measurements made to thereby produce a new local generator signal; and
- repeating said measuring step and said phase changing step multiple times, each time using the most recently produced new local generator signal as said local generator signal.

4,229,825

SYNCHRONIZING CIRCUIT FOR A DIGITAL ARRANGEMENT

Loic B. Y. Guidoux, Le Plessis Robinson, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France
Filed Nov. 13, 1978, Ser. No. 960,369
Claims priority, application France, Dec. 28, 1977, 77 39424
Int. Cl.¹ H04L 25/40 5 Claims



1. A circuit for synchronizing a digital arrangement with an external clock pulse signal, the digital arrangement having a

calculating unit receiving during each one of its cycles to be synchronized with the external clock pulse signal both an external information to be entered into a buffer store and, thereafter, a sequence of coefficients originating in a predetermined order from a circulating store formed by a number of shift registers equal to the number of coefficients, these shift registers being shifted by pulses derived from a main clock generator, said synchronizing circuit comprising:

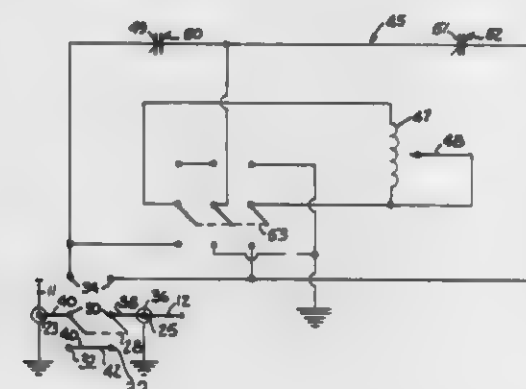
- switching means included in said circulating store for having the coefficients circulate in series in the cascade-connected registers, word-by-word, each coefficient being one word length;
- means for deriving from said main clock generator a word clock corresponding to the duration of circulation of a coefficient in a register;
- means for forming in synchronism with the word clock, operating cycles of constant duration for said calculating unit and a read signal for said buffer store at the beginning of each cycle;
- a transition detection circuit to start each cycle arranged for detecting at the occurrence of a word clock pulse the characteristic transition of the external clock pulse signal appearing after the end of each cycle;
- said switching means being controlled so that said coefficients circulate word-by-word from the end of each cycle to the instant at which within the next cycle said buffer store has been read and that thereafter said sequence of coefficients circulates in series until the end of said next cycle.

4,229,826

WIDE BAND IMPEDANCE MATCHING DEVICE

C. L. Wanzer, 111 S. Coleman, Spokane, Wash. 99206
Filed May 30, 1978, Ser. No. 910,149
Int. Cl.¹ H04B 1/44 10 Claims

U.S. Cl. 455-83



1. A wide band impedance matching device for coupling a radio transceiver to an antenna transmission line, comprising:

- a chassis housing;
- an input connector mounted to the housing and adapted to be operatively connected to the radio transceiver;
- an output connector mounted to the housing and adapted to be operatively connected to the antenna transmission line;
- a double pole, double throw manual bypass switch means having a first pair of terminals that are electrically connected to a second pair of terminals when the switch is in a "BYPASS" position and that are electrically connected to a third pair of terminals when the switch is in an "ON" position;
- a single coaxial feed cable within the housing coupled to the input connector, the output connector and the manual bypass switch having a center conductor which interconnects one of the connectors with one terminal of the first terminal pair and having another conductor coaxial with said center conductor which interconnects the other connector with the other terminal of the first pair;
- an impedance matching network electrically connected between the third pair of terminals for manually adjusting the impedance therebetween to match the impedance of

the transceiver with the impedance of the antenna transmission line when the bypass switch means is in the "ON" position; and

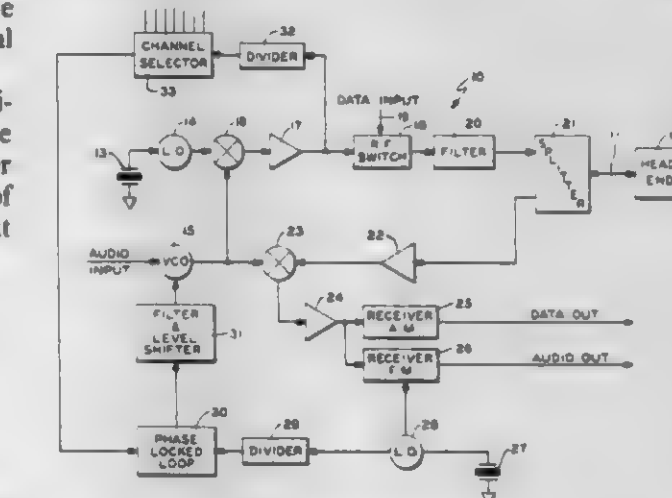
bridging means electrically interconnecting the second pair of terminals so that when the bypass switch means is in the "BYPASS" position the transceiver and antenna transmission line are directly interconnected through the coaxial cable to bypass the impedance matching network and thereby cause a minimum of radio signal attenuation loss.

4,229,827

SINGLE VOLTAGE CONTROLLED OSCILLATOR MODEM

George A. Bowman, Vernon Hills, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 26, 1979, Ser. No. 15,674
Int. Cl.¹ H04B 1/54 20 Claims

U.S. Cl. 455-87



1. A modem for transmitting data over a transmitting frequency and receiving data over a receiving frequency, wherein said transmitting frequency and said receiving frequency have different values, said modem comprising:

- a first oscillator for generating a first signal of a first frequency;
- voltage controlled oscillator means having a voltage controlled oscillator for generating a second signal of a second frequency;
- first mixer means connected to said first oscillator and to said voltage controlled oscillator for providing a first mixer output signal having a transmitting third frequency as a combination of said first frequency and said second frequency;
- input data means responsive to input data for modulating said first mixer output signal and for supplying said modulated first mixer output signal to a transmission medium;
- second mixer means connected to said voltage controlled oscillator and said transmission medium for mixing said second signal of said second frequency and said received data having a receiving fourth frequency, wherein said third and fourth frequencies have different values; and,
- receiver means connected to said second mixer means for demodulating said received data.

4,229,828

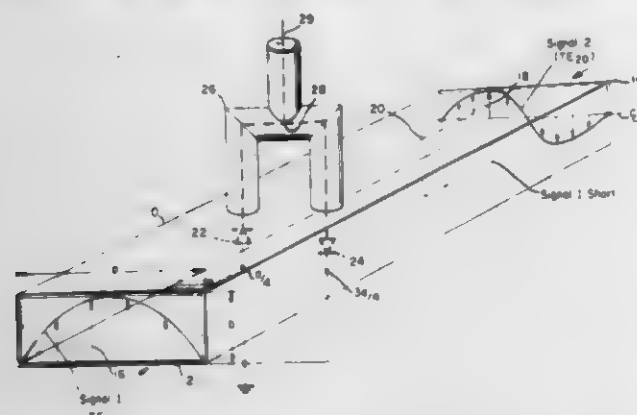
BI-MODE MILLIMETER WAVE MIXER

Joseph M. Baird, Newbury Park, and Paul M. Schwartz, Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 23, 1977, Ser. No. 864,027
Int. Cl.¹ H04B 1/26 15 Claims

U.S. Cl. 455-326

1. A balanced waveguide mixer structure for generating an intermediate frequency (IF) output signal in response to the mixing of local oscillator and incoming RF input signals, comprising:

- (a) means including a rectangular waveguide for propagating RF and local oscillator signals to a chosen location within said waveguide and in preselected modes of waveguide propagation, and
- (b) means including a pair of parallel-connected and reverse-poled mixer diodes connected at said chosen location



between top and bottom walls of said waveguide, said diodes symmetrically spaced along the width dimension of said waveguide with respect to the one-half width location in said waveguide and further positioned at predetermined width locations along said width dimension of said waveguide for generating said IF signals at a circuit node common to both of said diodes.

4,229,829

APPARATUS FOR WIRELESS TRANSMISSION OF A TEACHING PROGRAM IN A CLASSROOM

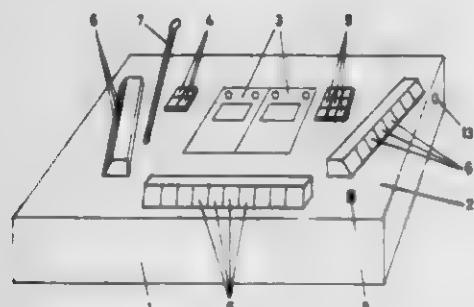
Peter H. Grunwald, Bogenweg 1, 6079 Buchschlag, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,114

Int. Cl.¹ H04B 9/00

U.S. Cl. 455-600

7 Claims



1. Apparatus for the wireless transmission of an instruction program in a classroom, comprising

a transmitting unit comprising a portable prismatic carrying case the size and shape of a suitcase adapted to rest on a table or desk in a flat position with one side of said case forming a top panel, at least one recording unit with operating elements, and an infrared transmitter for transmitting a recorded program from said recording unit housed in said case, said transmitter comprising a plurality of infrared transmitting diodes mounted on said top panel of said case and directed in at least two directions, and operating elements and indicating elements for said infrared transmitter and said recording unit mounted on said top panel,

a plurality of receiving units for individual students in the classroom, each of said receiving units comprising a headset comprising earphones connected by a bow, an infrared receiving diode mounted on said bow, a demodulator for signals received by said receiving diode, an amplifier for the demodulated signal and transducers in said earphones to convert an electrical signal output of said amplifier to a sound signal,

each of said receiving unit including an accumulator providing power for electronic circuitry of said receiving unit, said accumulator and electronic circuitry of said receiving

unit being housed in said earphones, and built-in means for charging said accumulator, said charging means comprising an induction coil on the bow of said headset with an upwardly facing magnetic core and means for rectifying current induced in said coil and supplying the rectified current to said accumulator to charge it, and

a storage cabinet for said receiving units, said storage cabinet having therein a horizontally extending rail and a plurality of induction coils on said rail with downwardly facing magnetic cores in position to be magnetically coupled with said induction coils of said receiving units when placed in said storage cabinet, said magnetic cores of said headset and said storage cabinet having sufficient magnetic force to suspend said headsets from said induction coils in said storage cabinet by the mutual attraction of said cores, said induction coils of said storage cabinet serving as primary windings to induce current in said induction coils of the receiving units.

4,229,830

APPARATUS AND METHOD FOR PROVIDING A MODULATION FORMAT FOR MULTIPLE WIDEBAND SIGNAL TRANSMISSION

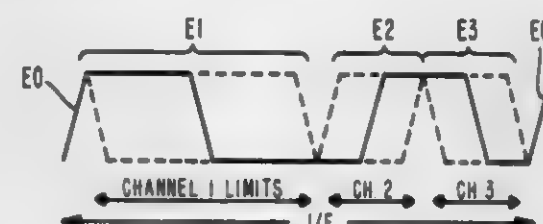
John O. Ryan, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jun. 1, 1979, Ser. No. 44,730

Int. Cl.¹ H04B 9/00

U.S. Cl. 455-608

28 Claims



1. A circuit for generating and utilizing a modulation format for transmitting multiple wideband signals of respective signal channels via a single optical fiber, the combination comprising: generating means including modulator means for generating said modulation format in the form of a waveform of a given time period having a stationary reference edge and multiple time deviable edges, wherein the position of each latter edge is time varied relative to the stationary reference edge in accordance with respective sampled signals of the corresponding signal channels, and; receiving means including demultiplexer means operatively coupled to the generating means via said single optical fiber, for detecting the stationary reference edge and for separating the multiple time deviable edges with respect to the stationary reference edge to recover the multiple wideband signals.

4,229,831

DRIFT COMPENSATED FIBER OPTIC RECEIVER

William A. Lacher, Lansdale, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 22, 1978, Ser. No. 972,502

Int. Cl.¹ H04B 9/00

U.S. Cl. 455-619

7 Claims

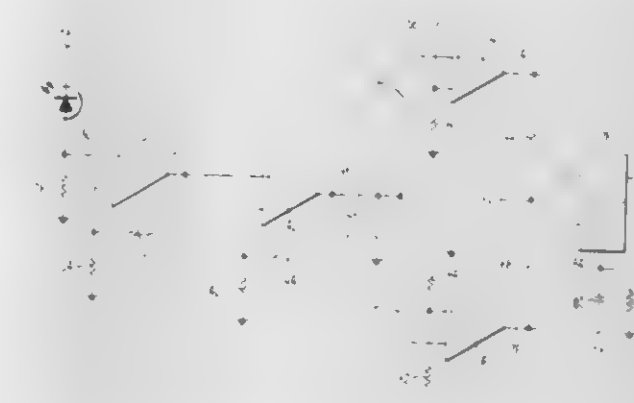
1. A receiver for use in a fiber-optic system for the transmission of digital data comprising: photodetector means responsive to the transmitted light incident thereupon for generating electrical pulses corresponding respectively to said digital data, amplifier means coupled to said photodetector means for amplifying said electrical pulses to a predetermined level, differentiator means coupled to said amplifier means for differentiating the amplified electrical pulses, thereby

providing with respect to a reference potential a pair of signals of opposite polarity for each amplified pulse,

a pair of comparator means coupled to said differentiator means and biased to respective opposite polarities, each of said pair of comparator means providing an output pulse in response to one of said pair of signals of opposite polarity from said differentiator means,

flip-flop means having at least a "1" and a "0" input terminal and a "1" output terminal, means coupling the output pulses of one of said pair of comparator means to said "1" input terminal and the output pulses of the other of said pair of comparator means to said "0" input terminal, the switching of said flip-flop means from one stable state to its opposite state in response to the pulses applied alternately to its "1" and "0" input terminals generating output

signal waveforms on said "1" output terminal which are of a predetermined usable amplitude and which correspond

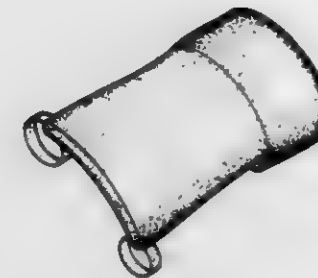


directly to said digital data transmitted optically by said system.

DESIGNS

OCTOBER 21, 1980

257,408
COMBINED WRISTBAND AND HANDCOVER
 Francis P. Talty, 5240 Reed Dr., Lewisville, Tex. 75056
 Filed Nov. 13, 1978, Ser. No. 959,492
 Term of patent 14 years
 Int. Cl. D02-06
 U.S. Cl. D2-361



257,409
JOGGER'S BELT
 John E. Kishbaugh, and Gordon Storholm, both of P.O. Box 671,
 Haddonfield, N.J. 08033
 Filed Jun. 21, 1978, Ser. No. 917,512
 Term of patent 14 years
 Int. Cl. D02-07
 U.S. Cl. D2-383



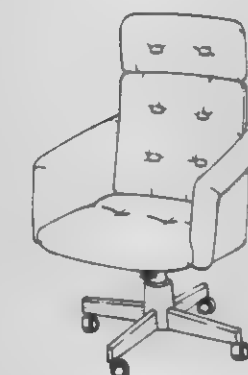
257,410
CARPENTER'S SQUARE POUCH
 Fred M. Rink, R.R. #2, Box 337, Wheatfield, Ind. 46392
 Filed Jan. 2, 1979, Ser. No. 562
 Term of patent 14 years
 Int. Cl. D2-99
 U.S. Cl. D2-400



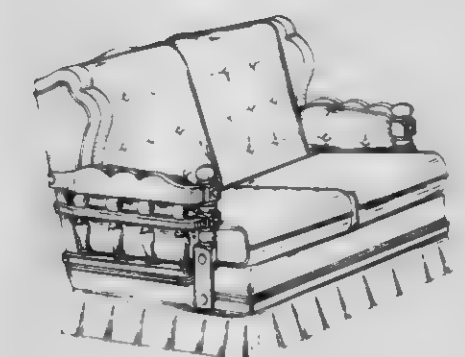
257,411
SMALL OBJECT ORGANIZER FOR LUGGAGE
 Renato Castelli, 53, Koning Leopold II laan, B-9000 Gent, Belgium
 Filed Sep. 18, 1978, Ser. No. 943,361
 Term of patent 14 years
 Int. Cl. D3-01
 U.S. Cl. D3-39



257,412
CHAIR
 Robert L. Wilson, Senatobia, Miss., assignor to Chromcraft Corporation, Amsterdam, N.Y.
 Filed Aug. 22, 1977, Ser. No. 826,785
 The portion of the term of this patent subsequent to Feb. 5, 1994, has been disclaimed.
 Term of patent 14 years
 Int. Cl. D6-01
 U.S. Cl. D6-31



257,413
SEAT
 Lester Beall, Jr., High Point, N.C., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
 Filed Oct. 3, 1977, Ser. No. 838,121
 Term of patent 14 years
 Int. Cl. D6-01
 U.S. Cl. D6-62



257,414

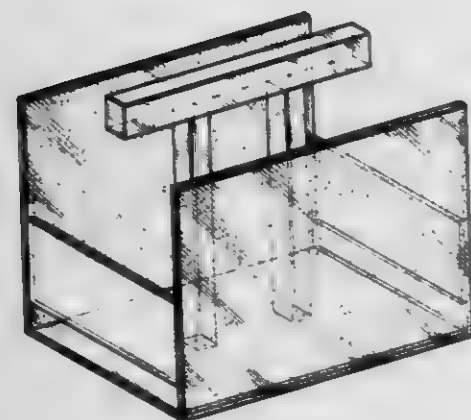
MAGAZINE RACK

John H. Smith, III, 31 Second Ave., Paterson, N.J. 07524, Donald G. King, Sr., 241 Dickson Park Cres., Mississauga, Ontario, Canada

assignor to John H. Smith, III, Paterson, N.J.
Filed Apr. 7, 1978, Ser. No. 894,408

Term of patent 14 years
Int. Cl. D6—04

U.S. Cl. D6—184



257,416

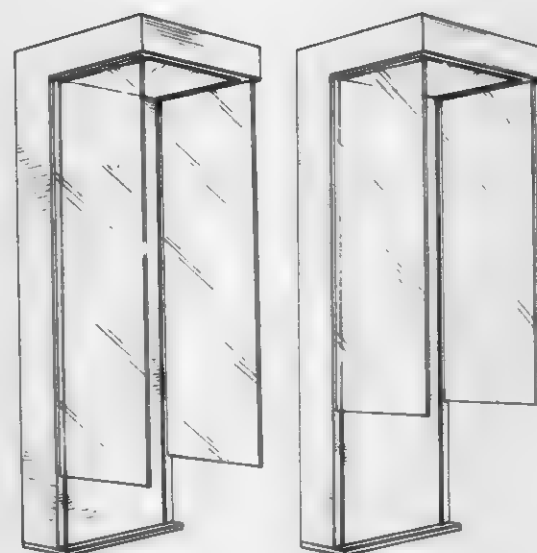
BOOTH

Donald G. King, Sr., 241 Dickson Park Cres., Mississauga, Ontario, Canada

Filed Jul. 28, 1978, Ser. No. 928,828

Term of patent 14 years
Int. Cl. D6—06; D25—03

U.S. Cl. D6—27



257,415

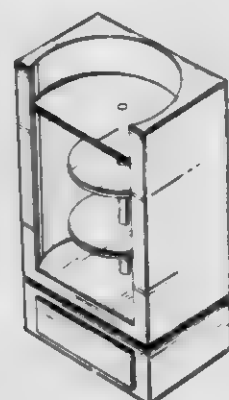
PICTURE DISPLAY CABINET

Allen Bell, 913 W. Magnolia St., Compton, Calif. 90220

Filed Jul. 17, 1978, Ser. No. 925,411

Term of patent 14 years
Int. Cl. D6—04

U.S. Cl. D6—186



257,417

DESK OR SIMILAR ARTICLE

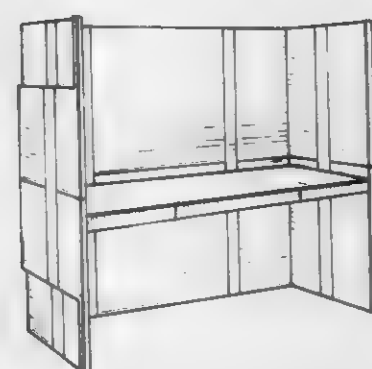
Lawrence Lerner, New York, N.Y., and Fred Schmitt, Nutley, N.J., assignors to Litton Business Systems, Inc.

Division of Ser. No. 770,328, Feb. 22, 1977. This application

Jun. 21, 1979, Ser. No. 50,884

Term of patent 14 years
Int. Cl. D6—04

U.S. Cl. D6—161

**DESIGN PATENTS**

GRANTED OCT. 21, 1980

ERRATA

For
CLASS

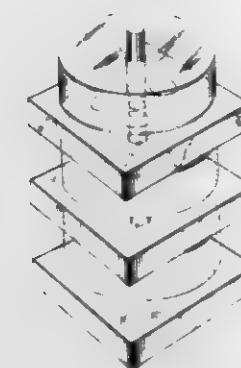
D21-027

See

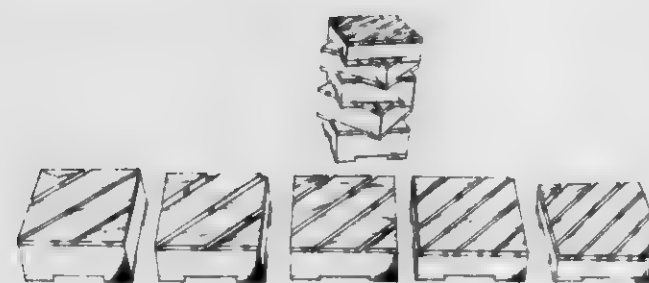
PATENT NO.

257,446

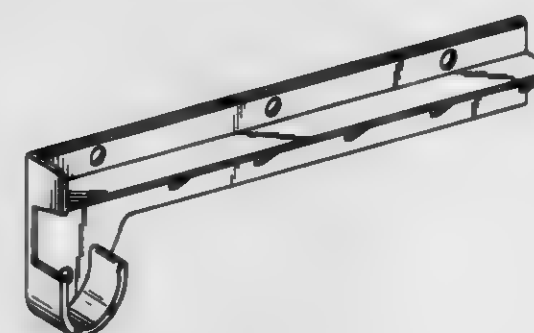
257,418
COMBINED SOAP HOLDER AND SOAP BARS
THEREFOR
 Sumner Rosenthal, 185 E. 85th St., New York, N.Y. 10028
 Filed Jun. 28, 1979, Ser. No. 52,758
 Term of patent 14 years
 Int. Cl. D21-01; D23-02; D28-02
 U.S. Cl. D6-23



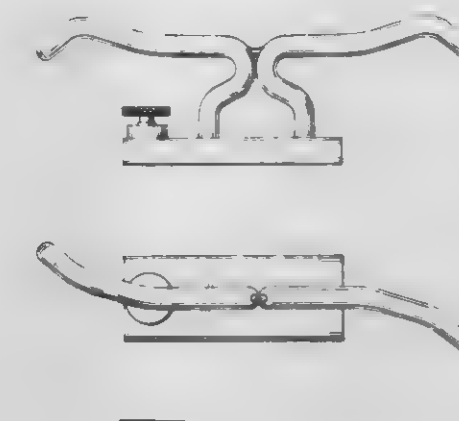
257,419
SET OF STACKABLE COASTERS
 Robert E. Russell, P.O. Box 19731, Dallas, Tex. 75219
 Filed Dec. 7, 1977, Ser. No. 858,472
 Term of patent 7 years
 Int. Cl. D07-06
 U.S. Cl. D7-45



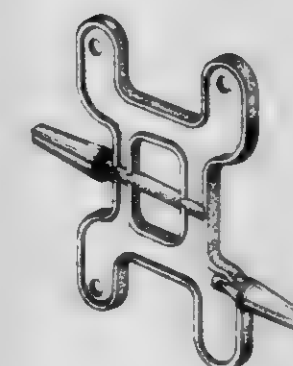
257,420
CLOSET FITTING FOR SUPPORTING A SHELF AND A
HANGER ROD
 James S. Follows, Surrey, Canada, assignor to Vanguard Plas-
 tics Ltd., Surrey, Canada
 Filed Jun. 5, 1978, Ser. No. 912,435
 Term of patent 14 years
 Int. Cl. D8-08
 U.S. Cl. D8-380



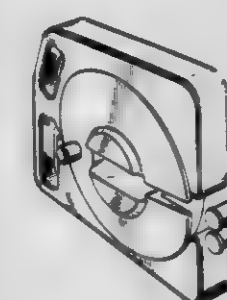
257,421
CLEAT
 Richard D. Cox, 22533 Winfield, Novi, Mich. 48050
 Filed Oct. 23, 1978, Ser. No. 953,430
 Term of patent 14 years
 Int. Cl. D8-08
 U.S. Cl. D8-382



257,422
LINE WINDER
 Kurt A. Greber, 3732 Randy Ct., Cincinnati, Ohio 45239
 Filed Nov. 13, 1978, Ser. No. 959,717
 Term of patent 14 years
 Int. Cl. D8-05, 99
 U.S. Cl. D8-359



257,423
HOSE CASSETTE
 Robert J. Tiedemann, Stamford, Conn., assignor to The Toro
 Co., Minneapolis, Minn.
 Filed Mar. 5, 1979, Ser. No. 17,827
 Term of patent 14 years
 Int. Cl. D8-08
 U.S. Cl. D8-359



257,424

COVER FOR FLOOR OUTLET

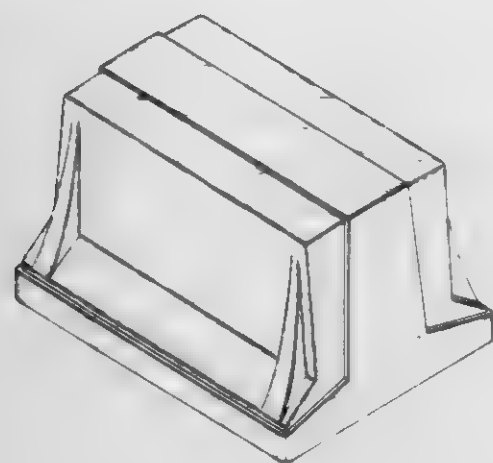
Thomas J. Sotolongo, Clearwater Beach, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 26, 1979, Ser. No. 61,084

Term of patent 14 years

Int. Cl. D8-09; D13-03

U.S. Cl. D8-353



257,425

INTEGRATED CIRCUIT CARRIER

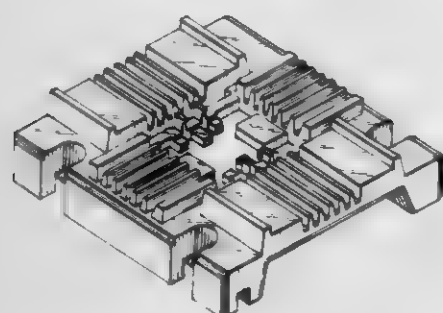
Milton I. Ross, 400 College Ave., Haverford, Pa. 19041

Filed Dec. 8, 1977, Ser. No. 858,675

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-187



257,426

CARRYING STRAP, OR THE LIKE

Herbert F. D'Alo, Lakewood, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,774

Term of patent 14 years

Int. Cl. D9-99

U.S. Cl. D9-292



257,427

BEVERAGE BOTTLE OR THE LIKE

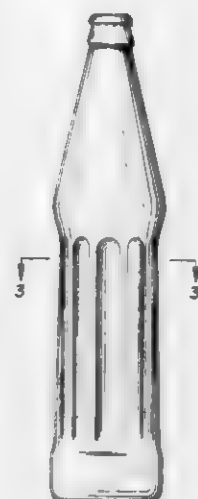
Kenneth R. Cooke, and Alvin H. Schechter, both of New York, N.Y., assignors to GCC Beverages, Inc., Miami, Fla.

Filed Dec. 4, 1978, Ser. No. 966,481

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-126



257,428

ELECTRONIC THERMOMETER

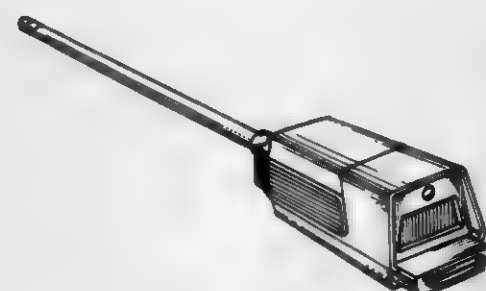
Joseph J. Manno, La Jolla, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Mar. 23, 1979, Ser. No. 23,333

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-57



257,429

TEMPERATURE PROBE

Joseph J. Manno, La Jolla, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Mar. 23, 1979, Ser. No. 23,332

Term of patent 14 years

Int. Cl. D10-07

U.S. Cl. D10-60



257,430

COMBINED WINCH MOUNT AND FRONT END GUARD

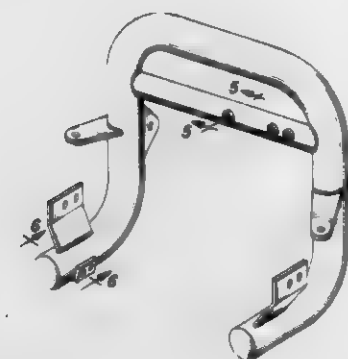
Victor F. Hickey, Ventura, Calif., assignor to W. R. Grace & Co.

Filed Sep. 18, 1978, Ser. No. 943,409

Term of patent 14 years

Int. Cl. D12-05, 16

U.S. Cl. D12-60



257,431

TRAILER

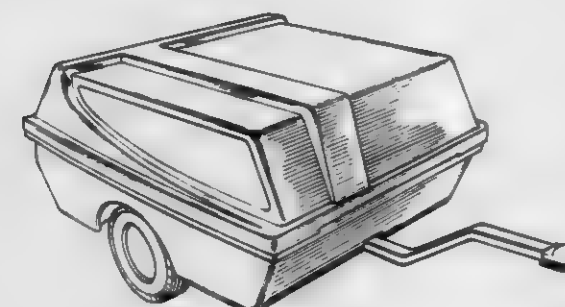
Arlen L. Huff, 1232 Canterbury Dr., South Bend, Ind. 46628

Filed Nov. 29, 1978, Ser. No. 964,626

Term of patent 14 years

Int. Cl. D12-10

U.S. Cl. D12-102



257,432

LIFT TRUCK

Bernard E. Erlacher, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

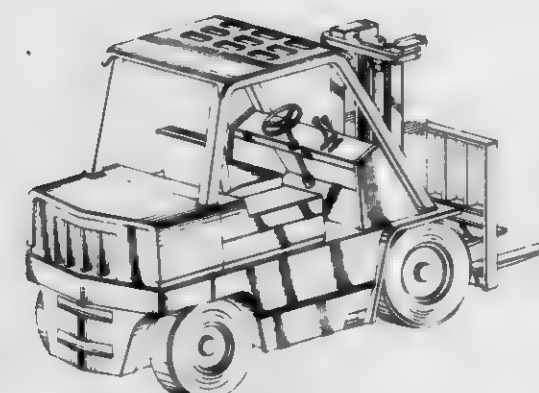
Continuation of Ser. No. 823,364, Aug. 10, 1977, abandoned.

This application Jun. 4, 1979, Ser. No. 45,572

Term of patent 14 years

Int. Cl. D12-05

U.S. Cl. D12-57



257,433

MODULAR CONTROL PANEL FACE

Barnet Weinstein, 14 Robert Rd., Marblehead, Mass. 01945, and John F. Price, 20 Trask Rd., Peabody, Mass. 01960

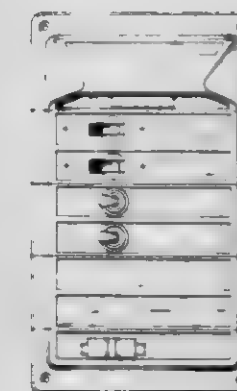
Division of Ser. No. 897,924, Apr. 19, 1978, Pat. No. Des.

254,370. This application Jun. 22, 1979, Ser. No. 50,992

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-35



257,434

PHOTOGRAPHIC CAMERA OR SIMILAR ARTICLE

James M. Conner, 75 Harrison Ave., Harrison, N.Y. 10528; Donato F. Pizzuti, 271 Lynnfells Pkwy., Saugus, Mass. 01906;

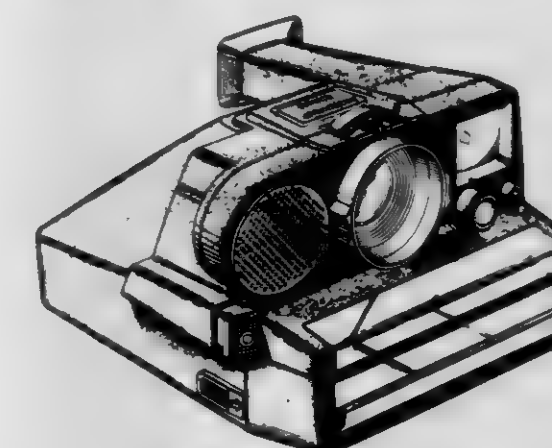
John M. Reynard, 8 Birchmeadow Cir., Framingham, Mass., 01701 and James M. Ryan, 327 Central Park West, New York, N.Y. 10025

Filed Apr. 23, 1978, Ser. No. 899,881

Term of patent 14 years

Int. Cl. D16-01

U.S. Cl. D16-01



257,435

PAIR OF SPECTACLES

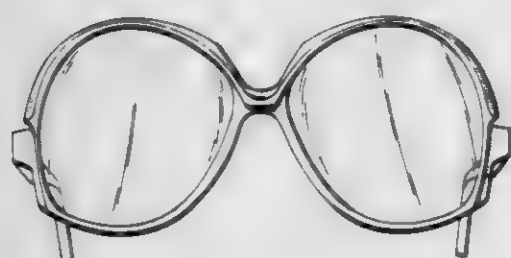
Richard M. Beane, E. Providence, R.I., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jun. 19, 1978, Ser. No. 916,686

Term of patent 14 years

Int. Cl. D16—06

U.S. Cl. D16—65



257,436

PAIR OF SPECTACLES

Richard M. Beane, E. Providence, R.I., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jun. 19, 1978, Ser. No. 916,694

Term of patent 14 years

Int. Cl. D16—06

U.S. Cl. D16—65



257,437

EYEGLASSES

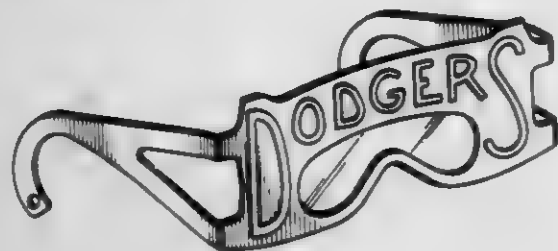
Kurt W. Wittke, 7055 Corbin, Canoga Park, Calif. 91305, and Addie L. Klotz, 18742 Labrador, Northridge, Calif. 91324

Filed Jun. 26, 1978, Ser. No. 919,377

Term of patent 14 years

Int. Cl. D16—06

U.S. Cl. D16—72



257,438

HOLDER UNIT FOR A DRAWING TOY

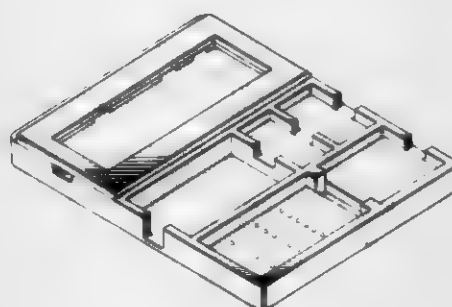
Akio Tsuyuki, Torrance, Calif., assignor to Tomy Corporation, Carson, Calif.

Filed Mar. 27, 1978, Ser. No. 890,826

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—59



257,439

DUPLICATOR

Koji Horii, Tokyo, Japan, assignor to Horii Toshado Kabushiki Kaisha, Tokyo, Japan

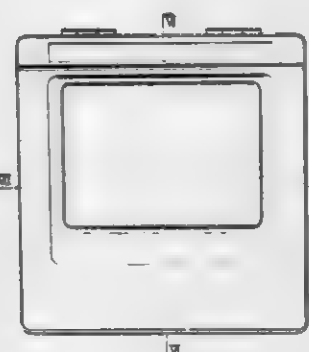
Filed Dec. 1, 1978, Ser. No. 965,286

Claims priority, application Japan, Jun. 16, 1978, 53-24756

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—127



257,440

FOOT EXERCISER

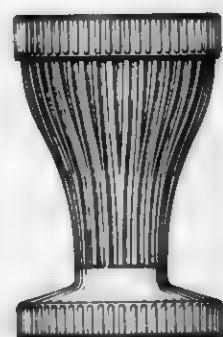
Frank S. Warner, 543 Twenty-Fifth St., Ogden, Utah 84401

Filed Aug. 31, 1978, Ser. No. 938,540

Term of patent 14 years

Int. Cl. D21—02

U.S. Cl. D21—191



257,441

GOLFER'S TOOL

Boris Kravich, 4868 Beacon Hill Dr., Castro Valley, Calif. 94546

Filed Jan. 8, 1979, Ser. No. 1,970

Term of patent 14 years

Int. Cl. D21—02

U.S. Cl. D21—234



257,442

COVER FOR INSECT TRAPS

Tadanobu Nakai, Nara, Japan, assignor to Tokiwa Chemical Industries, Limited, Osaka, Japan

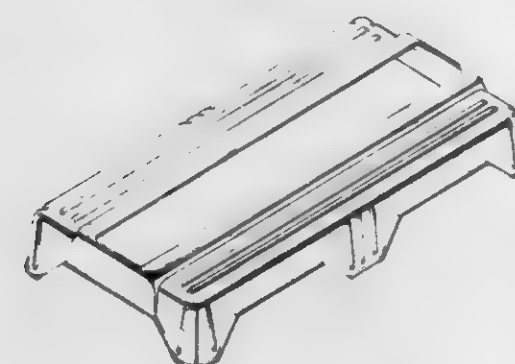
Filed Jun. 14, 1978, Ser. No. 915,995

Claims priority, application Japan, Jun. 14, 1978, 53-509

Term of patent 14 years

Int. Cl. D22—06

U.S. Cl. D22—99



257,443

FOUR-BLADED ARROW POINT

Roger S. Erlandson, 8600 Rubio Dr., Elk Grove, Calif. 95624

Filed Jan. 25, 1979, Ser. No. 6,286

Term of patent 14 years

Int. Cl. D22—05

U.S. Cl. D22—12



257,444

TWO-BLADED ARROW POINT

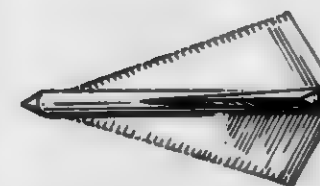
Roger S. Erlandson, 8600 Rubio Dr., Elk Grove, Calif. 95624

Filed Jan. 25, 1979, Ser. No. 6,287

Term of patent 14 years

Int. Cl. D22—05

U.S. Cl. D22—12



257,445

FISHING REEL

Masakazu Sakamoto, and Tetsuyuki Doi, both of Fukuyama, Japan, assignors to Ryobi Limited, Hiroshima, Japan

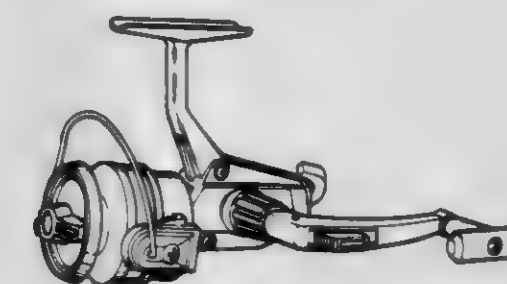
Filed Jul. 10, 1979, Ser. No. 56,389

Claims priority, application Japan, Jan. 16, 1979, 54-1173

Term of patent 14 years

Int. Cl. D22—05

U.S. Cl. D22—25



257,446

BASKETBALL GAME BOARD

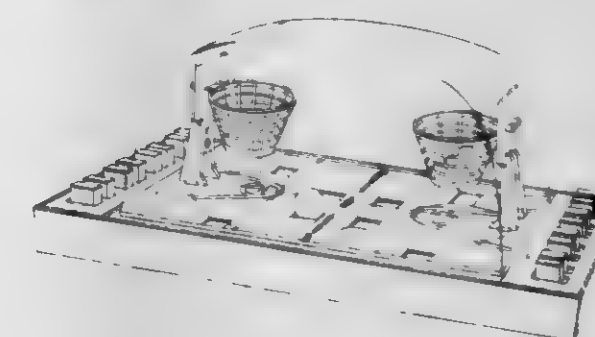
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan

Filed Aug. 1, 1978, Ser. No. 930,001

Term of patent 14 years

Int. Cl. D21—01

U.S. Cl. D21—27



257,447

APPLICATOR FOR LIQUIDS

Gerry D. Kesler, 1400 NE. 53rd Ct., Ft. Lauderdale, Fla. 33334

Filed Jun. 14, 1978, Ser. No. 915,145

Term of patent 14 years

Int. Cl. D28—03; D7—05

U.S. Cl. D28—07



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF OCTOBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A/S Cheminova: See—
Klemmensen, Per D.; Kolind-Andersen, Hans; and Madsen, Hans B., 4,229,353, Cl. 260-343.600.
- A/S N. Foss Electric: See—
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- A/S Niro Atomizer: See—
Felsvang, Karsten S.; and Hansen, Ove E., 4,229,249, Cl. 159-4.00B.
- A-T-O Inc.: See—
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- AAI Corporation: See—
Kahn, Marvin J.; Malchodi, Robert J.; Paine, Joseph P.; Rogers, Milton J.; and Zouck, Robert L., 4,228,737, Cl. 102-3.000.
- Aaron, Jon D.: See—
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- AB Svenska Flaktfabriken: See—
Eneroth, Jan-Mats; and Nordfeldt, Sven A., 4,229,183, Cl. 44-1.00D.
- AB Volvo: See—
Miller, Albert A., 4,228,697, Cl. 74-758.000.
- Abbott Laboratories: See—
Kerns, Ralph M., 4,228,831, Cl. 141-27.000.
- ABC Concrete Products: See—
Hyytinen, Niilo M., 4,229,156, Cl. 425-145.000.
- Abe, Naoto: See—
Ohta, Hideyasu; Shirasaki, Jun; Kanbe, Masaru; Abe, Naoto; Uozumi, Takahiro; and Mayama, Masayoshi, 4,229,523, Cl. 430-532.000.
- Abel, Edward P., to Eastman Kodak Company. Photographic material with temporary barrier layer comprising a mixture of vinylidene chloride terpolymer and polymeric carboxy-ester-lactone and photographic transfer process therefor. 4,229,516, Cl. 430-215.000.
- Abel, Heinz: See—
Schafer, Paul; and Abel, Heinz, 4,229,176, Cl. 8-582.000.
- Abelitis, Andris, to Klockner-Humboldt-Wedag AG. Method for the production of cement clinker low in sulphur. 4,229,226, Cl. 106-100.000.
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Olsson, Kjell I.; Aberg, Anders E. B.; and Gislen, Lars O. S., 4,228,677, Cl. 73-64.400.
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Brownlee, Sherwood S.; and Lohr, Warren G., 4,229,060, Cl. 312-305.000.
- Adachi, Teruhiko; and Ikeda, Hitoshi, to Teijin Limited. Polyamide multifilament yarn. 4,229,500, Cl. 428-373.000.
- Adam, Hans H., to Friedrich Deckel Aktiengesellschaft. Shift means for a multi-shaft sliding gear. 4,228,694, Cl. 74-342.000.
- Adams, Frederick J., to Cam Gears Limited. Gear assemblies and transmission. 4,228,699, Cl. 74-853.000.
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Toussaint, Herbert; Adelsberger, Klaus; and Hoffmann, Herwig, 4,229,346, Cl. 260-239.00B.
- Adler, Harold A. Turbine electric generator with solar heating and space cooling. 4,229,660, Cl. 290-2.000.
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Ruscitti, Tommaso; Albini, Giovanni; and Torretta, Roberto, 4,228,931, Cl. 222-321.000.
- AES Technology Systems, Inc.: See—
Savit, Joseph, 4,228,634, Cl. 53-492.000.
- AGA Aktiebolag: See—
Wiklund, Klas R.; and Ericsson, Lars A., 4,229,102, Cl. 356-5.000.
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Vulmiere, Huguette N.; and Vulmiere, Jacques C., 4,229,097, Cl. 355-35.000.
- Agency of Industrial Science & Technology: See—
Fukuta, Kenji; Ono-Oka, Ryuzo; Yoshida, Masatoshi; Saito, Kazuhisa; and Kosuda, Hiroyuki, 4,229,397, Cl. 264-113.000.
- Ogata, Ikuei; Kawabata, Yasuziro; Tanaka, Masato; and Hayashi, Teruyuki, 4,229,381, Cl. 568-454.000.
- Tonomura, Kenzo; and Urakami, Teizi, 4,229,543, Cl. 435-245.000.
- Yagi, Akihiro; Kuchinomachi, Yasuo; and Kodama, Hiroyuki, 4,228,807, Cl. 128-732.000.
- AGFA-Gevaert, A.G.: See—
Dunkel, Franz-Heinz; Klinkhammer, Ralf L.; Nebel, Heinz; Spanner, Siegfried; and Seibel, Gerd, 4,228,579, Cl. 29-430.000.
- Frank, Karl; and Block, Hans-Dieter, 4,229,521, Cl. 430-372.000.
- Ohlschlager, Hans, 4,229,526, Cl. 430-583.000.
- Ago, Tokinori: See—
Taguchi, Thoru; Ago, Tokinori; and Hashimoto, Isao, 4,229,597, Cl. 568-768.000.
- Aigami, Koji; Inamoto, Yoshiaki; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Takaishi, Naotake, to Kao Soap Company, Limited.
- 1-Aminomethyltricyclo[4.3.1.1^{2,5}]undecane and acid-addition salts thereof. 4,229,375, Cl. 260-563.00P.
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Errett, Paul W., 4,229,146, Cl. 417-281.000.
- Aisin Seiki Company, Limited: See—
Kondo, Toshiyuki; and Ando, Masamoto, 4,229,052, Cl. 303-115.000.
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- Akao, Takeshi: See—
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- Akasaki, Katsuyuki: See—
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Bengtsson, Erik; and Holm, Boris, 4,229,595, Cl. 568-706.000.
- Aktiebolaget Care Munters: See—
Lindahl, Sven, 4,228,847, Cl. 165-10.000.
- Aktiebolaget Carl Munters: See—
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- Aktiebolaget Electrolux: See—
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- Akzona Incorporated: See—
Lilly, Robert L.; Tummers, Gerardus L. J.; Johnson, Claude D., and Davis, Roger D., 4,229,813, Cl. 368-89.000.
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Hocker, Harvey L.; and Alcamo, John M., 4,228,928, Cl. 222-181.000.
- Alcan Aluminum Corporation: See—
Chalmers, Alexander A.; Gailey, J. Lynn; Englund, James A.; and Popek, Stephen, 4,228,629, Cl. 52-460.000.
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- Trevissan, Renato; and Pizzocri, Guido, 4,228,695, Cl. 74-492.000.
- Alfred University Research Foundation, Inc.: See—
Crandall, William B.; and Wasserstein, Linda J., 4,229,494, Cl. 428-35.000.
- Alisyncro S.a.S. di Bruno & C.: See—
Bruno, C. Ludovico, 4,228,888, Cl. 198-461.000.
- Allis-Chalmers Corporation: See—
Caldwell, Robert A., 4,229,643, Cl. 219-146.240.
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- Alper, Joseph B.: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Tanaka, Yoko; and Alper, Joseph B., 4,229,359, Cl. 260-397.200.
- Alpha Industries, Inc.: See—
Borzym, John J., 4,228,706, Cl. 83-320.000.
- Alquist, Henry E.; and Ammerman, Allen M., to Phillips Petroleum Company. Process for extracting bitumen from tar sands. 4,229,281, Cl. 208-11.0LE.
- Alt, Viktor V.; Mischenkov, Alexandr A.; Ponomarev, Viktor A.; Avdjushev, Eduard L.; Kamynin, Jury S.; Baryshnikov, Vladimir P.; Levin, Grigory K.; and Orlov, Alexei A. Apparatus for measuring parameters of work diagram of piston machines. 4,228,679, Cl. 73-117.300.
- Altenpohl, Paul J.: See—
Altenpohl, William F.; and Altenpohl, Paul J., 4,228,635, Cl. 53-572.000.
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- Aluminum Company of America: See—
LaBarge, Robert L.; and Williams, Marvin H., 4,228,851, Cl. 165-170.000.
- AM International, Inc.: See—
Ernozazy, Stephen; Meller, Frederick D.; and Oddo, Eugene P., 4,228,921, Cl. 222-40.000.

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Yamada, Hidesaki; Shimizu, Sakayu; and Tani, Yoshiki, 4,229,538, Cl. 435-193.000.

Ambac Industries, Incorporated: See—
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Amchem Products, Inc.: See—
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American Can Company: See—
Kellogg, Thomas W., 4,228,918, Cl. 221-65.000.
Kuchenbecker, Morris W., 4,228,946, Cl. 229-33.000.

American Cyanamid Company: See—
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Conrow, Ransom B.; and Bernstein, Seymour, 4,229,371, Cl. 260-507.000.
Conrow, Ransom B.; and Bernstein, Seymour, 4,229,584, Cl. 260-13.000.
Larkin, Joseph F., 4,228,895, Cl. 206-339.000.
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,229,370, Cl. 260-506.000.
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American Home Products Corporation: See—
Porter, William R., 4,229,447, Cl. 424-244.000.

American Hospital Supply Corporation: See—
Smith, Galyn F.; and Zwiernowski, Thomas P., 4,229,420, Cl. 422-310.000.

American Microsystems, Inc.: See—
Gregorian, Roubik; and Reddy, Kadiri R., 4,229,800, Cl. 364-745.000.

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Ameron, Inc.: See—
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Ammerman, Allen M.: See—
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Amos, Charles R.: See—
Suh, Kyung W.; and Amos, Charles R., 4,229,396, Cl. 264-53.000.

Ampex Corporation: See—
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Ryan, John O., 4,229,830, Cl. 455-608.000.

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Anders, Dale F.: See—
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Anderson, Edward M., to Kovar, Henry C., a part interest. Weedless fishing lure, 4,228,610, Cl. 43-42.410.

Anderson, Gordon H., to King-Seeley Thermos Co. Vibratory finishing machine, 4,228,619, Cl. 51-163.100.

Anderson, Richard J.; and Henrick, Clive A., to Zoco Corporation. Esters and thioesters of unsaturated acids, 4,229,368, Cl. 260-465.00D.

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Ando, Masamoto, to Aisin Seiki Kabushiki Kaisha. Hydraulic pressure control system for split brake system, 4,229,049, Cl. 303-6.00C.

Ando, Masamoto: See—
Kondo, Toshiyuki; and Ando, Masamoto, 4,229,052, Cl. 303-115.000.

Andoniev, Sergei M.; Laktushina, Valentina Y.; Medvedovsky, Viliam M.; and Shuster, Kim S. Roll-type electrical precipitator, 4,229,190, Cl. 55-112.000.

Angelucci, Francesco: See—
Penco, Sergio; Gozzi, Fausto; Angelucci, Francesco; and Arcamone, Federico, 4,229,355, Cl. 260-348.520.

Anic S.p.A.: See—
Vigano, Carlo; Quattrone, Francesco; and Toffanetti, Erio, 4,229,645, Cl. 235-92.00C.

Anichkov, Andrei D.; Polonsky, Jury Z.; and Usov, Vladimir V. Method of guiding a stereotaxic instrument at an intracerebral space target point, 4,228,799, Cl. 128-303.00B.

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Antos, George J., to UOP Inc. Attenuated superactive multimetallic catalytic composite, 4,229,319, Cl. 252-441.000.

Anumin Pty. Ltd.: See—
Parker, Alan J.; and Muir, David M., 4,229,212, Cl. 75-101.00R.

Aoki, Bunya: See—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,229,348, Cl. 260-239.100.

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Aoki, Keiji: See—
Yoshida, Hiroshi; Tabara, Nobuo; and Aoki, Keiji, 4,229,793, Cl. 364-431.000.

Aoki, Tadashi, to Jamesbury Corporation. Fire safe butterfly valve, 4,228,816, Cl. 137-72.000.

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Appel, Karl-Richard: See—
Brickl, Rolf; Eberhardt, Hans; Appel, Karl-Richard; Lechner, Uwe; and Merk, Walter, 4,229,479, Cl. 424-331.000.

Appley, Robert J. Vehicle control system for the handicapped, 4,228,865, Cl. 180-333.000.

Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, to Dai Nippon Insatsu Kabushiki Kaisha. Transfer printing method, 4,229,239, Cl. 156-155.000.

Arai, Minoru, to Tokyo Print Industry Co., Ltd. Automatic production system for printed-wiring boards, 4,228,582, Cl. 29-650.000.

Arai, Toshio: See—
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,229,085, Cl. 353-75.000.

Arakawa, Hideo; Namekawa, Takashi; Kuniya, Keiichi; and Sugawara, Hiroyuki, to Hitachi, Ltd. Vacuum-type circuit breaker, 4,229,631, Cl. 200-144.00B.

Arcamone, Federico: See—
Penco, Sergio; Gozzi, Fausto; Angelucci, Francesco; and Arcamone, Federico, 4,229,355, Cl. 260-348.520.

Arima, Tatsuhiro; and Yamanashi, Chusaku, to Nissan Motor Company, Limited; and Fuji Kiko Company, Limited. Seat belt retractor with tension eliminating mechanism, 4,228,971, Cl. 242-107.600.

Arlett, John, to Bryant & May Limited. Cutter for cutting match splints, 4,228,707, Cl. 83-387.000.

Armor-Inox S.A.: See—
Dreano, Claude; and Noyelle, Andre, 4,229,458, Cl. 426-264.000.

Armstrong Cork Company: See—
Heckles, John S., 4,229,505, Cl. 428-474.400.

Armstrong, W. Ted. Somersault swing, 4,228,999, Cl. 272-33.00R.

Arndt, Friedrich: See—
Borochewski, Gerhard; and Arndt, Friedrich, 4,229,208, Cl. 71-111.000.

Arnold, Fred E.: See—
Evers, Robert C.; Arnold, Fred E.; and Helminiak, Thaddeus E., 4,229,566, Cl. 528-185.000.

Arnold, Joe F.; Browning, Robert G.; and Meinzer, Richard A., to United Technologies Corporation. Linear capillary orifice injector, 4,229,158, Cl. 431-178.000.

Arold, Hermann; Elbe, Hans-Ludwig; Kranz, Eckart; Kramer, Wolfgang; Stetter, Jorg; Stolzer, Claus; and Thomas, Rudolf, to Bayer Aktiengesellschaft. Preparation of 1-azolyl-3,3-dimethyl-1-phenoxybutan-2-ones, 4,229,580, Cl. 548-262.000.

Arrowsmith, David R.; and Parsons, David, to Automotive Products Limited. Clutch release bearing assembly, 4,229,058, Cl. 308-184.00A.

Arvanitis, Aristotelis S.; Re, Thomas W.; and Malinowski, Stanley, to Motorola, Inc. Wide-bandwidth monolithic crystal filter, 4,229,718, Cl. 333-192.000.

Arya, Satya P.; Grossman, Leonard N.; and Schoenig, Frederick C., Jr., to General Electric Company. Determining fissile content of nuclear fuel elements, 4,229,654, Cl. 250-358.00R.

Asahi-Dow Limited: See—
Kai, Tamotsu; Tsurumi, Michio; Sakakiyama, Takashi; and Horiuchi, Kunihiro, 4,229,507, Cl. 428-541.000.

Nagumo, Tadashi; Yasuike, Akio; and Kataoka, Hiroshi, 4,229,395, Cl. 264-51.000.

Asahi Kasei Kogyo Kabushiki Kaisha: See—
Nohmi, Takashi; Yamada, Takao; and Doi, Yoshinao, 4,229,297, Cl. 210-654.000.

Shibuya, Chisei; Itoh, Hirataka; Ishii, Kunihiko; Ishida, Torao; and Shibukawa, Mitsuru, 4,229,573, Cl. 544-21.000.

Asai Germanium Research Institute: See—
Miyao, Kohei; Ito, Yoshitaka; and Wachi, Tsuneo, 4,229,468, Cl. 424-287.000.

Asai, Mitsuko: See—
Higashide, Eiji; Hatano, Kazunori; and Asai, Mitsuko, 4,229,533, Cl. 435-119.000.

Imada, Akira; Kitano, Kazuaki; and Asai, Mitsuko, 4,229,436, Cl. 424-117.000.

Asai, Yasuhiko: See—
Kyo, Kayomon; Asai, Yasuhiko; Hirose, Isamu; and Kishida, Minoru, 4,229,332, Cl. 260-22.00T.

Asato, Goro, to American Cyanamid Company. Process for the preparation of phosphoramidates, 4,229,383, Cl. 260-968.000.

Ashburner, Adi K., to Harper & Tunstall, Limited. Sheet selecting and dispensing apparatus, 4,228,992, Cl. 270-39.000.

Assmann, Bernd L.: See—
Brinkmann, Karl E.; and Assmann, Bernd L., 4,228,874, Cl. 188-72.100.

Ateliers de Constructions Electriques de Charleroi (ACEC): See—
Coppin, Roland; and Ghislain, Andre, 4,229,117, Cl. 403-370.000.

Atlantic Richfield Company: See—
Baillie, Lloyd A., 4,229,194, Cl. 55-397.000.

Auck, Yoon T., to UOP Inc. Hydrometallurgical recovery of nickel values, 4,229,213, Cl. 75-103.000.

Audi NSU Auto Union AG: See—
Naumann, Fritz, 4,228,866, Cl. 180-132.000.

Austin, John J., Jr., to Champion International Corporation. Container with a dispensing orifice and blank therefor, 4,228,899, Cl. 206-626.000.

Autoliv AB: See—
Svensson, Gustav E. V., 4,228,969, Cl. 242-107.40A.

Automation Industries, Inc.: See—
Sharpe, Donald E., 4,228,688, Cl. 73-631.000.

Automotive Products Limited: See—
Arrowsmith, David R.; and Parsons, David, 4,229,058, Cl. 308-184.00A.

Osborne, Duncan W., 4,228,876, Cl. 188-79.5GT.

Avco Everett Research Laboratory, Inc.: See—
Mani, Siva A.; Hyman, Howard A.; and Daugherty, Jack D., 4,229,708, Cl. 331-94.50G.

Avdjushev, Eduard L.: See—
Alt, Viktor V.; Mischenkov, Alexandr A.; Ponomarev, Viktor A.; Avdjushev, Eduard L.; Kamynin, Jury S.; Baryshnikov, Vladimir P.; Levin, Grigory K.; and Orlov, Alexei A., 4,228,679, Cl. 73-117.300.

Avery, Leslie R., to RCA Corporation. Video games color synthesis, 4,229,760, Cl. 358-22.000.

Avidan, Benjamin, to Techno-Instruments Ltd. Single phase power control circuit, 4,229,690, Cl. 323-24.000.

AVL AG: See—
Marsoner, Hermann J., 4,228,808, Cl. 128-762.000.

Azam, Guy: See—
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B. F. Goodrich Company, The: See—
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Houck, Robert J., 4,229,735, Cl. 340-676.000.

Baah, Albert; and Himmelsbach, Paul, to Jos. Schneider GmbH & Co., Optische Werke Kreuznach. Camera with transversely displaceable objective, 4,229,094, Cl. 354-286.000.

Baatz, Henning; and Rittscher, Dieter, to Steag Kernenergie GmbH. Device for the storage or disposal of radioactive wastes, 4,229,316, Cl. 252-301.10W.

Babad, Harry; and Strachan, Denis M., to United States of America. Energy. Method for immobilizing radioactive iodine, 4,229,317, Cl. 252-301.10W.

Babcock-BSH Aktiengesellschaft vormals Buttner-Schilde-Haas AG: See—
Kisters, Theodor; and Vogler, Alfred, 4,229,411, Cl. 422-62.000.

Babington, Robert S. Apparatus for producing finely divided liquid spray, 4,228,795, Cl. 128-200.220.

Backx, Leo J. J.: See—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,229,460, Cl. 424-269.000.
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,229,581, Cl. 548-262.000.

Badger, Harold J. Measuring tool especially for carpenters, 4,228,592, Cl. 33-174.00G.

Baillie, Lloyd A., to Atlantic Richfield Company. Vapor-solids separating device, 4,229,194, Cl. 55-397.000.

Baird, Joseph M.; and Schwartz, Paul M., to Hughes Aircraft Company. Bi-mode millimeter wave mixer, 4,229,828, Cl. 455-326.000.

Baker Perkins Holdings Limited: See—
Steels, Gordon; and Dacey, Raymond G., 4,229,484, Cl. 426-279.000.

Bakonyi, Stephen M., to General Motors Corporation. Low throttled volume engine, 4,228,772, Cl. 123-403.000.

Baldwin, Fredrick M.: See—
Noesen, Stanley J.; and Baldwin, Fredrick M., 4,228,583, Cl. 29-747.000.

Ballantyne, James W., to Toole Energy Company, Inc. Hole filling and sealing method and apparatus, 4,229,122, Cl. 405-258.000.

Balzano, Quirino: See—
Krone, Kenneth T.; and Balzano, Quirino, 4,229,717, Cl. 333-156.000.

Bando Kiko Co., Ltd.: See—
Bando, Shigeru, 4,228,617, Cl. 51-3.000.

Bando, Shigeru, to Bando Kiko Co., Ltd. Method for grinding glass plates and the like through numerical control and beveling machine therefor, 4,228,617, Cl. 51-3.000.

Bange, Joseph B., to Western States Machine Company, The. Method and apparatus for determining the thickness of a charge wall formed in a centrifugal basket, 4,229,298, Cl. 210-787.000.

Barber-Colman Company: See—
Haug, Edward W., 4,228,781, Cl. 125-11.0CD.
Trost, Wayne C., 4,228,827, Cl. 139-93.000.

Barlow, Gordon A.; Janiszewski, Anthony T.; and Kruttsch, John R., to Gordon Barlow Design. Track racing game, 4,229,005, Cl. 273-86.00D.

Barnard, James A., to General Motors Corporation. Method for assembling heat exchangers, 4,228,573, Cl. 29-157.30R.

Barnard, Walter C., to Whirlpool Corporation. Ice maker dispenser structure, 4,228,923, Cl. 222-52.000.

Barnett, Robert D.; Morrill, Charles D.; and Drouin, Andre H., to McEvoy Oilfield Equipment Company. Marine riser tool, 4,228,704, Cl. 81-57.390.

Barre, Rene E. L. Device for tightly stopping a bottle, 4,228,910, Cl. 215-364.000.

Barrett, John H.; and Flynn, Brian P., to Purex Corporation. Permeable dryer cycle fabric softener sheet, 4,229,475, Cl. 428-196.000.

Bartholme, Henri: See—
Watzka, Roland; and Bartholme, Henri, 4,228,901, Cl. 209-684.000.

Bartley, Donald L., to Kennametal Inc. Boring bar, 4,229,127, Cl. 408-158.000.

Bartsch, Wolfgang: See—
Kampe, Wolfgang; Stach, Kurt, deceased; Plattner, Werner, administrator; Thiel, Max; Bartsch, Wolfgang; Dietmann, Karl;

Roesch, Egon; and Schaumann, Wolfgang, 4,229,464, Cl. 424-274.000.

Baryshnikov, Vladimir P.: See—
Alt, Viktor V.; Mischenkov, Alexandr A.; Ponomarev, Viktor A.; Avdjushev, Eduard L.; Kamynin, Jury S.; Baryshnikov, Vladimir P.; Levin, Grigory K.; and Orlov, Alexei A., 4,228,679, Cl. 73-117.300.

BASF Aktiengesellschaft: See—
Boerzel, Paul; Freyberg, Peter; Greif, Norbert; and Widder, Rudi, 4,229,174, Cl. 8-588.000.
Dudeck, Christian; Lehmann, Gunter; Meissner, Bernd; Diem, Hans; Fliege, Werner; Petri, Norbert; and Ross, Karl-Heinz, 4,229,590, Cl. 560-174.000.
Junge, Helmut; Kurtz, Walter; Dimroth, Peter; and Scherer, Hans, 4,229,343, Cl. 260-156.000.
Knaflitz, France; and Miller, Franz-Friedrich, 4,229,175, Cl. 8-94.170.
Lamm, Gunther, 4,229,345, Cl. 260-205.000.
Mueller-Tamm, Heinz; Jaggard, James F. R.; and Schick, Hans, 4,229,318, Cl. 252-429.00B.
Oeser, Heinz-Gunter; Koenig, Karl-Heinz; and Mangold, Dietrich, 4,229,365, Cl. 260-465.00G.
Sterzel, Hans-Josef; Wurmb, Rolf; Schmidt, Franz; and Seiler, Erhard, 4,229,553, Cl. 525-438.000.
Straub, Ferdinand; Spoor, Herbert; and Cordes, Claus, 4,229,551, Cl. 525-337.000.
Theobald, Hans; Wuerzer, Bruno; and Kiehs, Karl, 4,229,205, Cl. 71-92.000.
Toussaint, Herbert; Adelsberger, Klaus; and Hoffmann, Herwig, 4,229,346, Cl. 260-239.00B.

BASF Wyandotte Corporation: See—
Newkirk, David D.; Login, Robert B.; and Thir, Basil, 4,229,554, Cl. 525-438.000.

Basfer S.R.L.: See—
Davini, Giorgio, 4,228,957, Cl. 239-300.000.

Baskevitch, Eugene: See—
Devendorf, Don C.; and Baskevitch, Eugene, 4,229,729, Cl. 340-347.0AD.

Bassi, Aldo, to Alfa Romeo S.p.A. Rotational speed transducer having greater low speed discrimination, 4,229,695, Cl. 324-166.000.

Basu, Pijus K.: See—
Cohen, Louis; and Basu, Pijus K., 4,229,547, Cl. 521-69.000.

Bates, J. Lambert: See—
Marchant, David D.; and Bates, J. Lambert, 4,229,322, Cl. 252-521.000.

Battelle Memorial Institute: See—
Schneider, Michel; and Lamy, Bernard, 4,229,360, Cl. 26G-403.000.

Battles, Donald D., to Cadre Corporation. The. Ladle heating system, 4,229,211, Cl. 75-46.000.

Baumann, Hans-Peter; Karmann, Hans-Georg; and Wiedemann, Achim, to Sandoz Ltd. Disperse dyeing of polyester with benzalketo derivatives as carriers: benzalacetone, methyl cinnamate etc, 4,229,172, Cl. 8-533.000.

Baumgartner, Alfons: See—
Burkhardt, Horst; Schwefel, Ernst; Baumgartner, Alfons; Mayer, Anton; and Rauth, Michael, 4,229,646, Cl. 235-92.00C.

Baus, Heinz-Georg. Lower guide for a sliding partition, 4,228,560, Cl. 16-90.000.

Bava, Kishor: See—
Smith, Peter J.; and Bava, Kishor, 4,229,169, Cl. 433-174.000.

Baxter Travenol Laboratories, Inc.: See—
Craig, Brian W., 4,229,407, Cl. 264-519.000.
Pearson, Frederick C., 4,229,541, Cl. 435-241.000.
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Bayer Aktiengesellschaft: See—
Arold, Hermann; Elbe, Hans-Ludwig; Kranz, Eckart; Kramer, Wolfgang; Stetter, Jorg; Stolzer, Claus; and Thomas, Rudolf, 4,229,580, Cl. 548-262.000.
Braun, Dietrich; and Titzschkau, Klaus, 4,229,556, Cl. 525-445.000.
Bruhne, Friedrich; and Lipper, Karl-August, 4,229,379, Cl. 568-437.000.
Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, 4,229,579, Cl. 548-256.000.
Ertel, Werner, 4,229,349, Cl. 260-239.100.
Hoffmann, Hellmut; Hamann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,229,444, Cl. 424-200.000.
Juffa, Richard; Wawra, Georg; and Uerdingen, Walter, 4,228,683, Cl. 73-204.000.
Juffa, Richard; Wawra, Georg; and Uerdingen, Walter, 4,228,815, Cl. 137-10.000.
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Paul, Volker, 4,229,459, Cl. 424-269.000.
Mues, Volker; and Behrenz, Wolfgang, 4,229,445, Cl. 424-200.000.
Roth, Hermann J.; Eger, Kurt; Issa, Sedika; and Jacobi, Hareddin, 4,229,453, Cl. 424-251.000.
Sattlegger, Hans; Schmidt, Hermann; and Schnurrbusch, Karl, 4,229,548, Cl. 521-110.000.

Bayer, Dieter: See—
Forster, Herbert; and Bayer, Dieter, 4,229,476, Cl. 428-201.000.

Bayerische Motoren Werke Aktiengesellschaft: See—
Gartner, Jurij; Hengl, Helmut; Sixt, Karl; and Woltmann, Reinhard, 4,228,769, Cl. 123-52.00M.

- BBC Brown, Boveri & Company, Limited: See—
Corti, Christopher W.; Luthi, Rolf; and Vogt, Ernst, 4,228,670, Cl. 72-42,000.
- Beardsley, Paul F. Scaffold device for harvesting and maintaining fruit trees. 4,228,870, Cl. 182-127,000.
- Beauchamp, Pierre; and Di Giacomo, Augusto. Valance hanger bracket and system. 4,228,980, Cl. 248-262,000.
- Beauchamp, William T.: See—
Rancourt, James D.; and Beauchamp, William T., 4,229,066, Cl. 350-1,600.
- Beery, Jack; and Mihalik, Andrew S., Jr., to Burroughs Corporation. Photosensitive recorder providing linguistic characters. 4,229,086, Cl. 354-5,000.
- Behrenz, Wolfgang: See—
Hoffmann, Helmut; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,229,444, Cl. 424-200,000.
- Mues, Volker; and Behrenz, Wolfgang, 4,229,445, Cl. 424-200,000.
- Betsch, Hans R., to Norris Industries, Inc. Wheel trim retention system. 4,229,047, Cl. 301-37,00P.
- Bessel, Dieter: See—
Walch, Axel; Wildhardt, Jürgen; and Beissel, Dieter, 4,229,291, Cl. 210-23,00F.
- Belcher, Alan E. Method and apparatus for converting pressure into rotative motion. 4,228,658, Cl. 60-649,000.
- Bell & Howell Company: See—
Koppensteiner, Eugene F., 4,228,972, Cl. 242-201,000.
- Bell, Malcolm C. E.: See—
Subramanian, Kohur N.; Bell, Malcolm C. E.; Thomas, John A.; and Nissen, Norman C., 4,229,270, Cl. 204-109,000.
- Bell, Roy L.; Garner, James B.; and Salmon, Douglas, to Coal Industry (Patents) Limited. Cowl arrangements for mining machines. 4,229,043, Cl. 299-33,000.
- Bell Telephone Laboratories, Incorporated: See—
Buckley, Reginald R.; and Kohl, Paul A., 4,229,269, Cl. 204-109,000.
- Cumiskey, Peter, 4,229,815, Cl. 370-84,000.
- Derby, Jeffrey H.; and Rao, Tadikonda N., 4,229,625, Cl. 179-170,00R.
- Haben, Dale E.; Kopley, Garry D.; and Vander Molen, Gordon L., 4,229,624, Cl. 179-18,00E.
- Henry, Paul S., 4,229,715, Cl. 332-18,000.
- Peoples, John T., 4,229,626, Cl. 179-175,30F.
- Schable, Clifford W., 4,229,620, Cl. 179-2,00B.
- Thomson, David J.; and Turner, Roland J., 4,229,823, Cl. 375-113,000.
- Belino, Joseph A.; Feldy, Edmund C.; LaSpesa, Richard E.; and Ramig, Robert J., Jr., to Teletype Corporation. Assembly for processing punched paper tape. 4,229,617, Cl. 178-92,000.
- Bellofram Corporation: See—
St. Laurent, Wilfred H., Jr., 4,229,010, Cl. 277-30,000.
- Beloit Corporation: See—
Cronin, Dennis C., 4,229,253, Cl. 162-358,000.
- Gill, Michael L., 4,229,254, Cl. 162-358,000.
- Bench, Stephen M., to Motorola, Inc. Data detector for a data communication system. 4,229,822, Cl. 375-81,000.
- Bendiner, Bernard; and Margolis, Barry I., to Fibre-Chem Corporation. Baled waste paper product containing a deinking chemical. 4,229,493, Cl. 428-2,000.
- Bendix Corporation, The: See—
Haase, Elmer A., 4,228,777, Cl. 123-454,000.
- Benedix, Harold E., Jr.: See—
Rogerson, Jerry B.; Connin, Robert F.; and Benedix, Harold E., Jr., 4,229,387, Cl. 261-66,000.
- Benes, Ivan; Muller-Duysing, Wolfgang; and Heinzl, Fritz. Process for the removal of radioactive iodine from a liquid, especially urine, and apparatus to carry out the process. 4,229,300, Cl. 210-96,100.
- Bengtsson, Erik; and Holm, Boris, to Aktiebolaget Bofors. Method of producing nitro-phenols. 4,229,595, Cl. 568-706,000.
- Bennett, Charles H. Combined razor holder and shaving fluid dispenser. 4,228,587, Cl. 30-41,000.
- Bennett, Herbert. Fire retardant coating composition comprising fly ash and polymer emulsion binder. 4,229,329, Cl. 260-17,00R.
- Bennett, James D.; Coolidge, Jimmy R.; and Murphy, Clifford E., to CBM Enterprises, Inc. Method and composition for toilet holding tank. 4,229,408, Cl. 422-5,000.
- Bensahel, Daniel; Pfister, Jean-Claude; and Revoil, Louis, to Commissariat à l'Energie Atomique. Method of fabrication of semiconductor components having optoelectronic conversion properties. 4,229,237, Cl. 148-190,000.
- Benson, Bernard A., to Boeing Construction Equipment Company. System for producing bituminous paving mixtures. 4,229,109, Cl. 366-24,000.
- Bensussan, André; and Azam, Guy, to CGR-MeV. γ -Ray irradiation head for panoramic irradiation. 4,229,657, Cl. 250-493,000.
- Bentley, John; Thompson, Morice W.; and Palluel, Auguste L. L., to Imperial Chemical Industries Limited. Process for the preparation of polymer dispersions. 4,229,339, Cl. 260-34,200.
- Bentley, William F.: See—
Luedtke, Arthur; and Bentley, William F., 4,229,744, Cl. 343-769,000.
- Berber, Viktor A.; Khodosov, Nikolai A.; Korygin, Stanislav A.; Mozyakov, Vladimir I.; and Lapshev, Igor M. Centrifugal liquid cleaner. 4,228,948, Cl. 233-3,000.
- Berber, Viktor A. Centrifugal liquid purifier. 4,228,951, Cl. 233-31,000.
- Berger, Guy F.; and Salom, Jacques, to Commissariat à l'Energie Atomique. Automatic apparatus for weighing and emptying a prod-
- uct contained in a container provided with a cover or lid. 4,228,864, Cl. 177-145,000.
- Berger, Peter: See—
Orths, Kurt; Prumbaum, Roland; and Berger, Peter, 4,229,412, Cl. 422-80,000.
- Bergeron, David L.; and Stephens, Geoffrey B., to International Business Machines Corporation. Voltage compensation of temperature coefficient of resistance in an integrated circuit resistor. 4,229,753, Cl. 357-28,000.
- Bergmeyer, Hans U.: See—
Ziegenhorn, Joachim; Wahlefeld, August W.; Hagen, Alexander; Gruber, Wolfgang; and Bergmeyer, Hans U., 4,229,527, Cl. 435-11,000.
- Beriger, Ernst, to Ciba-Geigy Corporation. Insecticidal 5-phenylcarbamoyl-barbituric acid. 4,229,454, Cl. 424-254,000.
- Berlin, Carter H., to Michaelson, Joseph B. Rabbit restraining box. 4,228,765, Cl. 119-98,000.
- Berlin, Donald M., Jr.; Mensing, Clifford E.; and Nilssen, Ole K., to Nilssen, Ole K. Lamp life extender. 4,229,680, Cl. 315-200,00R.
- Bernstein, Seymour: See—
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- Conrow, Ransom B.; and Bernstein, Seymour, 4,229,584, Cl. 560-13,000.
- Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,229,370, Cl. 260-506,000.
- Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,229,372, Cl. 260-507,00R.
- Bethlehem Steel Corporation: See—
Brachman, Armand E., 4,229,504, Cl. 428-461,000.
- Betts, William L., to E-Systems, Inc. Multiplex conference bridge. 4,229,814, Cl. 370-62,000.
- Beuch, Wallace E.: See—
Anderson, Theodore H.; Beuch, Wallace E.; and Lagergren, Richard E., 4,229,113, Cl. 400-596,000.
- Beyens, Jozef; Dewit, Guillaume; and Lambrechts, Jules, to Konstruktie J. Lambrechts p.v.b.a. Liquid dispensing head and installation. 4,228,927, Cl. 222-148,000.
- Bigham, Herbert L.: See—
Chamberlin, Rhodes R.; and Bigham, Herbert L., 4,228,570, Cl. 29-33,00R.
- Bilson, Edward B.; and Brown, Alfred H., III, to International Telephone and Telegraph Corporation. Luminaire with arcuate reflector. 4,229,779, Cl. 362-217,000.
- Binderup, Ernst T., to Leo Pharmaceutical Products, Ltd. A/S. Derivatives of penicillanic acid. 4,229,443, Cl. 424-200,000.
- Binney & Smith, Inc.: See—
Olinisky, Lester H., 4,229,115, Cl. 401-196,000.
- Biondetti, Mario, to Escher Wyss Aktiengesellschaft. Hydraulic support element. 4,228,571, Cl. 29-116,00AD.
- Bischoff, Daniel R., to Kysor Industrial Corporation. Double cylinder lock with key retention. 4,228,669, Cl. 70-379,00R.
- Bjarno, Ole-Christian: See—
Christoffersen, Steen R.; and Bjarno, Ole-Christian, 4,229,180, Cl. 23-230,00R.
- Black, Edward D.: See—
Comperatore, John A.; Black, Edward D.; and Wise, David J., 4,229,201, Cl. 65-287,000.
- Blake, Frederick H.; and Dittmann, Manfred K. Photo electric methods and apparatus for regulating electrical power consumption in stores. 4,229,664, Cl. 307-117,000.
- Bliley, Ward L.: See—
Wiltshire, Arthur J.; Nara, Harry R.; Le Breton, Edward T.; and Bliley, Ward L., 4,228,575, Cl. 29-407,000.
- Block, Hans-Dieter: See—
Frank, Karl; and Block, Hans-Dieter, 4,229,521, Cl. 430-372,000.
- Blomback, Birger E. G.; and Hessel, Dagny B. Preparation of blood fraction. 4,229,435, Cl. 424-101,000.
- Bly, Vincent T.; and Depersia, Anthony T., to United States of America, Army. Hydro-optical modulator for modulating transmission of radiation. 4,229,078, Cl. 350-353,000.
- Board of Regents, University of Texas System: See—
Finkelstein, Richard A.; and Payne, Shelley M., 4,229,530, Cl. 435-37,000.
- Bocchi, Andrea: See—
Fecondini, Luciano; and Bocchi, Andrea, 4,229,305, Cl. 210-321,00B.
- Boehringer Ingelheim GmbH: See—
Brickl, Rolf; Eberhardt, Hans; Appel, Karl-Richard; Lechner, Uwe; and Merk, Walter, 4,229,479, Cl. 424-331,000.
- Shelley, Julian H.; Clapp, John R.; and Hartog, Martin, 4,229,477, Cl. 424-330,000.
- Boehringer Mannheim GmbH: See—
Kampe, Wolfgang; Stach, Kurt; deceased; Plattner, Werner, administrator; Thiel, Max; Bartsch, Wolfgang; Dietmann, Karl; Roesch, Egon; and Schaumann, Wolfgang, 4,229,464, Cl. 424-274,000.
- Michal, Gerhard; Laube, Rolf; Roder, Albert; and Schneider, Walter, 4,229,529, Cl. 435-26,000.
- Ziegenhorn, Joachim; Wahlefeld, August W.; Hagen, Alexander; Gruber, Wolfgang; and Bergmeyer, Hans U., 4,229,527, Cl. 435-11,000.
- Boeing Company, The: See—
Graunke, Donald R., 4,229,264, Cl. 204-1,00T.
- Sealey, Francis, 4,228,975, Cl. 244-102,00R.

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- Picarello, Joseph F., 4,228,663, Cl. 62-507,000.
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- Boroschewski, Gerhard; and Arndt, Friedrich, to Schering AG. Diurethanes with selective herbicidal action. 4,229,208, Cl. 71-111,000.
- Borzyn, John J., to Alpha Industries, Inc. Swinging ram cut-off machine. 4,228,706, Cl. 83-320,000.
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- Bowman, George A., to Honeywell Inc. Single voltage controlled oscillator modem. 4,229,827, Cl. 455-87,000.
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- Breidenstein, Charles J.; Caplan, Jerome S.; and Littlefield, Bruce G., to Redcom Laboratories, Inc. Timing signal generation and distribution system for TDM telecommunications systems. 4,229,816, Cl. 370-100,000.
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- Brinkmann, Karl E.; and Assmann, Bernd L., to K. Ernst Brinkmann, Industrieverwaltung. Electromagnetic brake. 4,228,874, Cl. 188-72,100.
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Bilson, Edward B.; and Brown, Alfred H., III, 4,229,779, Cl. 362-217,000.
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- Brown, Frank R. Vacuum encapsulating apparatus. 4,228,832, Cl. 141-51,000.
- Brown, Lee O., to Sea Horse Corporation. The Concrete removal apparatus. 4,229,121, Cl. 405-158,000.
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- Brownlee, Sherwood S.; and Lohr, Warren G., to Acme Visible Records, Inc. Stop mechanism for rotary storage cabinet. 4,229,060, Cl. 312-305,000.
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- Bruner, Frank D., to Paxton & Vierling Steel Co. Automatically releasing stabilizer. 4,228,741, Cl. 105-197,00D.
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- Bryson, John D., to Will Rous, Inc. Industrial deodorizer. 4,229,415, Cl. 422-109,000.
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- Buchel, Karl H.: See—
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- Burke, John A.; and Gross, James B., to Greene, Tweed & Co., Inc. Spring seal. 4,229,013, Cl. 277-188.000.
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- Bustin, Raphael, to Varian Associates, Inc. Zero reference and offset compensation circuit. 4,229,703, Cl. 328-162.000.
- Butler, Donald E., to Warner-Lambert Company. 3-(3-Substituted aryloxy)-2-ylidene carbonitriles, pharmaceutical compositions and methods for their production. 4,229,457, Cl. 424-263.000.
- Butler, Irene. Pie crust shaper. 4,228,731, Cl. 99-433.000.
- Butler, William E. Bunsen burner guard. 4,229,160, Cl. 431-355.000.
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- Calaceto, Ralph R. Cyclonic scrubber with perforated plate distributor. 4,229,192, Cl. 55-238.000.
- Caldwell, Robert A., to Allis-Chalmers Corporation. Consumable welding electrode. 4,229,643, Cl. 219-146.240.
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- Cam Gears Limited: See—
Adams, Frederick J., 4,228,699, Cl. 74-853.000.
- Cameron Iron Works, Inc.: See—
Williams, Bolie C., III, 4,229,012, Cl. 277-127.000.
- Cammarota, David F. Stemware shelf bracket. 4,228,905, Cl. 211-71.000.
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- Campbell, Frank, Jr. Interlocking, laminated refractory for covering a pipe. 4,228,826, Cl. 138-149.000.
- Campbell, Robert T., to United States of America, Army. Early-late gate. 4,229,738, Cl. 343-7.300.
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- Canadian Patents and Development Limited: See—
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- Cardarelli, Nathan F., to Environmental Chemicals, Inc. Floating pesticide dispenser. 4,228,614, Cl. 43-131.000.
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- Carl Schleicher & Schull GmbH & Co. KG: See—
Hein, Wolfgang; and Cosack, Klaus, 4,229,306, Cl. 210-446.000.
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- Carreau, Bernard A.; and Lombard, Gabriel. Selective optical filter. 4,229,082, Cl. 351-44.000.
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- Carter, Merlon B.: See—
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- Casabona, Richard J.: See—
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- Case Western Reserve University: See—
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- Casull, Richard J. Means for mounting cylinder to frame of small hand gun. 4,228,606, Cl. 42-59.000.
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Cobb, Delwin E.; and Livesay, Richard E., 4,229,044, Cl. 299-37.000.
- Cathers, William P., to PPG Industries, Inc. Sheet orienting and transporting frame. 4,228,993, Cl. 271-236.000.
- Caton, Myron A., to Coxwells, Incorporated. Convenience lockbox. 4,228,746, Cl. 109-59.00T.
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- Cause, Antoine. Apparatus for drilling holes in the ground. 4,228,862, Cl. 175-242.000.
- Cavaliere, Michel, to Tractell S.A. Actuator for the release mechanism of a winch receiving a traction rope therethrough. 4,228,989, Cl. 254-384.000.
- Cavalleri, Charles G. Coin operated electric timer automatic electric candle. 4,228,885, Cl. 194-9.00T.
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- Cavitt, Stanley B., to Texaco Development Corp. Process for making a silver catalyst. 4,229,321, Cl. 252-476.000.
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- Chamberlin, Rhodes R.; and Bigham, Herbert L., to Photon Power, Inc. Electrode preparation apparatus. 4,228,570, Cl. 29-33.00R.

- Champion Corporation: See—
Woodruff, Roger D., 4,228,967, Cl. 242-86.50R.
- Champion International Corporation: See—
Austin, John J., Jr., 4,228,899, Cl. 206-626.000.
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- Chauvel, Bernard: See—
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- Cherian, Gabriel B. Biorhythmic device. 4,228,604, Cl. 40-107.000.
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- Cherqui, Jean S.; and Djiane, Alain C. Galenical form of administration of betahistine and its derivatives. 4,229,428, Cl. 424-19.000.
- Chiba, Katsuyoshi: See—
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- Chika, John J. Torsionally resilient structure for a sidecar. 4,229,018, Cl. 280-203.000.
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- Chinea, George L.: See—
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- Chiu, Chung W.; and Rutenberg, Morton W., to National Starch and Chemical Corporation. Cold-water dispersible, gelling starch. 4,229,489, Cl. 426-578.000.
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- Chiyoeda Chemical Engineering & Construction Co., Ltd.: See—
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- Christoffersen, Steen R.; and Bjarno, Ole-Christiansen, to A/S N. Foss Electric. Process and catalyst for determining nitrogen in a sample according to the Kjeldahl principle. 4,229,180, Cl. 23-230.00R.
- Chromie, Edsel. Solar energy concentrator. 4,229,076, Cl. 350-292.000.
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- Stecher, Vera J.; and Chinea, George L., 4,229,414, Cl. 422-101.000.
- Citizen Watch Co., Ltd.: See—
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- Nomura, Yasushi, 4,228,645, Cl. 368-75.000.
- Watanabe, Minoru; and Tamaru, Munetaka, 4,228,644, Cl. 368-28.000.
- City of Charlotte: See—
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- Clamp, John R.: See—
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- Clark, David E.: See—
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- Cline, Lawrence R., to Caterpillar Tractor Co. Track guide assembly. 4,229,053, Cl. 305-28.000.
- Coal Industry (Patents) Limited: See—
Bell, Roy L.; Garner, James B.; and Salmon, Douglas, 4,229,043, Cl. 299-33.000.
- Plummer, Derek, 4,229,042, Cl. 299-18.000.
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- Cobb, Delwin E.; and Livesay, Richard E., to Caterpillar Tractor Co. Clevis-mounted impact ripper. 4,229,044, Cl. 299-37.000.
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- Colby, Thomas H., to Shell Oil Company. Preparation of meta-phenox-ytoluene. 4,229,594, Cl. 568-635.000.
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- Cole, Donald G.; Hartmann, Achim; Kulling, Achim M.; and Trub, Hermann B., to NL Industries, Inc. Process for pelletizing and neutralizing solid mixtures of metal chlorides. 4,229,399, Cl. 264-117.000.
- Cole-Parmer Instrument Company: See—
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- Colgate-Palmolive Company: See—
Pocklington, Terence W., 4,229,401, Cl. 264-248.000.
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- Collier, James A.: See—
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- Combustion Engineering, Inc.: See—
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- Berger, Guy F.; and Salom, Jacques, 4,228,864, Cl. 177-145.000.
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- Consigli, Armando; and Danna, Roberto, to Societa Italiana Telecomunicazioni Siemens S.p.A. Interface unit facilitating communication between data processor and program-interrupting peripheral unit. 4,229,788, Cl. 364-200.000.
- Continental Group, Inc., The: See—
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- Coolidge, Jimmy R.: See—
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- Copple, Christopher J.: See—
- Dakin, John; O'Donnell, Dennis; and Copple, Christopher J., 4,228,642, Cl. 57-263.000.
- Copple, Virgil E.: See—
- Brown, Bruce W.; Copple, Virgil E.; and Wilson, Carroll K., 4,229,485, Cl. 426-305.000.
- Corbic, Yves J., to Gatrun Anstalt. Method for manufacturing, filling and closing a receptacle made of thermoplastic material. 4,228,633, Cl. 53-412.000.
- Cordes, Claus: See—
- Straub, Ferdinand; Spoor, Herbert; and Cordes, Claus, 4,229,551, Cl. 525-337.000.
- Corning Glass Works: See—
- Love, Walter F., 4,229,067, Cl. 350-96.150.
- Olshansky, Robert; and Sarkar, Arnab, 4,229,070, Cl. 350-96.310.
- Corti, Christopher W.; Luthi, Rolf; and Vogt, Ernst, to BBC Brown, Boveri & Company, Limited. Process for the isothermal forging of a work piece. 4,228,670, Cl. 72-42.000.
- Cosack, Klaus: See—
- Hein, Wolfgang; and Cosack, Klaus, 4,229,306, Cl. 210-446.000.
- Costruzioni Elettriche Automatiche Impianti (C.E.A.I.): See—
- Vigano, Carlo; Quattrone, Francesco; and Toffanetti, Erio, 4,229,645, Cl. 235-92.00C.
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- Cothary, Walter G. Wheeled suitcase with extendable handle means. 4,228,877, Cl. 190-18.00A.
- Cotter, Robert J.; and Gardner, Hugh C., to Union Carbide Corporation. Novel bis(half ester) and compositions containing the same. 4,229,559, Cl. 526-271.000.
- Covington, James W.; and Whittemore, Robert G., to Interlox Chemicals Limited. Metal extraction. 4,229,422, Cl. 423-20.000.
- Cowling, Edgar C., to Phillips Petroleum Company. Chiller with means for mixing hot vapors with cold or refrigerated liquid. 4,228,845, Cl. 165-1.000.
- Coxwells, Incorporated: See—
- Caton, Myron A., 4,228,746, Cl. 109-59.00T.
- Cragoe, Edward J., Jr.: See—
- Bolhofer, William A.; Cragoe, Edward J., Jr.; and Hoffman, Jacob M., Jr., 4,229,456, Cl. 424-256.000.
- Craig, Brian W., to Baxter Travenol Laboratories, Inc. Tear path products, method and apparatus. 4,229,407, Cl. 264-519.000.
- Crandall, William B.; and Wasserstein, Linda J., to Alfred University Research Foundation, Inc. Ceramic utensils. 4,229,494, Cl. 428-35.000.
- Crawford Collets Limited: See—
- Franklin, Reginald A., 4,229,130, Cl. 409-234.000.
- Crawford, Robert J., to Procter & Gamble Company. The. Synthesis of 1,4-bis(dicyanomethylene) cyclohexane. 4,229,364, Cl. 260-464.000.
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- Cronin, Dennis C., to Beloit Corporation. Extended nip press with special belt reinforcement. 4,229,253, Cl. 162-358.000.
- Crook, Douglas H. Behind door shelf assembly. 4,228,743, Cl. 108-31.000.
- Crosby, Lawton H., to Morley Furniture Spring Corporation. Seat spring assembly and spring unit. 4,228,991, Cl. 267-110.000.
- Crothers, William G., to Deer Park Baking Co. Method and apparatus to make cookies. 4,229,487, Cl. 426-496.000.
- Crouthamel, Carl E.: See—
- Johnson, Carl E.; and Crouthamel, Carl E., 4,229,260, Cl. 176-82.000.
- Crowe, Thomas J., to Crowe, Thomas J. Air-expanded mandrel having means to equalize expansion to obtain concentric chucking. 4,229,014, Cl. 279-2.00A.
- Cubic Corporation: See—
- En, John, 4,229,824, Cl. 375-119.000.
- Cubic Western Data: See—
- Heldwein, Carl A.; Jekel, Richard N.; Sampson, Stephen R.; and Zupan, John T., 4,229,737, Cl. 343-6.00R.
- Cuffe, Patricia M.: See—
- Rotenberg, Don H.; Cuffe, Patricia M.; Laurin, Bernard L.; and Ramirez, Peter R., 4,229,228, Cl. 106-287.140.
- Culley, Bobby G.; and Surtani, Kishin, to Texas Instruments Incorporated. Automated liquid crystal display process. 4,228,574, Cl. 29-25.130.
- Cummiskey, Peter, to Bell Telephone Laboratories, Incorporated. Full duplex bit synchronous data rate buffer. 4,229,815, Cl. 370-84.000.
- Cunningham, Hilary H. Fastener recess. 4,228,723, Cl. 81-460.000.
- Cusato, Anthony J.; and Goodman, Jerome J., to Goodman, Jerome J. Paralleling tool or gauge for general dentistry. 4,229,166, Cl. 433-72.000.
- Custode, Frank Z., to Rockwell International Corporation. Fabrication of very large scale integrated circuits containing N-channel silicon gate nonvolatile memory elements. 4,229,755, Cl. 357-41.000.
- Cutter Laboratories, Inc.: See—
- Coan, Michael H., 4,229,540, Cl. 435-219.000.
- D. Swarovski & Co.: See—
- Schwab, Kurt, 4,229,077, Cl. 350-293.000.
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- Dahl, Klaus J., to Raychem Corporation. Friedel-Crafts polymerization of monomers in the preparation of polyketones and polysulfones. 4,229,564, Cl. 528-175.000.
- Dai Nippon Insatsu Kabushiki Kaisha: See—
- Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,229,239, Cl. 156-155.000.
- Daikhovskaya, Evelina A.: See—
- Lesokhin, Albert Z.; Daikhovskaya, Evelina A.; and Bogustavsky, Ilya Z., 4,229,671, Cl. 310-198.000.
- Daimler-Benz Aktiengesellschaft: See—
- Jahn, Walter, 4,228,968, Cl. 242-107.000.
- Peitsmeier, Karl; and Link, Manfred, 4,229,062, Cl. 339-82.000.
- Schmid, Walter; Wilfert, Karl, deceased; and Wilfert, Thomas, legal heir, 4,229,021, Cl. 280-787.000.
- Dairy Systems, Inc.: See—
- Heidecker, Robert F.; and Harwood, Edward D., 4,228,763, Cl. 119-14.080.
- Plett, Carl E., 4,228,764, Cl. 119-14.080.
- Daiwa Shinku Corporation: See—
- Ueda, Hirotada; and Ihara, Satoshi, 4,229,075, Cl. 350-269.000.
- Dakin, John; O'Donnell, Dennis; and Copple, Christopher J., to Platt Saco Lowell Limited. Method and apparatus for stopping an open spinning machine. 4,228,642, Cl. 57-263.000.
- D'Amico, John J., to Monsanto Company. Process for preparing thioesters. 4,229,578, Cl. 548-165.000.
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- Daniel, Linda A., 4,228,596, Cl. 35-9.00B.
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- Consigli, Armando; and Danna, Roberto, 4,229,788, Cl. 364-200.000.
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- Danos, Michael. Visibility expander. 4,229,764, Cl. 358-160.000.
- Dansk Industri Syndikat, A/S: See—
- Gunnergaard, Marius; and Jacobsen, Ole A., 4,228,892, Cl. 198-832.000.
- Daryl, Gregory: See—
- Sustek, Alvin J., Jr.; Frazier, Terry L.; and Daryl, Gregory, 4,228,855, Cl. 166-250.000.
- Data General Corporation: See—
- Frissell, John M., 4,229,699, Cl. 328-63.000.
- Whipple, David L., 4,229,801, Cl. 364-748.000.
- Dataproducts Corporation: See—
- Van Horne, Arthur C., 4,229,114, Cl. 400-692.000.
- Date, Nobuaki; Kozuki, Susumu; and Iwashita, Tomonori, to Canon Kabushiki Kaisha. Motor drive device for a camera. 4,229,091, Cl. 354-173.000.
- Datotek, Inc.: See—
- Morgan, Barrie O.; and Carter, Merlon B., 4,229,817, Cl. 375-2.000.
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- Davini, Giorgio, to Basfer S.R.L. Spray gun. 4,228,957, Cl. 239-300.000.
- Davis, James P.; and Smith, Robert W., to Keystone Consolidated Industries, Inc. Package strapping device with pallet sensing means. 4,228,733, Cl. 100-4.000.
- Davis, Roger D.: See—
- Lilly, Robert L.; Tummers, Gerardus L. J.; Johnson, Claude D.; and Davis, Roger D., 4,229,813, Cl. 368-89.000.
- Davis, Sydney; and Durkin, John M., to United States of America, Navy. Fluidic controlled diffusers for turbopumps. 4,228,753, Cl. 114-67.00A.
- Davison, Richard R.; Harris, William B.; and Maldonado, Salomon. Solar heater. 4,228,790, Cl. 126-444.000.
- Dawson, David G.; Osmond, Desmond W. J.; Skinner, Maurice W.; and West, Edmund J., to Imperial Chemical Industries Limited. Cementitious compositions. 4,229,224, Cl. 106-90.000.
- Day, Frederick L. Insert travel chair and method of transporting the handicapped. 4,229,039, Cl. 297-232.000.
- Day, Henry, to Monier Limited. Coating uncured cementitious roofing tiles. 4,229,503, Cl. 428-451.000.
- Dayco Corporation: See—
- Jacob, Richard J.; and Waugh, Dale L., 4,228,692, Cl. 474-251.000.
- Deaton, David W. Suction receptacle with hygroscopic filter. 4,228,798, Cl. 128-276.000.

- Deaton, Willis R.; Clark, John I., Jr.; and Raynor, Harold M., to City of Charlotte. Portable electronic traffic event recorder. 4,229,726, Cl. 340-38.00R.
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- Robinson, Carleton D.; and Debrauwere, Jack J. A., 4,228,835, Cl. 150-8.000.
- Decker, Elmer L.; Moon, James; and Maxwell, Paul R., to Decker Engineering Corporation. Variable cable hoisting system having quick disconnect deadline load indicating apparatus. 4,228,682, Cl. 73-143.000.
- Decker Engineering Corporation: See—
- Decker, Elmer L.; Moon, James; and Maxwell, Paul R., 4,228,682, Cl. 73-143.000.
- Dederer, Guenter; and Muerkl, Helmut, to Siemens Aktiengesellschaft. Spot welding assembly for electrical resistance welding. 4,229,637, Cl. 219-86.250.
- Deer Park Baking Co.: See—
- Crothers, William G., 4,229,487, Cl. 426-496.000.
- Deere & Company: See—
- Kass, John J.; and Johannsen, Donald O., 4,229,144, Cl. 417-222.000.
- Rabe, David L.; Hudson, Colin M.; and Soteropoulos, Gust, 4,228,638, Cl. 56-341.000.
- Thompson, James E.; and Mayfield, Robert L., 4,228,984, Cl. 248-636.000.
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- DeFilippi, Louis J., to UOP Inc. Process for preparing immobilized enzymes. 4,229,536, Cl. 435-176.000.
- de Francisco Mesado, Jose Luis. Devices for operating variable-pitch propellers. 4,229,141, Cl. 416-157.00R.
- Degler, Howard E., Jr.; Clark, David E.; Hren, John J.; Jenkins, David A.; and Johnson, Paul F., III, to Concept, Inc. Bipolar electrosurgical knife. 4,228,800, Cl. 128-303.140.
- de Jager, Frank; Dekker, Cornelis B.; and Mulwijk, Dirk, to U.S. Philips Corporation. System for data transmission by means of an angle-modulated carrier of constant amplitude. 4,229,821, Cl. 375-53.000.
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- de Jager, Frank; Dekker, Cornelis B.; and Mulwijk, Dirk, 4,229,821, Cl. 375-53.000.
- Delano, Frank P.: See—
- Smith, Bernard; and Delano, Frank P., 4,228,750, Cl. 114-39.000.
- DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., to Wisconsin Alumni Research Foundation. Fluorovitamin D compounds and processes for their preparation. 4,229,357, Cl. 260-397.200.
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- Demers, Robert R.; and Leedom, Marvin A., to RCA Corporation. System for regulating the applied blade-to-boule force during the slicing of wafers. 4,228,782, Cl. 125-14.000.
- Deminski, Richard M., to Yorde Machine Products Company, The. Seat guided poppet valve having flow and dampening control means. 4,228,820, Cl. 137-514.300.
- Demray, Jack: See—
- Englert, Herbert U.; and Demray, Jack, 4,228,630, Cl. 52-656.000.
- Denelcor, Inc.: See—
- Gilliland, Maxwell C.; Smith, Burton J.; and Ferguson, Gary L., 4,229,790, Cl. 364-200.000.
- Dentsply Research & Development Corp.: See—
- Gonser, Donald I., 4,229,658, Cl. 250-504.00H.
- Depersia, Anthony T.: See—
- Bly, Vincent T.; and Depersia, Anthony T., 4,229,078, Cl. 350-353.000.
- Derby, Jeffrey H.; and Rao, Tadikonda N., to Bell Telephone Laboratories, Incorporated. Repeater level control circuit. 4,229,625, Cl. 179-170.00R.
- Desnick, Shirley. Soap bag. 4,228,834, Cl. 150-3.000.
- DeSoto, Inc.: See—
- Sicklesteel, Bruce G.; and Anders, Dale F., 4,229,336, Cl. 260-29.6NR.
- DeTrano, Mario: See—
- Bohm, Georg G. A.; and DeTrano, Mario, 4,228,839, Cl. 152-347.000.
- Deutsche Forschungs- und Versuchsanstalt für Luft und Raumfahrt e.V.: See—
- Klipping, Gustav, 4,228,662, Cl. 62-216.000.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: See—
- Wolff, Siegfried; and Tan, Ewe H., 4,229,333, Cl. 260-23.70M.
- Devendorf, Don C.; and Baskevitch, Eugene, to Hughes Aircraft Company. Analog to digital converter utilizing a quantizer network. 4,229,729, Cl. 340-347.0AD.
- Dever, Alfred J. Bearing assembly. 4,229,059, Cl. 308-236.000.
- De Vivo, Alessandro; Pierantozzi, Gianni; Santarpia, Diodato; and Spolverini, Renzo. Apparatus for treatment of the person. 4,228,557, Cl. 15-21.00E.
- Dewit, Guillaume: See—
- Beyens, Jozef; Dewit, Guillaume; and Lambrechts, Jules, 4,228,927, Cl. 222-148.000.
- Di Camillo, Carmen A.: See—
- Tulenko, Thomas N.; and Di Camillo, Carmeri A., 4,229,733, Cl. 340-500.000.
- Dickey, Richard P. Intravaginal contraception method. 4,228,797, Cl. 128-270.000.
- Diem, Hans: See—
- Dudeck, Christian; Lehmann, Gunter; Meissner, Bernd; Diem, Hans; Fliege, Werner; Petri, Norbert; and Ross, Karl-Heinz, 4,229,590, Cl. 560-174.000.
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- Dietmann, Karl: See—
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- Dietrich, Rainer. Method of producing abrasive compacts. 4,228,942, Cl. 228-121.000.
- Di Giacomo, Augusto: See—
- Beauchamp, Pierre; and Di Giacomo, Augusto, 4,228,980, Cl. 248-262.000.
- Digital Equipment Corporation: See—
- Levy, John V.; Rodgers, David; Stewart, Robert E.; Potter, David; and Casabona, Richard J., 4,229,791, Cl. 364-200.000.
- Dimroth, Peter: See—
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- Dingler, Geoffrey L.; and Johnson, Philip P., to Whirlpool Corporation. Comminuting liquid swirler. 4,228,962, Cl. 241-46.00R.
- Dinsdale, Raymond, to Rolls-Royce Limited. Control of an electro-discharge machine tool. 4,229,635, Cl. 219-69.00G.
- Dislich, Helmut; Hinz, Paul; and Wolf, Gunther, to JENAer Glaswerk Schott & Gen. Process for producing cadmium stannate layers. 4,229,491, Cl. 427-160.000.
- Displaytek Corporation: See—
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- Dittmann, Manfred K.: See—
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- Temler, Jan S., 4,229,251, Cl. 162-28.000.
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- Foszcz, Joseph L.: See—
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- Fraley, Lawrence R.: See—
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- Frangatos, Gerassimos, to Mobil Oil Corporation. Lubricant compositions, 4,229,310, Cl. 252-49.900.
- Frank, James G.: See—
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- Frank, Joseph M.; and Hufnagel, Robert A., to Westinghouse Electric Corp. Internal diameter measuring apparatus, 4,228,593, Cl. 33-178.00F.
- Frank, Karl; and Block, Hans-Dieter, to AGFA-Gevaert, A.G. Method of processing photographic materials, 4,229,521, Cl. 430-372.000.
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- Frankenfeld, Fred I., to Hedback Corp. Flow director, 4,228,786, Cl. 126-427.000.
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- Franklin, Reginald A., to Crawford Collets Limited. Collets, 4,229,130, Cl. 409-234.000.
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- Fraser, Brian W., to EMI Limited. Ultrasonic transducers, 4,228,687, Cl. 73-626.000.
- Fraula, Louis F.: See—
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- Frazier, Terry L.: See—
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- French, Barry T., to Rockwell International Corporation. CCD Imager with multi-select capability, 4,229,754, Cl. 357-30.000.
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- Freyberg, Peter: See—
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- Friedman, Leonard: See—
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- Friedrich Deckel Aktiengesellschaft: See—
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- Friedrich Munch Silber-und Alpacawarenfabrik: See—
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- Frissell, John M., to Data General Corporation. Multiple clock selection system, 4,229,699, Cl. 328-63.000.
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- Frost, Richard H.; and Dodge, Charles W., to Frost Engineering Development Corp. Releasable fastener for aircraft ejection seats, 4,228,568, Cl. 24-230.00R.
- Fryberg, Mario: See—
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- Frypan S.p.A.: See—
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- Fuji Electric Co., Ltd.: See—
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- Fuji Kiko Company, Limited: See—
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- Fuji Kogyo Co., Ltd.: See—
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- Fuji Oil Company, Ltd.: See—
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- Ueda, Hirozo, 4,229,525, Cl. 430-568.000.
- Watarai, Syu; Sawada, Kenichi; and Saida, Takeshi, 4,229,510, Cl. 430-38.000.
- Yoneyama, Masakazu; and Kishimoto, Shinzo, 4,229,524, Cl. 430-536.000.
- Fujii, Kojo: See—
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- Fujino, Masahiko; Nishimura, Osamu; and Takaoki, Munco, to Takeda Chemical Industries, Ltd. Nonapeptides, 4,229,438, Cl. 424-177.000.
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- Fujiya Confectionery Company Limited: See—
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- Gale, Vernon M. Variably-oriented footstool, 4,228,745, Cl. 108-116.000.
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- Gamble, George W. High-fidelity speaker with negative feedback, 4,229,618, Cl. 179-1.00F.
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- Gamewell Manufacturing, Inc.: See—
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- Gandolfi, Carmelo: See—
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- Garrett, Steven H., to Westinghouse Electric Corp. Programmed controller for ultrasonic testing, 4,229,796, Cl. 364-507.000.
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- Gee, Thomas A., to Eaton Corporation. Pulse control of an electro magnetically actuated viscous fluid coupling, 4,228,880, Cl. 192-58.00B.
- Geffe, Bruce T. Hollow rectangular joist, 4,228,631, Cl. 52-690.000.
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- Matter, Robert C., 4,228,580, Cl. 29-527.700.
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- Schweikert, John F., 4,228,775, Cl. 123-440.000.
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- Gilliland, Maxwell C.; Smith, Burton J.; and Ferguson, Gary L., to Denelcor, Inc. Concurrent task and instruction processor and method, 4,229,790, Cl. 364-200.000.
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- Glitz, Horst W.: See—
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- Glover, Leon C.; and Lopez, Eugene F., to Raychem Corporation. Method for coating a polymeric article with a thermochromic paint, 4,228,761, Cl. 116-201.000.
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- Goddijn, Bernardus H. A., to U.S. Philips Corporation. Electronically commutating motor, 4,229,682, Cl. 318-254.000.
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- Gray, Paul E., to Universal Sewer Pipe Company. Pipe coupler, 4,229,028, Cl. 285-235.000.
- Gray, Russell H.; and Kuchta, August D., to Du Pont de Nemours, E. I., and Company. Photocurable elements with a non-tacky matte finish, 4,229,518, Cl. 430-273.000.
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- Green, Stanley E., to Hycel, Inc. Tris (hydroxymethyl) aminomethane salt of 2-mercaptosuccinic acid, 4,229,369, Cl. 260-501.190.
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- Gross, Charles, to Vending Components, Inc. Stand for holding a beer keg in position for gravity feed, 4,228,929, Cl. 222-185.000.
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- Grunman Energy Systems, Inc.: See—
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- GTE Automatic Electric Laboratories Incorporated: See—
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- Hagen, Alexander: See—
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- Hahn, Reinhard, to Starch, Hermann C. Method of producing porous metal bodies for use in the electronic industry, 4,229,217, Cl. 75-244.000.
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- Hall, Lewis W., Jr.; Kerr, David L.; Hollstein, Elmer J.; Myers, Harry K., Jr.; and Schneider, Abraham, to Suntech, Inc. Decolorization of norbornadiene dimers, 4,229,612, Cl. 585-823.000.
- Hall, Wilbur S.: See—
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- Hamada, Hiroyuki: See—
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- Hamlin, Thomas J.; and George, Clifford L., to Xerox Corporation, Duplex/simplex precollation copying system, 4,229,101, Cl. 355-77.000.
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- Hance, Richard J., to Leeds & Northrup Company, Expendable immersion thermocouple, 4,229,230, Cl. 136-234.000.
- Hancox, Elwyn J. Drum tuning mechanism, 4,228,721, Cl. 84-411.00R.
- Hanlon, Terrance W.: See—
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- Hansen, Thomas A.; Johnson, Claude, Jr.; and Wilbarg, Robert R., to International Business Machines Corporation, Method for fabricating non-reflective semiconductor surfaces by anisotropic reactive ion etching, 4,229,233, Cl. 148-1.500.
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- Hanson, William, Adjustable idler roll, 4,228,891, Cl. 198-827.000.
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- Harakawa, Tetsuo; and Hasaka, Tomio, to Tokico Ltd. Mechanical disc brake, 4,228,875, Cl. 188-72.700.
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- Hartstein, Allan M.; and Petersen, Kurt E., to International Business Machines Corporation, Micromechanical display logic and array, 4,229,732, Cl. 340-378.200.
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- Hawkins, Curtis O.: See—
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- Hay, William D.: See—
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- Hayashi, Teruyuki: See—
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- Hayashi, Yasuro: See—
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- Haynes, Robert W.; and Rasmussen, William H., to Payfer Laboratories Inc. Living organism packaging, 4,229,544, Cl. 435-253.000.
- Hazen Research, Inc.: See—
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- Healy, Lawrence G., to Westinghouse Electric Corp. Optical viewing port assembly for a miniature inspection TV camera, 4,229,762, Cl. 358-100.000.
- Heath, James E., to Samuel Strapping Systems Limited, Process and apparatus for heat treating steel using infrared radiation, 4,229,236, Cl. 148-128.000.
- Heck, Gunter; Roscher, Gunter; and Donth, Rudolf, to Hoechst Aktiengesellschaft, Process for separating water from organic multiple component mixtures by distillation, 4,229,261, Cl. 203-14.000.
- Heckles, John S., to Armstrong Cork Company, Acrylate-ureadiaoacetamide-diaoacetamide copolymers, 4,229,505, Cl. 428-474.000.
- Hedback Corp.: See—
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- Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., to Janssen Pharmaceutica N.V. Heterocyclic derivatives of 1-(1,3-dioxolan-2-ylmethyl)-1H-1,2,4-triazoles having antifungal and antibacterial properties, 4,229,460, Cl. 424-269.000.
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- Heidecker, Robert F.; and Harwood, Edward D., to Dairy Systems, Inc. Milking unit support and detach mechanism, 4,228,763, Cl. 119-14.080.
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- Heijnenmans, Werner A. L.; Nieuwendijk, Joris A. M.; and Vink, Nicolaas G., to U.S. Philips Corporation, Deflection unit for a color television display tube, 4,229,720, Cl. 335-213.000.
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- Heilman, Robert R.: See—
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- Heim, Richard; Hermanns, Peter; and Tschentscher, Alfred, to FMN Schuster GmbH & Co. KG, Assembly for winding yarns and the like on a bobbin, 4,228,965, Cl. 242-45.000.
- Heimbigner, Gary L.; and Booher, Robert K., to Rockwell International Corporation, Voltage boosting substrate bias generator, 4,229,667, Cl. 307-297.000.
- Hein, Wolfgang; and Cosack, Klaus, to Carl Schleicher & Schull GmbH & Co. KG, Housing for single-use filter units, 4,229,306, Cl. 210-446.000.
- Heiney, Elmer T., III; and Merchant, Stanley R., to Ford Motor Company, Exhaust gas sensor electrical circuit improvement, 4,228,675, Cl. 73-23.000.
- Heinola, Reino, to Valmet Oy, Apparatus for controlling relative gas flow rates through ducts, 4,228,849, Cl. 165-39.000.
- Heinrich, Hans J.; Oelbermann, Max; and Rademacher, Karl A. Filter press with cleansing spray device, 4,229,303, Cl. 210-225.000.
- Heinrich Kuper, Firma: See—
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- Heinz, Richard; and Heidel, Bernd, to Robert Bosch GmbH, Method of recording a control signal adjacent another signal track on a magnetic recording medium, and system therefor, 4,229,771, Cl. 360-46.000.
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- Heinzmann, Erich, Inclined retaining wall and element therefor, 4,229,123, Cl. 405-273.000.
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- Heisner, Marvin M., to Fansteel Inc. Reinsertable adjustable boring bar, 4,229,128, Cl. 408-185.000.
- Heldwein, Carl A.; Jekel, Richard N.; Sampson, Stephen R.; and Zupan, John T., to Cubic Western Data, Ranging system and method for determining the range of a vehicle from a plurality of reference points, 4,229,737, Cl. 343-6.00R.
- Helminiak, Thaddeus E.: See—
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- Hengl, Helmut: See—
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- Henrick, Clive A., to Zeecon Corporation, Benzylpyrrolidylmethyl esters of cyclopropane carboxylic acids, 4,229,352, Cl. 260-326.430.
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- Hermanns, Peter: See—
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- Hernandez, Sebastian: See—
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- Herpin, Ivey, Saw (tooth cutting apparatus), 4,228,701, Cl. 76-29.000.
- Herriott, Leslie V., to Lowe and Fletcher Limited, Magnetically acting lock and key, 4,228,667, Cl. 70-276.000.
- Herschmann, Otto; Zernig, Norbert; Holthausen, Dieter; Stock, Hugo; and Tholen, Paul, to Klockner-Humboldt-Deutz Aktiengesellschaft, Internal combustion engine and a method of operation thereof, 4,228,655, Cl. 60-602.000.
- Hertz, Walter; Stroh, Jan; and Schwalme, Heinz, to Siemens Aktiengesellschaft, Compress gas circuit breaker, 4,229,632, Cl. 200-148.00A.
- Herwig, Warren E., to Allis-Chalmers Corporation, Method and apparatus for measuring area traversed by vehicular implement, 4,229,799, Cl. 364-564.000.
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- Higashi, Kazo; Nakanishi, Sadayuki; and Fukunaga, Akio, to Kobe Steel, Limited, Valve, 4,228,988, Cl. 251-327.000.
- Higashide, Eiji; Hatano, Kazunori; and Asai, Mitsuko, to Takeca Chemical Industries, Ltd. Method for producing antibiotic C-15003 P-4, 4,229,533, Cl. 435-119.000.
- Hight, Henry D., Jr. Apparatus for use in slip forming structural concrete members, 4,229,153, Cl. 425-64.000.
- Higuchi, Yoshinori: See—
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- Hill, Craig C. Heat recuperative engine with improved recuperator, 4,228,654, Cl. 60-508.000.
- Hill, Norman A.: See—
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- Himes, Glenn R.: See—
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- Himmelsbach, Paul: See—
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- Hinz, Paul: See—
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- Hipp, Jan, Apparatus for determining off-aim during firing simulation, 4,229,103, Cl. 356-141.000.
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- Hirose, Fumio: See—
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- Hitachi Chemical Company, Ltd.: See—
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- Hitachi Koki Company Limited: See—
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- Hitachi, Ltd.: See—
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- Kanno, Kimiji; Nagano, Masami; and Momono, Masakichi, 4,229,384, Cl. 261-39.00D.
- Matsuda, Noraki; and Enomoto, Kunio, 4,229,235, Cl. 148-127.000.
- Matsuki, Takeshi; Maruyama, Koichi; Osakabe, Kuniharu; and Kuntosh, Sakae, 4,229,675, Cl. 313-402.000.
- Nagashiro, Waichi; Fukke, Hajime; Kato, Yoshiki; Tsunoda, Teruo; Kobayashi, Teruaki; Oba, Yoichi; Chiba, Katsuyoshi; Mitsuya, Munehisa; Ishihara, Heigo; and Endo, Mitsushi, 4,229,312, Cl. 252-62.540.
- Takeda, Renzo; Uchikawa, Sadao; Kurihara, Kunitoshi; Yamamoto, Masaaki; Yokomi, Michiro; Yamashita, Junichi; and Takamatsu, Jun, 4,229,258, Cl. 176-76.000.
- Hitachi Shipbuilding & Engineering Company Limited: See—
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- Hocker, Harvey L.; and Alcamo, John M., to Northwest Sanitation Products, Inc. Bottle with a clip for suspending the bottle in inverted position, 4,228,928, Cl. 222-181.000.
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- Mayer, Norbert; Pfahler, Gerhard; Scheidl, Franz; and Wierer, Hartmut, 4,229,382, Cl. 260-930.000.
- Meininger, Fritz, 4,229,171, Cl. 8-661.000.
- Savitz, Steven R.; and Drago, James A., 4,229,299, Cl. 210-85.000.
- Spitschka, Ernst; and Urban, Manfred, 4,229,583, Cl. 549-52.000.
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- Walch, Axel; Wildhardt, Jurgen; and Bessel, Dieter, 4,229,291, Cl. 210-23.00F.
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- Hoffmann, Hellmut; Hamann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Pesticidal O-alkyl-O-(1,5-disubstituted-1,2,4-triazolyl)-(3)-thiono-phosphoric (phosphonic) acid esters and ester-amides, 4,229,444, Cl. 424-200.000.
- Hoffmann, Herwig: See—
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- Hollstein, Elmer J.: See—
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- Holm, Boris: See—
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- Holt, Donald A.: See—
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- Holt, John B.; and Ibbotson, Arthur, to Imperial Chemical Industries Limited. Liquid diphenylmethane diisocyanate compositions, 4,229,347, Cl. 260-239.00A.
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- Homburg, Helmut, to Gebr. Class Maschinenfabrik GmbH, Firma. Method and apparatus for the measurement of plant density for the control of harvest machines, 4,228,636, Cl. 56-10.200.
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- Honeywell Inc.: See—
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- Hawkins, Royal R.; and Kuntz, Leland E., 4,229,649, Cl. 250-215.000.
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- Schultz, Richard M., 4,229,734, Cl. 340-512.000.
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- Hooker Chemicals & Plastics Corp.: See—
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- Tang, David Y.; and Foster, Arthur M., 4,229,378, Cl. 568-313.000.
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- Horiuchi, Taku: See—
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- Horn, Richard E., to Pitt Metals & Chemicals, Inc. Process for electrochemically controlling the alkali metal ions in a metal plating process, 4,229,280, Cl. 204-301.000.
- Horton, Lloyd E., Jr. Grade checker, 4,228,588, Cl. 33-1.00H.
- Horvath, Steve. Hydraulic sewer cleaning system, 4,228,990, Cl. 254-134.3FT.
- Hospital Ltd.: See—
Fecondini, Luciano; and Bocchi, Andrea, 4,229,305, Cl. 210-321.00B.
- Hotchkiss, Kenneth W. Cable connector cover, 4,229,616, Cl. 174-138.00F.
- Houck, Robert J., to B. F. Goodrich Company. The Rip detector signal detection circuit, 4,229,735, Cl. 340-676.000.
- Housh, Lloyd M.; and Alder, William R., to Kaiser Aluminum & Chemical Corporation. Method of producing magnesium hydroxide, 4,229,423, Cl. 423-164.000.
- Howe, Robert K., to Monsanto Company. Trifluoromethylphenyl isoxazolyl benzoates, 4,229,204, Cl. 71-88.000.
- Howell, Russell B.; and Marrujo, Ralph G., to Fairchild Industries, Inc. Seat support structure, 4,229,040, Cl. 297-355.000.
- Howell, Stephen L., to Kimball International, Inc. Multiplex chime generator, 4,228,714, Cl. 84-1.010.
- Howe, Ronald N., to Vandervell Products Limited. Bearings, 4,229,057, Cl. 308-161.000.
- Hoya Corporation: See—
Hirota, Shinichiro, 4,229,220, Cl. 106-47.00R.
- Hren, John J.: See—
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- Hsu, Yun T. Bilateral swingable self-closing door hinge, 4,228,562, Cl. 16-154.000.
- Huber, Lothar; and Reitz, Werner, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch unit, 4,228,882, Cl. 192-98.000.
- Hudson, Colin M.: See—
Rabe, David L.; Hudson, Colin M.; and Soteropoulos, Gust, 4,228,638, Cl. 56-341.000.
- Hudson, Paul B.: See—
Mitscher, Lester A.; Clark, George W., III; and Hudson, Paul B., 4,229,592, Cl. 560-231.000.
- Hufnagel, Robert A.: See—
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- Hughes Aircraft Company: See—
Baird, Joseph M.; and Schwartz, Paul M., 4,229,828, Cl. 455-326.000.
- Devendorf, Don C.; and Baskevitch, Eugene, 4,229,729, Cl. 340-347.0AD.
- Leo, Bruno S., 4,228,657, Cl. 60-641.000.
- Lotspeich, James F., 4,229,073, Cl. 350-150.000.
- Manoly, Arthur E., 4,229,676, Cl. 315-3.500.
- Hui, Peter W., to NCR Corporation. Method for recording multiple data segments on a storage disc with eccentricity factor, 4,229,808, Cl. 365-234.000.

- Huignard, Jean-Pierre: See—
d'Auria, Luigi; and Huignard, Jean-Pierre, 4,229,071, Cl. 350-150.000.
- Hulse, David O.: See—
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- Hunt, Robert J.; and Hill, Norman A., to James Mackie & Sons Limited. Production of yarn, 4,228,639, Cl. 57-16.000.
- Huntington, Robert C., to Motorola, Inc. Modified dual-slope analog to digital converter, 4,229,730, Cl. 340-347.0NT.
- Hurst, George P. Cable tension roller, 4,229,138, Cl. 414-787.000.
- Hutchins, Donald H., to Hutchins Manufacturing Company. Abrading tool with wear plate, 4,228,620, Cl. 51-170.0TL.
- Hutchins Manufacturing Company: See—
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- Hutson, Thomas, Jr.; and Brinkmeyer, Francis M., to Phillips Petroleum Company. Process for dehydrogenating hydrocarbons, 4,229,609, Cl. 585-660.000.
- Hwang, Ki-Sup, to Mead Corporation. The Water based permanent jet printing ink and method of use, 4,229,747, Cl. 346-1.100.
- Hysel, Inc.: See—
Green, Stanley E., 4,229,369, Cl. 260-501.190.
- Lee, Lap Y., 4,229,179, Cl. 23-230.00R.
- Hyman, Howard A.: See—
Mani, Siva A.; Hyman, Howard A.; and Daugherty, Jack D., 4,229,708, Cl. 331-94.50G.
- Hynesek, Jaroslav, to Texas Instruments Incorporated. Virtual phase charge transfer device, 4,229,752, Cl. 357-24.000.
- Hynek, Josef: See—
Klabacka, Bedrich; Polansky, Josef; and Hynek, Josef, 4,229,334, Cl. 260-28.50A.
- Hyttinen, Niilo M., to ABC Concrete Products. Apparatus for making concrete brick having antique appearance, 4,229,156, Cl. 425-145.000.
- I-Production Establishment: See—
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- Ibbotson, Arthur: See—
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- Ichikawa, Atsushi; Tomita, Kenkichi; Horiuchi, Taku; Suzuki, Shin-ichi; and Sakuma, Akira, to Lion Dentifrice Co., Ltd., The N-(2-Ethylhexyl)-crotonamides, 4,229,471, Cl. 424-320.000.
- Ichikawa, Rinjiro: See—
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- ICI Australia Limited: See—
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- Idemura, Hideo: See—
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- Ignatenko, Gennady F.: See—
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- Ihara, Satoshi: See—
Ueda, Hirotsada; and Ihara, Satoshi, 4,229,075, Cl. 350-269.000.
- Ihara, Yasushi, to Shin Meiwa Industry Co., Ltd. Automatic welding apparatus, 4,229,641, Cl. 219-125.100.
- Iizuka, Kiyoshi: See—
Kawamura, Naoto; Iizuka, Kiyoshi; Tanaka, Nobuyoshi; Kuwayama, Tetsuro; Matsumoto, Kazuya; and Goshima, Takeshi, 4,229,750, Cl. 346-107.00R.
- Ikarashi, Takeo: See—
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- Ikari, Kouji, to Kyoto Ceramic Co., Ltd. Package for semiconductor devices with first and second metal layers on the substrate of said package, 4,229,758, Cl. 357-74.000.
- Ikeda, Hitoshi: See—
Adachi, Teruhiko; and Ikeda, Hitoshi, 4,229,500, Cl. 428-373.000.
- Ikeda, Toshihide; and Nakano, Motokiyo, to Shiseido Co., Ltd. Gel composition for nail enamel, 4,229,227, Cl. 106-181.000.
- Ikeda, Yorifumi: See—
Mori, Shoichi; Ikeda, Yorifumi; and Nishikawa, Kikuo, 4,229,292, Cl. 210-673.000.
- Ikesue, Haruyuki; and Yamamoto, Kazuo, to NSK-Warner K.K. Buckle assembly for seat belt, 4,228,567, Cl. 24-230.0AL.
- Igada, Akira; Kitano, Kazuaki; and Asai, Mitsuko, to Takeda Chemical Industries, Ltd. Antibiotic G-6302, 4,229,436, Cl. 424-117.000.
- Imahigashi, Naofumi: See—
Takahashi, Minoru; Ishii, Osamu; Naito, Masanori; Kusuhara, Yoshinobu; and Imahigashi, Naofumi, 4,229,495, Cl. 428-36.000.
- Imazeki, Ryoji: See—
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- Imperial Chemical Industries Limited: See—
Bentley, John; Thompson, Morice W.; and Palluel, Auguste L., 4,229,339, Cl. 260-34.200.
- Dawson, David G.; Osmond, Desmond W. J.; Skinner, Maurice W.; and West, Edmund J., 4,229,224, Cl. 106-90.000.
- Holt, John B.; and Ibbotson, Arthur, 4,229,347, Cl. 260-239.00A.
- Joy, David R., 4,229,313, Cl. 252-98.000.
- Inamoto, Yoshiaki: See—
Aigami, Koji; Inamoto, Yoshiaki; Ohnogi, Motoyoshi; Fujikura, Yoshiaki; and Takaishi, Naotake, 4,229,375, Cl. 260-563.00P.
- Takaishi, Naotake; Inamoto, Yoshiaki; and Matsukane, Masamoto, 4,229,324, Cl. 252-522.00R.
- Inamura, Minoru; Takeuchi, Noboru; Inukai, Kazuhiro; Taninouchi, Kentaro; and Utsunomiya, Shin, to Mitsubishi Denki Kabushiki Kaisha. Method of bonding substrates made of metal or alloy, 4,228,944, Cl. 228-198.000.
- Industrial Patterns & Molds, Inc.: See—
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- Industrial Pugliese, Inc.: See—
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- Ingram, James R., Jr.; and Kiesel, George A., to Recognition Equipment Inc. Dual belt drive, 4,228,953, Cl. 235-480.000.
- Inmont Corporation: See—
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- Innocenti Santeustacchio S.p.A.: See—
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- Inolex Corporation: See—
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- Inoue, Mutsuhiro: See—
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- Inouye, Shigeharu: See—
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- Insolio, Thomas A., to Fletcher-Terry Company. The Self-castering glass cutter and compensating bi-directional head, 4,228,711, Cl. 83-881.000.
- Institut Français du Pétrole: See—
Brulet, Daniel; and Chauvel, Bernard, 4,229,308, Cl. 252-47.000.
- Espitalie, Jean; Laporte, Jean-Loup; Madec, Marcel; and Marquis, Francois, 4,229,181, Cl. 23-230.0EP.
- Institute of Gas Technology: See—
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- Instytut Spawalnictwa: See—
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- Intel Magnetics, Inc.: See—
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- International Business Machines Corporation: See—
Bergeron, David L.; and Stephens, Geoffrey B., 4,229,753, Cl. 357-28.000.
- Chiu, George T.; Kitcher, James R.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,229,247, Cl. 156-643.000.
- Fillmore, Gary L., 4,229,749, Cl. 346-75.000.
- Hansen, Thomas A.; Johnson, Claude, Jr.; and Wilburg, Robert R., 4,229,233, Cl. 148-1.500.
- Hartstein, Allan M.; and Petersen, Kurt E., 4,229,732, Cl. 340-378.200.
- Janssen, Donovan M.; Radman, Anton J., Jr.; and Seaward, William S., 4,229,774, Cl. 360-98.000.
- Kryder, Mark H., 4,229,807, Cl. 365-12.000.
- Maiyas, Stephen M.; Meyer, Carl H. W.; and Tuckerman, Louis B., III, 4,229,818, Cl. 375-2.000.
- Metz, Eric A., 4,229,219, Cl. 106-22.000.
- Panissidi, Hugo A., 4,229,136, Cl. 414-673.000.
- Schaefer, John O., 4,229,112, Cl. 400-196.100.
- Smith, Gerald L., 4,229,669, Cl. 307-354.000.
- Travis, Terence, 4,229,100, Cl. 355-77.000.
- International Flavors & Fragrances Inc.: See—
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- Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,229,314, Cl. 252-174.110.
- International Nickel Co., Inc.: See—
Subramanian, Kohur N.; Bell, Malcolm C. E.; Thomas, John A.; and Nissen, Norman C., 4,229,270, Cl. 204-109.000.
- International Paper Company: See—
Hollis, Alberta M., 4,228,728, Cl. 93-84.0TW.
- International Rectifier Corporation: See—
Lidow, Derek, 4,228,806, Cl. 128-731.000.
- International Telephone and Telegraph Corporation: See—
Bilson, Edward B.; and Brown, Alfred H., III, 4,229,779, Cl. 362-217.000.
- Bnsson, Thomas F., 4,229,048, Cl. 301-37.0SS.
- Charlton, Gregory G., 4,229,746, Cl. 343-854.000.
- Kruger, Bradford E., 4,229,745, Cl. 343-771.000.
- Streng, DeWayne A., 4,229,197, Cl. 65-4.00B.
- Wallace, Charles H.; and Moncure, Richard W., 4,228,685, Cl. 73-432.00R.
- Interox Chemicals Limited: See—
Covington, James W.; and Whittemore, Robert G., 4,229,422, Cl. 423-20.000.
- Intille, George M., to Monsanto Company. Selective adsorption process, 4,229,188, Cl. 55-16.000.
- Inukai, Kazuhiro: See—
Inamura, Minoru; Takeuchi, Noboru; Inukai, Kazuhiro; Taninouchi, Kentaro; and Utsunomiya, Shin, 4,228,944, Cl. 228-198.000.
- Ir, H.M.W. Croese Raadgevend: See—
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- Irick, Dan F.; and Zollinger, Roger F., to Honeywell Information Systems Inc. Method and apparatus for capacitance testing printed circuit boards. 4,229,693, Cl. 324-73.0PC.
- Isaac, Peter, to Canada Atomic Energy of, Limited. Method and apparatus for positioning and ejecting fuel element bundles in and from a downstream end of a horizontally extending fuel channel. 4,229,255, Cl. 176-31.000.
- Ishida, Torao: See—
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- Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, to Kumiai Chemical Industry Co., Ltd. Method for preparing multihomocyclic. 4,229,535, Cl. 435-128.000.
- Ishihara, Heigo: See—
Nagashiro, Waichi; Fukke, Hajime; Kato, Yoshiki; Tsunoda, Teruo; Kobayashi, Teruaki; Oba, Yoichi; Chiba, Katsuyoshi; Mitsuya, Munechisa; Ishihara, Heigo; and Endo, Mitsushi, 4,229,312, Cl. 252-62.540.
- Ishihara, Kenji: See—
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- Ishii, Kunihiro: See—
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- Ishii, Osamu: See—
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- Ishikawa, Eizo: See—
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- Izuka, Yutaka, to Diesel Kiki Co., Ltd. Swash plate compressor. 4,229,145, Cl. 417-269.000.
- Issa, Sedika: See—
Roth, Hermann J.; Eger, Kurt; Issa, Sedika; and Jacobi, Haidreddin, 4,229,453, Cl. 424-251.000.
- Itatani, Hiroshi: See—
Nishimura, Kenji; Uchiumi, Shinichiro; Fujii, Kozo; Nishihira, Keigo; Yamashita, Masayoshi; and Itatani, Hiroshi, 4,229,589, Cl. 560-193.000.
- Itaya, Nobushige: See—
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 4,229,469, Cl. 424-304.000.
- Ito, Takamasa, to Sony Corporation. Method of recording on a magnetic tape which is attached to a card. 4,229,770, Cl. 360-15.000.
- Ito, Takusens; Murakami, Masami; Ishikawa, Eizo; and Otsuka, Keiichi, to Hitachi Shipbuilding & Engineering Company Limited. System for controlling feed of waste gas to ground flare. 4,229,157, Cl. 431-90.000.
- Ito, Yoichiro, to United States of America, Health, Education and Welfare. Horizontal flow-through coil planet centrifuge. 4,228,950, Cl. 233-25.000.
- Ito, Yoshitaka: See—
Miyao, Kohsei; Ito, Yoshitaka; and Wachi, Tsuneo, 4,229,468, Cl. 424-287.000.
- Itoh, Hirataka: See—
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- Itoh, Tsutomu, to Onoda Cement Co., Ltd. Electrostatic power painting head. 4,228,961, Cl. 239-698.000.
- ITT Industries, Inc.: See—
Engert, Klaus, 4,229,050, Cl. 303-6.00C.
- Holzmann, Dieter, 4,229,731, Cl. 340-365.00E.
- Ivanov, Boris I.: See—
Motin, Yuri D.; Reformatsky, Igor A.; Sinitsyn, Pavel R.; Ivanov, Nikolai M.; Malakhov, Igor K.; and Ivanov, Boris I., 4,229,069, Cl. 350-96.290.
- Ivanov, Nikolai M.: See—
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- Iversen, Arthur; and Magyar, John, to Pfizer Inc. X-ray orienting apparatus. 4,229,656, Cl. 250-447.000.
- Iwaki, Akio: See—
Kurita, Yoshio; and Iwaki, Akio, 4,229,514, Cl. 430-195.000.
- Iwashita, Tomonori: See—
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- Iwata, Hiroshi, to West Electric Company, Ltd. Distance indicator for camera. 4,229,092, Cl. 354-198.000.
- Iwata, Nobuo: See—
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- Izari, Gerard, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Spark erosion machining process. 4,229,636, Cl. 219-44.000.
- Izawa, Takatoshi: See—
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- Jablonsky, Erich, to Zahnradfabrik Friedrichshafen, A.G. Steering gear for motor vehicles. 4,228,696, Cl. 74-499.000.
- Jackson, Joseph F., to Thomas Broadbent & Sons Limited. Solid bowl scroll discharge decanter centrifuges. 4,228,949, Cl. 233-7.000.
- Jackson, Mervyn B.: See—
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- Jacob, Richard J.; and Waugh, Dale L., to Dayco Corporation. Endless power transmission belt and method of manufacture. 4,228,692, Cl. 474-251.000.
- Jacobi, Haidreddin: See—
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- Jacobone, Donato, to Frypan S.p.A. Coatings for polyolefinic products and products covered by skid coatings. 4,229,327, Cl. 260-13.000.
- Jacobsen, Ole A.: See—
Gunnegaard, Marius; and Jacobsen, Ole A., 4,228,892, Cl. 198-832.000.
- Jaconette, Frank C., to Harvey Hubbell, Incorporated. Electrical contact with torsion bars. 4,229,065, Cl. 339-258.00T.
- Jaggard, James F. R.: See—
Mueller-Tamm, Heinz; Jaggard, James F. R.; and Schick, Hans, 4,229,318, Cl. 252-429.00B.
- Jahn, Walter, to Daimler-Benz Aktiengesellschaft. Reel for automatic safety belts for vehicles, especially motor vehicles. 4,228,968, Cl. 242-107.000.
- Jai, Kenneth. Rotary piston. 4,228,725, Cl. 92-159.000.
- Jakob, Helmut: See—
Eiselbrecher, Max; Guenther, Rolf; and Jakob, Helmut, 4,228,976, Cl. 244-123.000.
- James Mackie & Sons Limited: See—
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- Jamesbury Corporation: See—
Aoki, Tadashi, 4,228,816, Cl. 137-72.000.
- Jameson, Michael J. Board games for playing draughts and chess. 4,229,008, Cl. 273-261.000.
- Janiszewski, Anthony T.: See—
Barlow, Gordon A.; Janiszewski, Anthony T.; and Krutsch, John R., 4,229,005, Cl. 273-86.00D.
- Janssen, Donovan M.; Radman, Anton J., Jr.; and Seaward, William S., to International Business Machines Corporation. Self-adapting flow restrictors. 4,229,774, Cl. 360-98.000.
- Janssen Pharmaceutica N.V.: See—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,229,460, Cl. 424-269.000.
- Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,229,581, Cl. 548-262.000.
- Jaunin, Jean-Pierre, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Hour hand corrector for dual display timepiece. 4,228,648, Cl. 368-185.000.
- Jekel, Richard N.: See—
Heldwein, Carl A.; Jekel, Richard N.; Sampson, Stephen R.; and Zupan, John T., 4,229,737, Cl. 343-6.00R.
- JENAer Glaswerk Schott & Gen.: See—
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- Jenkins, David A.: See—
Degler, Howard E., Jr.; Clark, David E.; Hren, John J.; Jenkins, David A.; and Johnson, Paul F., III, 4,228,800, Cl. 128-303.140.
- Jenkins, Ronald, to North American Philips Corporation. Acid phthalate crystal. 4,229,499, Cl. 428-336.000.
- Jennings, Wayne D.: See—
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- Jensen, Earl D.; and Marshall, George D., to Honeywell Inc. Bus allocation synchronization system. 4,229,792, Cl. 364-200.000.
- Jensen, Flemming E., to Industrial Patterns & Molds, Inc. Rotary disc sander with tiltable work support table and sander dust collection unit. 4,228,618, Cl. 51-125.500.
- Jerky Treats, Inc.: See—
Brown, Bruce W.; Copple, Virgil E.; and Wilson, Carroll K., 4,229,485, Cl. 426-305.000.
- Johannes Heidenhain GmbH: See—
Burkhardt, Horst; Schwefel, Ernst; Baumgartner, Alfons; Mayer, Anton; and Rauth, Michael, 4,229,646, Cl. 235-92.0GC.
- Johannsen, Donald O.: See—
Kass, John J.; and Johannsen, Donald O., 4,229,144, Cl. 417-222.000.
- Johansen, Thomas R.: See—
Torok, Ernest J.; Fleming, David L.; and Johansen, Thomas R., 4,229,072, Cl. 350-151.000.
- Johnsen, Vernon L.; and Stern, Elaine S., to Inolex Corporation. Process for preparing alcohol soluble condensates of abietic acid and a protein hydrolysate. 4,229,429, Cl. 424-47.000.
- Johnson, Alan J.: See—
Hodgins, Leonard T.; Finlay, Thomas H.; and Johnson, Alan J., 4,229,537, Cl. 435-177.000.
- Johnson, Carl E.; and Crouthamel, Carl E., to United States of America, Energy. Nuclear reactor fuel element. 4,229,260, Cl. 176-82.000.
- Johnson, Charles L. Lumber spacer and stick layer. 4,229,133, Cl. 414-42.000.
- Johnson, Claude, Jr.: See—
Hansen, Thomas A.; Johnson, Claude, Jr.; and Wilburg, Robert R., 4,229,233, Cl. 148-1.500.
- Johnson, Claude D.: See—
Lilly, Robert L.; Tummers, Gerardus L. J.; Johnson, Claude D.; and Davis, Roger D., 4,229,813, Cl. 368-89.000.
- Johnson & Jorgensen (Plastics) Limited: See—
Burton, George W., 4,228,920, Cl. 221-265.000.

- Johnson, Lawrence P.: See—
Hooper, Robert E.; and Johnson, Lawrence P., 4,228,915, Cl. 220-288.000.
- Johnson, Paul F., III: See—
Degler, Howard E., Jr.; Clark, David E.; Hren, John J.; Jenkins, David A.; and Johnson, Paul F., III, 4,228,800, Cl. 128-303.140.
- Johnson, Philip P.: See—
Dingler, Geoffrey L.; and Johnson, Philip P., 4,228,962, Cl. 241-46.00R.
- Johnston Boiler Company: See—
Smith, Willard P.; Michaels, Harry J.; and Shedd, Robert W., 4,228,767, Cl. 122-4.00D.
- Jones, Dennis L., to Kardex Systems, Inc. Adjustable rail mounting assembly. 4,228,906, Cl. 211-126.000.
- Jones, Gordon H.; and Young, John, to Syntex (U.S.A.) Inc. Naphthaquinone anti-psoriatic agents. 4,229,478, Cl. 424-331.000.
- Jones, John L., Jr.: See—
Coggin, Charles H., Jr.; and Jones, John L., Jr., 4,229,198, Cl. 65-11.00W.
- Jones, Robert J.; Vaughan, Robert W.; Buyny, Robert A.; and O'Rell, Michael K., to TRW Inc. Flexibilized vinyl polybutadiene maleimide resins. 4,229,550, Cl. 525-282.000.
- Jones, Terry L.; and Miller, Brian S., to United States of America, Army. Electro-mechanical image converter. 4,229,081, Cl. 350-361.000.
- Jos. Schneider GmbH & Co., Optische Werke Kreuznach: See—
Baab, Albert; and Himmelsbach, Paul, 4,229,094, Cl. 354-286.000.
- Josephs, Richard M., to Sperry Corporation. Consecutive bit bubble memory detector. 4,229,806, Cl. 365-8.000.
- Jost, Heinz: See—
Wenzel, Franz; Schoedel, Ulrich; Jost, Heinz; and Pilz, Hans, 4,229,311, Cl. 252-50.000.
- Joy, David R., to Imperial Chemical Industries Limited. Alkali metal hypochlorite bleaching and cleaning compositions thickened with branch chain amine oxides. 4,229,313, Cl. 252-98.000.
- Joy Manufacturing Company: See—
Frey, G. Robert; Parrotto, Joseph; and Fontaine, Francis X., 4,229,124, Cl. 405-303.000.
- Juffa, Richard; Wawra, Georg; and Uerdingen, Walter, to Bayer Aktiengesellschaft. Method of determining liquid flow in a conduit. 4,228,683, Cl. 73-204.000.
- Juffa, Richard; Wawra, Georg; and Uerdingen, Walter, to Bayer Aktiengesellschaft. Measurement and control of multicomponent liquid systems. 4,228,815, Cl. 137-10.000.
- Junge, Helmut; Kurtz, Walter; Dimroth, Peter; and Scherer, Hans, to BASF Aktiengesellschaft. Azo dyes from an oxadiazolyl-substituted aniline. 4,229,343, Cl. 260-156.000.
- K. Ernst Brinkmann, Industrieverwaltung: See—
Brinkmann, Karl E.; and Assmann, Bernd L., 4,228,874, Cl. 188-72.100.
- Kabelschlepp Gesellschaft mit beschränkter Haftung: See—
Moritz, Werner; Loos, Kurt; and Haschek, Friedrich, 4,228,825, Cl. 138-120.000.
- Kabushiki Kaisha Aoyama Seisakusho: See—
Kazino, Hiroshi, 4,228,722, Cl. 85-9.00R.
- Kabushiki Kaisha Daini Seikosha: See—
Yajima, Kenji, 4,228,647, Cl. 368-185.000.
- Kabushiki Kaisha Hirai Giken: See—
Hirai, Takashi; and Hino, Tadashi, 4,228,791, Cl. 126-450.000.
- Kabushiki Kaisha Komatsu Seisakusho: See—
Kisami, Nobuyuki, 4,228,878, Cl. 192-2.000.
- Kabushiki Kaisha Togowa Gomu Seizoshu: See—
Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, 4,229,341, Cl. 260-42.160.
- Kabushikikaisha Anoa: See—
Shimizu, Takeshi, 4,229,003, Cl. 273-1.00E.
- Kadambi, Vedanth: See—
Keramati, Bahram; and Kadambi, Vedanth, 4,228,959, Cl. 239-451.000.
- Kahan, Frederick M.: See—
Kahan, Jean S.; Kahan, Frederick M.; Goegelman, Robert T.; Stapley, Edward O.; and Hernandez, Sebastian, 4,229,534, Cl. 435-119.000.
- Kahan, Jean S.; Kahan, Frederick M.; Goegelman, Robert T.; Stapley, Edward O.; and Hernandez, Sebastian, to Merck & Co., Inc. Acetylthienamycin production. 4,229,534, Cl. 435-119.000.
- Kahn, Marvin J.; Malchod, Robert J.; Paine, Joseph P.; Rogers, Milton J.; and Zouck, Robert L., to AAI Corporation. Glide bomb. 4,228,737, Cl. 102-3.000.
- Kai, Tamotsu; Tsurumi, Michio; Sakakiyama, Takashi; and Horiuchi, Kunihiro, to Asahi-Dow Limited. Method for drying wood material. 4,229,507, Cl. 428-541.000.
- Kaise, Hirotsugu: See—
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- Kaiser Aluminum & Chemical Corporation: See—
Housh, Lloyd M.; and Alder, William R., 4,229,423, Cl. 423-164.000.
- Kaizu, Yasuo: See—
Takahashi, Nobuaki; Funasaka, Eiichi; Shinozaki, Masanobu; and Kaizu, Yasuo, 4,229,619, Cl. 179-1.00D.
- Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; and Kitada, Hisashi, to Mitsubishi Chemical Industries Limited. Process for preparing polyolefin. 4,229,558, Cl. 526-125.000.
- Kakusai Denshin Denwa Kabushiki Kaisha: See—
Enomoto, Hajime, 4,229,820, Cl. 375-27.000.
- Kalenian, Paul A. Combustion heater. 4,228,783, Cl. 126-112.000.
- Kalnasy, Kenneth A.; and Kalnasy, Marcia, to Kaplan-Stern Environmental, Inc. Tamper proof rodent baiting station. 4,228,613, Cl. 43-131.000.
- Kalnasy, Marcia: See—
Kalnasy, Kenneth A.; and Kalnasy, Marcia, 4,228,613, Cl. 43-131.000.
- Kamei, Kuniaki: See—
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,229,239, Cl. 156-155.000.
- Kampe, Wolfgang; Stach, Kurt, deceased; by Plattner, Werner, administrator; Thiel, Max; Bartsch, Wolfgang; Dietmann, Karl; Roesch, Egon; and Schaumann, Wolfgang, to Boehringer Mannheim GmbH. Aminopropanol substituted indole compounds and compositions for the treatment of cardiac and circulatory diseases. 4,229,464, Cl. 424-274.000.
- Kamynin, Jury S.: See—
All, Viktor V.; Mischenkov, Alexandr A.; Ponomarev, Viktor A.; Avdjushev, Eduard L.; Kamynin, Jury S.; Baryshnikov, Vladimir P.; Levin, Grigory K.; and Orlov, Alexei A., 4,228,679, Cl. 73-117.300.
- Kanai, Toshio; Yanagioka, Hiroshi; Idemura, Hideo; Sugiyama, Hiroshi; Kogawa, Yoshio; Yoshida, Michihiro; Kitamura, Mitsugu; and Sugiyama, Teruo, to Chiyoda Chemical Engineering & Construction Co., Ltd. Gas-liquid contacting apparatus. 4,229,417, Cl. 422-176.000.
- Kanbe, Masaru: See—
Ohta, Hideyasu; Shirasaki, Jun; Kanbe, Masaru; Abe, Naoto; Uozumi, Takahiro; and Mayama, Masayoshi, 4,229,523, Cl. 430-532.000.
- Kandalova, Valentina D.: See—
Tmenov, Dzantemir N.; Svintsov, Nikolai I.; Shapovalova, Lidia P.; Tabakov, Albert V.; Dvoretzky, Mikhail L.; Vasiliev, Gavril I.; Zhestovsky, Gennady P.; Kandalova, Valentina D.; Korotkevich, Boris S.; Lukashov, Anatoly I.; Lukyanenko, Valery P.; Polataiko, Roman I.; Malov, Evgeny A.; and Shmuk, Jury A., 4,229,604, Cl. 585-445.000.
- Kansas University Endowment Association: See—
Mitscher, Lester A.; Clark, George W., III; and Hudson, Paul B., 4,229,592, Cl. 560-231.000.
- Kao Soap Company, Limited: See—
Aigami, Koji; Inamoto, Yoshiaki; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Takaishi, Naotake, 4,229,375, Cl. 260-563.00P.
- Takaishi, Naotake; Inamoto, Yoshiaki; and Matsukane, Masamoto, 4,229,324, Cl. 252-522.00R.
- Kaplan-Stern Environmental, Inc.: See—
Kalnasy, Kenneth A.; and Kalnasy, Marcia, 4,228,613, Cl. 43-131.000.
- Kappelsberger, Erwin: See—
Koy, Johannes; Rappold, Franz; and Kappelsberger, Erwin, 4,229,639, Cl. 219-121.0EM.
- Karbowski, Sylvester G., to Palmieri, Louis W.; and Palmieri, Marcia K. Cut-off saw attachment for machine tool. 4,228,710, Cl. 83-794.000.
- Kardex Systems, Inc.: See—
Jones, Dennis L., 4,228,906, Cl. 211-126.000.
- Karino, Kimiji; Nagano, Masami; and Momono, Masakichi, to Hitachi, Ltd. Carburetor with starting means. 4,229,384, Cl. 261-39.00D.
- Karl Mayer Textilmaschinenfabrik GmbH: See—
Bogucki, Bogdan, 4,229,628, Cl. 200-61.180.
- Karmann, Hans-Georg: See—
Baumann, Hans-Peter; Karmann, Hans-Georg; and Wiedemann, Achim, 4,229,172, Cl. 8-533.000.
- Kasper Instruments, Inc.: See—
Schulte, Harvey L., 4,228,902, Cl. 211-41.000.
- Kass, John J.; and Johannsen, Donald O., to Deere & Company. Feed-back shaft extending between swashplate and displacement control valve. 4,229,144, Cl. 417-222.000.
- Kasugai, Hiroshi: See—
Shigematsu, Taichiro; Yoshida, Kenji; Nakazawa, Makoto; Kasugai, Hiroshi; and Tsuda, Masataka, 4,229,461, Cl. 424-270.000.
- Katagiri, Shigenobu: See—
Monma, Hisayoshi; Katagiri, Shigenobu; and Kozawa, Hiroomi, 4,228,938, Cl. 226-9.000.
- Kataoka, Hiroshi: See—
Nagumo, Tadashi; Yasuike, Akio; and Kataoka, Hiroshi, 4,229,395, Cl. 264-51.000.
- Kathawala, Faizulla G., to Sandoz, Inc. Unsaturated fatty acid hydrazides. 4,229,463, Cl. 424-274.000.
- Kato, Osamu: See—
Uemura, Seiichi; Yamamoto, Syunichi; Hirose, Takao; Takashima, Hiroaki; Kato, Osamu; and Nagai, Minoru, 4,229,221, Cl. 106-58.000.
- Kato, Yoshiaki, to Citizen Watch Co., Ltd. Electronic timepiece with indication disk for internal state of timepiece. 4,228,646, Cl. 368-66.000.
- Kato, Yoshiki: See—
Nagashiro, Waichi; Fukke, Hajime; Kato, Yoshiki; Tsunoda, Teruo; Kobayashi, Teruaki; Oba, Yoichi; Chiba, Katsuyoshi; Mitsuya, Munechisa; Ishihara, Heigo; and Endo, Mitsushi, 4,229,312, Cl. 252-62.540.
- Kato, Yuzo: See—
Kurabayashi, Sadasuke; Kato, Yuzo; Watanabe, Asao; Tsuda, Shin; and Muto, Haku, 4,229,768, Cl. 358-261.000.

Katoh, Tatuya, to Ricoh Company, Ltd. Electrophotography with uniform exposure for residual potential. 4,229,511, Cl. 430-55.000.
 Katsumura, Nobuhiko. Glucocorticoid sparing factor and process for the production of the same. 4,229,571, Cl. 536-18.000.
 Katakian, Terry A. Water bed sheet frame. 4,228,555, Cl. 5-498.000.
 Kawabata, Yasuziro: See—
 Ogata, Ikuei; Kawabata, Yasuziro; Tanaka, Masato; and Hayashi, Teruyuki. 4,229,381, Cl. 568-454.000.
 Kawamura, Naoto; Iizuka, Kiyoshi; Tanaka, Nobuyoshi; Kuwayama, Tetsuro; Matsumoto, Kazuya; and Goshima, Takeshi, to Canon Kabushiki Kaisha. Information output unit. 4,229,750, Cl. 346-107.00R.
 Kawasaki, Akio: See—
 Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu. 4,229,239, Cl. 156-155.000.
 Kawasaki, Motoo: See—
 Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa. 4,229,276, Cl. 204-222.000.
 Kawasaki Steel Corporation: See—
 Shinohara, Yoshiaki. 4,229,163, Cl. 432-194.000.
 Kawasaki, Yoshitaka: See—
 Ohmukai, Yoshimi; Tomisawa, Takeshi; and Kawasaki, Yoshitaka. 4,229,159, Cl. 431-328.000.
 Kay, James C. Solar energy collector. 4,228,789, Cl. 126-439.000.
 Kazino, Hiroshi, to Kabushiki Kaisha Aoyama Seisakusho. Upset bolt. 4,228,722, Cl. 85-9.00R.
 Kazino, Mitsutaka: See—
 Watanabe, Kikuo; Kazino, Mitsutaka; and Yamazaki, Hisashi. 4,229,683, Cl. 318-466.000.
 Keene, George W. Plectrum for stringed musical instruments. 4,228,719, Cl. 84-322.000.
 Keiper Automobiltechnik GmbH & Co. KG: See—
 Werner, Paul. 4,229,041, Cl. 297-468.000.
 Kelbel, Donald W., to Borg-Warner Corporation. Transmission shift control apparatus. 4,228,693, Cl. 74-339.000.
 Kellogg, Thomas W., to American Can Company. Cup dispensing apparatus. 4,228,918, Cl. 221-65.000.
 Kelsey Hayes Co.: See—
 Rinker, Kurt H.; and Evans, Anthony C., 4,228,726, Cl. 92-168.000.
 Kemp, James M. Growth system for crustaceans and fish. 4,228,762, Cl. 119-2.000.
 Kennametal Inc.: See—
 Bartley, Donald L., 4,229,127, Cl. 408-158.000.
 Kennedy Joseph P.: See—
 Thaler, Warren A.; Buckley, Donald J.; and Kennedy Joseph P., 4,229,325, Cl. 260-5.000.
 Kent County Council: See—
 Bourner, Malcolm S., 4,229,701, Cl. 328-10.00G.
 Kenworthy, E. J. Doyle, to Mead Corporation. The Method for fabricating and the solid metal orifice plate for a jet drop recorder produced thereby. 4,229,265, Cl. 204-11.000.
 Kempley, Garry D.: See—
 Haben, Dale E.; Kempley, Garry D.; and Vander Molen, Gordon L., 4,229,624, Cl. 179-18.00E.
 Keramati, Bahram; and Kadambi, Vedanth, to General Electric Company. Rotating nozzle expander. 4,228,959, Cl. 239-451.000.
 Kern, Georg, to Dyckerhoff & Widman Aktiengesellschaft. Steel rods, especially reinforcing or tensioning rods. 4,229,501, Cl. 428-399.000.
 Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung: See—
 Forster, Siegfried. 4,229,257, Cl. 176-60.000.
 Kerns, Ralph M., to Abbott Laboratories. Probe and syringe drive apparatus. 4,228,831, Cl. 141-27.000.
 Kerr, David L.: See—
 Hall, Lewis W., Jr.; Kerr, David L.; Hollstein, Elmer J.; Myers, Harry K., Jr.; and Schneider, Abraham. 4,229,612, Cl. 585-823.000.
 Kessler, Achill: See—
 Linder, Ernst; Rembold, Helmut; Teegen, Walter; Kessler, Achill; and Ehmann, Roland. 4,229,147, Cl. 417-283.000.
 Keystone Consolidated Industries, Inc.: See—
 Davis, James P.; and Smith, Robert W., 4,228,733, Cl. 100-4.000.
 Khodosov, Nikolai A.: See—
 Berber, Viktor A.; Khodosov, Nikolai A.; Kosygin, Stanislav A.; Mozyakov, Vladimir I.; and Lapshev, Igor M., 4,228,948, Cl. 233-3.000.
 Kiefer, Jurg; and Haug, Theobald, to Ciba-Geigy Corporation. Process for producing aliphatically N-substituted maleimides. 4,229,351, Cl. 260-326.260.
 Kiehs, Karl: See—
 Theobald, Hans; Wuerzer, Bruno; and Kiehs, Karl. 4,229,205, Cl. 71-92.000.
 Kiencke, Uwe: See—
 Espenschied, Helmut; Kiencke, Uwe; and Schulz, Alfred. 4,228,700, Cl. 74-866.000.
 Kiesel, George A.: See—
 Ingram, James R., Jr.; and Kiesel, George A., 4,228,953, Cl. 235-480.000.
 Kiess, Ronald J., to Wabash, Inc. Capacitor discharge ignition system with timing control arrangement. 4,228,780, Cl. 123-596.000.
 Kiga, Hidetaka: See—
 Sano, Kozo; Kiga, Hidetaka; and Ikarashi, Takeo. 4,229,373, Cl. 260-561.00R.

Kikkoman Shoyu Co., Ltd.: See—
 Aonuma, Tatuo; Kiuchi, Michio; Watanabe, Hirozi; and Akao, Takeshi. 4,228,932, Cl. 222-368.000.
 Kikuchi Kogyo K.K.: See—
 Kikuchi, Kouichi. 4,228,829, Cl. 139-408.000.
 Kikuchi, Kouichi, to NSK-Warner K.K.; and Kikuchi Kogyo K.K. Webbing for seat belt. 4,228,829, Cl. 139-408.000.
 Kikuchi, Makoto; and Yamada, Keiichi, to Porceny Co., Ltd. Dowel pin setting instrument. 4,229,167, Cl. 433-74.000.
 Kimball International, Inc.: See—
 Howell, Stephen L., 4,228,714, Cl. 84-1.010.
 Kimura, Shinichi. Leveling pole. 4,228,590, Cl. 33-138.000.
 Kimura, Tadashi, to Olympus Optical Co., Ltd. Focusing optical system for single-lens reflex. 4,229,087, Cl. 354-23.00R.
 Kimura, Takao: See—
 Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru. 4,229,348, Cl. 260-239.100.
 Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for beneficiating gold. 4,229,209, Cl. 75-1.00R.
 King-Seely Thermos Co.: See—
 Anderson, Gordon H., 4,228,619, Cl. 51-163.100.
 Kirchlechner, Richard, to Merck Patent Gesellschaft mit beschränkter Haftung. Process for the preparation of sterically uniform, natural 6-thiatetracycline derivatives. 4,229,582, Cl. 549-25.000.
 Kirk, Norbert A. Brush device. 4,228,559, Cl. 15-75.000.
 Kirkpatrick, Allen R., to Spire Corporation. Method involving pulsed beam processing of metallic and dielectric materials. 4,229,232, Cl. 148-1.500.
 Kisami, Nobuyuki, to Kabushiki Kaisha Komatsu Saisakusho. Control device for controlling accelerator and brake switches. 4,228,878, Cl. 192-2.000.
 Kishida, Minolu: See—
 Kyo, Kayomon; Asai, Yasuhiko; Hirose, Isamu; and Kishida, Minolu. 4,229,332, Cl. 260-22.00T.
 Kishimoto, Shinzo: See—
 Yoneyama, Masakazu; and Kishimoto, Shinzo. 4,229,524, Cl. 430-536.000.
 Kising, Russell L. Screenshot support. 4,229,118, Cl. 404-72.000.
 Kister, Albert T.: See—
 Gum, Clarence R.; and Kister, Albert T., 4,229,607, Cl. 585-520.000.
 Kisters, Theodor; and Vogler, Alfred, to Babcock-BSH Aktiengesellschaft vormals Buttner-Schilde-Haas AG. Process and apparatus for the absorptive removal of pollutants from waste gases. 4,229,411, Cl. 422-62.000.
 Kiszely, Eniko: See—
 Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszely, Eniko; and Nagy, Jozsef. 4,229,350, Cl. 260-243.300.
 Kita, Toru, to Nissan Motor Company, Limited. Air induction apparatus for use with karman vortex shedding flow meter. 4,228,768, Cl. 123-494.000.
 Kitada, Hisashi: See—
 Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; and Kitada, Hisashi. 4,229,558, Cl. 526-125.000.
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 Kitamura, Mitsugu: See—
 Kanai, Toshio; Yanagioka, Hiroshi; Idemura, Hideo; Sugiyama, Hiroshi; Kogawa, Yoshio; Yoshida, Michihiro; Kitamura, Mitsugu; and Sugiyama, Teruo. 4,229,417, Cl. 422-176.000.
 Kitamura, Shigeyoshi: See—
 Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi. 4,229,469, Cl. 424-304.000.
 Kitano, Kazuaki: See—
 Imada, Akira; Kitano, Kazuaki; and Asai, Mitsuko. 4,229,436, Cl. 424-117.000.
 Kitao, Saburo: See—
 Mitani, Yutaka; Tokuda, Katumi; and Kitao, Saburo. 4,229,786, Cl. 363-126.000.
 Kitcher, James R.: See—
 Chiu, George T.; Kitcher, James R.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,229,247, Cl. 156-643.000.
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 Kiwala, Jacob: See—
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 Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob. 4,229,314, Cl. 252-174.110.
 Klabacka, Bedrich; Polansky, Josef; and Hynek, Josef, to Koh-i-noor Hardtmuth, oborovy podnik. Plastic modified writing compositions. 4,229,334, Cl. 260-28.50A.
 Klein, Peter, to Messerschmitt-Bolkow-Blohm GmbH. Infantry projectile. 4,228,973, Cl. 244-3.100.
 Klemmensen, Per D.; Kolind-Andersen, Hans; and Madsen, Hans B., to A/S Cheminova. (2,2-Disubstituted vinyl)butyrolactones. 4,229,353, Cl. 260-343.600.

Klinkhammer, Ralf L.: See—
 Dunkel, Franz-Heinz; Klinkhammer, Ralf L.; Nebel, Heinz; Spanner, Siegfried; and Seibel, Gerd. 4,228,579, Cl. 29-430.000.
 Klipping, Gustav, to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V. Cryogenic apparatus. 4,228,662, Cl. 62-216.000.
 Klockner-Humboldt-Deutz Aktiengesellschaft: See—
 Herschmann, Otto; Zernig, Norbert; Holthausen, Dieter; Stock, Hugo; and Tholen, Paul. 4,228,655, Cl. 60-602.000.
 Klockner-Humboldt-Wedag AG: See—
 Abeltis, Andris. 4,229,226, Cl. 106-100.000.
 Knaflic, France; and Miller, Franz-Friedrich, to BASF Aktiengesellschaft. Lime-free and sulfide-free liming process. 4,229,175, Cl. 8-94.170.
 Knox, Raymond L.; and Lindsay, Charles D., to A-T-O Inc. Battery discharge indicator. 4,229,688, Cl. 320-48.000.
 Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, to Shikishima Tipton Manufacturing Co., Ltd.; and Motoo Kawasaki. Vibratory plating apparatus. 4,229,276, Cl. 204-222.000.
 Kobayashi, Hitoshi. Roll blind. 4,228,843, Cl. 160-306.000.
 Kobayashi, Katsumi: See—
 Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi. 4,229,535, Cl. 435-128.000.
 Kobayashi, Kengo; and Imazeki, Ryoji, to Fujitsu Fanuc Limited. Numerical control unit having a cassette type memory. 4,229,804, Cl. 364-900.000.
 Kobayashi, Reisuke: See—
 Miwa, Tan; Kobayashi, Reisuke; and Takita, Kiyoshi. 4,229,539, Cl. 435-207.000.
 Kobayashi, Teruaki: See—
 Nagashiro, Waichi; Fukke, Hajime; Kato, Yoshiki; Tsunoda, Teruo; Kobayashi, Teruaki; Oba, Yoichi; Chiba, Katsuyoshi; Mitsuura, Munehisa; Ishihara, Heigo; and Endo, Mitsushi. 4,229,312, Cl. 252-62.540.
 Kobayashi, Toyohiko; Tsuruta, Haruki; and Yoshida, Toshio, to Takasago Perfumery Co., Ltd. Norbornane and norbornene derivatives. 4,229,600, Cl. 568-820.000.
 Kobe Steel, Limited: See—
 Higashi, Kazo; Nakanishi, Sadayuki; and Fukunaga, Akio. 4,228,988, Cl. 251-327.000.
 Kobylinski, Thaddeus P.: See—
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 Kodama, Hiroyuki: See—
 Yagi, Akihiko; Kuchinomachi, Yasuo; and Kodama, Hiroyuki. 4,228,807, Cl. 128-732.000.
 Koeda, Takemi: See—
 Sekizawa, Yasuharu; Tsuruoka, Takashi; Hachisu, Mitsugu; Sezaki, Masaji; Miyamoto, Masashi; Shibata, Uichi; Mizutani, Kazuko; Inouye, Shigeharu; Koeda, Takemi; Shimomura, Keizo; and Niida, Taro. 4,229,448, Cl. 424-245.000.
 Koenig, Karl-Heinz: See—
 Oeser, Heinz-Gunter; Koenig, Karl-Heinz; and Mangold, Dietrich. 4,229,365, Cl. 260-465.00G.
 Koffski, Leonard E., to Talbot Industries, Ltd. Bracket. 4,228,871, Cl. 182-184.000.
 Koga, Shigetoe: See—
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 Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Paul, Volker, to Bayer Aktiengesellschaft. Combating fungi with 1-azol-1-yl-1-phenoxy-2-alkane ethers. 4,229,459, Cl. 424-269.000.
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 Krause, Joachim; Eidenschink, Rudolf; and Pohl, Ludwig, to Merck Patent Gesellschaft mit beschränkter Haftung. Liquid crystalline cyclohexane derivatives. 4,229,315, Cl. 252-299.000.
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 Krilanovich, Nicholas J., to Raytheon Company. Radio frequency signal direction finding systems. 4,229,740, Cl. 343-113.00R.
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 Krone, Kenneth T.; and Balzano, Quirino, to Motorola, Inc. Voltage controlled slow wave transmission line. 4,229,717, Cl. 333-156.000.
 Krug, Hans-Dietrich; and Mildenberger, Willi, to Carl Freudenberg, Firma. Shoe bottom. 4,228,600, Cl. 36-32.00R.
 Kruger, Bradford E., to International Telephone and Telegraph Corporation. Edge slotted waveguide antenna array with selectable radiation direction. 4,229,745, Cl. 343-771.000.
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Kulischenko, Walter, to Pennwalt Corporation. Remote controls for marine engine employing rotatable flexible shafts. 4,228,760, Cl. 440-86.000.

Kulling, Achim M.: See—
Cole, Donald G.; Hartmann, Achim; Kulling, Achim M.; and Trub, Hermann B., 4,229,399, Cl. 264-117.000.

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Kumiai Chemical Industry Co., Ltd.: See—
Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, 4,229,535, Cl. 435-128.000.

Miwa, Tan; Kobayashi, Reisuke; and Takita, Kiyoshi, 4,229,539, Cl. 435-207.000.

Kunitoh, Sakae: See—
Matsuki, Takeshi; Maruyama, Koichi; Osakabe, Kunihiro; and Kunitoh, Sakae, 4,229,675, Cl. 313-402.000.

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Hawkins, Royal R.; and Kuntz, Leland E., 4,229,649, Cl. 250-215.000.

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Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,229,531, Cl. 435-41.000.

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Groenebaum, Theo; and Kuper, Hans-Heinrich, 4,228,603, Cl. 38-1.00B.

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Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,229,570, Cl. 536-18.000.

Usami, Seiji; Oota, Masanori; Takita, Hitoshi; and Hashizume, Hideyuki, 4,229,549, Cl. 525-76.000.

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Kurtz, Walter: See—
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Kusuhara, Yoshinobu: See—
Takahashi, Minoru; Ishii, Osamu; Naito, Masanori; Kusuhara, Yoshinobu; and Imahigashi, Naofumi, 4,229,495, Cl. 428-36.000.

Kuwayama, Tetsuro: See—
Kawamura, Naoto; Iizuka, Kiyoshi; Tanaka, Nobuyoshi; Kuwayama, Tetsuro; Matsumoto, Kazuya; and Goshima, Takeshi, 4,229,750, Cl. 346-107.00R.

Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,229,085, Cl. 353-75.000.

Kwik-Way Manufacturing Company: See—
Wagor, John C., 4,228,621, Cl. 51-241.0VS.

Kyo, Kayomon; Asai, Yasuhiko; Hirose, Isamu; and Kishida, Minoru, to Unifika Ltd. Aromatic copolyester composition. 4,229,332, Cl. 260-22.00T.

Kyoto Ceramic Co., Ltd.: See—
Ikari, Kouji, 4,229,758, Cl. 357-74.000.

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Takemoto, Yoshinori; Yasui, Toshihiro; Fujii, Kyoichi; Tanaka, Hiroshi; and Hirayama, Tatsuyuki, 4,229,446, Cl. 424-230.000.

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Bischoff, Daniel R., 4,228,669, Cl. 70-379.00R.

La Maur Inc.: See—
Moore, Edward R.; and Riddle, Eldred O., 4,228,810, Cl. 132-7.000.

Laanio, Verena; Fory, Werner; and Schurter, Rolf, to Ciba-Geigy Corporation. Esters of 1,2-diphenyl-cyclohex-1-ene-4-carboxylic acid. 4,229,207, Cl. 71-107.000.

LaBarge, Robert L.; and Williams, Marvin H., to Aluminum Company of America. Solar heating panel. 4,228,851, Cl. 165-170.000.

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Cahen, Raymond M., 4,229,361, Cl. 260-409.000.

Lacher, William A., to Burroughs Corporation. Drift compensated fiber optic receiver. 4,229,831, Cl. 455-619.000.

Lagergren, Richard E.: See—
Anderson, Theodore H.; Beuch, Wallace E.; and Lagergren, Richard E., 4,229,113, Cl. 400-596.000.

Lago, Rudolph M.: See—
Chen, Nai Y.; Haag, Werner O.; and Lago, Rudolph M., 4,229,608, Cl. 585-640.000.

Lahme, Gerhard; Solter, Dieter; and Bohnsack, Hermann, to Eppendorf Geratebau Netheler & Hinz GmbH. Mixing cuvette. 4,229,104, Cl. 356-246.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: See—
Grenier, Maurice, 4,228,660, Cl. 62-79.000.

Laktjushina, Valentina Y.: See—
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Lambach, Heinrich W.; and Sorensen, Leif, to Brdr. Schur International A/S J. W. Schursvej. Packing of the folding bag type, primarily for pipe tobacco, and a folding bag member for such a packing. 4,228,900, Cl. 206-260.000.

Lambrechts, Jules: See—
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Lamm, Gunther, to BASF Aktiengesellschaft. (2-Chloro-4-cyanophenyl) (4-dialkylaminophenyl)-diazine dye useful for transfer printing. 4,229,345, Cl. 260-205.000.

Lamy, Bernard: See—
Schneider, Michel; and Lamy, Bernard, 4,229,360, Cl. 260-403.000.

Langford, John F.: See—
Sharp, Gerald B.; Petrak, Karel L.; Boiello, John H.; Wagner, Hans M.; and Langford, John F., 4,229,519, Cl. 430-287.000.

Langlois, Marius, to Burlington Industries, Inc. Apparatus for terrying yarn. 4,228,665, Cl. 66-93.000.

Lanphear, Marvin P. Rigid chain system for articles with column structures. 4,228,979, Cl. 248-188.100.

Laporte, Jean-Loup: See—
Espitalie, Jean; Laporte, Jean-Loup; Madec, Marcel; and Marquis, Francois, 4,229,181, Cl. 23-230.0EP.

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Berber, Viktor A.; Khodosov, Nikolai A.; Kosygin, Stanislav A.; Mozyakov, Vladimir I.; and Lapshev, Igor M., 4,228,948, Cl. 233-3.000.

Larkin, Joseph F., to American Cyanamid Company. Magazine tape containing a plurality of hemostatic clips. 4,228,895, Cl. 206-339.000.

LaSpesa, Richard E.: See—
Bellino, Joseph A.; Feldy, Edmund C.; LaSpesa, Richard E.; and Ramig, Robert J., Jr., 4,229,617, Cl. 178-92.000.

Laube, Rolf: See—
Michal, Gerhard; Laube, Rolf; Roder, Albert; and Schneider, Walter, 4,229,529, Cl. 435-26.000.

Laurel Bank Machine Co., Ltd.: See—
Watanabe, Kenkichi, 4,228,632, Cl. 53-54.000.

Laurie, William A., to Fiberite Corporation. Mold component comprising a mat impregnated with a reaction product of an aminoplast resin and a polyalkylene glycol. 4,229,400, Cl. 264-225.000.

Laurin, Bernard L.: See—
Rotenberg, Don H.; Cuffe, Patricia M.; Laurin, Bernard L.; and Ramirez, Peter R., 4,229,228, Cl. 106-287.140.

Lawton, Peter; and Borjesson, Per, to Lawton, Peter. Snow-shoe. 4,228,601, Cl. 36-124.000.

Lazar, Remus I.; and Reichel, Richard C., to Velsicol Chemical Corporation. Dye compositions. 4,229,177, Cl. 8-435.000.

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Le Dall, Jean-Claude; and Pasquet, Jean-Claude M., 4,229,142, Cl. 417-38.000.

Leake, William R.: See—
Shaver, Robert G.; and Leake, William R., 4,229,425, Cl. 423-449.000.

LeBoeuf, Eugene A.: See—
Kohley, Charles R., 4,229,019, Cl. 280-438.00R.

Le Breton, Edward T.: See—
Wiltshire, Arthur J.; Nara, Harry R.; Le Breton, Edward T.; and Bihley, Ward L., 4,228,575, Cl. 29-407.000.

Lechner, Uwe: See—
Brickl, Rolf; Eberhardt, Hans; Appel, Karl-Richard; Lechner, Uwe; and Merk, Walter, 4,229,479, Cl. 424-331.000.

Lechtenberg, Victor L.: See—
Richey, Clarence B.; Parsons, Samuel D.; Lechtenberg, Victor L.; and Holt, Donald A., 4,228,637, Cl. 56-341.000.

Lecinski, Frank H., Jr., to Continental Group, Inc. The Squeeze-off closure with tamper indicating band. 4,228,909, Cl. 215-253.000.

Le Dall, Jean-Claude; and Pasquet, Jean-Claude M., to Le Matériel Phonique. One-piece pumping device with ambivalent operation. 4,229,142, Cl. 417-38.000.

Ledley, Robert S., to National Biomedical Research Foundation. Method and system for whole picture image processing. 4,229,797, Cl. 364-515.000.

Lee, Henry L., Jr.; and Orlovski, Jan A., to Lee Pharmaceuticals. Method of applying self curing artificial nails. 4,229,431, Cl. 424-61.000.

Lee, Lap Y., to Hycel, Inc. Spectrophotometric measurement in a chemical testing apparatus. 4,229,179, Cl. 23-230.00R.

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Lee, Henry L., Jr.; and Orlovski, Jan A., 4,229,431, Cl. 424-61.000.

Leedom, Marvin A.: See—
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Leeds & Northrup Company: See—
Hance, Richard J., 4,229,230, Cl. 136-234.000.

Lehmann, Gunter: See—
Dudeck, Christian; Lehmann, Gunter; Meissner, Bernd; Diem, Hans; Fliege, Werner; Petri, Norbert; and Ross, Karl-Heinz, 4,229,590, Cl. 560-174.000.

Lehtinen, Antti, to Valmet Oy. Method of improving properties of mechanical paper pulp without chemical reaction therewith. 4,229,250, Cl. 162-23.000.

Leibfried, Russel B. Variable venturi carburetor. 4,229,385, Cl. 261-44.00H.

Leich, Robert A. Ammunition loader. 4,228,724, Cl. 86-26.000.

Leister, Harry M.; Donovan, Joseph C.; and Hall, Wilbur S., to Amchem Products, Inc. Control of autodeposition baths. 4,229,492, Cl. 427-345.000.

Lemmer, Helmut, to Starkstrom Schaltgeratefabriken Sprindler Deissler GmbH & Co. KG. Contactor. 4,229,719, Cl. 335-132.000.

Lempicki, Alexander: See—
McCollum, Bill C.; and Lempicki, Alexander, 4,229,713, Cl. 331-94.50F.

Lems, Peter; and Meier, William A., to Signode Corporation. Strap for forming a readily disengageable anti-reverse sealless strap connection. 4,228,565, Cl. 24-20.0EE.

Lenhard, Myron J.; Rees, James D.; and Xerox Corporation. Toner for color flash fusers containing a permanent colorant and a heat sensitive dye. 4,229,512, Cl. 430-106.000.

Leo, Bruno S., to Hughes Aircraft Company. Regenerative screw expander. 4,228,657, Cl. 60-641.000.

Leo Pharmaceutical Products, Ltd. A/S: See—
Binderup, Ernst T., 4,229,443, Cl. 424-200.000.

Lepetic, Vuko M., to Engelhard Minerals & Chemicals Corporation. Tin flotation. 4,229,287, Cl. 209-167.000.

Leppard, David G.: See—
Evans, Graham; Fryberg, Mario; Stauner, Thomas; Tschopp, Paul; and Leppard, David G., 4,229,577, Cl. 548-138.000.

Lerner, Bernard J. Mass or heat transfer or separation of solid or immiscible components from fluids. 4,229,386, Cl. 261-98.000.

Lesokhin, Albert Z.; Daikhovskaya, Evelina A.; and Boguslavsky, Ilya Z. Multiturn coil for field poles of dynamoelectric machine. 4,229,671, Cl. 310-198.000.

Levi, Israel, to Northern Telecom Limited. Amplitude equalizer circuit. 4,229,716, Cl. 333-28.00R.

Levin, Grigory K.: See—
Alt, Viktor V.; Mischenkov, Alexandr A.; Ponomarev, Viktor A.; Avdjushev, Eduard L.; Kamynin, Jury S.; Baryshnikov, Vladimir P.; Levin, Grigory K.; and Orlov, Alexei A., 4,228,679, Cl. 73-117.300.

Levy, John V.; Rodgers, David; Stewart, Robert E.; Potter, David; and Casabona, Richard J., to Digital Equipment Corporation. Distributed arbitration circuitry for data processing system. 4,229,791, Cl. 364-200.000.

Lewin, Ian: See—
Ruud, Alan J.; and Lewin, Ian, 4,229,782, Cl. 362-297.000.

Lewis, John R., Jr.: See—
Vo, Thang; and Lewis, John R., Jr., 4,229,743, Cl. 343-749.000.

Lewis, Robert N., to United States of America. Energy. Method and means for measurement and control of pulsed charged beams. 4,229,704, Cl. 328-233.000.

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Kuhlmann, Joachim; and Moser, Helmut, 4,229,819, Cl. 375-23.000.

Lichte, Carl L., to Dresser Industries, Inc. Unitized rotary rock bit. 4,229,638, Cl. 219-121.0EM.

Lidow, Derek, to International Rectifier Corporation. Sleep state inhibited wake-up alarm. 4,228,806, Cl. 128-731.000.

Lieber, Derek: See—
Weinstock, Jacques; Lieber, Derek; and Hay, William D., 4,229,652, Cl. 250-308.000.

Lignell, Hakan, to Aktiebolaget Carl Munters. Liquid distribution system for contact bodies and the like. 4,229,388, Cl. 261-111.000.

Likens, Jonas S., deceased (by Ford, Ruby L.; Jessie W. Likens, Mary F. L. Coulter, Pauline L. Coulter, heirs); and Filson, Lucille L., heir, to Felson, Lucille Likens. Paste or dough-like salve for treating skin. 4,229,437, Cl. 424-145.000.

Liljekvist, Bert S.; and Persson, Anders E., to Sandvik Aktiebolag. Reamer bit for raise boring. 4,228,863, Cl. 175-344.000.

Lilly, Robert L.; Tummers, Gerardus L. J.; Johnson, Claude D.; and Davis, Roger D., to Akzona Incorporated. Elapsed time indicator. 4,229,813, Cl. 368-89.000.

Lim-Holding, S.A.: See—
Schmidt, Oscar; and Sibril, Walter, 4,229,561, Cl. 528-68.000.

Lin, Lawrence Y.; Gutsche, Henry W.; and Collier, James A., to Monsanto Company. Method for off-orientation point rotation sawing of crystalline rod material. 4,228,578, Cl. 29-423.000.

Lindahl, Sven, to Aktiebolaget Care Munters. Core for use in humidity exchangers and heat exchangers and method of making the same. 4,228,847, Cl. 165-10.000.

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Forg, Wolfgang G., 4,229,195, Cl. 62-23.000.

Linder, Ernst; Rembold, Helmut; Teegen, Walter; Kessler, Achill; and Ehmann, Roland, to Robert Bosch GmbH. Rotary positive-displacement pump. 4,229,147, Cl. 417-283.000.

Lindsay, Charles D.: See—
Knox, Raymond L.; and Lindsay, Charles D., 4,229,688, Cl. 320-48.000.

Lindstrom, Jan, to Tekno-Detaljer Sture Carlsson AB. Apparatus for separating objects having a tendency to hitch to each other. 4,229,125, Cl. 406-137.000.

Linford, James, to I-Production Establishment. Device and method for optical tone generation. 4,228,716, Cl. 84-1.180.

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Peitsmeier, Karl; and Link, Manfred, 4,229,062, Cl. 339-82.000.

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Ichikawa, Atsushi; Tomita, Kenkichi; Horuchi, Taku; Suzuki, Shin-ichi; and Sakuma, Akira, 4,229,471, Cl. 424-320.000.

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- Steinemann, Hans, 4,228,787, Cl. 126-433.000.

- Michaels, Harry J.: See—
Smith, Willard P.; Michaels, Harry J.; and Shedd, Robert W., 4,228,767, Cl. 122-4.00D.
- Michaelson, Joseph B.: See—
Berlin, Carter H., 4,228,765, Cl. 119-98.000.
- Michal, Gerhard; Laube, Rolf; Roder, Albert; and Schneider, Walter, to Boehringer Mannheim GmbH. Process for determining formate and reagent therefor. 4,229,529, Cl. 435-26.000.
- Michels, Charles E., to Reliance Electric Company. Wrapping apparatus. 4,228,884, Cl. 192-135.000.
- Mihalik, Andrew S., Jr.: See—
Beery, Jack; and Mihalik, Andrew S., Jr., 4,229,086, Cl. 354-5.000.
- Milburn, Zachariah H., Jr., to GTE Products Corporation. Audio detector circuit. 4,229,666, Cl. 307-290.000.
- Mildenberger, Willi: See—
Krug, Hans-Dietrich; and Mildenberger, Willi, 4,228,600, Cl. 36-32.00R.
- Miller, Albert A., to AB Volvo. Vehicle transmissions. 4,228,697, Cl. 74-758.000.
- Miller, Brian S.: See—
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- Miller, Erzell L.: See—
Fahim, Mostafa S.; and Miller, Erzell L., 4,229,430, Cl. 424-49.000.
- Miller, Franz-Friedrich: See—
Knaflitz, France; and Miller, Franz-Friedrich, 4,229,175, Cl. 8-94.170.
- Miller, Gladys D.: See—
Renk, Richard J., 4,229,056, Cl. 308-99.000.
- Miller, Glenn E.: See—
Burkholder, Ward J.; Miller, Glenn E.; and Nagel, Fritz J., 4,229,596, Cl. 568-768.000.
- Miller, Jonathan, to Shop-Vac Corporation. Vacuum cleaner and sealed filter bag assembly therefor particularly useful for filtering asbestos fibers from air. 4,229,193, Cl. 55-318.000.
- Miller, Robert C., to Westinghouse Electric Corp. Circuit breaker magnetic trip device with time delay. 4,229,775, Cl. 361-210.000.
- Miller, Robert S.: See—
Feldman, Martin L.; Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,229,569, Cl. 528-501.000.
- Miller, William H., Jr., to Mechanical Technology Incorporated. Multi-pad compliant hydrodynamic journal bearing. 4,229,054, Cl. 308-9.000.
- Ministry of International Trade and Industry: See—
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- Minolta Camera Kabushiki Kaisha: See—
Yuasa, Yoshio; and Taniguchi, Nobuyuki, 4,229,088, Cl. 354-23.00D.
- Minowa, Masao: See—
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- Mir, Jose M., to Eastman Kodak Company. Electro-optical color imaging apparatus. 4,229,095, Cl. 355-4.000.
- Mirabel, Bernard, to Rhone-Poulenc Industries. Process for extracting proteins from milk using silica and anion exchange resins. 4,229,342, Cl. 260-120.000.
- Mischenkov, Alexandr A.: See—
Alt, Viktor V.; Mischenkov, Alexandr A.; Ponomarev, Viktor A.; Avdjushov, Eduard L.; Kamynin, Yuri S.; Baryshnikov, Vladimir P.; Levin, Grigory K.; and Orlov, Alexei A., 4,228,679, Cl. 73-117.300.
- Mitani, Yutaka; Tokuda, Katumi; and Kitao, Saburo, to Murata Manufacturing Co., Inc. Fly-back transformer with a low ringing ratio. 4,229,786, Cl. 363-126.000.
- Mitscher, Lester A.; Clark, George W., III; and Hudson, Paul B., to Kansas University Endowment Association. Intermediate for prostaglandins and process for preparing the intermediate. 4,229,592, Cl. 560-231.000.
- Mitsubishi Chemical Industries Limited: See—
Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; and Kitada, Hisashi, 4,229,558, Cl. 526-125.000.
- Shigematsu, Taichiro; Shibahara, Tetsuya; and Nakajima, Tetsuo, 4,229,433, Cl. 424-78.000.
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Inamura, Minoru; Takeuchi, Noboru; Inukai, Kazuhiro; Taninouchi, Kentaro; and Utsunomiya, Shin, 4,228,944, Cl. 228-198.000.
- Mitsubishi Gas Chemical Company, Inc.: See—
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- Tonomura, Kenzo; and Urakami, Teizi, 4,229,543, Cl. 435-245.000.
- Mitsui, Akio: See—
Nakamura, Shigeru; Shimamura, Isao; Nakamura, Taku; Sakaguchi, Shinji; Miyazaki, Takashi; Sugiyama, Masatoshi; and Mitsui, Akio, 4,229,522, Cl. 430-390.000.
- Mitsui Petrochemical Industries Ltd.: See—
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- Mitsuya, Munehisa: See—
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- Miwa, Tan; Kobayashi, Reisuke; and Takita, Kiyoshi, to Kumiai Chemical Industry Co., Ltd. β -Galactosidase and production thereof. 4,229,539, Cl. 435-207.000.
- Miyamoto, Masashi: See—
Sekizawa, Yasuharu; Tsuruoka, Takashi; Hachisu, Mitsugu; Sezaki, Masaji; Miyamoto, Masashi; Shibata, Uichi; Mizutani, Kazuko; Inouye, Shigeharu; Koeda, Takemi; Shimomura, Keizo; and Niida, Taro, 4,229,448, Cl. 424-245.000.
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- Miyazaki, Wasei; Kaise, Hirotsugu; Nakano, Yoshimasa; Izawa, Taketoshi; Oshiro, Yasuo; and Shinohara, Masanao, to Otsuka Pharmaceutical Co., Ltd. Sesquiterpene derivatives having anti-complementary activity. 4,229,466, Cl. 424-279.000.
- Miyazaki, Takushi: See—
Nakamura, Shigeru; Shimamura, Isao; Nakamura, Taku; Sakaguchi, Shinji; Miyazaki, Takushi; Sugiyama, Masatoshi; and Mitsui, Akio, 4,229,522, Cl. 430-390.000.
- Mizumoto, Shozo: See—
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, 4,229,276, Cl. 204-222.000.
- Mizutani, Kazuko: See—
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- Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, to Sumitomo Chemical Company Limited. Insecticidal alkadienylcyclopropanecarboxylates. 4,229,469, Cl. 424-304.000.
- Mobil Oil Corporation: See—
Chen, Nai Y.; Haag, Werner O.; and Lago, Rudolph M., 4,229,608, Cl. 585-640.000.
- Frangatos, Gerassimos, 4,229,310, Cl. 252-49.900.
- Kokotailo, George T., 4,229,424, Cl. 423-328.000.
- Peters, Alan W.; Bowes, Emmerson; and Stein, Thomas R., 4,229,282, Cl. 208-111.000.
- Tobias, Michael A.; and Lynch, Conrad L., 4,229,555, Cl. 525-443.000.
- Moeser, John. Self-contained all-terrain living apparatus. 4,228,788, Cl. 126-437.000.
- Molins, Desmond W., to Molins, Limited. Process of conveying cigarettes or other rod-like articles. 4,229,137, Cl. 414-786.000.
- Molins, Limited: See—
Molins, Desmond W., 4,229,137, Cl. 414-786.000.
- Molvat, Allen E., to Clevepak Corporation. Waste treatment apparatus with floating platform. 4,229,302, Cl. 210-220.000.
- Momono, Masakichi: See—
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- Moncure, Richard W.: See—
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- Monier Limited: See—
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- Monma, Hisayoshi; Katagiri, Shigenobu; and Kozawa, Hiroomi, to Hitachi Koki Company Limited. Paper feed control system in a printer. 4,228,938, Cl. 226-9.000.
- Monsanto Company: See—
D'Amico, John J., 4,229,578, Cl. 548-165.000.
- Howe, Robert K., 4,229,204, Cl. 71-88.000.
- Intille, George M., 4,229,188, Cl. 55-16.000.
- Lin, Lawrence Y.; Gutsche, Henry W.; and Collier, James A., 4,228,578, Cl. 29-423.000.
- Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,229,531, Cl. 435-41.000.
- Tolbert, William R.; and Feder, Joseph, 4,229,532, Cl. 435-41.000.
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Piccardi, Paolo; and Longoni, Angelo, 4,229,470, Cl. 424-304.000.
- Montgomery, Dean P.: See—
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- Mookherjee, Braja D.: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,229,599, Cl. 568-819.000.
- Moon, James: See—
Decker, Elmer L.; Moon, James; and Maxwell, Paul R., 4,228,682, Cl. 73-143.000.
- Moore, Edward R.; and Riddle, Eldred O., to La Maur Inc. Care and treatment of curly human hair. 4,228,810, Cl. 132-7.000.
- Moore, Lee P. Liquid soap dispenser and brush combination. 4,229,116, Cl. 401-275.000.
- Moore, Lester P. Technique for modifying the capacity of gas-liquid separator. 4,229,191, Cl. 55-203.000.
- Moore, Robert L., to Champion International Corporation. Pallet formed from two spaced, interlocking sheets of corrugated paperboard and rigid sleeves. 4,228,744, Cl. 108-51.300.
- Moran, Paul W. T.: See—
Schoonmaker, Edward B.; and Moran, Paul W. T., 4,228,997, Cl. 271-315.000.
- Moran, Raymond D., to PPG Industries, Inc. Position sensor. 4,228,886, Cl. 198-395.000.
- Morgan, Barrie O.; and Carter, Merlon B., to Datotek, Inc. Portable electronic cryptographic device. 4,229,817, Cl. 375-2.000.
- Morgan, Douglas J.; and Manis, Barry S., to NCR Corporation. System for transferring data between high speed and low speed memories. 4,229,789, Cl. 364-200.000.

- Morgan, Terry B.: See—
Przybylinski, Phillip G.; and Morgan, Terry B., 4,228,742, Cl. 105-248.000.
- Mori, Shoichi; Ikeda, Yorifumi; and Nishikawa, Kikuo, to Takeda Chemical Industries, Ltd. Countercurrent liquid-solid contacting apparatus. 4,229,292, Cl. 210-673.000.
- Morin, Boris P.; Voinova, Galina J.; Breusova, Irina P.; Stanchenko, Galina I.; and Rogovin, Zakhar A. Method for producing graft copolymers of cellulose or protein fiber with vinyl monomers. 4,229,326, Cl. 260-8.000.
- Morinaga, Masaru, to NSK-Warner K.K. Safety belt retractor with emergency locking mechanism. 4,228,970, Cl. 242-107.40A.
- Moritz, Werner; Loos, Kurt; and Haschek, Friedrich, to Kabelschlepp Gesellschaft mit beschränkter Haftung. Transmission line carrier. 4,228,825, Cl. 138-120.000.
- Morley Furniture Spring Corporation: See—
Crosby, Lawton H., 4,228,991, Cl. 267-110.000.
- Moro, Kanji: See—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,229,348, Cl. 260-239.100.
- Morrill, Charles D., to McEvoy Oilfield Equipment Company. Remote automatic make-up stab-in sealing system. 4,229,027, Cl. 285-137.00A.
- Morrill, Charles D.: See—
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- Morse, Harold. Maze puzzle. 4,229,006, Cl. 273-153.00S.
- Moser, Helmut: See—
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- Moser, Roland: See—
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- Moss, Donald C. Device for sharpening arrowheads. 4,228,703, Cl. 76-86.000.
- Mostmans, Joseph H.: See—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,229,460, Cl. 424-269.000.
- Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,229,581, Cl. 548-262.000.
- Motin, Jury D.; Reformatsky, Igor A.; Sinitysa, Pavel R.; Ivanov, Nikolai M.; Malakhov, Igor K.; and Ivanov, Boris I. Device for remote viewing of objects in ionizing radiation fields. 4,229,069, Cl. 350-96.290.
- Motoo Kawasaki: See—
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, 4,229,276, Cl. 204-222.000.
- Motorola, Inc.: See—
Arvanitis, Aristotelis S.; Re, Thomas W.; and Malinowski, Stanley, 4,229,718, Cl. 333-192.000.
- Bench, Stephen M., 4,229,822, Cl. 375-81.000.
- Groth, Edward J., Jr., 4,229,741, Cl. 370-24.000.
- Huntington, Robert C., 4,229,730, Cl. 340-347.00T.
- Krone, Kenneth T.; and Balzano, Quirino, 4,229,717, Cl. 333-156.000.
- Mourier, Georges, to Thomson-CSF. High-power hyperfrequency emission tube. 4,229,677, Cl. 315-3.600.
- Moussie, Michel, to U.S. Philips Corporation. Programmable memory cell having semiconductor diodes. 4,229,757, Cl. 357-59.000.
- Mowbray, Dorian F.; and Edwards, Stephen, to Lucas Industries Limited. Liquid fuel injectors. 4,228,960, Cl. 239-533.900.
- Mozyakov, Vladimir I.: See—
Berber, Viktor A.; Khodosov, Nikolai A.; Kosygin, Stanislaw A.; Mozyakov, Vladimir I.; and Lapshev, Igor M., 4,228,948, Cl. 233-3.000.
- Mueller-Tamm, Heinz; Jaggard, James F. R.; and Schick, Hans, to BASF Aktiengesellschaft. Manufacture of a titanium-containing component for catalysts of the Ziegler-Natta type. 4,229,318, Cl. 252-429.00B.
- Mueller, Walter B., to W. R. Grace & Co. Process for making a multi layer polyolefin shrink film. 4,229,241, Cl. 156-243.000.
- Muerkl, Helmut: See—
Dederer, Guenter; and Muerkl, Helmut, 4,229,637, Cl. 219-86.250.
- Mues, Volker; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Synergistic arthropodocidal compositions and methods of use. 4,229,445, Cl. 424-200.000.
- Muiliwijk, Dirk: See—
de Jager, Frank; Dekker, Cornelis B.; and Muiliwijk, Dirk, 4,229,821, Cl. 375-53.000.
- Muir, David M.: See—
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- Muller-Duysing, Wolfgang: See—
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- Muller, Paul: See—
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- Muller, Rolf; Roueche, Armand; Muller, Paul; and Ronco, Karl, to Ciba-Geigy Corporation. Monazo pigments containing hydroxynaphthylaminobenzimidazolone radical. 4,229,344, Cl. 260-157.000.
- Muller, Roman, to Gebrüder Buehler AG. Method of degerming maize. 4,229,486, Cl. 426-483.000.
- Mullerheim, Steven B.; and Williams, Fred G., to Great Circle Associates. Wastewater treatment with ultraviolet disinfection and increased capacity. 4,229,202, Cl. 71-8.000.
- Mullersman, Ferdinand H.; and Stillwell, Billy E., to General Electric Company. Battery charger adapter system. 4,229,686, Cl. 320-2.000.
- Mullins, John A., to Rolls-Royce Limited. Ducted fan gas turbine engine. 4,228,651, Cl. 60-226.00A.
- Murakami, Masami: See—
Ito, Takusen; Murakami, Masami; Ishikawa, Eizo; and Otsuka, Keichi, 4,229,157, Cl. 431-50.000.
- Muramatsu, Hiroshi, to Victor Company of Japan, Limited. Tape recorder having an automatic mode switching mechanism. 4,229,772, Cl. 360-69.000.
- Murasawa, Toyooki: See—
Yamauchi, Terukazu; Nishio, Katsufumi; Niino, Fusao, and Murasawa, Toyooki, 4,228,963, Cl. 241-92.000.
- Murata Manufacturing Co., Inc.: See—
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- Murata Manufacturing Co., Ltd.: See—
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- Murib, Jawad H., to National Distillers and Chemical Corporation. Process for preparing aromatic esters. 4,229,587, Cl. 560-131.000.
- Murofushi, Mitsugu; Sasaki, Kuniaki; Shiomi, Michio; Uchida, Yoshio; Hattori, Tokihisa; and Takeda, Keniti, to Fujiya Confectionery Company Limited. Pharmaceutical composition containing the polysaccharide KGF-C as active ingredient. 4,229,440, Cl. 424-180.000.
- Murphy Advantage Corporation, The: See—
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- Murphy, Clifford E.: See—
Bennett, James D.; Coolidge, Jimmy R.; and Murphy, Clifford E., 4,229,408, Cl. 422-5.000.
- Murphy, Michael R., to Murphy Advantage Corporation, The. Universal implement for cleaning corrugated surfaces. 4,229,032, Cl. 294-51.000.
- Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Preparation of a caryophyllene alcohol mixture. 4,229,599, Cl. 568-819.000.
- Mussler, George K. Restoration of nickel-cadmium batteries. 4,229,508, Cl. 429-49.000.
- Muto, Haku: See—
Kurabayashi, Sadasuke; Kato, Yuzo; Watanabe, Asao; Tsuda, Shin and Muto, Haku, 4,229,768, Cl. 358-261.000.
- Mutz, Alec N.: See—
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- Myers, Harry K., Jr.: See—
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- Myers, John G., to Calgon Corporation. Ash sampling probe. 4,228,676, Cl. 73-28.000.
- Myers, John W.; and Montgomery, Dean P., to Phillips Petroleum Company. Olefin double bond isomerization. 4,229,610, Cl. 585-664.000.
- Nagai, Minoru: See—
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- Nagano, Masami: See—
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- Nagaoka, Shinji: See—
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- Nagashiro, Waichi; Fukke, Hajime; Kato, Yoshiki; Tsunoda, Teruo; Kobayashi, Teruaki; Oba, Yoichi; Chiba, Katsuyoshi; Mitsuya, Munehisa; Ishihara, Heigo; and Endo, Mitsushi, to Hitachi, Ltd. Method of manufacturing a paint composite for magnetic films. 4,229,312, Cl. 252-62.540.
- Nagel, Fritz J.: See—
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- Nagumo, Tadashi; Yasuike, Akio; and Kataoka, Hiroshi, to Asahi-Dow Limited. Method for injection molding thick-walled articles. 4,229,395, Cl. 264-51.000.
- Nagy, Jozsef: See—
Rozsa, Laszlo; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Kiszelly, Eniko; and Nagy, Jozsef, 4,229,350, Cl. 260-243.300.
- Nagy, Lajos: See—
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- Naito, Masanori: See—
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- Nakada, Akira: See—
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- Nakagawa, Tadashi: See—
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- Nakajima, Tetsuo: See—
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- Nakajima, Yoshihisa: See—
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- Nakamura, Shigeru; Shimamura, Isao; Nakamura, Taku; Sakaguchi, Shinji; Miyazaki, Takashi; Sugiyama, Masatoshi; and Mitsui, Akio, to Fuji Photo Film Co., Ltd. Method for forming color images. 4,229,522, Cl. 430-390.000
- Nakamura, Takeshi, to Nippon Seiko Kabushiki Kaisha. Clutch release device of the self-centering type using a plastic deformation member. 4,228,881, Cl. 192-98.000
- Nakamura, Taku: See—
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- Nakanishi, Sadayuki: See—
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- Nakano, Motokiyo: See—
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- Nakano, Yoshimasa: See—
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- Nakata, Akira: See—
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- Nakazawa, Makoto: See—
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- Nalco Chemical Co.: See—
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- Namekawa, Takashi: See—
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- Namiki, Ryoichi; and Hayashi, Yasuro, to Ricoh Company, Ltd. Heat pipe roller. 4,229,644, Cl. 219-469.000
- Nanaumi, Ken: See—
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- Napoli, Joseph L., Jr.: See—
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- Nara, Harry R.: See—
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- Nashimoto, Ryo, to Honda Giken Kogyo Kabushiki Kaisha. Wiring of electrical equipments for motorcycles. 4,229,662, Cl. 307-9.000
- National Biomedical Research Foundation: See—
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- National Distillers and Chemical Corporation: See—
Donaldson, Charles R.; and Stiles, Claude J.. 4,229,416, Cl. 422-134.000
- Murib, Jawad H.. 4,229,587, Cl. 560-131.000
- National Starch and Chemical Corporation: See—
Chiu, Chung W.; and Rutenberg, Morton W.. 4,229,489, Cl. 426-578.000
- Naumann, Fritz, to Audi NSU Auto Union AG. Hydraulic power-steering system. 4,228,866, Cl. 180-132.000
- Nawafune, Hidemi: See—
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa. 4,229,276, Cl. 204-222.000
- Nawata, Kiyoshi: See—
Shiozaki, Masahiro; Nawata, Kiyoshi; Tsunawaki, Kiyokazu; Tsubaki, Kazumi; Yanagimoto, Akira; and Kumazawa, Shunichi. 4,229,552, Cl. 525-437.000
- NCR Corporation: See—
Hui, Peter W.. 4,229,808, Cl. 365-234.000
- Morgan, Douglas J.; and Manis, Barry S.. 4,229,789, Cl. 364-200.000
- Nebashi, Toshiyuki: See—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru. 4,229,348, Cl. 260-239.100
- Nebel, Heinz: See—
Dunkel, Franz-Heinz; Klinkhammer, Ralf L.; Nebel, Heinz; Spanner, Siegfried; and Seibel, Gerd. 4,228,579, Cl. 29-430.000
- Neeff, Charles W. Method of making cast aspheric lenses. 4,229,390, Cl. 264-1.000
- Neiman S.A.: See—
Lipschutz, Paul. 4,229,278, Cl. 204-297.00R
- Nelson, David J., to Victor Fluid Power. Crossover relief valve. 4,228,818, Cl. 137-115.000
- Nelson, Norman A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-16-fluoro-PGE₂ compounds. 4,229,377, Cl. 568-380.000
- Nelson, Robert C., to West Virginia Armature Company. Fluorescent lamp for use in explosive atmospheres such as mines. 4,229,780, Cl. 362-218.000
- Nelson, Wilbur C. Animal nail clipper. 4,228,585, Cl. 30-29.000
- Nemoto, Ichiro: See—
Koyama, Mitsuo; Nakagawa, Tadashi; Watanabe, Masanori; Onda, Eiichi; and Nemoto, Ichiro. 4,229,093, Cl. 354-266.000
- Neoloy Products, Inc.: See—
Prosen, Emil M.. 4,229,215, Cl. 75-134.00C
- New York University: See—
Hodgins, Leonard T.; Finlay, Thomas H.; and Johnson, Alan J.. 4,229,537, Cl. 435-177.000
- Newkirk, David D.; Login, Robert B.; and Thir, Basil, to BASF Wyandotte Corporation. Flame retardant antistatic additives and antistatic fibers. 4,229,554, Cl. 525-438.000
- Newman, Joseph W. Vehicle windshield rain deflector system. 4,229,035, Cl. 296-95.00R
- Newman, William A., to Utah Research & Development Corporation. Temperature maintained battery system. 4,229,687, Cl. 320-2.000
- Niagara Bottle Washer Manufacturing Co.: See—
Vamvakas, Michael. 4,228,887, Cl. 198-408.000
- Nickoladze, Leo G. AC Synchronized generator. 4,229,689, Cl. 322-32.000
- Nieuwendijk, Joris A. M.: See—
Heijnemans, Werner A. L.; Nieuwendijk, Joris A. M.; and Vink, Nicolaas G.. 4,229,720, Cl. 335-213.000
- Niida, Taro: See—
Sekizawa, Yasuharu; Tsuruoka, Takashi; Hachisu, Mitsugu; Sezaki, Masaji; Miyamoto, Masashi; Shibata, Uichi; Mizutani, Kazuko; Inouye, Shigeharu; Koeda, Takemi; Shimomura, Keizo; and Niida, Taro. 4,229,448, Cl. 424-245.000
- Niino, Fusao: See—
Yamauchi, Terukazu; Nishio, Katsufumi; Niino, Fusao; and Murasawa, Toyooki. 4,228,963, Cl. 241-92.000
- Nijhuis, Jan; and Terwee, Thomas H. M., to Hollandse Signaalapparaten B.V. Method for the manufacture of twistless or substantially twistless yarn. 4,228,643, Cl. 57-297.000
- "NIKEX" Nehezipari Kulkereskedelmi Vallalat: See—
Pucher, Janos; and Schmider, Antal. 4,229,143, Cl. 417-53.000
- Nilsen, Ole K.: See—
Berlin, Donald M., Jr.; Mensing, Clifford E.; and Nilsen, Ole K.. 4,229,680, Cl. 315-200.00R
- Nintendo Co., Ltd.: See—
Ohta, Takao. 4,229,009, Cl. 273-312.000
- Nippon Gakki Seizo Kabushiki Kaisha: See—
Uchiyama, Yasuji; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichiro; Yamaga, Eiichi; and Oya, Akiyoshi. 4,228,712, Cl. 84-1.010
- Nippon Oil Co., Ltd.: See—
Uemura, Seichi; Yamamoto, Syunichi; Hirose, Takao; Takashima, Hiroaki; Kato, Osamu; and Nagai, Minoru. 4,229,221, Cl. 106-58.000
- Nippon Seiko Kabushiki Kaisha: See—
Nakamura, Takeshi. 4,228,881, Cl. 192-98.000
- Nippon Soda Company, Ltd.: See—
Ohkuma, Kazuhiko; Takagi, Hideo; Nakata, Akira; and Kosaka, Shogo. 4,229,465, Cl. 424-274.000
- Nippondenso Co., Ltd.: See—
Yoshida, Hiroshi; Tabara, Nobuo; and Aoki, Keiji. 4,229,793, Cl. 364-431.000
- Nishihira, Keigo: See—
Nishimura, Kenji; Uchiyama, Shinichiro; Fujii, Kozo; Nishihira, Keigo; Yamashita, Masayoshi; and Itatani, Hiroshi. 4,229,589, Cl. 560-193.000
- Nishimura, Kenji; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaaki; and Uchiyama, Shinichiro. 4,229,591, Cl. 560-193.000
- Nishikawa, Kikuo: See—
Mori, Shoichi; Ikeda, Yorifumi; and Nishikawa, Kikuo. 4,229,292, Cl. 210-673.000
- Nishimura, Kenji; Uchiyama, Shinichiro; Fujii, Kozo; Nishihira, Keigo; Yamashita, Masayoshi; and Itatani, Hiroshi, to UBE Industries, Ltd. Process for preparing a diester of oxalic acid. 4,229,589, Cl. 560-193.000
- Nishimura, Kenji; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaaki; and Uchiyama, Shinichiro, to UBE Industries, Ltd. Process for preparing a diester of oxalic acid in the gaseous phase. 4,229,591, Cl. 560-193.000
- Nishimura, Osamu: See—
Fujino, Masahiko; Nishimura, Osamu; and Takaoki, Munao. 4,229,438, Cl. 424-177.000
- Nishio, Katsufumi: See—
Yamauchi, Terukazu; Nishio, Katsufumi; Niino, Fusao; and Murasawa, Toyooki. 4,228,963, Cl. 241-92.000
- Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, to Murata Manufacturing Co., Ltd. Piezoelectric crystalline film of zinc oxide and method for making same. 4,229,506, Cl. 428-539.000
- Nissan Chemical Industries Ltd.: See—
Shiozaki, Masahiro; Nawata, Kiyoshi; Tsunawaki, Kiyokazu; Tsubaki, Kazumi; Yanagimoto, Akira; and Kumazawa, Shunichi. 4,229,552, Cl. 525-437.000
- Nissan Motor Company, Limited: See—
Arima, Tatsuhiro; and Yamanashi, Chusaku. 4,228,971, Cl. 242-107.600
- Kita, Toru. 4,228,768, Cl. 123-494.000
- Toda, Tadayoshi. 4,229,036, Cl. 296-202.000
- Nissen, Norman C.: See—
Subramanian, Kohur N.; Bell, Malcolm C. E.; Thomas, John A.; and Nissen, Norman C.. 4,229,270, Cl. 204-109.000
- Nitro Nobel AB: See—
Persson, Ingemar P.. 4,228,941, Cl. 228-107.000

- Nitto Boseki Co., Ltd.: See—
Coggin, Charles H., Jr.; and Jones, John L., Jr.. 4,229,198, Cl. 65-11.00W
- Niveau AG: See—
Zerlauth, Hellmuth. 4,228,838, Cl. 152-216.000
- NL Industries, Inc.: See—
Cole, Donald G.; Hartmann, Achim; Kulling, Achim M.; and Trub, Hermann B.. 4,229,399, Cl. 264-117.000
- Nobileau, Philippe C., to Vetco Inc. Floating platform well production apparatus. 4,228,857, Cl. 166-341.000
- Noesen, Stanley J.; and Baldwin, Fredrick M., to General Electric Company. Screw socket assembly device. 4,228,583, Cl. 29-747.000
- Noguchi, Isamu. Lampstand for lampshade. 4,229,784, Cl. 362-414.000
- Noguera, John M. Top arms for textile fibre roller. 4,228,564, Cl. 19-282.000
- Nohmi, Takashi; Yamada, Takao; and Doi, Yoshinori, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of separating oil from oil-containing liquid. 4,229,297, Cl. 210-654.000
- Nomura, Yasushi, to Citizen Watch Company Limited. Electronic timepiece equipped with alarm system. 4,228,645, Cl. 368-75.000
- Nonogaki, Masahiko, to Elmo Company Limited. Zoom lens assembly for photographic cameras. 4,229,074, Cl. 350-187.000
- Nordfeldt, Sven A.: See—
Eneroth, Jan-Mats; and Nordfeldt, Sven A.. 4,229,183, Cl. 44-1.00D
- Noren, Tore H. Low temperature conveyor, rack-type dishwasher. 4,228,813, Cl. 134-47.000
- Norlin Industries, Inc.: See—
Gross, Glenn. 4,228,713, Cl. 84-1.190
- Luce, David A.. 4,228,717, Cl. 84-1.240
- Norman, Paula R., to Dow Chemical Company, The. Esterification process. 4,229,362, Cl. 260-410.600
- Norris Industries, Inc.: See—
Beisch, Hans R.. 4,229,047, Cl. 301-37.00P
- Norris, Philip R.: See—
Driscoll, John J.; Gold, Nicholas; Norris, Philip R.; and Wareham, Richard R.. 4,229,090, Cl. 354-86.000
- North American Philips Corporation: See—
Jenkins, Ronald. 4,229,499, Cl. 428-336.000
- Northern Telecom Limited: See—
Levi, Israel. 4,229,716, Cl. 333-28.00R
- Northwest Sanitation Products, Inc.: See—
Hocker, Harvey L.; and Alcamo, John M.. 4,228,928, Cl. 222-181.000
- Noto, Takao: See—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru. 4,229,348, Cl. 260-239.100
- Nourney, Carl-Ernest. Strain-gauge sound pickup for string instrument. 4,228,715, Cl. 84-1.160
- Nova Associates, Inc.: See—
Ryding, Geoffrey. 4,229,655, Cl. 250-400.000
- Noyelle, Andre: See—
Dreano, Claude; and Noyelle, Andre. 4,229,458, Cl. 426-264.000
- Nozaki, Kenzie, to Shell Oil Company. 1,7-Octadiene process. 4,229,605, Cl. 585-509.000
- Nozaki, Kenzie, to Shell Oil Company. 1,7-Octadiene process. 4,229,606, Cl. 585-509.000
- NSK-Warner K.K.: See—
Ikessue, Haruyuki; and Yamamoto, Kazuo. 4,228,567, Cl. 24-230.0AL
- Kikuchi, Kouichi. 4,228,829, Cl. 139-408.000
- Morinaga, Masaru. 4,228,970, Cl. 242-107.40A
- Nudelman, Abraham; and Patchornik, Abraham, to Yeda Research and Development Co., Ltd. 4-Hydroxy-3-(substitutedmethyl)-benzeneacetic acids. 4,229,363, Cl. 260-454.000
- Nudelman, Abraham; and Patchornik, Abraham, to Yeda Research and Development Co., Ltd. Indole cephalosporin derivatives. 4,229,574, Cl. 544-21.000
- Nyborg, George L., Jr., to Tri-County Elevator Co., Inc. Elevator door safety mechanism. 4,228,873, Cl. 187-61.000
- Nylen, Ulf T. G.; and Qvarnstrom, Lars A. G., to Gambro AB. Apparatus for the measuring of the concentration of low-molecular compounds in complex media. 4,229,542, Cl. 435-291.000
- Oba, Yoichi: See—
Nagashiro, Waichi; Fukke, Hajime; Kato, Yoshiki; Tsunoda, Teruo; Kobayashi, Teruaki; Oba, Yoichi; Chiba, Katsuyoshi; Mitsuya, Munehisa; Ishihara, Heigo; and Endo, Mitsushi. 4,229,312, Cl. 252-62.540
- Oberrecht, David A.; and Wilson, Fred A., to Dover Corporation. Swivel connector. 4,229,024, Cl. 285-98.000
- Occidental Petroleum Corporation: See—
Sass, Allan. 4,229,185, Cl. 48-197.00R
- Oce-van der Grinten N.V.: See—
Breuers, Theo P. C.; Heijnen, Andreas T.; and van Soest, Hendrikus J. J.. 4,228,995, Cl. 271-292.000
- Oddo, Eugene P.: See—
Ernohazy, Stephen; Meller, Frederick D.; and Oddo, Eugene P.. 4,228,921, Cl. 222-40.000
- O'Donnell, Dennis: See—
Dakin, John; O'Donnell, Dennis; and Copple, Christopher J.. 4,228,642, Cl. 57-263.000
- Oelbermann, Max: See—
Heinrich, Hans J.; Oelbermann, Max; and Rademacher, Karl A.. 4,229,303, Cl. 210-225.000
- Oeser, Heinz-Guenter; Koenig, Karl-Heinz; and Mangold, Dietrich, to BASF Aktiengesellschaft. Manufacture of substituted fluorobenzenes. 4,229,365, Cl. 260-465.00G
- Ogata, Ikuei; Kawabata, Yasuziro; Tanaka, Masato; and Hayashi, Teruyuki, to Agency of Industrial Science & Technology. Process for preparation of aldehydes. 4,229,381, Cl. 568-454.000
- Ogawa, Haruki: See—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru. 4,229,348, Cl. 260-239.100
- Ogawa, Toshio: See—
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- Ohkuma, Kazuhiko; Takagi, Hideo; Nakata, Akira; and Kosaka, Shogo, to Nippon Soda Company, Ltd. Cyanopyrrole derivatives. 4,229,465, Cl. 424-274.000
- Ohlschlager, Hans, to AGFA-Gevaert, A.G. Light-sensitive photographic recording material. 4,229,526, Cl. 430-583.000
- Ohmukai, Yoshimi; Tomisawa, Takeshi; and Kawasaki, Yoshitaka, to Matsushita Electric Industrial Co., Ltd. Combustion device for liquid fuels. 4,229,159, Cl. 431-328.000
- Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Fishing equipment. 4,228,612, Cl. 43-43.130
- Ohno, Nobuo: See—
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takeshi; Kitamura, Shigeyoshi; and Okuno, Yositosi. 4,229,469, Cl. 424-304.000
- Ohsugi, Motoyoshi: See—
Aigami, Koji; Inamoto, Yoshiaki; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Takashi, Naotake. 4,229,375, Cl. 260-563.00P
- Ohta, Hideyasu; Shirasaki, Jun; Kanbe, Masaru; Abe, Naoto; Uozumi, Takahiro; and Mayama, Masayoshi, to Konishiroku Photo Industry Co., Ltd. Method of undercoating treatment of polyester films for photographic light-sensitive materials. 4,229,523, Cl. 430-532.000
- Ohta, Takao, to Nintendo Co., Ltd. Light-emission gun amusement machine for home use. 4,229,009, Cl. 273-312.000
- Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, to Chugai Seiyaku Kabushiki Kaisha. Penicillanic acid derivatives. 4,229,348, Cl. 260-239.100
- Okada, Motohiro, to Honda Giken Kogyo Kabushiki Kaisha. Safety wheel. 4,228,840, Cl. 152-400.000
- Okazaki, Hiroshi: See—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru. 4,229,348, Cl. 260-239.100
- Okumura, Takatoshi: See—
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- Okuno, Yositosi: See—
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- Olin Corporation: See—
Specht, Steven J.. 4,229,277, Cl. 204-252.000
- Winter, Joseph; Tyler, Derek E.; and Pryor, Michael J.. 4,229,210, Cl. 75-10.00R
- Olinsky, Lester H., to Binney & Smith, Inc. Nib for a writing instrument. 4,229,115, Cl. 401-196.000
- Olshewski, Armin; Brandenstein, Manfred; and Walter, Lothar, to SKF Kugellagerfabriken GmbH. Vibration-absorbing antifriction bearing, especially for a driveshaft of a motor vehicle. 4,229,055, Cl. 308-26.000
- Olsen, Perry C., to RCA Corporation. Wire coil assembly for an electrical circuit. 4,229,722, Cl. 336-192.000
- Olshansky, Robert; and Sarkar, Arnab, to Corning Glass Works. High bandwidth optical waveguide having B₂O₃ free core and method of fabrication. 4,229,070, Cl. 350-96.310
- Olsson, Kjell I.; Aberg, Anders E. B.; and Gislén, Lars O. S. Method and means for measuring surface tension. 4,228,677, Cl. 73-64.400
- Olympus Optical Co., Ltd.: See—
Kimura, Tadashi. 4,229,087, Cl. 354-23.00R
- Omi, Kokichi: See—
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro. 4,229,085, Cl. 353-75.000
- Omura, Yoshio: See—
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Enchi. 4,229,570, Cl. 536-18.000
- Onda, Eiichi: See—
Kitai, Kiyoshi; Onda, Eiichi; Yonemoto, Tomoo; and Nagaoka, Shinji. 4,229,089, Cl. 354-25.000
- Koyama, Mitsuo; Nakagawa, Tadashi; Watanabe, Masanori; Onda, Eiichi; and Nemoto, Ichiro. 4,229,093, Cl. 354-266.000
- O'Neil, John B., to Exxon Research & Engineering Co. Thermoplastic twines. 4,228,641, Cl. 57-234.000
- O'Neill, Joseph C. Reinforced foundation structure. 4,228,627, Cl. 52-295.000
- Onisko, Bruce L.: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr. and Onisko, Bruce L.. 4,229,357, Cl. 260-397.200

- DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,229,358, Cl. 260-397.200.
- Ono-Oka, Ryuzo: See—
Fukuta, Kenji; Ono-Oka, Ryuzo; Yoshida, Masatoshi; Saito, Kazuhisa; and Kosuda, Hiroyuki, 4,229,397, Cl. 264-113.000.
- Onoda Cement Co., Ltd.: See—
Itoh, Tsutomu, 4,228,961, Cl. 239-698.000.
- Oota, Masanori: See—
Usami, Seiji; Oota, Masanori; Takita, Hitoshi; and Hashizume, Hideyuki, 4,229,549, Cl. 525-76.000.
- Optical Coating Laboratory, Inc.: See—
Rancourt, James D.; and Beauchamp, William T., 4,229,066, Cl. 350-1.600.
- O'Rell, Michael K.: See—
Jones, Robert J.; Vaughan, Robert W.; Buyny, Robert A.; and O'Rell, Michael K., 4,229,550, Cl. 525-282.000.
- Orihara, Yasuhiro: See—
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuhiro, 4,229,239, Cl. 156-155.000.
- Orlov, Alexei A.: See—
Alt, Viktor V.; Mischenkov, Alexandr A.; Ponomarev, Viktor A.; Avdjushev, Eduard L.; Kamynin, Yuri S.; Baryshnikov, Vladimir P.; Levin, Grigory K.; and Orlov, Alexei A., 4,228,679, Cl. 73-117.300.
- Orlowski, Jan A.: See—
Lee, Henry L., Jr.; and Orlowski, Jan A., 4,229,431, Cl. 424-61.000.
- Orr, Lawrence W., Jr.; and Ross, Edgar A., to Southern Weaving Company, Round/flat woven multi-conductor cable, 4,229,615, Cl. 174-117.00M.
- Orthman, Henry K., to Orthman Manufacturing, Inc. Apparatus for synchronizing the steering disc and row follower means of a row crop implement, 4,228,860, Cl. 172-26.000.
- Orthman Manufacturing, Inc.: See—
Orthman, Henry K., 4,228,860, Cl. 172-26.000.
- Ortho, Kurt; Prumbaum, Roland; and Berger, Peter, to Strohele GmbH & Co. Apparatus for the determination of bond forms of gases, 4,229,412, Cl. 422-80.000.
- Osakabe, Kintaru: See—
Matsuki, Takeshi; Maruyama, Koichi; Osakabe, Kintaru; and Kunitoh, Sakae, 4,229,675, Cl. 313-402.000.
- Osborne, Duncan W., to Automotive Products Limited, Internal shoe drum brakes, 4,228,876, Cl. 188-79.5GT.
- Oshiro, Yasuo: See—
Miyazaki, Wasei; Kaise, Hirotsugu; Nakano, Yoshimasa; Izawa, Takatoshi; Oshiro, Yasuo; and Shinohara, Masanao, 4,229,466, Cl. 424-279.000.
- Osmond, Desmond W. J.: See—
Dawson, David G.; Osmond, Desmond W. J.; Skinner, Maurice W.; and West, Edmund J., 4,229,224, Cl. 106-90.000.
- Otsuka, Keiichi: See—
Ito, Takusen; Murakami, Masami; Ishikawa, Eizo; and Otsuka, Keiichi, 4,229,157, Cl. 431-90.000.
- Otsuka Pharmaceutical Co., Ltd.: See—
Miyazaki, Wasei; Kaise, Hirotsugu; Nakano, Yoshimasa; Izawa, Takatoshi; Oshiro, Yasuo; and Shinohara, Masanao, 4,229,466, Cl. 424-279.000.
- Otten, David M.: See—
Wilson, Gerald L.; and Otten, David M., 4,229,694, Cl. 324-158.0MG.
- Otty, Malcolm. Method and apparatus for pressing and curing resin-impregnated wrappings about coils, 4,229,242, Cl. 156-245.000.
- Oura, Maremi; Tsumura, Haruo; and Kubota, Hayato, to Fuji Oil Company, Ltd. Coloring matter for foods, 4,229,483, Cl. 426-250.000.
- Outboard Marine Corporation: See—
Van Rens, Russell J., 4,229,151, Cl. 418-61.00A.
- Ovaert, Francis: See—
Renaud, Patrick; and Ovaert, Francis, 4,228,624, Cl. 52-145.000.
- Oya, Akiyoshi: See—
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- Ozols, Gunars M.: See—
Chiu, George T.; Kitcher, James R.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,229,247, Cl. 156-643.000.
- Packaging Corporation of America: See—
Zettler, Charles R.; and Thomas, John F., 4,228,898, Cl. 206-621.000.
- Paglione, Robert W., to RCA Corporation. Temperature controller for a microwave heating system, 4,228,809, Cl. 128-804.000.
- Paine, Joseph P.: See—
Kahn, Marvin J.; Malchodi, Robert J.; Paine, Joseph P.; Rogers, Milton J.; and Zouck, Robert L., 4,228,737, Cl. 102-3.000.
- Palluel, Auguste L. L.: See—
Bentley, John; Thompson, Morice W.; and Palluel, Auguste L. L., 4,229,339, Cl. 260-34.200.
- Palmer, Albion W., to Borg-Warner Corporation. Automatic wear adjuster for Belleville spring clutches, 4,228,883, Cl. 192-111.00A.
- Palmieri, Louis W.: See—
Karbowsky, Sylvester G., 4,228,710, Cl. 83-794.000.
- Palmieri, Marcia K.: See—
Karbowsky, Sylvester G., 4,228,710, Cl. 83-794.000.
- Panduit Corp.: See—
Guzay, Casimer M., Jr.; and Caveney, Jack E., 4,228,709, Cl. 83-620.000.
- Panelfold Doors, Inc.: See—
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- Panissidi, Hugo A., to International Business Machines Corporation. Programmable air pressure counterbalance system for a manipulator, 4,229,136, Cl. 414-673.000.
- Parent, Christopher A.: See—
Richmond, James A.; and Parent, Christopher A., 4,229,148, Cl. 417-485.000.
- Parker, Alan J.; and Muir, David M., to Anumin Pty. Ltd. Recovery of copper from materials containing copper and acid soluble iron compounds, 4,229,212, Cl. 75-101.00R.
- Parker, Roger A., to Richardson-Merrell Inc. Alkoxy benzofuran carboxylic acids and salts and esters thereof as hypolipidemic agents, 4,229,467, Cl. 424-285.000.
- Parrish, Ernest H. Metal can crusher, 4,228,734, Cl. 100-245.000.
- Parrotto, Joseph: See—
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- Richmond, James A.; and Parent, Christopher A., to Ambac Industries, Incorporated, Fuel injection pump, 4,229,148, Cl. 417-485.000.
- Richter, Fred T.: See—
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- Rickards, Anthony F., to Credit du Nord International N.V. Physiologically adaptive cardiac pacemaker, 4,228,803, Cl. 128-419.0PG.
- Ricke, Jack L.: See—
Stewart, Don S. D.; and Ricke, Jack L., 4,228,702, Cl. 76-36.000.
- Ricoh Company, Ltd.: See—
Katoh, Tatuya, 4,229,511, Cl. 430-55.000.
- Namiki, Ryoichi; and Hayashi, Yasuro, 4,229,644, Cl. 219-469.000.
- Suzuki, Takami; Iwata, Nobuo; and Tsunawasa, Masami, 4,228,577, Cl. 29-418.000.
- Riddle, Eldred O.: See—
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- Ridgway, Frederick A.: See—
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- Rieter Machine Works Ltd.: See—
Weber, Kurt, 4,228,563, Cl. 19-159.00R.
- Rife, Orin S. Tire and tool carrier, 4,228,936, Cl. 224-42.230.
- Ring, Thomas F., to Emhart Industries, Inc. Drive and clutch for a timing mechanism, 4,228,690, Cl. 74-122.000.
- Rinker, Kurt H.; and Evans, Anthony C., to Kelsey Hayes Co. Hydraulic disc brake piston seal, 4,228,726, Cl. 92-168.000.
- Rischawy, Dorothea Wilfert nee, legar heir: See—
Schmid, Walter; Wilfert, Karl, deceased; and Wilfert, Thomas, legal heir, 4,229,021, Cl. 280-787.000.
- Risdon Corporation: See—
Snyder, George R., 4,228,569, Cl. 24-252.00R.
- Rispoli, John L. Deodorizer footwear, 4,228,549, Cl. 2-239.000.
- Ritter, Ernst; Trui, Josef; and Kramer, Manfred, to Robert Bosch GmbH, Control apparatus for supercharged fuel injection engines, 4,228,774, Cl. 123-562.000.
- Rittscher, Dieter: See—
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- Robert Bosch GmbH: See—
Engel, Gerhard; and Wessel, Wolf, 4,228,680, Cl. 73-119.00A.
- Espenschied, Helmut; Kiencke, Uwe; and Schulz, Alfred, 4,228,700, Cl. 74-866.000.
- Forster, Herbert; and Bayer, Dieter, 4,229,476, Cl. 428-201.000.
- Heinz, Richard; and Heide, Bernd, 4,229,771, Cl. 360-46.000.
- Linder, Ernst; Rembold, Helmut; Teegen, Walter; Kessler, Achill; and Ehmann, Roland, 4,229,147, Cl. 417-283.000.
- Rabus, Friedrich; and Grather, Gunter, 4,228,778, Cl. 123-605.000.
- Ritter, Ernst; Trui, Josef; and Kramer, Manfred, 4,228,774, Cl. 123-562.000.
- Stump, Gerhard; and Schielinsky, Gerhard, 4,228,773, Cl. 123-505.000.
- Roberts, Raymond, to Hawker Siddeley Bracket Limited, Mechanically raked bar screen, 4,229,301, Cl. 210-159.000.
- Robertshaw Controls Company: See—
Weaver, Marvin P., 4,228,817, Cl. 137-79.000.
- Robertson, Calvin A.: See—
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- Robinson, Carleton D.; and Debrauwere, Jack J. A., to Baxter Travenol Laboratories, Inc. Breakaway cap for solution containers, 4,228,835, Cl. 150-8.000.
- Robnett, James H. Orthodontic method and means, 4,229,164, Cl. 433-20.000.
- Rockwell International Corporation: See—
Custode, Frank Z., 4,229,755, Cl. 357-41.000.
- Eshgby, Siavash, 4,228,576, Cl. 29-407.000.
- French, Barry T., 4,229,754, Cl. 357-30.000.
- Heimbigner, Gary L.; and Booher, Robert K., 4,229,667, Cl. 307-297.000.
- Kruse, John M.; and Gelnett, Leland E., 4,228,819, Cl. 137-489.000.
- Paton, Neil E.; and Rhodes, Cecil G., 4,229,216, Cl. 75-175.500.
- Williams, Ernest E.; and Brennan, William M., 4,229,778, Cl. 361-399.000.
- Roder, Albert: See—
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- Rodgers, David: See—
Levy, John V.; Rodgers, David; Stewart, Robert E.; Potter, David; and Casabona, Richard J., 4,229,791, Cl. 364-200.000.
- Roehrick, Otto A. Ecolarium aquarium filler, 4,228,833, Cl. 141-340.000.
- Roesch, Egon: See—
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- Rogers, Milton J.: See—
Kahn, Marvin J.; Malchodi, Robert J.; Paine, Joseph P.; Rogers, Milton J.; and Zouck, Robert L., 4,228,737, Cl. 102-3.000.
- Rogerson, Jerry B.; Connin, Robert F.; and Benedix, Harold E., Jr., to Ford Motor Company, Carburetor fuel flow control valve assembly, 4,229,387, Cl. 261-66.000.
- Rogier, Edgar R., to Henkel Corporation, Polycyclic polyamines, 4,229,376, Cl. 260-563.00P.
- Rogier, Edgar R., to Henkel Corporation, Polyurethanes based on high molecular weight formyl alcohols, 4,229,562, Cl. 528-85.000.
- Rogovin, Zakhar A.: See—
Morin, Boris P.; Vornova, Galina J.; Breusova, Irina P.; Stanchenko, Galina I.; and Rogovin, Zakhar A., 4,229,326, Cl. 260-8.000.
- Rohco, Inc.: See—
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- Rohm GmbH: See—
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- Rolls-Royce Limited: See—
Dinsdale, Raymond, 4,229,635, Cl. 219-69.00G.
- Mullins, John A., 4,228,651, Cl. 60-226.00A.
- Rolls-Royce (1971) Ltd.: See—
Scott, Alexander, 4,229,140, Cl. 416-97.00R.
- Roman, Michael P. Therapeutic exercise device, 4,229,001, Cl. 272-96.000.
- Ronco, Karl: See—
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- Roscher, Gunter: See—
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- Rose, Donald K.: See—
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- Rosen, Arye; and Santamore, William P., to RCA Corporation, Method of measuring blood perfusion, 4,228,805, Cl. 128-691.000.
- Rosenthal, William S.: See—
Franklin, Kenneth; Rosenthal, William S.; and Greer, S. Thomas, 4,228,893, Cl. 206-205.000.
- Rosenzweig, William, to Fashion Ribbon Company Inc. Textile article, 4,228,954, Cl. 239-60.000.
- Rosie, Aeneas M.; and Macleod, Colin J., to McDermott, Alistair Francis, Liquid storage tank contents gauge, 4,229,798, Cl. 364-564.000.
- Ross, Edgar A.: See—
Orr, Lawrence W., Jr.; and Ross, Edgar A., 4,229,615, Cl. 174-117.00M.
- Ross, Karl-Heinz: See—
Dudeck, Christian; Lehmann, Gunter; Meissner, Bernd; Diem, Hans; Fliege, Werner; Petri, Norbert; and Ross, Karl-Heinz, 4,229,590, Cl. 560-174.000.
- Rossi, Alessandro: See—
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- Rostron, Joseph R., to Electric Power Research Institute, Inc. Gas puffer type current interrupter and method, 4,229,627, Cl. 200-144.00R.
- Rotenberg, Don H.; Cuffe, Patricia M.; Laurin, Bernard L.; and Ramirez, Peter R., to American Optical Corporation, Coating composition, 4,229,228, Cl. 106-287.140.
- Roth, Hermann J.; Eger, Kurt; Issa, Sedika; and Jacobi, Haidreddin, to Bayer Aktiengesellschaft, Substituted 5,6-dimethylpyrrolo[2,3-d]pyrimidine compounds, their production and their medicinal use, 4,229,453, Cl. 424-251.000.
- Rotunda, Orlando, Cubicle Quad antenna, 4,229,742, Cl. 343-742.000.
- Roueche, Armand: See—
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- Rougeot, Henri, to Thomson CSF, Semiconductor display apparatus, 4,229,736, Cl. 340-782.000.
- Rozsa, Laszlo; Petocz, Lujza; Graaser, Katalin; Kosoczky, Ibolya; Kiszely, Eniko; and Nagy, Jozsef, to Egyi Gyogyszervegyeszet Gyar, Dibenzo[d,g][1,3,6]dioxazocine derivatives, 4,229,350, Cl. 260-243.300.
- RSR Corporation: See—
Pregaman, Raymond D.; and McDonald, Herschel B., 4,229,271, Cl. 204-114.000.
- Ruehmann, Donald W.: See—
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- Ruffer, Dittmar; and Wagner, Edmund, Construction system, 4,228,625, Cl. 52-223.00R.
- Ruscitti, Tommaso; Albini, Giovanni; and Torretta, Roberto, to ADM S.p.A. Manually operated pump for dispensing micronized liquids at a predetermined pressure, 4,228,931, Cl. 222-321.000.
- Rusznak, Istvan: See—
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- Rutenberg, Morton W.: See—
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- Ruud, Alan J.; and Lewin, Ian, to McGraw-Edison Company, High efficiency lighting units with beam cut-off angle, 4,229,782, Cl. 362-297.000.
- Ryan, John O., to Ampex Corporation, Beam control circuit for diode-gun type camera tubes, 4,229,767, Cl. 358-219.000.
- Ryan, John O., to Ampex Corporation, Apparatus and method for providing a modulation format for multiple wideband signal transmission, 4,229,830, Cl. 455-608.000.

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Sacuta, Aleksy, to Alberta Research Council. Enhanced oil recovery using electrical means. 4,228,854, Cl. 166-248.000.

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Sailing Systems, Inc.: See—
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Sanger, Winston D. Remote audio and brightness control circuit for television. 4,229,765, Cl. 358-188.000.

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Savit, Joseph, to AES Technology Systems, Inc. Envelope opening process and composition. 4,228,634, Cl. 53-492.000.

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Scharf, Rolf; Schlusser, Hans-Joachim; and Staschkiewicz, Friedrich, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Method of inhibiting corrosion of aluminum with 2-phosphonobutane-1,2,4-tricarboxylic acid. 4,229,409, Cl. 422-13.000.

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Schimmel, Vernon R.; and Foszcz, Joseph L., to Symons Corporation. Attachment for anchoring a safety belt. 4,228,986, Cl. 249-202.000.

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Schlomann, Kriemhild. Building blocks and connector means therefor. 4,228,628, Cl. 52-438.000.

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Schwefel, Ernst: See—
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Schweikert, John F., to General Motors Corporation. Closed loop air/fuel ratio controller with asymmetrical proportional term. 4,228,775, Cl. 123-440.000.

Schweizerische Lokomotiv-und Maschinenfabrik: See—
Vogel, Hans H., 4,228,740, Cl. 105-168.000.

Sclafani, Joseph R., to Reliable Automatic Sprinkler Co., The. Dry sprinkler with non-load-transmitting sealing arrangement. 4,228,858, Cl. 169-41.000.

SCM Corporation: See—
Ting, Vincent W.; and Evans, James M., 4,229,335, Cl. 260-29.40R.

Scott, Alexander, to Rolls-Royce (1971) Ltd. Turbine blade. 4,229,140, Cl. 416-97.00R.

Sea Horse Corporation, The: See—
Brown, Lee O., 4,229,121, Cl. 405-158.000.

Sealey, Francis, to Boeing Company, The. Kneeling nose landing gear assembly. 4,228,975, Cl. 244-102.00R.

Searls, Henry H. Automatically energizable lifesaving equipment. 4,228,556, Cl. 9-14.000.

Seaward, William S.: See—
Janssen, Donovan M.; Radman, Anton J., Jr.; and Seaward, William S., 4,229,774, Cl. 360-98.000.

Seetru Limited: See—
Potter, Michael B., 4,228,987, Cl. 251-210.000.

Seibel, Gerd: See—
Dunkel, Franz-Heinz; Klinkhammer, Ralf L.; Nebel, Heinz; Spanner, Siegfried; and Seibel, Gerd, 4,228,579, Cl. 29-430.000.

Seikisui Kagaku Kogyo Kabushiki Ltd.: See—
Takahashi, Minoru; Ishii, Osamu; Naito, Masanori; Kusuha, Yoshinobu; and Imahigashi, Naofumi, 4,229,495, Cl. 428-36.000.

Seiko Koki Kabushiki Kaisha: See—
Kitai, Kiyoshi; Onda, Eiichi; Yonemoto, Tomoo; and Nagaoka, Shinji, 4,229,089, Cl. 354-25.000.

Koyama, Mitsuo; Nakagawa, Tadashi; Watanabe, Masanori; Onda, Eiichi; and Nemoto, Ichiro, 4,229,093, Cl. 354-266.000.

Seiler, Erhard: See—
Sterzel, Hans-Josef; Wurmb, Rolf; Schmidt, Franz; and Seiler, Erhard, 4,229,553, Cl. 525-438.000.

Seiler, Georg, to Eisenwerke Friedr. Wilh. Duker GmbH & Co. Socket connection for pipes and pipe elements. 4,229,026, Cl. 285-105.000.

Seiz, Wolfgang: See—
Habermeyer, Jürgen; Moser, Roland; and Seiz, Wolfgang, 4,229,576, Cl. 544-222.000.

Sekiya, Fukuo: See—
Ebihara, Heihachiro; and Sekiya, Fukuo, 4,229,668, Cl. 307-304.000.

Sekizawa, Yasuharu; Tsuruoka, Takashi; Hachisu, Mitsugu; Sezaki, Masaji; Miyamoto, Masashi; Shibata, Uichi; Mizutani, Kazuko; Inouye, Shigeharu; Koeda, Takemi; Shimomura, Keizo; and Niida, Taro, to Meiji Seika Kaisha Ltd. 5-Substituted picolinic acid derivatives and an anti-hypertensive composition containing the same. 4,229,448, Cl. 424-245.000.

Sellera, Jose M. Hanging device for pictures. 4,228,982, Cl. 248-467.000.

SEMIKRON Gesellschaft für Gleichrichterbau und Elektronik m.b.H.: See—
Chadda, Madan M.; and Maier, Reinhold, 4,228,581, Cl. 29-578.000.

Sempliner, Arthur T.: See—
Teague, Walter D., Jr.; and Sempliner, Arthur T., 4,229,150, Cl. 418-50.000.

Seymour, Samuel L., to PPG Industries, Inc. Shaping glass sheets by drop forming with differential vacuum release. 4,229,199, Cl. 65-106.000.

Seymour, Samuel L., to PPG Industries, Inc. Drop forming glass sheets with auxiliary shaping means. 4,229,200, Cl. 65-106.000.

Sezaki, Masaji: See—
Sekizawa, Yasuharu; Tsuruoka, Takashi; Hachisu, Mitsugu; Sezaki, Masaji; Miyamoto, Masashi; Shibata, Uichi; Mizutani, Kazuko; Inouye, Shigeharu; Koeda, Takemi; Shimomura, Keizo; and Niida, Taro, 4,229,448, Cl. 424-245.000.

Shakespeare Company: See—
Vo, Thang; and Lewis, John R., Jr., 4,229,743, Cl. 343-749.000.

Shandon Southern Products Limited: See—
Gordon, Alan J., 4,228,926, Cl. 222-103.000.

Shapovalova, Lidia P.: See—
Tmenov, Dzantemir N.; Svintsov, Nikolai I.; Shapovalova, Lidia P.; Tabakov, Albert V.; Dvoretzky, Mikhail L.; Vasiliev, Gavril I.; Zhestovsky, Gennady P.; Kandalova, Valentina D.; Korotkevich, Boris S.; Lukashov, Anatoly I.; Lukanenko, Valery P.; Polataiko, Roman I.; Malov, Evgeny A.; and Shmuk, Jury A., 4,229,604, Cl. 585-445.000.

Sharkey, Hubert J., to Emery Industries, Inc. Copolyamide resins from piperazine and polyoxyalkylene diamine having improved creep resistance. 4,229,567, Cl. 258-338.000.

Sharp, Gerald B.; Petrak, Karel L.; Boiello, John H.; Wagner, Hans M.; and Langford, John F., to Eastman Kodak Company. Photo-polymerizable water-developable composition and elements. 4,229,519, Cl. 430-287.000.

Sharp Kabushiki Kaisha: See—
Take, Hiroshi; Koyanagi, Katubumi; and Ueda, Hisashi, 4,229,080, Cl. 350-357.000.

Sharpe, Donald E., to Automation Industries, Inc. Accurate distance amplitude compensation. 4,228,688, Cl. 73-631.000.

Shaver, Robert G.; and Leake, William R., to Versar, Inc. Process for making hollow carbon microspheres. 4,229,425, Cl. 423-449.000.

Shaw, Graham C.: See—
United States of America, National Aeronautics and Space Administration; and Shaw, Graham C., 4,229,182, Cl. 23-293.00R.

Shedd, Robert W.: See—
Smith, Willard P.; Michaels, Harry J.; and Shedd, Robert W., 4,228,767, Cl. 122-4.00D.

Shell Oil Company: See—
Coffman, Paul M., 4,229,405, Cl. 264-313.000.

Colby, Thomas H., 4,229,594, Cl. 568-635.000.

Gum, Clarence R.; and Kister, Albert T., 4,229,607, Cl. 585-520.000.

Hansen, David R.; and Himes, Glenn R., 4,229,338, Cl. 260-33.6AQ.

Nozaki, Kenzie, 4,229,605, Cl. 585-509.000.

Nozaki, Kenzie, 4,229,606, Cl. 585-509.000.

Slaugh, Lynn H., 4,229,320, Cl. 252-454.000.

Slaugh, Lynn H.; and Schoenthal, Galeon W., 4,229,374, Cl. 260-563.00R.

Smutny, Edgar J.; and Colby, Thomas H., 4,229,380, Cl. 568-435.000.

- Wijffels, Joannes B.; Pegels, Abraham A.; and Wezenberg, Arnold. 4,229,418. Cl. 422-191.000.
- Shelley, Julian H.; Clamp, John R.; and Hartog, Martin, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing bromhexine and method of treating diabetic nephropathy therewith. 4,229,477. Cl. 424-330.000.
- Shen, Tsung-Ying. See—
Bugianesi, Robert L.; Ponpipom, Mitree M.; and Shen, Tsung-Ying. 4,229,441. Cl. 424-182.000.
- Shepard, Kenneth L.; and Halczenko, Wasy, to Merck & Co., Inc. Imino-bridged benzocycloheptapyridines. 4,229,455. Cl. 424-256.000.
- Shepler, Edward E. See—
Gaudelli, Edmond N.; and Shepler, Edward E. 4,228,985. Cl. 249-93.000.
- Sherrad, C. David, to Carrier Corporation. Method of electrical connector. 4,228,584. Cl. 29-863.000.
- Shibahara, Tetsuya. See—
Shigematsu, Taichiro; Shibahara, Tetsuya; and Nakajima, Tetsuo. 4,229,433. Cl. 424-78.000.
- Shibata, Uichi. See—
Sekizawa, Yasuharu; Tsuruoka, Takashi; Hachisu, Mitsugu; Sezaki, Masaji; Miyamoto, Masashi; Shibata, Uichi; Mizutani, Kazuko; Inouye, Shigeharu; Koeda, Takemi; Shimomura, Keizo; and Nida, Taro. 4,229,448. Cl. 424-245.000.
- Shibata, Yutaka; Tanaka, Nobuyuki; and Maruyama, Ichiro, to Sumitomo Electric Industries, Ltd. Oil/water storage tank having flexible partition membrane and chamfered internal edges and corners. 4,228,754. Cl. 114-74.00R.
- Shibukawa, Mitsuru. See—
Shibuya, Chisei; Itoh, Hirataka; Ishii, Kunihiro; Ishida, Torao; and Shibukawa, Mitsuru. 4,229,573. Cl. 544-21.000.
- Shibuya, Chisei; Itoh, Hirataka; Ishii, Kunihiro; Ishida, Torao; and Shibukawa, Mitsuru, to Asahi Kasei Kogyo Kabushiki Kaisha. 7 α -Methoxycephalosporin derivatives. 4,229,573. Cl. 544-21.000.
- Shigematsu, Taichiro; Shibahara, Tetsuya; and Nakajima, Tetsuo, to Mitsubishi Chemical Industries Limited. Method for controlling viral diseases in plants. 4,229,433. Cl. 424-78.000.
- Shigematsu, Taichiro; Yoshida, Kenji; Nakazawa, Makoto; Kasugai, Hiroshi; and Tsuda, Masataka, to Mitsubishi Chemical Industries Limited. Fungicidal 6-(3,5-dichlorophenyl)perhydroimidazo[5,1-b]thiazole derivatives. 4,229,461. Cl. 424-270.000.
- Shikishima Tipton Manufacturing Co. Ltd. See—
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawa-fune, Hidemi; and Suzuki, Sadamasa. 4,229,276. Cl. 204-222.000.
- Shimamura, Isao. See—
Nakamura, Shigeru; Shimamura, Isao; Nakamura, Taku; Sakaguchi, Shinji; Miyazako, Takashi; Sugiyama, Masatoshi; and Mitsui, Akio. 4,229,522. Cl. 430-390.000.
- Shimano, Takashi; Masukata, Yoshimasa; and Sato, Hiromitsu, to Furukawa Electric Co., Ltd. The Process of producing a foamed plastic insulated conductor and an apparatus therefor. 4,229,392. Cl. 264-40.100.
- Shimizu, Hidetoshi. See—
Makino, Yoshimi; and Shimizu, Hidetoshi. 4,229,328. Cl. 260-16.000.
- Shimizu, Sakayu. See—
Yamada, Hideaki; Shimizu, Sakayu; and Tani, Yoshiki. 4,229,538. Cl. 435-193.000.
- Shimizu, Takeshi, to Kabushikikaisha Anoa. Fishing toy. 4,229,003. Cl. 273-1.00E.
- Shimomura, Keizo. See—
Sekizawa, Yasuharu; Tsuruoka, Takashi; Hachisu, Mitsugu; Sezaki, Masaji; Miyamoto, Masashi; Shibata, Uichi; Mizutani, Kazuko; Inouye, Shigeharu; Koeda, Takemi; Shimomura, Keizo; and Nida, Taro. 4,229,448. Cl. 424-245.000.
- Shin-Etsu Chemical Co., Ltd. See—
Wada, Norinobu; and Shiota, Yoshihiro. 4,229,568. Cl. 528-500.000.
- Shin Meiwa Industry Co., Ltd. See—
Ihara, Yasushi. 4,229,641. Cl. 219-125.100.
- Sakurai, Hajime; and Higuchi, Yoshinori. 4,229,642. Cl. 219-125.100.
- Shinagawa Refractories Co., Ltd. See—
Uemura, Seiichi; Yamamoto, Syunichi; Hirose, Takao; Takashima, Hiroaki; Kato, Osamu; and Nagai, Minoru. 4,229,221. Cl. 106-58.000.
- Shindo, Minoru. See—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru. 4,229,348. Cl. 260-239.100.
- Shinko Electric Co., Ltd. See—
Akama, Masaru. 4,229,288. Cl. 209-212.000.
- Shinko-Pfaudler Company, Ltd. See—
Tanabe, Kaichi; Koga, Shigeto; and Maeda, Yoshinori. 4,228,943. Cl. 228-182.000.
- Shinko, Toyotaro. See—
Konii, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro. 4,229,330. Cl. 260-19.00R.
- Shinohara, Masanao. See—
Miyazaki, Wasei; Kaise, Hirotsugu; Nakano, Yoshimasa; Izawa, Taketoshi; Oshiro, Yasuo; and Shinohara, Masanao. 4,229,466. Cl. 424-279.000.
- Shinohara, Yoshiaki, to Kawasaki Steel Corporation. Heating furnace. 4,229,163. Cl. 432-194.000.
- Shinozaki, Masanobu. See—
Takahashi, Nobuaki; Funasaka, Eiichi; Shinozaki, Masanobu; and Kaizu, Yasuo. 4,229,619. Cl. 179-1.00D.
- Shinozaki, Teizo. See—
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru. 4,229,348. Cl. 260-239.100.
- Shinozuka, Masanobu. Pressure-sustaining vessel. 4,228,759. Cl. 114-342.000.
- Shiomi, Michio. See—
Murofushi, Mitsugu; Sasaki, Kuniaki; Shiomi, Michio; Uchida, Yoshio; Hattori, Tokihisa; and Takeda, Keniti. 4,229,440. Cl. 424-180.000.
- Shiozaki, Masahiro; Nawata, Kiyoshi; Tsunawaki, Kiyokazu; Tsubaki, Kazumi; Yanagimoto, Akira; and Kumazawa, Shunichi, to Teijin Limited; and Nissan Chemical Industries Ltd. Fire-retardant polyester compositions. 4,229,552. Cl. 525-437.000.
- Shipley Company Inc. See—
Gulla, Michael; and Hartnett, Barry J. 4,229,218. Cl. 106-1.230.
- Shirai, Koichi. See—
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu. 4,229,239. Cl. 156-155.000.
- Shirasaki, Jun. See—
Ohta, Hideyasu; Shirasaki, Jun; Kanbe, Masaru; Abe, Naoto; Uozumi, Takahiro; and Mayama, Masayoshi. 4,229,523. Cl. 430-532.000.
- Shirota, Yoshihiro. See—
Wada, Norinobu; and Shiota, Yoshihiro. 4,229,568. Cl. 528-500.000.
- Shiseido Co., Ltd. See—
Ikeda, Toshihide; and Nakano, Motokiyo. 4,229,227. Cl. 106-181.000.
- Shlager, Abraham E. Layout tool for locating holes on structural steel. 4,228,594. Cl. 33-189.000.
- Shmagina, Nina N. See—
Chernikhov, Alexei Y.; Yakovlev, Mikhail N.; Lysova, Valentina B.; Gefter, Evgeny L.; and Shmagina, Nina N. 4,229,560. Cl. 528-4.000.
- Shmuk, Jury A. See—
Tmenov, Dzantemir N.; Svintsov, Nikolai I.; Shapovalova, Lidia P.; Tabakov, Albert V.; Dvoretzky, Mikhail L.; Vasiliev, Gavril I.; Zhestovsky, Gennady P.; Kandalova, Valentina D.; Korotkevich, Boris S.; Lukashov, Anatoly I.; Lukyanenko, Valery P.; Polataiko, Roman I.; Malov, Evgeny A.; and Shmuk, Jury A. 4,229,604. Cl. 585-445.000.
- Shop-Vac Corporation. See—
Miller, Jonathan. 4,229,193. Cl. 55-318.000.
- Short, Allen E. Exhaust nozzle for jet engines. 4,228,652. Cl. 60-263.000.
- Shoshan, Itamar. Wavelength selector for tunable laser. 4,229,710. Cl. 331-94.50C.
- Showa Aluminum K.K. See—
Hirai, Takashi; and Hino, Tadahiro. 4,228,791. Cl. 126-450.000.
- Shushlebin, Boris A.; Lyakishev, Nikolai P.; Tregubenko, Viktor V.; Ignatenko, Gennady F.; and Subbotin, Nikolai I. Process for combined production of ferrosilicozirconium and zirconium corundum. 4,229,214. Cl. 75-133.000.
- Shuster, Kim S. See—
Andoniev, Sergei M.; Laktjushina, Valentina Y.; Medvedovsky, Viliam M.; and Shuster, Kim S. 4,229,190. Cl. 55-112.000.
- Sibley, Henry C., to General Signal Corporation. Apparatus for sensing vehicular mechanical motion. 4,229,663. Cl. 307-9.000.
- Sibral, Walter. See—
Schmidt, Oskar; and Sibral, Walter. 4,229,561. Cl. 528-68.000.
- Sicklesteel, Bruce G.; and Anders, Dale F., to DeSoto, Inc. Self cross-linking N-methylol functional emulsion polymers using polycarboxylic acid surfactant. 4,229,336. Cl. 260-29.6NR.
- Siegfried Aktiengesellschaft. See—
Granwehr, Bernhard; and Gnehm, Rene. 4,229,367. Cl. 260-465.00R.
- Siemens Aktiengesellschaft. See—
Dederer, Guenter; and Muerkl, Helmut. 4,229,637. Cl. 219-86.250.
- Hertz, Walter; Siroh, Jan; and Schwalme, Heinz. 4,229,632. Cl. 200-148.00A.
- Sipos, Balint. 4,229,766. Cl. 358-209.000.
- Vieweg, Gunther; and Sturzl, Wilhelm. 4,229,795. Cl. 364-483.000.
- Weitzel, Klaus. 4,228,779. Cl. 123-652.000.
- Siemer, Sidney R., to W. R. Grace & Co. Phosphorus compounds as sugarcane ripeners. 4,229,203. Cl. 71-86.000.
- Siemer, Sidney R., to W. R. Grace & Co. S-triazines as sugarcane ripeners. 4,229,206. Cl. 71-93.000.
- SIG Schweizerische Industrie-Gesellschaft. See—
Watzka, Roland; and Bartholme, Henri. 4,228,901. Cl. 209-684.000.
- Signode Corporation. See—
Lems, Peter; and Meier, William A. 4,228,565. Cl. 24-20.00E.
- Silver Engineering Works, Inc. See—
Price, Frank B.; and Vertenstein, Mathieu J. 4,229,279. Cl. 204-297.00R.
- Silverbage, Sten. Sensitive measuring cell for a differential refractometer of the interference type. 4,229,105. Cl. 356-246.000.
- Silverman, Peter J.; and Rose, Donald K., to Intel Magnetics, Inc. Process for forming bonding pads on magnetic bubble devices. 4,229,248. Cl. 156-653.000.

- Simes Societa Italiana Medicinali e Sintetici S.p.A. See—
Ferrari, Giorgio; and Vecchietti, Vittorio. 4,229,450. Cl. 424-248.520.
- Sinityn, Pavel R. See—
Motin, Jury D.; Reformaty, Igor A.; Sinityn, Pavel R.; Ivanov, Nikolai M.; Malakhov, Igor K.; and Ivanov, Boris I. 4,229,069. Cl. 350-96.290.
- Sipos, Balint, to Siemens Aktiengesellschaft. Scanning apparatus and method for operating the apparatus. 4,229,766. Cl. 358-209.000.
- Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Ureylene phenylene anionic naphthalenesulfonic acids. 4,229,370. Cl. 260-506.000.
- Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Ureylene phenylene anionic naphthalenesulfonic acids. 4,229,372. Cl. 260-507.00R.
- Sixt, Karl. See—
Gartner, Jurij; Hengl, Helmut; Sixt, Karl; and Woltmann, Reinhard. 4,228,769. Cl. 123-52.00M.
- Skeen, James E., to Superior Industries International, Inc. Process for making a vehicle wheel. 4,228,671. Cl. 72-53.000.
- SKF Kugellagerfabriken GmbH. See—
Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar. 4,229,055. Cl. 308-26.000.
- Skinner, Maurice W. See—
Dawson, David G.; Osmond, Desmond W. J.; Skinner, Maurice W.; and West, Edmund J. 4,229,224. Cl. 106-90.000.
- Sladek, Theodore E.; and Maynard, Donald E. Surface effect boat. 4,228,752. Cl. 114-67.00A.
- Slaton, Clifton F., to Colgate-Palmolive Company. Surfactant concentration detector. 4,228,678. Cl. 73-64.400.
- Slaugh, Lynn H., to Shell Oil Company. Catalyst for making para-xylene. 4,229,320. Cl. 252-454.000.
- Slaugh, Lynn H.; and Schoenthal, Galeon W., to Shell Oil Company. Amine process using Cu-Sn-Na catalyst. 4,229,374. Cl. 260-563.00R.
- SMAC ACIEROID. See—
Reneault, Patrick; and Ovaert, Francis. 4,228,624. Cl. 52-145.000.
- Smeltzer, Ronald K. See—
Wu, Chung P.; and Smeltzer, Ronald K. 4,229,502. Cl. 428-446.000.
- Smirl, Richard L., to Borg-Warner Corporation. Variable pulley transmission. 4,228,691. Cl. 474-12.000.
- Smirlock, Martin E.; and Smith, Donald A., to Combustion Engineering, Inc. High energy arc ignition of pulverized coal. 4,228,747. Cl. 110-347.000.
- Smith, Bernard; and Delano, Frank P. Hydrofoil sailboat with control tiller. 4,228,750. Cl. 114-39.000.
- Smith, Burton J. See—
Gilliland, Maxwell C.; Smith, Burton J.; and Ferguson, Gary L. 4,229,790. Cl. 364-200.000.
- Smith, Donald A. See—
Smirlock, Martin E.; and Smith, Donald A. 4,228,747. Cl. 110-347.000.
- Smith, Galyn F.; and Zwierszowski, Thomas P., to American Hospital Supply Corporation. Surgical instrument rack. 4,229,420. Cl. 422-310.000.
- Smith, Gerald L., to International Business Machines Corporation. Tight tolerance zero crossing detector circuit. 4,229,669. Cl. 307-354.000.
- Smith, Irl W., Jr. See—
Dorschner, Terry A.; Smith, Irl W., Jr.; and Statz, Hermann. 4,229,106. Cl. 356-350.000.
- Smith, Kenneth E. See—
Hatcher, Charles S.; and Smith, Kenneth E. 4,229,404. Cl. 264-290.500.
- Smith, Peter J.; and Bava, Kishor. Dental prostheses fitting. 4,229,169. Cl. 433-174.000.
- Smith, Robert E.; and Dolbeare, Frank A. Fluorescence method for enzyme analysis which couples aromatic amines with aromatic aldehydes. 4,229,528. Cl. 435-23.000.
- Smith, Robert L. Magic chorder. 4,228,718. Cl. 84-317.000.
- Smith, Robert W. See—
Davis, James P.; and Smith, Robert W. 4,228,733. Cl. 100-4.000.
- Smith, Willard P.; Michaels, Harry J.; and Shedd, Robert W., to Johnston Boiler Company. Self contained boiler package utilizing atmospheric fluidized bed combustion. 4,228,767. Cl. 122-4.00D.
- Smith, William. See—
Chapman, Edward S.; and Smith, William. 4,229,421. Cl. 423-10.000.
- Smith, Winthrop W., to Westinghouse Electric Corp. Spread beam computational hardware for digital beam controllers. 4,229,739. Cl. 343-100.05A.
- Smolik, Robert A. Electrical receptacle box and method of installation. 4,229,614. Cl. 174-58.000.
- Smorol, Michael E., to Carrier Corporation. Control apparatus for a two-speed heat pump. 4,228,846. Cl. 165-2.000.
- Smutny, Edgar J.; and Colby, Thomas H., to Shell Oil Company. Preparation of 3-phenoxybenzaldehyde. 4,229,380. Cl. 568-435.000.
- Snyder, George R., to Risdon Corporation. Identification badge clip. 4,228,569. Cl. 24-252.00R.
- Societa Italiana Telecomunicazioni Siemens S.p.A. See—
Consigli, Armando; and Danna, Roberto. 4,229,788. Cl. 364-200.000.
- Societe Anonyme Roure Bertrand Dupont. See—
Teisseire, Paul J.; and Maupetit, Pierre. 4,229,323. Cl. 252-522.00R.
- Societe de Recherches Industrielles (SORI). See—
Majoie, Bernard. 4,229,439. Cl. 424-180.000.
- Societe Suisse pour l'Industrie Horlogere Management Services S.A. See—
Jaunin, Jean-Pierre. 4,228,648. Cl. 368-185.000.
- Solter, Dieter. See—
Lahme, Gerhard; Solter, Dieter; and Bohnsack, Hermann. 4,229,104. Cl. 356-246.000.
- Sommer, Gerd. See—
Sterki, Armin; and Sommer, Gerd. 4,228,591. Cl. 33-174.00L.
- Sony Corporation. See—
Ito, Takamasa. 4,229,770. Cl. 360-15.000.
- Makino, Yoshimi; and Shimizu, Hidetoshi. 4,229,328. Cl. 260-16.000.
- Sakamoto, Hitoshi. 4,229,773. Cl. 360-70.000.
- Sorensen, Leif. See—
Lambach, Heinrich W.; and Sorensen, Leif. 4,228,900. Cl. 206-260.000.
- Sosnowski, John, to Exxon Research & Engineering Co. Fluid hydrocoking with the addition of dispersible metal compounds. 4,229,283. Cl. 208-127.000.
- Soteropulos, Gust. See—
Rabe, David L.; Hudson, Colin M.; and Soteropulos, Gust. 4,228,638. Cl. 56-341.000.
- Southern Weaving Company. See—
Orr, Lawrence W., Jr.; and Ross, Edgar A. 4,229,615. Cl. 174-117.00M.
- Sova, Stanley G. See—
Suskind, Stuart P.; and Sova, Stanley G. 4,229,472. Cl. 428-113.000.
- Sowell, Lyles H., to Du Pont de Nemours, E. I., and Company. Gasket for yarn spinning pack. 4,228,917. Cl. 220-378.000.
- Spanner, Siegfried. See—
Dunkel, Franz-Heinz; Klinkhammer, Ralf L.; Nebel, Heinz; Spanner, Siegfried; and Seibel, Gerd. 4,228,579. Cl. 29-430.000.
- Spary, Norman B. See—
Harris, Clifford E.; and Spary, Norman B. 4,228,912. Cl. 220-4.00R.
- Speaight, David C.; and Longfoot, Gerald, to Wellworthy Limited. Pistons. 4,228,727. Cl. 92-228.000.
- Specht, Steven J., to Olin Corporation. Glove-like diaphragm structure for electrolytic cells. 4,229,277. Cl. 204-252.000.
- Spector, Arthur. See—
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- Sperry Corporation. See—
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- Schwalbe, Julian H. 4,229,809. Cl. 367-6.000.
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- Spolverini, Renzo. See—
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- Spoor, Herbert. See—
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- Specker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. 2-Oxabicyclooctane derivatives, processes for preparing same and organoleptic uses thereof. 4,229,314. Cl. 252-174.110.
- SRI International. See—
Uthe, Edward E. 4,229,653. Cl. 250-339.000.
- Stach, Kurt, deceased. See—
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- Stadler, Paul. See—
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- Stahly, Frederick A. See—
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- Stanaback, Robert J. See—
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Weingardt, Rolf E. 4,228,916. Cl. 220-354.000.
- Stapley, Edward O. See—
Kahan, Jean S.; Kahan, Frederick M.; Goegelman, Robert T.; Stapley, Edward O.; and Hernandez, Sebastian. 4,229,534. Cl. 435-119.000.
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Hahn, Reinhard. 4,229,217. Cl. 75-244.000.
- Starinshak, Thomas W. See—
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- Stark, Karl, to Saphirwerk Industrieprdukte AG. Gas-tight ball valve. 4,228,821. Cl. 137-533.110.

- Starks, Charles M.: See—
Weimer, Dean R.; and Starks, Charles M., 4,229,598, Cl. 568-792.000.
- Starkstrom Schaltgeraetefabriken Sprindler Deissler GmbH & Co. KG: See—
Lemmer, Helmut, 4,229,719, Cl. 335-132.000.
- Staschkiewicz, Friedrich: See—
Scharf, Rolf; Schlusser, Hans-Joachim; and Staschkiewicz, Friedrich, 4,229,409, Cl. 422-13.000.
- Statz, Hermann: See—
Dorschner, Terry A.; Smith, Irl W., Jr.; and Statz, Hermann, 4,229,106, Cl. 356-350.000.
- Stauner, Thomas: See—
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- Steag Kernenergie GmbH: See—
Batz, Henning; and Rittscher, Dieter, 4,229,316, Cl. 252-301.10W.
- Stecher, Vera J. and China, George L., to Ciba-Geigy Corporation. Adherence column, 4,229,414, Cl. 422-101.000.
- Steelastic Company, The: See—
Vanderzee, Robert S., 4,229,246, Cl. 156-417.000.
- Steels, Gordon; and Dacey, Raymond G., to Baker Perkins Holdings Limited. Process for the production of center-filled bars of confectionery, 4,229,484, Cl. 426-279.000.
- Steigerwald Strahltechnik GmbH: See—
Koy, Johannes; Rappold, Franz; and Kappelsberger, Erwin, 4,229,639, Cl. 219-121.0EM.
- Stein, Thomas R.: See—
Peters, Alan W.; Bowes, Emmerson; and Stein, Thomas R., 4,229,282, Cl. 208-111.000.
- Steinbach, Harold. Tool setting gage, 4,228,595, Cl. 33-201.000.
- Steinecker, Carl, to Richardson Chemical Company. Alkaline bright zinc plating and additive therefor, 4,229,267, Cl. 204-55.00R.
- Steinemann, Hans, to Micafil, AG. Solar heater, building cladding unit, 4,228,787, Cl. 126-433.000.
- Steinmetz, Werner: See—
Luethi, Peter; and Steinmetz, Werner, 4,228,814, Cl. 134-58.00R.
- Stendel, Wilhelm: See—
Hoffmann, Hellmut; Hamann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,229,444, Cl. 424-200.000.
- Stephens, Geoffrey B.: See—
Bergeron, David L.; and Stephens, Geoffrey B., 4,229,753, Cl. 357-28.000.
- Sterki, Armin; and Sommer, Gerd, to Maag Gear Wheel & Machine Co. Ltd. Measurement sensing devices, 4,228,591, Cl. 33-174.00L.
- Stern, Elaine S.: See—
Johnsen, Vernon L.; and Stern, Elaine S., 4,229,429, Cl. 424-47.000.
- Sterzel, Hans-Josef; Wurm, Rolf; Schmidt, Franz; and Seiler, Erhard, to BASF Aktiengesellschaft. Stabilized poly(alkylene terephthalate) molding materials, 4,229,553, Cl. 525-438.000.
- Stetter, Jorg: See—
Arold, Hermann; Elbe, Hans-Ludwig; Kranz, Eckart; Kramer, Wolfgang; Stetter, Jorg; Stotzer, Claus; and Thomas, Rudolf, 4,229,580, Cl. 548-262.000.
- Stewart, Don S. D.; and Rieke, Jack L. File guide for use in sharpening a chain saw, 4,228,702, Cl. 76-36.000.
- Stewart, Robert E.: See—
Levy, John V.; Rodgers, David; Stewart, Robert E.; Potter, David; and Casabona, Richard J., 4,229,791, Cl. 364-200.000.
- Stiles, Claude J.: See—
Donaldson, Charles R.; and Stiles, Claude J., 4,229,416, Cl. 422-134.000.
- Stillwell, Billy E.: See—
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- Stock, Hugo: See—
Herschmann, Otto; Zernig, Norbert; Holthausen, Dieter; Stock, Hugo; and Tholen, Paul, 4,228,655, Cl. 60-602.000.
- Stockford, William F.; and Gamewell, Joseph M., to Gamewell Manufacturing, Inc. Movable, continuously changing, self-charging electrostatic filter, 4,229,187, Cl. 55-14.000.
- Stokes, Alvin R. Floor type pool game apparatus, 4,229,004, Cl. 273-3.00C.
- Stolzer, Claus: See—
Arold, Hermann; Elbe, Hans-Ludwig; Kranz, Eckart; Kramer, Wolfgang; Stetter, Jorg; Stolzer, Claus; and Thomas, Rudolf, 4,229,580, Cl. 548-262.000.
- Storer, John E., Jr., to Sailing Systems, Inc. Catamaran tiller-crossbar connector, 4,228,756, Cl. 114-144.00R.
- Strachan, Denis M.: See—
Babad, Harry; and Strachan, Denis M., 4,229,317, Cl. 252-301.10W.
- Straub, Ferdinand; Spoor, Herbert; and Cordes, Claus, to BASF Aktiengesellschaft. Preparation of modified polymers of N-vinylpyrrolid-2-one and their use for the preparation of polymers interrupted by bridge members, 4,229,551, Cl. 525-337.000.
- Streinz, Ludwig: See—
Feinauer, Dieter; and Streinz, Ludwig, 4,229,557, Cl. 525-480.000.
- Streng, DeWayne A., to International Telephone and Telegraph Corporation. Method for making multiple optical core fiber, 4,229,197, Cl. 65-4.00B.
- Striegel, Oskar, to Friedrich Munch Silber-und Alpacawarenfabrik. Decorative linkwork, 4,229,496, Cl. 428-53.000.
- Stroh, Jan: See—
Hertz, Walter; Stroh, Jan; and Schwalm, Heinz, 4,229,632, Cl. 200-148.00A.
- Strohlein GmbH & Co.: See—
Orth, Kurt; Prumbaum, Roland; and Berger, Peter, 4,229,412, Cl. 422-80.000.
- Structural Fibers, Inc.: See—
Wiltshire, Arthur J.; Nara, Harry R.; Le Breton, Edward T.; and Bliley, Ward L., 4,228,575, Cl. 29-407.000.
- Studiengesellschaft Kohle mbH: See—
Bogdanovic, Borislav, 4,229,354, Cl. 260-347.200.
- Stumpp, Gerhard; and Schielinsky, Gerhard, to Robert Bosch GmbH. Device to activate an adjusting member in dependence on load, 4,228,773, Cl. 123-505.000.
- Sturzl, Wilhelm: See—
Vieweg, Gunther; and Sturzl, Wilhelm, 4,229,795, Cl. 364-483.000.
- Subbotin, Nikolai I.: See—
Shushlebin, Boris A.; Lyakishev, Nikolai P.; Tregubenko, Viktor V.; Ignatenko, Gennady F.; and Subbotin, Nikolai I., 4,229,214, Cl. 75-133.000.
- Subramanian, Kohur N.; Bell, Malcolm C. E.; Thomas, John A.; and Nissen, Norman C., to International Nickel Co., Inc. The Process for the recovery of metal values from anode slimes, 4,229,270, Cl. 204-109.000.
- Suda, Minoru: See—
Kondo, Kiyoshi; and Suda, Minoru, 4,229,593, Cl. 562-401.000.
- Suga, Yoshinori: See—
Kakogawa, Genjiro; Hasuo, Masayoshi; Suga, Yoshinori; and Kitada, Hisashi, 4,229,558, Cl. 526-125.000.
- Suganuma, Hisashi, to Pioneer Electronic Corporation. Automatic gain control circuit, 4,229,707, Cl. 330-277.000.
- Sugawara, Hiroyuki: See—
Arakawa, Hideo; Namekawa, Takashi; Kuniya, Keiichi; and Sugawara, Hiroyuki, 4,229,631, Cl. 200-144.00B.
- Suggs, James L.; and Buck, Dan F., to Eastman Kodak Company. Emulsifiers for baked goods, 4,229,480, Cl. 426-24.000.
- Suggs, James L.; and Buck, Dan F., to Eastman Kodak Company. Pasta conditioner, 4,229,488, Cl. 426-557.000.
- Sugimoto, Hiroyuki: See—
Tabushi, Iwao; Sugimoto, Hiroyuki; and Yazaki, Akira, 4,229,356, Cl. 260-396.00K.
- Sugiya, Teruo: See—
Kanai, Toshio; Yanagioka, Hiroshi; Idemura, Hideo; Sugiya, Hiroshi; Kogawa, Yoshio; Yoshida, Michihiro; Kitamura, Mitsugu; and Sugiya, Teruo, 4,229,417, Cl. 422-176.000.
- Sugiya, Hiroshi: See—
Kanai, Toshio; Yanagioka, Hiroshi; Idemura, Hideo; Sugiya, Hiroshi; Kogawa, Yoshio; Yoshida, Michihiro; Kitamura, Mitsugu; and Sugiya, Teruo, 4,229,417, Cl. 422-176.000.
- Sugiyama, Masatoshi: See—
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- Suh, Kyung W.; and Amos, Charles R., to Dow Chemical Company. The Method of extruding thermoplastic resin foams having enlarged cell-sizes, 4,229,396, Cl. 264-53.000.
- Sumitomo Chemical Company Limited: See—
Mizutani, Toshio; Itaya, Nobushige; Ohno, Nobuo; Matsuo, Takashi; Kitamura, Shigeyoshi; and Okuno, Yositosi, 4,229,469, Cl. 424-304.000.
- Sumitomo Electric Industries, Ltd.: See—
Saito, Yasunori, 4,229,238, Cl. 156-50.000.
- Shibata, Yutaka; Tanaka, Nobuyuki; and Maruyama, Ichiro, 4,228,754, Cl. 114-74.00R.
- Sumitomo, Hiroyuki, to Hisaka Works, Ltd. Plate used in condenser, 4,228,850, Cl. 165-110.000.
- Suntech, Inc.: See—
Hall, Lewis W., Jr.; Kerr, David L.; Hollstein, Elmer J.; Myers, Harry K., Jr.; and Schneider, Abraham, 4,229,612, Cl. 585-823.000.
- Superior Industries International, Inc.: See—
Skeen, James E., 4,228,671, Cl. 72-53.000.
- Surtani, Kishin: See—
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- Suskind, Stuart P.; and Sova, Stanley G., to Inmont Corporation. Sheet material, 4,229,472, Cl. 428-113.000.
- Sustek, Alvin J., Jr.; Frazier, Terry L.; and Daryl, Gregory, to Texaco Inc. Method of injectivity profile logging for two phase flow, 4,228,855, Cl. 166-250.000.
- Suzuki, Hajime; Hamada, Hiroyuki; and Ichikawa, Rinjiro, to Toyo Boseki Kabushiki Kaisha. Light-polarizing film, 4,229,498, Cl. 428-212.000.
- Suzuki, Hiroaki: See—
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,229,085, Cl. 353-75.000.
- Suzuki, Sadamasa: See—
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, 4,229,276, Cl. 204-222.000.
- Suzuki, Shin-ichi: See—
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- Suzuki, Takami; Iwata, Nobuo; and Tsunawawa, Masami, to Ricoh Company, Ltd. Method of making rotary type wheels, 4,228,577, Cl. 29-418.000.
- Svensson, Gustav E. V., to Autoliv AB. Device in connection with reel mechanisms for safety belts for automobiles, 4,228,969, Cl. 242-107.40A.

- Svintsov, Nikolai I.: See—
Tmenov, Dzantemir N.; Svintsov, Nikolai I.; Shapovalova, Lidia P.; Tabakov, Albert V.; Dvoretzky, Mikhail L.; Vasiliev, Gavril I.; Zhestovskiy, Gennady P.; Kandalova, Valentina D.; Korotkevich, Boris S.; Lukashov, Anatoly I.; Lukyanenko, Valery P.; Polataiko, Roman I.; Malov, Evgeny A.; and Shmuk, Jury A., 4,229,604, Cl. 585-445.000.
- Svoboda, Josef, to TMC Corporation. Safety strap for skis, 4,229,020, Cl. 280-618.000.
- Swan, Jack C., Jr., to Hanson Industries Incorporated. Viscous, flowable, pressure-compensating fitting compositions having therein both glass and resinous microbeads, 4,229,546, Cl. 521-55.000.
- Swope, Jack G., to Rencco Incorporated. Manual bag sealer with lift bar, 4,229,244, Cl. 156-358.000.
- Symons Corporation: See—
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- Syntex (U.S.A.) Inc.: See—
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- Szabo, Gabor: See—
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- Szabo, Gabor T.: See—
Tokke, Laszlo; Szabo, Gabor T.; Szabo, Gabor; Nagy, Lajos; and Rusznak, Istvan, 4,229,366, Cl. 260-465.00F.
- Tabakov, Albert V.: See—
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- Tabara, Nobuo: See—
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- Tabushi, Iwao; Sugimoto, Hiroyuki; and Yazaki, Akira, to Wakunaga Yakuhin Kabushiki Kaisha. Production of vitamin K₁ and vitamin K₂, 4,229,356, Cl. 260-396.00K.
- Taguchi, Thoru; Ago, Tokinori; and Hashimoto, Isao, to Mitsui Petrochemical Industries Ltd. Process for the preparation of resorcin, 4,229,597, Cl. 568-768.000.
- Takagi, Fumio: See—
Arai, Eisuke; Kamei, Kuniaki; Kawasaki, Akio; Takagi, Fumio; Shirai, Koichi; and Orihara, Yasuharu, 4,229,239, Cl. 156-155.000.
- Takagi, Hideo: See—
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- Takahashi, Eiichi: See—
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,229,570, Cl. 536-18.000.
- Takahashi, Minoru; Ishii, Osamu; Naito, Masanori; Kusuha, Yoshinobu; and Imahigashi, Naofumi, to Seikisui Kagaku Kogyo Kabushiki Ltd. Coating method and article produced thereby, 4,229,495, Cl. 428-36.000.
- Takahashi, Nobuaki; Funasaka, Eiichi; Shinozaki, Masanobu; and Kaizu, Yasuo, to Victor Company of Japan, Limited. Method and apparatus for driving a multi way speaker system, 4,229,619, Cl. 179-1.00D.
- Takahashi, Susumu; and Chikashige, Tadaaki, to Sansui Electric Co., Ltd. Differential amplifiers, 4,229,705, Cl. 330-258.000.
- Takahashi, Yuji; and Masaki, Hisaji, to Canon Kabushiki Kaisha. Position and presence detecting device for stacked sheet members, 4,229,650, Cl. 250-223.00R.
- Takaishi, Naotake; Inamoto, Yoshiaki; and Matsukane, Masamoto, to Kao Soap Company, Limited. Tricyclo- α,β -unsaturated aldehyde, 4,229,324, Cl. 252-522.00R.
- Takaishi, Naotake: See—
Aigami, Koji; Inamoto, Yoshiaki; Ohsugi, Motoyoshi; Fujikura, Yoshiaki; and Takaishi, Naotake, 4,229,375, Cl. 260-563.00P.
- Takamatsu, Jun: See—
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- Takaoki, Muneo: See—
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- Takasago Perfumery Co., Ltd.: See—
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- Takashima, Hiroaki: See—
Uemura, Seichi; Yamamoto, Syunichi; Hirose, Takao; Takashima, Hiroaki; Kato, Osamu; and Nagai, Minoru, 4,229,221, Cl. 106-58.000.
- Take, Hiroshi; Koyanagi, Katubumi; and Ueda, Hisashi, to Sharp Kabushiki Kaisha. Additional electrode of electrochromic display and refreshing method for the same, 4,229,080, Cl. 350-357.000.
- Takeca Chemical Industries, Ltd.: See—
Higashide, Eiji; Hatano, Kazunori; and Asai, Mitsuko, 4,229,533, Cl. 435-119.000.
- Takeda Chemical Industries, Ltd.: See—
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- Imada, Akira; Kitano, Kazuaki; and Asai, Mitsuko, 4,229,436, Cl. 424-117.000.
- Mori, Shoichi; Ikeda, Yorifumi; and Nishikawa, Kikun, 4,229,292, Cl. 210-673.000.
- Takeda, Kenji: See—
Murofushi, Mitsugu; Sasaki, Kuniaki; Shioimi, Michio; Uchida, Yoshio; Hattori, Tokihisa; and Takeda, Kenji, 4,229,440, Cl. 424-180.000.
- Takeda, Renzo; Uchikawa, Sadao; Kurihara, Kunitoshi; Yamamoto, Masaaki; Yokomi, Michiro; Yamashita, Junichi; and Takamatsu, Jun, to Hitachi, Ltd. Fuel assembly, 4,229,258, Cl. 176-76.000.
- Takemoto, Yoshinori; Yasui, Toshihiro; Fujii, Kyoichi; Tanaka, Hiroshi; and Hirayama, Tatsuyuki, to Kyowa Hakko Kogyo Co., Ltd. Aluminum acetylsalicylate glutamate, 4,229,446, Cl. 424-230.000.
- Takeshita, Ryuzo. Apparatus for injecting a desired volume of liquid in liquid and gas-liquid chromatography, 4,228,922, Cl. 222-47.000.
- Takeuchi, Noboru: See—
Inamura, Minoru; Takeuchi, Noboru; Inukai, Kazuhiro; Taninouchi, Kentaro; and Utsunomiya, Shin, 4,228,944, Cl. 228-198.000.
- Takita, Hitoshi: See—
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- Takita, Kiyoshi: See—
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- Talbot Industries, Ltd.: See—
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- Talbot, James R., to Fiber Industries, Inc. Simulated spun-like ingram yarn, 4,228,640, Cl. 57-208.000.
- Tamai, Masayoshi, to Xerox Corporation. Ink jet head, 4,229,751, Cl. 346-140.00R.
- Tamaru, Munetaka: See—
Watanabe, Minoru; and Tamaru, Munetaka, 4,228,644, Cl. 368-28.000.
- Tan, Ewe H.: See—
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- Tanabe, Kaichi; Koga, Shigeto; and Maeda, Yoshinori, to Shinko-Pfaunder Company, Ltd. Device for separating suspended material from a fluid stream by specific gravity difference, 4,228,943, Cl. 228-182.000.
- Tanaka, Akio; Nakajima, Yoshihisa; and Yokomori, Shinji, to Fuji Electric Co., Ltd. Apparatus for controlling a coin sorting machine, 4,228,811, Cl. 133-3.00R.
- Tanaka, Hiroshi: See—
Takemoto, Yoshinori; Yasui, Toshihiro; Fujii, Kyoichi; Tanaka, Hiroshi; and Hirayama, Tatsuyuki, 4,229,446, Cl. 424-230.000.
- Tanaka, Masato: See—
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- Tanaka, Nobuyoshi: See—
Kawamura, Naoto; Iizuka, Kiyoshi; Tanaka, Nobuyoshi; Kuwayama, Tetsuro; Matsumoto, Kazuya; and Goshima, Takeshi, 4,229,750, Cl. 346-107.00R.
- Tanaka, Nobuyuki: See—
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- Tanaka, Yasuo. Kite, 4,228,977, Cl. 244-153.00R.
- Tanaka, Yoko: See—
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- Tancrill, Roger H., to Raytheon Company. Fresnel focussed imaging system, 4,228,686, Cl. 73-626.000.
- Tang, David Y.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. Process for the production of 1-phenyl-3-(3-trifluoromethylphenyl)-2-propanone, 4,229,378, Cl. 568-313.000.
- Tani, Yoshiki: See—
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- Taniguchi, Nobuyuki: See—
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- Taninouchi, Kentaro: See—
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- Tarragona Corbella, Francisco J. Safety door fastening, 4,229,030, Cl. 292-270.000.
- Taylor, Chester J., to United States of America, Army. Cargo tiedown anchor means, 4,229,132, Cl. 410-115.000.
- Taylor Diving & Salvage Co., Inc.: See—
Wallace, Kenneth W.; and Gaudiano, Anthony V., 4,229,120, Cl. 405-158.000.
- Teague, Walter D., Jr.; and Sempliner, Arthur T. Anti-rotation arrangement for nutating fluid device, 4,229,150, Cl. 418-50.000.
- Techno-Instruments Ltd.: See—
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- Technovators, Inc.: See—
Fisher, Glen W., 4,228,822, Cl. 138-46.000.
- Teegen, Walter: See—
Linder, Ernst; Rembold, Helmut; Teegen, Walter; Kessler, Achill; and Ehmann, Roland, 4,229,147, Cl. 417-283.000.
- Teijin Limited: See—
Adachi, Teruhiko; and Ikeda, Hitoshi, 4,229,500, Cl. 428-373.000.
- Shiozaki, Masahiro; Nawata, Kiyoshi; Tsunawaki, Kiyokazu; Tsubaki, Kazumi; Yanagimoto, Akira; and Kumazawa, Shunichi, 4,229,552, Cl. 525-437.000.
- Tessiere, Paul J.; and Maupetit, Pierre, to Societe Anonyme Roure Bertrand Dupont. Nor-dehydropatchoulol, 4,229,323, Cl. 252-522.00R.

- Tekno-Detajler Sture Carlsson AB: See—
Lindstrom, Jan. 4,229,125, Cl. 406-137,000.
- Tektronix, Inc.: See—
Sato, Shuichi; Yamaguchi, Tadanori; and Sachitani, Jack. 4,229,756, Cl. 357-42,000.
- Telecommunications Radioelectriques et Telephoniques T.R.T.: See—
Guidoux, Loic B. Y., 4,229,825, Cl. 375-118,000.
- Teledyne Industries, Inc.: See—
Hickman, Clarence J.; Ruchmann, Donald W.; and Elkins, Christopher W., 4,229,634, Cl. 200-302,000.
- Teleflex Incorporated: See—
Wood, Robert A. R., 4,228,757, Cl. 114-150,000.
- Teletype Corporation: See—
Bellino, Joseph A.; Feldy, Edmund C.; LaSpesa, Richard E.; and Ramig, Robert J., Jr., 4,229,617, Cl. 178-92,000.
Thomas, James W., Jr., 4,229,702, Cl. 328-110,000.
- Temler, Jan S., to Dornier, Inc. High-yield semi-chemical carbonate pulping process. 4,229,251, Cl. 162-28,000.
- Templin, Jackson R., to General Motors Corporation. Remote temperature measuring system with semiconductor junction sensor. 4,228,684, Cl. 73-362,05C.
- Tenneco Chemicals, Inc.: See—
Feldman, Martin L.; Goodman, Donald; Koral, Marvin; Miller, Robert S.; and Stanaback, Robert J., 4,229,569, Cl. 528-501,000.
- Terwee, Thomas H. M.: See—
Nijhuis, Jan; and Terwee, Thomas H. M., 4,228,643, Cl. 57-297,000.
- Texaco Development Corp.: See—
Cavitt, Stanley B., 4,229,321, Cl. 252-476,000.
- Texaco Inc.: See—
Pitts, Robert W., Jr.; and Gillespie, Ronald G., 4,229,769, Cl. 358-285,000.
Sustek, Alvin J., Jr.; Frazier, Terry L.; and Daryl, Gregory. 4,228,855, Cl. 166-250,000.
- Texas Instruments Incorporated: See—
Culley, Bobby G.; and Surtani, Kishin, 4,228,574, Cl. 29-25,130.
Frank, Steven N.; and Frank, James G., 4,229,490, Cl. 427-113,000.
Hyncek, Jaroslav, 4,229,752, Cl. 357-24,000.
Rhodes, Clifford C., 4,229,803, Cl. 364-787,000.
- Thaler, Warren A.; Buckley, Donald J.; and Kennedy Joseph P., to Exxon Research & Engineering Co. High unsaturation butyl rubbers with additives. 4,229,325, Cl. 260-5,000.
- Theobald, Hans; Wuerzer, Bruno; and Kiehs, Karl, to BASF Aktiengesellschaft. Substituted alkoxyimino-pyridazones, their manufacture, and their use as herbicides. 4,229,205, Cl. 71-92,000.
- Thibodeau, Leslie N., to RCA Corporation. Flyback transformer. 4,229,787, Cl. 363-126,000.
- Thiel, Max: See—
Kampe, Wolfgang; Stach, Kurt, deceased; Plattner, Werner, administrator; Thiel, Max; Bartsch, Wolfgang; Dietmann, Karl; Roesch, Egon; and Schaumann, Wolfgang, 4,229,464, Cl. 424-274,000.
- Thierry, Timothy T. Shaving apparatus. 4,228,586, Cl. 30-41,000.
- Thir, Basil: See—
Newkirk, David D.; Login, Robert B.; and Thir, Basil, 4,229,554, Cl. 525-438,000.
- Tholen, Paul: See—
Herschmann, Otto; Zernig, Norbert; Holthausen, Dieter; Stock, Hugo; and Tholen, Paul, 4,228,655, Cl. 60-602,000.
- Thomas A. Schutz Co., Inc.: See—
Eckert, Ronald P., 4,228,903, Cl. 211-49,00D.
- Thomas Broadbent & Sons Limited: See—
Jackson, Joseph F., 4,228,949, Cl. 233-7,000.
- Thomas, James W., Jr., to Teletype Corporation. Circuit for detecting the relative occurrence of one signal among a plurality of signals. 4,229,702, Cl. 328-110,000.
- Thomas, John A.: See—
Subramanian, Kohur N.; Bell, Malcolm C. E.; Thomas, John A.; and Nissen, Norman C., 4,229,270, Cl. 204-109,000.
- Thomas, John F.: See—
Zeitter, Charles R.; and Thomas, John F., 4,228,898, Cl. 206-621,000.
- Thomas, Rudolf: See—
Arold, Hermann; Elbe, Hans-Ludwig; Kranz, Eckart; Kramer, Wolfgang; Stetter, Jorg; Stolzer, Claus; and Thomas, Rudolf, 4,229,580, Cl. 548-262,000.
- Thomas, Valerie L. Illusion transmitter. 4,229,761, Cl. 358-90,000.
- Thommen, Werner F.; Fehr, Werner; and Korom, Arpad, to U.S. Philips Corporation. Integrated circuit having first and second internal circuits controlled by a common input terminal. 4,229,670, Cl. 307-360,000.
- Thompson, James E.; and Mayfield, Robert L., to Deere & Company. Vibration attenuator seat. 4,228,984, Cl. 248-636,000.
- Thompson, Jay F. Seismogram display and method. 4,229,810, Cl. 367-68,000.
- Thompson Marine Corporation: See—
Granger, Steven T., 4,229,389, Cl. 261-122,000.
- Thompson, Morice W.: See—
Bentley, John; Thompson, Morice W.; and Palluel, Auguste L. L., 4,229,339, Cl. 260-34,200.
- Thomson-CSF: See—
d'Auria, Luigi; and Huignard, Jean-Pierre, 4,229,071, Cl. 350-150,000.
Hoet, Roger, 4,229,674, Cl. 313-348,000.
Mourier, Georges, 4,229,677, Cl. 315-3,600.
Rougeot, Henri, 4,229,736, Cl. 340-782,000.
- Thomson, David J.; and Turner, Roland J., to Bell Telephone Laboratories, Incorporated. Digital clock phase recovery circuits for data receiver. 4,229,823, Cl. 375-113,000.
- Tiedt, Larry M., to GTE Automatic Electric Laboratories Incorporated. Programmable power supply system. 4,229,665, Cl. 307-150,000.
- Timex Corporation: See—
Eberhardt, Noel, 4,229,783, Cl. 362-352,000.
- Ting, Vincent W.; and Evans, James M., to SCM Corporation. Aqueous dispersion of polyamino polyhydroxy polyether resinous adduct and acid-functional aminoplast for cathodic electrocoating. 4,229,335, Cl. 260-29,40R.
- Tisma, Ilija. Automobile shelter apparatus. 4,228,622, Cl. 52-3,000.
- Titzschkau, Klaus: See—
Braun, Dietrich; and Titzschkau, Klaus, 4,229,556, Cl. 525-445,000.
- TMC Corporation: See—
Svoboda, Josef, 4,229,020, Cl. 280-618,000.
- Tmenov, Dzantemir N.; Svintsov, Nikolai I.; Shapovalova, Lidia P.; Tabakov, Albert V.; Dyoretzky, Mikhail L.; Vasiliev, Gavril I.; Zhestovsky, Gennady P.; Kandalova, Valentina D.; Korotkevich, Boris S.; Lukashov, Anatoly I.; Lukyanenko, Valery P.; Polataiko, Roman I.; Malov, Evgeny A.; and Shmuk, Jury A. Process for producing unsaturated hydrocarbons. 4,229,604, Cl. 585-445,000.
- Tobias, Michael A.; and Lynch, Conrad L., to Mobil Oil Corporation. Linear polyester coil coating compositions. 4,229,555, Cl. 525-443,000.
- Tobin, Thomas J., to S&C Electric Company. Diaphragm having a pattern of reduced thickness in a high voltage, circuit-interrupting device. 4,229,723, Cl. 337-275,000.
- Tocchella, Antonio: See—
Zinno, Oscar; and Tocchella, Antonio, 4,229,034, Cl. 294-81,05F.
- Tocci, Anthony J., to RCA Corporation. Cleaving apparatus. 4,228,937, Cl. 225-96,500.
- Toda, Tadayoshi, to Nissan Motor Company, Limited. Pillar garnish. 4,229,036, Cl. 296-202,000.
- Toffanetti, Erio: See—
Vigano, Carlo; Quattrone, Francesco; and Toffanetti, Erio, 4,229,645, Cl. 235-92,00C.
- Togashi, Akira. Tubular body. 4,228,852, Cl. 165-173,000.
- Toho Beslon Co., Ltd.: See—
Fukuta, Kenji; Ono-Oka, Ryuzo; Yoshida, Masatoshi; Saito, Kazuhisa; and Kosuda, Hiroyuki, 4,229,397, Cl. 264-113,000.
- Toho Gasu Kabushiki Kaisha: See—
Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, 4,229,341, Cl. 260-42,160.
- Toke, Laszlo; Szabo, Gabor T.; Szabo, Gabor; Nagy, Lajos; and Rusznak, Istvan, to Chinoin Gyogyszer es Vegyeszeti Termekker Gyara Rt. Process for heterogeneous nucleophilic substitution reactions. 4,229,366, Cl. 260-465,00F.
- Tokico Ltd.: See—
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- Tokuda, Katumi: See—
Mitani, Yutaka; Tokuda, Katumi; and Kitao, Saburo, 4,229,786, Cl. 363-126,000.
- Tokyo Print Industry Co., Ltd.: See—
Arai, Minoru, 4,228,582, Cl. 29-650,000.
- Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, to Monsanto Company. Production of tumor angiogenesis factor by cell culture. 4,229,531, Cl. 435-41,000.
- Tolbert, William R.; and Feder, Joseph, to Monsanto Company. Production of tumor angiogenesis factor by cell culture. 4,229,532, Cl. 435-41,000.
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- Tomita, Kenkichi: See—
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- Tonomura, Kenzo; and Urakami, Teizi, to Agency of Industrial Science & Technology; Ministry of International Trade and Industry; and Mitsubishi Gas Chemical Company, Inc. Process for culturing methanol-utilizing yeasts. 4,229,543, Cl. 435-245,000.
- Toole Energy Company, Inc.: See—
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- Torok, Ernest J.; Fleming, David L.; and Johansen, Thomas R., to Sperry Rand Corporation. Color display system using magneto-optic screen having a dispersive Faraday coefficient. 4,229,072, Cl. 350-151,000.
- Torre, Arturo D.: See—
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- Torretta, Roberto: See—
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- Tothfalusi, Miklos, to Coal Industry (Patents) Limited. Particulate material loading equipment. 4,228,890, Cl. 198-514,000.
- Toussaint, Herbert; Adelsberger, Klaus; and Hoffmann, Herwig, to BASF Aktiengesellschaft. Production of hexamethylenimine. 4,229,346, Cl. 260-239,00B.
- Toyo Boseki Kabushiki Kaisha: See—
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- Toyota Jidosha Kogyo Kabushiki Kaisha: See—
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- Tractell S.A.: See—
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- Trampe, Stanley F. Prefabricated panel module construction. 4,228,626, Cl. 52-275,000.
- Trancik, Edward R., to Ford Motor Company. Spark plug with low erosion electrode tip. 4,229,672, Cl. 313-139,000.
- Travis, Terence, to International Business Machines Corporation. Automatic copy recovery. 4,229,100, Cl. 355-77,000.
- Tregubenko, Viktor V.: See—
Shushlebin, Boris A.; Lyakishev, Nikolai P.; Tregubenko, Viktor V.; Ignatenko, Gennady F.; and Subbotin, Nikolai I., 4,229,214, Cl. 75-133,000.
- Treitz, Gerd. Ladder. 4,228,872, Cl. 182-194,000.
- Tremba, Joseph A., to Eaton Corporation. Tire pressure monitor. 4,229,728, Cl. 340-58,000.
- Trevissio, Renato; and Pizzocri, Guido, to Alfa Romeo S.p.A. Collapsible-steering unit for motor vehicles. 4,228,695, Cl. 74-492,000.
- Tri-County Elevator Co., Inc.: See—
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- Trias, John A.: See—
Schimitschek, Erhard J.; Celto, John E.; and Trias, John A., 4,229,711, Cl. 331-94,50P.
- Trickel, Lorn L. Braking apparatus for dog track rabbit lure car. 4,228,998, Cl. 272-4,000.
- Trost, Wayne C., to Barber-Colman Company. Heddle for a weaving machine for making triaxial fabrics. 4,228,827, Cl. 139-93,000.
- Trott, William A., to Medical Products Institute Incorporated. Self-inflating and self-cleaning catheter assembly. 4,228,802, Cl. 128-349,00R.
- Trub, Hermann B.: See—
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- Trui, Josef: See—
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- TRW Inc.: See—
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- Jones, Robert J.; Vaughan, Robert W.; Buyny, Robert A.; and O'Rell, Michael K., 4,229,550, Cl. 525-282,000.
- Vetter, Ottomar H.; and Hanlon, Terrance W., 4,229,064, Cl. 339-186,00M.
- Tschentscher, Alfred: See—
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- Tschopp, Paul: See—
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- Tsubaki, Kazumi: See—
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- Tsuda, Masataka: See—
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- Tsuda, Shin: See—
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- Tsuji, Takao; Goshima, Takeshi; and Sato, Hideaki, to Canon Kabushiki Kaisha. Optical high density FM recording device with corrective signal. 4,229,763, Cl. 358-128,500.
- Tsumura, Haruo: See—
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- Tsunasawa, Masami: See—
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- Tsunawaki, Kiyokazu: See—
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- Tsunoda, Teruo: See—
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- Tsurumi, Michio: See—
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- Tsuruoka, Takashi: See—
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- Tsuruta, Haruki: See—
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- Tuckerman, Louis B., III: See—
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- Tulenko, Thomas N.; and Di Camillo, Carmen A., to Tulenko, Thomas N. Exposure detecting device. 4,229,733, Cl. 340-500,000.
- Tuller, Clarence J., to General Electric Company. Floodlight reflector mounting. 4,229,785, Cl. 362-433,000.
- Tummers, Gerardus L. J.: See—
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- Tumminaro, Anthony J. Toilet for animals. 4,228,554, Cl. 119-1,000.
- Turner, Richard L. Oil well pump. 4,229,149, Cl. 417-554,000.
- Turner, Roland J.: See—
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- Turner, Ronald L.: See—
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- Tweeton, Timothy J. Baby bottle carrier. 4,228,908, Cl. 215-11,00C.
- Tyler, Derek E.: See—
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- Tyson, Henry K.: See—
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- UBE Industries, Ltd.: See—
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- Nishimura, Kenji; Fujii, Kozo; Nishihira, Keigo; Matsuda, Masaaki; and Uchiumi, Shinichiro, 4,229,591, Cl. 560-193,000.
- Uchida, Yoshio: See—
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- Uchikawa, Sadao: See—
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- Uchiumi, Shinichiro: See—
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- Uchiyama, Yasuji; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichi; and Oya, Akiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Key code data generator. 4,228,712, Cl. 84-1,010.
- Ueda, Hiroto; and Ihara, Satoshi, to Displaytek Corporation; and Daiwa Shinku Corporation. Electrostatic display device. 4,229,075, Cl. 350-269,000.
- Ueda, Hiroto, to Fuji Photo Film Co., Ltd. Process for improving image-sharpness of photographic silver halide material. 4,229,525, Cl. 430-568,000.
- Uede, Hisashi: See—
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- Uemura, Seiichi; Yamamoto, Syunichi; Hirose, Takao; Takashima, Hiroaki; Kato, Osamu; and Nagai, Minoru, to Nippon Oil Co., Ltd., and Shinagawa Refractories Co., Ltd. Method for producing refractories. 4,229,221, Cl. 106-58,000.
- Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method of producing nitrogen-containing polysaccharides. 4,229,570, Cl. 536-18,000.
- Uerdingen, Walter: See—
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- Umehara, Yozaburo. Tape guide means for recording and/or reproducing apparatus and method of manufacturing the same. 4,228,940, Cl. 226-196,000.
- Underwood, J. Larry. Stacking element for retaining stacked articles. 4,228,897, Cl. 206-504,000.
- Union Carbide Corporation: See—
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Gardner, Hugh C.; and Matzner, Markus, 4,229,565, Cl. 528-176,000.
- Reed, Denvil E.; and Grimm, Richard C., 4,229,262, Cl. 203-29,000.
- Unit Process Assemblies, Inc.: See—
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- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the See—
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- United States of America
Air Force: See—
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- Army: See—
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- Campbell, Robert T., 4,229,738, Cl. 343-7,300.
- Hirata, Tetsuyuki, 4,228,689, Cl. 73-747,000.
- Jones, Terry L.; and Miller, Brian S., 4,229,081, Cl. 350-361,000.
- Meinzer, Richard A., 4,229,712, Cl. 331-94,50D.
- Mertwoy, Abraham, 4,228,674, Cl. 73-10,000.
- Taylor, Chester J., 4,229,132, Cl. 410-115,000.
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- Gregg, David W., 4,229,184, Cl. 48-62.00R.
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 MacGlashan, William F., Jr. Power control for hot gas engines. 4,228,656, Cl. 60-518.000.
 Shaw, Graham C. Recovery of aluminum from composite propellants. 4,229,182, Cl. 23-293.00R.
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 Heijnemans, Werner A. L.; Nieuwendijk, Joris A. M.; and Vink, Nicolaas G., 4,229,720, Cl. 335-213.000.
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- Dingler, Geoffrey L.; and Johnson, Philip P., 4,228,962, Cl. 241-14.000.
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- Williams, Marvin H.: See—
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- Winiasz, Michael E. Speed reducer. 4,228,698, Cl. 74-805.000.
- Winter, Joseph; Tyler, Derek E.; and Pryor, Michael J., to Olin Corporation. Method for the preparation of thixotropic slurries. 4,229,210, Cl. 75-10.00R.
- Wirt, Leslie S., to Lockheed Corporation. Noise barrier. 4,228,867, Cl. 181-210.000.
- Wisconsin Alumni Research Foundation: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,229,357, Cl. 260-397.200.
- DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,229,358, Cl. 260-397.200.
- DeLuca, Hector F.; Schnoes, Heinrich K.; Tanaka, Yoko; and Alper, Joseph B., 4,229,359, Cl. 260-397.200.
- Wise, David J.: See—
Comperatore, John A.; Black, Edward D.; and Wise, David J., 4,229,201, Cl. 65-287.000.
- Witt, August F.; and Raman, Ramaswamy V., to Massachusetts Institute of Technology. Method of forming a laminated ribbon structure. 4,229,231, Cl. 148-1.500.
- Wittmann, Erwin J.: See—
Harwood, Leopold A.; and Wittmann, Erwin J., 4,229,759, Cl. 358-19.000.
- Wojcik, Charles K. Epicyclic gear system and driving means therefor. 4,229,152, Cl. 418-61.00R.
- Wolf, David. Safety ski pole. 4,229,016, Cl. 280-821.000.
- Wolf, Gunther: See—
Dislich, Helmut; Hinz, Paul; and Wolf, Gunther, 4,229,491, Cl. 427-160.000.
- Wolff, Siegfried; and Tan, Ewe H., to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Cross-linkable rubber mixtures containing silicate fillers and process for cross-linking. 4,229,333, Cl. 260-23.70M.
- Woltmann, Reinhard: See—
Gartner, Jurij; Hengli, Helmut; Sixt, Karl; and Woltmann, Reinhard, 4,228,769, Cl. 123-52.00M.
- Wood, Robert A. R., to Teleflex Incorporated. Boat steering assembly. 4,228,757, Cl. 114-150.000.
- Woodbury, Larry A., to Deere & Company. Tractor transmission shift control. 4,228,879, Cl. 192-4.00A.
- Woodruff, Roger D., to Champion Corporation. Reel loader construction. 4,228,967, Cl. 242-86.50R.
- Woolam, John A., to United States of America, National Aeronautics and Space Administration. Atomic hydrogen storage method and apparatus. 4,229,196, Cl. 62-40.000.
- Wray, William R., to Polaroid Corporation. Two speed loop control arrangement. 4,229,083, Cl. 352-14.000.
- Wu, Ching-Yong; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Converting ethylene and propylene to the glycol using t-butyl hydroperoxide in a two-phase liquid reactant. 4,229,601, Cl. 568-860.000.

- Wu, Chung P.; and Smeltzer, Ronald K., to RCA Corporation. Low-resistivity polycrystalline silicon film. 4,229,502, Cl. 428-446.000.
- Wu, Jeng-Shyong. Packing device for decorative string set. 4,228,896, Cl. 206-420.000.
- Wuerzer, Bruno: See—
Theobald, Hans; Wuerzer, Bruno; and Kiehs, Karl, 4,229,205, Cl. 71-92.000.
- Wurmb, Rolf: See—
Sterzel, Hans-Josef; Wurmb, Rolf; Schmidt, Franz; and Seiler, Erhard, 4,229,553, Cl. 525-438.000.
- Wysocki, Lawrence S., to Champion International Corporation. Food carton for microwave heating. 4,228,945, Cl. 229-30.000.
- Xerox Corporation: See—
Hamlin, Thomas J.; and George, Clifford L., 4,229,101, Cl. 355-77.000.
- Lenhard, Myron J.; Rees, James D.; and Xerox Corporation, 4,229,512, Cl. 430-106.000.
- Tamai, Masayoshi, 4,229,751, Cl. 346-140.00R.
- Yagi, Akihiro; Kuchinomachi, Yasuo; and Kodama, Hiroyuki, to Agency of Industrial Science & Technology. Biofeedback device for recognition of a wave component and muscle potential component. 4,228,807, Cl. 128-732.000.
- Yajima, Kenji, to Kabushiki Kaisha Daini Seikosha. Click mechanism of a timepiece. 4,228,647, Cl. 368-185.000.
- Yakovlev, Mikhail N.: See—
Chernikhov, Alexei Y.; Yakovlev, Mikhail N.; Lysova, Valentina B.; Geffer, Evgeny L.; and Shmagina, Nina N., 4,229,560, Cl. 528-4.000.
- Yamada, Hideaki; Shimizu, Sakayu; and Tani, Yoshiki, to Amano Pharmaceutical Co. Ltd. Process for preparing acyl-CoA synthetase LCF-18. 4,229,538, Cl. 435-193.000.
- Yamada, Keijyu: See—
Kikuchi, Makoto; and Yamada, Keijyu, 4,229,167, Cl. 433-74.000.
- Yamada, Takao: See—
Nohmi, Takashi; Yamada, Takao; and Doi, Yoshino, 4,229,297, Cl. 210-654.000.
- Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, to Canon Kabushiki Kaisha. Film reader. 4,229,085, Cl. 353-75.000.
- Yamaga, Eiichi: See—
Uchiyama, Yasuji; Nakada, Akira; Okumura, Takatoshi; Aoki, Eiichi; Yamaga, Eiichi; and Oya, Akiyoshi, 4,228,712, Cl. 84-1.010.
- Yamaguchi, Tadanori: See—
Sato, Shuichi; Yamaguchi, Tadanori; and Sachitani, Jack, 4,229,756, Cl. 357-42.000.
- Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, to Toho Gasu Kabushiki Kaisha; and Kabushiki Kaisha Togowa Gomu Seizoshu. Method of making thermally expandable rubber tubes for use in self-closing gas pipes and pipe joints. 4,229,341, Cl. 260-42.160.
- Yamamoto, Kazuo: See—
Ikesue, Haruyuki; and Yamamoto, Kazuo, 4,228,567, Cl. 24-230.0AL.
- Yamamoto, Masaaki: See—
Takeda, Renzo; Uchikawa, Sadao; Kurihara, Kunitoshi; Yamamoto, Masaaki; Yokomi, Michiro; Yamashita, Junichi; and Takamatsu, Jun, 4,229,258, Cl. 176-76.000.
- Yamamoto, Syunichi: See—
Uemura, Seiichi; Yamamoto, Syunichi; Hirose, Takao; Takashima, Hiroaki; Kato, Osamu; and Nagai, Minoru, 4,229,221, Cl. 106-58.000.
- Yamanashi, Chusaku: See—
Arima, Tatsuhiko; and Yamanashi, Chusaku, 4,228,971, Cl. 242-107.600.
- Yamashita, Junichi: See—
Takeda, Renzo; Uchikawa, Sadao; Kurihara, Kunitoshi; Yamamoto, Masaaki; Yokomi, Michiro; Yamashita, Junichi; and Takamatsu, Jun, 4,229,258, Cl. 176-76.000.
- Yamashita, Masayoshi: See—
Nishimura, Kenji; Uchiyama, Shinichiro; Fujii, Kozo; Nishihira, Keigo; Yamashita, Masayoshi; and Itatani, Hiroshi, 4,229,589, Cl. 560-193.000.
- Yamauchi, Terukazu; Nishio, Katsufumi; Niino, Fusao; and Murasawa, Toyosaki, to Matsushita Electric Industrial Co., Ltd. Receptacle for motor-driven food processor. 4,228,963, Cl. 241-92.000.
- Yamazaki, Hisashi: See—
Watanabe, Kikuo; Kazino, Mitsutaka; and Yamazaki, Hisashi, 4,229,683, Cl. 318-466.000.
- Yanagimoto, Akira: See—
Shiozaki, Masahiro; Nawata, Kiyoshi; Tsunawaki, Kiyokazu; Tsubaki, Kazumi; Yanagimoto, Akira; and Kumazawa, Shunichi, 4,229,552, Cl. 525-437.000.
- Yanagioka, Hiroshi: See—
Kanai, Toshio; Yanagioka, Hiroshi; Idemura, Hideo; Sugiyama, Hiroshi; Kogawa, Yoshio; Yoshida, Michihiro; Kitamura, Mitsugu; and Sugiyama, Teruo, 4,229,417, Cl. 422-176.000.
- Yasui, Toshihiro: See—
Takemoto, Yoshinori; Yasui, Toshihiro; Fujii, Kyoichi; Tanaka, Hiroshi; and Hirayama, Tatsuyuki, 4,229,446, Cl. 424-230.000.
- Yasuike, Akio: See—
Nagumo, Tadashi; Yasuike, Akio; and Kataoka, Hiroshi, 4,229,395, Cl. 264-51.000.
- Yasuzawa, Kohei: See—
Konji, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,229,330, Cl. 260-19.00R.
- Yates, August B., to Webb, J. Talmadge. Protective device for instruments and locking of aircraft controls. 4,228,974, Cl. 244-224.000.
- Yates, Dow. Chlorine generator and method. 4,229,272, Cl. 204-128.000.
- Yazaki, Akira: See—
Tabushi, Iwao; Sugimoto, Hiroyuki; and Yazaki, Akira, 4,229,356, Cl. 260-396.00K.
- Yazaki Corporation: See—
Yoshizawa, Masaaki, 4,229,063, Cl. 339-95.00R.
- Yeda Research and Development Co., Ltd.: See—
Nudelman, Abraham; and Patchornik, Abraham, 4,229,363, Cl. 260-454.000.
- Nudelman, Abraham; and Patchornik, Abraham, 4,229,574, Cl. 544-21.000.
- Yokomi, Michiro: See—
Takeda, Renzo; Uchikawa, Sadao; Kurihara, Kunitoshi; Yamamoto, Masaaki; Yokomi, Michiro; Yamashita, Junichi; and Takamatsu, Jun, 4,229,258, Cl. 176-76.000.
- Yokomori, Shinji: See—
Tanaka, Akio; Nakajima, Yoshihisa; and Yokomori, Shinji, 4,228,811, Cl. 133-3.00R.
- Yonehara, Hiroshi: See—
Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, 4,229,535, Cl. 435-128.000.
- Yonekura, Kikuo: See—
Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, 4,229,341, Cl. 260-42.160.
- Yonemoto, Tomoo: See—
Kitai, Kiyoshi; Onda, Eiichi; Yonemoto, Tomoo; and Nagaoka, Shinji, 4,229,089, Cl. 354-25.000.
- Yoneyama, Masakazu; and Kishimoto, Shinzo, to Fuji Photo Film Co., Ltd. Photographic light sensitive material with antistatic property. 4,229,524, Cl. 430-536.000.
- Yorke Machine Products Company, The: See—
Deminski, Richard M., 4,228,820, Cl. 137-514.300.
- Yoshida, Hiroshi; Tabara, Nobuo; and Aoki, Keiji, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling internal combustion engines. 4,229,793, Cl. 364-431.000.
- Yoshida, Kenji: See—
Shigematsu, Taichiro; Yoshida, Kenji; Nakazawa, Makoto; Kasugai, Hiroshi; and Tsuda, Masataka, 4,229,461, Cl. 424-270.000.
- Yoshida Kogyo KK: See—
Matsuda, Yoshio, 4,228,566, Cl. 24-205.16C.
- Yoshida, Masatoshi: See—
Fukuta, Kenji; Ono-Oka, Ryuzo; Yoshida, Masatoshi; Saito, Kazuhisa; and Kosuda, Hiroyuki, 4,229,397, Cl. 264-113.000.
- Yoshida, Michihiro: See—
Kanai, Toshio; Yanagioka, Hiroshi; Idemura, Hideo; Sugiyama, Hiroshi; Kogawa, Yoshio; Yoshida, Michihiro; Kitamura, Mitsugu; and Sugiyama, Teruo, 4,229,417, Cl. 422-176.000.
- Yoshida, Takeshi: See—
Konji, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,229,330, Cl. 260-19.00R.
- Yoshida, Toshio: See—
Kobayashi, Toyohiko; Tsuruta, Haruki; and Yoshida, Toshio, 4,229,600, Cl. 568-820.000.
- Yoshikumi, Chikao: See—
Ueno, Saburo; Yoshikumi, Chikao; Hirose, Fumio; Omura, Yoshio; Wada, Toshihiko; Fujii, Takayoshi; and Takahashi, Eiichi, 4,229,570, Cl. 536-18.000.
- Yoshimura, Yukio: See—
Konji, Susumu; Yoshimura, Yukio; Nanaumi, Ken; Yasuzawa, Kohei; Yoshida, Takeshi; and Shinko, Toyotaro, 4,229,330, Cl. 260-19.00R.
- Yoshizawa, Masaaki, to Yazaki Corporation. Pressure terminal for use with aluminum wire. 4,229,063, Cl. 339-95.00R.
- Young, John: See—
Jones, Gordon H.; and Young, John, 4,229,478, Cl. 424-331.000.
- Yu, John P., to RCA Corporation. RF Connector assembly with provision for low frequency isolation and RFI reduction. 4,229,714, Cl. 333-12.000.
- Yuasa, Yoshio; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Exposure time controlling system. 4,229,088, Cl. 354-23.00D.
- Zahnradfabrik Friedrichshafen, A.G.: See—
Jablonsky, Erich, 4,228,696, Cl. 74-499.000.
- Zaremba, Tadeusz: See—
Koloczek, Wiktor; Dobaj, Edward; and Zaremba, Tadeusz, 4,229,721, Cl. 336-133.000.
- Zeiter, Charles R.; and Thomas, John F., to Packaging Corporation of America. Reclosable carton and blank therefor. 4,228,898, Cl. 206-621.000.
- Zellweger Ltd.: See—
Luethi, Peter; and Steinmetz, Werner, 4,228,814, Cl. 134-58.00R.
- Zepeda, Lamberto C. Garden hose thread protector. 4,228,823, Cl. 138-96.00R.
- Zerlauth, Hellmuth, to Niveau AG. Device for preventing skidding and for increasing the grip of vehicle wheels on ice and snow. 4,228,838, Cl. 152-216.000.
- Zernig, Norbert: See—
Herschmann, Otto; Zernig, Norbert; Holthausen, Dieter; Stock, Hugo; and Tholen, Paul, 4,228,655, Cl. 60-602.000.
- Zhadanov, Semen. Water impeller brush and massage. 4,228,558, Cl. 15-29.000.

Zhestovsky, Gennady P.: See—

Tmenov, Dzantemir N.; Svintsov, Nikolai I.; Shapovalova, Lidia P.; Tabakov, Albert V.; Dvoretzky, Mikhail L.; Vasiliev, Gavril I.; Zhestovsky, Gennady P.; Kandalova, Valentina D.; Korotkevich, Boris S.; Lukashov, Anatoly I.; Lukyanenko, Valery P.; Polataiko, Roman I.; Malov, Evgeny A.; and Shmuk, Jury A., 4,229,604, Cl. 585-445.000.

Ziegenhorn, Joachim; Wahlefeld, August W.; Hagen, Alexander; Gruber, Wolfgang; and Bergmeyer, Hans U., to Boehringer Mannheim GmbH. Process and reagent for the kinetic determination of enzyme substrates. 4,229,527, Cl. 435-11.000.

Zingerman, Bryant N.: See—

Chiu, George T.; Kitcher, James R.; Ozols, Gunars M.; and Zingerman, Bryant N., 4,229,247, Cl. 156-643.000.

Zinno, Oscar; and Tocchella, Antonio, to Costruzioni Meccaniche Industriali Genovesi C.M.I. S.p.A. Device for the rotation of containers. 4,229,034, Cl. 294-81.0SF.

Zoecon Corporation: See—

Anderson, Richard J.; and Henrick, Clive A., 4,229,368, Cl. 260-465.00D.

Henrick, Clive A., 4,229,352, Cl. 260-326.430.

Zollinger, Roger F.: See—

Irick, Dan F.; and Zollinger, Roger F., 4,229,693, Cl. 324-73.0PC.

Zouck, Robert L.: See—

Kahn, Marvin J.; Malchodi, Robert J.; Paine, Joseph P.; Rogers, Milton J.; and Zouck, Robert L., 4,228,737, Cl. 102-3.000.

Zuckert, Bertram, to Vianova Kunstharz, A.G. Process for producing water-emulsifiable air-drying binders, the binders, and emulsions made therefrom. 4,229,331, Cl. 260-20.000.

Zupan, John T.: See—

Heldwein, Carl A.; Jekel, Richard N.; Sampson, Stephen R.; and Zupan, John T., 4,229,737, Cl. 343-6.00R.

Zweigle, Maurice L., to Dow Chemical Company, The. Purification of cellulose ether reaction product. 4,229,572, Cl. 536-89.000.

Zwierszowski, Thomas P.: See—

Smith, Galyn F.; and Zwierszowski, Thomas P., 4,229,420, Cl. 422-310.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF OCTOBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adams, Charles D., to Du Pont de Nemours, E. I., and Company. Process for preparing N-alkoxycarbonyl-N-alkylcyanamide. Re. 30,421, Cl. 560-159.000.

Bayer Aktiengesellschaft: See—

Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; and Horstmann, Harald, Re. 30,420, Cl. 424-273.00P.

Benson-France: See—

Mourier, Jean, Re. 30,422, Cl. 346-112.000.

Caudill, Donald L.: See—

Crankshaw, Michael; Kuckeck, Leo; and Caudill, Donald L., Re. 30,419, Cl. 156-249.000.

Crankshaw, Michael; Kuckeck, Leo; and Caudill, Donald L., to Label-Aire Inc. Apparatus and method for transmitting elements to articles. Re. 30,419, Cl. 156-249.000.

Du Pont de Nemours, E. I., and Company: See—

Adams, Charles D., Re. 30,421, Cl. 560-159.000.

Ford, Eric H., to Lumenition Limited. Opto-electronic ignition systems for internal combustion engines. Re. 30,418, Cl. 123-651.000.

Horstmann, Harald: See—

Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; and Horstmann, Harald, Re. 30,420, Cl. 424-273.00P.

Kuckeck, Leo: See—

Crankshaw, Michael; Kuckeck, Leo; and Caudill, Donald L., Re. 30,419, Cl. 156-249.000.

Label-Aire Inc.: See—

Crankshaw, Michael; Kuckeck, Leo; and Caudill, Donald L., Re. 30,419, Cl. 156-249.000.

Lumenition Limited: See—

Ford, Eric H., Re. 30,418, Cl. 123-651.000.

Meng, Ilse Heide Frieda, heir and legal representative: See—

Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; and Horstmann, Harald, Re. 30,420, Cl. 424-273.00P.

Meng, Karl-August, deceased: See—

Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; and Horstmann, Harald, Re. 30,420, Cl. 424-273.00P.

Moller, Eike; Meng, Karl-August, deceased (by Meng, Ilse Heide Frieda, heir and legal representative); Wehinger, Egbert; and Horstmann, Harald, to Bayer Aktiengesellschaft. Pyrazol-5-ones. Re. 30,420, Cl. 424-273.00P.

Mourier, Jean, to Benson-France. Graphic recorder. Re. 30,422, Cl. 346-112.000.

Wehinger, Egbert: See—

Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; and Horstmann, Harald, Re. 30,420, Cl. 424-273.00P.

LIST OF DESIGN PATENTEEES

Abbott Laboratories: See—

D'Alo, Herbert F., 257,426, Cl. D9-292.000.

American Optical Corporation: See—

Beane, Richard M., 257,435, Cl. D16-65.000.

Beane, Richard M., 257,436, Cl. D16-65.000.

AMP Incorporated: See—

Sotolongo, Thomas J., 257,424, Cl. D8-353.000.

Beall, Lester, Jr., to Trend Line Furniture Corporation. Seat. 257,413, 10-21-80, Cl. D6-62.000.

Beane, Richard M., to American Optical Corporation. Pair of spectacles. 257,435, 10-21-80, Cl. D16-65.000.

Beane, Richard M., to American Optical Corporation. Pair of spectacles. 257,436, 10-21-80, Cl. D16-65.000.

Bell, Allen. Picture display cabinet. 257,415, 10-21-80, Cl. D6-186.000.

Castelli, Renato. Small object organizer for luggage. 257,411, 10-21-80, Cl. D3-39.000.

Caterpillar Tractor Co.: See—

Erlacher, Bernard E., 257,432, Cl. D12-57.000.

Chromcraft Corporation: See—

Wilson, Robert L., 257,412, Cl. D6-31.000.

Conner, James M.; Pizzuti, Donato F.; Reynard, John M.; and Ryan, James M. Photographic camera or similar article. 257,434, 10-21-80, Cl. D16-01.000.

Cooke, Kenneth R.; and Schechter, Alvin H., to GCC Beverages, Inc. Beverage bottle or the like. 257,427, 10-21-80, Cl. D9-126.000.

Cox, Richard D. Cleat. 257,421, 10-21-80, Cl. D8-382.000.

D'Alo, Herbert F., to Abbott Laboratories. Carrying strap, or the like. 257,426, 10-21-80, Cl. D9-292.000.

Doi, Tetsuyuki: See—

Sakamoto, Masakazu; and Doi, Tetsuyuki, 257,445, Cl. D22-25.000.

Epoch Company Ltd.: See—

Matsumoto, Teruo, 257,446, Cl. D21-27.000.

Erlacher, Bernard E., to Caterpillar Tractor Co. Lift truck. 257,432, 10-21-80, Cl. D12-57.000.

Erlanson, Roger S. Four-bladed arrow point. 257,443, 10-21-80, Cl. D22-12.000.

Erlanson, Roger S. Two-bladed arrow point. 257,444, 10-21-80, Cl. D22-12.000.

Follows, James S., to Vanguard Plastics Ltd. Closet fitting for supporting a shelf and a hanger rod. 257,420, 10-21-80, Cl. D8-380.000.

GCC Beverages, Inc.: See—

Cooke, Kenneth R.; and Schechter, Alvin H., 257,427, Cl. D9-126.000.

Greber, Kurt A. Line winder. 257,422, 10-21-80, Cl. D8-359.000.

Hickey, Victor F., to W. R. Grace & Co. Combined winch mount and front end guard. 257,430, 10-21-80, Cl. D12-60.000.

Horii, Koji, to Horii Toshado Kabushiki Kaisha. Duplicator. 257,439, 10-21-80, Cl. D21-127.000.

Horii Toshado Kabushiki Kaisha: See—

Horii, Koji, 257,439, Cl. D21-127.000.

Huff, Arlen L. Trailer. 257,431, 10-21-80, Cl. D12-102.000.

IVAC Corporation: See—

Manno, Joseph J., 257,428, Cl. D10-57.000.

Manno, Joseph J., 257,429, Cl. D10-60.000.

Kesler, Gerry D. Applicator for liquids. 257,447, 10-21-80, Cl. D28-07.000.

King, Donald G., Sr. Booth. 257,416, 10-21-80, Cl. D6-27.000.

Kishbaugh, John E.; and Storholm, Gordon. Jogger's belt. 257,409, 10-21-80, Cl. D2-383.000.

Klotz, Addie L.: See—

Witke, Kurt W.; and Klotz, Addie L., 257,437, Cl. D16-72.000.

Kraleovich, Boris. Golfer's tool. 257,441, 10-21-80, Cl. D21-234.000.

Lerner, Lawrence; and Schmitt, Fred, to Litton Business Systems, Inc. Desk or similar article. 257,417, 10-21-80, Cl. D6-161.000.

Litton Business Systems, Inc.: See—

Lerner, Lawrence; and Schmitt, Fred, 257,417, Cl. D6-161.000.

Manno, Joseph J., to IVAC Corporation. Electronic thermometer. 257,428, 10-21-80, Cl. D10-57.000.

Manno, Joseph J., to IVAC Corporation. Temperature probe. 257,429, 10-21-80, Cl. D10-60.000.

Matsumoto, Teruo, to Epoch Company Ltd. Basketball game board. 257,446, 10-21-80, Cl. D21-27.000.

Nakai, Tadanobu, to Tokiwa Chemical Industries, Limited. Cover for insect traps. 257,442, 10-21-80, Cl. D22-99.000.

Pizzuti, Donato F.: See—

Conner, James M.; Pizzuti, Donato F.; Reynard, John M.; and Ryan, James M., 257,434, Cl. D16-01.000.

Price, John F.: See—

Weinstein, Barnett; and Price, John F., 257,433, Cl. D13-35.000.

Reynard, John M.: See—

Conner, James M.; Pizzuti, Donato F.; Reynard, John M.; and Ryan, James M., 257,434, Cl. D16-01.000.

Rink, Fred M. Carpenter's square pouch. 257,410, 10-21-80, Cl. D2-400.000.

Rosenthal, Sumner. Combined soap holder and soap bars therefor. 257,418, 10-21-80, Cl. D6-23.000.

Ross, Milton I. Integrated circuit carrier. 257,425, 10-21-80, Cl. D9-187.000.

Russell, Robert E. Set of stackable units for coasters or the like. 257,419, 10-21-80, Cl. D7-45.000.

Ryan, James M.: See—

Conner, James M.; Pizzuti, Donato F.; Reynard, John M.; and Ryan, James M., 257,434, Cl. D16-01.000.

Ryobi Limited: See—

Sakamoto, Masakazu; and Doi, Tetsuyuki, 257,445, Cl. D22-25.000.

Sakamoto, Masakazu; and Doi, Tetsuyuki; to Ryobi Limited. Fishing reel. 257,445, 10-21-80, Cl. D22-25.000.

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Schechter, Alvin H.: See—
Cooke, Kenneth R.; and Schechter, Alvin H., 257,427, Cl. D9-126,000.
Schmitt, Fred: See—
Lerner, Lawrence; and Schmitt, Fred, 257,417, Cl. D6-161,000.
Smith, John H., III, to Smith, John H., III, Magazine rack, 257,414, 10-21-80, Cl. D6-184,000.
Sotolongo, Thomas J., to AMP Incorporated, Cover for floor outlet, 257,424, 10-21-80, Cl. D8-353,000.
Storholm, Gordon: See—
Kishbaugh, John E.; and Storholm, Gordon, 257,409, Cl. D2-383,000.
Talty, Francis P. Combined wristband and handcover, 257,408, 10-21-80, Cl. D2-361,000.
Tiedemann, Robert J., to Toro Co., The, Hose cassette, 257,423, 10-21-80, Cl. D8-359,000.
Tokiwa Chemical Industries, Limited: See—
Nakai, Tadanobu, 257,442, Cl. D22-99,000.

Tomy Corporation: See—
Tsuyuki, Akio, 257,438, Cl. D21-59,000.
Toro Co., The: See—
Tiedemann, Robert J., 257,423, Cl. D8-359,000.
Trend Line Furniture Corporation: See—
Beall, Lester, Jr., 257,413, Cl. D6-62,000.
Tsuyuki, Akio, to Tomy Corporation, Holder unit for a drawing toy, 257,438, 10-21-80, Cl. D21-59,000.
Vanguard Plastics Ltd.: See—
Follows, James S., 257,420, Cl. D8-380,000.
W. R. Grace & Co.: See—
Hickey, Victor F., 257,430, Cl. D12-60,000.
Warner, Frank S. Foot exerciser, 257,440, 10-21-80, Cl. D21-191,000.
Weinstein, Barnett; and Price, John F. Modular control panel face, 257,433, 10-21-80, Cl. D13-35,000.
Wilson, Robert L., to Chromcraft Corporation, Chair, 257,412, 10-21-80, Cl. D6-31,000.
Wittke, Kurt W.; and Klotz, Addie L. Eyeglasses, 257,437, 10-21-80, Cl. D16-72,000.

LIST OF PLANT PATENTEEES

Cobia, Barnell L. Plant variety of the Acanthus family, 4,602, 10-21-80, Cl. 88,000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 21, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2			124	4,228,601	CLASS 62			CLASS 83			74 R	4,228,754	533.11	4,228,821		
129	4,228,547		132	4,228,602	23	4,229,195	320	4,228,706	111	4,228,755	CLASS 138					
161 A	4,228,548		CLASS 38		40	4,229,196	387	4,228,707	144 R	4,228,756	46			4,228,822		
239	4,228,549		1 B	4,228,603	79	4,228,660	404.1	4,228,708	150	4,228,757	96 R			4,228,823		
CLASS 3			CLASS 40		89	4,228,661	620	4,228,709	219	4,228,758	119			4,228,824		
I	4,228,550		107	4,228,604	216	4,228,662	794	4,228,710	342	4,228,759	120			4,228,825		
CLASS 4			CLASS 42		507	4,228,663	881	4,228,711	CLASS 116			149	4,228,826			
484	4,228,551		CLASS 44		CLASS 64			CLASS 84			201	4,228,761	CLASS 139			
490	4,228,553		1 R	4,228,605	14	4,228,664	1.01	4,228,712	CLASS 119			93	4,228,827			
CLASS 5			59	4,228,606	CLASS 65			1.16	4,228,713	1	4,228,554	370.2	4,228,828			
498	4,228,555		67	4,228,608	4 B			1.18	4,228,716	2	4,228,762	408	4,228,829			
CLASS 8			CLASS 43		106	4,229,197	1.19	4,228,717	14.08	4,228,763	CLASS 140					
94.17	4,229,175		16	4,228,609	11 W	4,229,198	1.24	4,228,718	98	4,228,764	102			4,228,830		
435	4,229,177		42.41	4,228,610	287	4,229,199	317	4,228,719	103	4,228,765	CLASS 141					
519	4,229,173		42.53	4,228,611	93	4,229,200	322	4,228,720	CLASS 122			27	4,228,831			
533	4,229,172		43.13	4,228,612	CLASS 66			377	4,228,721	4 D			51	4,228,832		
582	4,229,176		131	4,228,613	CLASS 70			411 R	4,228,722	CLASS 123			340	4,228,833		
583	4,229,178		CLASS 44		CLASS 71			CLASS 85			CLASS 142					
588	4,229,174		1 D		67	4,228,666	9 R			52 M			66	4,228,834		
661	4,229,171		CLASS 46		276	4,228,667	26			73 V			8	4,228,835		
CLASS 9			22	4,228,615	363	4,228,668	CLASS 92			90.55			40	4,228,836		
14	4,228,556		228	4,228,616	379 R	4,228,669	159			403			1.5	4,229,231		
CLASS 15			CLASS 48		CLASS 72			CLASS 98			CLASS 125					
21 E	4,228,557		62 R		8	4,229,202	32			11 CD			35	4,229,232		
29	4,228,558		197 R	4,229,185	86	4,229,203	329 R			14			216	4,229,233		
75	4,228,559		CLASS 51		88	4,229,204	433			CLASS 126			347	4,229,234		
CLASS 16			3		92	4,229,205	509			112			400	4,229,235		
90	4,228,560		125.5	4,228,617	93	4,229,206	CLASS 100			121			50	4,229,236		
131	4,228,561		163.1	4,228,619	107	4,229,207	4			122			195	4,229,237		
154	4,228,562		170 TL	4,228,620	111	4,229,208	245			123			214	4,229,238		
CLASS 19			241 VS	4,228,621	CLASS 73			CLASS 101			124			243	4,229,239	
159 R	4,228,563		297	4,229,186	42	4,228,670	227			125			245	4,229,240		
282	4,228,564		CLASS 52		53	4,228,671	382 MV			126			249	4,229,241		
CLASS 23			3		130	4,228,672	CLASS 102			127			269	4,229,242		
230 EP	4,229,181		35	4,228,622	467	4,228,673	3			128			299	4,229,243		
230 R	4,229,179		79.3	4,228,552	CLASS 74			CLASS 103			24.3			358	4,229,244	
293 R	4,229,182		145	4,228,623	10	4,228,674	136			33			382	4,229,245		
CLASS 24			223 R	4,228,624	23	4,228,675	168			200.22			417	4,229,246		
20 EE	4,228,565		125 R	4,228,625	28	4,228,676	168			215			643	4,229,247		
205.16 C	4,228,566		275	4,228,626	64.4	4,228,677	197 D			270			653	4,229,248		
230 AL	4,228,567		295	4,228,627	117.3	4,228,678	248			276			CLASS 159			
230 R	4,228,568		438	4,228,628	119 A	4,228,679	CLASS 104			303 B			4 B	4,229,249		
252 R	4,228,569		460	4,228,629	143	4,228,680	95			304			CLASS 160			
CLASS 29			690	4,228,631	204	4,228,682	CLASS 105			344			CLASS 161			
25.13	4,228,574		CLASS 53		362 SC	4,228,683	136			349 R			183		4,228,841	
33 R	4,228,570		54	4,228,632	432 R	4,228,685	168			419 PG			234		4,228,842	
116 AD	4,228,571		492	4,228,633	626	4,228,686	197 D			660			306		4,228,843	
157.3 R	4,228,572		572	4,228,634	631	4,228,688	248			691			CLASS 162			
CLASS 30			CLASS 55		747	4,228,689	CLASS 106			731			23		4,229,250	
407	4,228,575		14	4,229,187	CLASS 75			1.23			732			28		4,229,251
418	4,228,576		16	4,229,188	122	4,228,690	22			762			65		4,229,252	
423	4,228,577		339	4,228,693	122	4,228,690	47 R			804			358		4,229,253	
430	4,228,578		912	4,229,189	122	4,228,690	51.3			CLASS 132			448		4,229,254	
527.7	4,228,580		110	4,229,190	122	4,228,690	116			CLASS 133			CLASS 164			
578	4,228,581		203	4,229,191	122	4,228,690	59 T			3 F			CLASS 165			
650	4,228,582		318	4,229,192	122	4,228,690	347			3 R			I		4,228,845	
747	4,228,583		338	4,229,193	122	4,228,690	CLASS 107			3 R			2		4,228,846	
863	4,228,584		397	4,229,194	122	4,228,690	CLASS 108			3 R			11 R		4,228,847	
CLASS 33			CLASS 56		853	4,228,699	CLASS 109			58 R			39		4,228,848	
29	4,228,585		10.2	4,228,636	866	4,228,700	CLASS 110			234			110		4,228,849	
41	4,228,586		341	4,228,637	CLASS 76			CLASS 111			CLASS 136			170		4,228,850
CLASS 35			CLASS 57		1 R			CLASS 112			CLASS 137			173		4,228,851
1 H	4,228,588		16	4,228,639	10 R			CLASS 113			10			CLASS 166		
138	4,228,589		208	4,228,640	46			CLASS 114			72			248		4,228,853
174 G	4,228,590		234	4,228,641	101 R			CLASS 115			79			250		4,228,854
174 L	4,228,592		263	4,228,642	101 R			CLASS 116			115			256		4,228,855
178 F	4,228,593		297	4,228,643	134 C			CLASS 117			489			341		4,228,856
189	4,228,594		CLASS 60		175.5			CLASS 118			514.3			411		4,228,857
201	4,228,595		39.09 R	4,228,650	244			CLASS 119			CLASS 138			CLASS 167		
CLASS 36			68 Z	4,228,659	29			CLASS 120			CLASS 139			CLASS 168		
9 B	4,228,596		226 A	4,228,651	36			CLASS 121			CLASS 140			CLASS 169		
10.4	4,228,597		263	4,228,652	86			CLASS 122			CLASS 141			CLASS 170		
29 R	4,228,599		272	4,228,653	57.39			CLASS 123			CLASS 142			CLASS 171		
CLASS 36			508	4,228,654	460			CLASS 124			CLASS 143			CLASS 172		
32 R	4,228,600		518	4,228,656	36 R			CLASS 125			CLASS 144			CLASS 173		
			602	4,228,655				CLASS 126			CLASS 145			CLASS 174		
			641	4,228,657				CLASS 127			CLASS 146			CLASS 175		
			649	4,228,658				CLASS 128			CLASS 147			CLASS 176		

CLASS 169	114	4,229,271	400.7	4,228,933	49.9	4,229,310	CLASS 270	304	4,229,668		
41	4,228,858	128	4,229,272	412	4,228,934	50	4,229,311	354	4,229,669		
57	4,228,859	159.13	4,229,273	CLASS 223	62.54	4,229,312	59	4,228,992	360	4,229,670	
CLASS 172	159.15	4,229,274	111	4,228,935	174.11	4,229,313	CLASS 271	CLASS 308			
26	4,228,860	222	4,229,275	CLASS 224	299	4,229,314	236	4,228,993	9	4,229,054	
CLASS 174	252	4,229,276	42.23	4,228,936	301.1 W	4,229,315	250	4,228,994	26	4,229,055	
47	4,229,613	297 R	CLASS 225	429 B	4,229,316	292	4,228,995	99	4,229,056	161	4,229,057
117 M	4,229,614	4,229,277	96.5	4,228,937	441	4,229,317	315	4,228,996	184 A	4,229,058	
138 F	4,229,616	4,229,278	CLASS 206	476	4,229,318	454	4,229,319	236	4,229,059		
242	4,228,862	4,229,279	9	4,228,938	521	4,229,321	4	4,228,998	198	4,229,671	
344	4,228,863	4,229,280	172	4,228,939	522 R	4,229,322	33 R	4,228,999	CLASS 310		
CLASS 175	339	4,228,896	196	4,228,940	522 R	4,229,323	61	4,229,000	CLASS 312		
CLASS 176	621	4,228,897	107	4,228,941	134.3 FT	4,229,324	96	4,229,001	305	4,229,060	
31	4,229,255	4,228,898	182	4,228,942	CLASS 284	4,228,989	117	4,229,002	CLASS 313		
36 S	4,229,256	4,228,899	198	4,228,944	CLASS 285		1 E	4,229,003	139	4,229,672	
60	4,229,257	11 LE	30	4,228,945	CLASS 286		3 C	4,229,004	225	4,229,673	
76	4,229,258	111	33	4,228,946	CLASS 287		153 S	4,229,005	348	4,229,674	
78	4,229,259	127	39 R	4,228,947	CLASS 288		176 B	4,229,006	402	4,229,675	
82	4,229,260	348	CLASS 289	4,228,948	CLASS 289		261	4,229,007	CLASS 315		
CLASS 177	145	4,228,864	3	4,229,285	CLASS 290		312	4,229,008	3.5	4,229,676	
CLASS 178	92	4,229,617	22	4,229,286	CLASS 291		30	4,229,009	3.6	4,229,677	
CLASS 179	1	4,229,618	167	4,229,287	CLASS 292		72 FM	4,229,010	73	4,229,678	
1 D	4,229,619	212	4,229,288	CLASS 293		22 T	4,229,011	111.7	4,229,679		
2 EB	4,229,620	474	4,229,289	CLASS 294		23.7 M	4,229,012	200 R	4,229,680		
18 E	4,229,621	684	4,229,290	CLASS 295		28.5 A	4,229,013	244	4,229,681		
170 R	4,229,622	23 F	4,229,291	CLASS 296		29.4 R	4,229,014	CLASS 318			
173.3 F	4,229,623	85	4,229,292	CLASS 297		29.6 NR	4,229,015	254	4,229,682		
CLASS 180	132	4,228,866	96.1	4,229,293	CLASS 298		32.6 A	4,229,016	466	4,229,683	
333	4,228,865	159	4,229,294	CLASS 299		33.6 AQ	4,229,017	561	4,229,684		
CLASS 181	210	4,228,867	473	4,229,295	CLASS 300		34.2	4,229,018	561	4,229,685	
247	4,228,868	231	4,229,296	CLASS 301		40 R	4,229,019	CLASS 320			
286	4,228,869	346	4,229,297	CLASS 302		42.16	4,229,020	2	4,229,686		
CLASS 182	673	4,229,298	451	4,229,298	CLASS 303		43.8 R	4,229,021	48	4,229,687	
127	4,228,870	723	4,229,299	CLASS 304		120	4,229,022	48	4,229,688		
111	4,228,871	727	4,229,300	CLASS 305		156	4,229,023	CLASS 322			
194	4,228,872	758	4,229,301	CLASS 306		157	4,229,024	32	4,229,689		
CLASS 187	61	4,228,873	787	4,229,302	CLASS 307		205	4,229,025	24	4,229,690	
CLASS 188	72.1	4,228,874	41	4,229,303	CLASS 308		239 A	4,229,026	CLASS 324		
72.7	4,228,875	79.5 GT	45	4,229,304	CLASS 309		239 B	4,229,027	51	4,229,691	
79.5 GT	4,228,876	126	4,229,305	CLASS 310		239.1	4,229,028	105	4,229,692		
CLASS 190	18 A	4,228,877	75 TC	4,229,306	CLASS 311		243.3	4,229,029	158 MG	4,229,693	
CLASS 192	4	4,228,878	11 C	4,229,307	CLASS 312		326.26	4,229,030	158 MG	4,229,694	
4 A	4,228,879	4,228,880	253	4,229,308	CLASS 313		326.43	4,229,031	207	4,229,695	
43	4,228,881	4,228,882	364	4,229,309	CLASS 314		343.6	4,229,032	244	4,229,696	
111 A	4,228,883	4,228,884	69 G	4,229,310	CLASS 315		347.2	4,229,033	CLASS 328		
135	4,228,884	4,229,311	102 R	4,229,311	CLASS 316		348.52	4,229,034	10 G	4,229,701	
CLASS 194	9 T	4,228,885	153 R	4,229,312	CLASS 317		396 K	4,229,035	63	4,229,702	
CLASS 196	395	4,228,886	224	4,229,313	CLASS 318		397.2	4,229,036	65	4,229,703	
461	4,228,887	4,228,888	49	4,229,314	CLASS 319		40 R	4,229,037	110	4,229,704	
514	4,228,889	4,228,890	121 LJ	4,229,315	CLASS 320		410.6	4,229,038	162	4,229,705	
827	4,228,891	4,228,892	125.1	4,229,316	CLASS 321		454	4,229,039	233	4,229,706	
CLASS 198	61	4,228,893	146.24	4,229,317	CLASS 322		464	4,229,040	CLASS 330		
CLASS 199	144 B	4,229,630	146.24	4,229,318	CLASS 323		465 D	4,229,041	258	4,229,707	
144 B	4,229,631	4,229,632	146.24	4,229,319	CLASS 324		465 F	4,229,042	272	4,229,708	
144 B	4,229,633	4,229,634	146.24	4,229,320	CLASS 325		465 G	4,229,043	277	4,229,709	
CLASS 200	14	4,229,261	146.24	4,229,321	CLASS 326		465 H	4,229,044	CLASS 331		
82 R	29	4,229,262	146.24	4,229,322	CLASS 327		465 I	4,229,045	94.5 C	4,229,710	
144 B	44	4,229,263	146.24	4,229,323	CLASS 328		465 J	4,229,046	94.5 D	4,229,711	
CLASS 201	11	4,229,264	146.24	4,229,324	CLASS 329		465 K	4,229,047	94.5 F	4,229,712	
33	55 R	4,229,265	146.24	4,229,325	CLASS 330		465 L	4,229,048	94.5 G	4,229,713	
55 R	4,229,266	4,229,267	146.24	4,229,326	CLASS 331		465 M	4,229,049	94.5 H	4,229,714	
55 R	4,229,268	4,229,269	146.24	4,229,327	CLASS 332		465 N	4,229,050	94.5 I	4,229,715	
109	4,229,270	4,229,271	146.24	4,229,328	CLASS 333		465 O	4,229,051	94.5 J	4,229,716	
		4,229,272	146.24	4,229,329	CLASS 334		465 P	4,229,052	94.5 K	4,229,717	
		4,229,273	146.24	4,229,330	CLASS 335		465 Q	4,229,053	94.5 L	4,229,718	
		4,229,274	146.24	4,229,331	CLASS 336		465 R	4,229,054	94.5 M	4,229,719	
		4,229,275	146.24	4,229,332	CLASS 337		465 S	4,229,055	94.5 N	4,229,720	
		4,229,276	146.24	4,229,333	CLASS 338		465 T	4,229,056	94.5 O	4,229,721	
		4,229,277	146.24	4,229,334	CLASS 339		465 U	4,229,057	94.5 P	4,229,722	
		4,229,278	146.24	4,229,335	CLASS 340		465 V	4,229,058	94.5 Q	4,229,723	
		4,229,279	146.24	4,229,336	CLASS 341		465 W	4,229,059	94.5 R	4,229,724	
		4,229,280	146.24	4,229,337	CLASS 342		465 X	4,229,060	94.5 S	4,229,725	
		4,229,281	146.24	4,229,338	CLASS 343		465 Y	4,229,061	94.5 T	4,229,726	
		4,229,282	146.24	4,229,339	CLASS 344		465 Z	4,229,062	94.5 U	4,229,727	
		4,229,283	146.24	4,229,340	CLASS 345		465 AA	4,229,063	94.5 V	4,229,728	
		4,229,284	146.24	4,229,341	CLASS 346		465 AB	4,229,064	94.5 W	4,229,729	
		4,229,285	146.24	4,229,342	CLASS 347		465 AC	4,229,065	94.5 X	4,229,730	
		4,229,286	146.24	4,229,343	CLASS 348		465 AD	4,229,066	94.5 Y	4,229,731	
		4,229,287	146.24	4,229,344	CLASS 349		465 AE	4,229,067	94.5 Z	4,229,732	
		4,229,288	146.24	4,229,345	CLASS 350		465 AF	4,229,068	94.5 AA	4,229,733	
		4,229,289	146.24	4,229,346	CLASS 351		465 AG	4,229,069	94.5 AB	4,229,734	
		4,229,290	146.24	4,229,347	CLASS 352		465 AH	4,229,070	94.5 AC	4,229,735	
		4,229,291	146.24	4,229,348	CLASS 353		465 AI	4,229,071	94.5 AD	4,229,736	
		4,229,292	146.24	4,229,349	CLASS 354		465 AJ	4,229,072	94.5 AE	4,229,737	
		4,229,293	146.24	4,229,350	CLASS 355		465 AK	4,229,073	94.5 AF	4,229,738	
		4,229,294	146.24	4,229,351	CLASS 356		465 AL	4,229,074	94.5 AG	4,229,739	
		4,229,295	146.24	4,229,352	CLASS 357		465 AM	4,229,075	94.5 AH	4,229,740	
		4,229,296	146.24	4,229,353	CLASS 358		465 AN	4,229,076	94.5 AI	4,229,741	
		4,229,297	146.24	4,229,354	CLASS 359		465 AO	4,229,077	94.5 AJ	4,229,742	
		4,229,298	146.24	4,229,355	CLASS 360		465 AP	4,229,078	94.5 AK	4,229,743	
		4,229,299	146.24	4,229,356	CLASS 361		465 AQ	4,229,079	94.5 AL	4,229,744	
		4,229,300	146.24	4,229,357	CLASS 362		465 AR	4,229,080	94.5 AM	4,229,745	
		4,229,301	146.24	4,229,358	CLASS 363		465 AS	4,229,081	94.5 AN	4,229,746	
		4,229,302	146.24	4,229,359	CLASS 364		465 AT	4,229,082	94.5 AO	4,229,747	
		4,229,303	146.24	4,229,360	CLASS 365		465 AU	4,229,083	94.5 AP	4,229,748	
		4,229,304	146.24	4,229,361	CLASS 366		465 AV	4,229,084	94.5 AQ	4,229,749	
		4,229,305	146.24	4,229,362	CLASS 367		465 AW	4,229,085	94.5 AR	4,229,750	
		4,229,306	146.24	4,229,363	CLASS 368		465 AX	4,229,086	94.5 AS	4,229,751	
		4,229,307	146.24	4,229,364	CLASS 369		465 AY	4,229,087	94.5 AT	4,229,752	
		4,229,308	146.24	4,229,365	CLASS 370		465 AZ	4,229,088	94.5 AU	4,229,753	
		4,229,309	146.24	4,229,366	CLASS 371		465 BA	4,229,089	94.5 AV	4,229,754	
		4,229,310	146.24	4,229,367	CLASS 372		465 BB	4,229,090	94.5 AW	4,229,755	
		4,229,311	146.24	4,229,368							

CLASSIFICATION OF DESIGNS

D2—	361	257,408	62	257,413		257,423	60	257,429		257,436	234	257,441			
	383	257,409	161	257,417	380	257,420	57	257,432		257,437	12	257,443			
	400	257,410	184	257,414	382	257,421	60	257,430	72	257,437		257,443			
D3—	39	257,411	186	257,415	D9—	126	257,427	102	257,431	27	257,446		257,444		
D6—	23	257,418	D7—	45	257,419	187	257,425	D13—	35	257,433	59	257,438	25	257,445	
	27	257,416	D8—	353	257,424	292	257,426	D16—	01	257,434	127	257,439	■	257,442	
	31	257,412		359	257,422	D10—	57	257,428	65	257,435	191	257,440	D28—	07	257,447

CLASSIFICATION OF PLANTS

P -	88	4,602				
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4	4,229,693	4,228,764	4,229,729	4,229,686	4,229,407	24	4,228,737
6	4,229,730	4,228,765	4,229,745	4,229,717	4,229,420		4,228,753
	4,228,556	4,228,793	4,229,754	4,229,739	4,229,429		4,228,950
	4,228,599	4,228,806	4,229,755	4,229,814	4,229,536		4,229,061
	4,228,868	4,228,813	4,229,765	4,228,789	4,229,541		4,229,651
	4,228,914	4,228,833	4,229,767	4,228,897	4,229,586		4,229,697
	4,229,368	4,228,836	4,229,783	4,228,935	4,229,617		4,229,761
	4,229,528	4,228,857	4,229,791	4,229,048	4,229,624		4,229,766
	4,229,540	4,228,867	4,229,800	4,229,211	4,229,665		4,229,797
	4,229,550	4,228,877	4,229,812	4,229,744	4,229,680	25	4,228,609
	4,229,564	4,228,894	4,229,822	4,229,689	4,229,704		4,228,654
	4,229,660	4,228,902	4,229,824	4,228,559	4,229,718		4,228,686
	4,229,667	4,228,906	4,229,828	4,228,565	4,229,723		4,228,744
	4,229,676	4,228,907	4,229,830	4,228,627	4,229,727		4,228,747
	4,229,706	4,228,918	4,229,006	4,228,634	4,229,734		4,228,748
	4,229,737	4,228,919	4,228,568	4,228,668	4,229,794		4,228,783
	4,229,740	4,228,924	4,228,763	4,228,672	4,229,827		4,228,994
	4,229,746	4,228,928	4,228,964	4,228,691	4,228,552	18	4,229,010
	4,229,778	4,228,999	4,228,979	4,228,702	4,228,580		4,229,016
	4,229,789	4,229,000	4,229,100	4,228,709	4,228,622		4,229,083
8	4,229,808	4,229,066	4,229,279	4,228,713	4,228,637		4,229,090
	4,229,209	4,229,073	4,229,546	4,228,719	4,228,684		4,229,106
	4,229,616	4,229,076	4,229,742	4,228,730	4,228,690		4,229,148
	4,229,634	4,229,114	4,229,749	4,228,781	4,228,693		4,229,161
	4,229,669	4,229,138	4,229,774	4,228,827	4,228,714		4,229,218
	4,229,679	4,229,139	4,229,790	4,228,835	4,228,733		4,229,231
9	4,229,290	4,229,165	4,228,569	4,228,861	4,228,742		4,229,232
	4,229,712	4,229,168	4,228,658	4,228,899	4,228,756		4,229,231
01	4,229,275	4,229,170	4,228,688	4,228,903	4,228,777		4,229,232
	4,229,700	4,229,184	4,228,710	4,228,909	4,228,780		4,229,618
04	4,228,553	4,229,185	4,228,711	4,228,921	4,228,786		4,229,655
	4,228,596	4,229,198	4,228,858	4,228,930	4,228,967		4,229,681
	4,228,762	4,229,202	4,229,065	4,228,945	4,229,019		4,229,694
	4,228,823	4,229,203	4,229,079	4,228,956	4,229,482		4,229,699
	4,228,908	4,229,206	4,229,210	4,228,972	4,229,482		4,229,703
	4,228,978	4,229,216	4,229,497	4,228,983	4,229,712		4,229,708
	4,229,213	4,229,219	4,229,811	4,228,986	4,229,724		4,229,713
	4,229,692	4,229,248	Re. 30,421	4,228,991	4,229,787		4,229,738
	4,229,741	4,229,352	4,229,005	4,229,005	4,229,787	19	4,229,801
05	4,228,728	4,229,423	4,228,585	4,229,038	4,228,571		4,228,571
	4,228,904	4,229,431	4,228,585	4,229,044	4,228,630		4,228,587
06	Re. 30,419	4,229,474	4,228,611	4,229,053	4,228,613		4,228,613
	4,228,555	4,229,475	4,228,650	4,229,155	4,228,879		4,228,616
	4,228,620	4,229,478	4,228,743	4,229,155	4,228,984		4,228,653
	4,228,656	4,229,563	4,228,749	4,229,177	4,229,144		4,228,664
	4,228,657	4,229,621	4,228,758	4,229,178	4,229,592	20	4,228,669
	4,228,671	4,229,623	4,228,800	4,229,189	4,229,189	21	4,228,678
	4,228,682	4,229,629	4,228,841	4,229,194	4,229,032		4,228,675
	4,228,703	4,229,653	4,228,874	4,229,253	4,229,112		4,228,706
	4,228,731	4,229,653	4,228,924	4,229,260	4,228,589	22	4,228,724
	4,228,739	4,229,661	4,228,982	4,229,289	4,228,752		4,228,726
	4,228,746	4,229,664	4,229,158	4,229,319	4,228,797		4,228,738
	4,228,761	4,229,698	4,229,442	4,229,336	4,229,120		4,228,751
		4,229,711	4,229,633	4,229,403	4,228,592	23	4,228,767

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

4,228,771	4,228,860	4,228,717	4,228,804	4,229,124	4,229,271
4,228,772	4,228,955	4,228,846	4,228,820	4,229,146	4,229,272
4,228,775	4,229,118	4,228,848	4,228,839	4,229,162	4,229,284
4,228,788	4,229,691	4,228,873	4,228,887	4,229,193	4,229,320
4,228,842	4,229,045	4,228,885	4,228,891	4,229,199	4,229,321
4,228,880	4,229,046	4,228,905	4,228,915	4,229,200	4,229,338
4,228,883	4,229,156	4,228,916	4,228,990	4,229,201	4,229,369
4,228,898	4,229,222	4,228,954	4,229,013	4,229,215	4,229,374
4,228,934	4,228,602	4,228,959	4,229,024	4,229,230	4,229,380
4,228,947	4,228,832	4,228,997	4,229,025	4,229,259	4,229,385
4,228,958	4,228,630	4,229,054	4,229,028	4,229,274	4,229,390
4,228,962	4,228,689	4,229,067	4,229,059	4,229,280	4,229,405
4,229,017	4,228,759	4,229,070	4,229,127	4,229,386	4,229,408
4,229,018	4,228,760	4,229,086	4,229,196	4,229,455	4,229,485
4,229,116	4,228,782	4,229,095	4,229,229	4,229,456	4,229,490
4,229,128	4,228,796	4,229,101	4,229,246	4,229,462	4,229,530
4,229,131	4,228,805	4,229,136	4,229,265	4,229,492	4,229,594
4,229,132	4,228,809	4,229,150	4,229,268	4,229,504	4,229,596
4,229,244	4,228,913	4,229,188	4,229,277	4,229,505	4,229,605
4,229,245	4,228,929	4,229,233	4,229,298	4,229,509	4,229,606
4,229,256	4,228,937	4,229,247	4,229,335	4,229,601	4,229,607
4,229,267	4,228,952	4,229,299	4,229,364	4,229,612	4,229,638
4,229,293	4,229,014	4,229,329	4,229,396	4,229,627	4,229,752
4,229,296	4,229,031	4,229,370	4,229,416	4,229,630	4,229,769
4,229,362	4,229,033	4,229,371	4,229,427	4,229,658	4,229,803
4,229,377	4,229,096	4,229,372	4,229,467	4,229,733	4,229,810
4,229,387	4,229,166	4,229,378	4,229,547	4,229,775	4,229,817
4,229,410	4,229,192	4,229,414	4,229,566	4,229,806	4,229,182
4,229,457	4,229,234	4,229,452	4,229,567	4,229,831	4,229,223
4,229,493	4,229,269	4,229,494	4,229,575	4,229,302	4,229,687
4,229,554	4,229,270	4,229,499	4,229,587	4,228,641	4,229,709
4,229,572	4,229,282	4,229,508	4,229,735	4,228,889	4,228,548
4,229,603	4,229,283	4,229,512	4,229,747	4,228,996	4,228,685
4,229,672	4,229,287	4,229,513	4,229,748	4,229,039	4,228,745
4,229,724	4,229,304	4,229,516	4,228,723	4,229,241	4,228,750
4,229,728	4,229,310	4,229,537	4,228,729	4,229,404	4,228,795
4,228,619	4,229,314	4,229,584	4,228,845	4,229,615	4,229,060
4,228,810	4,229,325	4,229,611	4,229,149	4,229,743	4,229,078
4,228,818	4,229,337	4,229,625	4,229,263	4,228,584	4,229,081
4,228,834	4,229,340	4,229,648	4,229,281	4,228,673	4,229,197
4,228,923	4,229,383	4,229,652	4,229,588	4,228,817	4,229,389
4,229,056	4,229,424	4,229,656	4,229,598	4,228,917	4,229,425
4,229,064	4,229,432	4,229,663	4,229,602	4,229,154	4,229,473
4,229,072	4,229,441	4,229,666	4,229,609	4,229,437	4,229,659
4,229,113	4,229,463	4,229,678	4,229,610	4,229,480	4,229,688
4,229,376	4,229,472	4,229,732	4,228,618	4,229,488	4,229,753
4,229,400	4,229,487	4,229,762	4,228,784	4,229,779	4,228,631
4,229,544	4,229,489	4,229,777	4,228,998	4,228,570	4,228,822
4,229,562	4,229,502	4,229,784	4,229,160	4,228,574	4,228,975
4,229,614	4,229,517	4,229,807	4,229,756	4,228,701	4,229,109
4,229,649	4,229,518	4,229,809	4,228,549	4,228,704	4,229,252
4,229,725	4,229,520	4,229,816	4,228,561	4,228,718	4,229,264
4,229,792	4,229,534	4,229,818	4,228,576	4,228,725	4,229,317
4,228,610	4,229,555	4,228,583	4,228,588	4,228,734	4,229,322
4,229,035	4,229,559	4,228,635	4,228,593	4,228,790	4,229,826
4,229,401	4,229,565	4,228,640	4,228,604	4,228,798	4,229,262
4,228,578	4,229,569	4,229,040	4,228,663	4,228,826	4,229,780
4,228,626	4,229,599	4,229,133	4,228,674	4,228,831	4,228,595
4,228,853	4,229,608	4,229,187	4,228,676	4,228,855	4,228,884
4,228,936	4,229,620	4,229,286	4,228,770	4,228,953	4,228,946
4,229,111	4,229,626	4,229,426	4,228,785	4,229,002	4,229,129
4,229,204	4,229,673	4,229,654	4,228,819	4,229,004	4,229,151
4,229,294	4,229,715	4,229,726	4,228,851	4,229,011	4,229,254
4,229,309	4,229,759	4,229,785	4,228,886	4,229,012	4,229,357
4,229,430	4,229,815	4,229,796	4,228,893	4,229,027	4,229,358
4,229,531	4,229,823	4,229,813	4,228,895	4,229,107	4,229,359
4,229,532	4,229,815	4,228,550	4,228,925	4,229,108	4,229,415
4,229,578	4,228,558	4,228,554	4,228,985	4,229,121	4,229,643
4,228,586	4,228,573	4,228,575	4,228,993	4,229,153	4,229,782
4,228,708	4,228,597	4,228,614	4,229,001	4,229,164	4,229,799
4,228,865	4,228,649	4,228,629	4,229,051	4,229,179	4,228,606
4,229,122	4,228,659	4,228,692	4,229,099	4,229,191	4,228,607
4,228,741	4,228,716	4,228,698	4,229,115	4,229,243	4,228,608

DESIGN PATENTS

6 : 257,441	257,437	17 : 257,426	28 : 257,412	44 : 257,435
257,443	257,438	257,432	257,409	257,434
257,415	257,444	257,410	257,414	257,436
257,428	257,423	257,431	37 : 257,413	257,408
257,429	257,424	257,433	39 : 257,422	257,419
257,430	257,447	257,421	42 : 257,425	257,440

PLANT PATENTS

12 : 4,602				
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Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee.....	\$35.00
Search fee.....	300.00
Basic fee (first 50 pages).....	190.00
Basic fee supplement (each sheet over 50).....	3.50
Designation fee.....	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

June 17, 1980.

Board of Appeals Decisions Rendered in the Month of September 1980

Affirmed	158
Affirmed in part	30
Reversed	60
Total	248

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,783,202, Re. S.N. 171,849, Filed Jul. 24, 1980, Cl. 179/111 R, SPEAKER SYSTEM AND ELECTROSTATIC

999 OG 24

SPEAKER, Lloyd J. Bobb, Owner of Record: Chester C. Pond, Doylestown, Pa., Attorney or Agent: Kenneth P. Synnestvedt, Ex. Gp.: 235

3,988,446, Re. S.N. 164,448, Filed Jun. 30, 1980, Cl. 424/230, GLYCERIDES WITH ANTI-INFLAMMATORY PROPERTIES, Gerard Yvon Paris, et al., Owner of Record: Abbott Laboratories, North Chicago, Ill., Attorney or Agent: Paul D. Burgauer, et al., Ex. Gp.: 125

4,080,542, Re. S.N. 114,821, Filed Jan. 24, 1980, Cl. 310/159, HIGH DENSITY FLUX MAGNETIC CIRCUIT, Albert L. De Graffenried, Owner of Record: Photocircuits Division of Kollmorgen Corporation, Glen Cove, N.Y., Attorney or Agent: George B. Finnegan, Jr., et al., Ex. Gp.: 212

4,103,056, Re. S.N. 171,756, Filed Jul. 24, 1980, Cl. 428/142, RESILIENT WOOD REPLICATION, Eugene L. Baratto, Owner of Record: Minnesota Mining and Manufacturing Company, St. Paul, Minn., Attorney or Agent: Cruzan Alexander, et al., Ex. Gp.: 164

4,104,675, Re. S.N. 172,058, Filed Jul. 25, 1980, Cl. 357/54, MODERATE FIELD HOLE AND ELECTRON INJECTION FROM ONE INTERFACE OF MIM OR MIS STRUCTURES, Donelli J. Di Maria, Owner of Record: International Business Machine Corporation, Armonk, N.Y., Attorney or Agent: Hansel L. McGee, Ex. Gp.: 254

4,202,181, Re. S.N. 185,536, Filed Aug. 29, 1980, Cl. 62/141, FUEL CONSERVATION CONTROLLER FOR HEATING AND REFRIGERATION APPARATUS, Jeffrey W. Lamb, Owner of Record: J & C Lamb Corporation, Long Island City, N.Y., Attorney or Agent: Myron Cohen, et al., Ex. Gp.: 344

PATENT NOTICES

Certificates of Correction for the Week of Oct. 28, 1980

Re. 80,325	4,191,086	4,208,054	4,213,176
D. 235,115	4,191,420	4,208,132	4,213,333
3,696,935	4,191,638	4,208,295	4,213,345
3,821,248	4,191,772	4,208,321	4,213,412
3,867,026	4,192,041	4,208,369	4,213,477
3,989,049	4,192,318	4,208,676	4,213,499
4,045,381	4,192,576	4,208,827	4,213,737
4,052,529	4,192,754	4,208,966	4,213,866
4,055,808	4,193,097	4,207,033	4,213,985
4,056,691	4,193,139	4,207,132	4,214,011
4,058,996	4,193,149	4,207,195	4,214,015
4,067,889	4,193,527	4,207,363	4,214,332
4,083,735	4,193,555	4,207,693	4,214,417
4,094,359	4,193,921	4,207,739	4,214,461
4,097,412	4,194,550	4,207,773	4,214,492
4,101,407	4,195,864	4,207,895	4,214,726
4,109,728	4,196,386	4,207,956	4,214,738
4,115,404	4,197,225	4,208,241	4,214,766
4,121,692	4,197,651	4,208,252	4,214,779
4,121,715	4,197,838	4,208,631	4,214,908
4,130,231	4,198,105	4,208,666	4,214,916
4,144,027	4,198,159	4,208,769	4,214,931
4,147,078	4,198,235	4,208,836	4,214,950
4,149,129	4,198,410	4,209,047	4,215,017
4,153,116	4,198,737	4,209,223	4,215,057
4,154,946	4,198,845	4,209,426	4,215,212
4,157,793	4,199,367	4,209,493	4,215,317
4,158,859	4,199,491	4,209,540	4,215,594
4,162,197	4,199,588	4,209,601	4,215,741
4,162,849	4,199,679	4,209,602	4,216,041
4,163,407	4,199,821	4,209,788	4,216,090
4,163,843	4,200,054	4,209,809	4,216,236
4,163,900	4,200,858	4,209,996	4,216,318
4,176,828	4,201,126	4,210,054	4,216,320
4,176,717	4,201,163	4,210,056	4,216,335
4,179,600	4,201,240	4,210,138	4,216,394
4,180,647	4,201,271	4,210,281	4,216,583
4,181,346	4,201,378	4,210,514	4,216,679
4,181,602	4,201,569	4,210,708	4,216,684
4,182,662	4,201,760	4,210,784	4,216,771
4,183,127	4,201,830	4,210,757	4,216,829
4,183,620	4,202,542	4,210,818	4,216,985
4,183,922	4,202,823	4,210,982	4,217,061
4,184,196	4,202,914	4,211,089	4,217,076
4,184,376	4,202,951	4,211,292	4,217,142
4,184,924	4,203,444	4,211,294	4,217,255
4,185,132	4,203,875	4,211,395	4,217,291
4,185,275	4,203,935	4,211,472	4,217,304
4,185,508	4,204,002	4,211,595	4,217,327
4,185,564	4,204,153	4,211,741	4,217,412
4,186,593	4,204,226	4,212,045	4,217,459
4,187,115	4,204,728	4,212,123	4,217,572
4,187,511	4,204,922	4,212,184	4,217,739
4,187,543	4,204,969	4,212,196	4,217,747
4,188,284	4,205,166	4,212,310	4,218,211
4,188,459	4,205,284	4,212,385	4,218,267
4,188,466	4,205,327	4,212,427	4,218,316
4,188,736	4,205,420	4,212,464	4,219,358
4,189,753	4,205,458	4,212,962	4,219,495
4,190,053	4,205,516	4,212,978	4,219,595
4,190,522	4,205,655	4,213,082	4,219,876

Disclaimer

3,977,440.—Larry E. Philippi, Mantua, Ohio. COMPOSITE BRAKE HOSE. Patent dated Aug. 31, 1976. Disclaimer filed Aug. 6, 1979, by the assignee, Eaton Corporation.

Hereby enters this disclaimer to claims 2 and 3 of said patent.

Dedications

3,358,527.—Louise Lake, New York, N.Y. and George H. Mortimer, Upper Montclair, N.J. WRIST ATTACHMENT AND MANUAL CONTROL FOR MOTOR VEHICLES. Patent dated Dec. 19, 1967. Dedication filed July 28, 1980, by the assignee, Louise Lake Enterprises, Inc. Hereby dedicates to the Public the entire term of said patent.

3,373,628.—Louise Lake, New York, N.Y. and George H. Mortimer, Montclair, N.J. HAND CONTROL FOR MOTOR VEHICLES. Patent dated Mar. 19, 1968. Dedication filed July 28, 1980, by the assignee, Louise Lake Enterprises, Inc. Hereby dedicates to the Public the entire term of said patent.

3,472,094.—Louise Lake, Palo Alto, Calif. and George H. Mortimer, Montclair, N.J. HAND CONTROL FOR MOTOR VEHICLES. Patent dated Oct. 14, 1969. Dedication filed July 28, 1980, by the assignee, Louise Lake Enterprises, Inc. Hereby dedicates to the Public the entire term of said patent.

4,118,044.—Harry Celms, Battle Creek, Mich. GATE MECHANISM FOR CART. Patent dated Oct. 3, 1978. Dedication filed Aug. 18, 1980, by the assignee, Roblin Industries, Inc. Hereby dedicates to the Public the entire term of said patent.

National Technical Information Service

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administration
Service Division, Federal Bldg., Science and Education
Administration, Hyattsville, Md. 20782

Patent application 6-085,180, An Electronic Sensor for Vapor-Pressure Deficit of the Air. Filed Oct. 15, 1979.

999 OG 25

Patent application 6-132,584. Partial Argentation Resin Chromatography for Separation of Polyunsaturated Fatty Esters. Filed Mar. 21, 1980.

Patent application 6-132,596. Tool for Welding Plastics. Filed Mar. 21, 1980.

Patent application 6-134,008. Control of Parasitic Ticks. Filed Mar. 26, 1980.

Patent application 6-139,885. Preferential Epoxidation of Allyl Fatty Esters. Filed Apr. 11, 1980.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-014,179. Process for Preparation of Potassium-38. Filed Feb. 22, 1979.

Patent application 6-026,505. Metal-Doped Organic Foam and Method of Making Same. Filed Apr. 3, 1979.

Patent application 6-026,509. Instantaneous Radiolodination of Rose Bengal at Room Temperature and a Cold-Kit Therefor. Filed Apr. 3, 1979.

Patent 4,164,146. Apparatus and Method for Monitoring the Presence of a Conductive Media. Filed Nov. 2, 1976. Patented Aug. 14, 1979. Not available NTIS.

Patent 4,176,285. Electrical Pulse Generator. Filed Jan. 11, 1978. Patented Nov. 27, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent 4,206,160. Mechanical Device to Produce a Finely Dispersed Aerosol. Filed Sept. 25, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,202,890. 4-Carboxy-Phthalate (1,2-Diaminocyclohexane)-Platinum(II) and Alkali Metal Salts Thereof With Cyclophosphamide and Hydroxyurea in Alleviating L1210 Murine Leukemia. Filed Dec. 22, 1978. Patented May 13, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-134,833. Portable Personnel Platform and Ladder. Filed Mar. 8, 1980.

Patent application 6-137,087. A Linearized Multiplier Device for Triple Product Convolvers. Filed Mar. 4, 1980.

Patent application 6-142,281. Personnel Chain Climber. Filed Apr. 21, 1980.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent application 6-145,282. Constant Magnification Optical Tracking System. Filed Apr. 30, 1980.

Patent application 6-147,700. Adjustable High Emittance Gap Filter. Filed May 7, 1980.

Patent 4,195,512. Coal-Shale Interface Detector. Filed Nov. 3, 1977. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,840. Method and Apparatus for Holding Two Separate Metal Pieces Together for Welding. Filed Apr. 6, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,530. Passive Intrusion Detection System. Filed Feb. 9, 1977. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,198,209. Process for the Leaching of AP From Propellant. Filed Sept. 29, 1978. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,198,232. Preparation of Monotectic Alloys Having a Controlled Microstructure by Directional Solidification Under Dopant-Induced Interface Breakdown. Filed Dec. 29, 1978. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,198,788. Method of Forming a Sharp Edge on an Optical Device. Filed July 28, 1978. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,198,988. Pulse Transducer With Artifact Signal Attenuator. Filed July 26, 1978. Patented Apr. 22, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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ing, the collections are organized in patent number sequence.

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State	Name of Library	Telephone Contact
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 6, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-25-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins with Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director..... Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-27-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	4-16-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-13-79
RECEPTACLES, SANITATION AND CLEANING, WINDING AND MEASURING, GROUP 240—A. L. SMITH, Director..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-78
DESIGNS, GROUP 260—Vacant..... Industrial Arts; Household, Personal and Fine Arts.	10-10-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. E. GRAY, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-4-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Information Dissemination.	7-30-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-24-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during September 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 85rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,102,370 to 3,105,236, inclusive
Plant Patents..... Numbers 2,277 to 2,286, inclusive

REISSUES

OCTOBER 28, 1980

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,423

VARIABLE SPEED WINCH

Albert J. Hutton, Baulkham Hills; Allen W. Hutton, Burwood, and Richard J. Dellit, Granville, all of Australia, assignors to Barlow Marine Limited, Australia

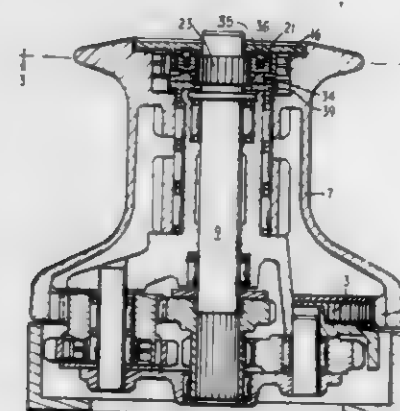
Original No. 3,962,935, dated Jun. 15, 1976, Ser. No. 522,123, Nov. 8, 1974. Application for reissue Jun. 13, 1978, Ser. No. 915,008

Claims priority, application Australia, Nov. 12, 1973, 5622/73

Int. Cl.² F16H 5/52; B66D 1/30

U.S. Cl. 254—346

4 Claims



1. A winch comprising, in combination, a unidirectional drum rotatable in one sense of rotation only initially by the [clockwise motion] rotation of a handle in a [clockwise] first sense [only], and a gear selector comprising a control [plate] member rotatable with respect to said drum into [an extreme clockwise] a first position wherein a first gear ratio is selected [whereby subsequent clockwise] in which rotation of said handle in said first sense gives the drum a [clockwise] rotational speed equal to that of the handle, and wherein subsequent [anti-clockwise] rotation of said handle in a second sense opposite to said first sense causes said drum to continue [clockwise] rotation [at] in said one sense via an intermediate [higher speed with reference to the handle, up to a point where said] gear ratio selected by this reversal of the sense of

rotation of the handle to obtain rotation of the handle in said second sense, said rotation of the handle in the second sense enabling said control [plate is] member to be urged into [an extreme anti-clockwise] a second position with respect to said drum to select a second gear ratio for rotation of said handle in the first sense, whereupon after selection of said second gear ratio the reversal of the handle [and] with subsequent [clockwise] rotation thereof in said first sense causes continued [clockwise] rotation of said drum [at a still higher speed with reference to said handle] in said one sense via said second gear ratio and wherein a subsequent reversal of said handle [and subsequent] with further [anti-clockwise] rotation [thereof] in said second sense causes said drum to revert to rotation via said intermediate [higher speed] gear ratio whilst continuing to rotate [clockwise] in said one sense, said gear selector further comprises ratchet means [splined to a shaft rotatable by said handle,] whereby [clockwise motion] rotation of said handle [operates a gear train] in said first sense directly drives said drum in said first gear ratio, via said shaft but whereby [anti-clockwise motion] rotation of said handle [operates said gear train] in said second sense drives said drum in said [second] intermediate gear ratio via [said shaft] a gear train;

said ratchet means being slidable [axially] with respect to said shaft under the influence of cam means responsive to [the relative angular displacement] rotation of said handle [with respect to said control plate] in said second sense.

said control [plate] member has [recesses] first entrainment means engageable by [respective spring loaded balls] second entrainment means supported by [said] ratchet means, [and said balls are] one of said first and second entrainment means is adapted to [enter and lock within said recesses] entrain the other of said first and second entrainment means in response to [an anti-clockwise] rotation of said handle in said second sense sufficient to cause [axial] sliding of said ratchet means [with respect to said shaft] under the influence of said cam means whereby said control [plate] member is urged [anti-clockwise until] towards said second position in which said gear train assumes said second gear ratio.

PLANT PATENTS

GRANTED OCTOBER 28, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,603

LILY NAMED CRIMSON SUN

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Jul. 30, 1979, Ser. No. 62,412

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by the color, form and stacked-head arrangement of its red-orange flowers; by its short and stocky growth habit and its abundant foliage; and by its rapid asexual reproductive rate and its ability for consistently high quality of forcing as a pot plant.

4,605

LILY PLANT NAMED STAR DUSTER

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Jul. 30, 1979, Ser. No. 62,315

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct variety of Asiatic hybrid lily, substantially as herein shown and described, characterized by the form and color of its bright orange-red and speckled flowers, by its relatively short and stocky growth habit, and by its extremely quick and consistently high quality of forcing for cut flower and pot plant production.

4,604

LILY NAMED STAR FIRE

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Jul. 30, 1979, Ser. No. 62,413

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. The new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by the color, form and arrangement of its brilliant red flowers and by its short and stocky growth habit and abundant foliage.

4,606

LILY PLANT NAMED GOLD DUST

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Jul. 30, 1979, Ser. No. 62,316

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct variety of Asiatic hybrid lily plant, substantially as herein shown and described, characterized by generally yellow-orange appearing blooms of medium size having golden yellow stripes extending the length of each petal, on each side of a central furrow, over an orange-red background.

PATENTS

GRANTED OCT. 28, 1980

ERRATA

For CLASS	See PATENT NO.
052-588	4,229,844
005-127	4,229,845
368-282	4,229,936
474-082	4,229,987
474-028	4,229,988
474-012	4,229,989
175-297	4,230,197
430-159	4,230,492
152-209 R	4,230,512
156-315	4,230,613
568-471	4,230,639
568-477	4,230,640
568-454	4,230,641
570-193	4,230,642
525-253	4,230,643
428-307	4,230,808
526-224	4,230,810
526-320	4,230,812
526-329	4,230,813
526-333	4,230,814
526-335	4,230,815
528-012	4,230,816
528-206	4,230,817
528-272	4,230,818
528-483	4,230,819
036-001	4,230,888
370-024	4,230,903
370-071	4,230,910
370-084	4,230,911
375-004	4,230,989
455-067	4,230,990
343-005 NQ	4,231,005

PATENTS

GRANTED OCTOBER 28, 1980

GENERAL AND MECHANICAL

4,229,832

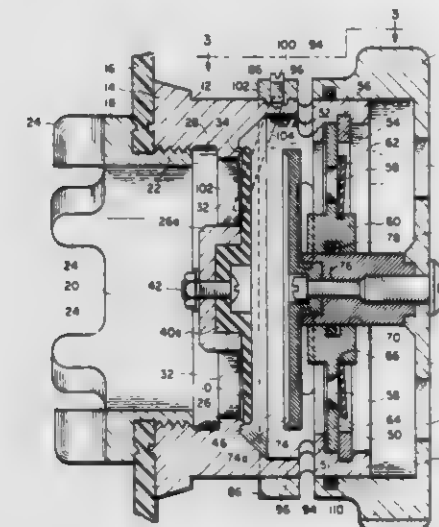
DIVER'S SUIT EXCESS GAS EXHAUST VALVE
Charles H. Dickson, Sr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1979, Ser. No. 41,037

Int. Cl.³ A62B 17/00

U.S. Cl. 2—2.1 R

12 Claims



1. A valve for controlling venting of air from a diver's suit of the type wherein a thermally insulating layer of air is maintained in the body portion of the suit, said valve comprising:
a substantially hollow valve body having defined therein a first cavity in communication with said layer of air in said suit;

a second cavity defined in said valve body;

a first interior wall extending transversely of said valve body between said first and second cavities, said wall having first means for flow of air from said first cavity to said second cavity;

a resiliently flexible first check valve element, cooperative with said first passage means, for permitting fluid flow from said first cavity to said second cavity and for preventing fluid flow from said second cavity to said first cavity;

a second interior wall extending transversely of said valve body in spaced relation to said first interior wall with said second cavity therebetween, said second interior wall having second passage means for flow of air from said second cavity;

a second check valve element, cooperative with said second passage means, for permitting fluid flow from said second cavity through said second passage means to an ambient fluid zone and for preventing fluid flow into said second cavity through said second passage means; and

a sealing plate disposed between said first and second interior walls and movable into and out of confining relation with said first check valve element, whereby when in said confining relation said first check valve seals said first passage means against fluid flow therethrough into or out of said first cavity.

9. A diver's suit exhaust valve comprising:

a valve body;

an inlet cavity defined in said valve body and adapted to communicate with the interior of a diver's suit;

first and second valve elements housed in spaced, series relation in said body;

a first outlet cavity defined in said valve body between said first and second check valve elements;

first outlet port means defined in said body for communication between said first outlet cavity and the exterior of said body;

a knob member mounted on said valve body for movement

between at least first and second operative positions and through an intermediate position, said knob member defining with said valve body a second outlet cavity;

second outlet port means defined in said knob member for communication between said second outlet cavity and the exterior of said valve;

third outlet port means defined in said knob member and movable into and out of registration with said first outlet port means in accordance with said first and second operative positions of said knob member; and

a check valve sealing member disposed in said first outlet cavity and movable into and out of confining relation with said first check valve element in response to movement of said knob member between said first and second operative positions.

4,229,833

WARM-UP SLEEVE

William J. Cox, Rte. 1, and James A. Hagale, Box 394, both of Ozark, Mo.

Filed Aug. 16, 1978, Ser. No. 934,181

Int. Cl.² A41D 13/08

U.S. Cl. 2—16

8 Claims



1. A warm-up sleeve, adapted to be worn on one arm of a wearer, said warm-up sleeve comprising:

a body portion arranged to cover at least a portion of said arm, said body portion being of a generally cylindrical shape and having a wrist opening at the lower edge thereof;

a peripherally stretchable cuff portion attached to said body portion lower edge for snugly engaging the lower edge of said body portion against the wrist or lower arm of said wearer;

a shoulder covering portion arranged to cover at least a portion of the shoulder corresponding with said arm, said shoulder covering portion being defined by an outer edge and first and second lateral edges, said shoulder covering portion being integrally formed with said body portion to define, in conjunction with a shirred underarm edge of said body portion, an upper arm opening;

elastic means attached to said underarm edge for holding the shoulder covering portion tightly against the wearer; and a resilient holding strap having one end attached to said first lateral edge and the other end attached to said second lateral edge adapted to loop under and to rest against the underarm area of the other arm of the wearer;

thereby providing a warm-up sleeve for the wearer's arm which may be securely retained in place and which may conform to and tightly engage the wearer's body in the vicinity of his shoulder and wrist.

4,229,834

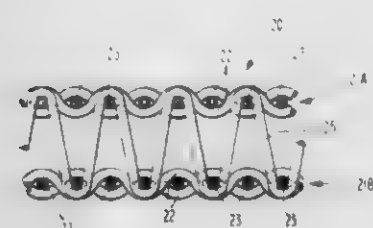
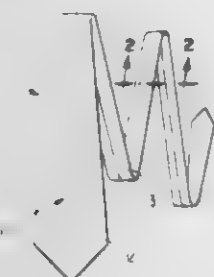
NECKWEAR CONSTRUCTION

Norman R. Alexander, Chappaqua, N.Y., and Harold F. Sutton, Albemarle, N.C., assignors to Ack-Ti-Lining, Inc., New York, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,376
Int. Cl.³ A41D 25/06

U.S. Cl. 2-146

5 Claims



1. Neckwear having a light-weight single interwoven double cloth fabric which has excellent resiliency and improved hand, stretching, and knotting characteristics, comprising:
a fabric casing folded longitudinally;
a single interwoven double cloth fabric within said fabric casing having two superimposed layers of plain woven fabric and a binder thread alternatively engaging each of said two superimposed layers.

4,229,835

PADDED UNDERGARMENT FOR PHYSICAL FITNESS

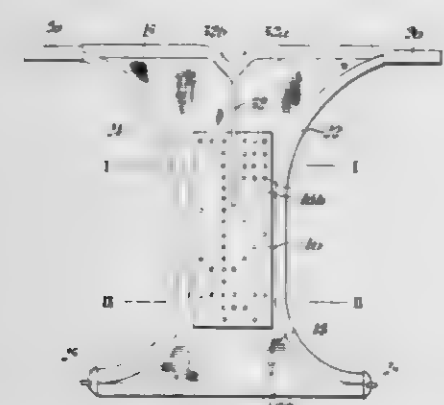
Joy D. Shaw, 3444 Spring Bluffs Pl., Lauderhill, Fla. 33319

Filed Nov. 17, 1978, Ser. No. 961,664

Int. Cl.² A41B 9/00

U.S. Cl. 2-406

1 Claim



1. A lightweight undergarment for providing both padded protection in the crotch area of the wearer and lifting support of the buttocks, comprising:

a stretchable, flexible resilient panel consisting of a fabric or fabric like material, said panel having a longitudinal axis and a first end to be disposed in the front waist area of the wearer and a second end representing the rear waist area of the wearer, said panel having a lateral mid portion substantially narrower than the lateral ends, said lateral mid portion being sized to be received in the crotch area of the wearer;

first and second elastic bands being connected to the sides of said panel, said first and second elastic bands forming first and second leg-encompassing straps;

a third elastic band connected along the edge of the front panel end forming a front elastic waist band;

a fourth elastic band connected along the rear end portion of

said panel, said rearly fastened elastic band including a centrally disposed Y-shaped elastic band, a portion of which is connected along the longitudinal axis from the rear waist band toward the central portion of said panel terminating in the crotch area of the panel;

a resilient pad disposed substantially in the crotch area of the wearer connected to said panel; and

a plurality of fasteners connected at the ends of said first, second, third and fourth elastic bands for fastening the front waist band to the rear waist band, said resilient pad being disposed along the longitudinal axis of the panel and overlapping the crotch and buttocks area of the wearer.

4,229,836

FACE SHIELD/HELMET AIRFLOW NOISE REDUCER

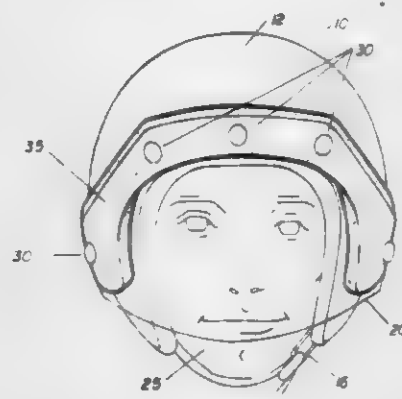
William Stinger, 6906 Virginia Ave., St. Louis, Mo. 63111

Filed Mar. 7, 1979, Ser. No. 18,459

Int. Cl.³ A42B 3/00; A61F 9/04; A42B 1/24

U.S. Cl. 2-422

4 Claims



1. A device constructed of flexible, compressible material, that can be affixed between a standard crash helmet, as worn by motorcycle riders, and a standard transparent face shield that is fixedly attached thereto by releasable fasteners, said device having holes formed therein through which the releasable fasteners extend thus enabling the device to be readily removable from said helmet and said face shield upon separation of said fasteners whereby said device stops wind flow between the top and sides of the face shield and where it attaches to the helmet, and so greatly reduces noise and irritating wind turbulence.

4,229,837

SAFETY GOGGLES

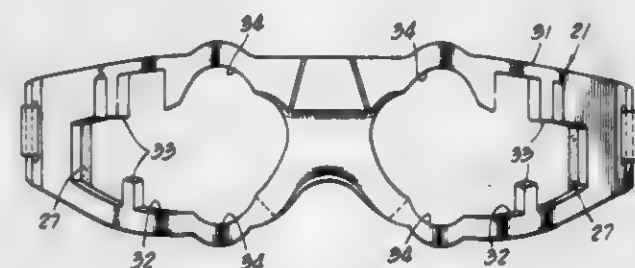
Ray L. Solari, 1670 Cordova St., Los Angeles, Calif. 90007

Filed Apr. 25, 1977, Ser. No. 790,479

Int. Cl.² A61F 9/02

U.S. Cl. 2-431

3 Claims



1. Safety goggles for a sport using a ball, the goggles having a frame adapted for fitting receipt onto the face of a wearer and closely spaced therefrom, and including upper and lower frame parts defining an elongated generally horizontally extending opening opposite each eye of a vertical dimension at least equal to that of the eye pupil throughout its horizontal length, comprising:

each horizontally extending opening defined by the frame parts including a vertical extension directly in front of each eye, said horizontally extending openings and vertical extensions thereof being free of centrally located obstructions; and

the upper and lower frame parts having a plurality of mutually spaced members integral with said frame parts and extending a limited extent into each horizontally extending opening outwardly of the vertical extension, said spaced members having their ends lying within the first and second openings spaced from one another;

each said horizontally extending opening and vertical extension thereof presenting a maximum circular open space less than the circular dimensions of said game ball.

4,229,838

VASCULAR PROSTHESIS HAVING A COMPOSITE STRUCTURE

Hiroshi Mano, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

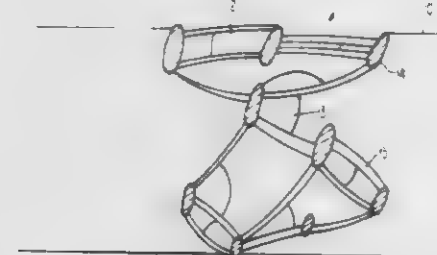
Filed Jul. 3, 1978, Ser. No. 921,680

Claims priority, application Japan, Jul. 1, 1977, 52/79385

Int. Cl.³ A61F 1/24

U.S. Cl. 3-1.4

8 Claims



1. A vascular prosthesis having a composite structure of a porous tubing of polytetrafluoroethylene with polyethyleneimine in the pores of the tubing, said polyethyleneimine being water-insolubilized with the amino groups quaternized and having heparin ionically bound thereto.

4,229,839

JOINT PROSTHESIS

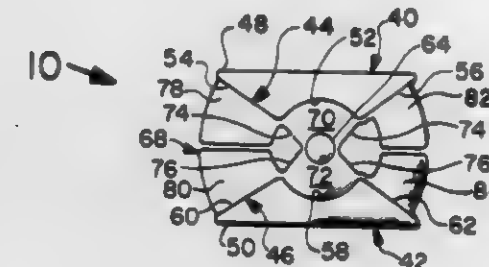
Leonard J. Schwemmer, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Nov. 16, 1977, Ser. No. 852,183

Int. Cl.³ A61F 1/03, 1/04, 1/08

U.S. Cl. 3-1.91

39 Claims



37. A prosthesis for replacing a skeletal joint in a human body comprising a first joint component adapted for connection with a first element, a second joint component adapted for connection with a second element, at least one of said first and second elements being a portion of a human body, a pivot component disposed between said first and second joint components, means for resiliently connecting said pivot component to said first and second joint components, said resilient means including a first body of elastomeric material disposed between and attached to said first joint component and said pivot component, a second body of elastomeric material disposed between and attached to said second joint component and said

pivot component, said first and second bodies of elastomeric material being spaced apart and suspending said pivot component between said first and second joint components to permit motion of said first and second joint components relative to each other about said pivot component in simulating the operation of a skeletal joint in a human body.

4,229,840

TOTAL TRISPHERICAL WRIST PROSTHESIS

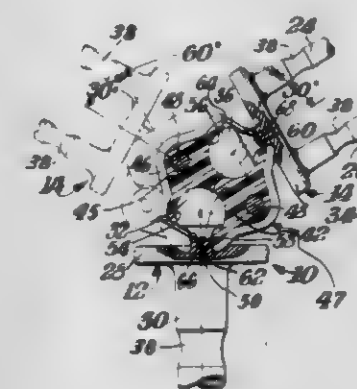
Anthony G. Gristina, Winston-Salem, N.C., assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 1, 1978, Ser. No. 929,915

Int. Cl.³ A61F 1/03

U.S. Cl. 3-1.91

9 Claims



1. A total trispherical prosthetic wrist device comprising a ball-headed radial component of a biocompatible metal, a radial stem on the ball-headed radial component for affixing it to the intramedullary canal of the distal radius, a radial flange separating the ball head of the radial component from its stem, a ball-headed metacarpel component of a biocompatible metal, a pair of metacarpel stems on the metacarpel component for affixing it to a pair of metacarpel bones of the hand, a metacarpel flange means separating the metacarpel ball from the metacarpel stems, a polygonal ball-capturing member having a pair of spherical sockets disposed substantially 180° from each other, the ball-capturing member comprising a pair of biocompatible cutout plastic hemipolygonal blocks sharing the sockets between them, clamping means joining the hemipolygonal blocks together whereby the ball heads are rotatably trapped in the sockets to provide a substantially stable wrist prosthesis with substantially wide range of movement, the clamping means comprising a pair of metal elongated rectangular shells having longer sides and shorter ends with the ball heads extending through the shorter ends, the clamping means substantially surrounding the hemipolygonal blocks whereby the shells are spacially compatible within the wrist area and provide a range of motion in excess of normal, and fastening means joining the metal shells together.

4,229,841

WRIST PROSTHESIS

Youngil Youm, Beltsville, Md., and Adrian E. Flatt, Iowa City, Iowa, assignors to The University of Iowa Research Foundation, Iowa City, Iowa

Filed Nov. 17, 1978, Ser. No. 961,821

Int. Cl.³ A61F 1/24

U.S. Cl. 3-1.91

14 Claims

9. A wrist prosthesis comprising,
a proximal component, a distal component, and a joint member,
connector means for connecting the proximal component to the radius of the forearm,
a first pivot pin defining a first generally transverse pivot axis connected to said proximal component and said joint member to provide pivotal movement of the joint member about said first generally transverse pivot axis,

connector means for connecting the distal component to at least one of the metacarpal bones,
a second pivot pin defining a second generally transverse pivot axis connected to said distal component and said joint member to provide pivotal movement of said distal component about said second generally transverse pivot



axis which is generally perpendicular to said first pivot axis,
said pivot pins being oriented to provide radial-ulnar movement and flexion-extension hand movement and to prevent axial rotation of the distal component relative to the proximal component.

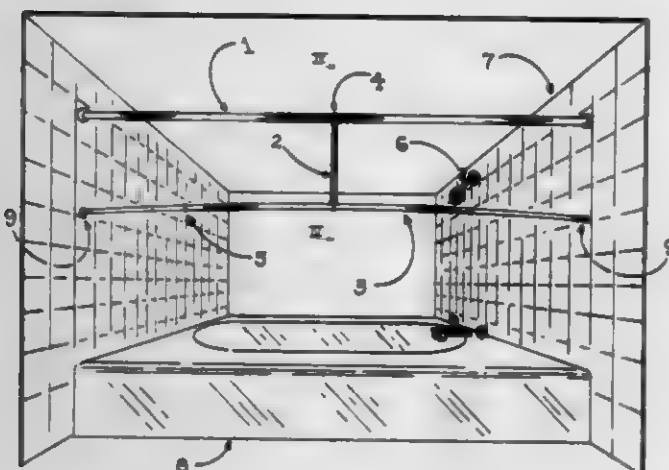
4,229,842

SHOWER CURTAIN CONVERTIBLE SUPPORT ADAPTER

Louis Gilmore, 245 E. 80th St., Suite 1C, New York, N.Y. 10021
Filed Apr. 20, 1979, Ser. No. 31,494
Int. Cl.³ A47K 3/22

U.S. Cl. 4-610

12 Claims



1. A shower curtain adapter for expanding the shower space in a shower enclosure formed by first and second opposite facing vertical walls, a third vertical wall extending between said first and second walls and a shower curtain, said shower curtain being vertically hung from a straight standard curtain rod extending in a substantially horizontal plane between said first and second walls, said adapter comprising an adapter rod having a length greater than the distance between said first and second walls, said adapter rod being of flexible material so that when said adapter rod is mounted between said first and second walls it will flex as a result of the pressure exerted between said first and second walls and will bow outwardly away from said third wall to engage said shower curtain, coupling means pivotally connected at one end thereof to said adapter rod and pivotally connected at the other end thereof to said standard curtain rod thereby preventing downward movement of said adapter rod when said adapter rod is pressure mounted between said first and second walls and said coupling means is connected to said standard curtain rod, whereby said adapter

rod when mounted between said first and second walls will be positioned in a plane below and substantially parallel to said horizontal plane of said standard curtain rod and when unmounted can be hung by said coupling means in a storage position.

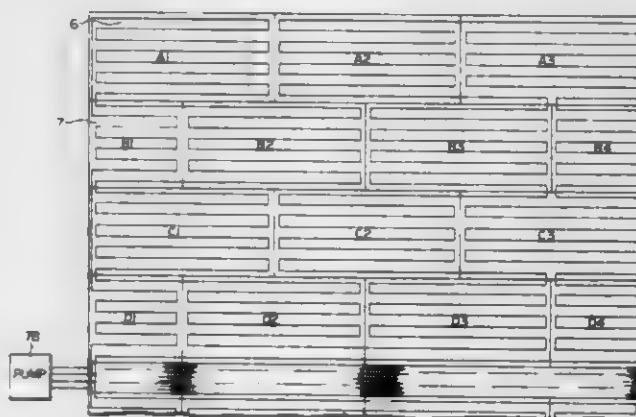
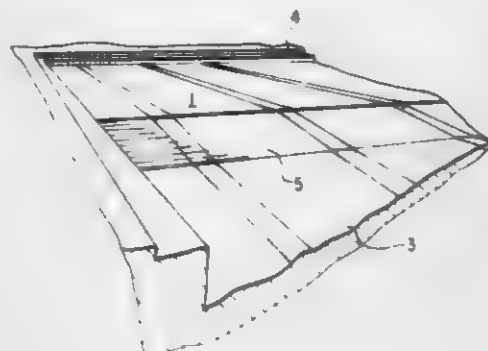
4,229,843

POOL FLOOR

Germain Belanger, St. Germain de Grantham, Canada, assignor to Bombardier Limited, Quebec, Canada
Filed Jul. 18, 1978, Ser. No. 925,753
Int. Cl.³ E04H 3/16, 3/18

U.S. Cl. 4-495

15 Claims



1. An adjustable flooring structure for a swimming pool comprising:

a planar platform having a flat upper side and a lower side; a plurality of legs each engageable in an operative position with said platform to extend downwardly therefrom and to support said platform in a horizontal disposition at a predetermined height above the floor of a swimming pool; buoyancy adjusting means mounted on said platform and selectively operable to cause said platform to float to the surface of the water in the pool or to sink towards the floor of the pool;

said legs being accessible from the upper side of said platform to effect movement thereof to and from said operative position, said platform being capable of resting with its lower side in contact with the pool floor when said legs are removed from the operative position and said buoyancy adjusting means operated to cause the platform to sink.

4,229,844

SWIMMING POOL COPING

James T. Cribben, Mechanicsburg, and Richard A. Feaser, Mt. Holly Springs, both of Pa., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 30, 1979, Ser. No. 34,862

Int. Cl.³ E04H 3/18

U.S. Cl. 52-588

9 Claims

1. A swimming pool coping comprising an edge piece and a cover piece; said edge piece including a base plate for attach-

ment to a wall of a swimming pool, an intermediate member extending upwardly from the base plate for engaging a corresponding central member of the cover piece, a channel extending from one end of the base plate for receiving the edge of a swimming pool liner, a curved outer end extending from the upper wall of the channel and mating means extending from the upper part of the curved outer end for pivotally engaging mating means on the cover piece; said cover piece including a mating means on said cover piece for pivotally engaging the edge piece mating means, a member extending downwardly from the cover piece mating means for resting on the edge piece, a vertical member extending downwardly from the other end of the cover piece for resting on one edge of the base

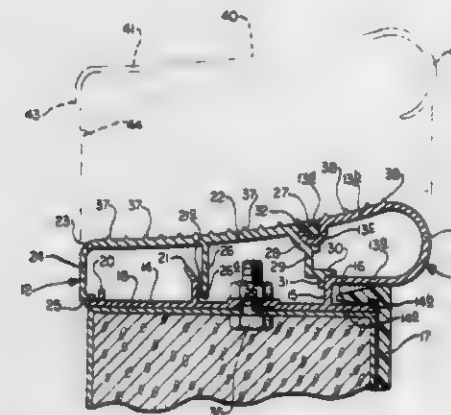


plate and a central member extending downwardly from the cover piece between the mating means and the vertical member for engaging the intermediate member on the base plate of the edge piece; wherein the mating means on the edge piece includes a downwardly extending curved member which forms a curved channel for receiving a beaded edge on one end of the cover piece and the mating means on the cover piece comprises a beaded edge for engaging the curved channel of the mating means of the edge piece and a curved member extending downwardly and outwardly from the mating means of the cover piece below the beaded edge which forms a channel with the beaded edge for receiving the downwardly extending curved member of the mating means on the edge piece.

4,229,845

COLLAPSIBLE HAMMOCK SUPPORT

Graciela V. O. de Cuadros, 9 de Octubre 836 (4to Piso), Guayaquil, Ecuador

Filed Sep. 7, 1978, Ser. No. 940,288

Int. Cl.² A45F 1/00

U.S. Cl. 5-127

9 Claims



1. A collapsible hammock support comprising:

(a) first and second ground-engaging support members for supporting a hammock at either end, said first and second ground-engaging support members each comprising an A-shaped structure comprising first and second legs which are pivotally connected together and a transverse bracing member which is pivotally connected to said first

leg and which is detachably connected to said second leg, whereby said transverse bracing member can be detached from said second leg and said second leg can be pivoted into alignment with said first leg in order to collapse each of said first and second ground-engaging support members from a first, or use, position to a second, or travel, position;

(b) three pairs of longitudinal bracing members, each longitudinal bracing member in each pair being connected to the other longitudinal bracing member in that pair by first means normally permitting relative pivotal motion between the two bracing members but permitting the user to selectively rigidify the two bracing members into a single rigid element, one pair of longitudinal bracing members being detachably connected to said A-shaped structures at the top of the A and at the bottom of each leg, whereby said longitudinal bracing member can be detached from said first and second ground-engaging support members and each pair of longitudinal bracing members can be pivoted into parallel, or travel, position; and

(c) second and third means for detachably connecting one end of a hammock to adjacent side of said first and second ground-engaging support member, respectively.

4,229,846

WATER-SAVING FLOAT-TO-INLET VALVE ADAPTER DEVICE

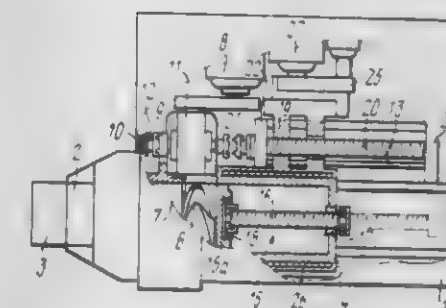
Edgar English, Jr., 45125 Redwood Ave., Lancaster, Calif. 93534

Filed Aug. 27, 1979, Ser. No. 69,832

Int. Cl.³ E03D 1/35

U.S. Cl. 4-396

12 Claims



1. A water-saving float-to-inlet valve adapter device for modifying the refilling level of a toilet flush tank of a type which includes a source of water under pressure and an inlet valve provided with an operating member for connecting same to an interior chamber within a toilet flush tank and which also includes a buoyant float member adapted to be connected to the inlet valve for opening same whenever the float member drops below a predetermined level and for closing same whenever the float member rises to at least substantially the same predetermined level, comprising: a replacement adapter having a first end adapted to be attached to an inlet valve opening and closing operating member and having a downwardly displaced second end remote from said first end and adapted to be attached to a buoyant toilet tank float member at a level substantially below that of the normal attachment location of such a toilet tank buoyant float member, whereby to effectively relatively downwardly displace the normal vertical position of such a hollow buoyant float member which corresponds to the closing of such an inlet valve and thus causes a toilet flush tank to refill only partially to a lower level than has been the customary practice with a conventional attachment arm adapted to conventionally substantially transversely interconnect such a buoyant float member and such an inlet valve operating member, said effective downward displacement of said second end of said replacement adapter relative to said first end thereof being provided by an intermediate down-

wardly offset displacement portion of said adapter effectively displacing the entire second end correspondingly downwardly from the entire first end thereof by an amount determined by the magnitude of said intermediate downwardly offset displacement portion, said intermediate downwardly offset displacement portion of said replacement adapter being further provided with manual adjustment means and thereby being controllably manually adjustable whereby to correspondingly modify the normal valve closing position of a buoyant float member adapted to be attached to the second end thereof and to similarly correspondingly modify the normal water refilling level within a toilet flush tank, said manual adjustment means comprising two relatively vertically slideably engageable adjustment portions and locking means for controllably locking same in any relatively vertically adjusted position; and water volume selector and indicator means effectively cooperating with respect to a portion of said replacement adapter carrying said second end and perceptibly indicating a selected extent of said magnitude of the vertical displacement of said second end relative to said first end and correspondingly perceptibly indicating a selected modified vertical position which a buoyant float member adapted to be attached to said second end will assume when in a normal valve closing position and thus correspondingly indicating a selected modified normal water refilling level within a toilet flush tank, said water volume selector and indicator means being effectively interconnected by said two relatively vertically slideably engageable adjustment portions of said manual adjustment means and including scale means and relatively moveable index means cooperating with said scale means for providing a perceptible indication of said relative vertical adjustment of said two vertically slideably engageable adjustment portions.

4,229,847

UPPER MATTRESSES

Hugo Degen, Seltisberg, Switzerland, assignor to Marpal AG, Chur, Switzerland

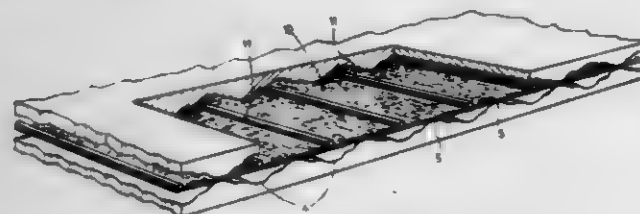
Filed Sep. 26, 1978, Ser. No. 945,970

Claims priority, application Switzerland, Sep. 27, 1977, 11784/77

Int. Cl.² A47C 27/15, 27/22

U.S. Cl. 5-481

11 Claims



10. A mattress comprising:

- a foam substance member having a longitudinal axis and a plurality of cavities formed therein,
- each cavity having a longitudinal axis and being defined by a boundary wall extending between an apex, and a laterally spaced horizontal plane with at least one horizontal support shoulder intermediately located between said apex and said horizontal plane,
- each cavity extending transversely to the longitudinal axis of said foam substance member,
- said at least one horizontal shoulder being effective to cause the resilient reaction force of said foam substance member adjacent each said cavity to initially rise continuously with increasing loading on said mattress.

4,229,848

BEE ESCAPE BOARD

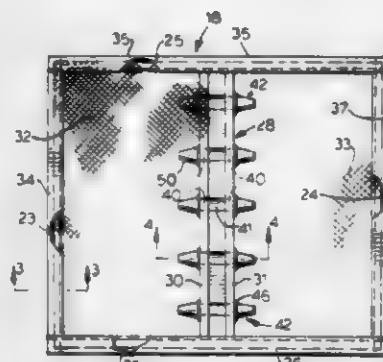
Valadimir Shaparew, 3371 Trafalgar Rd. R.R.#1, Oakville, Ontario, Canada

Filed Jan. 18, 1979, Ser. No. 961

Int. Cl.³ A01K 47/06

U.S. Cl. 6-4 B

9 Claims



1. A bee escape board for providing a controlled migratory pathway for bees from a chamber of a beehive, said bee escape board comprising:

- a frame structure including pairs of opposed side members defining an opening;
- screen means substantially covering said frame opening of said frame structure and secured thereto; said screen means preventing migration of bees from a first side of said escape board to a second side thereof, while simultaneously permitting passage of air therethrough;
- a distribution disposed within said frame structure and supported between a pair of opposed side members adjacent the screen means whereby said screen provides a transverse opening for bees to enter said distribution members, said distribution member having a longitudinal channel therein communicating with a plurality of through holes provided in said distribution member perpendicular to said channel to provide a migratory pathway for bees through the escape board; and
- bee escape cells of hollow frustoconical shape secured to said distribution member at each said through hole in said distribution member and projecting therefrom so as to permit voluntary migration of bees therefrom, while substantially preventing their return in the reverse direction; each said escape cell including a first ingress opening and a second egress opening smaller than said ingress opening at a distance spaced therefrom.

4,229,849

HAND CRIMP TOOL

Werner C. Theiler, Sr., Dix Hills, N.Y., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 24, 1978, Ser. No. 899,337

Int. Cl.³ B25F 1/00

U.S. Cl. 7-107

4 Claims

1. A tool for electrical connectors and the like, said tool comprising a pair of crossing parts pivotally connected together, a pair of jaws extending from respective crossing parts in facing relation with and swingable toward and away from each other and terminating at free ends, a pair of lever arms extending from respective crossing parts oppositely away from said jaws for swinging movement therewith in facing relation with each other, handgrips extending from the distal ends of said lever arms, and a single pair only by convergent entirely planar surfaces on the facing region of each of said jaws and tapering toward each other, the converging planar surfaces of one jaw converging at one location to intersect with each other in a generally straight cutting edge, the converging planar surfaces of the other jaw converging at a facing location to respective intersections with opposite sides of a generally flat truncated surface defining an anvil for said cutting edge

and limiting swinging movement of said crossing parts, jaws and lever arms, said pair of converging planar surfaces of each



4,229,850

KAYAK

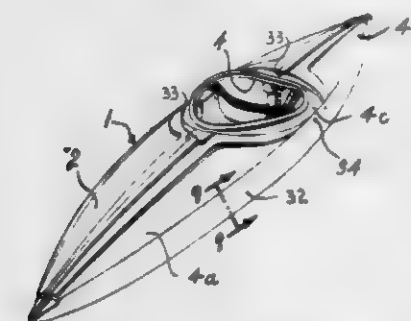
Pierre Arcouette, 39 rue Montagne Apt. 21, Granby, Quebec, Canada

Continuation-in-part of Ser. No. 830,814, Sep. 6, 1977, abandoned. This application Aug. 3, 1978, Ser. No. 922,071

Int. Cl.³ B63B 35/00

U.S. Cl. 9-1.4

17 Claims



14. A kayak comprising an integrally molded one piece elongated hull of semi-rigid material and defining a bottom wall, side walls and a top wall which latter has a passenger opening of restricted dimensions relative to said top wall so that the latter extends fore and aft and also laterally from said passenger opening, and an internal frame structure to stiffen said hull, said structure including three separate parts each having dimensions permitting its insertion within said hull through said passenger opening, two of said parts being each an elongated panel-like member positioned in an upright central longitudinal plane within said hull fore and aft of said passenger opening respectively, extending between, contacting and conforming to said top and bottom walls, each of said panel-like members having a beam extension projecting from the end of said member proximate to said passenger opening towards the beam extension of the other panel-like member, both beam extensions extending longitudinally along said bottom wall, contacting and conforming to the same, the third separate part being a seat located within said hull below said passenger opening, having a U-shaped cross-section defining a lower central seating portion resting on said two beam extensions and a pair of upwardly directed side wings extending close to the respective side walls and having upper ends engaged underneath and contacting said top wall laterally of said passenger opening.

4,229,851

METHOD FOR STIFFENING SHOE INSOLES

Leo F. Stanton, Newburyport, Mass., assignor to Bush Universal, Inc., Woburn, Mass.

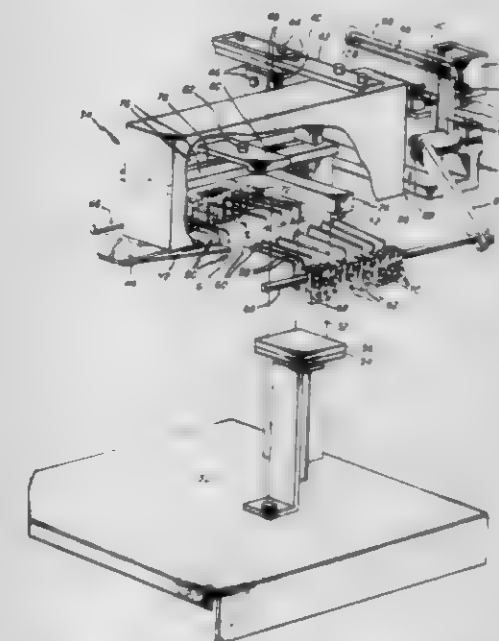
Division of Ser. No. 763,095, Feb. 3, 1977, Pat. No. 4,122,573.

This application May 30, 1978, Ser. No. 910,150

Int. Cl.² A43D 0/00

U.S. Cl. 12-146 S

8 Claims



1. A method for forming and applying a shank stiffener to the bottom of a shoe insole, said stiffener initially being in the form of an elongate flexible sleeve containing a flexible matrix of externally activatable thermosetting resin, said method comprising:

- placing said stiffener on the bottom of said insole;
- engaging longitudinally extending marginal portions of the sleeve to resiliently urge the stiffener toward and against the insole bottom to hold the sleeve in a predetermined position with respect to the insole bottom;
- while maintaining the sleeve in said predetermined position, exposing the sleeve to an external stimulus capable of passing through the sleeve and activating the resin to effect curing of the resin, said sleeve being constructed in a manner in which it will become initially limp and flaccid when exposed to said external stimulus;
- permitting the limp and flaccid insole stiffener to fall against the insole bottom to conform fully to the contour of the insole while in said limp, flaccid condition; and
- continuing exposure of the sleeve to the external stimulus to effect curing of the resin in said insole-conforming configuration.

4,229,852

PORTABLE PIPE CLEANING APPARATUS

Glenn H. Brobeck, 193 Geneva Dr., Aliquippa, Pa. 15001

Filed Nov. 22, 1978, Ser. No. 963,165

Int. Cl.³ B08B 9/02

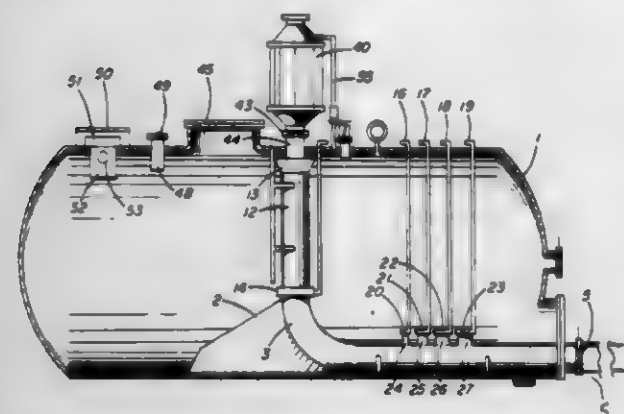
U.S. Cl. 15-3.5

7 Claims

1. An apparatus for cleaning pipes comprising:

- (a) a tank capable of withstanding at least about 100 psi; and
- (b) a plurality of outlet valve means in communication with said tank and with a single discharge outlet means, said

valves adapted to be opened independently of each other, said valves functioning to allow a variable discharge of air



and water through said valves and outlet means from said tank.

4,229,853

WINDSHIELD WIPER INSTALLATION FOR MOTOR VEHICLES

Günter Gmeiner, Egon Frey, both of Sindelfinger, and Josef Berger, Wolfschlugen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

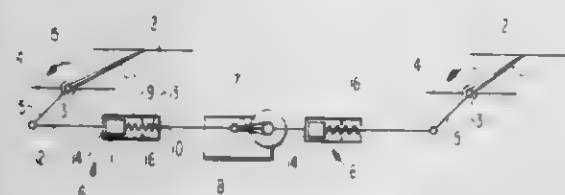
Filed Dec. 19, 1978, Ser. No. 971,000

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2756744

Int. Cl.³ B60S 1/02

U.S. Cl. 15—250.16

8 Claims



1. A windshield wiper installation for motor vehicles, comprising wiper arm means having wiper blade means, drive means for the wiper arm and wiper blade means including a driving motor, linkage means and wiper shaft means, the wiper arm means together with the wiper blade means being operable to be parked inside of a well in the cowl of the body in front of the windshield, characterized in that the drive means for the wiper arm means are so constructed that the wiper arm means together with the wiper blade means are manually movable out of their parking position in the wiping direction through a predetermined angular path and subsequently are movable back into the parking position.

4,229,854

SOOT BLOWER CONSTRUCTION

Jesse C. Johnston, Jr., Carroll, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 6, 1978, Ser. No. 949,089

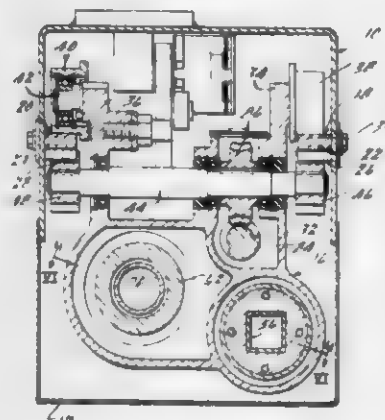
Int. Cl.³ F23J 3/02

U.S. Cl. 15—316 R

4 Claims

1. In a long retracting soot blower or the like comprising a frame structure including a generally horizontal elongated support, a lance carried by the support for movement generally parallel thereto to and from positions in which an end of the lance projects differing distances beyond the end of the support, and combined means for so moving the lance and for transmitting vertical loadings from the lance to said support, said combined means including a carriage to which the lance is attached, the carriage being movably carried by the support to actuate the lance, said carriage having a rigid frame, a carriage driving pinion journaled in the carriage on a transverse axis, and a roller also journaled in the carriage frame on a transverse axis vertically displaced from the first mentioned transverse

axis, said combined means also including a rigidly integrated longitudinal rack and track structure carried by the support including a track portion having a generally horizontal longitudinal track surface and a rack portion having a generally horizontal longitudinal toothed surface, said surfaces facing away from each other in opposite vertical directions, said combined means being characterized in that the track surface and the toothed surface overlap each other when viewed in a vertical projection, the pinion meshing with said toothed surface and



the roller being rollable on said track surface, and the axes of the roller and pinion being rigidly fixed in the carriage frame on parallel lines transverse to the longitudinal extent of said rack and track structure, the line of engagement of the roller directly overlying the position of meshing engagement between the pinion and toothed surface, whereby the rack and track structure is confined between the pinion and roller and vertical forces are transmitted in opposite directions via the carriage frame and the roller and pinion into the integrated rack and track structure.

4,229,855

WHEEL UNITS

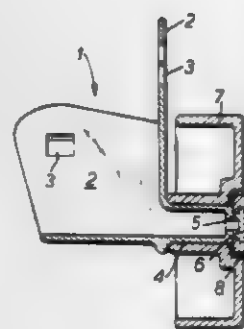
Anthony P. V. Rowe, 1, Royal Crescent, London W. 11, England

Filed Feb. 21, 1979, Ser. No. 13,285

Int. Cl.² B60B 33/00

U.S. Cl. 16—29

8 Claims



1. A toy wheel unit comprising a mounting member comprising three generally orthogonal parts defining a closed corner for receiving a closed corner of an article to be provided with a wheel, a stub shaft integral with said mounting member, a wheel rotatably mounted on said stub shaft, means for retaining said wheel on said stub shaft, and means for releasably fixing said mounting member to the article.

4,229,856

WHEEL SUPPORT ARRANGEMENTS

Curtis A. Sparkes, Altringham, England, assignor to Lamondine S.A., Fribourg, Switzerland

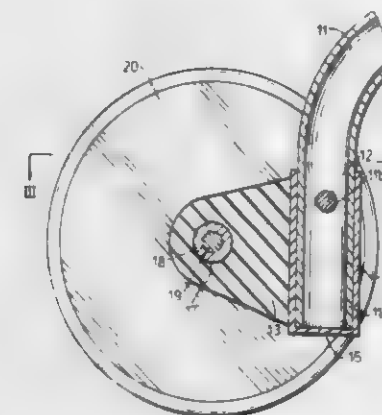
Filed Sep. 21, 1978, Ser. No. 944,665

Claims priority, application United Kingdom, Sep. 21, 1977, 39240/77

Int. Cl.² B60B 33/00

U.S. Cl. 16—47

11 Claims



1. A wheel support arrangement for supporting a wheel axle in spaced relationship to a leg frame member, comprising an elastomeric element defining a wheel axle journal support portion at one end and a leg frame attachment saddle portion defining its other end spaced from said wheel axle support, said elastomeric element being arranged to permit resilient deflection of said wheel axle support along three axes relative to said leg frame attachment part.

4,229,857

DUAL WHEEL CARRIER FOR USE IN CONJUNCTION WITH CURTAIN TRACK

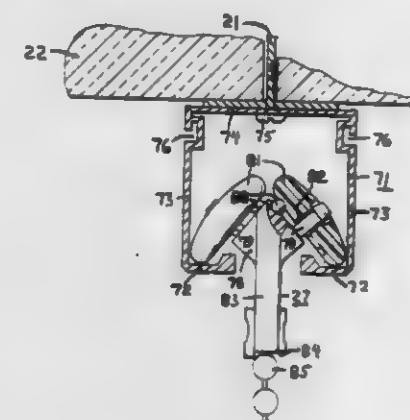
Ellis I. Toder, Fort Washington, Pa.

Filed Feb. 27, 1978, Ser. No. 881,394

Int. Cl.³ A47H 15/00

U.S. Cl. 16—95 R

12 Claims



1. A dual wheel carrier for use in conjunction with an underlying carrier track consisting of a pair of parallel longitudinally extending spaced apart tracks, said carrier comprising in combination,

- (a) an axle support from which extend divergently upward a pair of axles, and from which depends means for attaching an item to be carried, and
- (b) a wheel mounted on each of said axles for rotation, the lowest points of said wheels being spaced apart the proper distance so that each wheel is seatable on and rideable along a different one of the spaced apart tracks of the aforesaid carrier track, said wheels converging toward one another at their upper edges.

4,229,858

BOAT-MOUNTABLE FISH-CLEANING TRAY

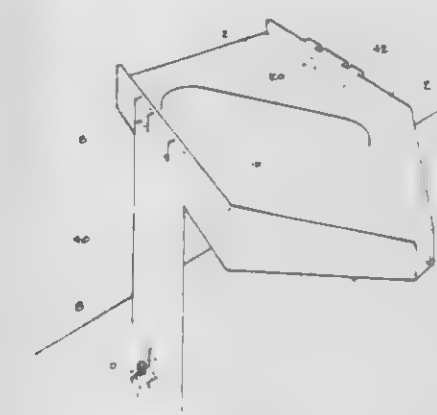
Stephen M. Baxter, P.O. Box 3995, Sarasota, Fla. 33578; M. David Baxter, 9 Northwood Dr., and James D. Eadline, P.O. Box 310, both of Vineland, N.J. 08360

Filed Nov. 1, 1978, Ser. No. 956,687

Int. Cl.³ A22C 25/06

U.S. Cl. 17—44

2 Claims



1. A boat-mountable fish-cleaning tray comprising, in combination, a bottom, upstanding sides connected to the edges of said bottom, and a drainage opening in the tray, at least one point on the perimeter of which opening being located on or adjacent to said tray bottom; a cutting board attached to said tray bottom; and a means for attaching the tray to a boat so that when attached the lowest points on the tray are adjacent to the aforementioned opening and so the part of the tray with said opening is suspended out away from the boat and over the water, said means for attaching the tray to a boat consisting of a plurality of legs which at their tops are slotted and connected to the tray by means of hand-tightenable and -loosenable fasteners which fit through the aforementioned slots, and which said legs at their bottoms can be cut to length to hold the tray at the proper working height and position and shaped to fit the contour of the boat at which points they are attached thereto, said legs being attachable to a boat by means of fittings, each comprising an L-shaped piece which is attached to the leg, a flat baseplate which is attached to the boat, and a hand-tightenable and -loosenable fastener which fits through a hole in the L-shape piece and screws into the baseplate.

4,229,859

MEAT PATTY PROCESSING METHOD AND APPARATUS

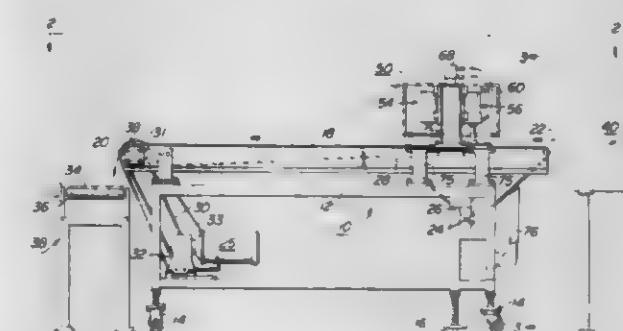
Eugene D. Gagliardi, Jr., West Chester, and Nicholas C. Gagliardi, Newtown Square, both of Pa., assignors to Gagliardi Bros., Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 744,587, Nov. 24, 1976, abandoned. This application May 1, 1978, Ser. No. 901,558

Int. Cl.³ A22C 7/00

U.S. Cl. 17—45

13 Claims



1. An automated process for forming meat patties comprising the steps of:

- (a) forming a plurality of substantially cylindrical masses of

- ground meat, said masses being of substantially uniform weight;
- (b) distributing said masses of ground meat on a continuously moving conveyor surface; and
- (c) flattening said masses of ground meat between two moving surfaces, one of which is said continuously moving conveyor surface and the other of which is a substantially flat surface which reciprocates in a direction substantially perpendicular to the surface of said conveyor, to form substantially disk-shaped meat patties having irregular edges and a thickness from about $\frac{1}{4}$ to about $\frac{1}{2}$ of the length of said substantially cylindrical masses.

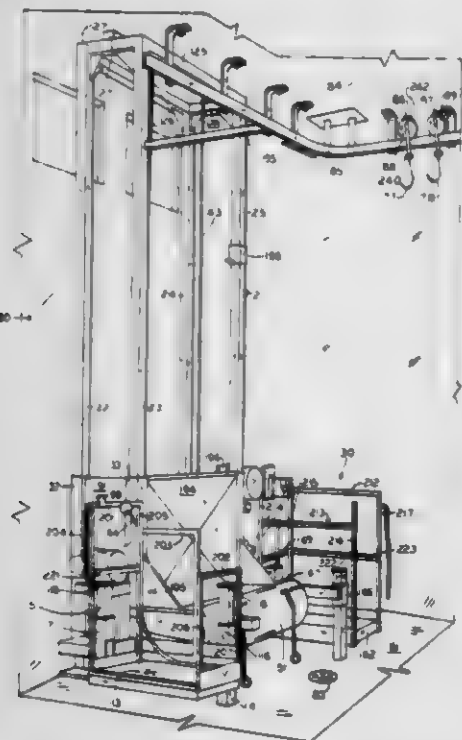
4,229,860

CATTLE SKINNING PROCESS AND APPARATUS THEREFOR

David C. Irwin, 2900 N. Grand, Amarillo, Tex. 79107
Continuation of Ser. No. 766,121, Feb. 7, 1977, abandoned. This application Dec. 13, 1977, Ser. No. 860,120
Int. Cl.³ A22B 5/16

U.S. Cl. 17—50

2 Claims



2. Process of removing hide from an animal carcass also comprising, hide, hind legs and forelegs, said process comprising the steps of

- (a) firmly supporting said carcass from its hind legs, with its hind legs above its forelegs and the spine of the animal substantially vertical, and attaching two laterally spaced edges of said hide to a horizontally elongated cylindrical drum therebelow at points on the surface of said drum further apart than the distance between said edges of said hide;
- (b) and operators for cutting said hide from said carcass being each supported on both sides of said carcass on a platform extending forward of the forward edge of said horizontally extending drum, each of said platforms moving vertically with said frame supporting said drum;
- (c) maintaining the hide under laterally and downwardly directed tension between
- (i) the points of attachment of said edges of said hide attached to said points on said drum and
- (ii) the superficial fascia joined to said hide and to the deep fascia of the carcass,
- (d) varying the downward linear speed of said drum surface and driving a frame supporting said drum downwardly while
- (e) lessening said speed of said drum surface when a greater force is required to pull said hide from the carcass and increasing said speed when less force is required to pull said hide; and
- (f) automatically moving the carcass away from one side of

the carcass whereat the tension on said pulled hide by said fascia is lesser and away from the operator on the platform on said one side of the carcass and towards another side of said carcass whereat the tension between the pulled hide and said fascia is greater and closer to the operator on said another side of said carcass;

- (g) cutting said superficial fascia where the greatest tensile force exists between the hide and the deep fascia and pulling the hide from said carcass on both sides thereof while the pulled hide is maintained under tension in a horizontal as well as vertical direction, said direction extending laterally and downwards of each side of the carcass towards said drum and collecting said pulled hide below the level at which it is pulled from the carcass; and at least one of said operators controls and varies the said downward linear speed of said drum and motion of the frame;

- (h) and wherein the carcass is the carcass of a cow and wherein both of said operators control and vary the said downward speed of said drum and motion of the frame.

4,229,861

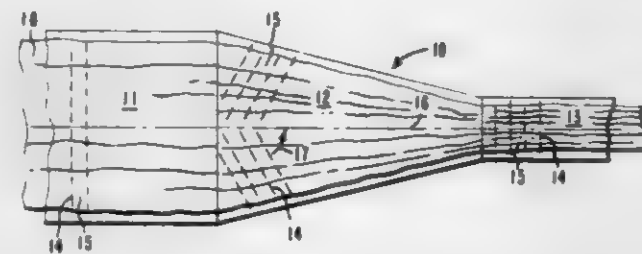
MATERIAL CONVERGER

Edgar A. Campo, Circleville, Ohio, and Robert B. Lewis, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 808,994, Jun. 22, 1977, Pat. No. 4,144,618. This application Aug. 10, 1978, Ser. No. 932,633
The portion of the term of this patent subsequent to Mar. 30, 1996, has been disclaimed.

Int. Cl.² D04H 11/00; B65H 17/32

U.S. Cl. 19—161.1

8 Claims



1. A material converger comprising an air feed plenum having an inlet end and an outlet end, a surface on the plenum decreasing in width from the inlet end to the outlet end, a multitude of louvers arranged at an acute angle with a reference line on the plenum surface from the center of the inlet end to the center of the outlet end, said louvers being from 2 to 15 centimeters long, less than one-fourth the width of the surface, more than one-fourth and less than three louver lengths apart, and directed toward the outlet end.

4,229,862

STRAP TENSIONING HUCKLE

Axel R. Kubelka, Kirchstettergasse 47, A 1160 Vienna, Austria, assignor to Erwin Weigl and Axel Kubelka, both of Vienna, Austria

Filed Feb. 21, 1978, Ser. No. 879,717

Claims priority, application Austria, Feb. 22, 1977, 1185/77

Int. Cl.² A43C 11/00

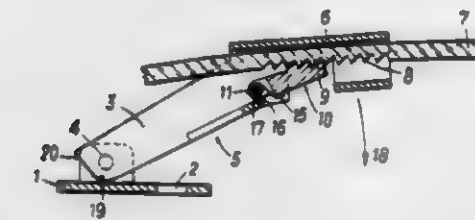
U.S. Cl. 24—68 SK

7 Claims

1. A strap tensioning buckle for a straplike pull element on ski boots or the like, said buckle comprising a tensioning lever turnable into a tightening position and hinged for movement about a hinge axis onto an eye fixed with a base plate fixed on the boot or on an element connected to said boot, and further, comprising two arms adjacent to the hinge axis and distant

from each other by a clearance equal at least to the width of said pull element and allowing between them a passageway for said pull element, and furthermore comprising a clamping device for holding the pull element, said tensioning buckle being characterized in that

- the tensioning lever in the portion opposite to the hinge axis is provided with a clamping lever and a cover plate covering said pull element,
- that the clamping lever is pivotally mounted in the tensioning lever, its pivotal axis being substantially parallel to the



- hinge axis of the tensioning lever, and its free end being directed opposite to the direction of the tensile load acting on the pull element,
- that the length of the clamping lever is greater than the perpendicular distance between its pivotal axis and the lower surface of the cover plate, diminished by the thickness of the pull element, and
- that at least a portion of the surface of the pull element is provided with a toothed profile matching with a counter-profile on the clamping lever.

4,229,863

SADDLE CLAMP ASSEMBLY

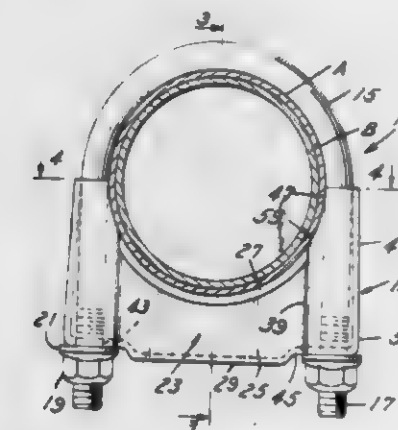
Lloyd L. Bowden, and C. Burton Dickinson, both of Clawson, Mich., assignors to Dickinson & Bowden Associates, Inc., Farmington, Mich.

Filed Sep. 25, 1978, Ser. No. 945,604

Int. Cl.² B65D 63/00

U.S. Cl. 24—277

2 Claims



1. A saddle clamp assembly comprising a hollow unit saddle body of general U-shape in cross section, said body including a bottom wall apertured adjacent its ends; the edges of said bottom wall terminating in upturned side walls; said side walls having opposed substantially semi-circular inner edge portions; said side walls being inclined inwardly towards upper edges, said semi-circular inner edge portions being parallel; end portions of the bottom wall terminating in integral upturned continuous formed sockets; edge portions of said side walls and corresponding portions inwardly of said edge portions above said sockets being oppositely intumed defining substantially tubular extensions above said sockets; said saddle body being formed from a unit blank, with said side walls formed as integral extensions of said bottom wall and with said sockets and tubular extensions formed

as integral extensions of said bottom wall and portions of said side walls;

said semi-circular inner edge portions being in engagement, forming a double wall thickness gripping area;

said sockets throughout their exterior surfaces extending to and being integral with said side walls respectively, being continuous in plan and flowed as a unit part of said bottom wall and adjacent portions of said side walls;

said intumed edge portions of said sockets being inclined upwardly and outwardly defining V-shaped notches outwardly of said U-bolt;

the intumed corresponding portions of the side walls inwardly of said edge portions above said sockets being inclined upwardly and outwardly at said semi-circular edge portions defining V-shaped notches, and curved to form an extension of said semi-circular edge portions;

a U-bolt having threaded ends projected through said tubular extensions, sockets and bottom wall;

and adjustable fasteners mounted over said threaded ends operatively engageable with said bottom wall;

the arcuate inner edge portions of said side walls merging with the upper inner ends of said tubular extensions and tangential to the U-bolt; to define between said U-bolt, said saddle inner edge portions and adjacent portions of said tubular extensions an internal annular gripping surface extending throughout 360 degrees.

4,229,864

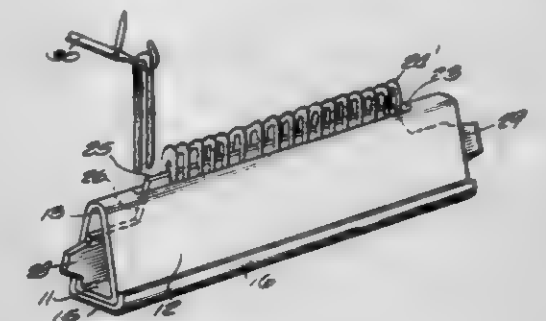
YARN HOLDER AND DISPENSER FOR MAKING HOOKED RUGS

Georgia A. Rankin, Highway 42-57, Sturgeon Bay, Wis. 54235
Filed Apr. 4, 1979, Ser. No. 27,172

Int. Cl.³ D03D 7/00; D03G 3/02

U.S. Cl. 28—147

9 Claims



1. A yarn holder comprising:
- a generally planar section having a slot across which yarn may be placed,
- an ejector blade section hinged to said planar section and having an edge portion that is sized for passing into said slot such that when said blade section is folded on its hinge over said planar section and advanced through said slot from one of its sides a loop will be formed in said yarn on the other side of said slot.

4,229,865

MACHINE FOR LASER SCRIBING AND WINDING METALLIZED FILM CAPACITOR BLANKS

William J. Faanning, Glen Ellyn, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,153

Int. Cl.³ H01G 4/32

U.S. Cl. 29—25.42

29 Claims

1. A machine for processing a film having one surface thereof provided with a metallic coating, which comprises:
- a drum;
- roller means positioned on opposite sides of the axis of the drum for guiding the film to ride over and engage a portion of the periphery of said drum with metallic coating being exposed;

means for rotating the drum;
a pinch roller means for forcing the film against the periphery of the rotating drum to advance and dispense the film;
means acting on the metallic coating as the film passes over the periphery of the drum for removing a portion of the metal coating from the exposed metallic coating to form a demetallized pattern defining line in the metallic coating;



a mandrel for receiving the film emanating from said drum;
and
means for rotating said mandrel independently of the drum rotating means to wind the film with a constant tension being imparted to successively wound convolutions.

4,229,866

FRAME SUPPORT FOR TOOL HEAD

Pierre Berthier, Le Collenon, 42320 La Grand Croix, Loire, France

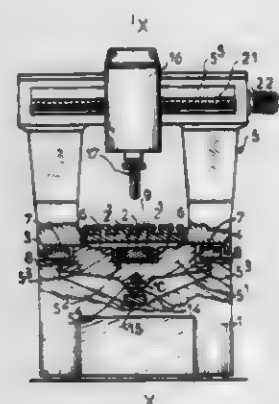
Filed Jan. 25, 1979, Ser. No. 7,353

Claims priority, application France, Jan. 31, 1978, 78 03450; May 18, 1978, 78 15377

Int. Cl.³ B23B 39/14; B23C 1/00

U.S. Cl. 29—26 A

15 Claims



1. Support apparatus for a movable tool head drive for a machine tool, said apparatus comprising a stand, a table or workplate fixed on said stand for support of a workpiece, a movable framework slidably supported by said stand and capable of movement relative to said table, said framework comprising an upper transverse member which supports a movable tool head adapted for support of a tool which is to operate on the workpiece, means for control, guidance and displacement of said framework and movable tool head with respect to said stand and the table, said framework comprising a closed vertical frame having spaced vertical posts and a lower transverse member mounted below said table of the machine, said vertical

posts being joined by said upper and lower transverse members to provide the closed configuration of said frame.

4,229,867

METHOD OF REPAIRING OR MODIFYING THE FIRING DECK OF AN INTERNAL COMBUSTION ENGINE

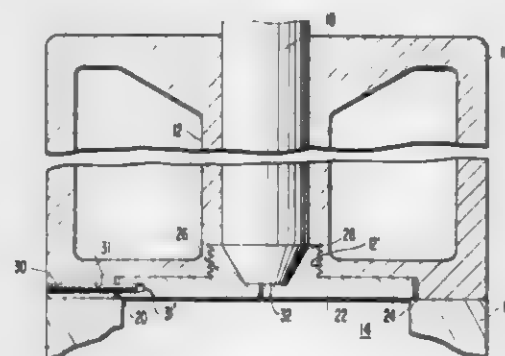
Boyd L. Spencer, Gladewater, Tex., assignor to Spencer Heads, Inc., Gladewater, Tex.

Division of Ser. No. 752,271, Dec. 20, 1976, Pat. No. 4,112,906. This application Jun. 16, 1978, Ser. No. 916,067

Int. Cl.³ B23P 15/00, 7/02

U.S. Cl. 29—156.4 R

6 Claims



1. A method of repairing or modifying an internal combustion engine having a coolant jacketed engine body including at least one combustion chamber having a firing deck surface with a critical area surrounding an ignition device being sealed from the coolant jacket by a generally tubular shaped wall structure, comprising

providing said firing deck area with a recess encompassing the area subject to the greatest strain during operation, said recess being disposed axially of the ignition device and including a floor spaced inwardly from said firing deck and surrounded by a peripheral wall extending between said floor and said deck,

drilling an axially disposed internally threaded bore extending into the tubular wall structure from the floor surface of said recess,

providing an insert comprising a circular body of a thickness substantially corresponding to the depth of said recess and having an inner surface surrounded by a peripheral edge and an outer firing wall substantially corresponding to the configuration of said firing deck surface and nesting said insert in said recess to conform to the recess with peripheral clearance and to cover at least a portion of the critical area of the firing deck surface, the diameter of said insert being slightly smaller than that of the recess with the peripheral edge of said insert spaced from the peripheral wall of the recess and providing the peripheral clearance as an expansion area for said insert to accommodate absorption by said insert of heat and strain independently of the engine body, and comprising a centrally disposed externally threaded boss of reduced diameter extending axially from the inner surface of said insert body and threadable into the internally threaded bore in said engine body for securing the insert and body together, and

inserting said insert boss said internally threaded bore and rotating said insert to thread said boss into said bore until the inner surface of said insert body firmly engages the floor of said recess to transmit heat therebetween, the thickness of said insert being substantially equal to the depth of said recess with the exposed surface of said insert generally contiguous with and conforming to said engine body surface surrounding said recess, said boss having an axially disposed opening therethrough and including a portion defining a set for said ignition device and an opening for exposing said ignition device to said combustion chamber, whereby said insert body is centrally fixed by said boss relative to the point of combustion in said cham-

ber but is free to expand radially from said boss as it absorbs heat of combustion without stress or strain, and further providing an insert that can expand radially as a result of heat absorption in said recess without restrictions in such radial expansion, said boss serving as the only means for fixedly attaching said insert body in said chamber.

4,229,868

APPARATUS FOR REINFORCEMENT OF THIN PLATE, HIGH PRESSURE FLUID HEAT EXCHANGERS

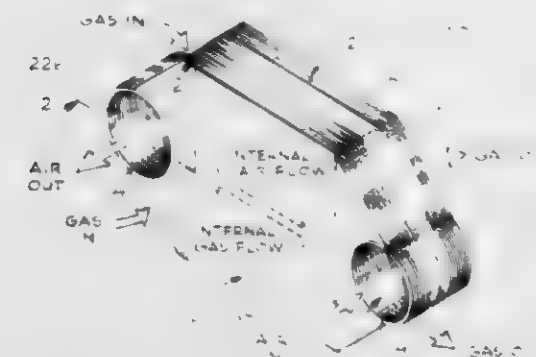
Karl F. Kretzinger, Simi Valley, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 26, 1978, Ser. No. 955,119

Int. Cl.³ B23P 15/26

U.S. Cl. 29—157.3 R

21 Claims



1. Apparatus for the reinforcement of thin plate heat exchangers fabricated of stacked tube plates defining fluid passages and having manifold sections integrally formed with the heat exchanging sections thereof comprising:

a plurality of hoops positioned respectively between pairs of adjacent plates which are joined together in sealing relationship, each hoop being configured to extend from one adjacent plate to the next and overlap a common juncture of said plates, said hoop being joined in structural reinforcing relationship to the adjacent surfaces of said plates; the plates being formed with outer flange portions and offset U-shaped ring portions about at least part of the manifold sections of the heat exchanger, each U-shaped ring portion having a base for joining to the base of the ring portion of the adjacent plate to develop a juncture plane for two adjacent plates; and

wherein the associated hoop is generally U-shaped in cross section, extends across the juncture plane and is brazed to the adjacent plates on both sides of the juncture plane and at both the flange and ring portions of the plates.

4,229,869

METHOD OF REPAIRING ALUMINUM PLATE FIN COILS

Michael E. Wendt, Mt. Washington, and Gerald J. Kushner, Louisville, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 11, 1979, Ser. No. 47,507

Int. Cl.³ B23P 15/26

U.S. Cl. 29—157.4

14 Claims

1. The method of repairing defective tube end portion of a fin and tube heat exchanger, including end plates, a series of spaced parallel fins arranged between said end plates having apertures therein, tubes arranged in said apertures having their end portions extending through said end plates being dimensioned to receive the end portion of a connecting member to form a joint therebetween, comprising the steps of: cutting off a defective tube end portion when present at a point adjacent its respective end plate, providing a stub tube member having a first portion dimensioned to be inserted in said tube and an expanded second

portion dimensioned to receive the end portion of a connecting member, forming at least one annular groove in said first portion of said stub tube member, arranging sealing means in said annular groove, inserting said first portion of the stub tube member in said tube so that said second portion is adjacent said end plate, providing an expansion member being dimensioned to fit into said stub tube member;



inserting said expansion member in said first portion of said stub tube and causing said expansion member to move said stub member and said tube outwardly to form a bulge in the area of said groove so that said sealing means in said groove provides an annular seal with the bulge having an inner diameter sufficient to prevent axial movement of said stub tube relative to said tube.

4,229,870

FREEZE PLUG INSTALLATION KIT

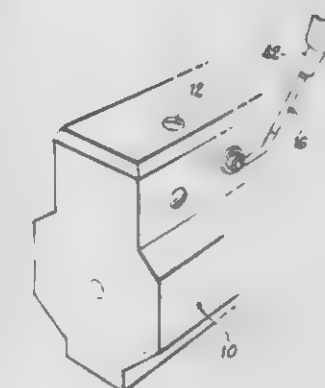
Ernest L. Tate, 9268 San Diego St., Spring Valley, Calif. 92077

Filed Dec. 6, 1978, Ser. No. 966,894

Int. Cl.³ B23P 19/04

U.S. Cl. 29—234

1 Claim



1. A freeze plug installation tool kit comprising:

- (a) a plurality of selectable head sections each having one end defining a ball which selectively swivel mounts a releasable freeze plug carrier and another end which is a connector end there being a shank between said connector end and said ball-defining end and the shank of each of said head sections having a bend defining a different angle than the shank of every other of said head sections;
- (b) a driver section having one end adapted to chuck into a pneumatic driver and another end which is a connector end;
- (c) a set of extension shaft sections of different lengths, each having two ends, both of which are connector ends adapted to releasably connect to the connector ends of said driver section and any selected one of head sections to define one of numerous selectable single integral units when said selected head, shaft, and driver sections are connected together.

4,229,871

METHOD FOR PRESTRESSING AN AXIALLY RETAINED HOMOKINETIC JOINT

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenger Spicer, Poissy, France

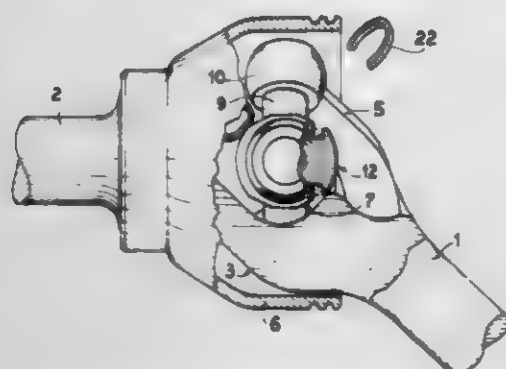
Filed Jul. 31, 1978, Ser. No. 929,816

Claims priority, application France, Sep. 5, 1977, 77 26873

Int. Cl.³ B23P 11/00

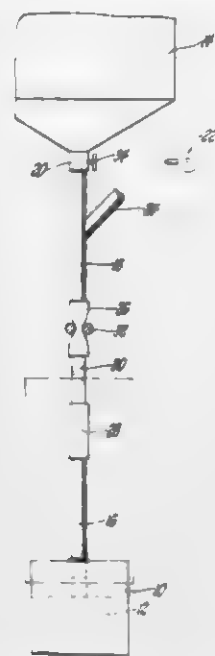
U.S. Cl. 29—407

4 Claims



1. A method for axially prestressing a homokinetic joint comprising a first tulip element for rigidly connecting to one of two shafts to be interconnected and defining raceways, a second element for rigidly connecting to the other of said shafts and comprising a hub and trunnions extending from the hub, the hub defining an axial bore and a radial bearing surface, rollers respectively rotatively and slidably mounted on the trunnions and received in the raceways of the first element, an axial retaining device comprising at least one thrust member slidably mounted in the axial bore of the hub, said thrust member comprising a radial shoulder in facing relation to the radial bearing surface of the hub, and a resiliently yieldable attachment fixed to an end of the tulip element, said method comprising, clipping the resiliently yieldable attachment onto the tulip element while the joint is in an assembled position, then determining for a position of alignment of said first and second elements the size of a gap between the shoulder of the thrust member and the bearing surface of the hub, axially shifting the thrust member away from the hub, and introducing between the thrust member and the hub a shim having a thickness which is so chosen as to be slightly larger than said gap, thereby providing an axial prestress between said thrust member and said hub and thus between said first and second elements.

section of the filled portion of the fill tube to melt some of the particulate material in the fill tube, and cooling the fill tube to



4,229,873

METHOD OF PRODUCING NONCONSUMABLE ELECTRODE FOR USE IN ARC TECHNIQUES

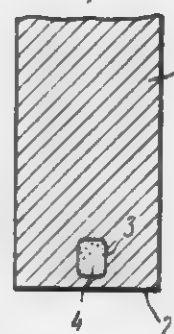
David G. Bykhovsky, Konjushenny pereulok, 1, kv. 18, and Vyacheslav G. Sobolev, ulitsa Aerodromnaya, 7, kv. 61, both of Leningrad, U.S.S.R.

Continuation of Ser. No. 677,859, Apr. 16, 1976, abandoned, which is a continuation of Ser. No. 466,255, May 2, 1974, abandoned. This application Sep. 15, 1978, Ser. No. 942,908

Int. Cl.³ H01T 17/00; H01J 9/04

U.S. Cl. 29—420

5 Claims



1. A method of producing a nonconsumable electrode ready for use in arc techniques without working-in operations, said method comprising forming a blind hole in the working end face of a high melting core of an electrode, the hole extending axially in the electrode in substantially symmetrical relation therein, filling said blind hole with pulverized doping agents, compressing the doping agents in said hole to a depth of about 3/5 the depth of the blind hole, filling the remaining portion of the hole with a mixture of the pulverized doping agents and a powder of the high melting core material, said high melting core material being present in a predominant amount in said mixture and heating the mixture from the surface of the electrode until a permanent fused surface layer is formed at the hole to produce an enclosed space with doping agents in the electrode wherefrom the doping agents can diffuse through the fused surface layer and provide constant and stable operating characteristics at the working end face of the core.

4,229,872

METHOD FOR FILLING AND SEALING A CONTAINER

Walter J. Rozmus, Birmingham, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 18, 1978, Ser. No. 934,986

Int. Cl.³ B22F 3/24; B65D 81/00; B65B 31/02

U.S. Cl. 29—420

3 Claims

1. A method for filling and sealing a container which is adapted to contain a particulate material under a pressure which is below ambient pressure, the container including a fill tube which is joined and sealed thereto comprising the steps of providing a source of particulate material and means for evacuating the container, connecting the fill tube of the container to the source of particulate material and to the means for evacuating the container, evacuating the container to a desired pressure below ambient pressure, filling the container and at least a portion of said fill tube with particulate material, heating a

4,229,874

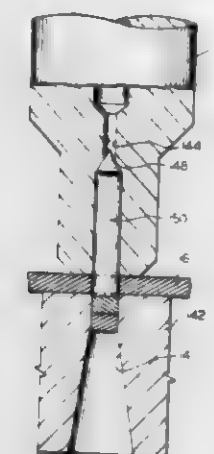
METHOD OF MOUNTING A PIVOT INSERT

William J. Schultz, Lynnfield, Mass., and Carl F. Van Bennekum, Green Valley, Ariz., assignors to General Electric Company, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,191

Int. Cl.³ B23P 11/00

U.S. Cl. 29—432



1. The method of forming a pivot element comprising: providing a pin to serve as a pivot pin having a blunt end and a pointed end; providing a strip to receive and hold the pin; providing a punch to contain said pin, where a portion of said punch immediately above the point of said pin is recessed, and with a portion of the blunt end extending from said punch to a distance slightly greater than the thickness of said receiving strip; placing said strip on a die having an opening of approximately the same cross section as that of the blunt end of the pin; aligning the blunt end of the pin above the die hole and above the strip disposed on the die; driving the punch to force the blunt end through the strip to remove a slug of metal from said strip as the pin acts on the strip.

4,229,875

METHOD OF PRESTRESSING BOLTS

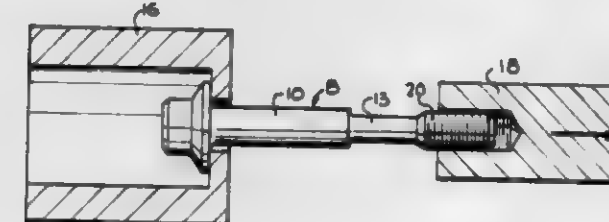
Corey F. Crispell, Warminster, Pa., assignor to SPS Technologies, Inc., Jenkintown, Pa.

Filed Dec. 26, 1978, Ser. No. 973,477

Int. Cl.³ B21K 1/46; B21D 31/00

U.S. Cl. 29—452

18 Claims



1. The method of forming threads in the shank of a bolt which comprises: exerting a force on the shank of the bolt placing it in tension; forming the threads in the shank while it is in tension; and releasing the force after the threads have been formed; whereby prestressed threads are provided.

4,229,876

OPTICAL FIBER BREAKER AND METHOD, AND COMBINATION BREAKER AND OPTICAL CONNECTOR

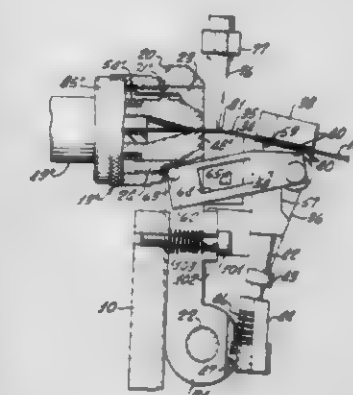
John S. Doty, Yucaipa, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Continuation-in-part of Ser. No. 905,294, May 12, 1978, abandoned. This application Aug. 29, 1978, Ser. No. 937,722

Int. Cl.³ B26F 3/00

U.S. Cl. 29—469

66 Claims



1. A breaker for optical fibers, which comprises: (a) means to clamp one portion of an optical fiber having a cylindrical shape, (b) means to clamp a second portion of said fiber at a location spaced from said one portion, (c) means to bend to a predetermined degree of curvature the region of said fiber between said clamped portions thereof, said degree of curvature being such that said fiber will, when scored transversely and while under a predetermined tension, break cleanly to provide mirror-like ends at the break, (d) means to create said predetermined tension in said fiber region, and (e) means to effect said transverse scoring of said fiber, said scoring means comprising a blade edge and means to move said edge along a curved path which (1) lies in a plane substantially perpendicular to the axis of said fiber at the region of scoring, and (2) intersects the curved surface of said fiber in said plane, the direction of curvature of said path being opposite to the direction of curvature of the intersected fiber surface region in said plane, the degree of intersection of said path with said surface region being adapted to effect said clean break of said fiber.

4,229,877

FLORA ATTACHING DEVICE

James D. Fagan, 631 Deerwood Dr., Columbia, S.C. 29205

Filed Mar. 2, 1979, Ser. No. 16,846

Int. Cl.³ B21D 39/00; B23P 11/00; A45F 5/08

U.S. Cl. 29—509

12 Claims

1. A method of attaching the shank of a flora arrangement to the front side of clothing material comprising: passing an elongated pin around the shank of said flora arrangement, said pin being of a deformable material and comprising a base and a pair of prongs extending away from said base; deforming said pin to conform said base to at least a portion of the cross-sectional shape of said flora shank and said prongs to a substantially parallel spaced-apart relation; passing at least a portion of each of said prongs through said clothing material so as to hold said flora shank between said base and the front face of said clothing material; placing an elongated body against the rear face of said material, said elongated body having a substantially planar backing surface for abutting the rear face of said material

over a relatively large area around the points where said prongs pass through said material; and, securing said prongs to said elongated body so as to press the base of said pin against said flora shank, said flora shank



against the front face of said material and the backing surface of said elongated body against the rear face of said material, said elongated body further including retaining means for securing each of said prongs.

4,229,878

METHOD OF OPERATING A REHEATING FURNACE IN A HOT ROLLING LINE AND A REHEATING FURNACE EMPLOYED THEREFOR

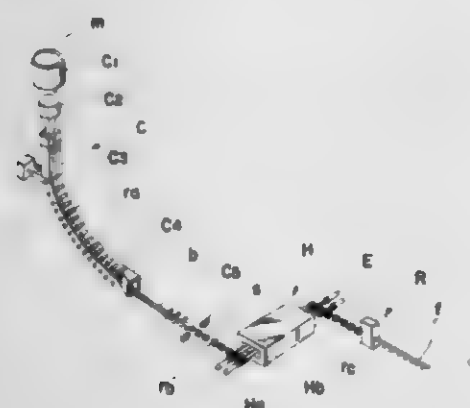
Shigemi Ushijima, Nagaokakyo, Japan, assignor to Chugairo Kogyo Kaisha Ltd., Osaka, Japan

Filed Nov. 30, 1978, Ser. No. 965,707

Int. Cl.³ B22D 11/126

U.S. Cl. 29—527.7

5 Claims



1. A method for heating workpieces in a reheating furnace in a hot rolling line of the type including a casting system for continuously casting workpieces to be rolled, a heating system to receive said workpieces from said casting system and to heat said workpieces and a rolling system to receive heated workpieces from said heating system and to roll said workpieces at a rolling speed greater than the casting speed of said casting system, said heating method comprising:

- (1) providing said heating system as a single reheating furnace having a longitudinal direction extending between a charging end adjacent said casting system and a discharging end adjacent said rolling system, and moving means for moving said workpieces through said furnace from said charging end thereof to said discharging end thereof, said moving means divided in said longitudinal direction into at least three walking beams each being independently movable in vertical and horizontal directions;
- (2) successively charging a first plurality, equal to a rolling quantity of workpieces to be rolled by said rolling system in a single rolling cycle, of cast workpieces from said casting system into said charging end of said furnace at said casting speed;
- (3) operating said walking beams to transport at a predetermined speed said first plurality of workpieces in said longitudinal direction through said furnace while therein heating said workpieces;

tudinal direction through said furnace while therein heating said workpieces;

- (4) upon the arrival of the leading of said first plurality of workpieces at said discharging end, operating said walking beams to interrupt said transport, and maintaining said first plurality of workpieces within said furnace while continuing said heating thereof;
- (5) while said first plurality of workpieces are maintained and heated within said furnace, initiating the successive charging of a second plurality of cast workpieces from said casting system into said charging end of said furnace at said casting speed;
- (6) during the charging of said second plurality of workpieces, and after said first plurality of workpieces have been heated for a predetermined period of time, operating said walking beams to discharge said first plurality of workpieces from said discharging end of said furnace to said rolling system at a discharge speed greater than said predetermined speed and in synchronization with said rolling speed;
- (7) during said discharging, continuing to charge said second plurality of workpieces into said charging end of said furnace, until said second plurality equals said first plurality;
- (8) operating said walking beams to transport at said predetermined speed said second plurality of workpieces in said longitudinal direction through said furnace while therein heating said workpieces;
- (9) upon the arrival of the leading of said second plurality of workpieces at said discharging end, operating said walking beams to interrupt said transport, and maintaining said second plurality of workpieces within said furnace while continuing said heating thereof; and
- (10) subsequently sequentially repeating said steps (5), (6), (7), (8) and (9) for successive further pluralities of cast workpieces.

4,229,879

MANUFACTURE OF PRINTED CIRCUIT BOARDS

Charles M. P. Lindebrings, Ivry; Pierre Vaillagou, St. Remy les Chevreuse, and André J. F. Velte, Le Chesnay, all of France, assignors to Societe Anonyme de Telecommunications, Paris, France

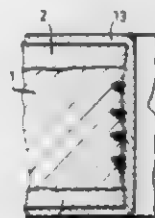
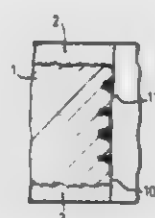
Filed Jul. 13, 1978, Ser. No. 924,228

Claims priority, application France, Jul. 28, 1977, 77 23251

Int. Cl.³ H05K 3/06, 3/22, 3/34

U.S. Cl. 29—840

3 Claims



1. A process for producing two-sided printed circuit boards with metal-coated holes from insulated supports made of glass-synthetic resin laminate, which comprises punching the holes to be metal-coated in the support, coating the punched support, at least in the inner surface of the holes, with a positive-action photosensitive resin, exposing the entire coated support to radiation capable of destroying said resin, drying the support, depositing conductive metal by chemical metal-coating in the holes on both faces of the support, depositing a reserve in accordance with the pattern of a desired circuit, etching the conductive metal on both faces, positioning electrical components in the metal-coated holes

and soldering the tails of the components in the respective holes to provide for connections.

4,229,880

COMBINED EATING UTENSIL

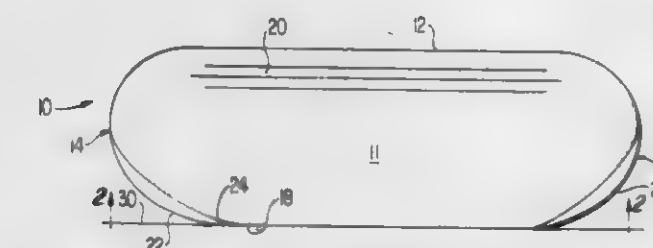
Henry W. Brooks, Minot, N. Dak., and Gloria C. Nichol, 2005 S. Blautvelt, Sioux Falls, S. Dak. 57105, assignors to Gloria C. Nichol, Sioux Falls, S. Dak.

Filed Feb. 23, 1979, Ser. No. 14,721

Int. Cl.³ B26B 11/00

U.S. Cl. 30—142

4 Claims



1. A one piece, combined eating utensil comprising a generally planar member having a longitudinally-extending straight bottom edge with the general shape of an elongated rectangle adapted to be positioned on a surface so that the bottom edge is in close contact with the surface whereby materials on the surface can be pushed by and pushed against the utensil, the bottom edge terminating in upwardly extending arcuate-shaped side portions, upper ends of the arcuate-shaped side portions being connected to each other to define the top of the utensil, at least one of the arcuate-shaped side portions having a part thereof sharpened to define a cutting edge, the top of the utensil including a profiled portion positioned above the bottom edge and adapted to be held by a user of the utensil.

4,229,881

PLIERS TYPE CUTTING TOOL AND THE LIKE

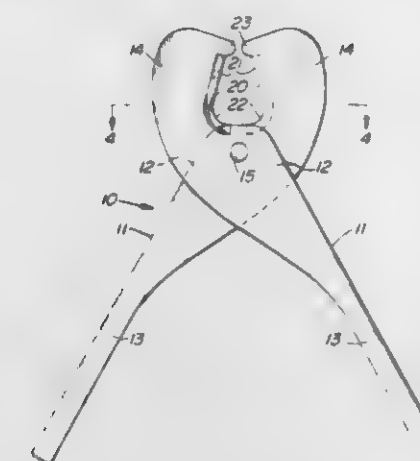
Ronald L. Troxel, 51 Bergen Ave., Sewell, N.J. 08080

Filed Mar. 2, 1979, Ser. No. 16,920

Int. Cl.³ B26B 13/06

U.S. Cl. 30—254

1 Claim



1. A pliers-type cutting tool for cutting cable and the like, said tool comprising a pair of crossing levers, pivot means connecting said levers together at their crossing regions, manual gripping arms extending from one pair of lever ends for movement of said arms toward and away from each other, and cutting jaws on the other pair of lever ends and movable into and out of overlying relation, said cutting jaws including laterally inner edges movable slidably past each other upon said jaw movement to effect shearing action, said laterally inner edges each including a substantially straight distal portion extending from a radially outer point generally radially inwardly and obliquely laterally outwardly of the respective jaw to combine with each other in defining an included angle facing toward said pivot means, for urging an intermediate work piece toward said pivot means, said laterally inner edges each includ-

ing an arcuately concave proximate portion extending continuously from each distal portion generally radially and laterally inwardly from a respective distal portion, said proximate portions combining to capture an interposed work piece and shear the latter, and a nub on each of said laterally inner jaw edges located radially outwardly of said radially outer point and projecting generally toward each other normal to said distal edge portions, for retaining relation with a work piece before said jaws move into said overlying relation.

4,229,882

CUTTER HEAD AND CUTTERS FOR A VEGETATION CUTTING TOOL

Eldrick D. Chartier, Box 214, Yoncalla, Ore. 97499

Filed Sep. 27, 1978, Ser. No. 946,364

Int. Cl.³ A01D 55/18; A01G 3/06

U.S. Cl. 30—276

9 Claims



1. A rotary cutter head for attachment to the driven shaft of a motorized hand supported apparatus for cutting vegetation, said cutter head comprising, a flexible metal cutters each of hook shaped configuration at one end and having a substantially straight exposed cutting segment at its opposite end, a circular body removably coupled to said shaft, said body including a central boss and radially offset abutments constituting cutter retention means engaging each of said cutters at spaced apart points therealong so as to permit flexure of the cutter along its length to minimize cutter breakage, said cutters in partial overlying relationship with one another, a closure plate for attachment to said main body, and a retainer engageable with said body for closure plate retention.

4,229,883

MEASURING INSTRUMENT WITH DIGITAL DISPLAY

Takashi Kobashi, Utsunomiya, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

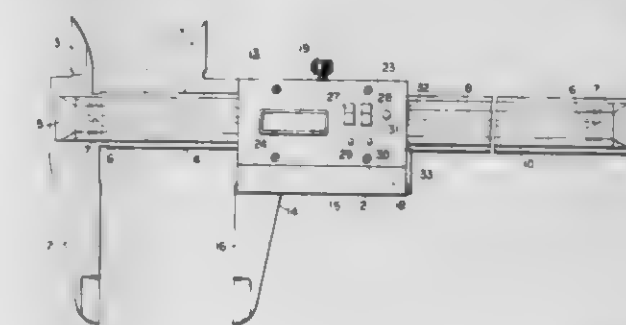
Filed May 3, 1979, Ser. No. 35,899

Claims priority, application Japan, May 4, 1978, 53/53460

Int. Cl.³ G01B 7/02, 5/02

U.S. Cl. 33—143 L

2 Claims



1. A measuring instrument with digital display comprising: a relatively elongated instrument body including a measur-

ing part adapted to make measuring engagement with an article to be measured;

a transparent scale fixedly disposed on an upper surface of said instrument body with its axis extending in a longitudinal direction of said instrument body, said linear scale further being disposed perpendicularly to said body such that a calibrated face of said linear scale forms a right angle with said upper surface of said body;

a slider freely slidable in said longitudinal direction of said instrument body and including a measuring part disposed opposite to said measuring part of said instrument body;

a measuring circuit mounted in said slide and including a digital display means;

a transparent index scale mounted in said slider having a calibrated face disposed opposite to said calibrated face of said linear scale in slightly spaced apart relations; and

a light emitting element and a light receiving element mounted in said slider and disposed opposite to each other with said linear scale and said index scale interposed therebetween, said light receiving element being electrically connected to said measuring circuit and generating pulse signals corresponding to movement of said calibrated face past said light emitting element and supplying said pulse signal to said measuring circuit.

4,229,884

ARRANGEMENT FOR ELECTROMECHANICAL AXIAL CLEARANCE MEASUREMENT

Hartwig Knöhl; Klaus Högg, both of Munich, and Hermann Laudenberg, Neu-Euting, all of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

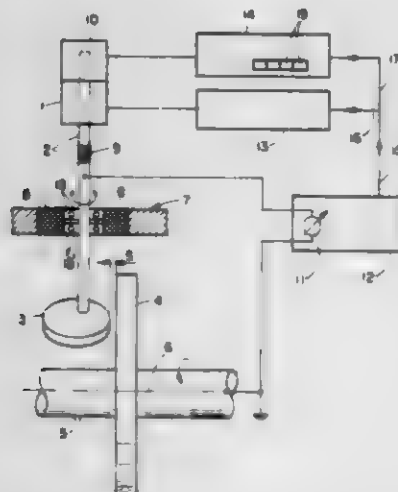
Filed Feb. 6, 1979, Ser. No. 9,858

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 1807297

Int. Cl.³ G01B 7/14

U.S. Cl. 33—174 L

6 Claims



1. In an arrangement for the electromechanical measurement of the axial clearance of rotating elements, particularly for the measurement of the axial clearance of shafts in high-speed turbomachinery, including a housing fixed in position relative to a measured object; a rotatable member supported in said housing; a motor driving said rotatable member; sensor means connected to said rotatable member and being movable towards said measured object and, responsive to the triggering of a contact impulse, being movable away from said measured object, said sensor means being electrically insulated from said housing and from said measured object, the improvement comprising:

(a) said rotatable member being the extended shaft of said drive motor extending substantially perpendicular to the axis of rotation of a rotating element in the operating condition of the former and parallel to the measured object; said sensor means including an eccentric feeler fas-

tened to the end of said shaft proximate the measured object;

(b) an absolute angle-measuring encoder for defining the zero position of said shaft and determining a change in distance between said eccentric feeler and said measured object from a concurrently occurring change in the angle of rotation of said shaft; and

(c) indicator means for measuring a contact resistance so as to generate a contact signal responsive to falling below a resistance threshold value between the electrically-insulated eccentric feeler and said measured object during movement of said eccentric feeler in a direction towards said measured object whereby there is stored the instantaneous indicated value of said absolute angle-measuring encoder and said drive motor concurrently controlled so as to reverse the direction of rotation of said shaft into the zero position thereof.

4,229,885

STRUCTURE OF VERTICAL AND HORIZONTAL SURVEYING INSTRUMENT

Chuang-Min Chiou, No. 415, Yung An Rd., Tao Yuan, Tao Yuan City, 330, Taiwan

Filed Mar. 21, 1979, Ser. No. 22,495

Int. Cl.³ C01C 9/04

U.S. Cl. 33—376

4 Claims



1. A level for determining whether surfaces are in horizontal and vertical planes comprising; an outer case having an internal space for removably mounting therein some instrumentation for use of the level in gauging horizontal surfaces and vertical surfaces, the case having outer flat surfaces disposed in intersecting planes at ninety degrees to each other for respectively contacting vertical and horizontal surfaces on which level determinations and readings are to be made, said case being open to said space at one major side thereof and having a lateral opening along a side edge thereof open to side space; an enclosure mounting therein instrumentation and insertable alternatively into said space through said open major side for taking vertical readings with the level and insertable into said space through said lateral opening into said space for placing of the case in a horizontal position for taking horizontal readings with the level; said instrumentation being disposed in said enclosure comprising a gravity-responsive depending pendulum having a weight on a free end thereof, means to pivotally mount the pendulum for movement laterally in a plane, a pivot for said depending pendulum for having the pendulum in a depending position when taking readings on vertical and horizontal surfaces, and indicating means having a scale indicia representative of the weight position relative to the vertical for indicating jointly with the weight deflection of the pendulum relative to an exactly vertical plane thereby to indicate how much a vertical surface or a horizontal surface respectively is out of verticality or out of level, said indicating means comprises a pivoted depending pointer coactive with the pendulum and displaced by said pendulum from the vertical proportionately to any displacement the pendulum indicates a surface read varies from the vertical or from the horizontal, said pendulum comprises a pivot for said pointer fixed on an upper end thereof and having two oppositely disposed flat sides, said

pointer having two knife-edges defining oppositely flat sides, said pointer for defining lateral pivoting of the pointer laterally under control of the pendulum to an extent a surface being read is not a plane parallel to said flat sides.

4,229,886

MICROWAVE HEATED VACUUM DRYER FOR POWDERS

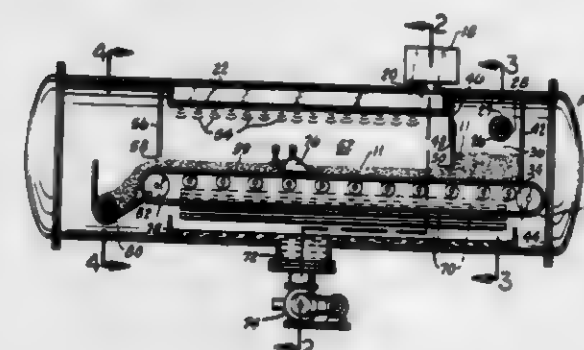
Dick Q. Durant, Manchester, Mo., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 9, 1979, Ser. No. 18,899

Int. Cl.³ F26B 13/30

U.S. Cl. 34—92

23 Claims



1. A dryer for material including: a pressure vessel having an inlet end and an outlet end; means for reducing the pressure within said vessel; means for introducing microwave energy into said vessel; means for transporting the material in the vessel from the inlet end to the outlet end and while the material is being subjected to microwave energy at the reduced pressure for at least a portion of the travel thereof; a first continuous conveyor for transporting the material into said inlet end of said vessel while the reduced pressure is maintained; and a second continuous conveyor for transporting the material from said outlet end of said vessel while the reduced pressure is maintained, said first continuous conveyor for transporting the material into said inlet end of said vessel including:

an inlet hopper for the material; a cylindrical member extending from said hopper to said inlet end of said pressure vessel; and a worm screw positioned for rotation within said cylindrical member from said hopper to said inlet end of said pressure vessel which transports the material from said hopper to said inlet end of said pressure vessel, said worm screw having a predetermined outer diameter and said cylindrical member having an inner cylindrical surface of a diameter generally similar to said predetermined outer diameter of said worm screw, a predetermined length so that the material in said hopper and said cylindrical member acts to prevent the passage of air therethrough, an inlet end at said hopper and an outlet end in said vessel, said outlet end including a plurality of openings transverse to said means for transporting the material in the vessel from the inlet end to the outlet end thereof for distributing said material thereon.

4,229,887

UNIVERSAL ELECTRICAL CONSTRUCTION SET

John J. Lukita, 1843 6th St., Manhattan Beach, Calif. 90266

Filed Sep. 29, 1978, Ser. No. 947,202

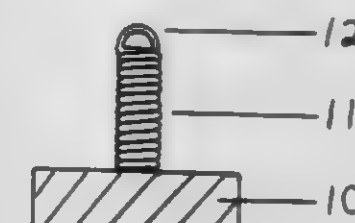
Int. Cl.³ G09B 23/18

U.S. Cl. 35—19 A

1 Claim

1. A Universal Electrical Construction Set consisting of connectors, hook-up wires, adaptors, and indicators, the connectors being a series of spring-bearing disks, the diameter and color of which correlate with the number of springs supported,

in such manner that the diameter in inches of the nth disk is given by $d(n) = \frac{1}{4}(n+5)$ for n ranging from 1 to 9 or 10, and in such manner that the disk colors correlate with the number of springs supported, conforming colorwise and numberwise with the well-established resistor color code, and in such manner that the springs are arranged in the most symmetric way for the number that are supported by any given disk, and the primary purpose of which is to provide both a means for attachment generally accompanied by support for electrical circuit components and a means for attachment of hook-up wires that extend between circuit components, the hook-up wires being a set of wires with different lengths such that the lengths grow by $\frac{1}{4}$ " increments beginning at 1", coded in such manner that the insulation color for any wire indicates the highest whole number of inches of insulated wire, in accor-



dance with the resistor color code, and in such manner that each additional $\frac{1}{4}$ " of insulated wire above the highest whole number of inches is indicated by a band around the wire, to a maximum of 3 bands, the adaptors being accommodative, go-between devices, each of which consists of a solder-lug and an alligator-clip with a short bendable wire or spring extending between them, and each of which extends when needed between a spring of a connector and a lead or pin of a circuit component thus serving as a means for accommodating otherwise unattachable components, the indicators being a series of colored beads each of which has permanently associated with it a solder-lug for attachment of the bead to the spring of a connector thereby serving as a means for associating with any spring of any connector a number or whatever that is arbitrarily associated with the color of the bead, the colors employed again being those of the resistor color code.

4,229,888

FASTENER SUITABLE FOR ATTACHING A HEEL TO A SHOE

Francis F. H. Rawson, Loughborough, England, assignor to USM Corporation, Farmington, Conn.

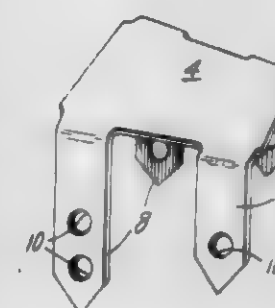
Filed Mar. 8, 1979, Ser. No. 18,501

Claims priority, application United Kingdom, Jul. 28, 1978, J1530/78

Int. Cl.² A43B 21/36, 23/20

U.S. Cl. 36—1

15 Claims



1. A fastener suitable for use in attaching a plastic heel to a shoe, comprising:

a generally flat head portion and at least three shank portions extending from the head portion parallel to one another and generally normal to the head portion, each shank portion having at least one aperture therein.

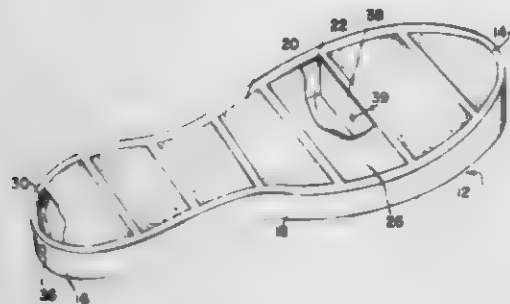
4,229,890

PRESSURIZED POROUS MATERIAL CUSHION SHOE BASE

Charles Petrovsky, 1118 N. Jefferson St., Arlington, Va. 22205
Continuation-in-part of Ser. No. 678,658, Apr. 20, 1976, Pat. No. 4,129,951. This application Jun. 6, 1978, Ser. No. 913,149
Int. Cl.² A43B 13/18, 13/20

U.S. Cl. 36—28

10 Claims



1. An air cushion shoe base comprising a flexible sole for contacting the floor, a flexible insole positioned above the sole for contacting a foot of a wearer, a rim extending around a periphery of the sole and insole for connecting the sole and insole in airtight relationship, and a flexible porous core of a foam material having cells and fine pores extending across the rim between the sole and the insole for dividing the shoe base into plural small inflatable compartments each filled with foam material, each compartment having small metering pores for flowing fluid through from one section to another section of the core and means joining the sole, the rim, the insole and the core in airtight relationship.

4,229,890

PICTURE-MAKING EASEL AND FRAME

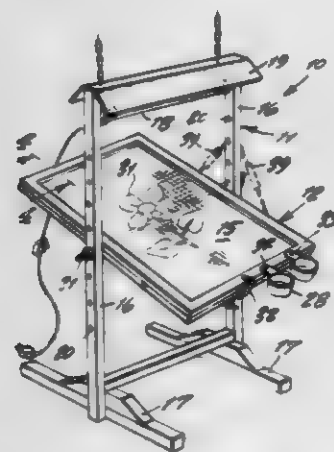
Marion Dropinski, 1305 Hartford St., Colorado Springs, Colo. 80906

Filed May 25, 1978, Ser. No. 909,543

Int. Cl.³ D05C 1/02; D06C 3/08

U.S. Cl. 38—102.1

1 Claim



1. An adjustable easel and frame unit for supporting needlework and the like comprising:

- A. a pair of vertical side legs having feet at the lower ends thereof;
- B. lamp means mounted between upper ends of said legs;
- C. spaced-apart openings located along each leg in order to selectively receive a bolt;
- D. a frame unit pivotally supported upon said easel by said bolt;
- E. said frame unit comprises upper and lower frame means, said upper means including a plurality of downwardly extending nails and said lower means including a plurality of openings into which said nails are receivable, whereby needlework may be retained in a stretched condition between said frame means by said nails of said upper frame

passing through said needlework into the openings of the lower frame;

F. means for clamping said upper and lower frames means together; and;

G. cup means supported upon said frame unit for holding needle-working material.

4,229,891

PLACARD HOLDING DEVICE

Robert L. Keller, Neenah, Wis., assignor to J. J. Keller & Associates, Inc., Neenah, Wis.

Filed Dec. 11, 1978, Ser. No. 968,116

Int. Cl.³ G09F 3/18

U.S. Cl. 40—17

9 Claims



1. A placard holding device for displaying a placard upon a vertical planar surface comprising:

a back frame member adapted to be mounted upon the vertical planar surface and including a plurality of adjoining back frame peripheral edges;

a front frame member having a flat surface portion enclosing an open window area, said flat surface portion including a plurality of adjoining front frame peripheral edges enclosing said open window area, with the number of said front frame edges corresponding with the number of said back frame edges;

fastening means for mounting said front frame member on said back frame member and including an upstanding lip integral with said back frame member and extending perpendicularly along all but one of said back frame edges, said one back frame edge comprising a rear smooth edge, a groove integral with said front frame member and extending along all but one of said front frame edges, said one front frame edge comprising a front smooth edge, said groove symmetrically disposed for co-extensive engagement with said upstanding lip when said front frame member is mounted on said back frame member;

an interior placard holding pocket formed intermediate said back frame member and said flat surface portion when said front frame member is mounted on said back frame member, said placard holding pocket peripherally enclosed by said upstanding lip along all but said rear smooth edge and including an access slot formed intermediate said front and rear smooth edges;

a locking arm integral with and extending from said front smooth edge, said locking arm being generally resilient and having a normal generally coplanar position relative to said flat surface portion for permitting passage of the placard through said access slot and movable from said normal position toward a displaced position; obstructing means on said back frame member located on said rear smooth edge and arranged for engagement by said locking arm when said locking arm has been displaced from said normal position and together with said displaced locking arm blocking movement of the placard into and out of said placard holding pocket; and locking means for maintain-

ing said engagement between said displaced locking arm and said obstructing means while permitting selective movement of said locking arm between said displaced position and said normal position.

a switching circuit for operating the attention-drawing means said switching circuit being closed by movement of

4,229,892

DISPLAY DEVICE

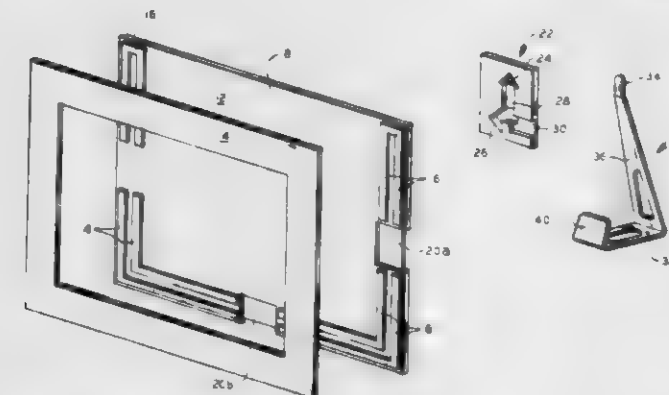
O. William Hueter, 2970 Airport Hwy., Toledo, Ohio 43609, and Richard A. Groes, Perrysburg, Ohio, assignors to O. William Hueter, Toledo, Ohio

Filed Jan. 24, 1979, Ser. No. 6,089

Int. Cl.³ G09F 1/12

U.S. Cl. 40—152.1

12 Claims



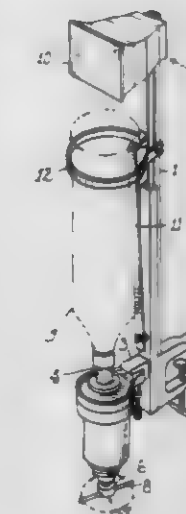
1. A display device comprising:

a panel having an outer periphery and front and rear planar surfaces;

a tab receiving chamber formed along the marginal edge portion of said panel;

an adapter element attached to the rear planar surface of said panel and having at least one aperture formed therein for receiving a suitable hook for hanging the panel with one of its axes in generally horizontal position and having at least one slot formed therein; and

a support member having an upper tab insertable into the slot in said adapter element and a lower tab insertable into the tab receiving chamber formed along the marginal edge of said panel, said support member including a foot portion attached to the lower tab and extending away from the rear surface of said panel defining a lower planar surface for supporting the panel in a free standing mode on a supporting planar surface, wherein the planar surface of the foot is adapted to be on the plane of the supporting surface.



the bottle on the resilient mounting when the liquid metering device is activated.

4,229,894

ILLUMINATED NUMBER DISPLAY DEVICE

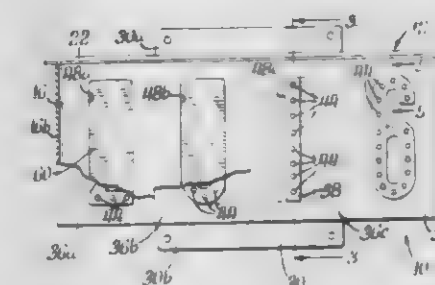
John P. Beck, 2507 Glendale Way, Michigan City, Ind. 46360

Filed Aug. 19, 1977, Ser. No. 825,933

Int. Cl.² G09F 13/06

U.S. Cl. 40—579

8 Claims



4,229,893

FLUID DISPENSING APPARATUS AND DISPLAY MEANS

Thomas F. Uys Naude, Capetown, South Africa, assignor to Optic Ads (Pty.) Limited, Capetown, South Africa

Filed Sep. 26, 1978, Ser. No. 945,818

Claims priority, application South Africa, Sep. 29, 1977, 77/5204

Int. Cl.³ G09F 23/04

U.S. Cl. 40—332

8 Claims

1. Advertising apparatus for use with a device for dispensing liquids from inverted bottles comprising:

a support bracket;

a resilient mounting projecting from the bracket and adapted to locate a liquid metering device and a bottle attached thereto;

Electrically operated attention-drawing means; and

1. A device for displaying a visually observable number or the like during daylight and displaying the same but illuminated number or the like during nighttime, said device comprising a housing having an interior chamber defined in part by a front wall, said front wall having at least one opening there-through in light communication with said interior chamber, light producing means supported within said chamber and adapted to be electrically energized to emit light through said opening, and a plurality of discrete, individual indicia display plates mounted on said front wall, each of said indicia display

plates having means thereon for attaching the same to said housing and in position in front of said opening and for juxtaposition next to adjacent indicia display plates to provide the visually observable number, each of said indicia display plates having an identifying indicia thereon visible in daylight and each having a plurality of light transmitting channels there-through overlying said opening and disposed in a pattern providing an illuminated display of the same identifying indicia visible during nighttime when said light producing means is electrically energized, each of said light transmitting channels being an unobstructed opening and having an axis disposed substantially perpendicular to the plane of said display member, each said opening being defined by a frustoconical surface being integral with said plate and having a larger diameter opening facing the interior of the housing and a smaller diameter opening facing outwardly of the housing, said housing including a bottom wall having an opening therethrough, and including a light diffusing plate supported by said housing in overlying relation to said opening in said bottom wall so that light emitted from said light producing means is transmitted through said opening in said bottom wall to provide general illumination beneath the device.

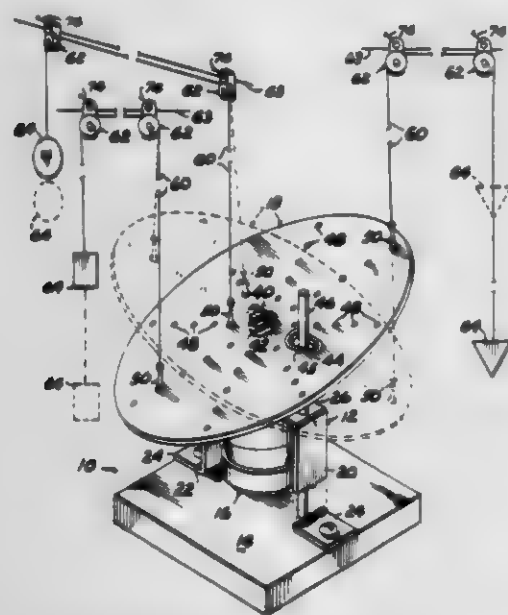
4,229,895

OSCILLATING PLATE ANIMATED MOTION DISPLAY MACHINE

Thomas L. Byers, 3000 SW. 60, Oklahoma City, Okla. 73159
Continuation-in-part of Ser. No. 807,716, Jun. 17, 1977, Pat. No. 4,132,021. This application Dec. 18, 1978, Ser. No. 970,677
Int. Cl.³ G09F 19/00

U.S. Cl. 40-614

6 Claims



1. An animated display drive, comprising: a base; motor means having a vertically disposed drive shaft supported by said base; a plate; axle means journaled by said plate on an axis inclined with respect to the axis of said drive shaft; bracket means interposed between and connected with said drive shaft and said axle means; means for preventing angular rotation of said plate with said drive shaft; and, at least one flexible strand radially connected, at one end, with said plate and connected, at its other end, with an element to be animated.

4,229,996

RAPID LOADING DEVICE FOR A REVOLVER

Mike Jurich, III, 221 28th Pl., Manhattan Beach, Calif. 90266
Filed Feb. 7, 1979, Ser. No. 10,170
Int. Cl.³ F42B 39/04

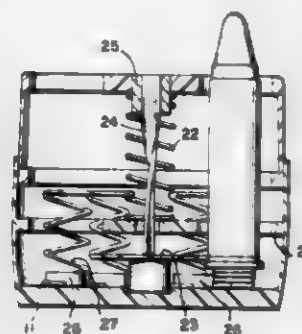
U.S. Cl. 42-89

5 Claims

1. A rapid loading device for a revolver which provides

releasable securement of cartridges in condition for simultaneous loading of the cartridges in the chambers of the cylinder of the revolver, said rapid loading device comprising:

- a first cylindrical member having an open end and a closed end which forms the base of said rapid loading device;
- a first disc having a center bore and a plurality of axially extending, radially distributed cartridge-receiving bores adapted to align with and introduce the cartridges into the



chambers of the cylinder of the revolver, said first disc is disposed within said first cylindrical member and is mechanically coupled to the inner sidewall thereof;

- a star sprocket whose lateral projections releasably lock each cartridge flange while laterally supporting each cartridge in conjunction with said first disc; and
- means for releasing said star sprocket system in order to release the cartridges when the cartridge ends are in the chambers of the cylinder of the revolver.

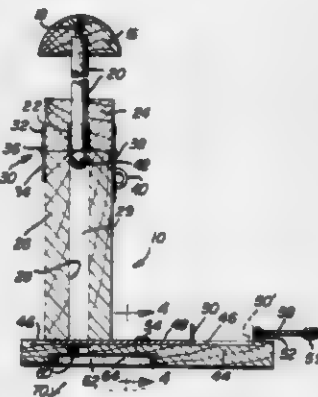
4,229,897

MUZZLE LOADING APPARATUS

Jimmy C. Sawden, 72 Western Dr., Pine Bluff, Ark. 71602
Filed Oct. 17, 1978, Ser. No. 953,891
Int. Cl.³ F41C 27/00

U.S. Cl. 42-90

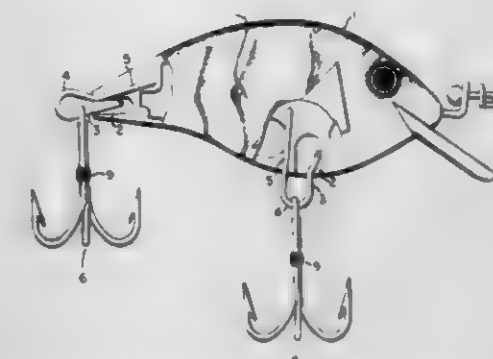
10 Claims



1. Apparatus for loading a premeasured charge of propellant and a ball in a muzzle loaded firearm, the apparatus comprising a plunger assembly for receiving said charge and said ball, and a mounting and loading assembly attached to the plunger assembly for mounting on the muzzle loaded firearm and depositing said charge and said ball thereinto, said firearm being a rifle, said propellant being black powder, and said plunger assembly comprising a plunger slidably contained within a plunger housing, the mounting and loading assembly comprising a platform having release means for acting in cooperation with said plunger to deposit said charge and said ball into said rifle and having a recess for conformingly mounting the apparatus on the barrel of said rifle held in an upright position, said plunger housing comprising an elongated block having a longitudinal extension and retraction of the plunger within said longitudinal bore, said platform having a platform bore in register with said

longitudinal bore, and said release means separating said longitudinal bore from said platform bore, said platform having a trough extending through said platform bore, said release means comprising a slide cover strip slidable within said trough to separate and close off said longitudinal bore from said platform bore, said apparatus further including holding means for releasably holding a percussion cap for use with said rifle.

form of a collar affixed to said hook for adjusting its effective weight;
a lure body; and



4,229,998

FISHING ROD AND REEL MOUNTING HANDLE

Akio Urakami, Fuchu, Japan, assignor to Ryobi, Ltd., Fuchu, Japan

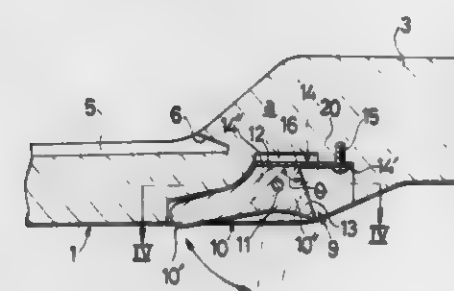
Filed Jan. 19, 1979, Ser. No. 4,788

Claims priority, application Japan, Jan. 31, 1978, 53-10899[U]

Int. Cl.³ A01K 87/00

U.S. Cl. 43-21.2

4 Claims



1. In a fishing rod and reel mounting handle including a rod holder at the front end thereof, a gripping portion at the rear end thereof, and an intermediate portion having a recessed portion for mounting a reel thereon, and a means for fixing a reel foot to the recessed portion, the improvement comprising:

- a blind bore recess formed in said intermediate portion at a position approximately opposite to said recessed portion,
- a trigger pivotably secured in said blind bore recess,
- a locking means disposed in said blind bore recess for selectively locking said trigger at a trigger extended position and a trigger retracted position, said trigger having one end surface thereof adapted to be substantially flush with a surface of said intermediate portion in the trigger retracted position,

whereby said trigger may be positioned in said extended position when a spin cast reel is mounted within said recessed portion, and in said retracted position when a spinning reel is hangingly mounted from said recessed portion, the position of said trigger being independent of the type of reel mounted upon said reel mounting handle.

4,229,999

VARIABLE DEPTH FISHING LURE SYSTEM

Welbourne D. McGhee, Melbourne, Fla., assignor to Loop-A-Line, Inc., Melbourne, Fla.

Filed Mar. 26, 1979, Ser. No. 23,681

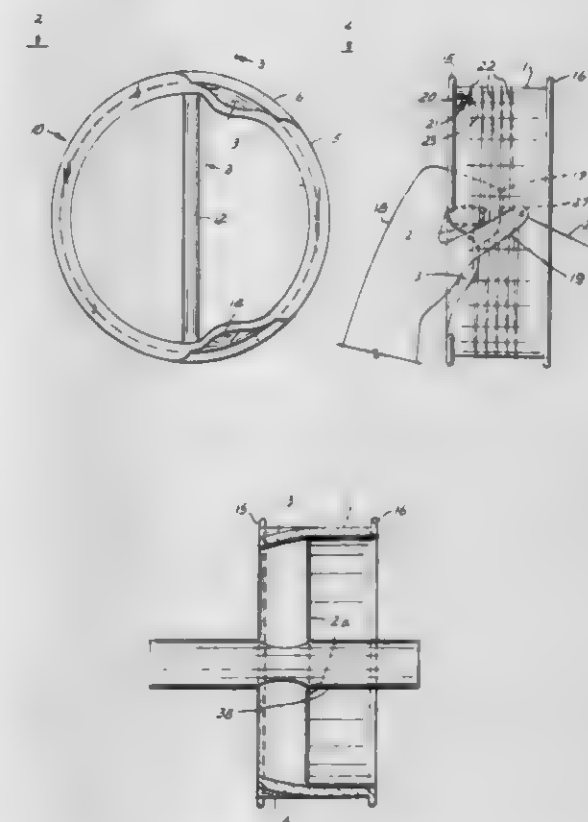
Int. Cl.³ A01K 85/00

U.S. Cl. 43-42.09

14 Claims

1. A fishing lure system, comprising:
a set of fishing hooks including a plurality of interchangeable hooks each of which includes a calibrated weight in the

1. Fishing apparatus, comprising a tubular cylinder around which any selected length of fishing line may be randomly wound, and a crossbar interiorly across said cylinder fixedly connected between opposite sides of said cylinder adapted to be held by hand to support said cylinder, said crossbar being disposed adjacent an end of said cylinder whereby said crossbar may be grasped by the fingers of one hand while the thumb of the same hand is disposed at the exterior of the cylinder to be used to control fishing line wound therearound, said cylinder having a smoothly depressed outer surface portion inwardly flared toward the cylinder end adjacent which said crossbar is disposed and at one side of an end of said crossbar against which the thumb may be comfortably positioned while the fingers are disposed about said crossbar inward of said cylinder, said apparatus including a bar affixed to said crossbar and disposed transversely of said crossbar along the axis of said cylinder and extending to opposite sides of said crossbar



adapted for holding loosely by hand to permit rotation of said cylinder therearound and adapted for holding more firmly by hand to produce drag in the fishing line and adapted to be fixedly held by hand to prevent rotation of said cylinder therearound.

4,229,901

FISHING HOOK WITH ENCIRCLING HOLDER FOR LIVE BAIT

Gene D. Flowers, Box 181, R.R. 2, Mulkeytown, Ill. 62865, and David E. Flowers, 1011 E. Market St., Christopher, Ill. 62822
Filed Aug. 7, 1978, Ser. No. 932,046

Int. Cl.³ A01K 83/06

U.S. Cl. 43-44.4

5 Claims



1. A fishing hook with a girth-encircling holder for live bait, comprising:

a basic hook including a generally vertical shank with a curved lower portion, when upright, terminating in a barbed point, said shank having an upper end provided with an eye;

a support structure mounted on said basic hook so as to depend below said curved lower portion thereof, said support structure further including a first eye mounted on said basic hook and disposed generally midway along said shank;

a flexible strap means secured to said support structure below said basic hook lower curved portion, and extending upwards from said basic hook lower curved portion, through said first eye of said support structure and through said eye at the upper end of said basic hook;

said flexible strap having an upper portion constituting a fishing line leader terminating upwardly in fastening means for fastening the leader to a fishing line;

the flexible strap having enlargement means thereon located between where said flexible strap means is secured to said support structure and said first eye; said enlargement means being sized and located to act as a positive stop for limiting the constrictability in girth of a loop that is cooperatively defined by said support structure and basic hook and said flexible strap.

said support structure being constituted by a wire rod armature having said first eye provided thereon and further having a second eye and a third eye provided thereon so that the second and third eyes are disposed below said curved lower portion of said basic hook and at generally the same level as one another;

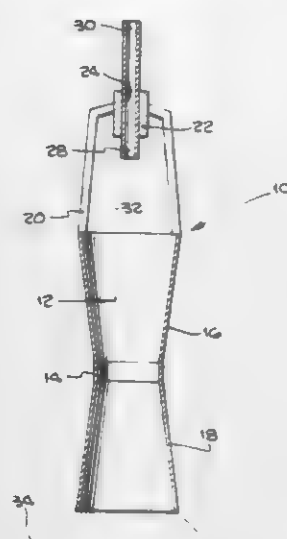
the flexible strap being comprised of a section of fishing line led through said first, second and third eyes and then knotted to itself between said first and second eyes with a knot that is too large to fit through said first eye and thus constitutes said positive stop,

so that when an individual of live bait, such as a minnow, is inserted through the loop and the loop is constricted by pulling up on the leader relative to the basic hook the enlargement acts to prevent slicing through the live bait so that the live bait is juxtaposed beside the basic hook without being impaled thereby and thus is free to wriggle though harnessed from escaping.

4,229,902
AUGMENTED BUBBLE BLOWER DEVICE
Forrest D. Smith, P.O. Box 3784, Eureka, Calif. 95501
Filed May 8, 1978, Ser. No. 903,742
Int. Cl.³ A63H 33/28

U.S. Cl. 46-6

9 Claims



1. An augmented bubble blower device comprising: a tubular member having a nozzle end for discharging gas, an open chamber, a venturi chamber spaced from said nozzle end and having a longitudinal axis, said venturi chamber including in axial alignment a converging section adjacent said open chamber, a constricted throat section, and a diverging section, and means for slidable mounting said tubular member for movement along said longitudinal axis toward and away from said venturi chamber, said means for mounting positioning said tubular member so that said nozzle end is adapted to discharge gas into said open chamber toward said venturi chamber approximately along said longitudinal axis whereby gas discharged from said nozzle end enters said venturi chamber and draws additional gas from said open chamber into said venturi chamber, and means for supporting a film of bubble forming material in position to receive gas after said gas passes through said diverging section.

4,229,903
REMOTE CONTROLLED TALKING AMUSEMENT DEVICE

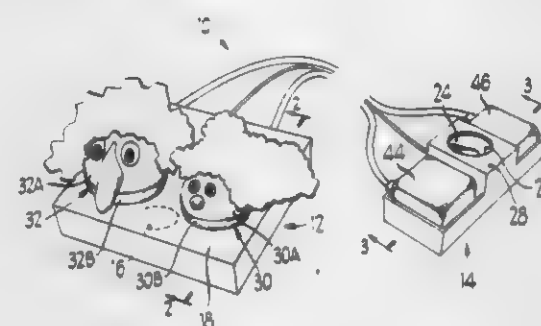
Howard J. Morrison, Deerfield, and John R. Wildman, North Riverside, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,807

Int. Cl.³ A63H 33/26

U.S. Cl. 46-232

6 Claims



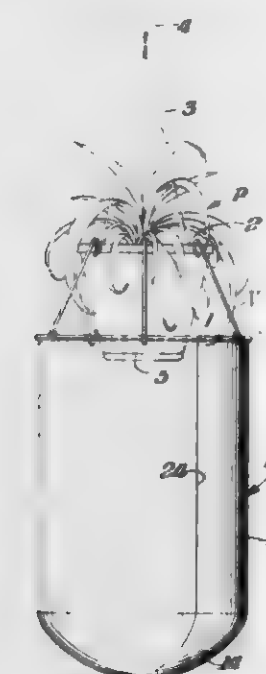
1. A children's amusement device useful to improve a child's hand and eye coordination, comprising: a base, first transducer means secured to said base for transmitting an audible signal from said base, at least two juxtaposed fanciful heads secured to said base,

each of said heads having at least one movable head portion, said base having a pair of motive means for independently moving said head portion of each of said heads, a control unit physically separate from said base, said control unit having mounted centrally thereon a second transducer means secured to said control unit for receiving an audible signal, said control unit also having a pair of opposed manually operated actuating means secured to said control unit on either side of said second transducer means, each of said actuating means operative to actuate one of said motive means to selectively move one of said head portions synchronously with respect to said audible output signal, means for functionally interconnecting said base and said control unit for operating said amusement device and for simultaneously enabling said control unit to be physically remotely disposed from said base during operation of said amusement device, said functionally interconnecting means including means for electrically interconnecting said first transducer means and said second transducer means and means for operatively interconnecting said motive means and said actuating means, such that a child can operate said device by speaking into said centrally mounted second transducer means while simultaneously actuating one of said motive means by operating one of said manually operated actuating means with one hand and thereafter actuating the other of said means with the other hand to simulate a conversation between said fanciful heads while all the time speaking into said centrally mounted second transducer means.

4,229,904
METHOD AND DEVICE FOR FACILITATING THE WATERING OF HANGING PLANTS
Allen H. Burton, Box 83, Central Ave., Ocean View, Del. 19970
Filed Nov. 22, 1978, Ser. No. 962,963
Int. Cl.³ A01G 9/02

U.S. Cl. 47-58

6 Claims



1. A method for facilitating the watering of hanging plants wherein the plant is in a hanging pot comprising the steps of disposing an elongated waterproof flexible container under the hanging pot with the container having a closed bottom and an open top of larger cross-sectional area than the cross-sectional area of the pot and with the container being deeper than it is wide, detachably securing the container to the pot thereabove with the container extending substantially, concentrically outwardly beyond the pot, tucking all hanging vines of the plant down into the container so that the plant and its vines are disposed within the periphery of the container, watering the plant by directing water to the pot from above, catching and

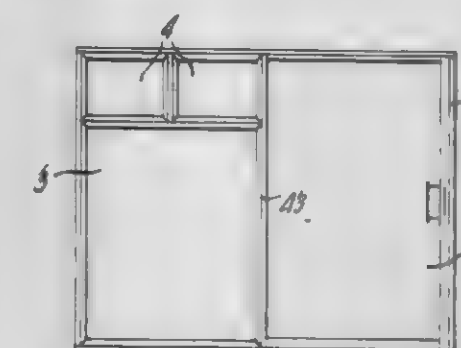
collecting in the container any spillage from the watering of the plant in the pot, detaching the container from the hanging pot, removing the container away from the hanging pot and attaching the container to another hanging pot to facilitate the watering of the plant therein.

4,229,905
COMBINED DOOR AND WINDOW FRAME SYSTEM
Jerome B. Rush, 3 Stanhope Pl., London, W.2., England
Filed Feb. 2, 1978, Ser. No. 874,557
Claims priority, application United Kingdom, Feb. 2, 1977, 4209/77

Int. Cl.³ E06B 3/32

U.S. Cl. 49-143

11 Claims

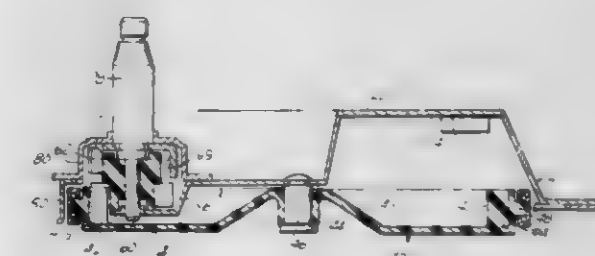


1. An elongate extruded metal frame member comprising in cross-sectional view: a supporting portion of hollow box section, a first flange extending a first wall of the box section to define with a second wall an L-shaped recess, a web extending a third wall of the box section, a second flange connected to said web and extending in the same direction as and parallel to said first flange, a projection extending from said web in the same direction as said first and second flanges and having a recess facing said second flange for retaining draught excluding material, said first and second walls having projections extending over said second wall for retaining a glazing bead adjacent said second wall, said first wall having a pair of adjacent claws facing toward the L-shaped recess and defining between them a channel for retaining draught excluding material or a glazing gasket.

4,229,906
WINDOW REGULATOR
Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.
Filed Aug. 2, 1978, Ser. No. 930,376
Int. Cl.³ E05F 11/48

U.S. Cl. 49-352

6 Claims



1. A window regulator comprising a circular drum having a flat peripheral portion having an annular flange extending axially from one side of said drum, the central portion of said drum extending laterally from its flat peripheral portion in the same direction as said annular flange, and a central tubular hub extending axially from said central portion of said drum in a direction opposite to that in which said flange extends, said annular flange and hub being generally axially coextensive, the inner surface of said annular flange having a circular array of

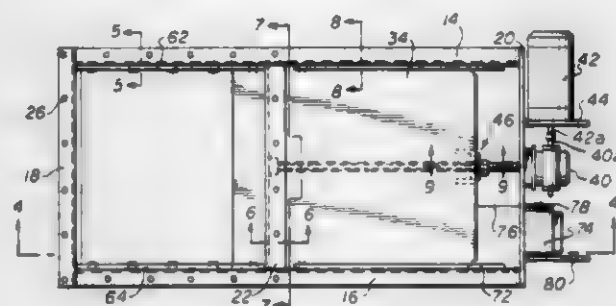
gear teeth thereon, the outer surface of said annular flange having a narrow guide flange extending radially outwardly therefrom, a generally circular support housing having a drum supporting pin fixed centrally thereon and extending in the same direction from said support housing as said hub, said drum being mounted by its hub for rotation on said pin, said support housing having a circular housing flange extending therefrom in the same direction as said pin, said housing flange being spaced radially outwardly from said guide flange to define an annular confining space therewith, a pinion pivotally mounted on said support housing between said drum and support housing and in mesh with the gear teeth on the annular flange of said drum, an elongated, slightly flexible window actuating element having in cross-section a flat tape portion and laterally and then inwardly extending tangs spaced apart to define a central guide groove therebetween, said element being wound on the outer surface of said drum with said guide flange extending into the space between said tangs, one end of said element being fixed to said drum, said housing flange being discontinuous to define a window through which flexible element extends, an elongated functionally rigid support on which the portion of said element exterior of said support housing is slidable having one end fixed to said support housing adjacent said window, a bracket on said flexible element for attachment to a vehicle window, and means for rotating said pinion to drive said drum in opposite directions to move said bracket longitudinally of said support.

6. A window regulator comprising a circular drum integrally formed of plastic material and having a peripheral cylindrical flange and a central tubular hub concentric with said cylindrical flange, an intermediate portion of said drum connecting said flange to said hub comprising a conical portion, said cylindrical flange extending laterally from the periphery of said intermediate portion in one direction, said tubular hub extending laterally from said intermediate portion in the opposite direction, so that said conical portion constitutes a reinforcement between said cylindrical flange and said hub, said cylindrical flange and hub being generally axially coextensive, the inner surface of said annular flange having a circular array of gear teeth thereon, the outer surface of said annular flange having a narrow guide flange extending radially outwardly therefrom, a generally circular support housing having a drum supporting pin fixed centrally thereon and extending in the same direction from said support housing as said hub, said drum being mounted by its hub for rotation on said pin, said support housing having a circular housing flange extending therefrom in the same direction as said pin, said housing flange being spaced radially outwardly from said guide flange to define an annular confining space therewith, a pinion pivotally mounted on said support housing between said drum and support housing and in mesh with the gear teeth on the annular flange of said drum, an elongated, slightly flexible window actuating element having in cross-section a flat tape portion and laterally and then inwardly extending tangs spaced apart to define a central guide groove therebetween, said element being wound on the outer surface of said drum with said guide flange extending into the space between said tangs, one end of said element being fixed to said drum, said housing flange being discontinuous to define a window through which flexible element extends, an elongated functionally rigid support on which the portion of said element exterior of said support housing is slidable having one end fixed to said support housing adjacent said window, a bracket on said flexible element for attachment to a vehicle window, and means from rotating said pinion to drive said drum in opposite directions to move said bracket longitudinally of said support.

4,229,907
SLIDE GATE
George R. Hall, Houston, Tex., assignor to Keystone International, Inc., Houston, Tex.
Filed Mar. 31, 1978, Ser. No. 892,175
Int. Cl.³ E05F 11/34

U.S. Cl. 49—362

10 Claims



1. Apparatus for selectively opening and closing a passage-way comprising:

- (a) a gate;
- (b) frame means for guiding said gate;
- (c) screw means mounted for rotational motion relative to said frame means; and
- (d) lost motion coupling means for coupling said gate to said screw means and for converting rotational motion of said screw means into translational motion of said gate, and whereby said screw means may undergo rotational motion to a predetermined extent before said coupling means so converts said rotational motion of said screw means into translational motion of said gate, further comprising:
 - (i) a traveling nut threadedly engaged with said screw means;
 - (ii) follower means;
 - (iii) connection means joining said traveling nut with said follower means while permitting a predetermined spacing between said traveling nut and said follower means; and
 - (iv) coupler means fixed relative to said gate for positioning between said traveling nut and said follower means whereby said traveling nut and said follower means may each separately engage said gate to apply driving force thereto, said coupler means being sized relative to said spacing to permit motion of said traveling nut and said follower means relative to said gate corresponding to said predetermined extent of rotational motion to said screw means without conversion to translational motion of said gate.

4,229,908
APPARATUS FOR AUTOMATIC JOINT MACHINING IN HEAVILY THICK CYLINDERS

Cesare Panzeri, Macherio, Italy, assignor to Breda Termomeccanica S.p.A., Milan, Italy

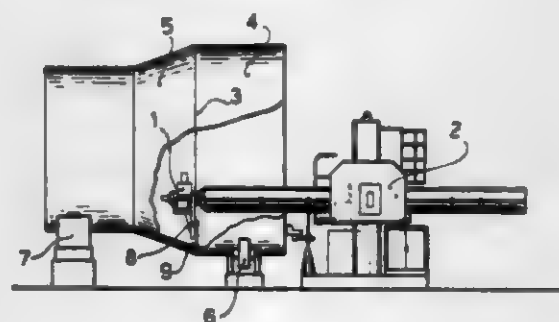
Filed Oct. 24, 1978, Ser. No. 954,202

Claims priority, application Italy, Jun. 1, 1978, 24114 A/78

Int. Cl.³ B24B 5/40

U.S. Cl. 51—103 R

6 Claims



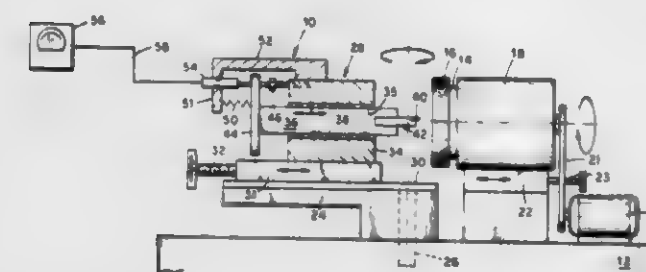
1. An apparatus for the automatic machining of joints in

cylinders comprising a handling device, a first base structure attached to said handling device and provided with vertical guides, a first carriage slidable on the said vertical guides, a second base structure attached to said carriage and provided with horizontal guides, a second carriage slidable on said horizontal guides, a hydropneumatic device mounted on said second carriage and comprising at least one double acting pneumatic piston and cylinder assembly and a hydraulic damper, an operating head, and means attaching said operating head to said hydropneumatic device, said attaching means including means for angularly orienting said operating head relative to said second carriage about a vertical axis, said pneumatic piston and cylinder assembly having a lower chamber and an upper chamber, means for supplying said lower chamber with fluid at a first pressure to cause a fast lifting of said head, and means for supplying said upper chamber with fluid at a second pressure lower than said first pressure to annul the upward thrust while supplying said operating head with a downward operative thrust of a constant value.

4,229,909
TOOL GRINDING MACHINE
Charles E. Dial, Sr., Lenoir City, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 22, 1979, Ser. No. 22,895
Int. Cl.³ B24B 3/34

U.S. Cl. 51—165.75

5 Claims



1. A tool grinding machine comprising a rotatable grinding wheel, tool holding means for holding a tool to be ground to desired tolerances, bearing means for supporting the tool holding means in a relatively movable manner therewith along a path in a single plane, pivotal means coupled to said bearing means for rotating the tool holding means over a preselected arc on an axis perpendicular to said plane and parallel to the face of the grinding wheel, moving means disposed intermediate said pivotal means and said bearing means for effecting relative displacement of said bearing means and the tool holding means supported thereby along said plane, sensing means coupled to said tool holding means for sensing said relative movement of said tool holding means within said bearing means when the tool is placed in contact with said grinding wheel by said moving means and when the tool holding means is displaced about said arc while in said contact with the grinding wheel, and spring means engaging said tool holding means for continually urging the latter along said path towards said grinding wheel.

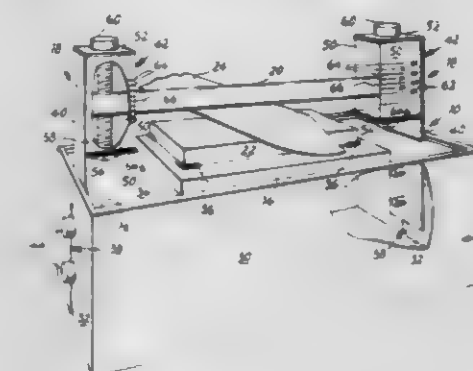
4,229,910
KNIFE SHARPENING APPARATUS
James A. McRae, P.O. Box 21, Beatty, Ore. 97621
Filed Dec. 6, 1978, Ser. No. 966,883
Int. Cl.³ B24D 15/08

U.S. Cl. 51—211 H

6 Claims

1. Knife-sharpening apparatus comprising, in operative condition, a platform supporting a sharpening stone thereon, a bar mounted adjacent said platform, means defining a scale of markings representing spacings between said bar and said platform measured relative to a preselected spacing,

shifting means for producing such preselected spacing between said scale-defining means and said platform, and bar shifting means operatively interconnecting said bar and said platform, selectively operable, independent of said shifting means, to produce a desired spacing between said

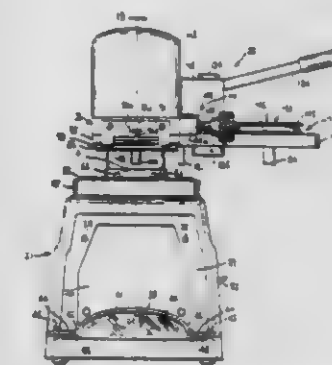


bar and said platform corresponding to a preselected one of said scale markings, wherein a knife blade placed with its working edge against said stone and its opposite edge against said bar is held at a preselected angle relative to said stone.

4,229,911
PRECISION BLOCKING OF SEMI-FINISHED LENS BLANKS
Bela J. Bicskei, 7 Hemenway Rd., Framingham, Mass. 01701
Filed Apr. 3, 1978, Ser. No. 893,078
The portion of this patent subsequent to Feb. 6, 1996, has been disclaimed.
Int. Cl.³ B24B 1/00

U.S. Cl. 51—284 E

6 Claims



1. The method of blocking a lens blank with a prescribed optical condition comprising the steps of:

- (a) manually positioning a lens blank in an instrument until the prescribed optical condition has been satisfied; and
- (b) affixing a block to said lens blank without moving it from its adjustment position using a plunger mechanism to bring a releasable block bearing a double-faced adhesive strip into contact with the lens blank to adhesively secure the block to the blank.

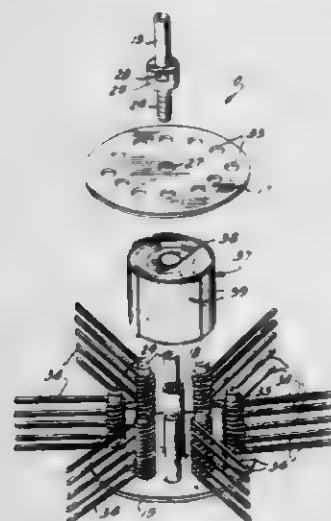
4,229,912
TAKE-APART CONVERTIBLE ROTARY TOOL
William F. Laughlin, 133 Division St., St. Charles, Ill. 60174
Filed May 30, 1978, Ser. No. 910,210
Int. Cl.³ B24D 13/04

U.S. Cl. 51—335

8 Claims

1. A take-apart convertible rotary tool for working a surface by means of peripherally extending yieldable working elements, comprising: a pair of spaced coaxial body disks of substantial diameter; an axial hub of substantially smaller diameter than the disks and having one end permanently fixedly attached in unitary relation to the center of one of said disks, and the opposite end of said hub projecting toward the other disk;

said other disk being separably assembled with said opposite end of said hub;
 said hub having a threaded bore opening through said opposite end;
 said other disk having a central opening slightly larger than said threaded bore but smaller than the diameter of said other end of said hub;
 an arbor adapted to be engaged by a power tool chuck and having a threaded shank projecting axially from a clamping shoulder integral with said arbor and of larger diameter than said shank;
 said shank engaging through said central hole in said other disk into threaded engagement in said threaded bore whereby said shoulder clamps said other disk toward said other end of the hub, said arbor being adapted to function as the sole means for securing said other plate to said hub and having peripheral wrench face means adjacent to said shoulder to facilitate threaded manipulation of the arbor for securing the parts of the tool together or for separating the parts of the tool from one another;
 a plurality of working element supporting shafts having one of their ends permanently fixedly attached in unitary relation to said one disk at respective spaced intervals relative to each other and relative to said hub and projecting toward said other disk;
 said shafts being longer than said hub;
 said other disk having socket holes therein complementary in diameter to said shafts;



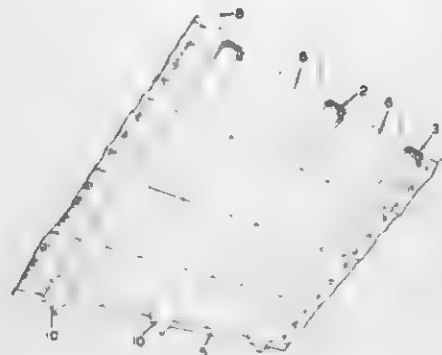
free ends of said shafts extending freely slidably and freely releasably and without affixation into said sockets for mutual cooperation of said shafts and said other disk so that said shafts maintain said other disk corotative with said one disk and said other disk maintains said free ends of said shafts in stable relation in the assembly and working elements mounted on said shafts will be held against escape;

said other disk being separable from said hub and said shafts by simply detaching said arbor from said hub so that said other disk is then adapted to be freely lifted away from said free ends of said shafts for attaching or removing the working elements relative to said shafts, said other disk being then adapted to be quickly replaced and the arbor shaft rethreaded into said threaded bore of the hub to refasten said other disk and the unit comprising said one disk and the unitarily attached hub and shafts;

a roll of surface finishing material comprising finishing strips secured to a tubular core, said core received about said hub between said disks and inside said shafts, said core being retained between said disks but being rotatable relative to said hub to pay the strips out between said shafts;

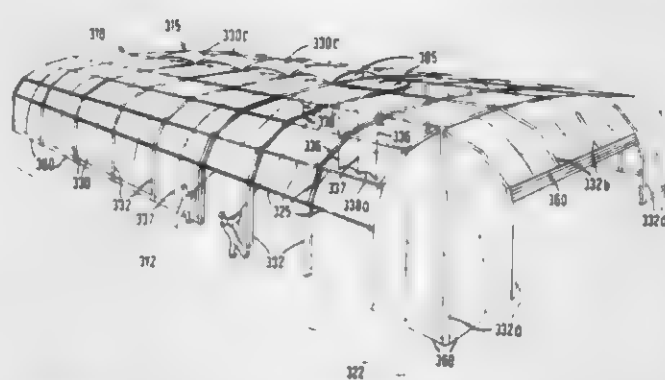
and stiff working elements mounted rotatably on said shafts and adapted to serve as primary surface cleaning elements, and also to serve as backing for said strips when the strips are paid out for finishing purposes.

4,229,913
CEILING DISPLAY
 James L. Corrigan, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
 Filed Aug. 24, 1979, Ser. No. 69,549
 Int. Cl.³ E04B 5/52; E04F 19/02
 U.S. Cl. 52—38 5 Claims



1. A ceiling display unit comprising:
 - (a) a plurality of T-shaped runner members formed into a grid pattern, said runners having flanges adapted to support ceiling boards,
 - (b) a plurality of ceiling boards with different designs on the faces thereof positioned in the grid pattern of the runners,
 - (c) said runners and ceiling boards being suspended from structural members of a building and being positioned about 7 to 14 feet above the floor of the building, the plane of the faces of the ceiling boards having the different designs being inclined slightly from the vertical so that the ceiling board faces can be viewed directly on by a person standing on the floor of the building; and
 - (d) the improvement comprising
 - (1) divider means positioned perpendicular to the plane of the faces of the ceiling boards, said divider means separating the different ceiling board designs one from the other.

4,229,914
BUILDING STRUCTURES
 Raymond D. Lucas, "Maryland", Old Mill La., Bray-on-Thames, Berkshire, England
 Filed Apr. 12, 1978, Ser. No. 895,651
 Claims priority, application United Kingdom, Oct. 7, 1977, 41873/77
 Int. Cl.³ E04B 1/347
 U.S. Cl. 52—63 5 Claims



1. A building structure comprising a plurality of arch frames disposed in vertical planes extending transversely of the building structure and spaced apart longitudinally of the building structure, each frame being provided with retainer means for longitudinal beaded edges of flexible roofing material in the form of strips, characterized in that the lengths of two of said strips are in aggregate less than that required to extend continuously along a said arch frame, said two strips are slidingly received in said retainer means of a pair of neighbouring ones

of said frames such that said two strips extend with their width dimensions directed longitudinally of the building structure across space between said pair of neighbouring frames and with their length dimensions directed transversely of the building structure in opposite directions away from a gap in the roof of the building structure between adjacent upper ends of said two strips, the bottom edges of said two strips remote from said gap are positionally fixed, and said two strips are tensioned in the direction of their length dimensions by adjustable tensioning means interconnecting the upper ends of said two strips and acting between said two strips in the general direction of their said length dimensions.

4,229,915
CORNER BRACKET WITH SADDLE FOR HIP RAFTERS OF BUILDINGS
 Kenneth T. Snow, P.O. Box 175, Gilberts, Ill. 60136, and Kenneth T. Snow, Jr., 837 Price Charles La., Schaumburg, Ill. 60195
 Filed Apr. 27, 1979, Ser. No. 33,816
 Int. Cl.³ E04B 1/60
 U.S. Cl. 52—92 3 Claims



1. A building corner bracket with an integral hip saddle for wood framed buildings of the type having walls disposed at right angles to one another and forming a corner, and each wall having a top plate, said bracket comprising a horizontal plate having a portion thereof disposed over the tops of the top plates of the adjoining walls and another portion thereof extending inwardly of the corner, a first tab struck downwardly from the horizontal portion extending inwardly of the corner and adapted to abut against the inner wall of one of the wooden top plates, a second downwardly struck tab from the horizontal portion extending inwardly of the corner and disposed at right angles with respect to the first tab and adapted to abut against the inner wall of the adjoining wooden top plate, a first tab struck upwardly from the horizontal portion disposed over the tops of the top plates of the adjoining walls and a second tab struck upwardly from the horizontal portion disposed over the tops of the top plates of the adjoining walls and spaced apart from the first upwardly struck tab and lying parallel thereto, said upwardly struck tabs defining with a section of the horizontal portion between the tabs, a saddle for a hip rafter, said horizontal plate, the downwardly struck tabs and the upwardly struck tabs having nail holes for inserting nails therein to securely hold the bracket to the adjoining wooden walls and the included roof hip rafter.

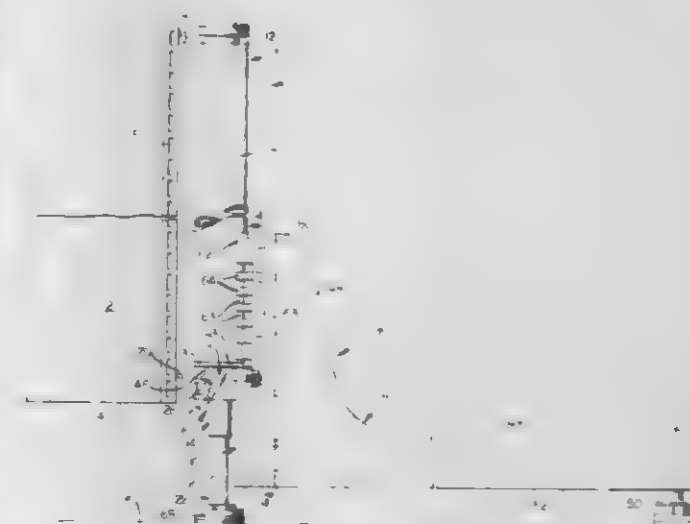
4,229,916
BUILDING PANEL
 Robert W. White, 37930 Sheffield, Mt. Clemens, Mich. 48043
 Filed Sep. 29, 1978, Ser. No. 946,948
 Int. Cl.³ H02G 3/14
 U.S. Cl. 52—98 6 Claims

1. A building panel for use in conjunction with manufactured siding such as aluminum and vinyl siding which is constructed to provide a surface having a lapped siding appearance, said building panel having substantial dimensions in two mutually perpendicular directions parallel to the sides thereof, said building panel being rectangular and having a top edge, a

bottom edge and two side edges, flanges extending in the same direction from one side thereof perpendicular to the building panel at the top, bottom and side edges thereof, a pair of reinforcing ribs extending in the same direction from the one side thereof perpendicular to the building panel between the top and bottom flanges substantially centrally of the building panel, said flanges and reinforcing ribs terminating in surfaces having a configuration complementary to the configuration of the manufactured siding so as to fit flush against the installed manufactured siding, said building panel having a flat surface on the side thereof opposite the flanges and reinforcing ribs

which is vertical with the building panel installed to facilitate vertical mounting of a fixture on a building structure, three spaced apart annular grooves in the surface of the one side of the building panel on the upper two-thirds thereof surrounded by annular ridges on the surface of one side of the building panel and one annular groove in the surface of the lower one-third of the one side of the building panel surrounded by an annular ridge whereby the other side of the building panel is flat and openings may be readily effected at different locations vertically thereof to facilitate connecting of the fixture on the building panel.

4,229,917
STRUT SUPPORT ASSEMBLY
 Melvin A. Textoris, Struthers, Ohio, and Thomas L. Holman, Sharpsville, Pa., assignors to GF Business Equipment, Inc., Youngstown, Ohio
 Filed Mar. 7, 1979, Ser. No. 18,577
 Int. Cl.³ E04H 1/00
 U.S. Cl. 52—239 12 Claims



1. A strut support assembly for a partition system including, an upright having an exterior periphery terminating in a bottom edge adjacent a hollow interior, a retainer assembly partly disposed within said upright interior and extending below said bottom edge, said retainer assembly having an enlarged medial

portion and provided with a fastener receiving groove beneath said upright bottom edge and above said medial section, a strut assembly including a vertical strut support and a radially extending floor strut, said vertical strut support provided with an attachment surface having a configuration mating with that of said upright exterior periphery and said retainer assembly medial section, said strut support having fastener carrying means therein, a fastener member insertable through said fastener carrying means and encircling said retainer assembly within said fastener receiving groove to securely abut said strut assembly attachment surface against said upright periphery above said fastener member and against said retainer assembly medial section below said fastener member.

4,229,918

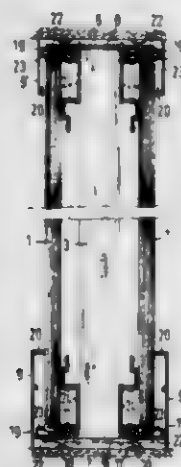
COMPLEMENTARY ELEMENTS ASSEMBLEABLE INTO A PARTITION FOR PREEXISTING WALL-PARTITIONS

Andre Delcroix, rue Paul Pastur 5, 59391 Wattrelos, France
Filed Jun. 21, 1978, Ser. No. 917,580

Claims priority, application France, Jun. 22, 1977, 77 19698
Int. Cl.² E04H 1/00; E04B 2/74

U.S. Cl. 52-242

13 Claims



1. A device consisting of complementary elements for the purpose of fitting a sandwich filled or central cored type partition, having either a carrier framework or being a self-supporting type and being formed by opaque, translucent or transparent flat elements, to existing interior surfaces, that is, floor, ceiling, and side walls, adjoining certain outer edges of the partition, said device comprising, as a first essential element, a sole piece section made of plastics material of which the cross-sectional configuration throughout the whole of its length presents, on its face at the side which is applied against the existing interior surfaces and which forms the start of the partition, two feet of dovetail form, and presents, on the other face, firstly, flat parts on which the panels of the partition rest edgewise, and secondly, perpendicular flanges against which said panels can rest, and having in its two side edges a longitudinal slot; and further comprising, as a second essential element complementary to the first, a profiled joint cover member of which the cross-section over the whole of its length has the configuration of an upright L of which the outermost end of a shorter side bears against the panel of the partition and the outermost end of a longer side bears against the existing interior surface, the longer side of the L being provided inwardly near its outermost end with a rib which is designed to fit into said slot of said sole piece section and which has a length considerably greater than that of the shorter side of said L, and being provided, above but adjacent to said rib, with a supplementary flange of which the extremity bears against the panel of the partition thereby limiting the extent to which said rib can enter into said slot in the sole piece section.

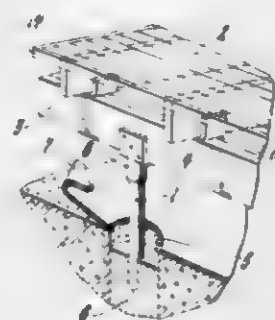
4,229,919 KIT OF COMPONENTS FOR INTERCONNECTING STRUCTURAL MEMBERS, AND METHOD OF UTILIZING SAME

Robert S. Hughes, Southfield, Mich., assignor to Oakwood Manufacturing, Inc., Oxford, Mich.

Continuation of Ser. No. 844,017, Oct. 20, 1977, which is a division of Ser. No. 621,789, Oct. 14, 1975, Pat. No. 4,081,940, which is a continuation of Ser. No. 372,698, Jun. 22, 1973, Pat. No. 3,921,356. This application Feb. 12, 1979, Ser. No. 11,213
Int. Cl.³ E04B 1/343

U.S. Cl. 52-263

17 Claims



1. A method of erecting a structure elevated off of the ground, comprising the steps of:
rigidly installing a plurality of post members projecting out of the ground in a predetermined pattern and in such a manner that the major longitudinal axis of each said post member is oriented substantially vertically and that the uppermost ends of said post members lie substantially within a plane which is oriented in a substantially horizontal fashion;
placing substantially at the top of each said post member an associated first apparatus having upper and lower portions whose major surfaces are oriented substantially parallel to said major longitudinal axis of the post member;
placing adjacent to said upper portion of each said first apparatus one or more structural members to form a series of substantially parallel beams;
fastening said beams to said upper portion of said first apparatus;
fastening at predetermined periodic spaced intervals on the top of said substantially parallel beams a plurality of second apparatuses by passing fastening means through apertures in the lowermost part of each said second apparatus and into the uppermost surface of said beams;
placing one or more structural members within each said second apparatus to form a series of substantially parallel joists which are oriented substantially perpendicular to said series of beams; and
fastening a layer of structural members on top of said joists to form the elevated structure.

4,229,920

FOAMED PLASTIC CONCRETE FORM AND CONNECTORS THEREFOR

William D. Lount, Winnipeg, Canada, assignor to Frank R. Lount & Son (1971) Ltd., Winnipeg, Canada
Filed Sep. 25, 1978, Ser. No. 945,524

Claims priority, application United Kingdom, Oct. 5, 1977, 41420/77

Int. Cl.³ E04B 2/32; E04C 2/20

U.S. Cl. 52-309.12

6 Claims

1. A form for concrete walls and the like comprising in combination a pair of substantially rectangular foamed plastic panels, and means to maintain said panels in spaced and parallel relationship, said means including cooperating pairs of vertically situated anchor means embedded within said panels, connector engaging means extending from each of said pair of anchor means and protruding from one face of said panels, and a connector slidably engaging upon said corresponding pairs of connector engaging means in detachable locking relationship

thereby holding said panels in the said spaced and parallel relationship, each said pair of anchor means including a base portion embedded within said panel with said connector engaging means extending therefrom, each said anchor means including an upper and lower connector engaging means situated substantially at right angles to the longitudinal axis of said panel in spaced apart relationship one above the other and spaced from the upper and lower edges of said panel by a

means to facilitate attachment of said subassembly to said appliance door.

4,229,922

WALL ASSEMBLY

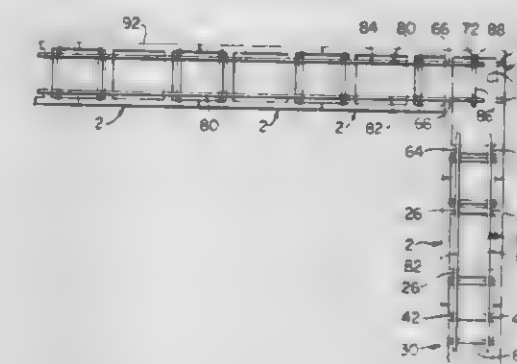
John E. Clark, Jr., 735 Granvia Valmonte, Palm Springs, Calif. 92266

Filed Jun. 4, 1979, Ser. No. 45,188

Int. Cl.¹ E04C 1/10

U.S. Cl. 52-586

7 Claims



similar amount and also being spaced inwardly from the ends of said panel by a similar amount whereby said panels are interchangeable and reversible end to end, said connector including a vertically situated frame and upper and lower portions on each side of said frame operatively engaging with the corresponding connector engaging means of said anchor means, a pair of jaws on each of said connector engaging means and guide means formed on said portions of said connector slidably engageable within said jaws.

4,229,921

APPLIANCE DOOR DECORATOR PANEL CONSTRUCTION

Paul F. Schell, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Nov. 30, 1978, Ser. No. 964,840

Int. Cl.² E04C 1/40; A47B 43/00

U.S. Cl. 52-506

11 Claims



1. A decorator kit subassembly for an appliance door, the combination comprising: a support panel having lower flange means for supporting a decorator panel insert and further having rearwardly spaced generally vertically extending side flange means including an inwardly turned rear flange portion in a generally vertical plane; generally vertical side channel means on each side of said support panel having a front lip spaced from the front surface of said support panel to receive said panel insert therebetween and to retain said panel insert on said support panel, a rearwardly extending side surface, and an inwardly turned rear flange means disposed in a generally vertical plane parallel to the plane of said rear flange portion of said support panel side flange means in overlapping and generally mating contact therewith; and fastener means engaging the rear flange portion of the side flange means of said support panel and the rear flange means of said side channel means to secure said side channel means to said support panel for forming a decorator kit subassembly of said support panel and said side channel means, said fastener means including integral

1. A wall assembly comprising a plurality of building blocks, each of said building blocks have a first upstanding rectangularly-shaped wall portion, a second upstanding rectangularly-shaped wall portion parallel to and coextensive with said first wall portion, and a third interconnecting said first and second wall portions, said first wall portion having first groove means on an interior surface thereof opposed to said second wall portion, said first groove means extending from an upper edge of said first wall portion toward a lower edge of said first wall portion, said second wall portion having second groove means on an interior surface thereof opposed to said first wall portion, said second groove means extending from an upper edge of said second wall portion toward a lower edge of said second wall portion, said third wall portion having third groove means in an upper edge thereof, said third groove means extending width-wise of said third wall portion upper edge, and a lattice member comprising first and second elongated runner members disposed parallel to each other and generally coextensive with each other, and spreader members, each spreader member interconnecting said runner members, the ends of said spreader members extending beyond said runner members, said spreader members being upturned at their ends to provide end portions extending substantially normal to said spreader member and extending upwardly above said runner members, said first and second groove means being adapted to receive said spreader and portions and said third groove means being adapted to receive said runner members, whereby said lattice member is adapted to interconnect and lock together said plurality of building blocks to form a wall structure

4,229,923

METHOD OF CONNECTING PIPES AND FLANGED PIPE JOINTS USED THEREIN

Noriatsu Kojima, 5-31, Yanagishima-cho, Nakagawa-ku, Nagoya-shi, Japan

Filed Sep. 15, 1977, Ser. No. 833,410

Claims priority, application Japan, Sep. 16, 1976, 51/111213; May 31, 1977, 52/63733

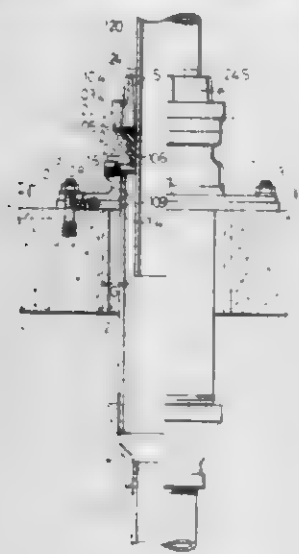
Int. Cl.² E04B 5/48

U.S. Cl. 52-741

2 Claims

1. A method of assembling a pipeline in a building, which pipeline extends through floors or walls of said building, comprising:
providing pipes,
making a through-hole in a wall or floor portion of said building having a diameter larger than said pipes,
providing a pipe joint having a flange larger than said through-hole and including means for transverse adjust-

ment thereof on said wall or floor portion and for engagement by anchoring means to secure said pipe joint in a selected one of a plurality of possible positions, said pipe joint comprising means for receiving a pipe non-perpendicularly relative to the plane of the flange, providing anchor means in said wall or floor portion in position to engage said flange when said pipe joint is positioned substantially coaxially or somewhat misaligned with said through-hole, placing an elastic gasket on said wall or floor portion about said through-hole to accommodate tilting.



placing said pipe joint in position with the flange engaging said elastic gasket and said adjustment means of said flange being adjacent said anchor means, said pipe joint extending away from said through-hole, securing a pipe to said pipe joint, said pipe extending in said through-hole, effecting lateral adjustment of said pipe and pipe joint, and thereafter fixing said flange in a selected position by operation of said anchor means.

4,229,924

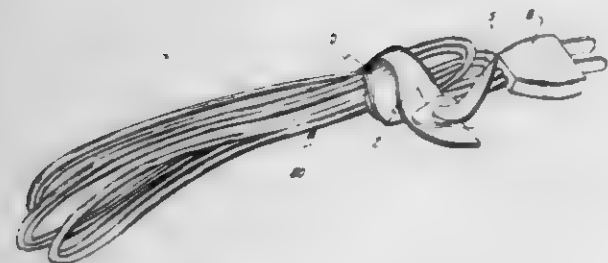
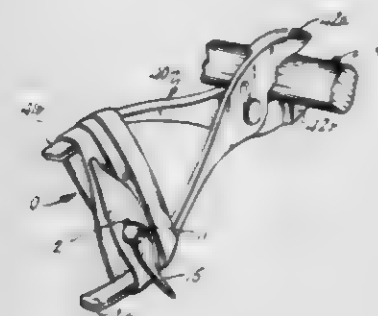
GRIPPING DEVICE AND METHOD

Donald O. Teachout, Sr., 1721 Bradford, N.E., Grand Rapids, Mich. 49503

Filed May 24, 1978, Ser. No. 896,250
Int. Cl.¹ B65B 13/02

U.S. Cl. 53—399

33 Claims



19. A method for gripping articles comprising wrapping an article with an elongated flat strip of flexible, elastic material having at least 100% elasticity and having two ends, there

being an enlargement relative to the lateral cross-sectional dimensions of said strip located near one end thereof, and there being an aperture in said strip located near the other end thereof, said aperture being just sufficiently large that said enlargement can be fitted therethrough, but being sufficiently small that once through said aperture, said enlargement cannot easily be pulled back through it; applying tension to said strip as it is wrapped about said article by stretching the same at least 100%, and inserting said enlargement through said aperture to hold said strip in place.

4,229,925

SKEIN AND BALL BANDING MACHINE

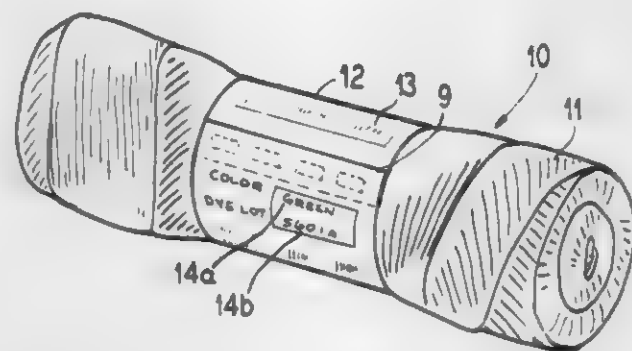
James P. Stirniman, 706 Canal Rd., Rt. 2, Minooka, Ill. 60447

Filed Jun. 6, 1978, Ser. No. 912,993

Int. Cl.¹ B65B 13/16

U.S. Cl. 53—399

35 Claims



1. A banding machine system for wrapping a band around a compressible skein of material to be banded, comprising:

- (a) a belt extending in a predetermined direction formed in a closed loop;
- (b) first and second pocket forming guide rollers axially spaced apart from each other and transversally to said predetermined direction, portions of the belt being formed around peripheral portions of the first and second guide rollers;
- (c) a partially cylindrical pocket means for receiving the skein to be banded and formed of end walls and a curved main wall, the end walls comprising end surfaces of the first and second guide rollers and the curved main wall comprising portions of the belt formed around the first and second guide rollers, the end walls being spaced sufficiently to permit placement of the skein entirely therebetween and a diameter of the end walls being less than a maximum diameter of the skein such that the skein will be compressed in the pocket means to the diameter of the end walls;
- (d) skein feed means for placing the skein in the pocket means;
- (e) band feed means for placing the band between the skein and the belt; and
- (f) drive means for moving the belt around the pocket forming guide rollers and to thereby wrap the band around the skein with the belt remaining in substantially complete circumferential contact with the first and second guide rollers throughout the wrapping operation.

4,229,926

METHOD OF MAKING BOOKLET

Sidney Rowling, Wynnewood, Pa., assignor to Jack Seidman, Philadelphia, Pa., a part interest

Continuation of Ser. No. 541,307, Jan. 15, 1975, abandoned. This application Mar. 1, 1976, Ser. No. 662,749

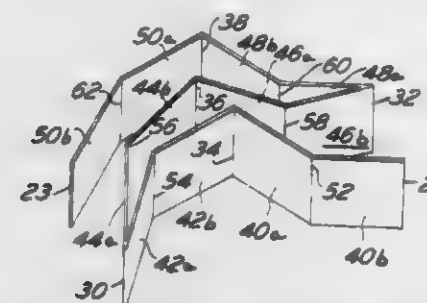
Int. Cl.¹ B65B 9/02, 63/04

U.S. Cl. 53—429

4 Claims

1. A method comprising the steps of printing on an elongated paper sheet in a direction parallel to the longest edge of said sheet, folding said printed sheet transversely into thirds,

said folding step being accomplished in a manner so that a third of said sheet at one end overlies one face of the middle third of the sheet and the remaining third of the sheet is juxtaposed to the opposite face of the middle third of the sheet, then folding the sheet in half, then folding the sheet in half again, to thereby provide a booklet having pages of the same size without the use of fasteners and only fold lines at one end thereof, introducing the thusly folded booklet into an envelope, sealing said booklet



within said envelope, slitting the folded booklet in a direction perpendicular to said fold lines before it is introduced into the envelope so as to define a plurality of discrete booklets each having a width narrower than the width of said sheet, and producing by said folding steps a booklet having dimensions of approximately three inches in length by approximately 2 1/4 inches in width before introducing said booklet into said envelope.

4,229,927

PROCESS AND APPARATUS FOR VACUUM PACKING

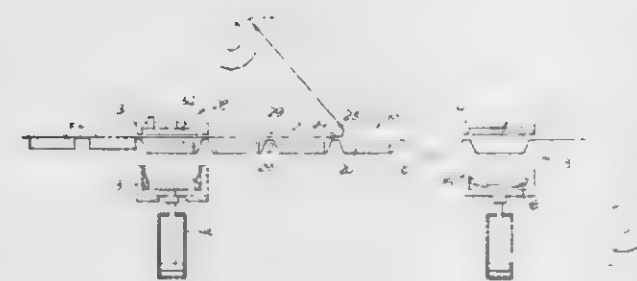
Timothy T. Day, London, England, assignor to J. Sainsbury Limited, London, England

Continuation-in-part of Ser. No. 799,868, May 23, 1977, abandoned. This application Oct. 6, 1978, Ser. No. 949,176

Int. Cl.¹ B65B 31/02, 47/02

U.S. Cl. 53—433

19 Claims



1. A process for successively packing commodities into vacuum-sealed packs formed from a pair of superposed flexible films each of which comprises a laminate of two flexible layers of plastics material one dominating layer of which has a softening temperature below that of the other layer, comprising thermoforming unstretched depending pockets successively in a lower continuous web of a first film by thermoplastic deformation of but without stressing said film which has the laminate with the lower softening point on its upper surface, said thermoplastic deformation to form pockets taking place above the softening point of said dominating layer, putting a commodity to be packed into each of said unstretched thermoformed pockets, laying an upper continuous web of a second film onto the upper surface of said lower web with lower softening point layer in contact with the upper surface of the lower web in overlying relation to the pockets containing the commodities, impulse sealing said films transversely of the web between the pockets, advancing the superposed webs to a vacuum sealing and continuously heated chamber, enclosing at least one of the pockets in said chamber, hermetically sealing said chamber, heat sealing said films together around the pocket periphery leaving an opening and evacuating the interior of the chamber and the interior of the pocket and simultaneously heating above the softening point of adjacent layers of said two films within the chamber, closing said opening and

sealing said pocket under vacuum and aerating the interior of the chamber to cause the heat softened films to collapse without shrinking around the commodity in the pocket, the films in the chamber being heated to a temperature above the softening point of the low melting point layers so as to cause the portions of the inner layers of the films which are in contact with each other to soften sufficiently to fuse together around the commodity on aeration of the chamber.

4,229,928

METHOD OF AND AN APPARATUS FOR PACKAGING CONSUMER GOODS

Bernd Münchinger, Talstrasse 9, 7064 Remshalden 1, and Robert Brehm, Schmölzstrasse 11, 8104 Grainau, both of Fed. Rep. of Germany

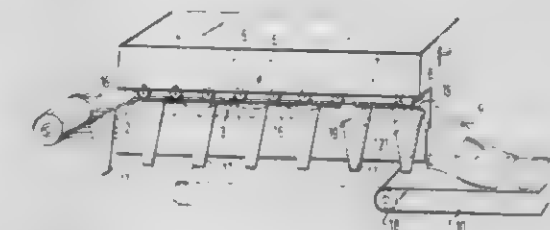
Filed Oct. 28, 1977, Ser. No. 846,521

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649777; May 23, 1977, 2723173; Aug. 1, 1977, 2734644

Int. Cl.¹ B65B 43/06

U.S. Cl. 53—452

17 Claims



1. A method of packaging goods, such as flowers, flower pots, foodstuffs, beverages, and similar consumer goods, comprising the steps of superimposing two strip-shaped thermally weldable layers; converting the layers into an elongated formation having a receptacle portion including a plurality of packaging receptacle preforms each having at least one open end, and at least one transporting portion extending along the receptacle portion and interconnecting the receptacle preforms in series, including applying heat to zones of the superimposed layers which extend from the open end of the respective receptacle preform into the receptacle portion and away from the transporting portion to thereby weld such zones of the layers to one another; advancing the transporting portion of the formation to thereby displace the receptacle preforms in a processing path; detecting the respective receptacle preform from the remainder of the receptacle portion of the formation at least at the welded zones; separating the superimposed layers of the detached receptacle preform at least at the open end thereof; introducing the goods to be packaged into the detached receptacle preform through the separated open end thereof; closing the open end of the filled receptacle preform; dissociating the closed receptacle preform from the transporting portion after said closing step, to obtain a freely transportable filled receptacle; supporting and transporting the filled receptacle preform which is dissociated from the transporting portion, by movable means; and using said movable means which supports and transports the dissociated filled receptacle preform, during said introducing step for supporting the receptacle preform.

4,229,929

THERMOPLASTIC CONTAINER

Leslie Vajtay, 107 Stanford Ave., Colonia, N.J. 07067

Filed Jun. 5, 1978, Ser. No. 912,839

Int. Cl.¹ B65B 43/08

U.S. Cl. 53—456

3 Claims

1. Method of forming a thermoplastic can comprising the steps of:

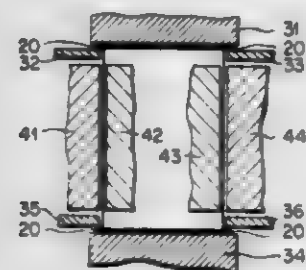
- providing a flattened thermoplastic sleeve at a first manufacturing location, said sleeve having at least one pair of creases;
- transporting said flattened thermoplastic sleeve in its flat-

tened state to a second manufacturing location, all further fabrication steps occurring at said second manufacturing location;

opening said flattened thermoplastic sleeve into a substantially round cross-sectional shape;

eliminating said at least one pair of creases by inserting said sleeve into a die having heated die portions placed adjacent said pair of creases on both the inside wall and outside wall of said sleeve and applying heat and pressure to both the inside and outside walls;

stiffening the ends of said opened thermoplastic sleeve into said substantially round cross-sectional shape by inserting said sleeve into a die having heated die portions surrounding the lip of the sleeve at each end and applying heat and



pressure to form an outwardly radiating flange that is adapted to receive a metal canning disc as an end closure at each end of the sleeve, thereby forming a stable cylindrical central section;

metallizing at least one surface of said stable cylindrical central section;

providing first and second end closures for said cylindrical central section;

joining the first end closure to said cylindrical central section, thereby sealing one end of said cylindrical central section and forming an open can;

filling said open can with desired contents; and

joining the second end closure to the other end of said cylindrical central section, thereby completing the sealing of said filled thermoplastic can.

4,229,930

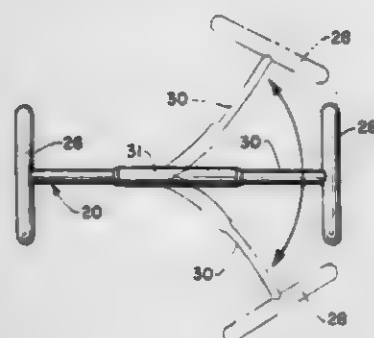
FLEXIBLE LINK FASTENER

Albert E. Ostermaier, 4710 Sunnyslope Ave., Sherman Oaks, Calif. 91403

Continuation-in-part of Ser. No. 867,728, Jan. 9, 1978, abandoned. This application Nov. 29, 1978, Ser. No. 964,771
Int. Cl.² B68C 5/00; B44D 3/18

U.S. Cl. 34-79

5 Claims



1. A fastening system for a horse blanket or the like comprising:

a blanket having a pair of opposing flanges and adapted to cover a horse;

said flanges adapted to come together around the horse and having a plurality of eyelets in said opposing flanges adapted to overlap to adjust the fit of said blanket;

a flexible link fastener adapted to engage and join respective eyelets in said flanges to secure said blanket;

said fastener comprising:

an elongate cylindrical flexible shaft;

a pair of substantially stiff cylindrical bars attached at each end of said flexible shaft;

said flexible shaft having a cylindrical thickened portion of at least one-half the length of the flexible shaft and narrower, more flexible end portions;

the thickened portion being at least one-and-one-half times the diameter of the end portions;

the ends of said flexible shaft being connected substantially perpendicular to the stiff bars when in an unflexed position at the mid-point of said stiff bars;

said stiff bars being passed through respective eyelets in said opposed flanges thereby securing said blanket to a horse.

4,229,931

HYDRAULIC HEIGHT SENSING SYSTEM WITH CYLINDER BY-PASS

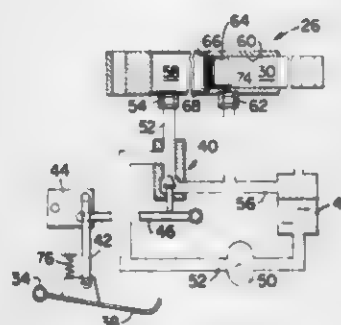
Francis E. Schlueter, Des Moines; Russell D. Copley, Ankeny, and Leon F. Sanderson, Des Moines, all of Iowa, assignors to Deere & Company, Moline, Ill.

Division of Ser. No. 811,961, Jun. 30, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,219

Int. Cl.³ A01D 75/14, 45/00

U.S. Cl. 56-10.2

4 Claims



1. A harvester having a main mobile frame, a harvesting unit having a forward end and a rearward end and carried on the frame for rocking movement about a transverse horizontal axis, and an improved unit height control means for rockably raising and lowering the forward end of said unit in accordance with ground surface variations including: a hydraulic fluid supply supported by the frame; a fluid supply line connected with the supply; a ground-engaging feeler mounted on the unit for vertical movement in response to ground surface variations; a hydraulic cylinder supported between the frame and unit and connected with the supply line; means in the supply line between the supply and hydraulic cylinder for creating a flow therein; a first fluid return line connected with the supply; a second fluid return line between the supply and hydraulic cylinder; a valve control mechanism connected to the first return line and the supply line and coupled with the feeler so as to be responsive to vertical movement of the feeler to adjustably vary fluid flow to the supply and hydraulic cylinder; and fluid bypass means in the hydraulic cylinder to permit fluid flow from the supply line, through the cylinder and to the second return line when the hydraulic cylinder is extended.

4,229,932

HARVESTERS

Gustaaf M. Persoons, Schoten, Belgium, and Corneel C. Wijts, San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 7, 1976, Ser. No. 693,615

Claims priority, application United Kingdom, Jun. 13, 1975, 25310/75

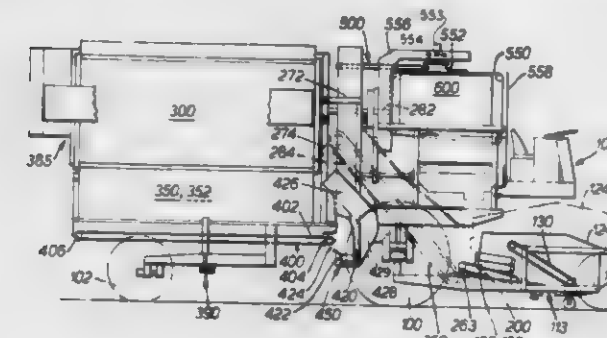
Int. Cl.³ A01D 45/24

U.S. Cl. 56-13.5

19 Claims

1. In a pea harvester, a pick-up reel extending at least over the full width of the track of the harvester, a first conveyor of a width substantially corresponding to that of the reel and

disposed rearwardly of the pick-up reel to receive vines therefrom, transverse, second, conveyors, an upwardly-inclined, relatively narrow, third conveyor, said second conveyors being arranged to receive vines from the first conveyor and to centralize the vines to a station where they are received by the third conveyor, an elevating conveyor of a width substantially corresponding to the width of said third conveyor and arranged to convey the vines upwardly, a rotary threshing drum with its axis of rotation extending longitudinally of the harvester and disposed to receive vines from the elevating con-



veyor, said drum serving to thresh the peas, cleaning conveyor means running below the drum, to receive peas from the drum, a pea conveyor extending below the threshing drum arranged to receive the peas from the cleaning conveyor means and serving to convey the peas forwardly of the harvester, an elevator receiving peas from the pea conveyor, a horizontal conveyor receiving peas from the elevator, a movable endless sieve receiving peas from the elevator, and a hopper with the upper run of the movable sieve lying over an opening into the hopper and allowing only peas to fall into the hopper.

4,229,933

SEPARABLE MOWER BLADE

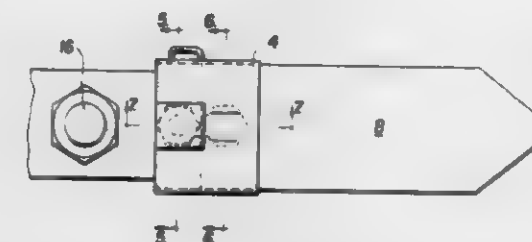
Roy A. Bernard, Rte. 3, Box 366, St. Martinville, La. 70582

Filed Mar. 7, 1979, Ser. No. 18,342

Int. Cl.³ A01D 55/18

U.S. Cl. 56-295

5 Claims



1. A blade which is separable from a stem of a mower bar in which the area of interconnection comprises a cut away slot disposed on said blade which extends to a hexagonal cut out area nearer a tip of the blade, and a bolt extending through a terminal portion of the stem having a nut with a substantially hexagonal configuration whereby said stem and said blade can be interconnected by juxtaposing the hexagonal bolt with said hexagonal cut out area, and sliding said blade outwardly so that said hexagonal bolt rides within said slot and a protective shroud means overlying the area of interconnection between said blade and said stem which further retains said blade and stem, said shroud means having a depression which resides within said hexagonal cut out area to resist relative motion of said blade and said stem.

4,229,934

BALE ROLLING MACHINE

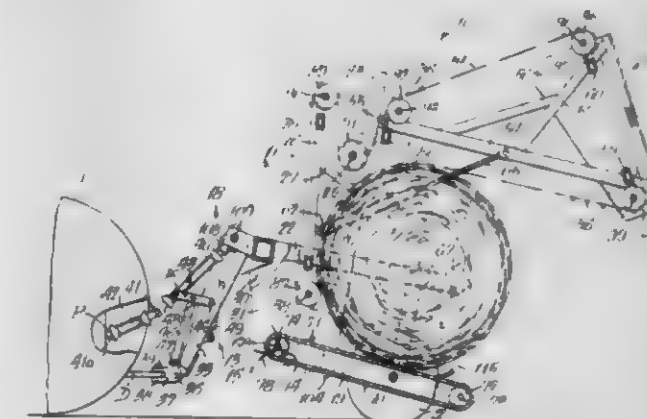
Richard K. Berky, Cedar Falls, Iowa, assignor to Chromalloy American Corporation, New York, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,722

Int. Cl.³ A01D 37/00

U.S. Cl. 56-341

25 Claims



1. Apparatus for rolling large bales of fodder comprising, in combination:

a frame which has side frame members and supporting wheels;

a floor supported by said side frame members;

hitch means at the front of the frame adapted for attachment to the draw bar of a farm tractor by means of an upright pintle;

means for tilting said floor about a transverse pivot axis between a baling position in which the front of the floor is immediately adjacent the ground, and a discharge position in which the front of the floor is raised;

endless chain fodder conveyor means extending longitudinally of the floor, said conveyor means having front and rear sprockets and lugged chains with a rearwardly moving working run on top of the floor;

rotary fodder pickup means coaxial with the front sprockets, said pickup means having tines to feed fodder from the ground onto the fodder conveying means;

a pair of riddle guiding discs journaled on the side frame members to define the sides of a baling chamber, said discs having outer plates substantially the diameter of a finished bale and inwardly projecting narrow, concentric flanges near the periphery of the plates;

a rear discharge gate pivoted on the side frame members above the axes of the discs;

a plurality of parallel endless baling riddle chains connected by raddles extending transversely above the floor, said baling riddle chains being trained over upper and lower forward sprockets journaled on the frame and over upper and lower rearward sprockets journaled on the gate, and said raddles having their extremities supported on the disc flanges so the chains and raddles have a lower working run from the lower rearward sprocket, over the discs, and down the front part of the frame and define the rear, top and front of the baling chamber;

chain take-up means including movably mounted take-up sprockets engaging the baling chains and spring means biasing said movably mounted sprockets to minimize the length of the working run of said baling chains;

means for driving the fodder conveyor means and the fodder pickup means;

means for driving a forward sprocket to move the working run of the baling chains forwardly above the floor;

and means for swinging the rear discharge gate between a generally upright baling position and a generally horizontal elevated discharge position.

4,229,935

JOINING YARNS

John K. Wain, Little Arrow, Torver, Coniston, Cumbria, England

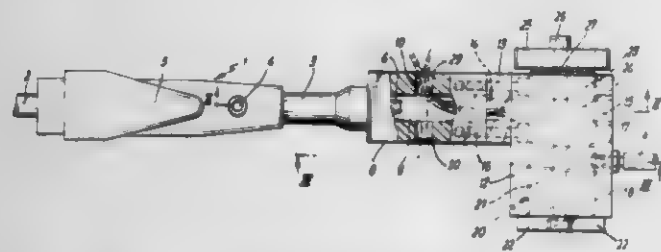
Filed Mar. 14, 1979, Ser. No. 20,504

Claims priority, application United Kingdom, Mar. 21, 1978, 11053/78; Apr. 11, 1978, 14129/78; Apr. 25, 1978, 16379/78; Apr. 26, 1978, 16611/78; May 2, 1978, 17167/78; Jun. 1, 1978, 26249/78

Int. Cl.² D01H 15/00

U.S. Cl. 57-22

15 Claims



1. A method of joining yarns comprising the steps of positioning portions of the yarns alongside each other, introducing said portions into apparatus having an inlet for said portions, and exposing said yarn portions within said apparatus to a fluid flow to effect joining of said yarn portions wherein said apparatus has two passages in communication with and extending away from said inlet and the fluid flow is directed alternately along one then the other of said passages in a direction away from said inlet such as to cause said yarn portions to be drawn alternately along one then the other of said passages.

8. Yarn joining apparatus comprising a chamber with a yarn inlet thereto through which yarn portions arranged alongside each other can be introduced into the chamber, and a pressure fluid inlet to said chamber, wherein first and second passages are in communication with and extend away from said chamber, such that pressure fluid from said inlet can flow into one or the other of said passages, and diversion means is provided which is operable to effect diversion of said pressure fluid flow alternately to one then the other of said passages.

4,229,936

LOW-COST WATCH CASE AND BAND

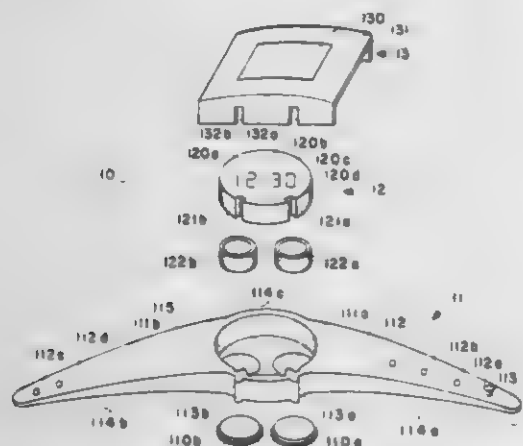
Mark R. Schneider, San Jose, and Larry D. Wickwar, San Mateo, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Apr. 19, 1977, Ser. No. 788,866

Int. Cl.² G04B 37/00; G04C 3/00

U.S. Cl. 368-282

8 Claims



1. An integral watch band and case comprising: a receptacle for receiving a watch module, said receptacle having a sidewall formed of a resilient material, said sidewall having an outside surface and an inside surface; switch means located directly adjacent to M switches operable for controlling functioning of the watch module, where M is a selected positive integer, said switch means comprising N sidewall sections integrally formed with

said sidewall where N is a selected positive integer, each of said N sidewall sections (1) being thicker than the normal thickness of said sidewall, (2) having an external protuberance extending outward beyond the normal outside surface of said sidewall, and (3) having an internal protuberance extending inward beyond the normal inside surface of said sidewall, each internal protuberance being located directly adjacent to at least one of said M switches, said switch means operable for actuating at least one of said M switches in response to the watch user pressing at least one of said N sidewall sections on said outside surface; and a watch band integrally formed with said receptacle for attaching said receptacle to an arm of the watch user.

4,229,937

SHUT-OFF VALVE ARRANGEMENTS FOR FLUIDS

Trevor S. Smith, Sutton Coldfield, England, assignor to Lucas Industries Limited, Birmingham, England

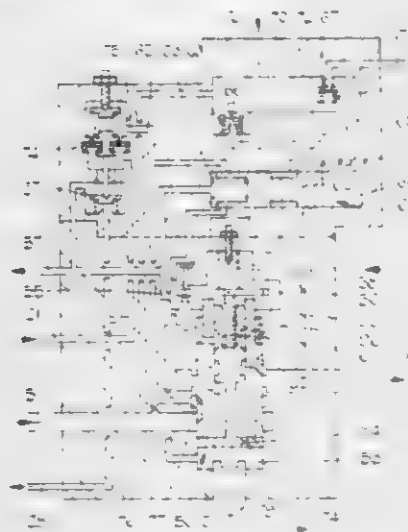
Filed Nov. 7, 1978, Ser. No. 958,836

Claims priority, application United Kingdom, Nov. 11, 1977, 46986/77

Int. Cl.¹ F02C 9/04

U.S. Cl. 60-39.28 R

5 Claims



1. A shut-off valve arrangement for use in a fluid regulating system comprises a shut-off valve having a control member and biasing means urging said control member to a shut position, said control member being urged against said biasing means by a first servo pressure, a first pilot valve having a fluid pressure operable control element movable between a first position in which said first servo pressure is vented, and a second position, electrically energisable centre-stable valve means for applying operating pressures to said pilot valve control element so that movement of said valve means in a first sense from its stable central position causes said pilot valve control element to be urged to its first position, movement of said valve means in a second sense from its stable central position causes said pilot valve control element to be urged to its second position, and in the de-energised condition of said valve means said pilot valve control element is maintained in the position to which it was last urged.

4,229,938

ROTARY INTERNAL COMBUSTION ENGINE

William A. Gallagher, Box 252, Lincoln, Mont. 59639

Filed Aug. 28, 1978, Ser. No. 937,322

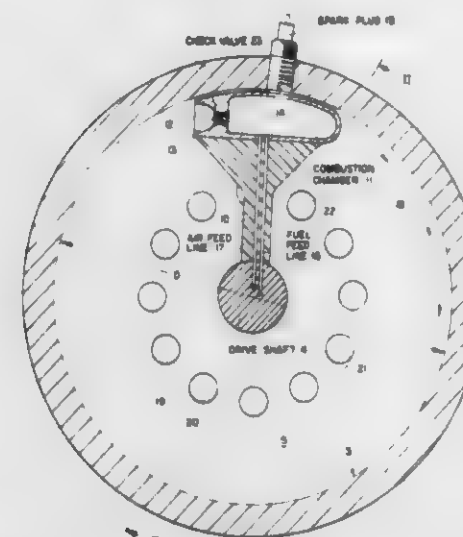
Int. Cl.¹ F02C 5/04

U.S. Cl. 60-39.34

2 Claims

1. A rotary internal combustion engine, comprising a cylindrical engine casing with a predetermined diameter, an axis and a width smaller than the diameter, the casing having a cylindrical interior surface; a drive shaft coaxially rotatably mounted in the engine casing and extending out of said casing;

an arm extending radially from the drive shaft in said casing; a combustion chamber formed in the arm in close proximity with the cylindrical interior surface of said casing and having an end with an exhaust opening therethrough, said arm having an ignition opening formed therethrough to said combustion chamber; a spark plug mounted in said casing and in operative proximity with the ignition opening of said arm;



a fuel feed line extending through said drive shaft and said arm to said combustion chamber therein for supplying fuel to said combustion chamber; and an air feed line extending through said drive shaft and said arm to said combustion chamber therein for supplying air to said combustion chamber whereby when the spark plug produces a spark in said combustion chamber said arm rotates and rotates said drive shaft.

4,229,939

FUEL CONTROL FOR A GAS TURBINE ENGINE REHEAT SYSTEM

Trevor S. Smith, Sutton Coldfield, England, assignor to Lucas Industries Limited, Birmingham, England

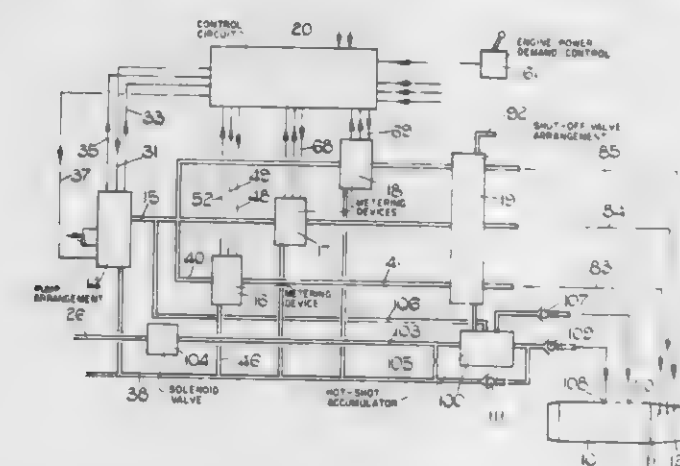
Filed Jan. 22, 1979, Ser. No. 5,207

Claims priority, application United Kingdom, Feb. 17, 1978, 822578

Int. Cl.³ G05D 7/06

U.S. Cl. 60-243

6 Claims



1. A fuel control for a gas turbine engine reheat system having a plurality of burners, the fuel control system comprising a plurality of metering valves for controlling fuel flow to the respective burners of the reheat system, a plurality of means for varying the effective flow areas of the respective valves, a plurality of means for detecting the pressure differentials across the respective valves, means responsive to the aforesaid detected pressure differentials, for determining the fuel flows through the respective valves, a fuel pump having an inlet throttle, means for generating a first control signal proportional to the sum of the determined fuel flows, means for generating a second control signal dependent on a pressure

differential across one of said metering valves, and means responsive to said first and second control signals for controlling said pump inlet throttle.

4,229,940

HYDRAULIC MASTER CYLINDER

Raymond Higgerson, Bishops Itchington, and David Parsons, Kenilworth, both of England, assignors to Automotive Products Limited, Leamington Spa, England

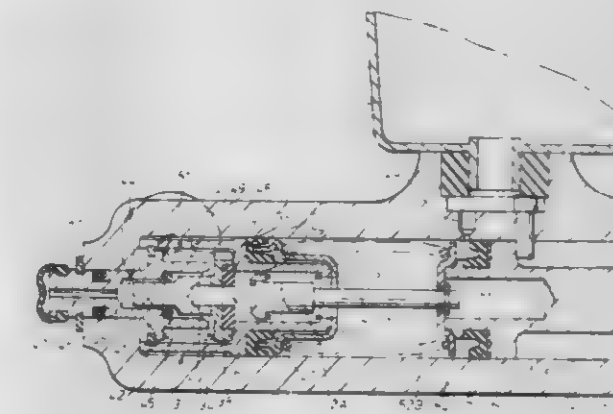
Filed Aug. 22, 1978, Ser. No. 935,771

Claims priority, application United Kingdom, Sep. 7, 1977, 37270/77

Int. Cl.¹ B60T 11/20

U.S. Cl. 60-562

8 Claims



1. A master cylinder for use in a motor vehicle split hydraulic braking system having disc brakes for acting on one set of wheels and drum brakes for acting on another set of wheels, the master cylinder comprising:

a body having first and second bore portions therein; a first piston slidable in the first bore portion; a second piston slidable in the second bore portion; a first chamber defined by the housing and the first piston, and which in use is pressurised by movement of the first piston in a brake-applying direction; a second chamber defined by the housing and the second piston and which in use is pressurised by movement of the second piston in a brake-applying direction; a first outlet port communicating with the first chamber for connection to the drum brakes; a second outlet port communicating with the second chamber for connection to the disc brakes; delay valve means to control flow from the second chamber to the second outlet port, said delay valve means comprising a valve member mechanically connected to one of said first and second pistons and being movable to close communication from the second chamber to the second outlet port in direct response to initial movement of said one piston away from a brake released position, a plunger movable by fluid pressure in the second chamber to re-open communication from the second chamber to the second outlet port and a control spring biasing the plunger in the opposite direction to delay such movement of the plunger until pressure in the second chamber reaches a predetermined magnitude; and non-return valve means allowing return flow from the second port to the second chamber.

4,229,941

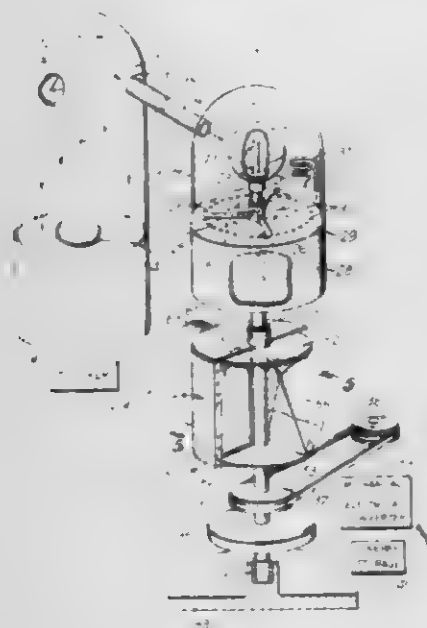
METHOD OF AND SYSTEM FOR GENERATING ENERGY FROM SOLAR AND WIND ENERGY SOURCES

Charles S. Hope, New York, N.Y., assignor to Solwin Industries, Inc., New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,094
Int. Cl.² F03G 7/02; F03D 11/02

U.S. Cl. 60-641

14 Claims



1. A system for generating energy from solar and wind energy sources for use in building structures, particularly for domestic use in homes, comprising:

- (a) solar collector means for collecting incident solar rays, and for directing the collected rays along a predetermined path;
- (b) first heat exchanger means including a main fluid circuit along which a vaporizable fluid circulates, said first heat exchanger means being located in the predetermined path for exchanging heat energy with the collected solar rays therein, and for converting the vaporizable fluid in one part of the main circuit to a vaporized gas in another part thereof;
- (c) means for converting the thermal energy contained in the vaporized gas to mechanical energy;
- (d) wind collector means for collecting incident wind energy, and for converting the collected wind energy to mechanical energy;
- (e) means for converting both the mechanical energy derived from the solar rays and the mechanical energy derived from the wind energy to electrical energy, to thereby combine the dual solar and wind energy sources into a unitary power system; and
- (f) second heat exchanger means including a service circuit along which water for domestic use circulates, said second heat exchanger being also located in the predetermined path for exchanging heat energy with the collected solar rays therein, and for heating colder water in one portion of the service circuit to hotter water in another part thereof, to thereby supply heated water for domestic use in the home.

4,229,942

RADIOLYTIC DISSOCIATIVE GAS POWER CONVERSION CYCLES

Henry J. Gomborg, John G. Lewis, and John E. Powers, all of Ann Arbor, Mich., assignors to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Jun. 6, 1978, Ser. No. 913,017
Int. Cl.² G21D 5/00

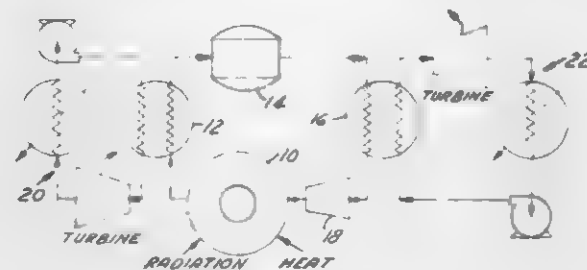
U.S. Cl. 60-644

5 Claims

1. In a power cycle which includes the steps of adding heat to a working fluid at high pressure to raise said working fluid to high temperature and withdrawing heat from said working

fluid at reduced pressure, the improvement wherein said step of adding heat to said working fluid comprises the steps of:

- (a) chemically dissociating at least a portion of said working fluid by radiolysis at a temperature below the thermal equilibrium temperature of said dissociated working fluid



such that said dissociated working fluid is at macroscopic thermal non-equilibrium, and

- (b) chemically reacting dissociated components of said working fluid with each other to recombine said components and simultaneously heat said working fluid.

4,229,943

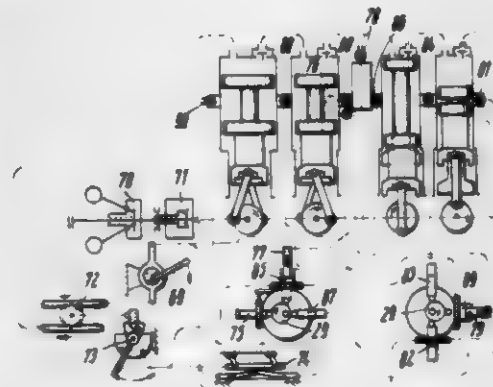
STEAM ENGINE

Franz Kriegler, Arndesstieg 3, Hamburg, Fed. Rep. of Germany (D-2000)

Filed Apr. 20, 1977, Ser. No. 789,343
Int. Cl.² F01K 13/02

U.S. Cl. 60-652

17 Claims



1. In a steam engine for conversion of all kinds of heat energy into mechanical energy; the combination of engine cylinder means; reciprocable piston means in said cylinder means; rotary output means driven by said piston means; inlet valve means for admission of steam into said cylinder means and relief valve means for evacuating fluid from said cylinder means, said valve means including valving means acted upon by the pressure of fluid in said cylinder in an opening sense; means for biasing said valve means to closed positions; means for constantly balancing the force with which said pressure acts upon said valve means in the opening sense so that said valve means is subjected solely to the biasing force of said biasing means in the closing sense both in the open and closed positions of said valve means variable-ratio motion transmitting means for superimposing an opening force proportionate to said pressure upon the biasing force furnished by the respective biasing means so that the action of the latter upon said valving means prevails over that of said pressure at selected values thereof, including selector means movable to a plurality of positions for varying the pressure of steam which is admitted into said cylinder means by way of said inlet valve means and means controlled by said selector means and operative for opening said valve means and for simultaneously changing the degree of filling of said cylinder means with steam in dependence on the position of said selector means; condenser means; pump means; regulating means for relating the pressure in said condenser means to the operation of said pump means so as to achieve an optimum thermal efficiency by raising the conden-

sation point to a maximum or to achieve maximum output by lowering said point to a minimum; and means for controlling the operation of said transmitting means, including speed-responsive governor means for indicating the speed of the engine, torque-responsive regulator means for indicating the output torque of the engine, and transmission and switching means interposed between said regulator and governor means and said transmitting means, and operative for changing the performance of the engine in dependency on the instantaneous conditions by so adjusting said transmitting means as to achieve opening and/or closing of said valve means as a combined function of the indications furnished by said governor means and said regulator means.

4,229,944

FUEL INJECTION NOZZLE ASSEMBLY FOR GAS TURBINE DRIVE

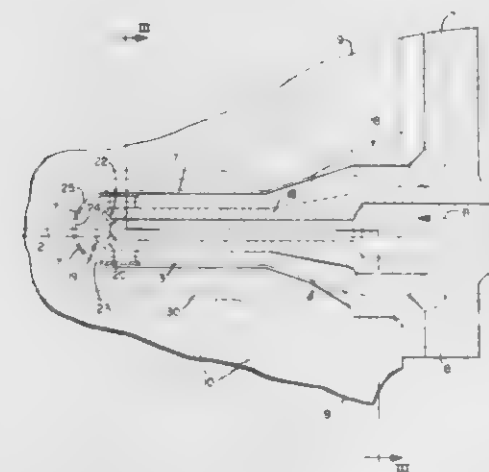
Wolfgang Weiler, Dachau, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union München GmbH, Fed. Rep. of Germany

Filed Mar. 10, 1978, Ser. No. 885,189
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710618

U.S. Cl. 60-740

Int. Cl.² F02C 7/22

4 Claims



1. A fuel injection nozzle assembly for gas turbine drives of the type having at least one heat exchanger for heating the combustion air, and a fuel injection nozzle which includes an annular conduit that runs coaxially to the longitudinal axis of the nozzle between an outer shielding wall and a sleeve-like central body having a passage for fuel supply, said annular conduit being ventilated by cool air that is not heated by the heat exchanger, characterized by the combination of the following features:

- (a) the fuel injection nozzle is confined in a structural part that is integrated in the engine housing, forming part of an outer housing of a combustion chamber, and from there the nozzle extends via a primary air supply bore in a back wall of a flame tube, into a primary zone of the combustion chamber;
- (b) the ventilated annular conduit of the injection nozzle is connected directly to a compressor end of the turbine drive and said central fuel supply passage is connected with a frontal section of the annular conduit via fuel supply bores in an injection head, and also with the primary zone by means of intake openings in the shielding wall;
- (c) the central body for fuel supply engages the outer shielding wall exclusively via localized contact surfaces on the ends of cross-pieces protruding radially from the central body and located in the region of the injection head and said engine housing integrated structural part; and
- (d) wherein said outer shielding member is formed of a material having the high temperature resistivity and low thermal conductivity of nickel alloys, and said central body is formed of a material having the high thermal conductivity of a copper alloy, whereby heat will be

caused to flow from the injection head to the engine housing so as to act to prevent fuel carbonization.

4,229,945

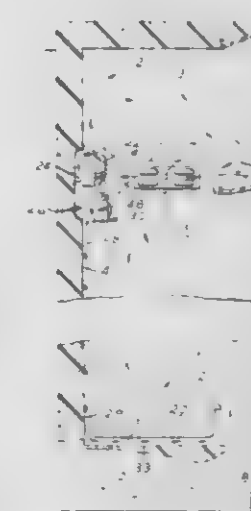
HOUSEHOLD REFRIGERATOR AIR FLOW CONTROL AND METHOD

James R. Griffin, and Raymond M. Schreck, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 8, 1978, Ser. No. 967,743
Int. Cl.² F25D 17/06

U.S. Cl. 62-229

6 Claims



1. In a refrigerator having a freezer compartment on top and a fresh food compartment below the freezer compartment and being separated by a partition, an air flow system comprising:

- (a) an air duct connecting the freezer compartment and the fresh food compartment to introduce a stream of cold air into the fresh food compartment;
- (b) a temperature sensing element located at the top of the fresh food compartment and shielded from the stream of cold air being directed into the fresh food compartment, said temperature sensing element being utilized to change the temperature in both the freezer and fresh food compartments without changing the constant ratio of those respective compartment temperatures;
- (c) an air flow control assembly to divide the stream of cold air entering the fresh food compartment between the top of the compartment and the bottom, the assembly including:
 - (i) a chamber for receiving the stream of cold air,
 - (ii) a first opening for directing a portion of the stream of cold air into the top of the fresh food compartment,
 - (iii) a first air passage from the chamber to the first opening,
 - (iv) a second opening for directing a portion of the stream of cold air downwardly into the bottom of the fresh food compartment,
 - (v) a second air passage from the chamber to the second opening,
 - (vi) an air flow control having first and second dampers and means for rotating the dampers in unison, the dampers being spaced from each other such that when the first damper blocks the first air passage, the second damper blocks the second air passage, whereby rotation of the dampers will divide the cold air stream being directed to the first and second openings and change the ratio of the temperatures in the freezer and fresh food compartments.

4,229,946

PLANT FOR COLLECTING AND BRIQUETTING DOMESTIC WASTE

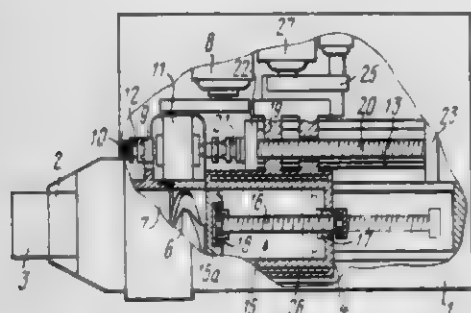
Valentin N. Slavinsky, prospekt Shvernika, 10, kv. 101; Genrikh V. Bairon, Kolpino, ulitsa Proletarskaya, 131, kv. 77, both of Leningrad; Adolf M. Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8, Moscow; Gennady M. Alexeev, Sredny prospekt, 61, kv. 55, Leningrad; Vladimir M. Matveev, Staro-Orlovskaya, ulitsa, 35, kv. 1, Leningrad; Oleg D. Minin, ulitsa Basseinaya, 105, korpus 1, kv. 355, Leningrad; Jury A. Tsimbler, Sojuzny prospekt, 10, kv. 26, Moscow; Vladimir A. Vasiliev, Moskovsky prospekt, 125, kv. 40, and Gennady B. Provalsky, ulitsa Gastello, 10, kv. 31, both of Leningrad, all of U.S.S.R.

Filed Nov. 6, 1978, Ser. No. 958,265

Int. Cl.³ F25C 5/14

U.S. Cl. 62—341

5 Claims



5. A plant for collecting and briquetting domestic waste, comprising: a housing with a loading opening and a discharge opening; a conveyor screw mounted in said housing adjacent to the loading opening thereof and adapted to advance and compact domestic waste; a reversible drive operatively connected to said conveyor screw; a chamber for forming domestic waste into briquettes, mounted in said housing adjacent to the discharge opening thereof; coaxially with said conveyor screw and adjoining the latter at one of the end faces thereof; abutment means mounted in said chamber and spanning the cross-sectional area thereof; said abutment means being mounted in said chamber for motion therealong from a first position to a second position independently of said chamber under the action of domestic waste being formed into a briquette and which is being advanced by the rotation of said conveyor screw; said chamber being mounted in said housing for axial reciprocation from a first position to a second position independently of said abutment means to release a briquette upon its having been formed and from said second position to said first position together with said abutment means; and means for effecting reciprocation of said chamber whereby upon said chamber moving together with said abutment means from said second position to said first position, said abutment means also moves from its second position to its first position.

4,229,947

CRYOGENIC FREEZER

David J. Klee, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Aug. 6, 1979, Ser. No. 64,234

Int. Cl.³ F25D 17/02

U.S. Cl. 62—374

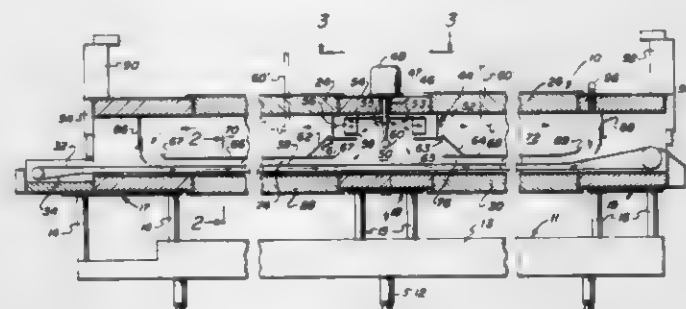
12 Claims

1. A cryogenic freezer comprising:

- (a) at least one elongated, thermally insulated tunnel section having a product inlet and a product outlet spaced apart by at least 15 feet;
- (b) horizontally disposed divider baffle means extending substantially throughout said tunnel section between said inlet and said outlet for dividing said tunnel into a pair of elongated upper plenum chambers and a pair of elongated lower product contact chambers;
- (c) a single blower mounted in substantially the mid-portion of said tunnel, said blower having discharge passage

means connected to said plenum chambers and inlet passage means connected to said product contact chambers; (d) a porous conveyor belt having at least the upper reach thereof extending through said product contact chambers, means supporting said upper reach so as to form refrigerant flow paths extending above and below said reach within said product contact chambers;

(e) flow reversing passage means connecting said plenum



chambers to said product contact chambers adjacent the inlet and outlet portions of said tunnel section for passing refrigerant from said plenum chambers to and through said product contact chambers and back to said blower inlet passage means to form two high velocity refrigerant recirculation paths; and

(f) cryogenic refrigerant injection means for directly injecting a cryogenic refrigerant in the liquid or gas/solid phase into at least one of said recirculation paths.

4,229,948

WATER CONSERVING SHOWERING SYSTEM

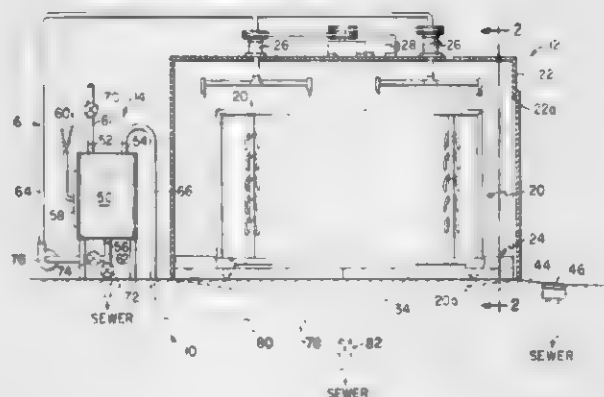
Erwin Waters, Jericho, N.Y., assignor to S & F Sheet Metal and Welding Works Inc., Bronx, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,710

Int. Cl.³ F25D 17/02

U.S. Cl. 62—376

13 Claims



1. In a system for cooling a food product with a showering apparatus providing a stream of coolant, a showering cabinet adapted to receive a quantity of said product on a rack for cooling and to achieve recirculation of said coolant without contamination thereof, said cabinet comprising:

collection means, defining part of a floor for said cabinet, for receiving coolant which has not come in contact with contaminated portions of said rack and said cabinet, said collection means being connected to provide coolant for recirculation to said showering apparatus; and diverting means, defining part of a floor for said cabinet, for receiving coolant which has come in contact with contaminated portions of said rack, said diverting means being connected to divert contaminated coolant for disposal, said diverting means being lower in position than that portion of said collection means which first receives coolant.

4,229,949

REFRIGERATION SYSTEM

Tore Brandin, Norrköping, Sweden, assignor to Stal Refrigeration AB, Norrköping, Sweden

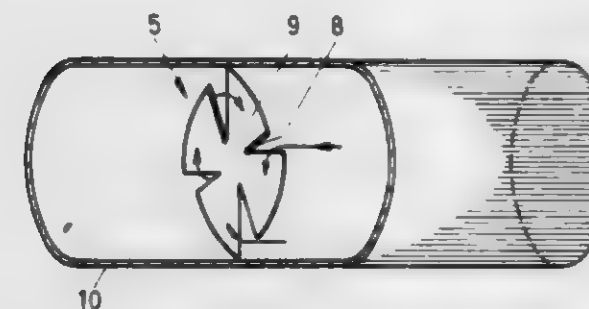
Filed Jan. 31, 1979, Ser. No. 8,174

Claims priority, application Sweden, Feb. 7, 1978, 7801379

Int. Cl.³ F25B 43/00

U.S. Cl. 62—503

1 Claim



1. In a refrigeration system, the combination of a series of elements interconnected in a circuit, said elements comprising a compressor, a condenser, an expansion valve and an evaporator, a refrigerant enclosed in said circuit and adapted to flow through the circuit, said evaporator being operable to discharge the refrigerant toward the compressor as a two-phase flow which is a mixture of flowing liquid particles and flowing superheated vapor, and a flowing disturbing disc located in said circuit downstream from the evaporator and operable to give said flowing phases an increased mutual relative speed, said disc being arranged perpendicularly to the flow direction of the refrigerant and provided with openings formed by cuts extending from the periphery of the disc and dividing the disc into flaps, said flaps being twisted about 45° to form baffles for guiding the flow.

4,229,950

COUPLING FOR END GUDGEON AND INTERNALLY HEATED ROLLER

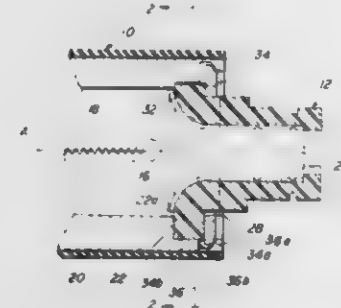
John R. Fessenden, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,869

Int. Cl.³ A42B 3/00

U.S. Cl. 64—5

10 Claims



1. A heated rotatable member comprising:

a core having a surface including a first wall and a second wall spaced from and angularly disposed relative to said first wall for defining a groove in said surface; drive means mounted in juxtaposition with said groove for supporting and rotating said core, the coefficient of thermal expansion of said drive means being different from that of said core; and means for compensating for unequal thermal expansion and contraction of said drive means and said core, said compensating means having a first portion engaging said drive means to provide support for and rotation of said core by said drive means, and a second portion extending at least partially into said groove spaced from said first wall and in slidable engagement with said second wall to accommodate for movement between said drive means and core

resulting from said unequal thermal expansion and contraction.

4,229,951

FLEXIBLE COUPLING

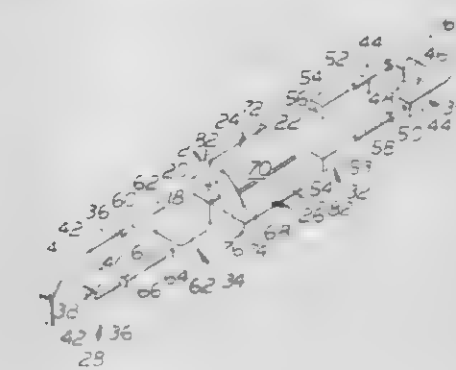
Daniel M. Jedlicka, Bloomington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 1, 1978, Ser. No. 939,640

Int. Cl.³ F16D 3/64

U.S. Cl. 64—14

6 Claims



1. A flexible coupling (10) for connecting first and second shaft members (14,16), comprising:

resilient body means (12) for transmitting torque and compensating for misalignment between the first and second shaft members (14,16), said resilient body means (12) including an elastomeric body (68) having a central axis (18), opposite first and second ends (20,22), and a plurality of reinforcement members (86) arranged within the elastomeric body (68), each reinforcement member (86) being oriented in a direction substantially parallel to the axis (18);

first arms means (28) for connecting the first shaft member (14) interlockingly to said resilient body means (12) at said first end (20);

second arm means (30) for connecting the second shaft member (16) interlockingly to said resilient body means (12) at said second end (22);

first retaining means (32) for releasably coupling said resilient body means (12) to said first arm means (28) at said second end (22); and

second retaining means (34) for releasably coupling said resilient body means (12) to said second arm means (30) at said first end (20).

4,229,952

HOMOKINETIC UNIVERSAL JOINT

Erich Auctor, Offenbach, and Wolfgang Rubin, Hanau, both of Fed. Rep. of Germany, assignors to Lohr & Bromkamp GmbH, Offenbach am Main, Fed. Rep. of Germany

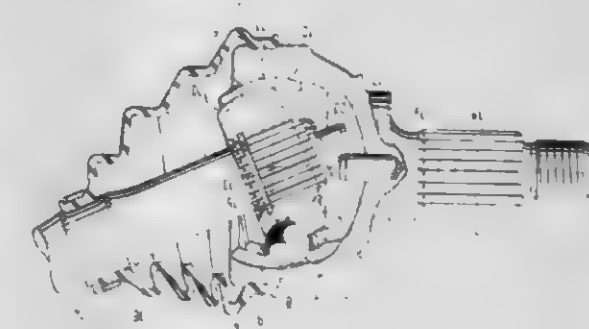
Filed Feb. 13, 1979, Ser. No. 11,945

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807921

Int. Cl.³ F16D 3/30, 3/02, 3/16, 3/50

U.S. Cl. 64—21

2 Claims



1. A homokinetic universal joint comprising an outer joint

member having a hollow space defined by an inner surface with a first part of said inner surface being spherically shaped, said hollow space having an axis laterally enclosed by the spherically shaped first part of said inner surface, said inner surface having a second part extending transversely of the axis of said inner space, first grooves formed in said first part of said inner surface and extending in the direction of the axis of said hollow space and spaced apart in the direction extending circumferentially around said axis, an inner joint member positioned within said hollow space and having an outer surface spaced inwardly from said inner surface of said outer joint member, said outer surface having a spherically shaped first part and a second part, said inner joint member having an axis encircled by said spherically shaped first part of said outer surface and said second part of said outer surface extending transversely of the axis of said inner joint member, second grooves formed in said spherically shaped first part of said outer surface extending generally in the axial direction of said inner joint member and spaced apart in the direction extending circumferentially about said axis of said inner joint member, said first grooves and said second grooves arranged in a number of oppositely disposed pairs of grooves with each said pair containing one said first groove and one said second groove, a plurality of balls located between said outer joint member and said inner joint member with each ball seated in one pair of said grooves for transmitting torque between said outer and inner joint members, a cage located between the outer surface of said inner joint member and the inner surface of said outer joint member and having a plurality of openings therein for each said ball for holding the balls between said inner and outer joint members, said cage having a spherically shaped outer surface and a spherically shaped inner surface with the outer and inner surfaces thereof being concentric, the radially outer surface of said cage being guided on the spherically shaped first part of said inner surface of said outer joint member and the spherically shaped inner surface of said cage being guided on the spherically shaped first part of said outer surface of said inner joint member, the radii of said spherically shaped surfaces on said outer joint member, said cage and said inner joint member and the generating radii of said grooves in said inner and outer joint members having a common center point, wherein the improvement comprises that said inner joint member comprises a first check pin located on said second part of said outer surface thereof and facing toward said second part of said inner surface of said outer joint member, said first check pin extending along the axis of said inner joint member, said outer joint member comprises a second check pin located on said second part of said inner surface of said outer joint member and facing toward said first check pin on said inner joint member, said second check pin extending along the axis of said outer joint member and the combined axial length of said first and second check pins being greater than the dimension between the facing second parts of said inner joint member and said outer joint member when the axes of said inner and outer joint members are in alignment, so that the axes of said inner and outer joint member are maintained in oblique axial relationship.

4,229,953

STITCH BONDED FABRIC

David H. Warsop, Blackburn, England, assignor to Cosmopolitan Textile Company Limited, Cheshire, England
Filed Aug. 15, 1978, Ser. No. 933,843

Claims priority, application United Kingdom, Aug. 16, 1977, 34268/77

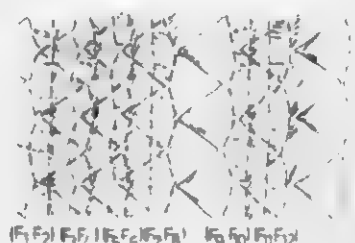
Int. Cl.² D04B 23/08, 23/10

U.S. Cl. 66—193

14 Claims

1. A two guide bar stitch knitted fabric comprising a filling and front and back bar warp thread systems of which the front bar system comprises pillar stitches, characterised in that the back bar system repeats over not less than four courses, its threads passing between at least two wales of the front bar

system, and comprises fewer stitches in a repeat than the number of courses in a repeat, the back bar system distorting,



through tension in its threads, the front bar system and/or filling to give a pattern or texture effect.

4,229,954

DOUBLE KNIT FABRIC

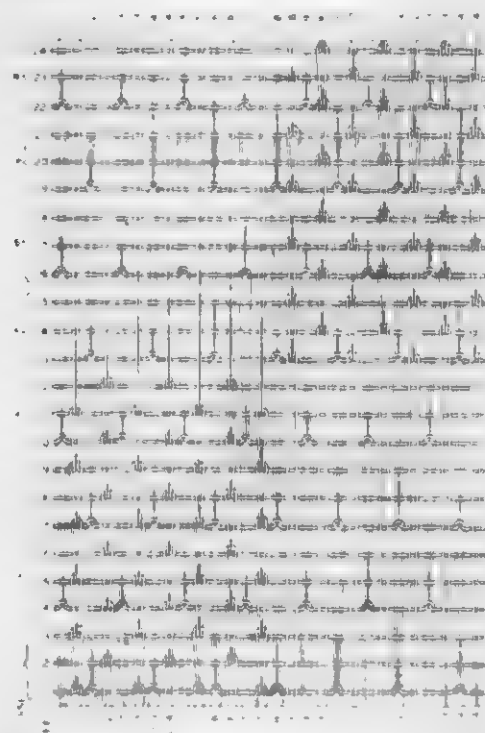
James H. Blore, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 7, 1978, Ser. No. 967,455

Int. Cl.² D04B 21/00

U.S. Cl. 66—196

5 Claims



1. A double knit fabric comprising a first set of consecutive courses, a second set of consecutive courses, a first set of consecutive wales having a first set of alternating wales and a second set of alternating wales with each interior wale of said first set of alternating wales being positioned between two wales of the second set of alternating wales, and a second set of consecutive wales having a first set of alternating wales and a second set of alternating wales with each interior wale of said first set of alternating wales being positioned between two wales of said second set of alternating wales, wherein the first set of alternating wales of the first and second sets of consecutive wales form the face side of said fabric and the second set of alternating wales of the first and second sets of consecutive wales form the reverse side of said fabric;

said fabric having a repeat pattern of at least one first set of consecutive courses followed by at least one second set of consecutive courses and a first set of consecutive wales followed by a second set of consecutive wales, each said first and second sets of alternating wales of said first set of consecutive wales containing at least two wales and each said first and second sets of alternating wales of said second set of consecutive wales containing at least two wales; each said first set of consecutive courses comprising consecutively first, second, third, fourth, fifth and sixth courses; the first course of each said first set of consecutive courses

having knit stitches in the first wale of the first set of alternating wales of the first set of consecutive wales and in the second wale of the second set of alternating wales of the first set of consecutive wales, welt stitches in the first wale of the second set of alternating wales of the first set of consecutive wales and in the second wale of the first set of alternating wales of the second set of consecutive wales, knit stitches in the first wale of the second set of alternating wales of the second set of consecutive wales, and welt stitches in the first and second wales of the first set of alternating wales of the second set of consecutive wales and in the second wale of the second set of alternating wales of the second set of consecutive wales;

the second course and the sixth course of each said first set of consecutive courses having knit stitches in the second wale of the first set of alternating wales of the first set of consecutive wales, welt stitches in the first and second wales of the second set of alternating wales of the first set of consecutive wales and in the first wale of the first set of alternating wales of the second set of consecutive wales, and welt stitches in the first and second wales of each of the first set of alternating wales and the second set of alternating wales of the second set of consecutive wales;

the third and fifth courses of each said first set of consecutive courses having knit stitches in the first wale of the first set of alternating wales of the first set of consecutive wales, welt stitches in the second wale of the first set of alternating wales of the first set of consecutive wales and in the first and second wales of the second set of alternating wales of the first set of consecutive wales, and welt stitches in the first and second wales of each of the first set of alternating wales and the second set of alternating wales of the second set of consecutive wales;

the fourth course of the first set of consecutive courses having knit stitches in the second wale of the first set of alternating wales of the first set of consecutive wales and in the first wale of the second set of alternating wales of the first set of consecutive wales, knit stitches in the second wale of the second set of alternating wales of the second set of consecutive wales, and welt stitches in the first and second wales of the first set of alternating wales of the second set of consecutive wales and in the first wale of the second set of alternating wales of the second set of consecutive wales;

each said second set of consecutive courses comprising consecutively first, second, third, fourth, fifth and sixth courses;

the first course of each of said second set of consecutive courses having knit stitches in the second wale of the second set of alternating wales of the first set of consecutive wales, welt stitches in the first and second wales of the first set of alternating wales of the first set of consecutive wales and in the first wale of the second set of alternating wales of the first set of consecutive wales, knit stitches in the first wale of the first set of alternating wales of the second set of consecutive wales and in the first wale of the second set of alternating wales of the second set of consecutive wales, and welt stitches in the second wale of the first set of alternating wales of the second set of consecutive wales and in the second wale of the second set of alternating wales of the second set of consecutive wales;

the second course and the sixth course of each of said second set of consecutive courses having welt stitches in the first and second wales of each of the first and second sets of alternating wales of the first set of consecutive wales, knit stitches in the second wale of the second set of alternating wales of the second set of consecutive wales, and welt stitches in the first and second wales of the second set of alternating wales of the second set of consecutive wales;

the third course and the fifth course of each of said second set of consecutive courses having welt stitches in the first and second wales of each of the first and second sets of alternating wales of the first set of consecutive wales, knit

stitches in the first wale of the first set of alternating wales of the second set of consecutive wales, and welt stitches in the second wale of the first set of alternating wales of the second set of consecutive wales and in the first and second wales of the second set of alternating wales of the second set of consecutive wales; and

the fourth course of each of said second sets of consecutive courses having knit stitches in the first wale of the second set of alternating wales of the first set of consecutive wales, welt stitches in the first and second wales of the first set of alternating wales of the first set of consecutive wales and in the second wale of the second set of alternating wales of the first set of consecutive wales, knit stitches in the second wale of the first set of alternating wales of the second set of consecutive wales and in the second wale of the second set of alternating wales of the second set of consecutive wales, and welt stitches in the first wale of the first set of alternating wales of the second set of consecutive wales and in the first wale of the second set of alternating wales of the second set of consecutive wales.

4,229,955

LOCK FOR ROLLER SHUTTERS

Giorgio V. Coralli, and Alessandro Brunelli, both of Bologna, Italy, assignors to Viro Innocenti S.p.A., Zola Predosa, Italy
Filed Sep. 28, 1978, Ser. No. 946,693

Claims priority, application Italy, Oct. 3, 1977, 15219/77[U]

Int. Cl.¹ E05B 67/36

U.S. Cl. 70—32

2 Claims

1. In a roller shutter lock of a type including a body, a bolt slidably situated in the body for engagement with an anchoring ring secured to a threshold, and a key cylinder for locking said bolt, the improvement comprising a hood-shaped body having a rear flat surface attached to an outer side of the roller shutter, two side surfaces which converge upwardly and outwardly from the outer side of the roller shutter, an upper surface having at least a portion inclined downwardly, and a flat bottom surface, said body including a cavity extending from the bottom surface thereof to receive the anchoring ring therein when the shutter is closed, said bolt extending laterally across the cavity and said key cylinder being situated vertically to lock or unlock the bolt directly.

4,229,956

LOCKING MECHANISM

Maxwell Thorburn, P. O. Box 707, Clearlake Oaks, Calif. 95423
Filed Dec. 26, 1978, Ser. No. 973,038

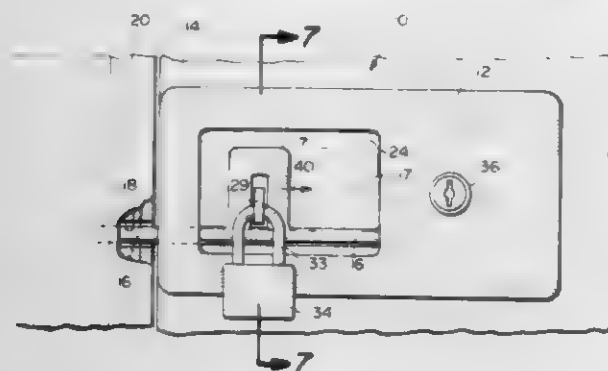
Int. Cl.¹ E05B 63/14; E05C 1/02, 5/02, 13/02

U.S. Cl. 70—129

11 Claims

1. A locking mechanism comprising: a frame, a bolt supported on said frame for slidable movements between extended and withdrawn positions, a member mounted on said frame for slidable movements generally parallel to said bolt, first locking means for releasably connecting said bolt to said member, said bolt being movable together with said member when said first locking means is engaged, second locking means for releasably positioning said member with respect to said frame so as to

restrict slidable movements thereof, said first and second locking means cooperating with securing means engagable with



said first locking means, and in which engagement of said securing means prevents release of said first locking means.

4,229,957

LOCKING MECHANISM AND LOCKS INCORPORATING SAID MECHANISM

Moshe Schneerson, 189a Assirey Zion Str., Kiriya Sharet, Raanana, and Anatoli Kofman, 8 Tamar St., Neve Monoson, both of Israel

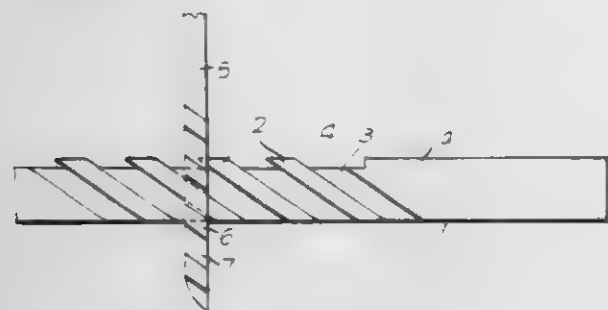
Filed Oct. 11, 1977, Ser. No. 840,800

Claims priority, application Israel, Oct. 11, 1976, 50660; Aug. 29, 1977, 52849; Sep. 12, 1977, 52931

Int. Cl.³ E05B 29/08, 65/06

U.S. Cl. 70-134

22 Claims



1. A locking mechanism having at least one locking bolt supported for guided linear movement in a housing between locked and unlocked positions, said mechanism being characterized in that said locking bolt is comprised by at least two superposed bolt parts which are linearly movable along the longitudinal axis of the bolt relative to each other and are provided on the corresponding longitudinal edges thereof with a plurality of spaced matching teeth at an angle of 10°-80°, a key adapted for guided linear movement through a key-hole perpendicular to said bolt parts and having teeth matching those in the bolt parts formed in at least one of its side edges at a matching angle, the movement of the bolt parts being effected by the meshing of their teeth with those of the key upon insertion of the key in a manner such that one of the bolt parts moves linearly along the longitudinal axis of the bolt with continued insertion of the key until its teeth become aligned with the teeth in the other bolt part at which point both bolt parts move together as a single locking bolt between locking and unlocking positions.

4,229,958 CONTROL DEVICE PARTICULARLY FOR USE IN A LOCK

Alfred Burger, and Adalbert Paar, both of Vienna, Austria, assignors to EVVA-Werk Spezialerzeugung von Zylinder- und Sicherheitsschlössern GmbH & Co., Vienna, Austria

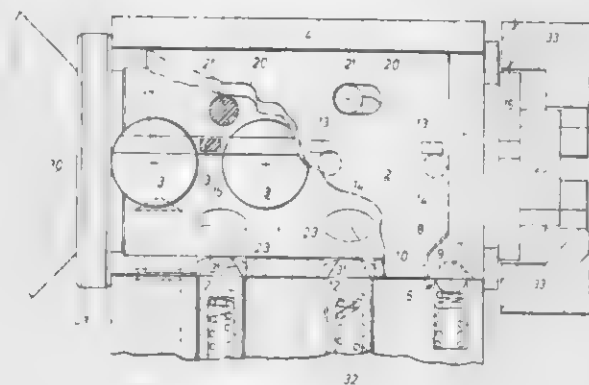
Filed Mar. 2, 1979, Ser. No. 16,892

Claims priority, application Austria, Mar. 6, 1978, 1574/78; Mar. 15, 1978, 1839/78

Int. Cl.³ E05B 28/00, 47/00

U.S. Cl. 70-366

12 Claims



1. A control device, particularly for use in connection with a lock, comprising a tubular housing eventually having in its inner wall a first arresting recess; a plug disposed for rotation in said housing and having on its outer surface a second arresting recess; at least one magnetic rotary member arranged in said plug for rotation about an axis transverse to the center axis of the plug and defining on its surface a third arresting recess alignable with said second arresting recess; a sleeve arranged for rotation and for an axial displacement between said housing and said plug; and arresting elements connected to said sleeve and arranged for selectively engaging said recesses.

4,229,959

METHOD AND APPARATUS FOR OPENING A LOCK

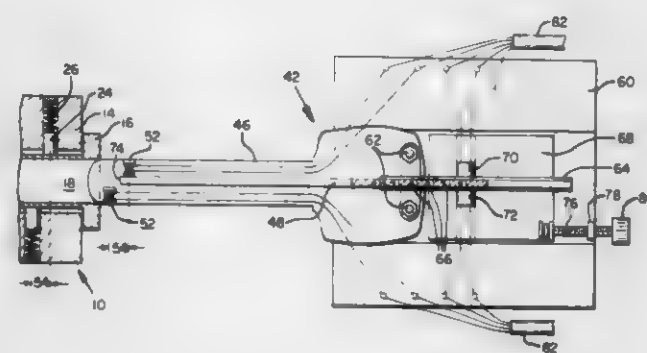
Thomas E. Easley, 1303 Fourth St., LaGrande, Oreg. 97850

Continuation-in-part of Ser. No. 928,232, Jul. 26, 1978, abandoned. This application Mar. 30, 1979, Ser. No. 25,402

Int. Cl.³ E05B 19/20

U.S. Cl. 70-394

15 Claims



1. A lock pick apparatus for opening a cylinder lock of the type having an outer cylinder, a rotatable inner cylinder disposed within the outer cylinder for opening the lock upon rotation, one or more magnetic pins disposed within one said cylinder for engaging the other said cylinder to prevent said inner cylinder from rotating, and a keyway within the inner cylinder for insertion of a magnetic key to displace each pin and release the inner cylinder, thereby opening said lock, said apparatus comprising:

(a) means for determining the position and polarity orientation of each said pin by detecting the magnetic field produced thereby; and

(b) means for selectively displacing each said pin so that said inner cylinder may be rotated to open said lock.

passes being arranged alternatively on said opposed sides of each chock in mutually staggered relationship lengthwise of the chock.

4,229,960

TOOL FOR INSTALLING SO-CALLED PRESS NUTS

Sven R. Nilsson, Lindesberg, Sweden, assignor to Lindova Aktiebolag, Lindesberg, Sweden

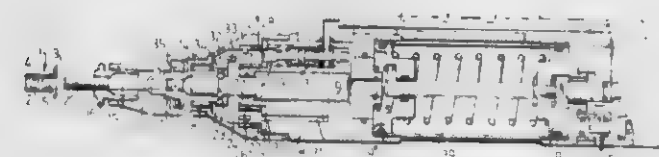
Filed Dec. 8, 1978, Ser. No. 967,788

Claims priority, application Sweden, Dec. 9, 1977, 7714022

Int. Cl.³ B21J 15/34

U.S. Cl. 72-114

6 Claims



1. In a tool for the installation of so-called press nuts, in which the tool has a housing, a draw bar arranged in the housing for axial displacement, one end of said draw bar being operatively connected to a draw mandrel which extends out of the housing through a nose sleeve arranged thereon and in which a protruding end portion of the draw mandrel is provided with a thread for threadable engagement with said press nut, the improvement comprising means for connecting said draw mandrel to said draw bar so that the draw mandrel is axially immovably connected relative to said draw bar but is rotatable relative to said draw bar, a turbine wheel or the like that is journaled in said housing around said draw bar at the end thereof connected to the draw mandrel for rotation in either direction, means for rotating said turbine wheel in either direction and for bringing the turbine wheel into operative engagement with said rotatable draw mandrel to thereby rotate the draw mandrel and bring it into and out of threaded engagement with said press nut.

4,229,961

CONTINUOUS MILL

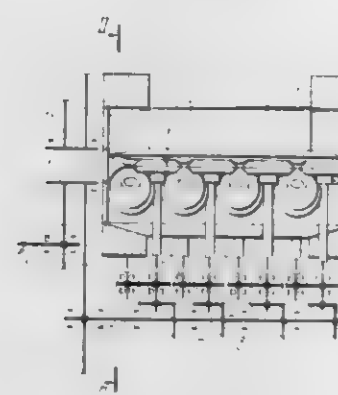
Vladimir N. Vydrin, ulitsa Timiryazeva, 28-27; Valery V. Pastukhov, ulitsa Stalevarov, 28a, kv. 79; Leonid A. Barkov, ulitsa Klary Tsetkin, 30a, kv. 13, and Vladimir S. Sysoev, ulitsa Artilleriiskaya, 65 B, kv. 6, all of Chelyabinsk, U.S.S.R.

Filed Feb. 7, 1979, Ser. No. 10,310

Int. Cl.³ B21B 1/18, 13/12

U.S. Cl. 72-235

4 Claims



1. A continuous multi-pass rolling mill having a plurality of work rolls per pass, with the work rolls in successive passes being mutually angularly displaced, wherein said work rolls are mounted on chocks extending lengthwise of the mill, the number of chocks being equal to the number of work rolls in each pass, each chock having a pair of opposed convergent sides extending lengthwise of the mill, said sides defining an angle therebetween equal to the displacement angle between successive work roll passes, each chock carrying one work roll for each pass of the mill and the work rolls for successive

1. The method of reconditioning similar oblong chain links of a worn chain comprising the following steps:

- (1) disassembling said worn chain links from said chain for reconditioning said chain links individually,
- (2) providing a support to hold said chain links individually, positioning one of said chain links to be reconditioned in said support, providing a heating device positioned relative to said support, said heating device being operable to provide intense heat concentrated in designated central opposite portions of said one chain link positioned in said support,
- (3) operating said heating device to apply heat simultaneously to said central opposite portions of the sides of said one chain link, the application of heat being concentrated over short longitudinal distances of the sides and being of such intensity and short duration to heat said central portions throughout to a required temperature for reforming said portions with moderate longitudinal force while maintaining both ends of said one chain link at a relatively lower temperature to preserve the hardness thereof,
- (4) providing a compressing member at each end of said one chain link, said compressing members being aligned with said one chain link in a direction to provide longitudinal inward forces within said sides thereof, each of said compressing members having a formed end adjacent a respective end of said one chain link, each of said formed ends contoured to fit precisely said adjacent end of said one chain link,
- (5) moving at least one of said compressing members inwardly to position said compressing members against said respective ends of said one chain link and continuing to move at least one of said compressing members until said compressing members are separated a predetermined distance to shorten said one chain link while the temperature of said central portions thereof in cross section is substantially maximum, said predetermined distance being just sufficient to restore the pitch of said one chain link.

4,229,963

MACHINE FOR NONCUTTING METAL SHAPING

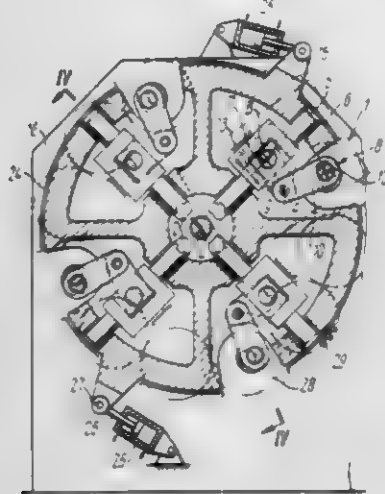
Evgeny A. Savinov, ulitsa Internatsionalnaya, 3, korpus 2, kv. 47, and Mikhail I. Baranov, ulitsa Kombainovaya, 36, kv. 116, both of Ryazan, U.S.S.R.

Filed May 26, 1978, Ser. No. 909,992

Int. Cl.³ B21J 9/18

U.S. Cl. 72-402

3 Claims



1. A forging machine comprising: a frame (14,16) having an opening longitudinal to the axis of said frame permitting a workpiece (L) to be moved, hammer means (2) equally spaced around the workpiece (L); main crankshaft means (7) for imparting reciprocation to said hammer means (2); a driving crankshaft means (13) of a crank gear mechanism (8) for transmitting rotary movement to said driving crankshaft means (7), wherein the kinematic coupling of the main crankshaft means (7) with the driving crankshaft means (13), is accomplished by means of a lever (9) rigidly secured to the main crankshaft means (7) and pivotally connected to a connecting rod (10) of said crank gear mechanism (8).

4,229,964

APPARATUS FOR TREATING LEADS OF ELECTRICAL COMPONENTS

Thomas Weresch, Greschbachstr. 19, D-7500, Karlsruhe 41, Fed. Rep. of Germany

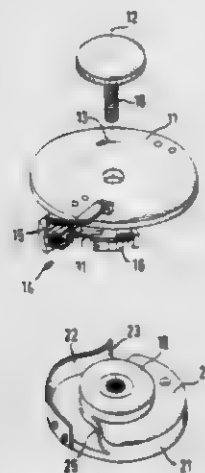
Filed Mar. 9, 1979, Ser. No. 18,917

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810654

Int. Cl.³ B21J 9/18; B23P 23/00

U.S. Cl. 72-452

10 Claims



1. Apparatus for the preparation of leads of electrical components, such as transistors or the like, having a carrier plate rotatable about a fixed axis of rotation, at least one tool set arranged at the periphery of the carrier plate, said tool set including a stationary tool and a tool pivotable about a pivot axis that is parallel to the fixed axis of rotation, and a fixed cam

disk, wherein the pivotable tool, during the rotation of the carrier plate, is controllable by an operating cam section of the fixed cam disk from an open position into a closed position and wherein the cam disk additionally has an opening cam section, the pivotable tool being controlled by means of the opening cam section from the closed position into the open position.

4,229,965

HYDRAULIC CIRCUIT OF A HYDROMECHANICAL DRAWING PRESS

Jindrich Spacek, Brno, and Jiri Kosek, Zdar, both of Czechoslovakia, assignors to Vyzkumny ustav tvarecich stroju a technologie, Brno

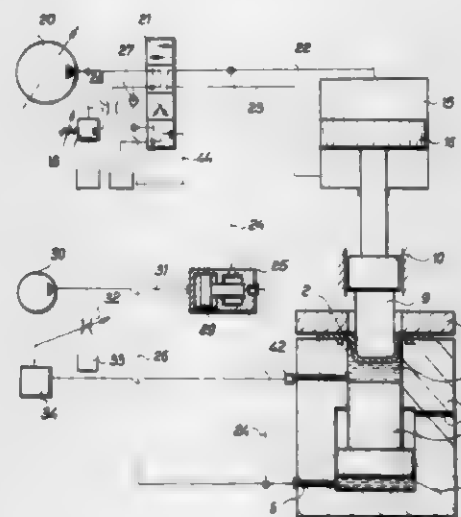
Filed Mar. 31, 1978, Ser. No. 892,288

Claims priority, application Czechoslovakia, Apr. 5, 1977, 2256-77

Int. Cl.³ B21J 9/18

U.S. Cl. 72-453.13

6 Claims



1. In the combination of a hydromechanical press for the drawing of a workpiece made of material in sheet form, the press having a body providing a fluid pressure chamber with a first space therein including a first cylinder, said first space receiving a first fluid which forms an external drawing die, the pressure chamber also having a second space therein including a second cylinder, said second space receiving a second fluid, a force transmitter separating the first and second spaces and having connected first and second pistons sealingly engaging and reciprocable in the said first and second cylinders, respectively, the press having a third, main working cylinder spaced from said body and having a working pressure side, a piston reciprocable in the main working cylinder and provided with a piston rod movable toward away from the first space in the body, a drawing punch mounted on the outer end of the piston rod for drawing a sheet workpiece in cooperation with the fluid in the first space in the body, and a source of fluid pressure selectively connectible with the pressure side of the main working cylinder to thrust the drawing punch toward the first space in the body and a sheet workpiece into said first space, whereby the improvement which comprises a conduit connecting the working pressure side of the main working cylinder to the second space in the fluid pressure chamber, and a first, controlled throttle valve interposed in said conduit.

4,229,966

ADJUSTABLE HOLDER FOR THE STATIONARY DIE OF A THREAD ROLLING MACHINE

Warren M. Jackson, 5071 Crofton, Rockford, Ill. 61101

Filed Mar. 22, 1979, Ser. No. 22,927

Int. Cl.³ B21H 3/06

U.S. Cl. 72-469

4 Claims

1. A holder for the stationary die of a thread rolling machine, said die including a thread forming face having upper and lower edges, said holder comprising a mounting block and an adjustable block supported on said mounting block, said die

4,229,968

GAS MEASUREMENT AND ANALYSIS SYSTEM

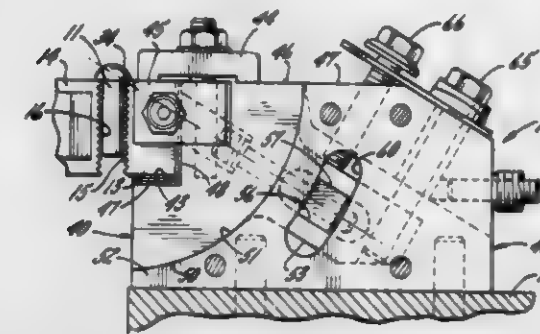
James F. Muldoon, Neptune, N.J., assignor to Electronic Associates, Inc., West Long Branch, N.J.

Filed Sep. 28, 1978, Ser. No. 946,784

Int. Cl.³ G01N 31/08

U.S. Cl. 73-23.1

15 Claims



mounting block to hold said surface in engagement with said seat while permitting said surface to slide along said seat, and selectively adjustable means connected between said blocks and operable when adjusted to cause said surface to slide along said seat thereby to tilt the thread forming face of said die without changing the location of the upper edge of said thread forming face.

4,229,967

METHOD AND MEANS FOR TESTING THE FLAMMABILITY OF COMBUSTIBLE MATERIALS

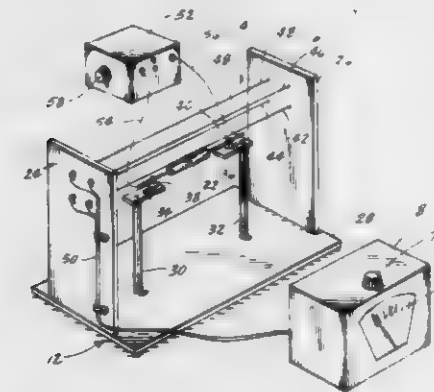
Jerome J. Kneifel, and John C. Veburg, both of Columbus, Nebr., assignors to Dale Electronics, Inc., Columbus, Nebr.

Filed Dec. 26, 1978, Ser. No. 972,783

Int. Cl.³ G01N 25/00

U.S. Cl. 73-15 R

18 Claims



1. A device for testing the flammability of a combustible material, comprising, means for holding the material to be tested, means for sensing ionization in the vicinity of the material to be tested, said means for sensing comprising a pair of spaced-apart polarized sensor elements, means for supporting said sensor elements in spaced-apart relation to the material to be tested and at positions above and on opposite sides of said material whereby a flame supported by the combustion of said material will pass between said sensor elements, circuit means to detect current flow in said means for sensing ionization, said circuit means being electrically connected to said sensing means, and indicator means for indicating current flow detected by said circuit means, said indicator means being electrically connected to said circuit means.



1. Apparatus for making waves in a body of liquid comprising a container for the liquid, including a longitudinal dimension and opposed inner surfaces spaced apart transversely, displacing means having an active face disposed substantially

APPARATUS FOR MAKING WAVES IN A BODY OF LIQUID

William B. Hark, "The Paddocks" Frith La., Mill Hill, London, England (NW7 1PS)

Filed Mar. 12, 1979, Ser. No. 19,761

Int. Cl.³ G01M 10/00

U.S. Cl. 73-148

5 Claims

transversely between said inner surfaces, said active face having opposed sides means for moving said displacing means longitudinally back and forth in said container between said opposed inner surfaces, so that said active face, in motion, creates a wave-pattern in the liquid, and further including flexible seal means between said sides and said opposed inner surfaces, to prevent liquid from flowing between said sides and said corresponding inner surfaces.

4,229,970

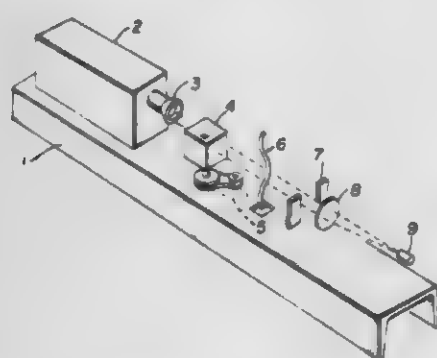
METHOD AND APPARATUS FOR MEASURING THE RHEOLOGICAL PROPERTIES OF AN EXTRUDABLE MATERIAL

Robert I. Barker, Cuyahoga Falls; David P. King, Akron, both of Ohio, and Patrick F. Rice, Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 5, 1979, Ser. No. 1,136
Int. Cl.³ G01N 11/04; G01B 11/08

U.S. Cl. 73—56

15 Claims



1. The method of measuring the rheological properties of an extrudable material comprising the steps of

- extruding a continuous strand of the material under controlled conditions of temperature and shear rate or shear stress,
- measuring the diameter of the strand periodically to provide a plurality of instantaneous diameter values,
- averaging the instantaneous diameter values over a finite number of such values to obtain an average diameter figure,
- measuring the frequency of those instantaneous values which depart from the average diameter figure by more than a given amount, and
- comparing the frequency thus obtained with a predetermined standard.

4,229,971

LIQUID SAMPLING SYSTEM

Otis E. Ririe, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 28, 1975, Ser. No. 572,043
Int. Cl.³ G01N 31/08, 33/22

U.S. Cl. 73—61 R

33 Claims



1. Apparatus comprising:

at least one sample conduit means for providing a liquid sample material containing precipitable material in solution;

means for initiating precipitation of said precipitable material from said liquid sample material;

filter means for separating from the precipitated material at

least a portion of the remaining liquid of said liquid sample material;

and liquid chromatographic analysis means for analyzing said portion of said remaining liquid material;

wherein said means for initiating precipitation comprises means for cooling said liquid sample material.

4,229,972

METHODS OF AND/OR MEANS FOR INDICATING THE LEVELS OF LIQUIDS

Dougald S. M. Phillips, and Peter A. J. Phillips, both of Hamilton, New Zealand, assignors to AHI Operations Limited, Auckland, New Zealand

Filed May 24, 1979, Ser. No. 42,106

Claims priority, application New Zealand, May 26, 1978, INT3M7

Int. Cl.³ G01F 23/24

U.S. Cl. 73—304 R

8 Claims



1. A method of indicating the level of an electrically conducting liquid milk in a vessel which contains a vertically disposed rod type resistor having adjacent lengths having an average cross sectional dimension between twenty and forty-five mm and a resistance of between three and thirty-two ohms per mm of length of the resistor, said method comprising the steps of (a) allowing the liquid to rise in the vessel in a manner such that the liquid interconnects the adjacent lengths of the resistor thus changing the impedance of the resistor appearing at the terminals thereof, (b) measuring that change of impedance and (c) converting the change of impedance into a display which indicates change of level of liquid in the vessel, whereby said dimension enables the total area of the resistor in contact with the milk to be sufficiently great to allow a good resistance connection to the milk in contact with it and enables extremely small changes of impedance to be measured in step (b).

4,229,973

DEVICE FOR BRAKING FLOAT MOTION IN FLOAT-TYPE LIQUID LEVEL GAUGE

Kunio Hara, Kawasaki, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Mar. 23, 1979, Ser. No. 23,068

Claims priority, application Japan, Mar. 29, 1978, 53/39297[U]

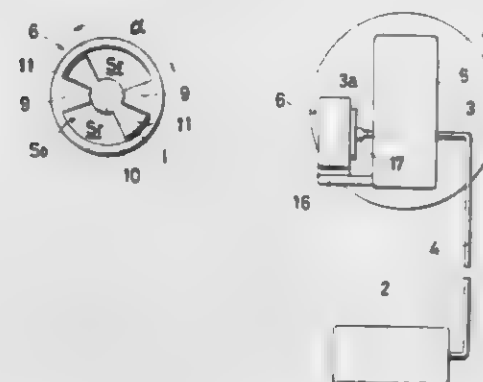
Int. Cl.³ G01F 23/10

U.S. Cl. 73—317

4 Claims

1. A device for braking the motion of a float in a float type liquid-level gauge used with a liquid container and adapted so that, by virtue of the float kept on the liquid surface in the container by buoyant force and allowed to follow faithfully the vertical displacement of liquid level by the force of gravity acting thereon, the volume of the liquid in the container measured in terms of the height of the liquid level determinable by the position of the float relative to the container is indicated on the scale of the gauge, which device comprises:

a first member possessed of an inner chamber,
a second member accommodated within the inner chamber of the first member in such a manner as to produce a motion relative to the first member, the size of the second member being such that the inner chamber of the first member is large enough to accommodate the second member and also retain an extra space for permitting the motion of the second member relative to the first member,
a fluid placed to fill the extra space within the inner chamber of the first member,
a cover member serving to seal tightly the inner chamber containing therein the second member and the fluid,



a path for permitting the flow of the fluid within the tightly sealed inner chamber when there is produced a relative motion between the first and second members mentioned above,

means for fixing in position either one of the first and second members, and

means for connecting the other one of the first and second members with the part adapted to move in conjunction with the float,

said first member possesses a disc-like inner chamber and said second member being provided with vanes adapted to rotate around the axis thereof within the inner chamber, whereby the relative motion to be produced between the first and second members is a rotary motion.

4,229,974

PETROLEUM AND SYNTHETIC GREASE THERMOPARTICULATING COATING

James D. B. Smith, Wilkins Township, Allegheny County; D. Collin Phillips, Monroeville, and Kenneth W. Grossett, Murrysville Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 27, 1978, Ser. No. 956,143

Int. Cl.³ G08B 27/00; G01K 11/00, 13/00, 1/02

U.S. Cl. 73—339 R

11 Claims

1. A method of protecting electrical apparatus from damage due to overheating, said apparatus including a gas stream and a monitor for detecting particles in said gas stream and for emitting a signal when said particles are detected, comprising applying to said electrical apparatus at positions exposed to said gas stream a thermoparticulating grease selected from the group consisting of synthetic straight chain hydrocarbons, synthetic diesters, and mixtures thereof and detecting the particles in said gas stream formed from thermoparticulation of said grease.

4,229,975

THROWAWAY PLASTIC THERMOMETER STRUCTURE

Charles L. Rowe, 787 E. Illinois Rd., Lake Forest, Ill. 60045

Filed May 21, 1979, Ser. No. 40,489

Int. Cl.³ G01K 5/08, 5/22

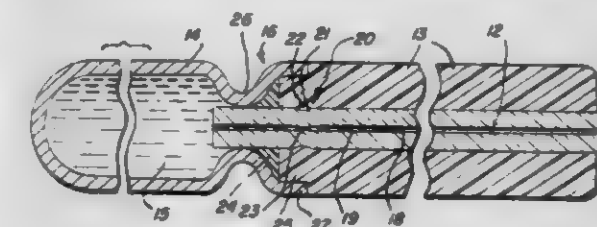
U.S. Cl. 73—371

11 Claims

1. In a throwaway thermometer structure (10,110) having a thin wall tubular light-transmitting, gas impermeable core (11,111) defining a capillary bore (12,112) containing a column (19,119) of thermally expandable indicator liquid (15,115), an

outer tubular light-transmitting jacket (13,113) formed of molded synthetic resin and provided with a temperature indicating scale (17), and a reservoir bulb (14,114) for the liquid at one end of the core, the improvement comprising:

cooperating interlock means on said core and jacket spaced from and adjacent said reservoir bulb defining a radially directed interlock (20,120) for locking said jacket (13,113)



against longitudinal displacement relative to said core (11,111), said interlock means (20) including an annular groove (21) in the outer wall of said core and an annular projection (22) on said jacket (13) extending into said groove; and
securing means for locking the reservoir bulb to the locked jacket.

4,229,976

CAPILLARY THERMOMETER CONTAINING VISIBLE SILICONE FLUID

James E. Jones, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 31, 1979, Ser. No. 71,452

Int. Cl.³ G01K 5/12

U.S. Cl. 73—371

6 Claims

1. A thermometer comprising a transparent capillary tube portion which is closed at one end and which has a reservoir portion at the other end, said reservoir portion being in fluid communication with said transparent capillary portion, and an expanding fluid contained therein in sufficient amount to fill said reservoir portion and the provide a meniscus of said fluid in said transparent capillary tube portion at the intended temperature of use of said thermometer, said fluid consisting essentially of a silicone fluid having dissolved therein an amount of 1,4-bis(alkylamino)-9,10-anthraquinone sufficient to provide a color to said silicone fluid in said transparent capillary tube portion.

4,229,977

TIRE BALANCING MACHINE SYSTEM

Robert P. Newton, Tampa, Fla., assignor to Autodynamics, Inc., Tampa, Fla.

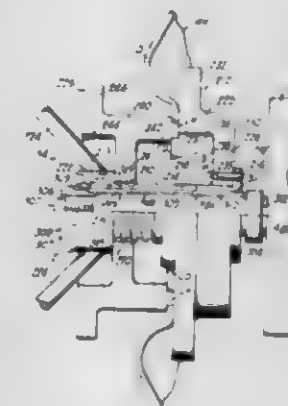
Division of Ser. No. 709,544, Jul. 28, 1976, Pat. No. 4,139,041.

This application Jan. 11, 1979, Ser. No. 2,744

Int. Cl.³ G01M 1/06

U.S. Cl. 73—487

6 Claims



1. A tire balancing machine for balancing a tire assembly

having an inflated pneumatic tire mounted on a vehicular wheel rim with an effective axis of rotation comprising:

a balancer drive spindle rotatable about a balancer spindle axis;

balancer drive key means fixedly mounted on and rotatable with said balancer drive spindle;

a tire assembly mounting adapter removably mounting the tire assembly thereon independently of said balancer drive spindle and having an adapter central axis for fixedly yet removably mounting the tire assembly thereon so that the effective axis of rotation of the tire assembly coincides with the adapter central axis, said adapter including drive means for engaging the tire assembly while the tire assembly is mounted on said adapter for maintaining a fixed rotational position of the tire assembly relative to said adapter, said adapter defining a spindle receiving passage therethrough concentric about said adapter central axis so that said balancer drive spindle is slidably receivable therethrough to removably mount said adapter with the tire assembly thereon on said balancing machine with the adapter central axis coinciding with said balancer spindle axis, and said adapter including key engaging means for engaging said balancer drive key means when said adapter is mounted on said balancer drive spindle; and

adapter locking means for selectively engaging said balancer drive spindle and said tire mounting adapter to force said key engaging means on said tire mounting adapter into engagement with said balancer drive key means, said balancer drive key means and said key engaging means constructed and arranged so that engagement between said balancer drive key means and said key engaging means maintains said tire mounting adapter fixed axially along the length of said balancer drive spindle and fixed rotationally with respect to said balancer drive spindle.

4,229,978

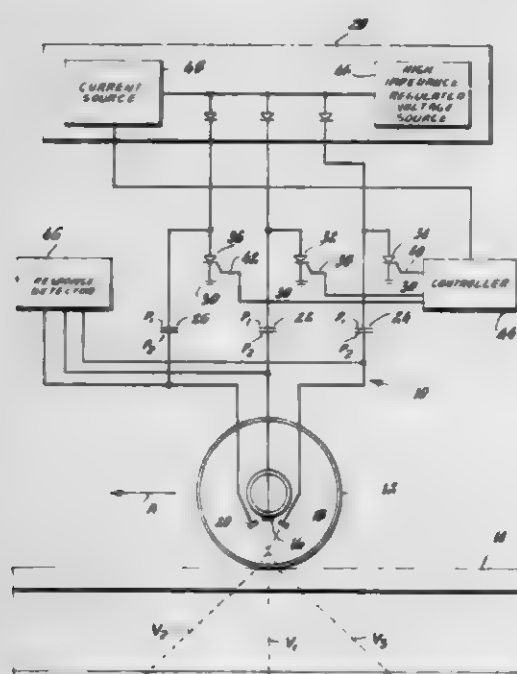
SYSTEM FOR SELECTABLY PULSING ULTRASONIC TRANSDUCERS IN A TEST APPARATUS

Howard A. Sholl, Storrs, and John T. Marshall, Willimantic, both of Conn., assignors to Dapco Industries, Inc., Ridgefield, Conn.

Filed Oct. 2, 1978, Ser. No. 947,482
Int. Cl.² G01N 29/00

U.S. Cl. 73-626

7 Claims



1. A system for selectably electrically pulsing subsets of at least one of a plurality of ultrasonic transducers in a testing apparatus in rapid sequence to produce a pattern of ultrasonic energy transmitted into and subsequently received from a test piece, said system comprising:

a plurality of transducer pulsing circuits, each connected to a different associated one of said transducers and includ-

ing charge storing means dischargeable to electrically pulse said associated transducer and electronic switch means connected between said charge storing means and ground, said electronic switch means being switchable to an "on" condition to rapidly discharge said charge storing means, said electronic switch means further maintaining said "on" condition until current conducted thereby drops below a characteristic holding current and thereafter switching to an "off" condition; and

switched regulator means connected to each of said pulsing circuits for recharging said charge storing means therein, including a high impedance source of voltage for maintaining a desired charge on said charge storing means at a current less than said holding current thereby allowing said electronic switch means to switch to the "off" condition and a regulated current source for rapidly charging said charge storing means after said electronic switch means is switched to the "off" condition.

4,229,979

TRANSDUCER AND METHOD OF MAKING THE SAME

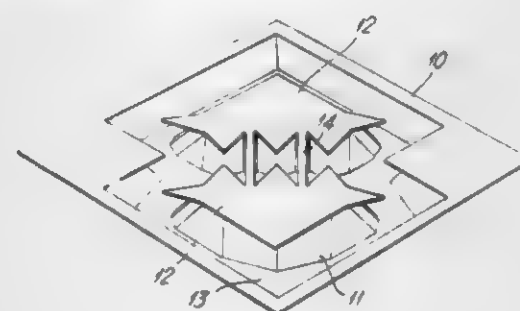
John C. Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed May 29, 1979, Ser. No. 43,446

Claims priority, application United Kingdom, May 30, 1978, 24186/78

Int. Cl.³ G01L 11/00

U.S. Cl. 73-704

2 Claims



1. A pressure transducer comprising: a flexible diaphragm supported in a frame of the same material as the diaphragm; first and second lands extending from one surface of said diaphragm; a plurality of filaments stretched and fixed between said lands; and means to vibrate said filaments at their respective resonant frequencies as determined by the configuration of said diaphragm, movement of said diaphragm producing movements of said lands toward and away from each other, said movements respectively causing stresses, strains and therefore lengthwise contractions and elongations of said filaments and thereby respective lowering and raising of the tensions in and the resonant frequencies of said filaments.

4,229,980

POWER TAKE-OFF

William Kingston, 47 Mespil Rd., Dublin 4, Ireland
Division of Ser. No. 796,518, May 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 659,229, Feb. 19, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,475

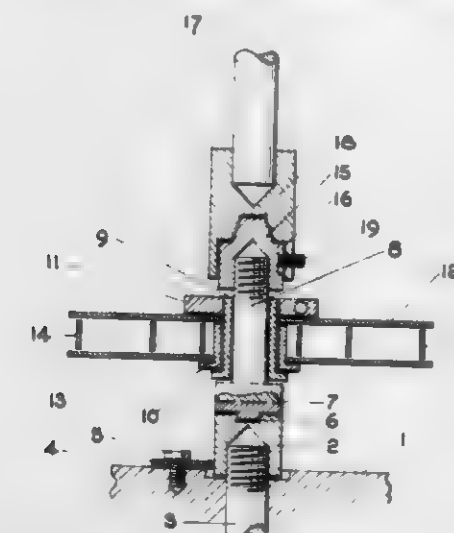
Int. Cl.³ F16H 37/00; F02N 1/00, 7/00

U.S. Cl. 74-15.63

4 Claims

1. A power take-off for a motor, comprising, in combination, an extension to an unmodified motor crankshaft, said extension arranged to penetrate a recoil starter mounted axially in relation to said flywheel, a spindle carrying the sheave of said starter, arranged to permit the passage of said extension there-

through, and locking means for preventing torque from separating said extension from said crankshaft, said locking means



being independent of friction between said crankshaft and said extension.

4,229,981

REVERSIBLE HAMMER DRILL

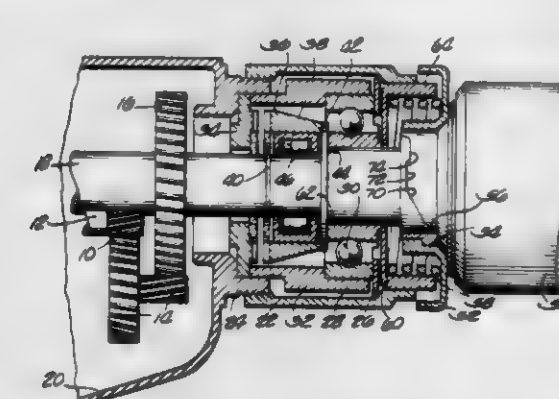
Barry L. Macky, Grafton, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed Sep. 18, 1978, Ser. No. 943,577

Int. Cl.³ B23B 45/16; F16H 37/16, 25/12, 25/14

U.S. Cl. 74-56

4 Claims



1. A rotary hammer drill of the type having a drive spindle mounted in the housing for limited axial movement, a first ratchet member mounted on the spindle for axial movement with the spindle, a second ratchet member fixed in the housing, said ratchet members having confronting faces having complementary ratchet faces which cam the first member from the second member when the spindle is rotated in the forward direction, characterized in that the spindle is driven by a reversible motor and a one way clutch is operatively connected between the spindle and said first ratchet member to drive the first ratchet member in the forward direction only.

4,229,982

CAM DRIVE SYSTEM HAVING PARALLEL INPUT AND OUTPUT SHAFTS

Joseph F. Cattorini, Palm Bay, and Subhash R. Dandage, Rockledge, both of Fla., assignors to Documentation Incorporated, Melbourne, Fla.

Filed Nov. 13, 1978, Ser. No. 959,748

Int. Cl.³ F16H 21/12, 21/48

U.S. Cl. 74-63

18 Claims

1. A cam drive system having parallel input and output shafts and means for rotating said input shaft, said system comprising:

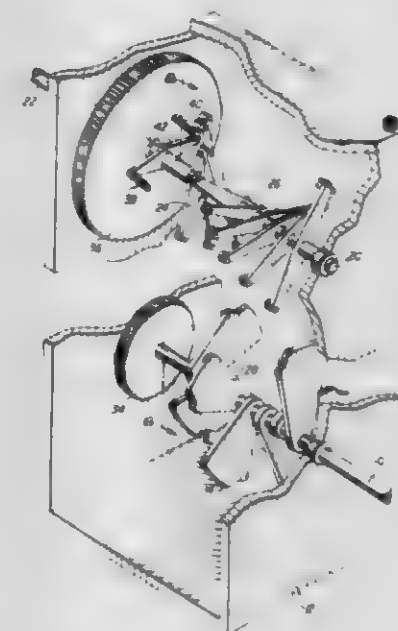
a. a plurality of geometrically identical cams coupled along the length of said input shaft at equal angular intervals,

each said cam having a camming surface occupying an arc of less than one hundred eighty degrees and including

i. a radially outwardly sweeping step section;

ii. a constant radius dwell section adjacent said step section;

b. a plurality of geometrically identical cam followers coupled in diametrically opposed pairs at equal angular intervals along the length of said output shaft, each pair of said



followers being aligned to engage the entire camming surface of a single one of said cams; and

c. biasing means coupled to said output shaft for continuously biasing said cam followers against the camming surfaces of said cams, whereby the continuous rotation of said input shaft is converted into stepped angular displacements of said output shaft, each stepped displacement of said output shaft being followed by a dwell interval of a predetermined duration.

4,229,983

BALL-AND-SCREW POWER TRANSMISSION DEVICE

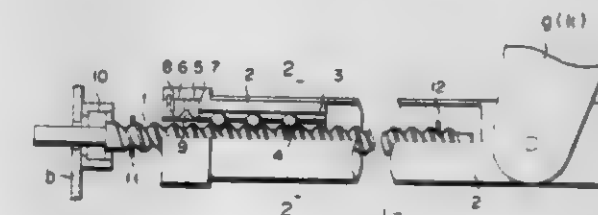
Masayasu Morita, Fuchu, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1978, Ser. No. 891,287

Int. Cl.² F16H 27/02, 29/02, 29/20

U.S. Cl. 74-89.14

2 Claims



1. A ball-and-screw power transmission device operable in non-counter and counter directions, comprising:

elongated screw means provided with at least one thread; at least one spherical member disposed in between the adjacent turns of said thread;

a sleeve in which said at least one spherical member is supported;

an outer cylindrical member surrounding said sleeve and having an inner wall surface with which said at least one spherical member is in contact; and

friction means disposed to be in contact with said sleeve upon axial displacement of said sleeve to frictionally restrain rotation of said sleeve relative to said outer cylindrical member when said sleeve is axially displaced, said

friction means including a pair of friction rings disposed in said outer cylindrical member and being non-rotatable

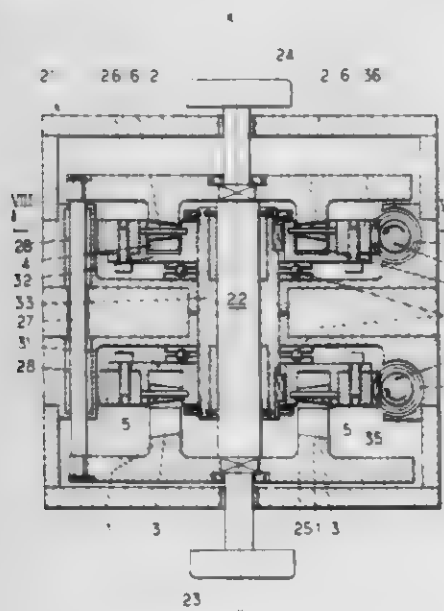
relative to said outer cylindrical member, said friction rings being biased toward each other and being movable in the axial direction of said outer cylindrical member; said sleeve having an integrally formed flange positioned between said friction rings of said friction means; said at least one spherical member revolving while rotating around said screw means jointly with said sleeve during non-counter-direction operation of said transmission device, and said at least one member and said sleeve abutting to be fixed relative to said outer cylindrical member by means of said friction means when said sleeve is axially displaced during counter-direction operation of said transmission device.

4,229,984

STEP BY STEP MOTOR AND/OR BRAKE DEVICE
Jean-Pierre Pegourie, Montpellier, France, assignor to Agence Nationale de Valorisation de la Recherche-Anvar, France
Filed Jul. 28, 1978, Ser. No. 929,014
Claims priority, application France, Aug. 2, 1977, 77 23702
Int. Cl.² F16D 27/10

U.S. Cl. 74—125.5

28 Claims



1. A step by step motor and/or brake device by controlled translation, characterized in that it comprises, in a casing having a shape generally cylindrical about an axis XX, a sliding assembly, comprising a shaft carrying two pistons for the pneumatic control of its reciprocal sliding, with means for guiding this sliding, and carrying two symmetrical annular rings, provided with identical and consecutive cavities whose periphery is in the shape of an asymmetrical V with one leg parallel to said axis and with the other leg comprising an external part forming with said axis an angle less than about 60°, and preferably equal to about 30°, and an internal part parallel to said axis, said cavities of one annular ring being staggered angularly in relation to the other annular ring, by half of the width of a cavity, and a rotating assembly, comprising a sleeve rotating in said casing and carrying an irreversible gear wheel meshing with an output pinion, and on said sleeve two discs, each disc being mounted on said sleeve with an angular clearance at least equal to half of the width of said cavities and with a spring taking up this angular clearance, each disc comprising several, particularly three, cylindrical rollers.

4,229,985

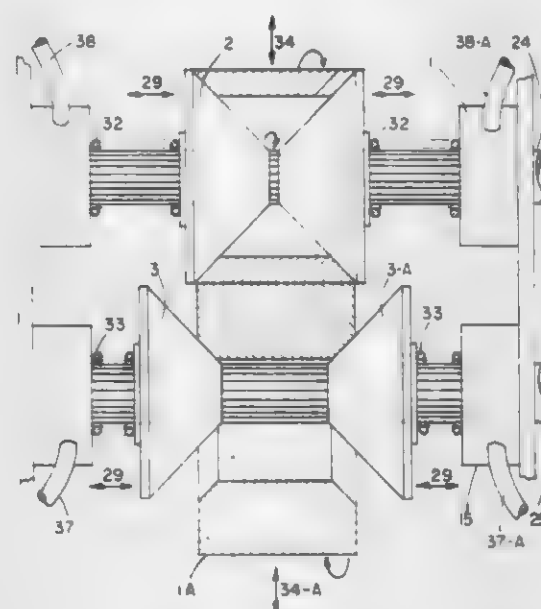
CONTINUOUS VARIABLE SPEED TRANSMISSION
Domenic Borello, 142 Nyc Ave., Pelham, N.Y. 10803
Filed Dec. 22, 1977, Ser. No. 863,393
Int. Cl.² F16H 15/16, 15/42

U.S. Cl. 74—192

2 Claims

2. A variable speed transmission comprising a driving shaft and a driven shaft journaled for rotation in spaces apart parallel relation and disposed in a common plane, a first pair of

driving cones operatively arranged with the apexes thereof in facing relation to each other disposed for sliding movement in opposite directions along said driving shaft, each said cone of said first pair having sides oriented at a select acute angle to the rotational axis of said driving shaft, a second pair of driven cones operatively arranged with the apexes in facing relation to each other disposed for sliding movement in opposite directions along said driven shaft, each said cone of said second pair having sides oriented at a select acute angle to the rotational axis of said driven shaft, a first hollow cylindrical sleeve member having edges bounding opposite end openings into the hollow interior of the said sleeve, thereof oriented at the same angle as said sides of said cones of said first pair having an operative position in supported relation suspended between



said first pair of cones, a second hollow cylindrical sleeve member having edges bounding opposite end openings into the hollow interior of the said sleeve, thereof oriented at the same angle as said sides of said cones of said second pair having an operative position in supported relation suspended between said second pair of cones, and means for varying the speed ratio between said driving shaft and said driven shaft by the sliding movement of said first and second pairs of cones into operative positions on said driving and driven shafts to produce frictional driving contact at the interface of the external surfaces of said first and second cylindrical sleeve members and frictional driving contact whereby said first pair of cones are not required to be in alignment or to remain in alignment with said second pair of cones in order for the apparatus to be in frictional engagement.

4,229,986

AXIAL LOADING DEVICE

Raymond Sharpe, Mirfield, England, assignor to Lucas Industries Limited, Birmingham, England
Continuation of Ser. No. 824,151, Aug. 12, 1977, abandoned.
This application Sep. 7, 1979, Ser. No. 73,231
Claims priority, application United Kingdom, Aug. 14, 1976, 33907/76

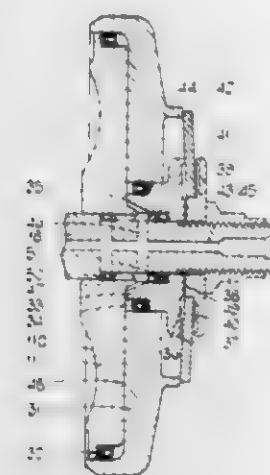
Int. Cl.² F16H 15/38

U.S. Cl. 74—200

4 Claims

1. An axial loading device for applying an axial load to an axially movable member including spring means acting between an abutment and the member, said member being axially movable relatively to said abutment, the spring means acting on one part of said member in a first axial position of said member and acting on a further part of said member when it is in a further axial position, the said one part of the member being spaced from the said further part of said member, such that different axial loading is applied to said member by said spring means when the member occupies said first and said further axial positions respectively wherein said axially movable member includes inner and outer coaxial elements, one of

said elements including said one part upon which said spring means acts when said member is in a first axial position, the other of said elements including said further part of said mem-



4,229,988

**CONTINUOUSLY VARIABLE CONE PULLEY
BELT-DRIVE GEARING**

Manfred Rattunde, Bad Homburg, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Reimers Kommanditgesellschaft, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,472

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744947

Int. Cl.² F16H 55/52

U.S. Cl. 474—28

5 Claims

ber upon which said spring means acts when said member is in a further axial condition, said two coaxial elements being relatively axially movable with respect to each other.

4,229,987

**BICYCLE DERAILLEUR HAVING POSITIVE SPEED
POSITION RETENTION**

Hideaki Fujimoto, Toyonaka, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

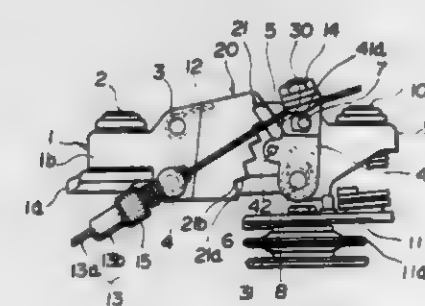
Filed Feb. 15, 1979, Ser. No. 12,607

Claims priority, application Japan, Feb. 28, 1978, 53-23909

Int. Cl.² F16H 7/22, 7/00

U.S. Cl. 474—82

17 Claims

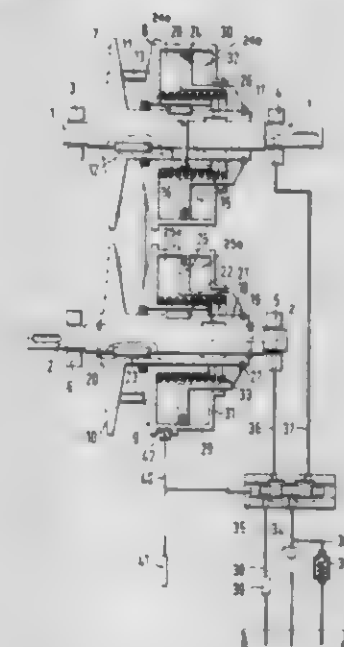


1. In a bicycle derailleur comprising four members, a fixing member, two linkage members and a movable member mounting a chain guide, two members of said four members carrying a return spring between them so that the cooperative operation of a control cable comprising an inner wire and an outer sheath and the action of said return spring enables said movable member to reciprocate with respect to said fixing member for changing the bicycle speed, the improvement comprising:

a control element for setting said movable member in a proper position corresponding to a desired speed change stage, said control element being supported to one of said four members and having a plurality of engageable portions corresponding to the number of speed change stages said movable member reciprocates among for changing the bicycle speed, said engageable portions having engaging faces for each speed change stage and connecting faces for interconnecting said engaging faces;

a retainer engageable with a said engaging face at each of said engageable portions of said control element for retaining said movable member in a proper position corresponding to a desired speed change stage, said retainer being supported swingably to another member of said four members, said another member being relatively movable with respect to said one member carrying said control element;

a spring urging said retainer in a first direction where said retainer engages with said engageable portions of said control element; and spring means for moving said re-



1. An infinitely variable cone pulley belt-drive transmission arrangement with a tractive means arranged to revolve around first and second pairs of cone discs having a symmetric pulley wedge, wherein each disc pair has a common shaft and comprises a first cone disc with an extended hub and a second cone disc carried on the extended hub, and wherein on one side of the tractive means there is a pressure means for each disc pair, each pressure means comprising a cylinder and a piston, the cylinder being secured to the respective second cone disc and radially supported on the respective shaft by way of cover means provided on the cylinder and the piston being secured to the hub of the respective first disc, the first disc of one disc pair being axially slidable on its shaft and the second disc of the said one disc pair being axially fixed to the shaft by its associated cylinder and the first disc of the other disc pair being axially fixed by its hub to its shaft and the second disc of the other disc pair being carried on the shaft in an axially slidable manner by way of its associated cylinder cover means.

4,229,989

**V-BELT TYPE AUTOMATICALLY VARIABLE
TRANSMISSION**

Jyoji Tamura, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 28, 1978, Ser. No. 964,253

Claims priority, application Japan, Nov. 29, 1977, 52-143101

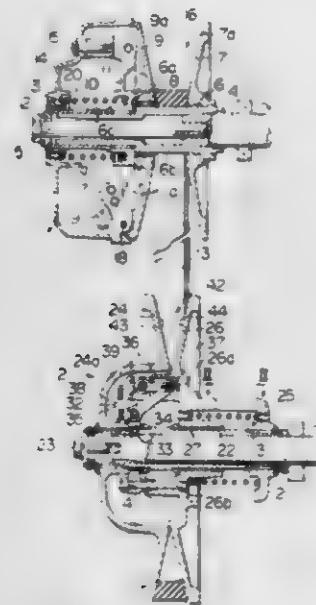
Int. Cl.² F16H 55/52

U.S. Cl. 474—12

7 Claims

1. V-belt type automatically variable transmission comprising a primary sheave assembly having an effective diameter and mounted on a drive shaft adapted to be driven by a prime-

mover, centrifugal means associated with the primary sheave assembly for biasing it so that the effective diameter is increased in accordance with an increase in rotating speed of the drive shaft, a secondary sheave assembly having an effective diameter and provided on a driven shaft, cam means associated with said secondary sheave assembly for biasing it so that the effective diameter is increased in accordance with an increase



spur gears of the pair so that each spur gear meshes with two of the pinions;
first gear means connected to be driven by the first shaft; and second gear means which includes cascaded transmission means (a) and (b), one of the transmission means (a) and (b) providing for axial power branching, the other one being gear means providing lateral power branching, the transmission means (b) including four driven shafts respectively connected to the pinions of said first and second pairs, the transmission means (a) including gear means drivingly connected to and gearingly meshing with the first gear means.

4,229,991

GEAR REDUCER WITH TANDEM DRIVES TO THE OUTPUT

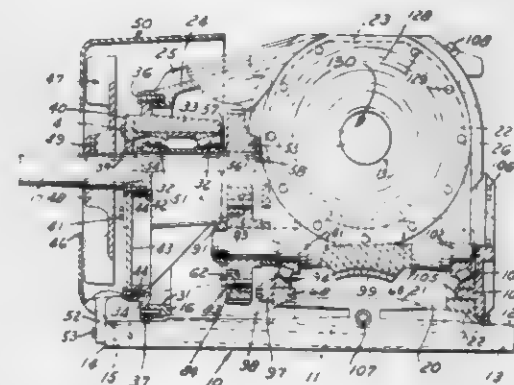
Walter H. Douglas, Centerville, Ohio; Richard F. Peterson, Traverse City, Mich.; Willard J. Nielsen, Traverse City, Mich.; Charles D. Treat, Traverse City, Mich.; Jerry B. Hagaman, Traverse City, Mich.; Wendell G. Loveless, Traverse City, Mich., and William R. Scott, Rapid City, Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Mar. 27, 1978, Ser. No. 890,355

Int. Cl.² F16H 55/18, 57/00, 37/06

U.S. Cl. 74—409

6 Claims



1. In a speed reducer, the combination, comprising:
 - (a) a housing;
 - (b) an input shaft rotatably mounted in said housing in a horizontal plane;
 - (c) an idler drive pinion operatively mounted on said input shaft;
 - (d) a pair of laterally spaced apart worm shafts rotatably mounted in said housing in positions parallel to each other and parallel to said input shaft;
 - (e) an idler driven pinion operatively mounted on each of said worm shafts and meshed with and driven by said idler drive pinion;
 - (f) an output shaft rotatably mounted in said housing in said horizontal plane;
 - (g) a pair of worm gear sets including a pair of worm gears operatively mounted on said output shaft, and a worm on each of said worm shafts; and
 - (h) load sharing means for obtaining equal load distribution between the idler pinion and driven pinions and the worms and worm gears of said pair of worm gear sets, said load sharing means comprising:
 - (1) means for adjustably mounting one of said idler driven pinions on one of said worm shafts;
 - (2) each tooth on said idler drive pinion having a drive face and a non-driving face;
 - (3) each tooth on each of said idler driven pinions having a drive face and a non-driving face;
 whereby said driving face of said teeth of the idler driving pinion are in simultaneous contact with the driving face of said teeth of both idler driven pinions.

4,229,990

TRANSMISSION OF SHIPS

Hans Steinberg, Witten, and Wolfgang Sudhoff, Dortmund, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

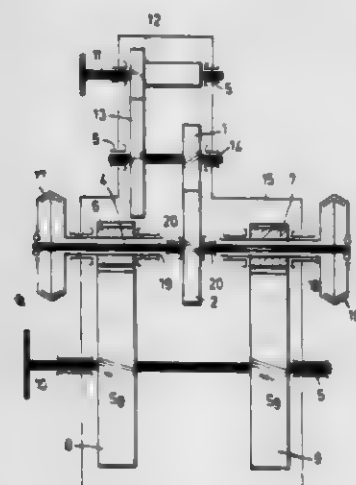
Filed May 24, 1978, Ser. No. 909,006

Claims priority, application Fed. Rep. of Germany, May 27, 1977, 2724783

Int. Cl.³ F16H 3/14

U.S. Cl. 74—377

13 Claims



1. A transmission for a ship's drive system having a first, engine-driven shaft as input of the transmission and a second shaft as output thereof, comprising:
 - a pair of relatively large diameter spur gears, drivingly connected to the second shaft for driving the second shaft;
 - first and second pairs of pinions, the pinions of each pair being coaxially arranged and respectively meshing the

4,229,992

MIRROR ACTUATOR

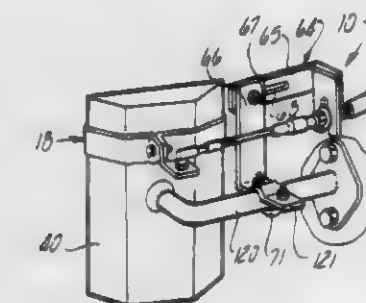
Clyde M. McKee, 22175 Bernard, Taylor, Mich. 48180, and Ward Scott, 429 Rochdale Dr., Rochester, Mich. 48063

Continuation-in-part of Ser. No. 706,448, Jul. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 526,794, Nov. 25, 1974, Pat. No. 3,969,982. This application Jun. 28, 1978, Ser. No. 920,113

Int. Cl.² F16C 1/10

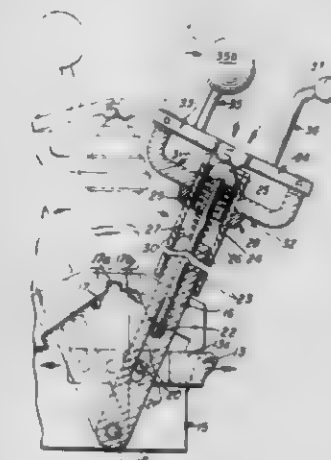
U.S. Cl. 74—501 M

3 Claims



1. A mirror actuator assembly adapted for use in conjunction with an exteriorly mounted conventional right hand mirror already mounted on a vehicle by at least one strut, said mirror being pivotally mounted around a generally vertical axis of rotation, said assembly comprising:

a cable assembly having an outer sleeve portion and an inner wire member;
one end of said inner wire member extending into said vehicle and including means attached thereto for selectively moving said inner wire member axially within said outer member;
means removably attaching the opposite end of said inner wire member to said mirror to produce rotation of said mirror around said vertical axis upon axial movement of said inner wire member along an axis of movement; and
a bracket assembly having a first elongated bracket member and a second elongated bracket member, means for securing one end of said first bracket member to the strut, means for securing one end of the second bracket member to the outer sleeve portion of the cable assembly at a predetermined longitudinal position along the outer sleeve portion and means for longitudinally adjustably securing said second bracket member to the other end of said first bracket member, said longitudinal adjustable securing means further comprising an elongated slot formed through said second bracket member, an aperture formed through said other end of the first bracket member and fastener means which extends through said slot and said aperture for locking said bracket members together at an adjusted position, whereby with the inner wire member stationary with respect to the outer sleeve portion the angular position of the mirror can be varied by adjusting the longitudinal position of the second bracket member and wherein said longitudinal adjustable securing means further includes means for securing said bracket members together in a selected pivotal position with respect to each other whereby said one end of the first bracket member can be selectively secured to either a vertical or horizontal strut and wherein said elongated slot in said second bracket member extends substantially parallel to said axis of movement when said first bracket member is connected to either a vertical or a horizontal strut.



therefrom along said path and being angularly disposed relative to the direction of movement of said shaft means along said path; and follower means carried by said shaft means and being selectively movable independently thereof a limited amount, said follower means being operatively connected to said handle means and biased to normally engage said cam surface means, said follower means being disengageable from said cam surface means and said first means upon the application of said predetermined squeeze input force to said handle means and said shaft means being movable from the rest position in response to an additional application to said handle means of an input force of predetermined magnitude; upon release of the input forces on said handle means when the shaft means is within the path and offset from said rest position, said biased follower means coacting with said segments of said cam surface means and producing a vector force combining with the resiliency of the first external resistance to overcome the second external resistance and return said shaft means to said rest position.

4,229,994

STEERING WHEEL MOUNTING

Gunter Plamper, Brunswick, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Aug. 21, 1978, Ser. No. 926,408

Int. Cl.² G05G 1/12

U.S. Cl. 74—552

3 Claims

1. In a vehicle having a rigid metal steering shaft, the shaft having an upper end portion, a steering wheel mounting structure for the mounting of a steering wheel to the said upper end portion of the said rigid metal steering shaft, the steering wheel being molded of plastic resin, said upper end portion of the shaft having opposed flat sides inclined inwardly toward each other progressively toward the upper end of the shaft, said upper end portion being threaded adjacent the upper end of the shaft for threaded interengagement with a nut, said steering

4,229,993

ACTUATING DEVICE

Herman J. Andresen, 1330 Woodlawn Ave., Glenview, Ill. 60025

Filed Apr. 7, 1978, Ser. No. 894,338

Int. Cl.³ G05G 5/06

U.S. Cl. 74—538

10 Claims

1. An actuating device for use in simultaneously converting predetermined input forces into stored energy within the device and into an output force sufficient to overcome a resilient

wheel having a hub portion, the said hub portion having an upper side and lower side and having a central opening extending axially therethrough for receiving said upper end portion of the shaft upon insertion of the upper end portion of the shaft upwardly into the entrance of the opening at the lower side of the hub portion, the said opening having opposed flat walls inclined inwardly toward each other progressively toward the upper side of the hub complementing the said flat sides of said shaft end portion to engage the same closely, said flat sides of the shaft upper end portion interengaging with the flat walls of the hub for providing rotation of the shaft upon turning of the wheel, the interengagement of the opposed inclined flat sides of the shaft upper end portion with the opposed inclined flat walls of the central opening in the hub being such that, upon the drawing down of a nut threadably engaged with the threaded end portion of the shaft to impart a downwardly axially directed force on the hub toward the shaft, the said inclined flat walls of the said shaft end portion by a wedging action against the inclined flat walls of said recess exert an



outwardly directed radial force tending to expand the wheel hub surrounding said opening, the improvement of a cup-shaped metal washer embedded in said wheel hub adjacent the said entrance into said central opening, said washer having a substantially flat central base portion and side walls extending upwardly from the periphery of said base portion, said washer having a bore complementing the cross-sectional shape of said end portion of the shaft in a plane transverse of said end portion of the shaft at said entrance of the opening, the base portion of the washer being disposed in the said hub portion at the lower side thereof in position to engage said upper end portion of the shaft, the side walls of the cup-shaped washer extending into the wheel hub outwardly of the said opening, the said washer embedded in the wheel hub resisting the said wedging action tending to expand the wheel hub, the said bore in said washer having oppositely disposed flat edge portions for interengaging with the opposed flat sides of the shaft end portion to interlock therewith against rotational movement of the washer relative to the shaft.

4,229,995

LOCKING MECHANISM FOR AN ADJUSTABLE SPINDLE DRIVE

Felix R. Bernasconi, Zollikon, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Mar. 15, 1979, Ser. No. 20,745

Claims priority, application Switzerland, Mar. 16, 1978, 1859/78

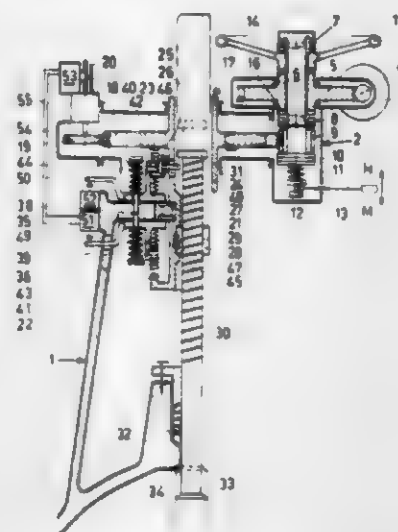
Int. Cl.³ F16D 7/00

U.S. Cl. 74-625

14 Claims

9. A spindle drive comprising:
 - a housing;
 - a spindle rotatable within said housing;
 - a gear drive for rotating said spindle and axially movable relative to the spindle;
 - said gear drive including locking elements which limit rotation of said spindle;
 - locking elements for engaging said locking elements on said gear drive;
 - said locking elements being resiliently mounted on said housing and operatively engaged by the gear drive;
 - switches for actuating the gear drive, said switches being

controlled by deflection of said resiliently mounted locking elements when engaged by the gear drive; and
a shiftable cam carried by said gear drive for selectively maintaining said resiliently mounted locking elements out



of engagement with said locking elements on the gear drive; wherein said locking elements on said gear drive engage said resiliently mounted locking elements during a selected period of spindle travel to prevent continued rotation of the spindle.

4,229,996

COMPACT FOUR SPEED AUTOMATIC TRANSMISSION

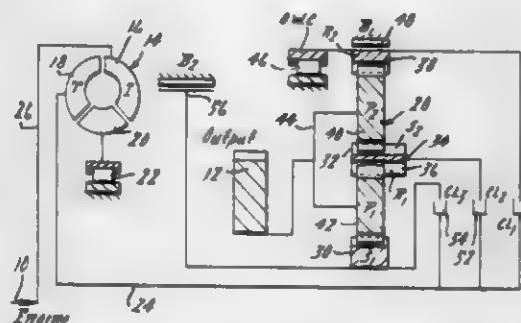
Daniel H. Hildebrand, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1978, Ser. No. 966,979

Int. Cl.³ F16H 47/08, 57/10

U.S. Cl. 74-688

3 Claims



1. A planetary, multiple-ratio power transmission mechanism having compound gearing and a hydrokinetic unit, the hydrokinetic unit having an impeller and a turbine arranged in a toroidal fluid flow circuit; said planetary gearing comprising two sun gears, two ring gears, two sets of planet pinions and a carrier that is common to each set of planet pinions, a driven member connected to said carrier, a driving member connected to said impeller; a first of said sun gears, a first of said ring gears, a second of said sun gears and a second of said ring gears being arranged in radial disposition one with respect to the other; said first ring gear and said second sun gear being common and formed on a ring, the external teeth of said second sun gear being formed on the periphery of said ring and the internal teeth of said first ring gear being formed on the internal periphery of said ring, a first of said sets of planet pinions engaging drivably the first sun gear and said first ring gear, a second of said sets of planet pinions engaging drivably said second sun gear and said second ring gear, said planet pinions being rotatably supported by said common carrier; first selectively engageable clutch means for distributing driving torque to said second ring gear, second selectively engageable clutch means for delivering driving torque from said turbine to said ring, third selectively engageable clutch means for distributing driving torque from said turbine to said first sun gear, and brake means selectively engageable for anchoring said first sun

gear during operation in the first and fourth speed ratios, said first and second clutches being engaged during third speed ratio operation and said first clutch means being engaged during overdrive operation, said third clutch means being engaged during reverse drive operation as said second ring gear acts as a reaction point during reverse drive.

4,229,997

MULTIPLE SPEED HUB FOR A BICYCLE WITH CENTRIFUGALLY CONTROLLED SPEED CHANGE AND OVERRIDE MECHANISM ACTUATED BY BACK PEDALING

Hans-Joachim Schwerdtfuer, Schweinfurt am Main, Fed. Rep. of Germany, assignor to Fichtel & Sachs A.G., Schweinfurt am Main, Fed. Rep. of Germany

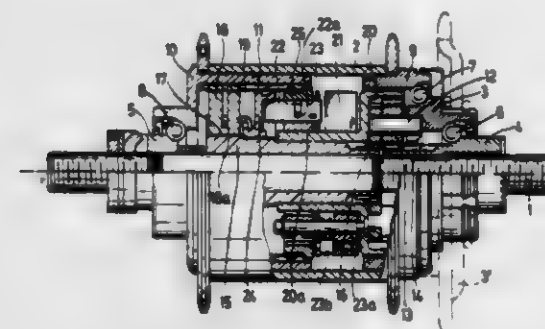
Filed Aug. 1, 1977, Ser. No. 820,782

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635442

Int. Cl.³ F16H 3/74, 5/52

U.S. Cl. 74-752 E

18 Claims



1. A two-speed gear hub for bicycles and the like comprising:
 - (a) a hub axle;
 - (b) a hub sleeve rotatably mounted on said hub axle;
 - (c) a planetary gear transmission in said hub sleeve including first and second transmission members operatively connected for simultaneous rotation about said axle at different speeds;
 - (d) drive means for rotating said members in a forward direction and in a backward direction;
 - (e) an overrunning clutch operatively interposed between said first transmission member and said hub sleeve for transmitting torque from said first member to said hub sleeve when said first member is rotated in said forward direction;
 - (f) a pawl-and-ratchet clutch operatively interposed between said second transmission member and said hub sleeve and operable for transmitting torque from said second member to said hub sleeve when said second member is rotated in said forward direction;
 - (g) a flyweight switch responsive to the rotary speed of one of said first and second transmission members for operating said pawl-and-ratchet clutch; and
 - (h) control means responsive to backward rotation of said drive means and operating to be alternately switched between two operating positions for overriding said flyweight switch and for permitting engagement of said pawl-and-ratchet clutch in one of said operative positions and for preventing said engagement when in the other of said operative positions.

4,229,998 AUTOMATIC SPEED RATIO CONTROL SYSTEM FOR STEPLESS TRANSMISSION OF AUTOMOTIVE VEHICLES

Kiyofumi Mizuno, Nagoya; Hiroaki Maeda, Toyota; Shigeo Takahashi, Kariya; Masanori Sato, and Satomi Suzuki, both of Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

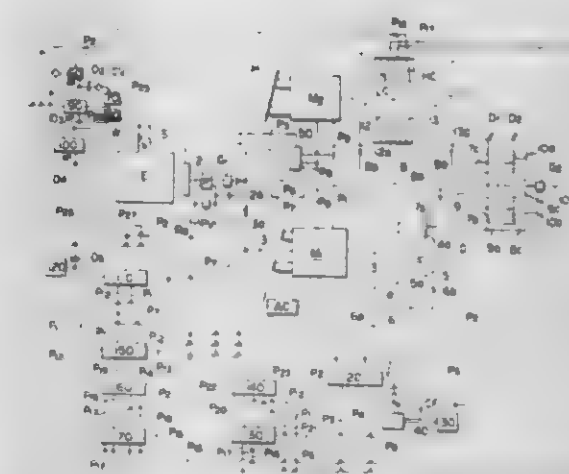
Filed Jun. 19, 1978, Ser. No. 917,034

Claims priority, application Japan, Jun. 22, 1977, 52-74137

Int. Cl.³ B60K 41/12, 41/16

U.S. Cl. 74-865

3 Claims



1. In an automatic speed ratio control system for a stepless transmission of an automotive vehicle, having a desired value signal generator means which produces a desired engine speed signal which corresponds to a throttle opening for controlling operation of an engine on the automotive vehicle, a detector means for producing a signal indicative of operation of the engine, a control signal generator means for comparing the signal from the detector means against the desired value signal from the desired value signal generator means to generate a deviation signal in accordance with a deviation therebetween and a controller means responsive to the deviation signal from the control signal generator means to change a speed ratio of the stepless transmission, said means comprising an integration servo control system further including means for producing a differential signal indicative of a differential or pseudo-differential of a throttle opening during the time the throttle opening increases, the differential signal being added in opposing relationship with the desired value signal from the desired value signal generator means or the deviation signal from the control signal generator means.

4,229,999

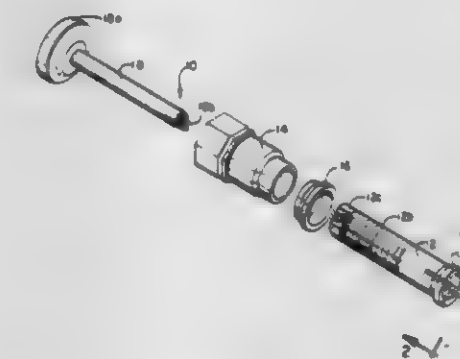
VALVE ADJUSTMENT TOOL

Joseph G. Rottigni, 3659 Greenwood Ter., Chalfont, Pa. 18914
Filed Jun. 11, 1979, Ser. No. 47,311

Int. Cl.³ B25F 1/00

U.S. Cl. 81-3 F

4 Claims



1. A tool comprising:

a barrel having a bore therethrough and provided with a collet portion at its lower end and external threads intermediate the ends of the barrel;
 a collar overlaying and surrounding said collet portion and movable between a first position wherein said collet portion is compressed and a second position wherein said collet portion is uncompressed;
 an internally threaded sleeve threadably engaging said barrel, the lower end of said sleeve confronting the upper end of the collar; and
 a rotatable and axially adjustable driver reposing within the bore of the barrel, said driver having an upper end provided with an enlarged disc shaped knob and having a lower end provided with an object engaging means.

4,230,001

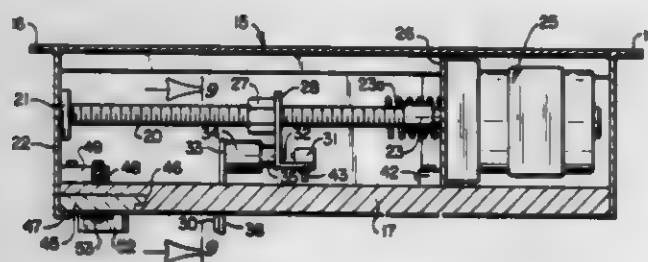
AUTOMATIC GRIPPER FOR CAPS TO BE REMOVED FROM JARS

Edgar S. Downs, 6530 Huntley Rd., Worthington, Ohio 43085
 Filed Jul. 26, 1979, Ser. No. 60,779

Int. Cl.³ B67B 7/08

U.S. Cl. 81-3.2

20 Claims



1. A device for gripping the cap of a capped jar to facilitate turning of the jar relative to the cap, comprising a cap-contacting surface for engaging the outer surface of the cap, jaws at said surface and relatively movable towards and away from each other to clamp and release the cap, means for producing the relative movement comprising a screw operatively connected to the jaws and means for driving the screw, and trigger mechanism engaged by the cap as it is positioned in engagement with said surface and at least one of the jaws to actuate said driving means.

4,230,001

TATOOING PINCERS FOR MARKING EARS OF ANIMALS

Erwin Noll, Klein-Weinbach 1, and Karlheinz Knoerr, Fichtenhof, both of 6294 Weinbach 4, Fed. Rep. of Germany
 Filed May 29, 1979, Ser. No. 42,882

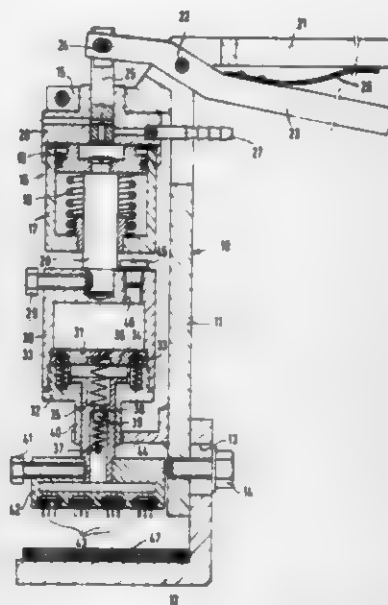
Int. Cl.³ B43K 5/00

U.S. Cl. 81-9.22

10 Claims

1. Tatooing pincers for marking ears of animals by injection of a tatooing liquid, said pincers comprising:
 a portable support structure,
 a first jaw carried by said support structure,
 a second jaw movably arranged in direction to said first jaw, said second jaw having a cavity therein,
 a number of hollow needles carried by said second jaw and protruding against said first jaw, said hollow needles being connected with said cavity,
 a drive means arranged on said support structure for moving said second jaw in direction to said first jaw,
 an intermediate means operatively connecting said drive means and said second jaw in a yielding relationship, said intermediate means yielding under increased pressure after said needles having fully penetrated an animal's ear located between said first and second jaws,
 a storage chamber for tatooing liquid and
 a pump chamber comprised by said intermediate means and

connected to said storage chamber and said cavity by check valves,



the volume of the pump chamber being reduced when said intermediate means yields thereby pressing tatooing liquid out of said pump chamber through said cavity and said hollow needles into animal's ear.

4,230,002

FUNNEL EMPLOYING TOOL FOR REMOVING PLUG AND DRAINING OIL FROM VEHICLE OIL PAN

Paul E. Skidmore, 2535 N. 68th St., Scottsdale, Ariz. 85257
 Filed Aug. 2, 1979, Ser. No. 62,970

Int. Cl.³ B25B 13/06

U.S. Cl. 81-121 R

9 Claims



1. A dual purpose tool for removing drain plugs of vehicle oil pans and substantially simultaneously receiving the oil draining therefrom comprising:
 a funnel shaped member,
 said member having an open flared end for receiving the oil draining from the drain port of the vehicle oil pan and a tubular portion integral with the neck of said member and extending therefrom,
 the free end of said tubular portion arranged for receiving a drain hose in a snug fit therewith,
 a bracket extending across the flared end of said member, and
 a head mounted on said bracket and extending outwardly of said member for receiving a socket in a snug interlocking fit therewith,
 whereby the tool mounted socket when pushed over a drain

plug and the tool rotated, the socket will loosen and remove the drain plug from the oil pan and said member will receive the oil released by said drain plug.

4,230,003

FEED APPARATUS FOR A LATHE

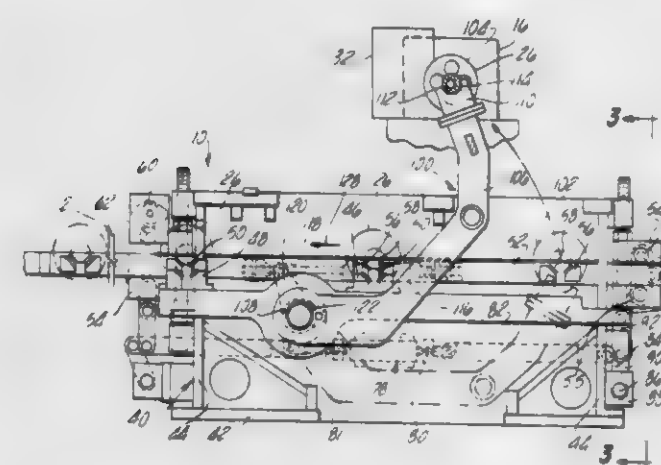
Joseph A. Oeming, 220 Reynick, Saginaw, Mich. 48602

Filed Jan. 22, 1979, Ser. No. 5,346

Int. Cl.³ B23B 13/00

U.S. Cl. 82-2.7

9 Claims



1. Apparatus for sequentially feeding elongated workpieces to work station of a lathe, said lathe having means for engaging and rotatably driving one workpiece about its longitudinal axis in said work station and means for machining the workpiece in the work station, said apparatus comprising:

conveyor means for sequentially moving said workpiece underneath the work station of at least one lathe; and
 means for sequentially moving said workpieces from said conveyor means and to said work station whereupon said lathe engages and machines said workpiece, said moving means being further operable to return said workpiece from the work station and to the conveyor means upon the completion of the machining operation;

wherein said apparatus further includes a frame and wherein said conveyor means is a lift and carry conveyor means and further comprises a pair of spaced and parallel rails having means for supporting workpieces laterally across the rails at predetermined longitudinal intervals, at least two pair of laterally spaced stationary workpiece support members secured to said frame and longitudinally spaced said predetermined distance from each other, means for longitudinally reciprocally moving said rails said predetermined distance, and means for vertically reciprocally moving said rails between an upper and lower position, said rail workpiece support means being positioned above said stationary support members in said upper position and being positioned below said stationary support members in said lower position.

4,230,004

METHOD OF SAWING AND STACKING BOARD

Sven M. Jonson, Sundsvall, Sweden, assignor to Möhög AB, Sundsvall, Sweden

Filed Feb. 27, 1978, Ser. No. 881,854

Claims priority, application Sweden, Mar. 11, 1977, 7702805

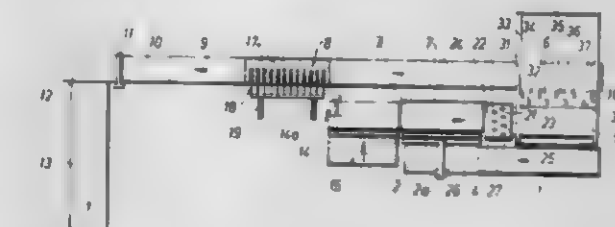
Int. Cl.³ B27B 5/06

U.S. Cl. 83-23

5 Claims

1. Method of sawing and stacking board, with the board including first sheets and second sheets each having a longitudinal dimension and a transverse dimension, comprising the steps of moving one first sheet over a first saw table for cutting the sheets in the longitudinal direction and over a second saw table for cutting the sheets in a transverse direction and cutting the one first sheet at least for trimming the longitudinal edges thereof, placing the cut first sheet on the support surface of a stacking table for forming a support for the bottom of a stack,

moving a number of second sheets in series over the first saw table and over the second saw table and cutting each of the second sheets at least in one of the longitudinal and transverse directions for forming a plurality of sub-divided second sheets from each one of the second sheets moved over the first and second saw tables, each of the sub-divided second sheets hav-



ing a combined area size equal to or less than the size of the cut first sheet placed on the support surface, and stacking these smaller sub-divided second sheets, while maintaining their positions in relation to each other, on the cut first sheet lying on the stacking table, so that the cut first sheet thus forms a supporting surface for the sub-divided second sheets cut from said second sheets of board.

4,230,005

TRAVELING CIRCULAR SAW

Ferenc Varga, Combette 22, 3280 Murten, Switzerland

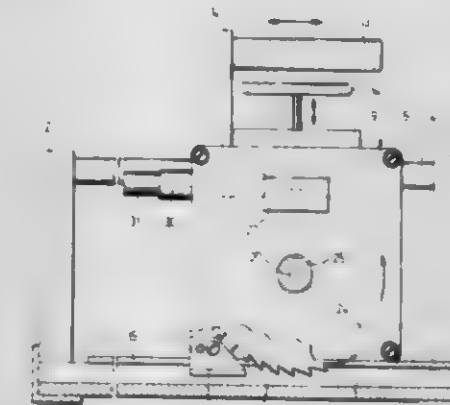
Filed Jan. 22, 1979, Ser. No. 3,480

Claims priority, application Switzerland, Jan. 2, 1978, 1107/78

Int. Cl.³ B27B 5/18

U.S. Cl. 83-100

10 Claims



2. A cutting machine, particularly for plates of plastic material and non-ferrous metal sheets, having a table for the material to be cut and at least one cutting blade rotatably accommodated in a protecting casing or guard casing, a motor for driving said cutting blade in such a direction that the portion of said cutting blade projecting from the guard casing enters into said guard casing at the cutting place, a rim defining an opening of said guard casing through which said blade projects with very small clearance, said rim thus being closely adjacent said blade at least near said cutting place, said guard casing, cutting blade and motor together defining a cutting unit, first means for shifting said cutting unit longitudinally in a direction parallel to said table and parallel to the plane of said cutting blade for cutting with and resetting of the cutting unit, and second means for shifting said cutting unit in a direction perpendicular to said table and parallel to the plane of said cutting blade for uniformly applying said guard casing with said rim against the material to be cut at least near said cutting place in order to prevent bending and splitting of the material by the cutting forces of said blade entering into the guard casing and for lifting off said cutting unit from said table and from said material to be cut, respectively.

4,230,006

CONTINUOUS CASTING OF METALS

Anthony W. Hudd, Sutton Coldfield, England, assignor to IMI Refiners Limited, Walsall, England

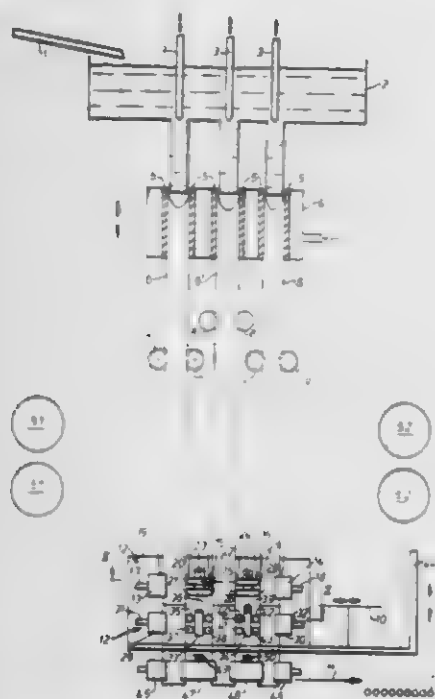
Filed Jan. 17, 1979, Ser. No. 4,192

Claims priority, application United Kingdom, Jan. 17, 1978, 1803/78

Int. Cl.³ B22D 11/126

U.S. Cl. 83-319

8 Claims



1. A device for cutting into predetermined lengths at least three laterally spaced continuously cast parallel axes metal strands during their downward movement, said device comprising: a carriage mounted for downward movement at the same rate as the strands; strand clamping means on the carriage and strand cutting means positioned on the carriage to cut all the strands when clamped; said strand clamping means comprising a single pair of opposed spaced outer clamping surfaces; means for moving said outer clamping surfaces into operative engagement with said strands, transverse to the axes of the strands; at least two members operatively attached to the carriage; at least one of the carriage attached members pivotally mounted for movement about an axis transverse to the axes of the strands; each of the carriage attached members providing pairs of intermediate clamping surfaces; said two outer and two of the intermediate clamping surfaces defining between them two passageways each for vertically receiving one cast metal strand; and said carriage attached members defining between them at least one passageway for receiving a vertically cast metal strand.

4,230,007

FLEXIBLE MEAT SLICING BLADE AND SUPPORT THEREFOR

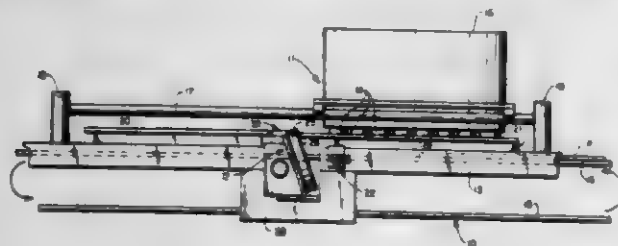
James E. Grote, Westerville, and Thomas A. Hochandel, Pickerington, both of Ohio, assignors to J. E. Grote Pepp-A-Matic Co., Inc., Columbus, Ohio

Filed Jul. 27, 1978, Ser. No. 928,509

Int. Cl.³ B26D 4/42, 4/48

U.S. Cl. 83-409.2

12 Claims



1. A slicing apparatus comprising slicing means including an elongated flexible cutting blade

having a longitudinally extending cutting edge formed along one marginal edge portion of said blade, said cutting edge being formed with a longitudinally extending beveled surface that is angularly disposed at a predetermined angle relative to the plane of the blade, and drive means coupled therewith for support of a longitudinally extending portion of said blade in linearly disposed relationship with the plane of the blade disposed in angularly oriented relationship to a cutting plane and having a longitudinally extending terminal edge of the cutting edge projecting into the cutting plane, said drive means operable to effect longitudinal displacement of said blade in performance of cutting operations, and

guide means for said cutting blade including a structurally rigid guide bar supported in relatively fixed relationship to the cutting plane, said guide bar having an elongated slot formed therein for receiving the portion of said blade disposed in angularly oriented relationship to the cutting plane and supporting that portion of the blade against displacement in either axis transverse to the longitudinal dimension of the cutting blade, said guide bar including a support surface and a deflecting surface with both extending longitudinally of said bar in colinearly extending relationship to said slot with the guide bar support surface disposed in substantially contiguous and parallel relationship to the cutting plane and having said support and deflecting surfaces disposed in relatively divergent relationship to said slot with said slot disposed relative to said guide bar support surface to place the beveled surface of said blade cutting edge adjacent to the cutting plane and in divergently angled relationship to said support surface and cutting plane.

4,230,008

CABLE SPLITTER

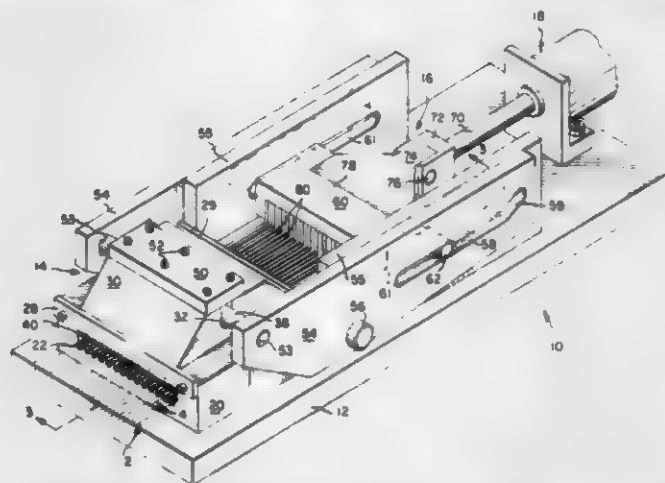
Robert G. Fornwalt, Lancaster, and Walter C. Shatto, Jr., Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 19, 1979, Ser. No. 58,642

Int. Cl.³ B26D 7/02; H02G 1/12

U.S. Cl. 83-456

4 Claims



1. An apparatus for separating selected conductors from the plurality of conductors confined in a ribbon cable, comprising a cable clamp having upper and lower jaws, said jaws having a plurality of opposed teeth defining a plurality of opposed voids for clamping selected conductors among said plurality of said conductors between said teeth, a plurality of splitting blades dimensioned to be received in said voids and having a mean height greater than that of said teeth of said lower jaw, and drive means for moving said splitting blades along said voids and separating selected conductors.

4,230,009

ROTARY TOOL POSITIONER

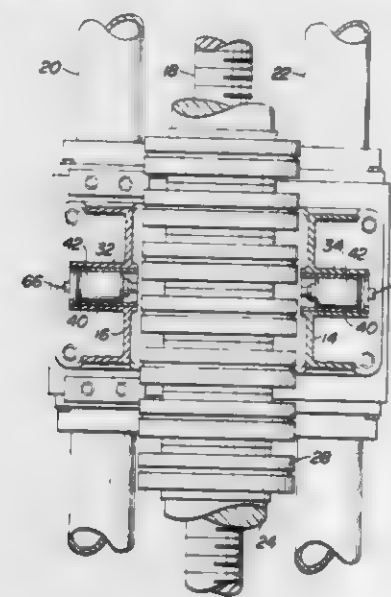
Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Continuation-in-part of Ser. No. 814,749, Jul. 11, 1977, Pat. No. 4,162,643. This application Feb. 9, 1979, Ser. No. 10,561

Int. Cl.³ B23D 19/06, 35/00

U.S. Cl. 83-504

7 Claims



1. In a tool positioner for use in a slitter scorer, the improvement comprising a housing supported by said tool positioner, a cylindrical bearing within said housing, a cylindrical plunger coaxial with and guided by said bearing, the axial length of said plunger being greater than its diameter, said plunger having a pin at one end thereof, a piston coaxial with said plunger and spaced from said one end of said plunger, a piston rod having one end connected to said piston and its other end connected to said one end of said plunger, a stationary cylindrical guide in said housing for guiding said piston, and means for introducing a pressurized fluid to one face of said piston for causing said piston to move in a first direction to a position wherein said plunger pin projects out of said housing to an operative position for contact with a tool.

4,230,010

DEVICE FOR CUTTING GLASS

Franz Guenther, Mainz, Fed. Rep. of Germany, assignor to Jena Glaswerk Schott & Gen., Fed. Rep. of Germany

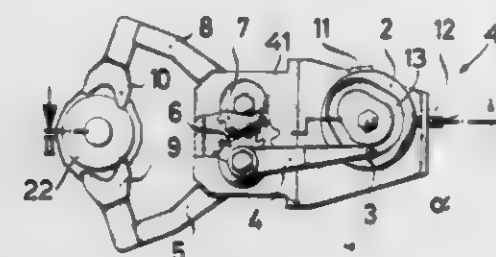
Filed Apr. 4, 1979, Ser. No. 27,043

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818234

Int. Cl.³ C03B 5/38

U.S. Cl. 83-600

20 Claims



1. In a device for cutting glass, for example for separating a drop or portion of a plastic glass skein emerging from a feeder, said device having two shear arms mounted for rotation in a common frame, each of said shear arms being provided with a knife at its extreme end, and means for periodically rotating the arms to move in a pincher-like closing movement toward one another and away from one another so that the knives execute a cutting process, the improvements comprising the means for periodically rotating including means for forming a periodic working cycle, said working cycle having two different stages

with one stage being a working stage in which the knives execute the cutting process with a temporal sequence of movement which is essentially unalterable in its operating time from a given drive setting and the other stage being an idle time stage in which the glass shears are in an open position and the temporal sequence of movement can be changed within broad limits.

4,230,011

AUTOMATIC CENTER PUNCH FOR TEMPLATES

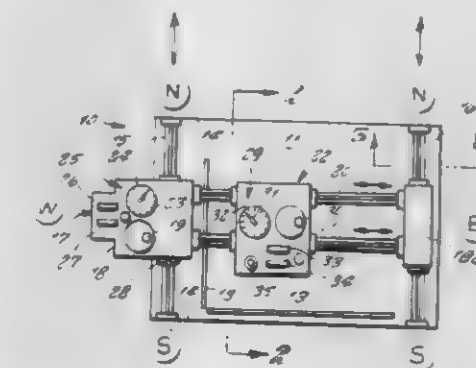
Luciano Battaglia, 46 Dewlane Dr., Willowdale, Ontario, Canada (M2R 2P8)

Filed Dec. 26, 1978, Ser. No. 973,740

Int. Cl.³ B26D 3/08, 7/26; B26F 1/02

U.S. Cl. 83-866

1 Claim



1. An automatic center punch for templates, comprising in combination, a base against which a template blank is positioned, a pair of stops on said base for placement thereagainst by said blank, a first pair of spaced apart rails respectively positioned on opposing sides of said base and forming a track running in a first direction, a first carriage slidable along one of said rails and a guide unit slidable along the other one of said rails, said first carriage and guide unit rigidly secured together by a second pair of rails forming a track running in a second direction perpendicular to said first direction, a second carriage slidable along said second pair of rails, a precision telescopic punch carried on said second carriage aligned to punch a center in said blank, all four of said rails being substantially identical and being of circular cross section with a notch formed in the top thereof, a crank handle respectively associated with each carriage operating a drive along its respective track for movement of the carriage along its track, a readout gauge respectively associated with each carriage for providing an indication of movement of the carriage along its respective track, and counters for each gauge for counting the number of rotations of a dial within its respective gauge.

4,230,012

MUSICAL INSTRUMENT AND METHOD FOR USE THEREIN

Wolfgang Bommersbach, and Robert A. Dean, Jr., both of Palm Beach, Fla., assignors to Bach Laboratories, Inc., West Palm Beach, Fla.

Filed Jun. 14, 1977, Ser. No. 806,484

Int. Cl.³ G10H 1/00; G10F 1/00; G10H 1/02; H04M 1/00

U.S. Cl. 84-1.01

31 Claims

1. In a musical instrument responding to an applied input signal by producing an output signal including at least one of a plurality of signals of different predetermined pitch, which signals lie in a continuum of octaves and correspond to notes of a musical scale within each octave, the combination of: an octave detector responsive to said input signal for producing an octave code signal; a note detector jointly responsive to said input signal and said octave code signal for producing a note code signal, said note detector including frequency shifting means controlled by said octave code signal and operating on

4,230,019

FLUID ARRANGEMENT

Luis M. Castejon Castan, Calle Pablo Casals, 12, Madrid, Spain

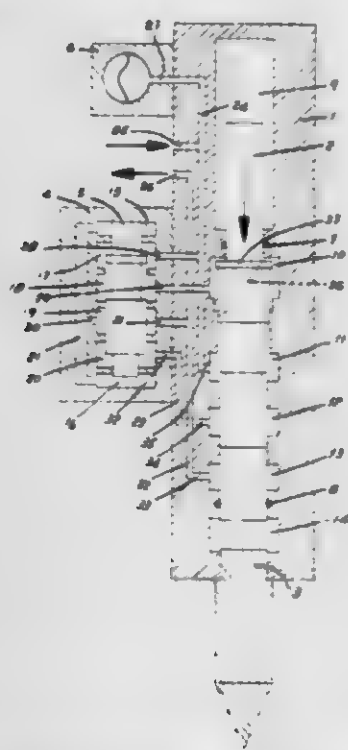
Filed Nov. 13, 1978, Ser. No. 959,781

Claims priority, application Spain, Nov. 12, 1977, 464093

Int. Cl.³ F01B 7/18, 11/02, 25/04; F01L 25/04

U.S. Cl. 91-220

5 Claims



1. A fluid actuating apparatus of the type including a fluid circuit and a plurality of actuating members which have imparted thereto alternating movement governed by said fluid circuit, said apparatus comprising:

- a working cylinder;
- a working piston mounted for movement in opposite first and second directions within said working cylinder;
- a control cylinder;
- a control piston mounted for movement in opposite first and second directions within said control cylinder;
- a fluid feeding line for a source of fluid under pressure permanently connected to a return chamber in said working cylinder and to a first chamber in said control cylinder;
- a working chamber in said working cylinder permanently connected to a second chamber in said control cylinder;
- a fluid discharge line for discharging fluid permanently connected to a discharge chamber in said working cylinder and to a third chamber in said control cylinder;
- a control chamber in said working cylinder permanently connected to a fourth chamber in said control cylinder; and

said working piston and said control piston each including means cooperating with said working cylinder and said control cylinder, respectively, for opening and closing communication between selected ones of said chambers in said working cylinder and said control cylinder, such that in an initial stage of the cycle of operation of the apparatus said working piston is in a first position thereof adapted to contact a percussion tool and said control piston is in a first position thereof whereat said second and third chambers thereof are in communication, thereby permitting driving of said working piston to a second position thereof spaced from the percussion tool, at which second position of said working piston said return chamber and said control chamber are in communication, thereby causing driving of said control piston to a second position thereof at which said first and second chambers are in communication, thereby causing said working piston to be moved toward said first position thereof to strike the percussion tool, at which first position said control chamber and said discharge chamber are in communication, thereby permitting said control piston to be moved to said first position thereof, whereat the cycle of operation starts anew.

4,230,020

INTEGRAL SERVO STEERING GEAR WITH RACK TRANSMISSION

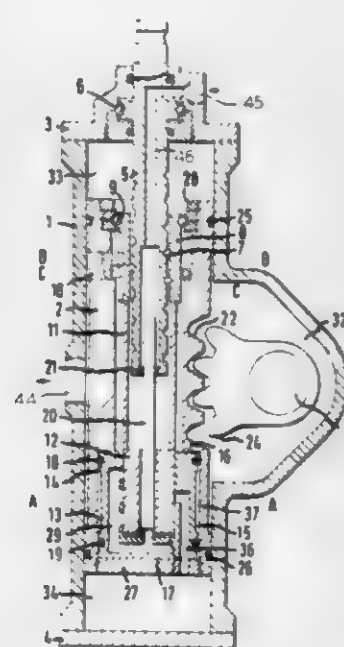
József Ivony, Hegedüs Gyula utca 50; Imre Lendvai, Árpád utca 35; László Szűcs, Batthyányi utca 14, and József Orbán, Alsóhegyi ut 7, all of Budapest, Hungary

Continuation-in-part of Ser. No. 671,298, Mar. 29, 1976, abandoned. This application Mar. 21, 1978, Ser. No. 888,773

Int. Cl.² F15B 9/10, 13/04

U.S. Cl. 91-422

5 Claims



1. Hydraulic servo steering gear comprising

- a steering shaft,
- a double-acting working piston,
- a housing in which said working piston is accommodated,
- a rack and sector gear connection between said steering shaft and said working piston,
- a steering spindle journaled in said housing which, in operation, is rotated to control steering,
- a steering nut, journaled in said working piston, in threaded engagement with the steering spindle,
- first and second abutment elements secured relative to the steering nut and the working piston, respectively to limit angular movement of the steering nut relative to the working piston,
- resilient means fixed between the steering nut and the working piston and, in operation, tending to restore the steering nut and the working piston to a predetermined relative angular position when movement from the said predetermined position occurs,
- a bore defined in said working piston,
- a piston and sleeve type control mechanism arranged in said bore,
- an inlet communicating with a chamber disposed within the outer periphery of the sleeve, said inlet enabling high pressure liquid to enter said steering gear and thereby reach said chamber,
- said housing having an outlet enabling low pressure liquid to leave said steering gear,
- an entraining member connecting the steering nut to the piston of the said control mechanism,
- securing means positioned to secure said sleeve against angular displacement within said bore of the working piston,
- the piston of the control mechanism defining a first channel forming part of a connection between said chamber and a high pressure space at one end of the working piston,
- the sleeve of the control mechanism defining a second channel forming part of a connection between said chamber and a further high pressure space at the other end of the working piston,
- angular movement of the piston of the said control mechanism relative to the sleeve in one direction tending to connect the first channel but not the second channel to

said inlet for high pressure liquid, and angular movement of the piston of the said control mechanism relative to the sleeve in the other direction tending to connect the second channel but not the first channel to said inlet for high pressure liquid,

the sleeve having a substantially cylindrical outer surface and fitting loosely in said bore in a radial sense, and adjacent each end of the control sleeve a respective one of two ring seals is disposed on the outer cylindrical surface of the sleeve to form an annular space due to said loose fitting, said annular space being defined between said two ring seals and being in flow connection with a liquid return space communicating with said outlet.

4,230,021

GOVERNING DEVICE FOR A SPRING BRAKE ACTUATOR

Andre Arousseau, Argenteuil, and Michel Roger, Ville d'Avray, both of France, assignors to Svenska Aktiebolaget Bromsregulator, Malmö, Sweden

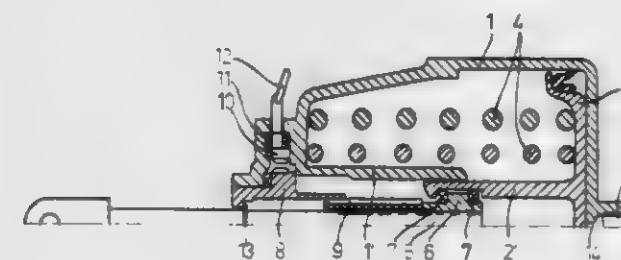
Filed Oct. 11, 1977, Ser. No. 841,045

Claims priority, application Sweden, Oct. 11, 1976, 7611248

Int. Cl.³ F15B 11/08

U.S. Cl. 91-461

5 Claims



1. In a fluid pressure operated system including a spring brake actuator having spring biased clutch means for disengagement of and thereafter automatically restoring engagement of the spring brake actuator when fluid pressure is absent, governing means supplied with said fluid pressure, comprising in combination, a braking system wherein the spring brake actuator is actuated by fluid supply means for selectively applying fluid at varying pressures for service braking,

- a source of fluid supplying said fluid at varying pressure for said service braking and the spring brake actuator,
- a pilot valve with a valve-closing prestressed bias spring and pressure actuated pilot diaphragm coupled to said source to admit fluid under pressure to said spring brake actuator when the pilot valve is overcome by maximum prevailing service braking pressure,
- an operating device comprising an operating diaphragm, means supplying on opposite sides of the operating diaphragm service braking pressure and said maximum prevailing pressure,
- valve means operated by the diaphragm for giving a clutch disengaging signal when the spring brake actuator pressure is higher than the service braking pressure, and calibrated nozzle means releasing pressure in said spring brake actuator slowly.

4,230,022

HYDRAULIC ROCK BREAKER CIRCUIT FOR AN EXCAVATOR

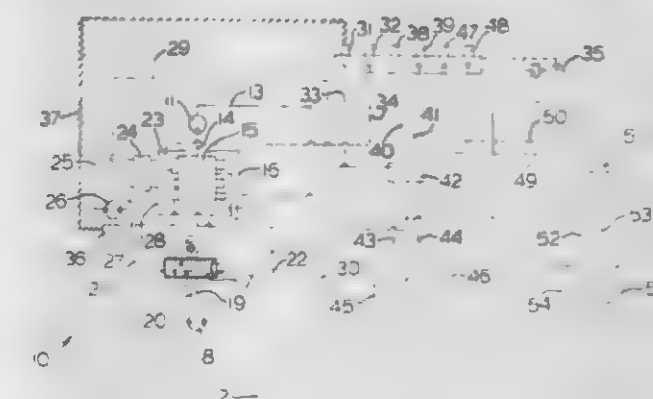
Donald L. Bianchetto, Coal City, and Lawrence F. Schexnayder, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 729,527, Oct. 4, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,492

Int. Cl.³ F15B 11/16

U.S. Cl. 91-516

6 Claims



1. A hydraulic control system comprising:

- a source of pressurized fluid;
- first circuit means for communicating pressurized fluid from said source for operation of a first motor;
- second circuit means for communicating pressurized fluid from said source for operation of a second motor;
- priority valve means disposed between said source and said first and said second circuits for communicating all fluid from said source to said first circuit until the pressure thereof reaches a predetermined minimum and thereafter maintaining said predetermined pressure in said first circuit and communicating all available flow to said second motor, and a dual-stage relief valve for said second circuit, wherein said dual-stage relief valve is conditioned to one of said dual-stages by lubricating pressure in said second motor for preventing high-speed operation of said second motor until lubrication pressure builds up therein; and
- wherein said hydraulic control system includes a pressure responsive means responsive to lubricating pressure in said second motor for operating an activation means through an electrical conductor carrying an electrical signal from the pressure responsive means to the activation means, the activation means conditioning the dual-stage relief valve to said one of said dual-stages through a conduit which provides communication between the activation means and a pilot control chamber of the dual-stage relief valve in response to said electrical signal.

4,230,023

CLAMPING APPARATUS

Charles W. Ward, Akron, Ohio, assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Dec. 5, 1977, Ser. No. 857,790

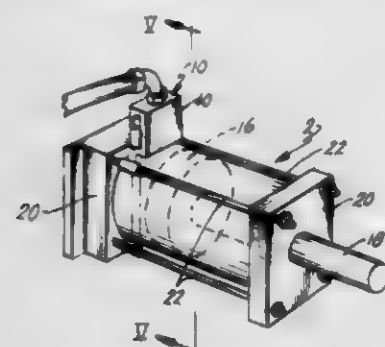
Int. Cl.³ F01B 31/12; F16M 13/00

U.S. Cl. 92-5 L

15 Claims

- 1. In combination, a first object a second object, and a clamping apparatus for securing the first object to said second object, said clamping apparatus comprising:
 - an elongated, flexible clamping strap having a plurality of spaced, generally transverse slots therethrough;
 - a clamp member connected to a free end of said clamping strap and contoured to the shape of the second object for positive, secure engagement with the second object;
 - an adjustment means coupled to said clamping strap for moving said clamping strap in the direction of elongation of said strap to adjust the effective length of said clamping strap between the first and second objects; said adjustment means including a screw with threads engaging said trans-

verse slots of said clamping strap, a mount with an opening securing said screw therein; and an elongated slot in communication with said opening and receiving said clamping strap therein, so that turning said screw causes longitudinal movement of said clamping strap within said slot thereby changing the effective length of said clamping strap between said mount and said clamp member; and securing means coupling said adjustment means to the first object, said securing means including an elongated strap separate from said clamping strap, said separate elongated



strap having first and second ends, permanent securement means for permanently fastening said first end to the exterior of said first object, said mount with said screw including flange means for fixedly securing said mount in a predetermined position at said second end of said separate elongated strap whereby when said clamp member is engaged with the second object, said clamping strap can be tightened or loosened by manipulation of the adjustment means to clamp the first object to or release the first object from the second object.

4,230,024

ADJUSTABLE STROKE CYLINDER

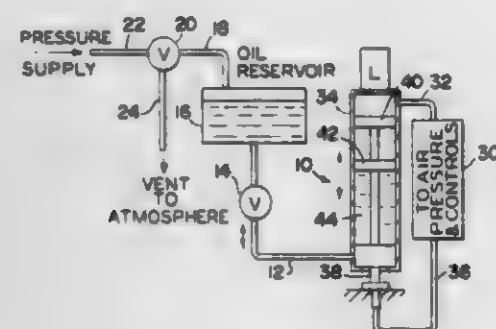
Michael L. Becker, Akron, Ohio, assignor to A-T-O Inc., Wiloughby, Ohio

Filed Jul. 11, 1978, Ser. No. 923,633

Int. Cl.³ F15B 15/22, 15/24

U.S. Cl. 92-13.1

4 Claims



1. An adjustable stroke piston and cylinder combination comprising:

- a cylinder means having closed ends,
- a piston with a piston rod secured thereto slidably positioned in said cylinder means,
- said piston rod being tubular, having a bore, and extending from one end of said cylinder means,
- an auxiliary piston in sealed engagement with said cylinder means and said piston rod,
- said piston rod having ports therein connecting its bore to a point intermediate said piston and said auxiliary piston,
- liquid supply means connecting to said one end of said cylinder means for supply of liquid under pressure thereto whereby the effective length of said cylinder means can be controlled from one end thereof by moving said auxiliary piston away from said one end of said cylinder means and retaining it in a given position when said piston and piston rod reciprocate in relation to said cylinder means, an adjustable air cushion means being provided in said cylinder

der; and said auxiliary piston having a bleeder bore therein operatively connecting its axially inner face to said piston rod bore, said air cushion means including a valve controlling fluid flow through said bleeder bore, which valve is accessible from the periphery of said auxiliary piston.

4,230,025

PNEUMATIC ACTUATOR

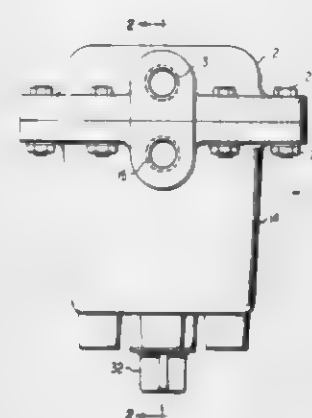
Charles T. Caliri, Northboro, Mass., assignor to Jamesbury Corporation, Worcester, Mass.

Filed Nov. 2, 1978, Ser. No. 957,073

Int. Cl.³ F01B 3/04

U.S. Cl. 92-31

4 Claims



1. A pneumatic actuator comprising:
 - a drive pin coupled to a rotatable drive shaft;
 - a diaphragm housing formed by an upper housing and a lower housing; a resilient diaphragm;
 - a cap-shaped diaphragm cam rigidly attached to said resilient diaphragm, said resilient diaphragm being mounted in said housing for restraining torsional movement of said diaphragm cam wherein said diaphragm cam is provided with a pair of opposed arcuate drive slots which engage said drive pin so as to be rotatable in said drive slots such that a linear motion of said diaphragm cam produces a rotational movement of said drive pin and said drive shaft;
 - said diaphragm cam having at least one correction slot of a particular shape cut through the cam wall at the bottom edge thereof and
 - said lower housing having at least one correction cam formed at the bottom wall thereof and projecting from same, and beneath said correction slot, said correction cam and said correction slot being normally disengaged from one another, said correction cam having the shape of said correction slot, said correction cam and said correction slot having respective engagable oblique surfaces, whereby said correction cam is firmly seated in said correction slot when said diaphragm cam descends within said housing; and
 - whereby rotational movement of said diaphragm cam is corrected and precise rotation of said drive shaft is produced.

4,230,026

RECIPROCATING PISTON DEVICE

E. Dale Hartley, 2700 Jalma Dr., Los Angeles, Calif. 90046

Filed Oct. 25, 1978, Ser. No. 954,403

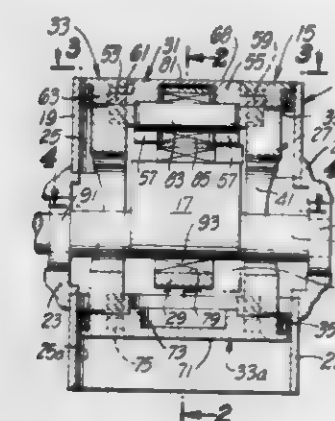
Int. Cl.³ F01B 9/02; F16J 1/14

U.S. Cl. 92-138

8 Claims

1. A reciprocating piston device comprising:
 - a cylinder;
 - a piston reciprocable in said cylinder;
 - said piston including a piston body having a cavity therein, a pivot arm and means for mounting the pivot arm on said piston body for pivotal movement in said cavity, said pivot arm having a passage therein which is within the cavity;
 - a rotatable drive member in said passage;

means for mounting said rotatable drive member for rotation about a rotational axis in said passage, said rotatable drive member having some throw as it rotates about said rotational axis whereby the rotatable drive member can drive the pivot arm and reciprocate the piston body; and



said pivot arm mounting means including an anchor plate mounted on said piston body, a pin extending into said anchor plate and said pivot arm, and bearing means between the pin and the pivot arm.

4,230,027

RECIPROCATING PISTON

Maurice J. Promeyrat, Sevrans, France, assignor to Societe Civile Promeyrat-Castella-Techniques Nouvelles du Moteur, Gagny, France

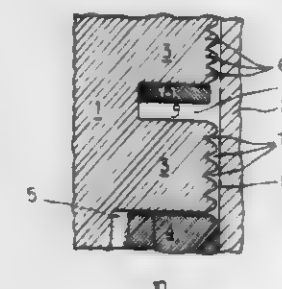
Filed Mar. 29, 1978, Ser. No. 891,200

Claims priority, application France, Mar. 28, 1977, 77 09155

Int. Cl.³ F16J 1/02, 1/08

U.S. Cl. 92-159

3 Claims



1. A reciprocating piston for heat engines, compressors and the like including a cooperating piston and a cylinder, comprising:

- a piston body including an upper bead, said piston being provided with a transverse annular groove having an inner portion;
- a first ring housed in said transverse annular groove, said ring having an upper corner in tangency with the inner wall of said cylinder and a rear inner facing surface spaced from said inner portion of said transverse inner groove;
- said upper bead having on its periphery projecting ribs and recessed portions spaced from the inner wall of its said cooperating cylinder, said projecting ribs alternating with said recessed portions;
- said upper bead including a decompression chamber above said first ring, said ribs and recessed portions being above and below said decompression chamber, a ring piece housed within said decompression chamber and freely axially movable therein to cooperate with said first ring in response to the movement of said piston in said cylinder; and,
- the outer periphery of said ribs having a diameter related to the diameter of the inner wall of said cylinder such that the initial diametrical clearance between said outer rib periphery in its cold condition and said inner wall periphery of said cylinder is substantially equal to half the clearance usually provided with a conventional piston and said

inner wall of said cylinder such that during running-in, said projecting ribs being pressed against the inner wall of said cylinder whereby said ribs may contract and be compressed in said recessed portions which absorb said projecting ribs, wherein for a reciprocating piston having a diameter of 75 mm, and when mounted in a four stroke engine, the diameter of a first self-adapted bead of said cooperating piston has a diameter larger by 0.2 mm than that of the conventional piston for said four stroke engine.

4,230,028

MACHINE FOR INSTALLING INSERTS IN CONTAINER LIDS

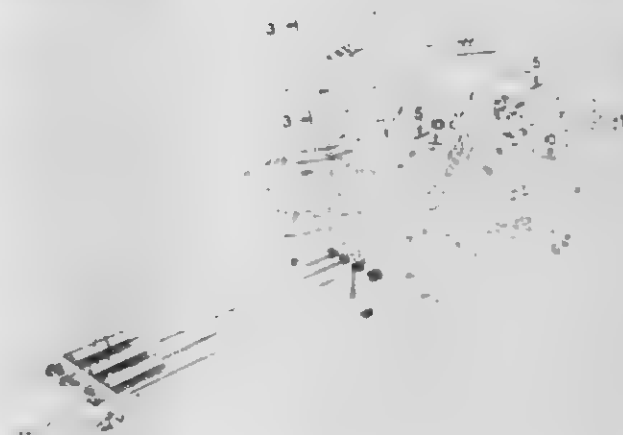
David S. Knudsen, 3145 Hawthorne Blvd., St. Louis, Mo. 63104

Filed Nov. 22, 1978, Ser. No. 963,011

Int. Cl.³ B21D 43/18

U.S. Cl. 93-1.3

21 Claims



1. A machine for installing a thin, highly flexible insert into a container lid having a closure portion that is sized to extend across and close the mouth of a container and a flange that extends from the closure portion and is configured for engaging the container around its mouth; the closure portion having an inside face that is presented toward the interior of the container when the lid is in place, said machine comprising: backing means for positioning the lid in a predetermined position with the inside face of the closure portion accessible; a retaining member mounted in a fixed position with respect to the backing means and immediately beyond the flange on the lid, the retaining member having an aperture that aligns with the flange, the aperture being slightly smaller than the insert, yet of generally the same peripheral configuration; a plunger having a forwardly presented smooth flat face that is rigid and a plurality of ports which open out of the smooth face near the periphery of the plunger, the plunger having generally the same peripheral configuration as the aperture in the retaining member, yet being smaller than the aperture so that the plunger can fit into the aperture and move toward the closure portion of the lid, the configuration of the aperture and plunger being such that when the plunger is in the aperture, the space between the periphery of the plunger and the wall of the aperture is substantially greater than the thickness of the material of the insert; means for moving the plunger into and out of the aperture; means for placing an insert against the smooth face of the plunger when the plunger is out of the aperture, said means including a blanking punch and a blanking aperture into which the punch moves to blank and insert from a sheet of thin flexible material, the blanking aperture being larger than the aperture in the retaining member; and means for placing the ports of the plunger under a partial vacuum as the plunger advances toward and into the aperture so that atmospheric air holds the insert against the plunger as the plunger moves toward the aperture, whereby the peripheral portion of the insert will be deformed backwardly as the insert passes into the aperture to thereby facilitate its entry into the lid.

4,230,029

CUTTING ASSEMBLY USEFUL IN BAG MACHINES

Charles M. Schott, Jr., Atkinson, N.H., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Oct. 26, 1978, Ser. No. 955,068

Int. Cl.³ B31B 1/14, 19/14

U.S. Cl. 93—33 H

4 Claims



1. In a cutting assembly useful in a bag machine, the cutting assembly being of the sprocket and endless belt type in which a cutting blade is secured to the belt and is moved in a path between spaced apart sprockets as the sprockets rotate in engagement with the belt, the improvement wherein,

the belt is of the timing-belt type constructed of flexible material with an inner side and an outer side and having a series of equally spaced, formed teeth and intervening, formed grooves, along its inner side

the sprockets have corresponding grooves and teeth constructed to mate respectively with the teeth and grooves of the belt,

the cutting blade is mounted on the belt by a blade holder disposed on the outside of the belt, a back plate on the inside of the belt, and bolt means extending through the thickness of the belt, joining said blade holder and back plate,

said back plate dimensioned to fit in a single said groove in said belt between a pair of said belt teeth, said bolt means extend through said belt at only a single location along the longitudinal length of said belt, corresponding to the location of said single groove, and each of said sprockets has its series of equally spaced teeth interrupted by the omission of a tooth corresponding to the groove of said belt in which said back plate is located.

4,230,030

MACHINE AND METHOD FOR MANUFACTURING SQUARE OR FLAT BOTTOM BAGS HAVING MOVABLE POSITIONS OR STATIONS INCLUDING THE USE OF A MANDREL

Violet M. Hanson, P.O. Box 163, Plainview, N.Y. 11804, and Edgar Strecker, Freeport, N.Y., assignors to Violet M. Hanson, Old Bethpage, N.Y.

Filed Aug. 11, 1978, Ser. No. 933,085

Int. Cl.³ B31B 33/14

U.S. Cl. 93—35 SB

44 Claims

1. In an apparatus for forming flat bottom bags from a continuous sleeve of material having opposed faces and sides, a mandrel adapted for floating and being enclosed within the sleeve of material for rectilinear movement therewithin, said mandrel having relatively movable actuating members,

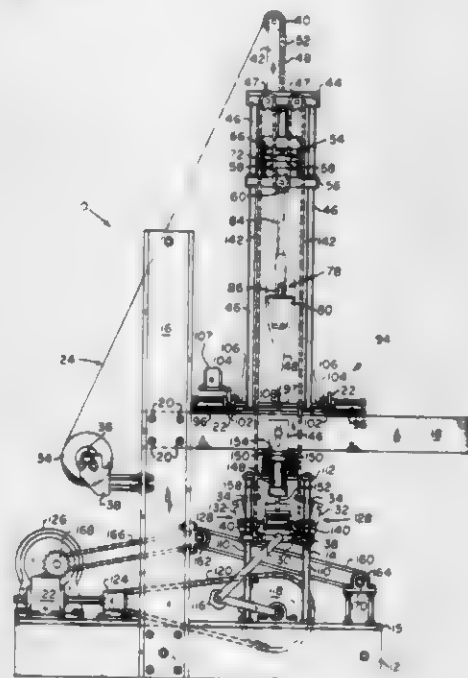
wings means on said mandrel connected with said actuating members for movement thereby between an expanded operative position and a retracted inoperative position, said wings means in said expanded operative position press-

ing against the interior surfaces of the sleeve of material to open the sides of the same and flattening a portion of the faces of the material to form a flat bottom of a bag and being disposed in said retracted inoperative position substantially remote from the interior surfaces of the sleeve to permit movement of the sleeve of material beyond and relative to said mandrel,

means external of the sleeve of material engaging opposed faces thereof and for actuating said actuating members, cooperative means on said mandrel actuating members in operative engagement with said external means for actuation thereby,

and means connected with said external means to move at least part of the same rectilinearly to cause said actuating members to move correspondingly rectilinearly to cause said wings means to move between their extended operative and retracted inoperative positions.

35. A method of making a reinforced flat bottom plastic bag comprising the steps of:



providing a sleeve having opposed faces and sides gusseted inwardly between the opposed faces, closing one end of the sleeve with a seam to seal the opposed faces together with the gusseted sides therebetween, providing a means exterior of the sleeve and wing-like means interior of the sleeve,

opening the gusseted sides by operating said wing-like means by said means exterior of the sleeve through the faces of the sleeve interposed therebetween such that said wing-like means flatten the gusseted sides against the opposed faces to form flaps of the gusseted sides that have folds lying in overlapping relationship with the opposed faces while moving together the sleeve and said wing-like means included within the sleeve,

and securing together preselected portions of the flaps and the overlapping sides and faces to form a flat bottom by pressing preselected portions of the flaps and the overlying sides and faces together at the preselected portions and heat sealing to secure the same together thereat.

4,230,031

BIOHAZARD CONTAINMENT APPARATUS AND METHOD

Raul I. Pedroso, and Robert E. Auer, both of Miami, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Apr. 26, 1978, Ser. No. 900,103

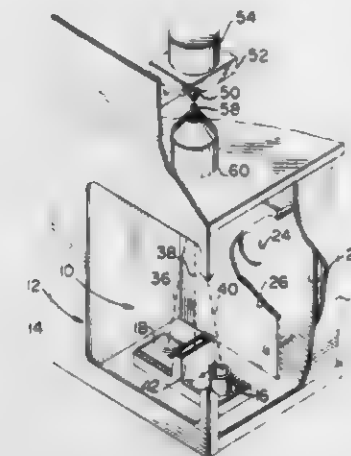
Int. Cl.³ F23J 11/00

U.S. Cl. 98—115 LH

6 Claims

1. Method for use in containment of hazardous substances which may be carried in a stream of biological sample flowing in air within a testing chamber, the testing chamber having at

least one face out through which the hazardous substances could move; said method comprising the steps of: establishing a flow of containment air into the chamber through its face and out from the chamber via an exhaust port, the linear face velocity of the containment air flow being sufficient to inhibit hazardous substance movement through the face of the chamber, but of such velocity magnitude to cause detrimental deflection of the biological sample stream if the containment air were to impinge upon the sample stream; and generating an air



stagnation region which encompasses the sample stream for preventing the containment air flow from causing detrimental deflection of the sample stream, said generating being accomplished by interposing air flow diverting means between the sample stream and the exhaust port and including diverting the containment air flow generally uniformly laterally with respect to the sample stream, by centering the exhaust port relative to the diverting means, said generating being accomplished in the absence of any air flow shielding structure lying between the chamber face and the sample stream.

4,230,032

SPRAY BOOTH WITH VENTILATION

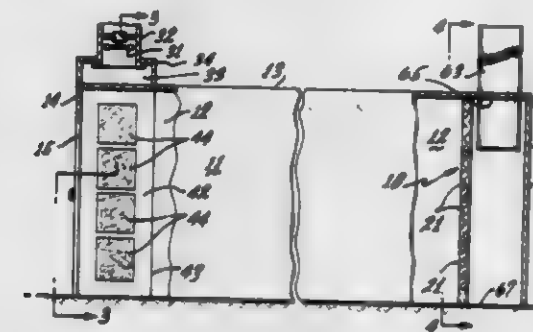
Albert A. Perryman, 11872 W. 207 St., Lakewood, Calif. 90715

Filed Apr. 16, 1979, Ser. No. 30,531

Int. Cl.³ F23J 11/00

U.S. Cl. 98—115 SB

5 Claims



1. A spray paint booth for a vehicle to be sprayed with paint said booth sitting on a floor and comprising:

a pair of parallelly disposed side walls, a pair of end walls and an overhead forming an enclosure;

one of said end walls having a door opening formed thereon; a solid door assembly closing said door opening and providing access into said enclosure when said door assembly is open;

a first filtering wall disposed within said enclosure and spaced from and parallel to said other end wall to form an appendage therebetween;

said filtering wall extending to both side walls, said overhead and said floor;

means for allowing air to enter said appendage from a region outside said enclosure and said appendage;

second and third filtering walls disposed at right angles to each other and disposed within said enclosure adjacent said one end wall and on one side of said door opening to

form, with said adjacent side wall, a first vertical compartment extending from said floor to said overhead; fourth and fifth filtering walls disposed at right angles to each other and disposed within said enclosure adjacent said one end wall on the other side of said door opening from said first compartment to form, with said one end wall and said adjacent side wall, a second vertical compartment extending from said floor to said overhead; a U-shaped member disposed over said overhead and over said first and second compartments to form a third compartment disposed horizontally; said overhead having a pair of openings disposed over said first and second compartments so that said first, second and third compartments communicate with each other; a vertical chimney extending from and communicating with said third compartment; and an exhaust fan disposed within said chimney to draw air out of said enclosure through either one of said first or second compartments and through said third compartment to exhaust said air out of said chimney so that the air, entering said enclosure through the said appendage, is filtered by said first filtering wall and the air, leaving said enclosure, is filtered by said second and third filtering walls and said fourth and fifth filtering walls.

4,230,033

INFUSION DEVICE

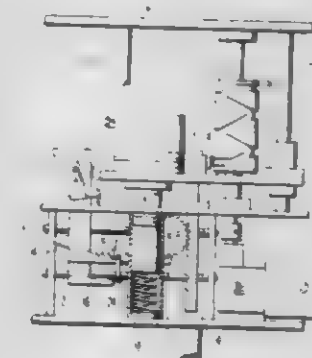
Bernard Cuccia, Valriant 2, Batiment D3, Le Charrel, Aubagne, France

Filed Dec. 27, 1978, Ser. No. 973,556

Int. Cl.³ A47J 31/00

U.S. Cl. 99—289 R

9 Claims



1. A device for automatically producing a coffee infusion by means of a single control for a continuously rotating motor, said device comprising means to proportion a charge of coffee, means to place the charge, means to infuse the charge, means to compress the infused charge so as to form a press cake, and means to eject the press cake; said device further comprising a first cam and a single pinion, and first and second racks, said pinion being arranged so as to simultaneously engage, said first and second racks, and wherein said first rack is adapted to be moved by said cam so as to rotate said pinion thereby moving said second rack, said racks being arranged so as to drive each of said means for sequentially producing said coffee infusion.

4,230,034

APPARATUS FOR CONTINUOUS PRODUCE SURFACE TREATMENT

John H. Amstad, Alameda, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Filed Feb. 12, 1979, Ser. No. 11,391

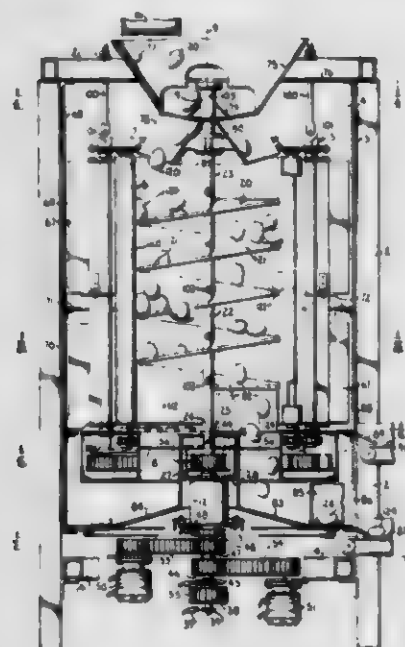
Int. Cl.³ A23N 7/00; A47J 17/00

U.S. Cl. 99—587

30 Claims

1. Apparatus for removing material from the surface of produce and separating the removed material from the resultant mixture of produce and removed material, comprising: (a) a housing forming a treating chamber and having an entrance and an exit for produce to be treated;

- (b) an upwardly directed cage rotatably mounted in said housing and formed of elongated rotating spindles with a material removing surface thereon,
- (c) means rotating said cage in said housing at a rotary speed sufficient, at the interior radius of said cage, to maintain produce in a circular path of rotation and in continuous centrifugal force contact against said material removing surface but insufficient to prevent downward movement of produce within said cage under the force of gravity,
- (d) means associated with said housing for urging produce, from which material is to be removed, through said entrance and into said cage and into engagement with said spindles so that said produce is accelerated substantially to said rotary speed within said cage and said produce travels



substantially at said rotary speed in contact with said material removing surface,

- (e) a residence control member located at least partially within said cage and having a produce travel resisting upper surface thereon located near said interior radius and resisting said downward gravitational movement, thereby increasing the cage residence time of said produce,
- (f) means moving said residence control member relative to said cage so as to functionally lower the position of said travel resisting surface, thereby permitting the lowering of said produce under the force of gravity and controlling the residence time of said produce in said cage, and
- (g) means associated with said housing for directing treated produce through said exit.

4,230,035

METHOD FOR IMPROVING TIE MATERIAL TENSION IN PACKAGE TYING MACHINES

Paul Pierce, Jr., LaGrange, and Robert G. Beedy, Hometown, both of Ill., assignors to B. H. Bunn Company, Alsip, Ill.
Division of Ser. No. 892,995, Apr. 3, 1978, Pat. No. 4,185,548
This application Sep. 6, 1979, Ser. No. 72,906

Int. Cl.³ B65B 13/10

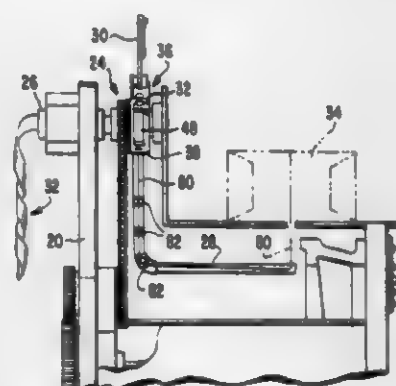
U.S. Cl. 100—2

5 Claims

1. A method for establishing a substantially uniform tension in the tie material for a package tying machine, the method comprising:

- drawing the tie material along a support member;
- guiding the supported tie material through a constricted outlet member so as to gather the tie material into a uniform lateral dimension while in an untensioned state;

flexibly compressing the gathered tie material into a uniform cross-section; and



biasing the compressed tie material to thereby tension the same.

4,230,036

NIP ROLL FOR TREATING WEB MATERIALS AND METHOD OF MANUFACTURING SAME

Ernest J. Groome, Covington, Va., assignor to Clupak, Inc., New York, N.Y.

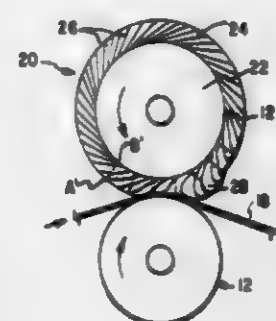
Division of Ser. No. 582,105, May 3, 1975, Pat. No. 3,995,354.

This application Apr. 14, 1976, Ser. No. 676,791

Int. Cl.³ B30B 13/00

U.S. Cl. 100—35

4 Claims



1. In a method of producing asymmetric forces in the plane of web materials such as paper and the like wherein the web is passed through a nip between a pair of rollers at least one of which has an inner roll core and an outer cover member predominantly of a substantially incompressible resilient material, the steps of:

- rotating one of said rolls while feeding said material longitudinally into said nip and
- restraining substantial elastic deformation of said cover member in only one circumferential direction relative to said roll core adjacent and in said nip by exerting an oblique tension force from within and to the material of said cover member, adjacent the outer surface thereof, in a direction generally tangential to said roll core on one side of said nip whereby pressure between said rollers will displace the material of said cover member toward only said one side of said nip and thereby apply asymmetrical longitudinal forces to said web on opposite sides of said nip.

4,230,037

APPARATUS FOR PROCESSING METAL MATERIAL INTO BALES

Roman Schmalz, Milwaukee, Wis., assignor to Logemann Brothers Company, Milwaukee, Wis.

Filed Mar. 22, 1979, Ser. No. 22,805

Int. Cl.³ B30B 1/32, 15/30

U.S. Cl. 100—95

10 Claims

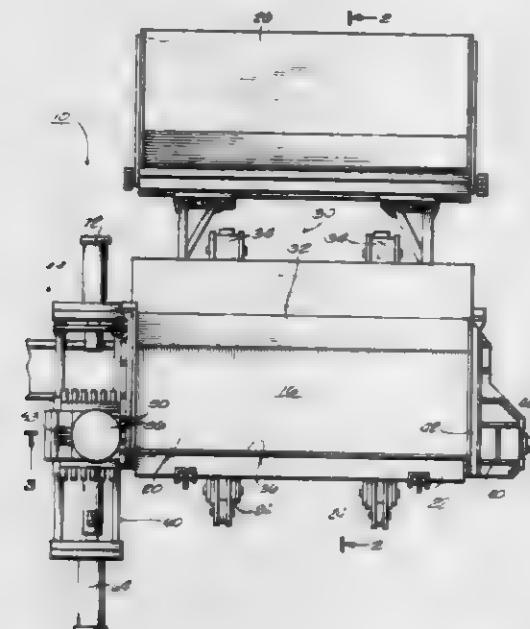
1. A baling machine comprising
- a frame defining a first baling chamber having an open top

and an opening formed in one end, and a second baling chamber communicating with said first baling chamber through said opening;

a cover member pivotally mounted on said frame and movable between an open position permitting access into said first baling chamber through said open top and a closed position covering said open top and sealing said first baling chamber;

feed hopper means mounted on said frame for introducing material to be baled through said open top into said first baling chamber when said cover member is in said open position;

first compression ram means mounted adjacent to said first baling chamber and movable into said first baling chamber underneath said cover member when said cover member is in said closed position for compressing the material in said first baling chamber and for forming the material into



a block with one end section of said block aligned with said opening when said first compression ram means is energized in its compression direction;

feed ram means mounted adjacent to said first baling chamber and movable into said first baling chamber underneath said cover member when said cover member is in said closed position for moving said block end section into said second baling chamber through said opening;

shearing means mounted adjacent to said opening for severing said block end section from the body of said block when said block end is located by said feed ram means in said second baling chamber; and

second compression ram means mounted adjacent to said second baling chamber and movable into said second baling chamber for compressing said severed block end section and for forming said severed block end into a completed bale.

4,130,038

MATRIX PRINT HEAD ASSEMBLY

Donald G. Hebert, San Ramon, Calif., assignor to Helmut Falk, Palo Alto, Calif.

Filed Jun. 23, 1977, Ser. No. 809,423

Int. Cl.³ B41J 3/10, 9/38

U.S. Cl. 101—93.05

18 Claims

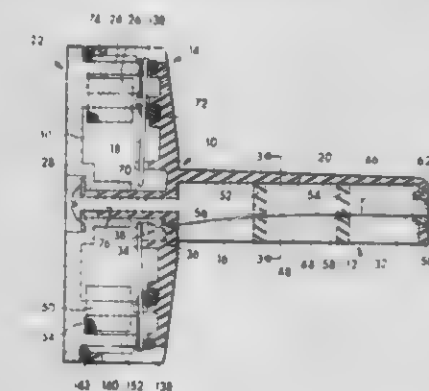
1. A matrix print head assembly comprising:

- a number of wire stylus members spaced about a central longitudinal axis and being longitudinally movable between a non-print position and a print position;
- guide means for movably supporting said wire stylus members;

a number of rigid armature members equal to the number of wire stylus members movable between a non-print position and a print position and extending radially outwardly of and being circumferentially spaced about the central

longitudinal axis with a radially inner portion being driveably engageable with said wire stylus members during movement from the non-print position to the print position to drive the stylus members from the non-print position to the print position;

a number of electromagnet means equal to the number of armature members mounted in juxtaposition to a radially outer portion of said armature members for pivotally supporting said armature members during movement from the non-print position to the print position and being selectively energizable for causing pivotal movement of the radially outer portion of said armature members toward said electromagnet means and opposite pivotal movement of the radially inner portion of said armature members away from said electromagnet means during movement from the non-print position to the print position;



tion by magnetic force applied to the radially outer portion;

said armature members being positioned between said electromagnet means and said wire stylus members and said radially innermost portion being movable away from said electromagnet means toward said wire stylus members during movement from the non-print position to the print position;

first pivotal support means for pivotally supporting said armature members during a first initial portion of the movement of said armature members from the non-print position to the print position; and

second pivotal support means pivotally supporting said armature members during a second terminal portion of the movement of said armature members from the non-print position to the print position.

4,230,039

DRUM PRINTER WITH HELICALLY ARRANGED TYPE SETS

Nagao Mizutani, Hachioji; Toshio Kurihara, Tokorozawa; Yutaka Nishiyama, Higashiyama; Masao Kunita, Sayama; Teruo Kinoshita, and Makoto Yasunaga, both of Kawagoe, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed May 12, 1978, Ser. No. 905,614

Claims priority, application Japan, May 20, 1977, 52-57651; May 24, 1977, 52-60204; May 24, 1977, 52-60205; May 24, 1977, 51-50106

Int. Cl.³ B41J 1/24

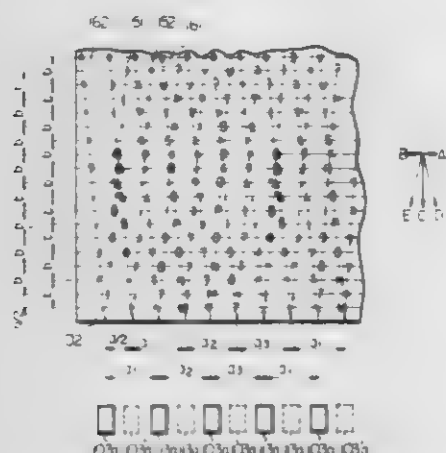
U.S. Cl. 101—93.17

32 Claims

1. A line printer for impact printing upon a recording medium, comprising:

- a type drum having at least a first and a second set of type faces formed on an outer cylindrical surface thereof, comprising a first and a second group of characters respectively, said first set of type faces being arranged in a helical path with a clockwise orientation relative to the axis of said type drum and said second set of type faces being arranged in a helical path with a counter-clockwise orientation relative to the drum axis, said helical paths of the

first and second sets of type faces being of identical pitch and lead angle;
 means for continuously rotating said type drum about its axis while alternately and repetitively traversing the drum in opposite directions along the drum axis;
 a plurality of hammers arranged adjacent to said type drum, in a line which is parallel to said drum axis, with a fixed offset being provided between said hammers, the ratio of said offset between the hammers to said pitch of said helical paths of the type faces being an integer, said hammers being restrained against movement in a direction parallel to the type drum axis during each traverse of said type drum and arranged such that at least a part of said first set of type faces become successively aligned opposite each of said hammers as said type drum rotates during



a traverse of said type drum in a first axial direction and at least a part of said second set of type faces become successively aligned opposite each of said hammers during a traverse of said type drum in a second axial direction opposite to said first axial direction; and
 hammer actuating means operated in cooperation with said type drum rotating and traversing means for actuating selected ones of said hammers to impact selected ones of said first set of type faces through the intermediary of said recording medium during a traverse of said type drum in said first axial direction and for actuating selected ones of said hammers to impact selected ones of said second set of type faces during a traverse of said type drum in said second axial direction at appropriate timings for printing a plurality of characters of a print line during each traverse of said type drum.

4,230,040

RELEASING DEVICE

Jan Björk, Björred; Jan T. Olsson, Landskrona; Bo S. Lindgren, Sandviken; Arne G. Borg, and Jan A. R. Andersson, both of Lund, all of Sweden, assignors to SAB Industri AB, Malmö, Sweden

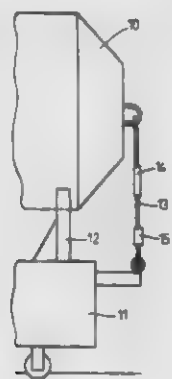
Filed Oct. 10, 1978, Ser. No. 949,983

Claims priority, application Sweden, Oct. 10, 1977, 7711322

Int. Cl.³ F42B 22/16

U.S. Cl. 102-13

4 Claims



1. A releasing device used for disconnecting a buoyant body

from an anchor a predetermined period after the body tied to the anchor by said device has been sunk into water comprising in combination, a cylinder and a piston reciprocally movable therein forming first and second cylinder spaces on opposite sides of the piston, each of said spaces being connected to the surroundings by respective first and second passages, the first passage having a considerably smaller cross-sectional area than the second passage, spring means biasing the piston for movement toward the second space, latching means arresting movement of the piston toward the second space and disengageable by movement of the piston against the spring bias, connecting means connecting the body and the anchor respectively at opposite ends of the cylinder, and first means for disconnecting one of the body and the anchor from the cylinder at the respective one of said connecting means when the piston is displaced towards the second space.

4,230,041

EXPLOSIVE FUZE CORD

John R. W. Bailey, East Caulfield; Michael R. L. Carter, Templestowe, and Richard Fox, Rosanna, all of Australia, assignors to ICI Australia Limited, Victoria, Australia

Filed Jul. 12, 1978, Ser. No. 924,064

Claims priority, application Australia, Aug. 1, 1977, PD1055

Int. Cl.³ C06C 5/04; F42D 1/04

U.S. Cl. 102-27 R

16 Claims



1. In a fusecord of the kind commonly employed for the transmission of detonation or flame in blasting and prospecting operations and comprising a core of explosive or incendiary material surrounded by non-explosive wrapping material and wherein said wrapped core is encased by a casing comprising a thermoplastic sheath a part at least of which is enclosed by flexible strands the improvement wherein the said strands are adhered to the said sheath by an amount of adhesive component derived from a water-bearing adhesive composition selected from the group consisting of rubber, epoxy resins, acrylic compounds and polymeric vinyl materials.

4,230,042

POINT-DETONATING IMPACT FUZE

Dragolyoub Popovitch, 37 Myers Ave., Denville, N.J. 07834

Filed Jul. 26, 1978, Ser. No. 927,126

Int. Cl.³ F42C 9/00, 9/14

U.S. Cl. 102-233

13 Claims

1. A point-detonating impact fuze for spin-stabilized projectiles, having a two-piece body and comprising:
 a point-detonating module housed in the upper portion of said two-piece body including an axially located shaft;
 a time-delay module housed in the lower portion of said two-piece body having means for setting a preselected mode of function;
 a safing and arming module housed in the lower portion of said two-piece body below said time-delay module;

said axially located shaft communicating said point-detonating module with said time-delay module and said safing and arming module;
 an explosive train located in said modules and inside said shaft;



a means in said point-detonating module to engage said axially located shaft communicating with said time-delay module to set the fuze for a preselected mode of function.

4,230,043

RAILWAY CAR WHEELSET AND RAILS THEREFOR

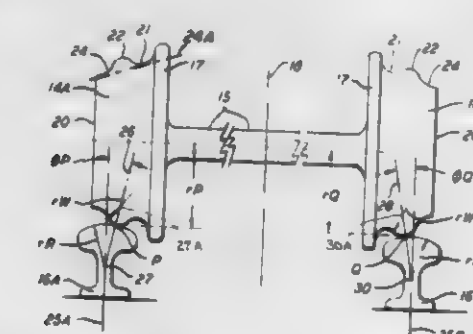
Thomas Aldington, 13 Oxford Ct., New Hartford, N.Y. 13413

Filed Mar. 24, 1978, Ser. No. 889,881

Int. Cl.³ B60P 17/00; B61F 13/00; F16H 19/00, 55/00

U.S. Cl. 104-1 A

6 Claims



1. A railway car wheel having a basically frusto-conical shape, the wheel having inner and outer sides, the wheel being formed with an annular curved convex protrusion extending radially outward from the basic frusto-conical shape at a location intermediate the inner and outer sides of the wheel, said annular curved convex protrusion forming the tread surface of the wheel.

3. In combination, a railway car wheelset and a pair of rails forming a railway track, the wheelset comprising an axle and a pair of variable diametered wheels of substantially frusto-conical configuration each having an inner and an outer side, the wheels being adapted to roll on the rails and being respectively secured at their inner sides to the opposite ends of the axle for rolling in unison therewith, each of the track rails having a crowned rolling surface, the tread surface of each wheel being formed with an annular curved convex protrusion, the gage tolerance of the wheelset being within the gage tolerance of the rails of the track.

4,230,044
 AIRCRAFT PALLET FOR OVER-HANGING LOAD
 Eberhard Röhrig, Kiefernweg 13, 6941 Gornheimer-Tal, Fed. Rep. of Germany

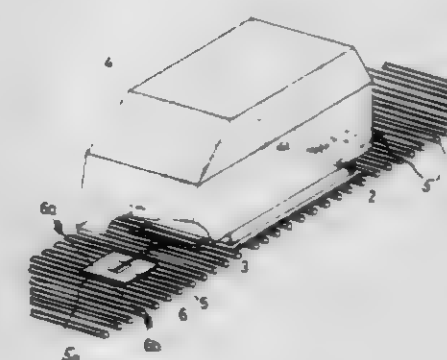
Filed Jul. 11, 1977, Ser. No. 814,346

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 2631378

Int. Cl.³ B65G 49/00

U.S. Cl. 104-135

6 Claims



1. An aircraft pallet having a main load-bearing portion for use with overhanging loads extending beyond the boundaries of the load-bearing portion and for further use on a roller track which includes sensing means for detecting such overhanging loads that extend beyond the pallet, the improvement of at least one flat pilot plate being separate from and not a part of the load-bearing portion and being attachable to said portion in approximate alignment with the pallet bottom and extending beyond a side, a front, or a rear end of the pallet to simulate a larger extension and dimension of the pallet for cooperation with the sensing means.

4,230,045

METHOD AND SYSTEM FOR INCREASING THE TRACK-TO-WHEEL FRICTION OF THE WHEELS OF A LOCOMOTIVE FOR MOTIVE POWER AND DECREASING THE ROLLING RESISTANCE FOR TRAILING LOADS

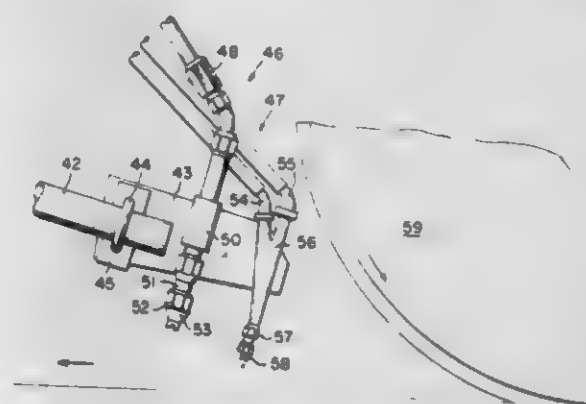
Joseph G. Fearon, Boise, Id., assignor to Morrison-Knudsen Company, Inc., Boise, Id.

Filed Sep. 7, 1978, Ser. No. 940,460

Int. Cl.³ B61F 19/00

U.S. Cl. 104-279

7 Claims



1. A system for maximizing the track-to-wheel adhesion and minimizing the rolling resistance of the wheels of a locomotive, comprising:

a jet nozzle positioned directly above the contact surface of the track immediately forward of the driven wheels of the locomotive;
 a high pressure pump connected to the nozzle assembly delivering water at a pressure of at least 4,000 psi to the jet nozzle,
 water storage means holding a supply of water for delivery to the high pressure pump.

valve control means controlling the delivery of water to the jet nozzle, and means for ejecting a high pressure gas onto the same contact surface of the rails forward of the driven wheels of the locomotive and immediately following the means for ejecting high pressure water for drying and conditioning the wheel contact surfaces of the rail to assure maximum adhesion of the locomotive wheels thereto and minimize the rolling resistance of the locomotive wheels thereon.

4,230,046

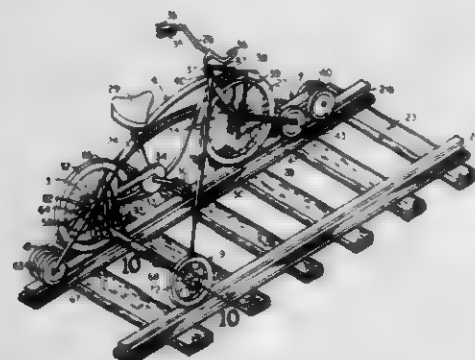
CONVERTIBLE RAILWAY VELOCIPEDE

Richard C. Smart, 3502 Buckskin Rd., Coeur d'Alene, Id. 83814

Filed May 14, 1979, Ser. No. 38,486

Int. Cl.³ B61D 15/10; B61F 9/00, 13/00; B62H 1/12
U.S. Cl. 105—95

4 Claims



1. A bicycle, having a medial frame rotatably mounting a rear wheel on a rear wheel axle and pivotably carrying a front wheel fork that rotatably mounts a front wheel on a front wheel axle, with movably mounted appurtenant structures to adapt for travel on railroad trackage having two spaced rails, comprising, in combination:

a forward guide wheel structure having a forward guide wheel truck rotatably supporting at least two adjustably spaced larger guide wheels and one smaller travel wheel therebetween said wheels so positioned that when the travel wheel is supported on an upper surface of a rail to be traversed the guide wheels extend therebelow on each side of said rail, said guide wheel truck being mounted on a yoke pivotably supported by the front wheel axle of a bicycle and extending forwardly therefrom to carry the forward guide wheel truck immediately radially outwardly of the periphery of the front wheel of the bicycle, said yoke being biased to a downward operative position but movable pivotally upwardly to an inoperative position, and said spaced guide wheels being biased toward each other and being journaled with plural washers therebetween to allow adjustment of the minimum space therebetween by regulation of said washers;

a rear guide wheel structure having a rear guide wheel yoke pivotably supporting at least two adjustably spaced larger guide wheels and one smaller travel wheel therebetween, said wheels so positioned that when the travel wheel is supported on the upper surface of a rail to be traversed the guide wheel extend below the upper surface thereof, said rear guide wheel yoke being pivotably carried by the rear bicycle wheel axle to support the rear guide wheel structure immediately radially outwardly at the periphery of the rear wheel of the bicycle, and being biased to a downward position but pivotably movable and releasably maintainable in an inoperative upward position, and said spaced guide wheels being biased toward each other and being journaled with plural washers therebetween to allow adjustment of the minimum space therebetween by regulation of said washers;

an outrigger wheel structure carried by a rearward outrigger wheel support pivotably mounted upon the bicycle frame adjacent the rear wheel axle, said rear outrigger wheel support being movable from a vertical inoperative position to a horizontal operative position and journaled

an outrigger wheel in its outer part to be supported on the rail opposed to that supporting the associated bicycle with a forward outrigger wheel support brace movably mounted on an upper forward position of the bicycle frame extendable from inoperative position along the bicycle frame to an operative position releasably communicating with the laterally outer portion of the outrigger wheel support.

4,230,047

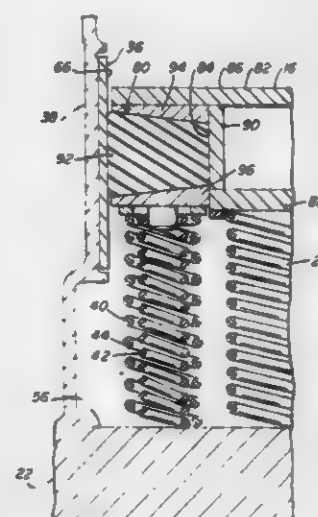
RAILWAY TRUCK BOLSTER FRICTION ASSEMBLY

Donald Wiebe, Sewickley, Pa., assignor to A. Stucki Company, Pittsburgh, Pa.

Filed Oct. 20, 1978, Ser. No. 953,012

Int. Cl.³ B60F 3/00
U.S. Cl. 105—197 D

12 Claims



1. A railway truck bolster friction assembly adapted to be captively retained within a pocket of an elongated truck bolster member which extends between spaced elongated side frame members of a railway truck vehicle comprising: elastomeric friction means adapted to have a first portion thereof in communication with adjacent surfaces of such a pocket and a second portion thereof in frictional engagement with adjacent portions of wearing surface means of a column guide of a respective one of such side frame members, said second portion being spaced transversely outwardly, with respect to the longitudinal axis of such a bolster member, from such a pocket and said first portion extending transversely inwardly from said second portion; and said elastomeric friction means being operative to deform and maintain said frictional engagement, without slipping between adjacent engaging surfaces, during at least initial vertical and transverse movements of such a bolster member with respect to such a respective one of such side frame members.

4,230,048

RAILROAD CAR

Robert Gordon, Arcadia; Oscar Weingart, Riverside; Harry A. King, Yorba Linda, all of Calif., and James V. Springrose, Edina, Minn., assignors to Structural Composite Industries, Inc., Azusa, Calif. and Cargill Incorporated, Minneapolis, Minn.

Filed Nov. 14, 1977, Ser. No. 851,154

Int. Cl.² B61D 7/02

20 Claims

1. A railroad car having an elongated cylindrical car body formed of thin cylindrical longitudinal walls and closed at the ends by respective end walls, a coupler at each end of said car body for coupling the car to other cars, a truck at each end of said car body, and a supporting structure pivotally mounted on each of said trucks for supporting said car body on the respective truck for transport on rails, each of said supporting structures comprising

structural members connecting a respective one of said couplers to the ends of said cylindrical walls at locations substantially balanced vertically and horizontally from the line between the couplers for transmitting forces substantially horizontally from the coupler to the car body, said locations being balanced in the sense that force applied longitudinally at said coupler produces a relatively small net torque on the car body, and bolster means connected to said structural members, extending upward from the



respective truck, and connected to the distal end of a respective one of said end walls above said locations for transmitting forces substantially vertically to said end wall at its distal end to support said car body vertically from said respective truck substantially exclusively at the extreme end of the car body while applying relatively small forces longitudinally to the car body, said car body being substantially self-supporting between said supporting structures and transmitting substantially all horizontal forces transmitted between said couplers.

4,230,049

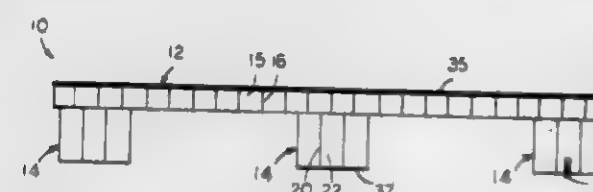
COMPOSITE STRUCTURAL SYSTEM AND METHOD AND APPLICATIONS TO PALLETS AND PLATFORMS

Fred H. Horne, Rye, N.H., assignor to Ellis Paperboard Products, Inc., Portland, Me.

Filed Feb. 12, 1979, Ser. No. 11,229

Int. Cl.³ B65D 19/32, 19/34; B32B 23/08; B05D 7/00
U.S. Cl. 108—51.1

34 Claims



15. A pallet structure of the type having a deck for supporting a load, and legs spacing the deck from ground to permit entry of fork lift tines for lifting the pallet and supported load, said deck affording a bridge across the legs, the improvement comprising:

said deck and legs comprised of an interpenetrating network composite including two phases, a first phase comprising a substrate of intersecting partitions of absorbent fiber-like material forming a continuous phase fibrous network said intersecting partitions defining a cellular lattice, and a second phase comprising a polymerized plastic material extending throughout and filling the voids and interstices of the fibrous network of the fiber-like material first phase, said second phase derived by in situ polymerization from a solvolysis system including at least a dissolved starting polymer substance and solvent in which the solvent reacts with the dissolved substance, said solvolysis system adapted for saturating and penetrating rather than merely coating the interstices and voids of the fiber-like material first phase, and for reacting and polymerizing throughout the fibrous network of the first phase;

said deck and legs comprised of the interpenetrating composite of fiber-like material and plastic material also formed with at least one laminate coating of an agglomerating plastic material adherent and chemically bonding to the surface of said plastic material and substrate composite and forming thickened weld joints at the intersections of

the substrate partitions, said at least one laminate coating derived by in situ polymerization from a similar solvolysis system adjusted to have agglomerative characteristics for coating rather than saturating, and for forming thickened weld joints or fillets at the intersections of the cellular lattice structure, said adjusted solvolysis system adapted to liquify the outer surface of the composite for chemical bonding and interpolymerization between the coating and the composite said at least one coating formed over the deck and legs as a whole, whereby said cellular lattice composite and at least one coating form a monolithic pallet structure.

4,230,050

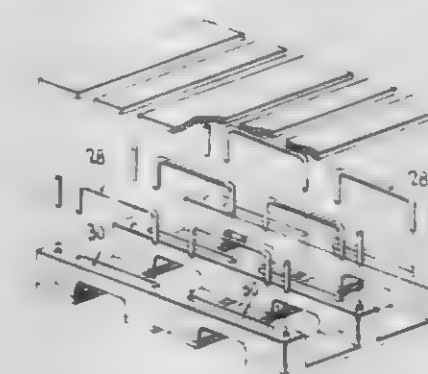
PALLETS

Gerald F. Mays, Timonium, Md., assignor to The Nelson Company, Baltimore, Md.

Continuation-in-part of Ser. No. 796,652, May 13, 1977, abandoned. This application May 3, 1979, Ser. No. 35,441

Int. Cl.² B65D 19/26, 19/40
U.S. Cl. 108—51.1

17 Claims



15. A pallet for material transport to be handled with a fork lift truck comprising a plurality of longitudinally extending stringers, transverse deckboards fixedly secured to said stringers, at least the outermost stringers of said plurality of stringers being wooden and having drilled holes at each end thereof and a reinforcing pin in each of said drilled hole enclosed and interlocked within said stringer, and said pin in said drilled hole in interlocking relation with said stringer being of a diameter sufficient to arrest cleavage of said stringer when said stringer is struck by the tine of a fork lift truck, and said pin having a surface sufficiently smooth to enable relative movement between split stringer parts and said pin subsequent to any such cleavage so as to permit repeated repair of a stringer by the forcing together of cleaved stringer parts around said pin.

4,230,051

PALLETS WITH CARGO POSITIONING AND RETAINING STRUCTURE

Gerald F. Mays, Timonium, Md., assignor to The Nelson Company, Baltimore, Md.

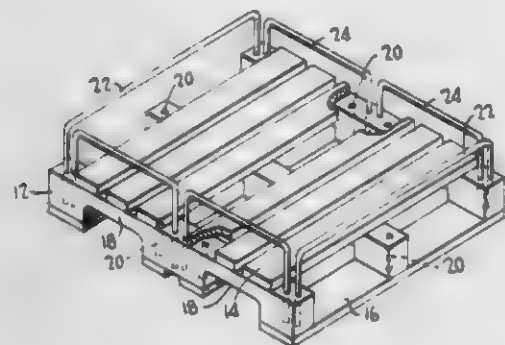
Continuation-in-part of Ser. No. 834,064, Sep. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 796,652, May 13, 1977, abandoned. This application May 3, 1979, Ser. No. 35,442

Int. Cl.² B65D 19/26, 19/40, 19/44
U.S. Cl. 108—55.1

6 Claims

1. A pallet having two ends and two sides for material transport to be handled with a forklift truck comprising a plurality of longitudinally extending solid wooden stringers, transverse top deckboards fixedly secured to said longitudinally extending stringers and at least two U members positioned opposite of each other, the ends of said U members fitted into drilled holes in said stringers and extending vertically into and substantially completely through said stringers in at least a semi-permanent fit, and said U member being constructed and arranged with said stringers and deckboards to extend a distance above said top deckboard sufficient to position and retain cargo on said

pallet without passing through said deckboards, the ends of said U members fitted into said drilled holes in said stringers being of a diameter sufficient to arrest cleavage of said stringer when said stringer is struck by the tine of a forklift truck, and



said ends having a surface sufficiently smooth to enable relative movement between split stringer parts and said U member ends subsequent to any such cleavage so as to permit repeated repair of a stringer by the forcing together of cleaved stringer parts around said U member ends.

4,230,052

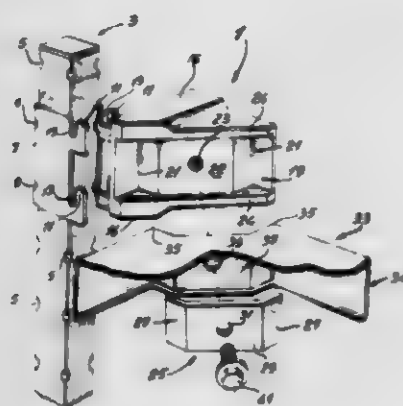
CORNER SUPPORT FOR A SHELVING SYSTEM

Gaston Champagne, Longueuil, Canada, assignor to Cogan Wire & Metal Products (1974) Limited, Montreal, Canada
Filed May 10, 1979, Ser. No. 37,760

Int. Cl.³ A47F 5/10

U.S. Cl. 108-144

5 Claims



1. A corner support for a shelving system; said shelving system including a corner post at each corner thereof, and a holding means on each said corner post, each said holding means including, at one end thereof, upwardly extending side arms defining respective, vertically spaced, sets of notches, and at least one shelf having generally truncated corners and a downwardly depending portion at at least each corner thereof; said corner support comprising:

- a generally triangular shape when seen in top view;
 - a rear end formed at one of the legs of the triangular shape;
 - a front end formed at another one of the legs of the triangular shape;
 - vertically spaced bars disposed across said rear end, the spacing between said bars corresponding to the spacing between said sets of notches; and
 - means at said front end for receiving a respective depending portion at a respective corner of said shelf;
- whereby, each corner support is held at and supported by a respective holding means, and, in turn, holds and supports a respective corner of said shelf.

4,230,053

METHOD OF DISPOSING OF TOXIC SUBSTANCES

Paul A. Deardorff, 1128 Dix, Lincoln Park, Mich. 48146; Robert C. Wood, 36002 Huron River Dr., New Boston, Mich. 48164, and Sante M. Cundari, 530 Woodcrest, Dearborn, Mich. 48124

Continuation-in-part of Ser. No. 923,054, Jul. 10, 1978, which is a continuation-in-part of Ser. No. 901,492, May 1, 1978. This application Feb. 5, 1979, Ser. No. 9,108

Int. Cl.³ F23G 7/00

U.S. Cl. 110-346

16 Claims

1. A method of disposing of toxic material comprising the steps of:

- placing said material to be disposed of in close proximity with a thermit composition producing heat and capable of reaction at temperatures in excess of 3000° F., said composition comprising about 50% to 95% by weight of an iron-containing by-product from the production of steel; a mineral acid; about 10% to about 25% by weight pulverulent reducing metal selected from the group consisting of aluminum, magnesium, and manganese; and water; and
- reacting said composition to dispose of said material by heating at least a portion of said composition to about 3000° F. to initiate reaction whereby said composition reacts at temperatures in excess of 3000° F. thereby heating said material so as to decompose said material.

4,230,054

EARTH-WORKING IMPLEMENT

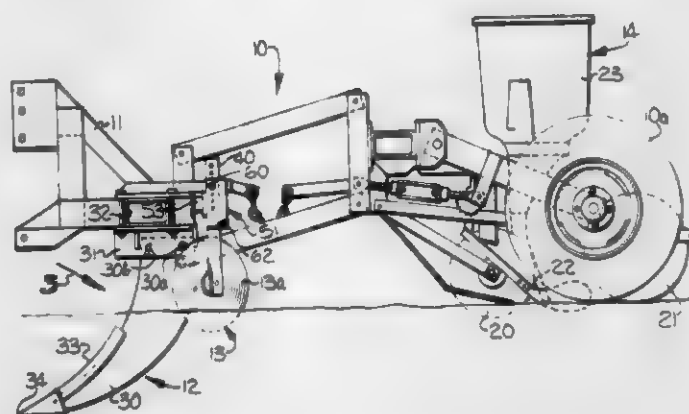
John C. Hatcher, 7525 Valleybrook Rd., Charlotte, N.C. 28211

Filed Aug. 16, 1978, Ser. No. 934,188

Int. Cl.³ A01C 5/04

U.S. Cl. 111-62

2 Claims



1. A combination earth-working and seed planting implement comprising:

- a frame means adapted to be moved over the ground by a propelling means, such as a tractor,
- at least one subsoil plow means including a plate-like stock carried by said frame means and provided with a downwardly and forwardly curved forward cutting edge terminating in a substantially pointed tip at a given level below said frame means,
- a pair of cutting discs spaced one from the other and positioned to straddle the forward path of travel of said stock during earth-working by the implement, said discs being inwardly concave and forwardly diverging relative to each other and with respect to said path of travel and each disc being located rearwardly of said stock with the lower extremities of said discs being spaced above said given level of said tip so as to aid in leveling and smoothing the soil upset by said stock,
- means rotatably supporting each cutting disc to maintain the same in a predetermined position during operation of the implement and including
- elongate mounting post means positioned with a longitudinal axis thereof substantially vertical and having a non-circular cross-sectional configuration,

said mounting post means being twisted intermediate its ends to form an upper shank portion and a lower disc-mounting portion thereof with said lower portion extending in substantially axial alignment with said shank portion and at a predetermined radial angle relative to said shank portion by virtue of the twist in said post means,

shaft means extending radially outwardly from said lower portion of said post means and rotatably supporting the respective disc thereon, and

means on said frame means having an opening therein for receiving said shank portion of said post means therein and wherein said opening is shaped and sized to restrain said shank portion from rotation therein and to thereby maintain the respective disc at the desired predetermined angle with respect to the path of travel of said stock over the ground, and

seed planter means carried by said frame means and including furrow opening means spaced rearwardly of said discs and being positioned along the path of travel of said stock so as to form a planting furrow in the soil leveled and smoothed by said discs, and seed dispensing means for depositing seeds into the furrow rearwardly of said discs.

4,230,055

MATERIAL HOLD-DOWN

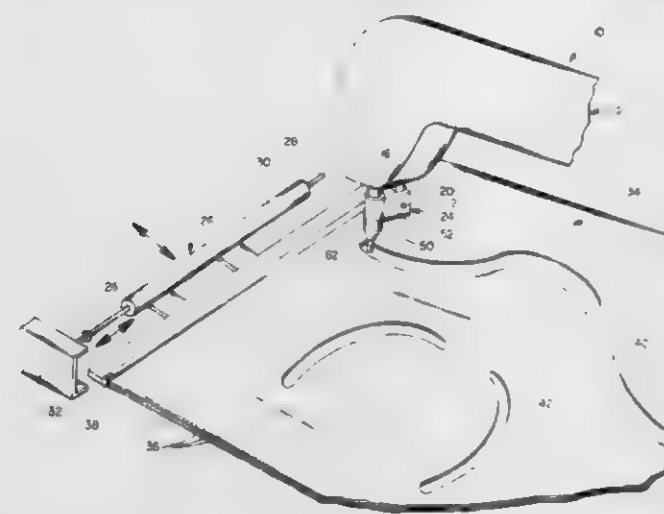
Gerhard P. Kaempfer, Wyoming, Mich., assignor to Wolverine World Wide, Inc., Rockford, Mich.

Filed Apr. 18, 1979, Ser. No. 31,190

Int. Cl.³ D05B 29/04

U.S. Cl. 112-236

3 Claims



3. A material hold-down device in combination with a stitching machine having a reciprocal cylindrical needle bar and needle comprising:

- a tubular cylindrical bearing sleeve to slidably receive said needle bar, said sleeve having an open side of less than 180° extent; a mounting portion extending laterally from said sleeve to mount said device to the stitching machine; said sleeve slidably receiving said needle bar, and said needle bar being accessible through said lateral opening; an elongated hollow nose coaxial with said sleeve to receive the reciprocal needle, joined to said sleeve by a frustoconical juncture, and having a material follower surface on the end thereof.

4,230,056

AUTOMATIC THREAD WIPER FOR SEWING MACHINES

Irving H. Steinbach, Glen Rock, N.J., assignor to Glen Manufacturing Company, Glen Rock, N.J.

Filed Aug. 15, 1978, Ser. No. 933,791

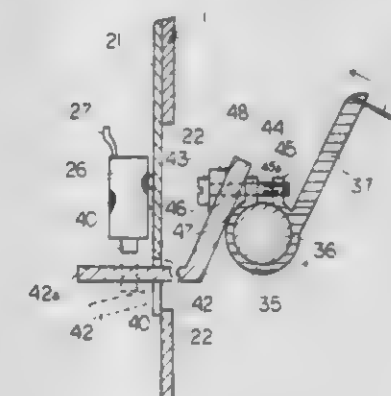
Int. Cl.³ D05B 65/00, 81/00

U.S. Cl. 112-239

9 Claims

1. A thread wiper for a sewing machine, comprising a compact unit adapted to be mounted on the back of an arm of a sewing machine and including a spring biased pneu-

matic cylinder having a piston, and a solenoid valve operatively connected to said pneumatic cylinder, a downwardly biased presser foot, linkage means mounted in the sewing machine for lifting said presser foot upon actuation thereof, means for actuating said linkage means via extension of said piston in said pneumatic cylinder upon stopping stitching operation of the sewing machine, a needle having an eye and thread extending therethrough, said needle being mounted in said sewing machine, said thread having a thread tail beginning at the eye of the needle and extending between said presser foot to a cut-off thread end therebelow when said presser foot is in a lifted position,



a holder mounted on said presser foot, an air jet tube connected from said solenoid valve to said holder means and extending to an open free end of said air jet tube at an upper portion of the sole of said presser foot adjacent and facing said thread tail, means for deactivating said solenoid valve and retracting said piston in said pneumatic cylinder, and releasing said actuating means, so that said downwardly biased presser foot is released and descends, and simultaneously the exhaust from said pneumatic cylinder jets through said air jet tube, exiting at said open free end thereof, lifting said entire thread tail including said cut-off thread end above the presser foot so that the thread tail is out of the way for the initiation of sewing.

4,230,057

THERMAL INSULATING MATERIAL

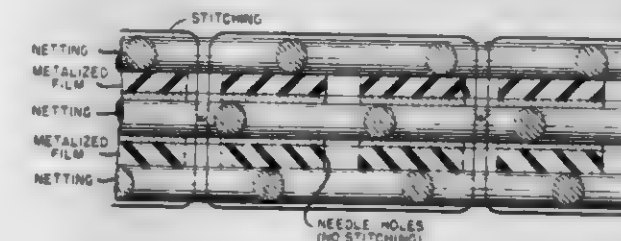
Milton Kurz, Pond Crossing, Lawrence, N.Y. 11559

Filed May 8, 1978, Ser. No. 903,719

Int. Cl.³ B32B 7/08

U.S. Cl. 112-420

1 Claim



1. A thermal insulating material comprising at least two sheets of polymeric film, each of which is metallized on at least one side, a mesh sandwiched between each adjacent pair of film sheets, an outer mesh on each outside face of the film-mesh sandwich, rows of stitching joining the outer meshes and film-mesh sandwich, and needle perforations through the film sheets to make the material vapor permeable including both perforations made by the needles which stitch the outer meshes and film-mesh sandwich together which are of a size not less than about four diameters of the stitching thread and additional perforations made by non-threaded needles.

4,230,058

METHOD AND APPARATUS FOR MANUFACTURING BOX-SHAPED STRUCTURE FROM METAL SHEET

Takashi Iwaki; Takeji Tanaka; Yoshitomo Tanaka, and Hiroshi Tanaka, all of Kisarazu, Japan, assignors to Yuwa-Sangyo Kabushiki-Kaisha, Tokyo, Japan

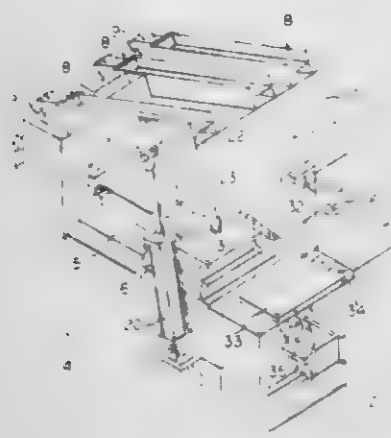
Filed Feb. 21, 1979, Ser. No. 13,737

Claims priority, application Japan, Feb. 24, 1978, 53-19720

Int. Cl.³ B21D 51/06

U.S. Cl. 113-1 R

6 Claims



1. An apparatus for fabricating a box-like metal structure from a channel-shaped metal sheet having a rectangular bottom section and a pair of side sections rising upright from opposite sides of the bottom section, said apparatus comprising:

- a main frame;
- a bottom support member and a side support member provided on said main frame to support the underside of said bottom section and outer surface of said side section of said channel-shaped metal sheet, respectively;
- a clamp arm and a holding arm having the respective outer ends thereof rockably connected to said main frame having a clamp member fixed to the inner end thereof for gripping the bottom and side sections of said channel-shaped metal sheet in cooperation with said bottom and side support members;
- a counter die fixedly mounted at the fore end of said holding arm and having a diagonal crease forming groove;
- a pressing die mounted in opposing relation with the outer surface of said side section of said channel-shaped metal sheet and having a diagonal crease forming protuberance cooperative with said diagonal crease forming groove of said counter die for forming a diagonal crease in the side-section of said channel-shaped metal sheet; and
- an upbending member pivotally mounted on said main frame for upwardly bending an end portion of said bottom section of said channel-shaped metal sheet.

4,230,059

NOISE ABATING SLEEVE

George P. Kalaf, Ashton, and Irvin C. Henschen, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,076

Int. Cl.³ F42B 19/00

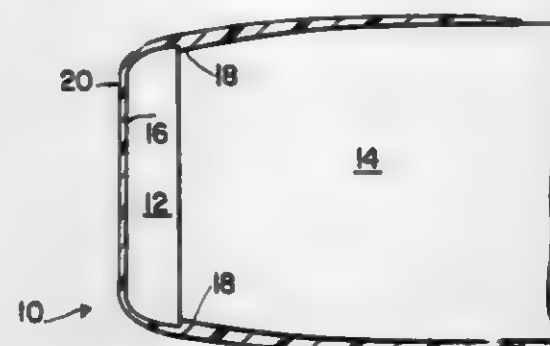
U.S. Cl. 114-20 R

8 Claims

1. In a torpedo having a nose section formed of an acoustic transducer section affixed to the forward end of a torpedo nose shell, a method for reducing the flow induced self-noise generated by said torpedo as it travels through the water comprising the steps of:

- fabricating an elastomeric, acoustically transparent sleeve conforming to the shape of said torpedo nose section, said sleeve having a trailing edge extending well aft of the interface between said transducer section and said nose shell;
- installing said sleeve over said torpedo nose section in such

a manner that all voids and air bubbles are removed from between said sleeve and the surface of said torpedo; buffing the surface of said sleeve to obtain the desired level of smoothness; and



tapering the trailing edge of said sleeve so as to minimize turbulence at the interface between said trailing edge and the surface of said torpedo.

4,230,060

SAILING SYSTEM

John D. McCoy, 719 N. 91st St., Seattle, Wash. 98103

Continuation-in-part of Ser. No. 705,590, Jul. 15, 1976, abandoned. This application Nov. 11, 1977, Ser. No. 850,711

Int. Cl.³ B63H 9/04

U.S. Cl. 114-39

22 Claims



1. A sailing system comprising:
- an elongated mast;
 - a mainsail connected to the elongated mast; and
 - means for mounting the mast onto a boat for 360° rotation about its own axis, and for bracing the mast against buckling, said means comprising a masthead at the upper end of said mast, including first journal means engaging the upper end of the mast and allowing the mast to rotate about its own axis relative to the masthead; second journal means mountable onto a boat hull, for engaging the lower end of the mast and allowing the mast to rotate about its own axis relative to the boat hull; a transverse spreader bar extending crosswise of an intermediate portion of said mast; third journal means between said mast and said spreader bar allowing said mast to rotate about its own axis relative to said spreader bar, but maintaining the spreader bar substantially perpendicular to the mast; and
 - shroud means connectible between the masthead and the spreader bar and a boat hull.

4,230,061

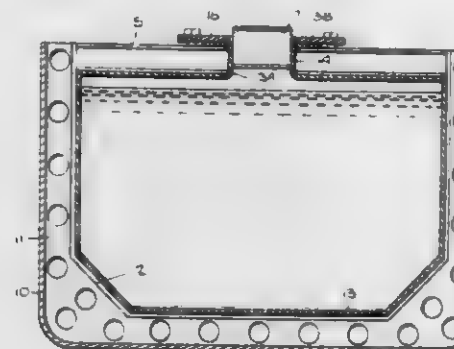
LIQUID CARGO CONTAINER

William M. Roberts, Blauvelt, and Jean Kohn, New York, both of N.Y., assignors to Baltek Corporation, Northvale, N.J. Continuation-in-part of Ser. No. 786,878, Apr. 12, 1977, Pat. No. 4,101,045. This application Jun. 29, 1978, Ser. No. 920,251. The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.

Int. Cl.² B63B 25/08, 25/12; B65D 25/16, 87/24

U.S. Cl. 114-74 A

3 Claims



1. A double-tank shipping container for general bulk liquid cargo such as crude oil, said container comprising:

- A a single hull sea-going vessel whose liquid-imperious hold has a prismatic formation which is spaced from the hull by a reinforcing frame to define a thermally-uninsulated outer tank capable of independently containing said liquid cargo and serving as a secondary barrier for the liquid, the deck of said vessel having an inlet port communicating with said hold;
- B a removable inner tank insertable in said outer tank and serving as a primary barrier, said inner tank being constituted by a collapsible bladder of flexible fabric woven of polyester material and coated with a liquid- and gas-imperious film which is a silicone-rubber elastomer which may be lowered in the collapsed state into said hold through said port, said bladder having a geometry roughly conforming to the configuration of the hold whereby those areas of the bladder that do not exactly conform to the hold are unsupported thereby, said bladder being formed of a coated fabric material of sufficient strength as to resist rupture in the unsupported areas; and
- C detachable means at selected positions to anchor said collapsible bladder in the hold to maintain the normal shape of the bladder when it is empty.

4,230,062

RELEASABLE BOAT ANCHOR

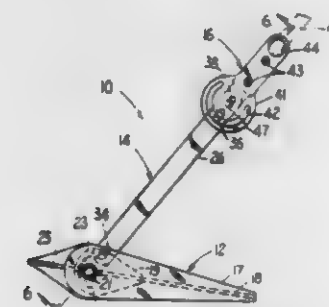
Peter J. Fornasiero, 54,638 Starlite, Utica, Mich. 48087

Filed Dec. 12, 1978, Ser. No. 968,793

Int. Cl.³ B63B 21/38

U.S. Cl. 114-297

4 Claims



1. An improved releasable boat anchor of the double-acting type for anchoring a boat and for releasing itself from an underwater obstruction in which said anchor may be captured, said anchor comprising a fluke body and a shank, said shank comprising an intermediate portion pivotally connected to said fluke body and an outer portion pivotally connected to said

intermediate portion, said outer shank portion having means for attaching an anchor line to said anchor, said anchor having two alternate anchor drag positions, an intermediate release position and a full release position, said intermediate shank portion consisting of at least one member axially fast and another axially moveable in respect to said fluke body, said axially fast member being pivotally connected at its lower end to said fluke body and at its upper end to said outer shank portion, respective cooperative means on the outer end of said axially moveable member and on said outer shank portion whereby pivotal movement of said outer shank portion controls the axial movement of said moveable member, said intermediate shank portion being disposed at an acute angle with respect to said fluke body and being axially aligned with said outer shank portion in each of said anchor drag positions, respective cooperative locking means on the inner end of said axially moveable member and on said fluke body which are relatively moved into locking engagement with each other in each of said anchor drag positions, said intermediate shank portion being disposed at an acute angle with respect to both said fluke body and said outer shank portion in said intermediate release position, said angular positioning of said outer shank portion in said intermediate release position moving said axially moveable member so that the locking means on the inner end thereof moves clear of the locking means on said fluke body, said intermediate shank portion being disposed in a substantially straight line position with respect to said fluke body and being axially aligned with said outer shank portion in said full release position, the locking means on said axially moveable member moving behind the locking means on said fluke body in said full release position so that the pull on said fluke body is substantially from the rear thereof.

4,230,063

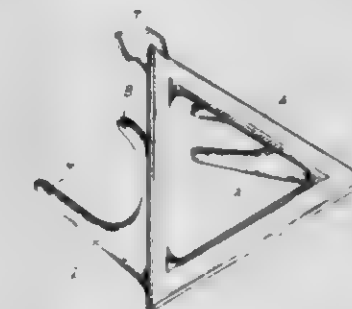
INFLATABLE AUTOMOBILE WARNING REFLECTOR
Donly Chang, 1st Fl., 9-2, 20th St., Tien Mu 3rd Rd., Taipei, Taiwan

Filed May 17, 1979, Ser. No. 39,762

Int. Cl.³ B63C 9/20; E01F 9/04; G08G 1/00

U.S. Cl. 116-63 T

4 Claims



1. An inflatable automobile warning reflector device usable also as a floatation buoy comprising an inflatable triangular body comprising three integral tubular straight sides joined at their ends to define a triangle, reflective material covering a front face of the triangular body formed by said tubular sides, and two integral L-shaped tubular inflatable supports projecting rearwardly from two lower corners of said triangular body to support said triangular body on a surface in an upright position and to receive weights for anchoring said body, and means for inflating said body and supports, said tubular sides forming said body and said supports all communicating with one another for common inflation.

4,230,064

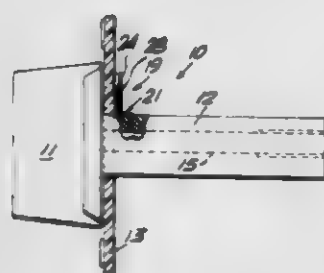
UNIVERSAL T.V. CHANNEL KNOB

Bernard Mack, 1750 NE, 1st St., North Miami Beach, Fla. 33179

Continuation-in-part of Ser. No. 21,359, Mar. 19, 1979, abandoned. This application Dec. 3, 1979, Ser. No. 99,987
Int. Cl.³ H03J 1/00; F16H 35/18

U.S. Cl. 116-245

7 Claims



1. A control knob assembly for universal replacement of T.V. channel knobs and the like comprising, in combination, a knob bar portion for manual grasping, a cylindrical knob shank portion extending perpendicularly outwardly with respect thereto, said cylindrical knob shank portion being formed of a synthetic plastic material, a coaxial pocket in the outer end of said knob shank portion, said pocket being of "D-shaped" cross-sectional configuration for sliding fit intercoupling with a control shaft of complementary cross-sectional configuration, a circular, disc-shaped, substantially flat skirt member having a central circular opening of such size as to provide for close sliding fit of said skirt member over said knob shank portion, said skirt member being provided, along marginal outer edge portions of one side thereof adjacent the outer periphery, with indicia serving to indicate the rotative setting position of a controlled shaft, and means carried by said skirt member and piercibly receivable within said knob shank portion for fixedly securing said skirt member thereto at any one, selectively, of an infinite number of relatively rotative positions as well as a wide range of relatively longitudinal positions, said skirt member securing means comprising a metal pin member having a pin head portion at one end and a pin point at one other end, means carried by the other side of said skirt member for supporting said pin member and constraining it to radial movement with respect to the axis of generation of said circular skirt member, said pin member being radially axially movable with respect to said skirt member between a first position whereat said pin point is withdrawn from said skirt member central opening, and a second position whereat said point portion projects within said central opening, and means frictionally retaining said pin member in said first position whereby, upon said skirt member being selectively, positionally received on said knob shank portion, said pin member can be radially depressed so that said point portion thereof will be imbedded into said knob shank portion for fixedly securing said skirt member thereto, at the selected position.

4,230,065

APPARATUS FOR PRINTING AND PROTECTING INK INDICIA ON FRUITS

Ned C. Carter, Chino; Jerry W. Cramer, Upland, and Dennis E. Bilton, Alta Loma, all of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Jul. 31, 1978, Ser. No. 929,264

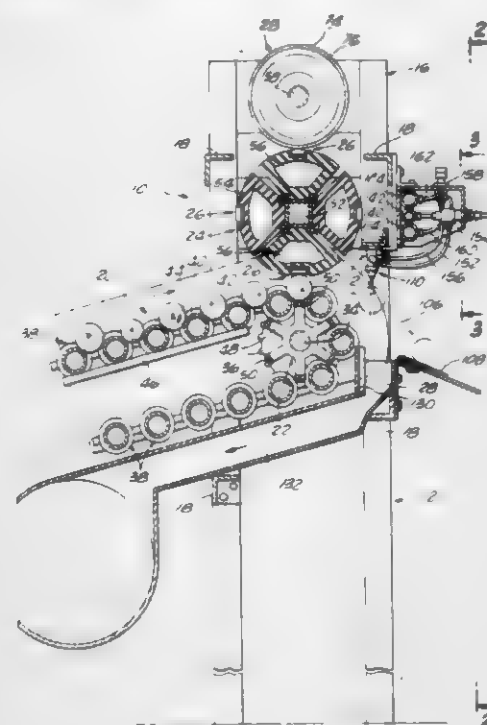
Int. Cl.³ B41F 17/34, 35/00, 31/20; B05B 13/2

U.S. Cl. 118-17

3 Claims

1. In apparatus for printing and protecting indicia on an object which apparatus includes a conveyor for conveying objects, said conveyor having a delivery end, a printing station through which said conveyor passes, a printing die at said printing station arranged to print indicia on the upper surface of said objects as they pass through said station and a receiver spaced from said delivery end, said conveyor being arranged to project said objects from said delivery end to said receiver

in a free flight path across the space therebetween, said path having a substantial horizontal component, the improvement comprising:



a nozzle over said space and arranged to spray a quick drying transparent material downwardly transversely across said path onto the upper surface of objects projected along said path whereby said material does not impinge on and contaminate either said conveyor or said receiver.

4,230,066

APPARATUS FOR BASTING AND DISPLAYING FOODS

Charles M. Lents, San Antonio, Tex., assignor to Church's Fried Chicken, Inc., San Antonio, Tex.

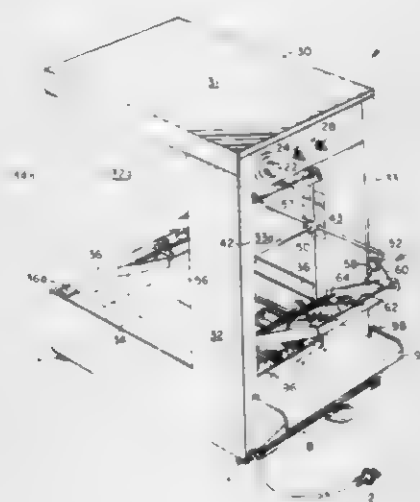
Division of Ser. No. 813,954, Jul. 8, 1977, Pat. No. 4,153,736.

This application May 12, 1978, Ser. No. 905,160

Int. Cl.³ A47J 37/10

U.S. Cl. 118-20

11 Claims



1. An automatic food basting apparatus for maintaining precooked food items in a moist condition at a suitable serving temperature, comprising:

food basting trays for holding food items and a heated basting pan for containing a basting liquid;

basting means for periodically immersing and removing the trays from the heated liquid basting pan to baste food in the trays and drain substantially all the basting liquid from the trays and food item in the trays at a controlled predetermined rate;

said basting tray having a draining means for draining basting liquid from a food item in the tray and the tray after

removing from the basting pan, at a controlled predetermined rate sufficient to provide a predetermined amount of basting of the food item and to control the draining to avoid splashing of the draining basting liquid out of the basting pan; and
the basting trays having means mounting them on the means for periodically immersing and removing to normally maintain the trays in a tilted position relative to the horizontal toward the draining means to drain substantially all of the basting liquid from the trays and a food item therein.

4,230,067

LIQUID APPLYING APPARATUS

Taro Iwamoto; Shimon Ando; Koji Kurokawa, and Sho Kusumoto, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

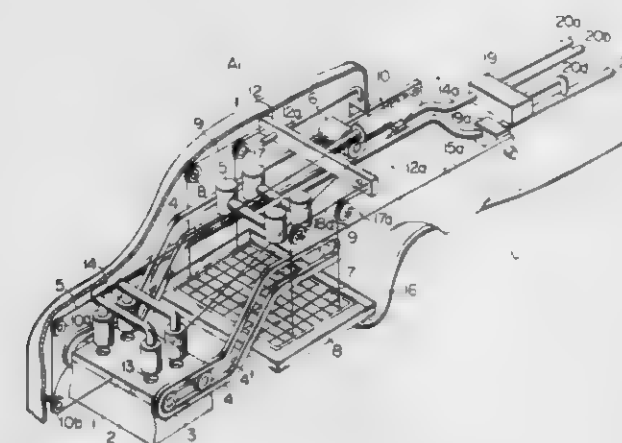
Filed Sep. 15, 1978, Ser. No. 942,559

Claims priority, application Japan, Sep. 17, 1977, 52-111768; Jan. 27, 1978, 53-7207; Feb. 8, 1978, 53-12456

Int. Cl.³ B05C 1/02

U.S. Cl. 118-104

14 Claims



1. A liquid applying apparatus comprising:

a main body;

a carrier supporting said main body for movement;

liquid applying means mounted on said main body and comprising a surface rubbing means including a liquid-absorptive, resilient contacting member and a supporting member supporting said contacting member, and a spray nozzle means for selectively applying a variety of liquids to a surface of a structure;

liquid feeding means comprising conduit means and valve means for supplying said variety of liquids in predetermined amounts to said liquid applying means; and

liquid removing means mounted in said main body for removing liquids from said liquid-absorptive, resilient contacting member to clean the same prior to an application of a further liquid by said liquid applying means;

said liquid applying means receiving a supply of liquids through said liquid feeding means for cleaning the surface of the structure and applying desired liquids thereto by rubbing the surface by said contacting member as said carrier is actuated, and said liquid removing means being effective to remove liquids from said liquid-absorptive, resilient contacting member by performing a liquid removing operation selectively with a surface cleaning operation and a liquid applying operation performed by said liquid applying means, whereby application of the liquids can be effected automatically with a high degree of efficiency and without any loss of the liquids.

4,230,068

APPARATUS USED IN CONTINUOUS PROCESS FOR ELECTROSTATIC COATING WITH PULVERIZED MATERIAL

Tsutomu Itoh, Tokyo; Kenji Ouchi; Nobuo Furuya, both of Chiba, and Takeo Shimizu, Chofu, all of Japan, assignors to Onoda Cement Company, Ltd., Onoda, Japan

Filed Oct. 31, 1978, Ser. No. 956,999

Claims priority, application Japan, Jun. 13, 1977, 52-68974
Int. Cl.² 427 350; B05B 5/02, 7/14

U.S. Cl. 118-634

4 Claims

1. An apparatus used for continuously electrostatically coating an axially symmetrical object with pulverized synthetic resin, which comprises

(i) an electrostatic coating chamber where said pulverized synthetic resin is coated on the surface of said object maintained at a temperature below the melting point of said resin, which object has been conveyed into said chamber by means of a holding device; said electrostatic coating chamber comprising a long and slender casing permitting the passage of said object therethrough, silent discharge plate electrodes on both sides of said casing, a suction part at the upper part of said casing to recover surplus pulverized resin which is not coated on said object, and a pulverized resin feeder having an electrically precharging device positioned at the lower part of said chamber body to electrically precharge said pulverized resin in the same polarity as that of said silent discharge plate electrode and to feed the electrically pre-charged pulverized material into the lower part of said chamber in such a manner as to flow upwards; said silent discharge being caused on the surface of the plate electrode by applying an AC voltage, and superimposing a DC voltage on the AC voltage to cause a minute discharge current and electric field to flow from the plate electrode to the object being produced; and

(ii) a device for removing surplus pulverized resin from the specific parts of said object by suction to electrostatically coat the desired part only, said device comprising suction slit openings positioned close to the specific parts of said object from which the surplus pulverized resin is to be removed, and wherein said suction slit openings have squeegees made of an elastic material to facilitate the removal of the surplus pulverized resin.

4,230,069

PARTICLE FEED ARRANGEMENT FOR APPLYING SOLID PARTICLES TO THE IMAGE CARRIER OF A NON-IMPACT PRINTER

Jacques Aldea; Jean-Jacques Eltgen, both of Danjoutin, and Gabriel Thiollier, Belfort, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, Paris, France

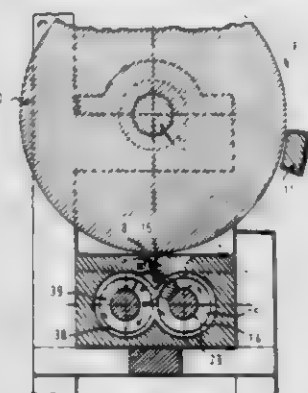
Filed Oct. 17, 1978, Ser. No. 952,080

Claims priority, application France, May 16, 1978, 78 14363

Int. Cl.³ G03G 21/00

U.S. Cl. 118—653

7 Claims



1. An apparatus for developing a latent image formed on the surface of an image carrier which is arranged for movement in a predetermined path, said apparatus comprising: a tank for containing a supply of attractable solid particles, first endless screw conveying means comprising a rotatable shaft having a spiral thread and being disposed in said tank so as to cause particles in said tank to be transported to the vicinity of a lowermost position in the path of said image carrier upon rotation of said shaft, a deflector interposed between said endless screw conveying means and said image carrier at said lowermost position, said deflector having two opposite parallel edges of which one is disposed in close proximity to the surface of said image carrier to form, in conjunction with the latter, a trough of generally prismatic shape, the other being disposed in contact with the spiral thread of said endless screw conveying means to cause particles conveyed by said screw conveying means to be collected and accumulated in said trough; and driving means for moving said image carrier in a direction in which it carries particles so accumulated towards said deflector edge which is in close proximity to the surface of said carrier, the distance between said deflector edge and said surface being higher than a first limiting value to allow particles which are carried by said image carrier not to be arrested by said deflector, and lower than a second limiting value in order to prevent the formation of a wave of particles.

4,230,070

DEVICE FOR AUTOMATICALLY REPLENISHING TONER TO DRY-TYPE DEVELOPING APPARATUS FOR ELECTROPHOTOGRAPHY

Hiroshi Murasaki, Sakai; Masaya Ogawa, Osaka, and Hidetoshi Kawabata, Tondabayashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 16, 1978, Ser. No. 934,121

Claims priority, application Japan, Aug. 24, 1977, 52-113924[U]; Feb. 18, 1978, 53-19827[U]

Int. Cl.² G03G 15/09

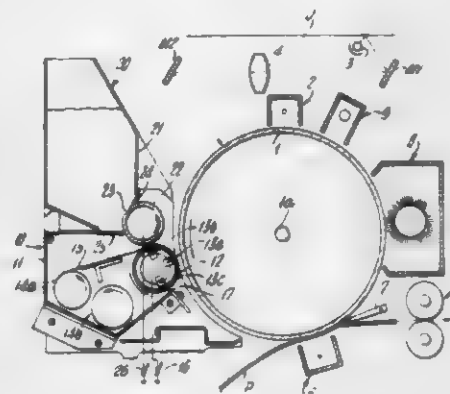
U.S. Cl. 118—658

16 Claims

1. In a dry-type developing apparatus for converting electrostatic latent images into visible images with a two-component developer composed of a triboelectrically chargeable toner and a magnetic carrier and conveyed to a developing station by a developing sleeve having a plurality of magnets arranged in its interior, an automatic toner replenishing device comprising:

a roller to which voltage is applied having at least one recessed toner disperser portions and a toner recovering

surface portion on its periphery and rotatable in contact with a portion of the developer on said sleeve after the developer portion has passed through the developing station;



means for producing a potential difference between said sleeve and said roller for recovering the toner; and a toner tank arranged to cover part of said roller and containing the toner to be replenished.

4,230,071

ADJUSTABLE EGG CARRIER SYSTEM

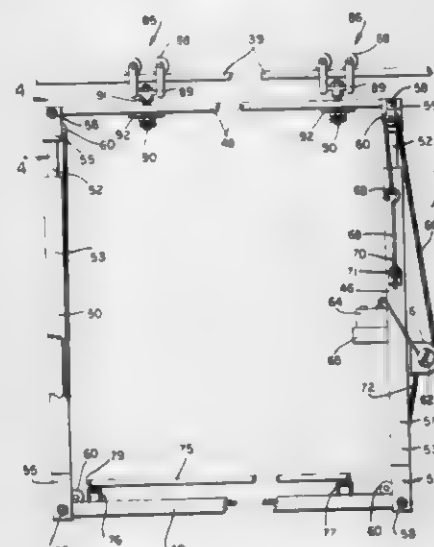
Roy L. Phillips, Rte. 3, Adairsville, Ga. 30103

Filed Jan. 8, 1979, Ser. No. 1,875

Int. Cl.³ A01K 31/00

U.S. Cl. 119—21

8 Claims



4. An adjustable egg carrier for use on an overhead conveyor rail in a chicken house comprising a framework including an upper cross bar, a lower cross bar below said upper cross bar, a pair of telescoping end bars pivotally connected at their ends to the ends of said upper and lower cross bars, a trolley mounted on each end portion of said upper cross bar for supporting said egg carrier from an overhead conveyor rail, an egg support platform mounted on said lower cross bar, and means for progressively raising and lowering said lower cross bar and said egg support platform with respect to said upper crossbar.

4,230,072

INTERNAL COMBUSTION ENGINE WITH A METHANOL REFORMING SYSTEM

Masaaki Noguchi, Nagoya; Masaharu Sumiyoshi, Toyota; Tsuchio Bunda, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 913,206, Jun. 6, 1978, abandoned, which is a continuation of Ser. No. 641,603, Dec. 17, 1975, abandoned.

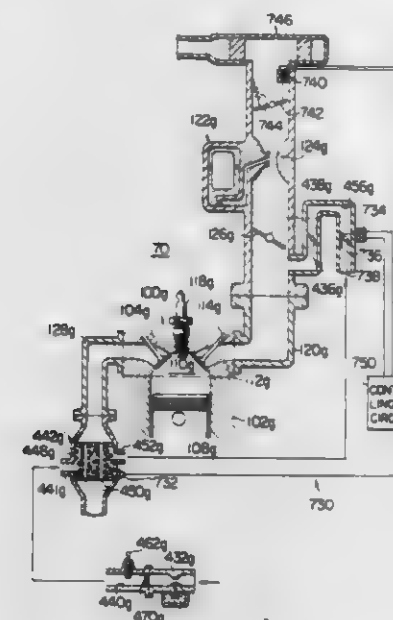
This application Apr. 18, 1979, Ser. No. 31,158

Claims priority, application Japan, Dec. 20, 1974, 49-147057; Aug. 22, 1975, 50-102469; Aug. 26, 1975, 50-103653; Aug. 28, 1975, 50-104804

Int. Cl.³ F02B 43/08; F02M 13/06

U.S. Cl. 123—1 A

7 Claims



1. An internal combustion engine comprising: a combustion chamber; a spark plug; an intake and exhaust system; said intake system including first and second fuel circuits; said first fuel circuit comprising a choke valve, a first carburetor disposed in said first fuel circuit downstream of said choke valve for producing a mixture of air and gasoline, and a first throttle valve disposed in said first fuel circuit downstream of said first carburetor; said second fuel circuit comprising a second carburetor for producing mixture of air and methanol, a catalytic reactor disposed in said second fuel circuit downstream of said second carburetor and containing a catalyst bed so arranged as to be heated by the engine exhaust gases flowing through said exhaust system, a second throttle valve disposed in said second fuel circuit and operatively connected to said first throttle valve for operation therewith, and a shut-off valve disposed in said second fuel circuit to control the communication between said combustion chamber and said second carburetor; said catalytic reactor being so constructed as to cause the air-methanol mixture to flow through said catalyst bed and being rendered operative to facilitate a catalytic conversion of said air-methanol mixture into a reformed gaseous mixture containing free hydrogen when said catalyst bed is heated to a temperature higher than a predetermined temperature; and means responsive to the temperature of said catalyst bed to actuate said choke valve and said shut-off valve, the arrangement being such that, when said catalyst bed temperature is below said predetermined temperature, said shut-off valve is closed to render said second carburetor inoperative to produce the air-methanol mixture and said choke valve is at least partially closed to enrich the air-gasoline mixture produced by said first carburetor whereby said combustion chamber is supplied solely with the enriched air-gasoline mixture, and such that, when said catalyst bed temperature is higher than said predetermined temperature, said choke valve is fully opened to

4,230,073

COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Hidetaka Nohira, Mishima; Sumio Ito, Susono; Hisashi Oki, Numazu, and Terao Kumai, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

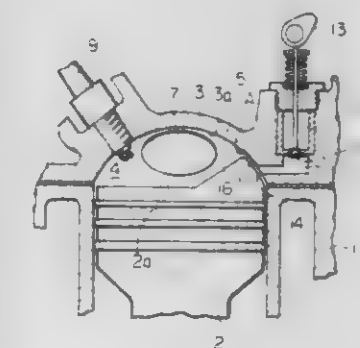
Filed Jun. 19, 1979, Ser. No. 50,058

Claims priority, application Japan, Oct. 19, 1978, 53-127886

Int. Cl.² F02B 41/00

U.S. Cl. 123—308

9 Claims



1. An internal combustion engine comprising: a cylinder block having therein an inner wall defining a cylinder bore; a cylinder head having an inner wall therein and mounted on said cylinder block; a piston reciprocally movable in said cylinder bore and having a top face and an upper circumferential wall which is approachable to at least one of a peripheral portion of the inner wall of said cylinder head and an upper portion of the inner wall of said cylinder bore when said piston reaches the top dead center; a combustion chamber formed between the inner wall of said cylinder head and the top face of said piston; an intake valve movably mounted on said cylinder head for leading a suction gas into said combustion chamber; an exhaust valve movably mounted on said cylinder head for discharging an exhaust gas into the atmosphere; an accumulation chamber formed in said inner wall; a gas passage communicating said accumulation chamber with said combustion chamber and having an opening which is formed on at least one of the peripheral portion of the inner wall of said cylinder head and the upper portion of the inner wall of said cylinder bore so that said opening is covered by the upper circumferential wall of said piston when said piston reaches the top dead center, and; a valve means arranged in said gas passage and opened during the compression stroke.

4,230,074

MOTORCYCLE TYPE INTERNAL COMBUSTION ENGINE HAVING OPTIMALLY DISPOSED VALVE ACTUATING MECHANISMS

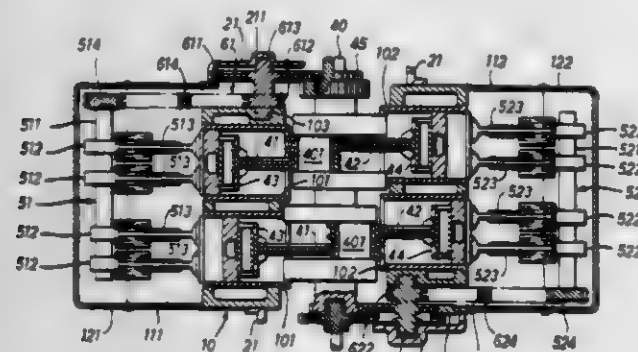
Satoru Ichikawa, Hamamatsu, and Shunji Minami, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 21, 1978, Ser. No. 944,651

Claims priority, application Japan, Sep. 29, 1977, 52-117206 Int. Cl.³ F02B 75/22, 75/24

U.S. Cl. 123—55 R

8 Claims



1. An internal combustion engine comprising: a first and a second cylinder bank, each bank having at least one cylinder; a crank shaft having an axis; intake and exhaust valves in each of said cylinders; a piston in each cylinder; a rod assembly connecting each piston to the crank shaft, said cylinders being staggered from bank to bank along said axis, said staggered arrangement leaving a first recess at one axial end of said first bank, and a second recess at the opposite end of said second bank; and a respective valve actuating means for each of said banks including valve motive means for opening and closing said valves, and a first and a second interlocking means, said first interlocking means being disposed in said first recess, and said second interlocking means being disposed in said second recess, said interlocking means being coupled to said crank shaft and to their respective said motive means.

4,230,075

INTERNAL COMBUSTION ENGINE

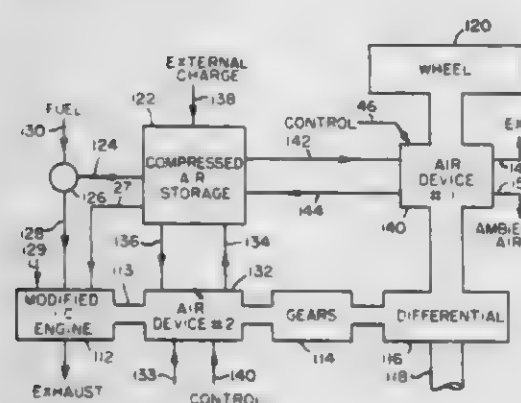
Frank E. Lowther, Buffalo, N.Y., assignor to Purification Sciences Inc., Geneva, N.Y.

Continuation-in-part of Ser. No. 955,895, Oct. 30, 1978, Ser. No. 955,896, Oct. 30, 1978, Ser. No. 926,237, Jul. 20, 1978, Ser. No. 947,998, Oct. 2, 1978, and Ser. No. 970,320, Dec. 18, 1978. This application Dec. 26, 1978, Ser. No. 972,786

Int. Cl.³ F02B 33/00, 75/00

U.S. Cl. 123—68

8 Claims



5. An apparatus comprising:

- (a) an internal combustion engine including at least one piston-cylinder-combustion chamber system;
- (b) means for compressing air to be fed into said combustion chamber, said compressing means being separate from said internal combustion engine and out of heat exchange contact therewith, and comprising a rotary sliding vane

compressor having a pulsed output and means for matching the pulses thereof with the position of said piston in said cylinder;

- (c) means for mixing fuel with air to form an air-fuel mixture to be ignited in said combustion chamber;
- (d) means for feeding compressed air from said compressor into said combustion chamber;
- (e) means for igniting an air-fuel mixture in said combustion chamber;
- (f) exhaust duct means for feeding hot exhaust gas from said combustion chamber; and
- (g) means for regenerating the heat in the hot exhaust gas from said combustion chamber including at least one heat exchanger between said exhaust duct means and said compressed air feeding means.

4,230,076

CONTROL FOR VALVE DISABLERS

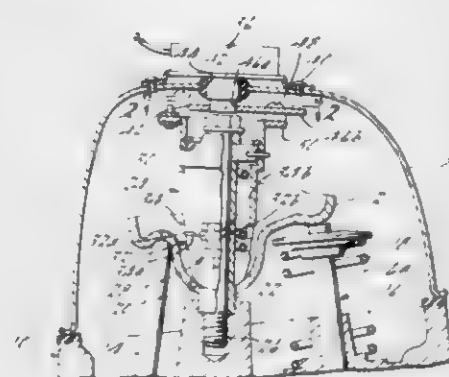
Robert S. Mueller, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 5, 1975, Ser. No. 610,719

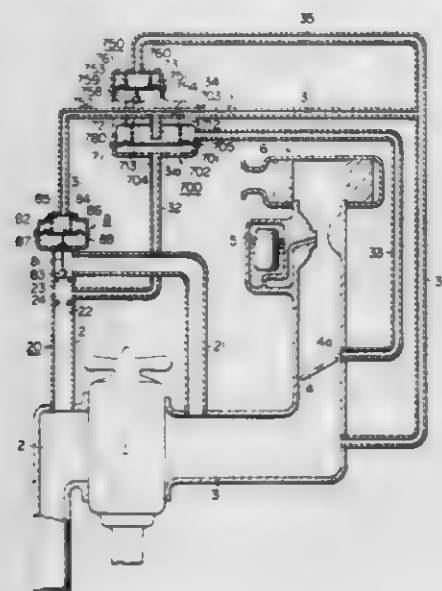
Int. Cl.³ F02D 13/06; F01L 1/18

U.S. Cl. 123—90.16

8 Claims



downstream of said throttle valve when said throttle valve is opened to a predetermined opening degree; and a pressure cell provided in said recirculating passage between said exhaust gas pipe and said control valve; said pressure control valve means including a pressure control unit for controlling said pressure signal in dependence on a throttle negative pressure produced at said throttle port and a pressure in said pressure cell, a load control unit



for controlling said throttle negative pressure supplied to said pressure control unit by introducing an amount of ambient air to said pressure control unit in dependence on an intake negative pressure prevailing downstream of said throttle valve, and a bypass passage for constantly communicating a chamber of said load control unit into which said ambient air is introduced with a chamber of said pressure control unit to which said throttle negative pressure is transmitted.

4,230,080

DEVICE FOR EXHAUST GAS RECYCLING

Gerhard Stumpp, Stuttgart, and Werner Banzhaf, Sindelfingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

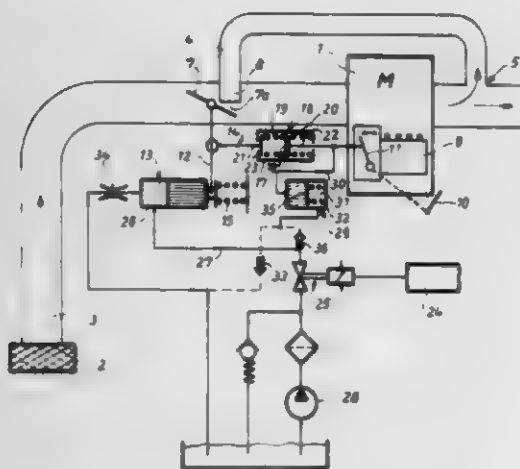
Filed May 24, 1979, Ser. No. 42,267

Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823671

Int. Cl.³ F02M 25/06

U.S. Cl. 123—568

9 Claims



1. Device for exhaust gas recycling in internal combustion engines equipped with a fuel injection system, including an injection pump, and having a throttle valve to control the recycled stream of exhaust gas arranged in the intake manifold, further wherein the throttle valve for an exhaust gas return line terminates in said intake manifold and is directly connected with an adjusting lever of said injection pump.

4,230,081 SYSTEM FOR IMPROVING INTERNAL COMBUSTION ENGINE FUEL EFFICIENCY

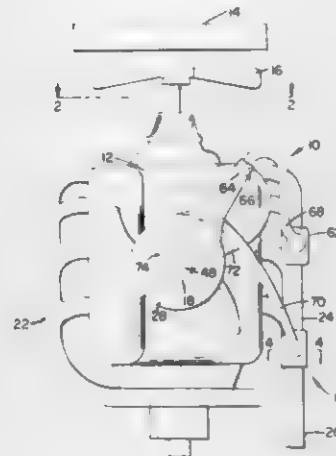
James S. Meek, 3303 Lockwood Dr., Chattanooga, Tenn. 37415

Filed Jun. 27, 1979, Ser. No. 52,671

Int. Cl.³ F02M 31/00

U.S. Cl. 123—555

3 Claims



1. In an internal combustion engine having a carburetor with fuel inlet means and air inlet means for metering fuel and air to an intake manifold, a liquid fuel reservoir adjacent said inlet means for maintaining a small supply of fuel for entry into said fuel inlet means, an air cleaner assembly including a housing having an inlet and an outlet communicating with said carburetor air inlet means, and an exhaust manifold, the improvement comprising a housing defining a plenum chamber positioned about and encapsulating at least a portion of said fuel reservoir, said housing including inlet means and outlet means for said plenum chamber, heat transfer means on said exhaust manifold for producing heated air, means communicating said heated air to the inlet means of said plenum chamber, and means communicating the outlet means of said plenum chamber with the inlet of said air cleaner assembly.

4,230,082

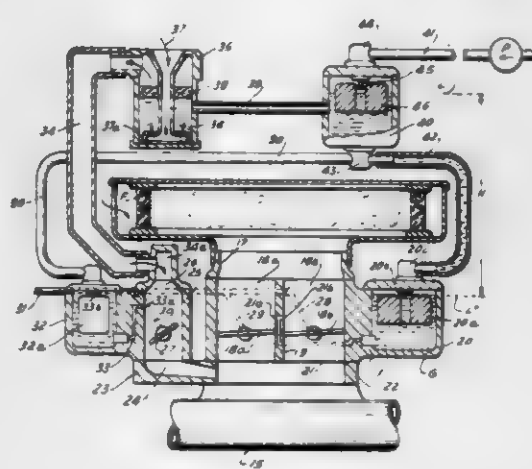
SYSTEM FOR REGULATING THE FUEL SUPPLY OF AN INTERNAL COMBUSTION ENGINE

Paul A. W. Jurschewitz, 43, rue du Poteau, Paris 18e, France
Continuation of Ser. No. 709,908, Jul. 29, 1976, abandoned. This application Apr. 23, 1979, Ser. No. 32,506

Int. Cl.³ F02M 37/14, 17/10, 19/08

U.S. Cl. 123—518

8 Claims



1. In an internal-combustion engine for an automotive vehicle, provided with a carburetor fed from a fuel pump by way of interposed pressure-regulating means for supplying a fuel/air mixture under the control of an accelerator to an alternately expanding and contracting combustion chamber, the improvement wherein said carburetor comprises:

a main duct provided with a constricted throat forming a

first air inlet and with a first outlet leading to said combustion chamber;
an ancillary duct of smaller cross-section than said main duct provided with a constricted throat forming a second air inlet and with a second outlet leading to said combustion chamber;
at least one first butterfly valve in said main duct linked with said accelerator for displacement between a wide-open position and a fully closed position;
a second butterfly valve in said ancillary duct ganged with said first butterfly valve for displacement by said accelerator between a wide-open position coinciding with the wide-open position of said first butterfly valve and a throttling position coinciding with said fully closed position;
a first injection nozzle opening into said main duct between said first inlet and said first butterfly valve and communicating with said pressure-regulating means for receiving fuel therefrom;
a second injection nozzle opening into said ancillary duct between said second inlet and said second butterfly valve and communicating with said pressure-regulating means for receiving fuel therefrom, said first and second injection nozzles communicating with said pressure-regulating means by way of respective connections supplying fuel thereto at a higher and a lower hydrostatic head, respectively;
a vessel containing a pool of fuel, said second air inlet communicating with the atmosphere through said vessel whereby air aspirated through said ancillary duct is pre-charged with fuel vapors; and
an air filter in said vessel overlying said pool, said vessel having an air entrance opening into said pool and an air exit above said filter whereby the aspirated air passes through said filter after traversing said pool.

4,230,083

FUEL SUPPLY APPARATUS

Wolf Wessel, Oberriexingen, and Konrad Eckert, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

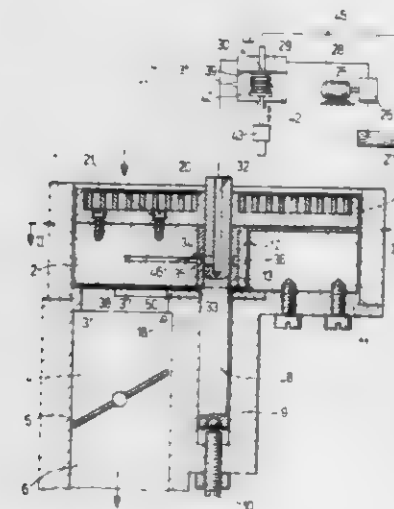
Filed Dec. 5, 1978, Ser. No. 966,705

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805786

Int. Cl.³ F02M 39/00

U.S. Cl. 123—450

6 Claims



1. A fuel supply apparatus for mixture-compressing, externally ignited internal combustion engines having a housing, an air intake manifold with at least one fuel depositing point in said air intake manifold, an air flow rate meter and an arbitrarily actuatable throttle valve disposed in series in said air intake manifold and said air flow rate meter is moved against a restoring force in accordance with the quantity of air flowing therethrough, further wherein said housing includes an aperture which leads to said air intake manifold, said air flow rate meter being embodied as a relatively flat rotary member in the

form of a circular sector that is arranged to variably open said aperture and swing laterally out of the cross-section of said air intake manifold in an opening motion, a shaft in said housing extending parallel to the direction of air flow in said air intake manifold and being disposed outside of the cross-section of said air intake manifold, said rotary member being fixed on said shaft for rotation transversely with respect to the flow of air in said air intake manifold and subjected on one side to the intake manifold pressure upstream and on the other side thereof to the intake manifold pressure downstream of said air flow rate meter.

4,230,084

ENGINE STARTING DEVICE

Isamu Gotoh, Kiyoseshi; Yoshinori Okamoto, Kawagoshi, and Goro Wakatsuki, Oimachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 779,604, Mar. 21, 1977, Pat. No. 4,176,648.

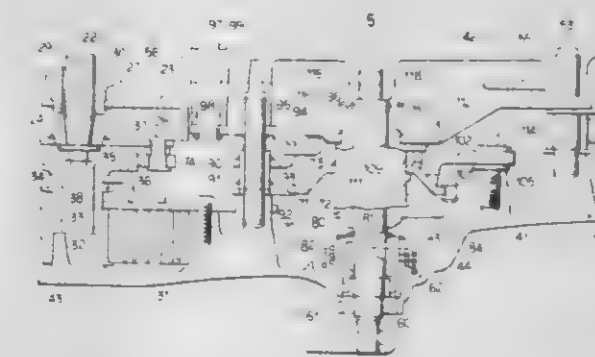
This application Apr. 9, 1979, Ser. No. 28,522

Claims priority, application Japan, Mar. 24, 1976, 51-32096; Apr. 24, 1976, 51-51822[U]

Int. Cl.³ F02N 3/04, 5/02

U.S. Cl. 123—179 S

5 Claims



1. An engine starting device comprising:
an input member mechanically and operably connected to an engine;
a spiral spring;
an output member mechanically and operably connected to said spiral spring;
a driving member operably connected to and driven by said engine;
automatic force accumulating means operably connected to said spiral spring for accumulating force in said spiral spring;
said driving member being operably connected to said automatic force accumulating means for driving said automatic force accumulating means;
a winding pressure accumulating mechanism operably connected to said spiral spring;
a first one-way clutch means for selectively connecting said automatic force accumulating means with said winding pressure accumulating mechanism;
means for connecting said output member to said input member when the force accumulated by said spiral spring is released to start said engine;
a cam provided on an output shaft which is also an input member at the time of starting the engine;
said automatic force accumulating operation means comprising an intermittently rotating member rocked by said cam; and
said intermittently rotating member and spiral spring winding pressure accumulating mechanism being connected with each other through a one-way clutch.

4,130,885

MANUAL STARTER FOR INTERNAL COMBUSTION ENGINES

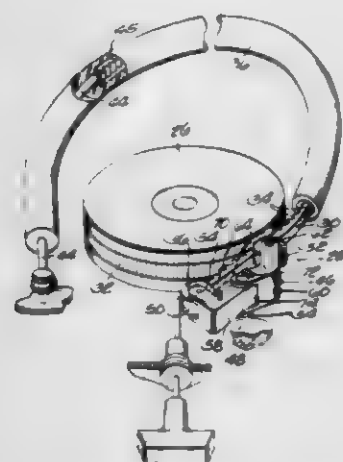
Gene F. Baltz, Lake Villa, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 15, 1979, Ser. No. 3,702

Int. Cl.³ F02N 3/02

U.S. Cl. 123-185 A

11 Claims



1. A manual starter for an internal combustion engine, said starter including a drive member mounted for rotation, operable to start the engine when rotated, and having a toothed portion, a flexible pull element mounted for movement between a normally retracted position and an extended position and having a flexible cogged portion for drivingly engaging said drive member toothed portion, movable actuation means operable in response to movement of said pull element for applying a force acting radially of said rotatable drive member and against said cogged portion so as to displace said pull element into a drive position wherein said pull element cogged portion is releasably and drivingly engaged with said drive member toothed portion to effect starting rotation of said engine in response to said pull element being pulled from the retracted position to an extended position and for permitting movement of said pull element from the drive position to a non-drive position wherein said pull element cogged portion is drivingly disengaged from said drive member toothed portion in response to said pull element being released or in response to the rotational speed of said drive member exceeding the pulled speed of said pull element, and retracting means for returning said pull element from an extended position to the retracted position.

4,230,886

FUEL DRIP PRIMING SYSTEM FOR COLD INTERNAL COMBUSTION ENGINES

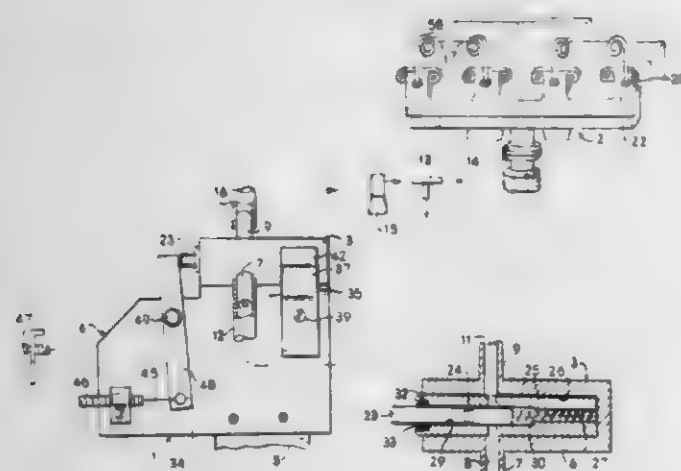
John E. Lovret, 145-20 243rd St., Rosedale, N.Y. 11422

Filed Jan. 10, 1979, Ser. No. 2,376

Int. Cl.³ F02M 1/16

U.S. Cl. 123-187.5 R

5 Claims



1. A system for drip priming a gasoline powered internal

combustion engine of a motor vehicle for fast starting of the engine in cold weather, the engine being of a type having piston cylinder intake ports, a fuel pump and an intake manifold provided with outlet ends adjacent the piston cylinder intake ports, the system comprising: a selectively operable fuel feed control valve unit having an inlet and an outlet, the inlet being normally closed to the outlet; drip priming nozzles mounted in the intake manifold having outlet orifices in close proximity to the piston cylinder intake ports, the orifices opening out of the nozzles in opposed spaced relation to a bottom wall of the manifold; the inlet of the valve unit being connected to a discharge port of the fuel pump; a hose having an inlet end connected to the outlet of the valve unit and having multiple branch lines, each branch line being connected to a separate one of the nozzles; the hose and branch lines being adapted to fill with fuel as a consequence of operation of the fuel pump and operation of the valve unit to an open condition, and the nozzles being adapted to effect as a consequence thereof injection of the fuel into the manifold; and a loop formed in each branch line of the hose at a predetermined distance from the connection of the branch line with its related nozzle; and each nozzle being adapted upon the valve unit obtaining a closed condition to cease injection of fuel into the manifold and to thereafter effect dripping of fuel from the related branch line into the manifold to the extent of the fuel filling the related branch line between the related loop and the nozzle.

4,230,887

LOW-NOISE-LEVEL INTERNAL COMBUSTION ENGINE

Fumiyuki Abe, Yoshimasa Hayashi, both of Yokohama, and Akira Kimura, Kawasaki, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

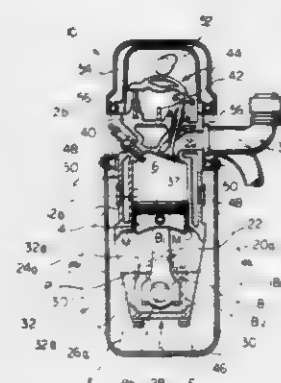
Filed Nov. 13, 1978, Ser. No. 959,474

Claims priority, application Japan, Nov. 17, 1977, 52/138296

Int. Cl.³ F02F 1/00; F02B 77/00

U.S. Cl. 123-193 CH

11 Claims



1. A reciprocating piston internal combustion engine, comprising: an integrally formed engine block including a cylinder block portion which is formed therein with cylinders, and a cylinder head portion, said cylinder block portion carrying a generally semicylindrical part of each of main bearings for supporting the rotatable journal of a crankshaft; pistons reciprocally disposed in said cylinders, respectively, a combustion chamber being defined between the crown of each piston and said cylinder head, the piston stroke of each piston being the same as or smaller than the bore diameter of each cylinder; a bearing support frame secured to said cylinder block portion of said engine block, and carrying the other generally semicylindrical part of each of the main bearings, the semicylindrical part carried by said bearing support constituting a generally cylindrical main bearing in cooperation with the semicylindrical part carried by said cylinder block portion; and a sound-insulating cover elastically secured to said engine block in spaced relation to and around the engine block to

cover the outer surface of the cylinder block portion of said engine block.

4,230,888

ROTARY INTERNAL COMBUSTION ENGINE WITH INTEGRATED SUPERCHARGING

Albert A. Southard, R.R. #3, Council Grove, Kans. 66846

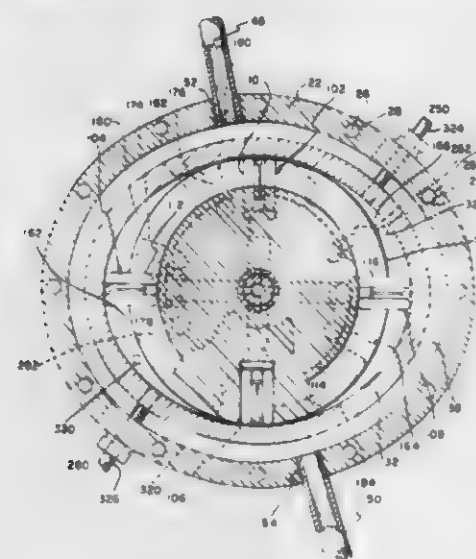
Continuation-in-part of Ser. No. 745,555, Nov. 29, 1976, Pat. No. 4,134,382, which is a continuation-in-part of Ser. No. 522,500, Nov. 11, 1974, Pat. No. 3,994,641, which is a

continuation-in-part of Ser. No. 322,430, Jan. 10, 1973, abandoned. This application Sep. 22, 1978, Ser. No. 944,850

Int. Cl.³ F02B 53/02, 53/08

U.S. Cl. 123-203

28 Claims



12. In a rotary internal combustion engine of the type wherein a rotor is mounted for rotation within a housing having a spaced inner surface surrounding the rotor, with a plurality of sealing means circumferentially-spaced about and rotatable with the rotor to contact sealingly the inner surface of the housing to separate space between the rotor and the inner surface into a plurality of zones inclusive of adjacent first and second zones that orbit the axis during rotation of the rotor, and wherein the inner surface is noncircular in an arrangement such that each zone alternately increases and decreases in volume as it orbits an axis within the housing, and wherein operating means is provided for cyclically operating the first zone as an internal combustion engine working chamber on a four-phase cycle involving successively an intake phase, a compression phase, a combustion phase and an exhaust phase, said cycle having a duration such that the volume of such first zone is successively increased, decreased, increased and decreased, and wherein the operating means is operatively connected to the rotor for synchronized operation thereof with rotation of the latter and includes means for introducing air to such working chamber, means for introducing fuel into such working chamber and means for exhausting combustion products from such working chamber; the improvement comprising in combination therewith the provision of air pumping means for cyclically operating the second zone as an air pumping chamber with the duration of a pumping cycle being such that the volume of said second zone is successively once increased and once decreased, said air pumping means being operatively connected to the rotor for synchronized operation thereof with rotation of the latter and includes normally closed valve means that opens between ambient atmosphere and the pumping chamber as the volume of the latter increases, and means for feeding air to the engine working chamber.

4,230,889

SUPPORT ASSEMBLY FOR COOKING UTENSILS

Allan D. Barden, R.R. 32, Box 467, Terre Haute, Ind. 47803

Filed Oct. 2, 1978, Ser. No. 947,414

Int. Cl.³ F24B 3/00

U.S. Cl. 126-30

7 Claims



1. A support assembly for utensils utilized in cooking food over a source of heat such as a campfire or the like, said assembly including a vertical elongated member generally U-shaped in cross-section having a central longitudinal axis and having a series of horizontally aligned detent notches formed in the vertical side margins of the member, a horizontal arm having at its free end attaching means for detachably securing a cooking utensil to the arm, said arm at its other end being adjustably joined to said vertical member by two vertically spaced horizontal plates attached to said arm and each of said plates having a circular aperture therethrough sized to closely accommodate said vertical member, the corresponding aperture margins nearest said arm being horizontally spaced a distance substantially equal to the depth of the detent notches on said vertical member, whereby tilting the arm to align the centers of said apertures with the central longitudinal axis of said vertical member permits said vertical member to extend through said apertures and said spaced plates with attached arm to slide along said vertical member and to seat in selected ones of said notches when said arm is positioned substantially normal to said vertical member and alternate ones of said vertically spaced horizontal plates enter said notches as said arm is pivoted through 180° in a horizontal plane about said vertical members.

4,230,890

HEATING STOVE

Eric Darnell, South Strafford, Vt. 05070

Filed May 1, 1978, Ser. No. 901,582

Int. Cl.³ F24B 7/00

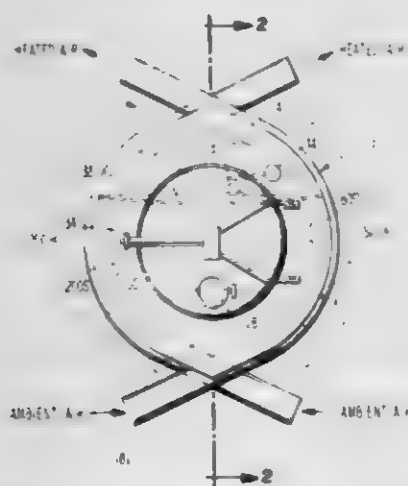
U.S. Cl. 126-72

11 Claims

1. A heating stove comprising:
(a) a longitudinally extending generally cylindrical fire box including:
(i) a first plurality of parallel aligned connected vertically oriented curved uniform cross-section open-ended conduits, lower extremities of said conduits of said first plurality aligned for contacting a planar surface to thereby support said stove;

(ii) a second plurality of parallel aligned connected vertically oriented curved uniform cross-section open-ended conduits, lower extremities of said conduits of said second plurality aligned for contacting said planar surface to thereby support said stove;

said second plurality of conduits positioned opposing said first plurality of conduits and in alternating interdigitated engagement therewith at intermediate upper and lower positions on said conduits, said positions defining upper and lower extremities of said fire box; said first and second pluralities of conduits being disposed symmetrically about a longitudinal axis of said cylindrical fire box; major curved central portions of said first and second pluralities respectively being spaced from and facing one another and curved about said longitudinal axis with curved central portions of each plurality defining a curved half of said generally cylindrical fire box; outwardly facing surfaces of said conduits of said first and second pluralities defining a generally cylindrically configured curved exterior surface of said stove; extremities of said conduits extending tangentially outwardly away from said cylin-



drically configured fire box and defining upper and lower stove extremities; upper extremities of said conduits of said first and second pluralities being vertically aligned with their respective lower extremities;

(iii) a generally planar back plate having an exhaust port therethrough;

(iv) a generally planar front plate, of substantially the same size and shape as said back plate, including an operable door having an inlet port therethrough;

most forward positioned conduits of said first and second pluralities each connected to said front plate at the periphery thereof; most rearward positioned conduits of said first and second pluralities each connected to said back plate at the periphery thereof;

(b) a longitudinally extending generally planar baffle connected to at least some of said conduits of said first and second pluralities, and to said back plate below said exhaust port to contact said back plate across the interior width thereof, extending forward towards said front plate, within said fire box interior;

(c) valve means, in said door, for admitting air to said fire box.

4,230,091 STOVE

Kenneth E. Judge, London, and Jerald D. Hayter, Ilderton, both of Canada, assignors to Carnor Manufacturing Ltd., London, Canada

Filed Aug. 23, 1978, Ser. No. 936,067
Int. Cl.³ F24C 1/00

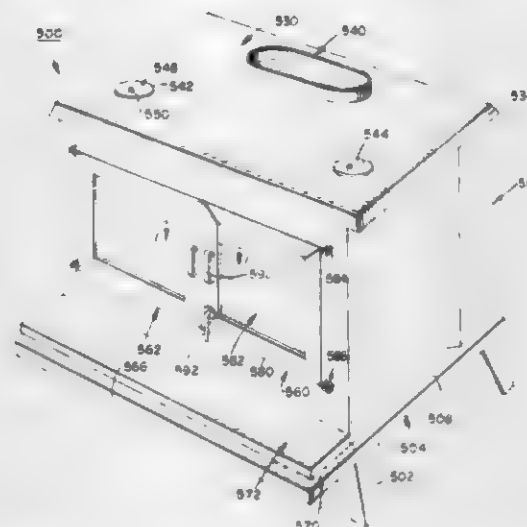
U.S. Cl. 126—77

1. A stove comprising:

a base;

a stove front, rear and side walls on said base and extending away therefrom, said rear and side walls each including a

central portion, an end portion on each end of said central portion, and offset portions connecting said central and end portions together, said end portions being essentially coplanar with each other and in a plane which is in spaced parallelism with a plane containing said central portion; a stove top wall on said walls and spaced from said base; at least one anti-warping bar on each of said front and rear stove walls, said anti-warping bars each extending upward from adjacent said base for essentially the entire length of said front and rear stove walls, said anti-warping bars and said wall portions providing structural support for a stove while increasing the heat output of that stove;



a firebrick combustion chamber located within the stove and including a bottom on said base, and combustion chamber walls located inwardly adjacent said stove front, rear and side walls and extending from said base for a portion of the distance between said base and said top wall, those combustion chamber walls located adjacent said front and rear stove walls each having a channel defined therein for accommodating said anti-warping bars; holder support means located adjacent the intersection of said combustion chamber walls for positioning said combustion chamber walls and for reinforcing said combustion chamber wall intersections; and channel-shaped top caps resting on top edges of said combustion chamber walls.

4,230,092

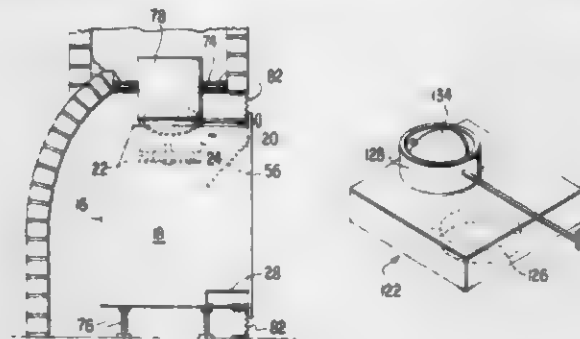
METHOD AND APPARATUS FOR IMPROVEMENTS IN CONVECTIVE HEATING

Joseph Henriques, 24 Hidden Brook Dr., Brookfield, Conn. 06804

Filed Apr. 17, 1978, Ser. No. 897,009
Int. Cl.³ F24C 15/30

U.S. Cl. 126—126

29 Claims



1. An improved convective heating system of the type having fireplace enclosure walls, a chimney with an apertured fireplace pan (74) for receipt of nascent products of combustion, and an elongate firebox (10) having bottom (12), top (14), back (16) and side walls (18) positioned in spaced relation to the corresponding fireplace enclosure walls and defining therewith a convective flow path of air across said firebox walls,

said firebox having a front wall with a fuel receiving opening and a hearth area rearwardly of said front wall, the walls of the firebox defining an elongate volume of space within the firebox, the improvement comprising:

(A) means, connected to the firebox, for maintaining an ignition temperature range substantially throughout that elongate volume of said firebox overlying said hearth area, said means including a flue assembly (20) having a flue extension (24) passing downwardly through the top wall of the firebox into the firebox with an opening (22) for receipt of nascent combustion products, the flue extension extending below the top wall of the firebox so as to create a blanket of hot combustion products (44) adjacent the firebox top wall, the flue assembly having a flue pipe (78) connected at one end to the outlet end of the flue extension and at its other end to the apertured fireplace pan (74) of the chimney for allowing the combustion products to pass up the chimney while preventing the convective flow path of air from passing up the chimney; and

(B) combustion air inlet means including a preheat manifold (28) mounted within the firebox and extending between the side walls of the firebox, the preheat manifold having at least one opening (50) at one end extending through the corresponding firebox side wall for receipt of combustion air and also having means for distributing this combustion air to the firebox hearth area.

4,230,093

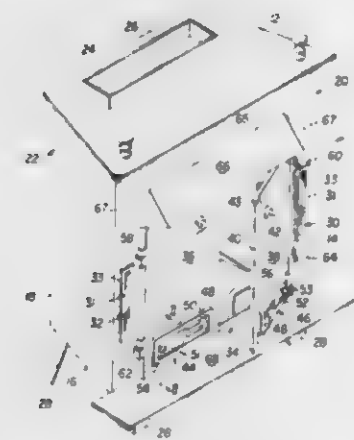
FIREPLACE DOOR

Carrol E. Buckner, Weaverville, N.C., assignor to Smoky Mountain Enterprises, Inc., Asheville, N.C.

Continuation-in-part of Ser. No. 693,805, Jun. 7, 1976, Pat. No. 4,092,976. This application Aug. 26, 1977, Ser. No. 828,207
Int. Cl.³ F23M 7/00

U.S. Cl. 126—190

1 Claim



1. A heating unit comprising:

a firebox;

an access opening in the front wall of said firebox;

a pair of doors pivotally mounted to said front wall for covering said access opening;

a first of said doors having a first handle thereon;

a second of said doors having a second handle on the exterior surface of said second door and a latch means on the interior surface of said second door;

said latch means including a plate extending beyond the periphery of said second door and of a length sufficient to extend behind an interior portion of said front wall of said firebox, a pair of posts extending from said interior surface of said second door and positioned on opposite sides of said plate to limit movement of said plate between a first vertical position and a second horizontal position, said plate being connected to said second handle for rotation between said pair of posts;

each of said doors comprising a main planar portion with a space between said main planar portions when said doors are in a closed position; and

a planar vertical strip extending from the exterior surface of

said second door and adapted to overlap the exterior surface of said first door main planar portion to retain said first door in closed position when said second door is in closed position whereby movement of said latch means to latched position will retain both of said doors in closed position.

4,230,094

SOLAR CONCENTRATOR

Wally Szulmayer, Burwood, Australia, assignor to Unisearch Limited, Australia

Filed Feb. 10, 1976, Ser. No. 656,945

Claims priority, application Australia, Feb. 13, 1975, PC0596
Int. Cl.³ F24J 3/02

U.S. Cl. 126—439

5 Claims



1. A solar radiation concentrator comprising: trough means, having an open portion, for reflecting solar radiation incident thereupon; refracting means, covering said open portion of said trough means, for refracting solar radiation incident thereupon onto said trough means, said refracting means comprising at least one strip of transparent material including a pattern of prismatic parallel grooves; and target means, linearly, extended in said trough means parallel with a longitudinal axis of said strip means, for absorbing solar radiation refracted and reflected thereupon by said refracting means and said trough means, respectively, said trough means including at least two side portions, each of said side portions is a circular curved reflective portion with a center of curvature offset from a center of curvature of the other side portion, and a substantially flat bottom portion, said side portions in combination with said refracting means facilitating the focussing of solar radiation, incident at angles up to 30° from a normal to said refracting means, upon said target means so as to permit stationary operation of said concentrator without sun-tracking or seasonal orientation.

4,230,095

IDEAL LIGHT CONCENTRATORS WITH REFLECTOR GAPS

Roland Winston, Chicago, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 26, 1978, Ser. No. 909,864

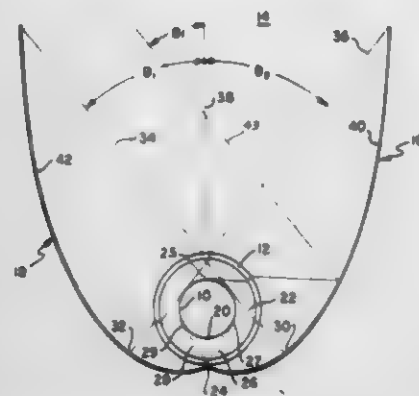
Int. Cl.³ F24J 3/02

U.S. Cl. 126—439

5 Claims

1. A cylindrical radiant energy concentration and collection device, comprising: an energy absorber having an exterior surface, a glazing enveloping and spaced from said absorber, and a first reflective wall, said absorber, said glazing and said first wall being aligned parallel to an axis to form a trough-shaped structure, said wall having an ideal contour determined with respect to a virtual absorber shape, said virtual absorber shape having a cross sectional area in a plane perpendicular to said axis defined by the cross sectional area of said absorber in

said plane and the additional area defined by the intersection of a first and a second tangent line drawn from a first and a second means controlled by said inertia body and controlling the pressure in said pockets as an increasing function of the accel-



point respectively along said glazing to be tangent with the exterior surface of said absorber.

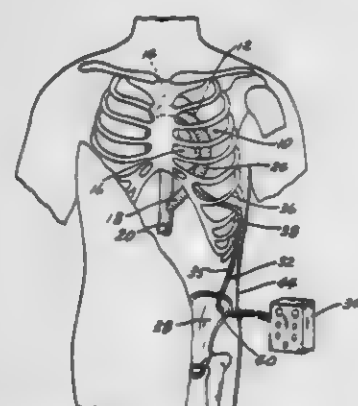
4,230,096

METHOD OF IMPLANTING TRANSCUTANEOUS CONNECTOR

Robert H. Zeff, 4220 Foster Dr., and Steven J. Phillips, 6023 N. Waterbury Rd., both of Des Moines, Iowa 50312
Division of Ser. No. 817,728, Jul. 21, 1977. This application Sep. 3, 1978, Ser. No. 939,884
Int. Cl.³ A61B 17/00

U.S. Cl. 128-1 R

7 Claims



1. A method of implanting a transcutaneous tube connector, comprising the steps of forming a tube connector aperture in a bone located closely adjacent the body outer skin, and routing the tube connector from the body cavity where it is connected to a body organ through said aperture and outwardly through the skin for transmission of fluid between the body cavity and the outside.

4,230,097

BREATHING AND ACCELERATION PROTECTION APPARATUS FOR AIRCRAFT CREW MEMBERS

Raymond Beaumont, Bretigny Sur Orge, and Jacques Claude, Fresnes, both of France, assignors to Inter technique, Plaisir, France

Filed Jun. 30, 1978, Ser. No. 921,090
Claims priority, application France, Jul. 1, 1977, 77 20345
Int. Cl.³ A61B 19/00

U.S. Cl. 128-1 A

14 Claims

1. A breathing and acceleration protection apparatus for the crew of fighter aircraft, having a source of pressurized gas, anti-g regulator valve means having an input connected to said source and an output constructed to be connected to inflatable trouser pockets of a g-suit carried by a member of said crew, and a demand regulator arranged to deliver respiratory gas to said crew member, wherein said anti-g regulator valve means include an inertia body movable along a predetermined direction responsive to acceleration along said direction, valve

eration, and additional means responsive to the aircraft altitude for setting a pressure in said pockets at a value which increases with altitude in the absence of acceleration.

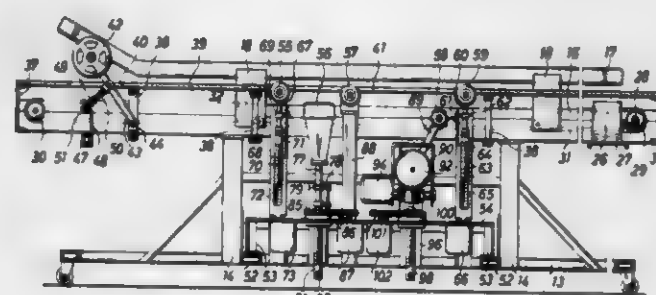
4,230,098

RHYTHMICAL TRACTION TYPE DEVICE FOR MEDICAL TREATMENT

Kazuma Uematsu, 1-17-3 Oyamadai, Setagaya-ku, Tokyo, Japan
Filed Feb. 13, 1979, Ser. No. 11,934
Int. Cl.³ A61H 1/00

U.S. Cl. 128-33

10 Claims



1. A rhythmic traction type instrument for medical treatment including a couch having a movable frame mounted thereon in reciprocating fashion and a motor for moving said movable frame, which couch is provided with a roller for correcting the backbone, a vibrator, a reciprocating roller for massaging the lumbar and a roller for massaging the lower half of one's body, each of said rollers and vibrator being fitted with a motor for causing up and down movement thereof.

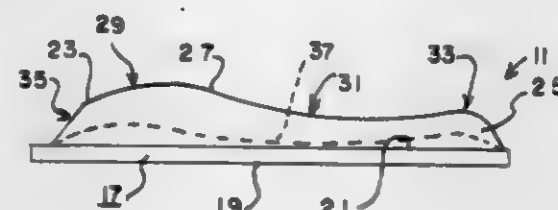
4,230,099

DEVICE FOR ALINING THE SPINE

Billy H. Richardson, 9140 Millbraach, Southaven, Miss. 38671
Filed Feb. 21, 1979, Ser. No. 13,629
Int. Cl.³ A61F 5/00

U.S. Cl. 128-69

11 Claims



1. A device for use in alining a human spine, said device comprising: first and second elongated ridge members and a bridge means for holding said first and second elongated ridge members substantially parallel to and alined with one another

at a substantially constant distance apart from one another, each of said ridge members having a first end and a second end and an upper surface, said upper surface of each of said ridge members being continuous and gently curved and forming a convex curve substantially at said first end thereof, forming a concave curve intermediate said first and second ends thereof and forming a substantially flat, sloping area adjacent said first end thereof.

curvature of the front of the patient, each of said uprights terminating at a level just below the level of a patient's clavicle, laterally extending rigid metal arms fastened to the upper portions of said uprights and curved so as to be adapted to encircle the body of the patient at the approximate level of the patient's armpits, underneath the patient's arms, means on said girdle to secure the joint portions of the girdle together and means on the upper portions of said pair of posterior uprights

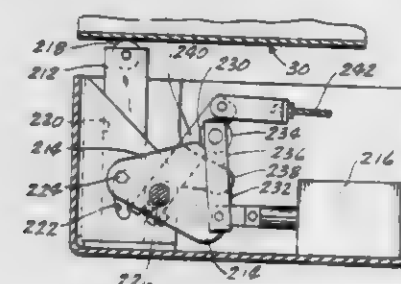
4,230,100

CHIROPRACTIC TABLE

Derryl E. Moon, Fairmount, N. Dak. 58030
Filed Jul. 26, 1978, Ser. No. 927,961
Int. Cl.³ A61F 5/00

U.S. Cl. 128-70

3 Claims



1. A chiropractic table comprising: an elongated table frame, a plurality of support-pieces positioned in spaced relation along the length of said table and each having an upwardly presented support surface, mounting means for mounting at least one of said support pieces to said frame for vertical movement between upper and lower positions; a vertically movable member mounted to said table frame for vertical movement with respect thereto, and being in supporting engagement with said one support piece; a rotatable cam mounted to said frame for pivotal movement about a horizontal axis, said cam having first and second ends on opposite sides of said axis, said first end engaging said vertically movable member for lifting thereof in response to rotational movement of said cam in one direction and for lowering thereof in response to rotation of said cam in the opposite direction; said second end of said cam having a cam surface comprising a curved surface and a notch, a cam follower in rolling engagement with said cam surface and adapted to roll into said notch when said vertically movable member is in a predetermined upper position; yieldable power means connected to said cam follower for urging said cam follower toward said notch with a force of predetermined magnitude and being yieldable to permit said cam follower to roll out of said notch in response to a moment of predetermined magnitude exerted on said cam by a downward force acting through said support piece and vertically movable member.

4,230,101

BACK BRACE

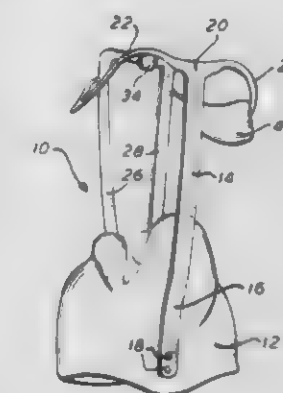
Jack Gold, 4 Hillary Ct., Livingston, N.J. 07039
Filed Aug. 28, 1978, Ser. No. 937,611
Int. Cl.³ A61F 5/02

U.S. Cl. 128-78

1 Claim

1. In a back brace for the treatment of scoliosis in a patient, said brace comprising, a rigid, molded plastic pelvic girdle shaped to fit closely about the lower stomach and pelvic portion of a patient, said girdle adapted to substantially surround the patient and coming together in a separable posterior joint, a pair of posterior rigid metal uprights, one of said uprights positioned on each side of said posterior joint, a single anterior rigid metal upright fastened substantially centrally of said girdle and extending vertically upward and adapted to fit the

1. A device for exercising a urine bladder into which a catheter has been inserted, comprising closing-opening means engaging said catheter, said closing-opening means being normally closed for preventing flow through said catheter, means for detecting the pressure in said catheter between said bladder and said closing-opening means, and actuation means coupled to the pressure detecting means for opening said closing-opening means for a pre-set time period to permit flow through said catheter in response to the detection of a predetermined pressure by said pressure detecting means, said pre-set time period being sufficient to permit said bladder to empty at least substantially, wherein said actuation means is adjustable for opening said closing-opening means at one of a plurality of predetermined pressures in said catheter.



4,230,102

DEVICE FOR THE TRAINING OF A URINE BLADDER

Fred V. G. Ekbladh, Kungälv, Sweden, assignor to Astra-Sjeco AB, Göteborg, Sweden
Filed Apr. 17, 1978, Ser. No. 896,746
Claims priority, application Sweden, Apr. 25, 1977, 7704703
Int. Cl.³ A61F 5/00; A61M 25/00

U.S. Cl. 128-79

12 Claims

4,230,103

ORTHOPEDIC DEVICE

Renaud A. Cote, 1021 26th St., NW., Washington, D.C. 20037

Filed Nov. 30, 1978, Ser. No. 966,192

Int. Cl.³ A61F 3/00

U.S. Cl. 128—80 A

7 Claims



1. An orthopedic assembly for attachment to a child's shoes comprising:
 - a pair of plate members, each substantially larger than a child's shoe;
 - a pair of children's shoes adapted to be operatively attached to said plate members;
 - means for operatively attaching said plate members together so that they are disposed in a common plane and so that they cannot rotate with respect to each other or said attaching means; and
 - means for operatively attaching said pair of plate members to said pair of child's shoes so that the angular position the shoes may assume relative to the plate members is continuously adjustable, and so that the shoes are readily removable from the plate members, said means comprising cooperating hook and loop fastening means attached to coplanar faces of said plate members, and to the bottoms of said shoes.

4,230,104

SPLINTS FOR TREATING JAW FRACTURES

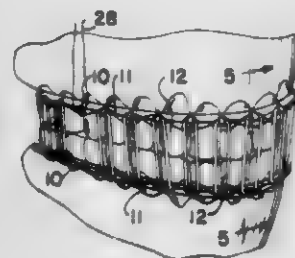
Alice E. Richter, 260 N. Cache St., Jackson, Wyo. 83001

Filed Jan. 23, 1978, Ser. No. 871,642

Int. Cl.³ A61F 5/04

U.S. Cl. 128—89 A

2 Claims



1. An oral surgery appliance for use in holding together human jaws to permit the jaws by wires and elastic bands to set properly, the improvements comprising:
 - a malleable arch bar member;
 - said arch bar member having metal means adapted to be shaped into a curved configuration about a person's teeth and conform to the contour thereof;
 - said arch bar having flat back for positioning adjacent the wearer's teeth and also having an arcuate front extending downwardly from the top of the flat back;
 - prong means;
 - said prong having base means extending horizontally from said bar member;
 - tab means including a first portion extending from said base member;
 - said tab means including means movable by bending from a first position spaced from the arch bar member to a second position with a portion of said tab adjacent to the arch bar

member yet shorter than the contiguous portion of the arch bar member to provide a smooth contour; and said means movable by bending comprising means adapted to extend away from said arch bar member and confine and hold said elastic bands.

4,230,105

TRANSDERMAL DELIVERY OF DRUGS

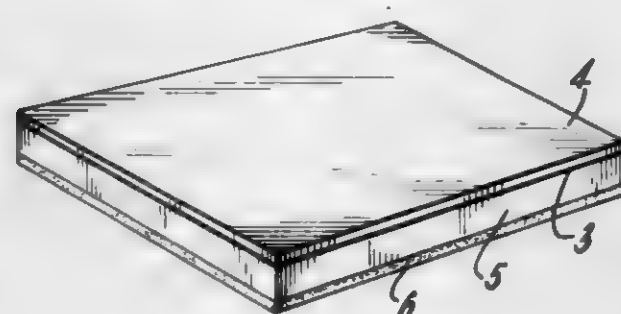
Richard J. Harwood, Philadelphia, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 13, 1978, Ser. No. 960,354

Int. Cl.³ A61L 15/00

U.S. Cl. 128—156

2 Claims



1. An improved medical bandage for the administration of drug through the skin or mucosa which comprises a layered bandage comprising first a heat-generating layer containing a hydrate-forming inorganic salt dispersed throughout an inactive matrix layer, and second, a pressure-sensitive adhesive area containing drug to be administered to the patient, dispersed intimately throughout said adhesive layer.

4,230,106

ARTICULATED SNORKEL

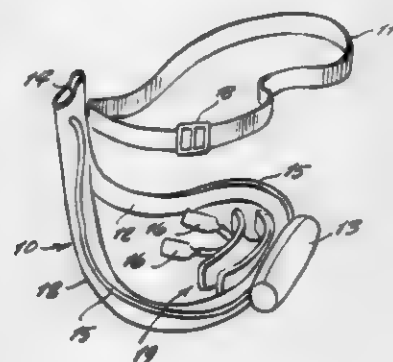
John W. Geeslin, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007, and George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed May 12, 1978, Ser. No. 905,334

Int. Cl.³ B63C 11/16

U.S. Cl. 128—201.11

3 Claims



1. An articulated snorkel, comprising in combination a support for being worn around a person's head, a pair of air supply tubes adapted to extend around opposite sides of said person's head, each tube terminating at the rear end thereof in a common tubular opening including a normally deflated tube bladder, a mouthpiece at a forward end of each of said air supply tubes connected to and in communication with said mouthpiece, said mouthpiece adapted to be positioned in the mouth of said person for communication therewith, with said air supply tubes extend around the person's head and said common tubular opening in the rear of the person's head, a bit integral with said mouthpiece for placement between front teeth, a pair of normally inflated mouth bladders mounted to and extending from said bit for being squeezed between side teeth of said person, a pair of connecting tubes connecting said tube bladder with said mouth bladders whereby upon squeezing.

ing said mouth bladders causes inflation of the normally deflated tube bladder, means to retain said mouth bladders aligned between said side teeth and flapper purge valves mounted at each end of said mouth piece.

4,230,107

RAIL SYSTEM AND GAS METERING SYSTEM IN A HYPERBARIC SYSTEM

Glenn J. Butler, White Plains, N.Y., assignor to IUC International, Inc., Bronx, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,808

Int. Cl.³ A61M 16/02

U.S. Cl. 128—205.26

16 Claims



1. A hyperbaric system comprising
 - a hyperbaric chamber having an inside surface;
 - a stretcher within said chamber;
 - a means for hanging said stretcher in a substantially horizontal plane in said chamber, said means comprising a supporting structure transversely mounted on said inside surface substantially above said stretcher and hanging means attached to said stretcher and connected with said supporting structure and extending downwardly from said supporting structure to permit slidable movement of said hanging means and therefore of said stretcher along said supporting structure whereby said hanging means does not obstruct the sides and undersides of said stretcher.

4,230,108

APPARATUS AND METHOD FOR SEALING ESOPHAGEAL ENTRANCE TO TRACHEA ABOVE AND BELOW

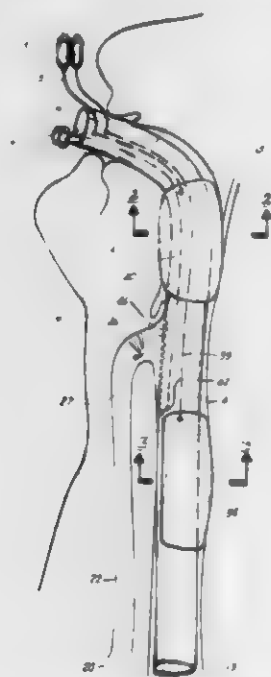
Sharon L. Young, 8600 Pontchartrain Blvd. Apt. 312, New Orleans, La. 70124

Filed Mar. 13, 1979, Ser. No. 20,146

Int. Cl.³ A61M 25/00

U.S. Cl. 128—207.15

2 Claims



1. Apparatus for sealing trachea entrance from above and below entrance to esophagus comprising:
 - (a) flexible esophageal tube means, having oppositely disposed ends, for insertion of one end into the esophagus

- past the entrance of said trachea to a position in the esophagus opposite tracheal carina, with the other end remaining outside of the mouth, said esophageal tube means being flattened on a anterior side thereof between said trachea entrance and carina for sealing said esophageal tube means on an area greater than a tangential strip;
- (b) upper inflatable cuff means fixed to said esophageal tube means above said tracheal entrance for sealing said tracheal entrance from above;
 - (c) lower inflatable and deflatable cuff means fixed between said trachea entrance and above said tracheal carina said lower cuff means extending around the round posterior sides only and providing no expansion on the flattened anterior side to possibly occlude said trachea in case of over inflation of said lower cuff; and
 - (d) ventilation tube means, having an open end and closed end, interiorly fixed to an anterior side of said esophageal tube means, said anterior side being common to both said tube means, and with said open end extending outwardly beyond the mouth of said esophageal tube means, and the closed end extending past said tracheal entrance, said common anterior side defining perforations opposite said entrance for ventilating the lungs therethrough.

4,230,109

APPARATUS FOR SECURING COUPLINGS OF INTRAVENOUS AND INTRA-ARTERIAL ACCESS SYSTEMS

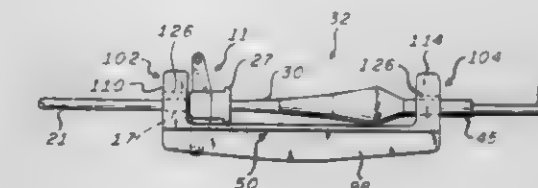
Alan Geiss, 50 Brampton Ln., Great Neck, N.Y. 11030

Filed Aug. 21, 1978, Ser. No. 935,669

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214 R

10 Claims



1. An apparatus for conveying vascular fluids to or from a patient, comprising:
 - a tubular catheter having a frictional coupling;
 - a tubular conduit for conveying vascular fluids to or from the catheter and having a coupling frictionally engaged with the frictional coupling of the catheter; and
 - an apparatus for restraining disengagement of the frictional coupling between the catheter and tubular conduit, comprising:
 - a base member;
 - a clamp means affixed to one of the tubular catheter and conduit, comprising first and second members projecting from the base member and having opposed, diverging surfaces wedging said one of the tubular catheter and conduit radially therebetween;
 - retaining means on the diverging surfaces of the clamp means for opposing disengagement of said one of the catheter and conduit from wedged relation between the surfaces of the first and second members;
 - whereby tubular catheters and conduits of various radial dimensions may be retained by the clamp means; and
 - an affixing means spaced axially from the clamp means on the base member and affixed to the other one of the tubular catheter and conduit.

4,230,110

HUB WITH SUTURING PROVISION FOR MEDICAL DEVICES

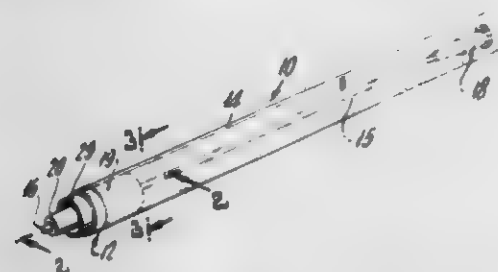
Howard Beroff, Bridgewater, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Aug. 22, 1978, Ser. No. 935,840

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214.4

1 Claim



1. A hub suitable for use with an introducer catheter and adapted to remain in a fixed position on a patient comprising:
 - a body with a passage therethrough adapted to receive a catheter for insertion into a patient and having a diameter greater than the outer wall of said catheter to facilitate the easy insertion of said catheter therethrough without substantial frictional resistance;
 - a first thin walled flange extending from said body, coaxially aligned about said passageway and defining an extension thereof coterminous therewith;
 - an annular dimple on the end of said first flange and projecting into said passage extension and engaging the outer periphery of said catheter and providing a resilient seal thereagainst but permitting said catheter to slide there-through into said passageway;
 - a second thin walled flange extending from said body and coaxially aligned with the axis of said passageway and having an interior wall spaced radially apart from said first thin walled flange, said second thin walled flange including a pierceable section adapted to be pierced for suturing said hub to said patient and thereby anchoring the same in place regardless of the angular orientation of said hub with respect to the patient, said radial space between said first and said second flanges permitting the passage of a suture needle.

4,230,111

HYGIENIC SYRINGE AND CLEANSING METHOD

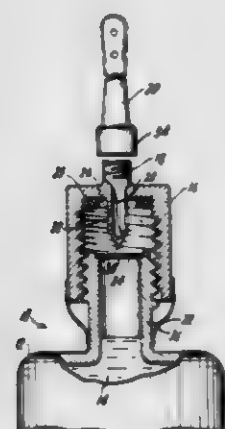
Nicholas F. Piazza, and Joan A. Piazza, both of 13 Alpine Way, Huntington Station, N.Y. 11746

Filed Apr. 13, 1979, Ser. No. 29,728

Int. Cl.³ A61M 3/00

U.S. Cl. 128—225

11 Claims



1. A hygienic syringe for dispensing a hygienic liquid mixture in an effervescing state comprising a container having a neck portion extending therefrom, a hygienic liquid mixture within said container having a gas dissolved therein when said hygienic liquid mixture is stored within said container in a pre-charged condition, said hygienic liquid mixture reaching

an effervescing state when said dissolved gas is released therefrom by sufficient disturbance of said precharged condition of said hygienic liquid mixture within said container, a cap constructed and arranged to movably engage said neck portion and having a cap opening therein to communicate the hygienic liquid mixture in said container to a dispensing location, and sealing means on said neck portion and responsive to movement of said cap for preventing said hygienic liquid mixture in said pre-charged condition from entering said cap opening when said cap is in a first position and for enabling said hygienic liquid mixture when in said effervescing state to be propelled out of said container through said cap opening in response to pressure developed within said container by said released gases when said cap is in a second position.

4,230,112

SYRINGE-TYPE LIQUID CONTAINER DISPENSER ADAPTER

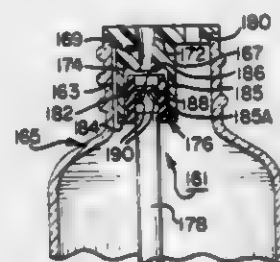
Philip E. Smith, 6033 N. Sheridan Rd., Chicago, Ill. 60660

Filed Aug. 7, 1978, Ser. No. 931,712

Int. Cl.³ A61J 1/00; B65D 39/00; B65B 1/04

U.S. Cl. 128—272.3

11 Claims



1. An adapter for connecting in fluid communication a nozzle of a liquid medication dispensing syringe-type dispenser with the interior of a bottle having a bottom wall and containing liquid medication or the like comprising:
 - a tubular body member composed of resilient material and being generally cylindrical in shape to fit snugly within the mouth of the bottle;
 - means defining an opening extending axially through said body member for receiving the nozzle of the syringe-type dispenser, said opening including a forward nozzle-receiving portion and a rear portion, the axial length of said forward portion being substantially the same as the axial length of the nozzle so that the exit end of the nozzle terminates near said rear portion when the nozzle is inserted fully within said opening;
 - means defining a fluid pathway disposed at said rear portion of said opening for guiding liquid to said forward nozzle-receiving portion and for preventing or minimizing the introduction of air into said opening;
 - means defining a re-entry vent opening extending axially through said body member terminating near the bottom thereof to vent to the atmosphere the space between the liquid level and said member; and
 - said means defining a fluid pathway including a tube depending from the adapter into the bottle terminating at its lower end near the bottom wall of the bottle for conveying liquid medication therefrom to the nozzle of the dispenser; valve means disposed in said fluid pathway for permitting liquid medication to flow from said tube to the nozzle when it is inserted in the nozzle-receiving opening and for trapping liquid medication in said tube near the first-mentioned opening when the dispenser is withdrawn from said opening.

4,230,113

INFANT'S DIAPER

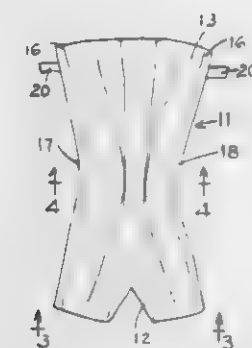
Khushal Mehta, T2-6 Hatfield Village Apts., Hatfield, Pa. 19440

Filed Jul. 17, 1978, Ser. No. 924,917

Int. Cl.³ A61F 13/16

U.S. Cl. 128—287

1 Claim



1. A moisture absorbing infant's diaper for newborn babies, comprising an outer water impervious layer, an intermediate moisture absorbing layer and an inner moisture transmitting layer, the two long sides being folded inwardly about midway of their lengths to form a central pleat which reduces the central width of the diaper, which is about 22 cm. wide, about 27 cm. long and has in one of its narrow ends a V-shaped notch which opens out at that edge of the diaper, said notch being centrally located along that end and being from 2.5 to 4.5 cm. deep and from 4 to 6 cm. wide at the edge.

4,230,114

EXERCISE PANTS

Jack V. Feather, P.O. Box 737, Pebble Beach, Calif. 93953

Filed Mar. 2, 1978, Ser. No. 882,649

Int. Cl.³ A61F 7/00

U.S. Cl. 128—293

6 Claims



1. A pair of exercise pants comprising a pant material which throughout its length and width is non-porous and non-absorbent,
 - means for cinching said pant material about the waist and legs of the user whereby the space between the pant material and the user's body is substantially pneumatically isolated from outside atmosphere, and
 - connector means sealedly secured to said pant material, said connector means being adapted to permit an air evacuation hose to be attached thereto whereby when the user exercises, such as by running in place, air can be evacuated from the interior of said pants causing the pant material to press against the user's body to induce sweating and to thereby promote overall girth reduction, wherein said connector means includes an air permeable bolster means disposed on the internal side of said pants for holding said connector means together with the pant material immediately surrounding same away from the user's body surfaces whereby the connector means and surrounding pant

material are prevented from bearing down onto the user's skin while air is being evacuated from the interior of said pants.

4,230,115

CATHETERIZATION UNIT

Arthur J. Walz, Jr., Elk Grove Village, and Christopher A. Nowacki, Des Plaines, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 831,702, Sep. 12, 1977, abandoned. This application Oct. 20, 1978, Ser. No. 953,336

Int. Cl.³ A61F 5/44

U.S. Cl. 128—295

33 Claims



1. An aseptic urethral catheterization unit including an elongated initially sealed flexible imperforate container, a urethral catheter having a predetermined diameter throughout a substantial portion of its length positioned in said container, said container including elongated flat flexible imperforate sheet material sealed about its entire perimeter in face to face relation, said container having a restricted portion forming a passageway spaced from one end thereof formed by sealing a limited area of said sheet material in face to face relation thereby creating a first chamber between said restricted portion and said one end, a second chamber substantially larger than said first chamber being formed between said restricted portion and said opposite end, substantially all of said catheter being initially positioned within said second chamber in an aseptic fashion but adapted for movement through said passageway upon manipulation externally of said container, said catheter having an eye adjacent one end communicating with the axial bore of said catheter, means for initially maintaining said eye end of said catheter substantially within said passageway which communicates between said chambers, and a transversely disposed weakened portion positioned between said one end and said restricted portion, said weakened portion having a generally linear configuration and existing in substantially aligned relation in each independent layer of said sheet material, said aligned portion extending substantially across the entire width of said container between opposite edges on a line spaced from said one end and said portion being manually separable along said line to break said seal upon manipulation and expose said eye end of said catheter and said first chamber in the interior of said container, said second chamber adapted for collection and acceptance of an aseptic specimen and aseptic initial storage of said catheter, whereby application of a surgical lubricant into said first chamber adjacent said restricted portion passageway substantially seals the juncture of said catheter and said passageway and protects said second chamber against external contamination.

4,230,116

TUBAL LIGATION INSTRUMENT WITH ANESTHESIA MEANS

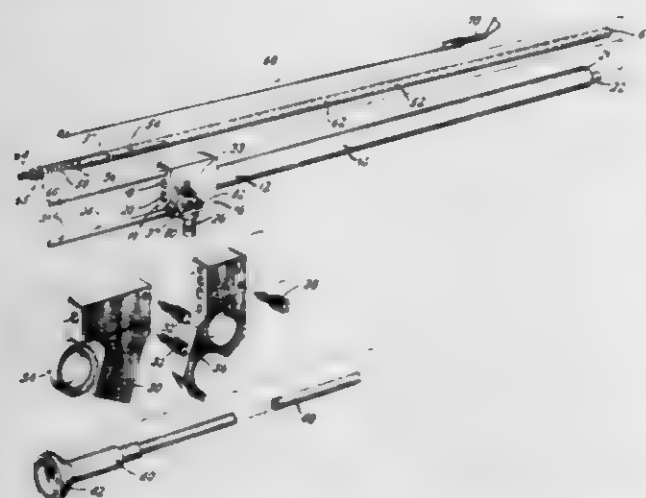
Trevor F. Watson, Columbia, Mo., assignor to Kli, Inc., Newtown, Pa.

Filed Oct. 2, 1978, Ser. No. 947,467

Int. Cl.³ A61B 17/12

U.S. Cl. 128—303 A

17 Claims



1. In a tubal ligation instrument of the type having a housing, an elastic ring support means carried by said housing, an elastic ring displacement means, a means for causing a relative movement of said support means to said displacement means for displacing an elastic ring off of said support means in a manner to perform a tubal ligation, the improvement which comprises:

- (a) an anatomical element grasping means slidable in said support means, with a channel between said grasping means and said support means;
- (b) a means for receiving an anesthetic agent on said housing, said receiving means having a channel therethrough, said grasping means adapted so that said channel between said grasping means and said support means communicates with the channel of said receiving means so as to introduce an anesthetic agent to a grasped anatomical element;
- (c) actuating means for reciprocally sliding said grasping means axially along said support means, said receiving means communicating with said channel between said grasping means and said support means during only a portion of said reciprocal sliding motion.

4,230,117

STEREOTAXIC APPARATUS

Andrei D. Anichkov, ulitsa Blokhina, 6/3, kv. 4, Leningrad, U.S.S.R.

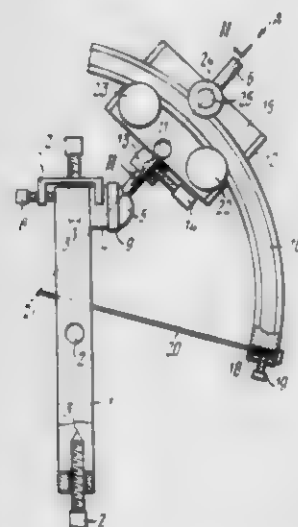
Filed Oct. 25, 1978, Ser. No. 955,026

Claims priority, application U.S.S.R., Feb. 27, 1978, 2580704

Int. Cl.³ A61B 19/00

U.S. Cl. 128—303 B

2 Claims



1. A stereotaxic apparatus comprising a ring sized to fit

around the head of a patient, said ring having a plurality of head clamps, a spatial hinge having a first and a second portion, said first portion being movable with respect to said second portion through two degrees of freedom, said first portion being mounted on said ring so as to be movable therealong, an elongated bar having first and second ends, said first end being connected to said second portion of said hinge, a bushing adapted to be mounted on said bar so as to be movable therealong and rotatable thereabout, an elongated arc-shaped plate, means including a guide member of said plate for connecting said plate to said bushing so that said plate may be moved lengthwise with respect to said bushing, said bar being disposed radially with respect to an arc defining the shape of said plate, said means for connecting including means for securing said plate to said bushing, a stereotaxic instrument comprising an elongated rod having two ends, said instrument being mounted on said plate so that one end of said stereotaxic instrument is positioned at a point which is the projection of the center of curvature of the arc defining the shape of said plate on the axis of said bar.

4,230,118

AUTOMATIC LANCET

Rury R. Holman, 42 Meadow Close, Farmoor, and Robert C. Turner, May Cottage, Great Milton, both of England

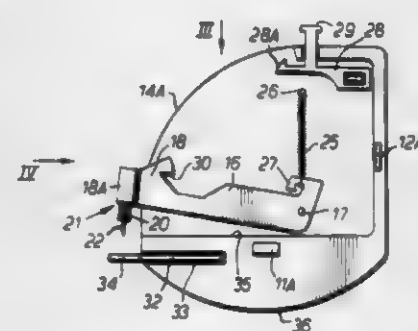
Filed Aug. 4, 1978, Ser. No. 931,154

Claims priority, application United Kingdom, Aug. 5, 1977, 33029/77

Int. Cl.² A61B 17/34

U.S. Cl. 128—314

7 Claims



1. A lancet device which comprises:

- a housing;
- a movable arm pivoted in the housing for rotation about a pivot therein through a limited angle;
- a holder at one end of the arm remote from the pivot, the holder being adapted to receive a replaceable mounted lancet needle and to hold the latter by its mounting pointing in the tangential direction;
- spring means acting on the arm to bias it angularly for rotation about its pivot from a retracted position towards an operative position in which the point of a mounted lancet needle carried in the holder will be exposed projecting forwardly for a pricking operation; and
- releasable latch means for holding the arm in the said retracted position against the force of the said spring means; said latch means including a manually-operable trigger for releasing said latch means, whereby on release of said latch means the arm will be urged forwardly by said spring means to rotate into its operative position to perform a pricking operation;
- said spring means having a characteristic such that the resultant biasing torque which it exerts on the arm reduces progressively in magnitude as the arm rotates from its retracted position towards its operative position until the arm reaches a neutral position shortly before its operative position, the resultant biasing torque reaching zero in said neutral position of the arm and thereafter reversing in angular direction to increase progressively as the arm is carried by inertia towards its operative position against the reversed biasing torque, whereby the said spring

means will tend to retract the arm from its operative position towards and into its neutral position so that the tip of the needle is automatically withdrawn after a pricking operation.

4,230,119

MICRO-HEMOSTAT

Alvin S. Blum, Fort Lauderdale, Fla., assignor to Medical Engineering Corp., Racine, Wis.

Filed Dec. 1, 1978, Ser. No. 965,623

Int. Cl.³ A61B 17/12

U.S. Cl. 128—325

6 Claims



1. A micro-hemostat useful in micro-surgery during anastomosis of blood vessels comprising

- (a) a highly flexible tubular bar having a flexible, relatively inelastic inner wall and a flexible elastic outer wall, said walls being joined together at the ends of the bar to form an annular chamber defined by the space between the walls, said inner wall forming a passage through which uninterrupted blood flow takes place when the tubular bar is placed within a blood vessel;
- (b) means preventing said outer wall from expanding when the chamber is pressurized except for areas adjacent each end of the bar which can be inflated under pressure to form annular cuffs; and
- (c) a tubular stem attached at one end to the outer wall of said bar between said cuff areas at a point intermediate the length of the bar permitting said chamber to be pressurized therethrough, said stem having a passage therethrough which communicates with the annular chamber.

4,230,120

ENERGY COMPENSATION MEANS FOR DIGITAL CARDIAC PACEMAKER

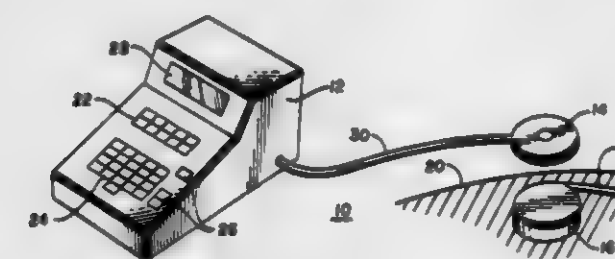
Ray S. McDonald, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,958

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 PT

36 Claims



1. A digital cardiac pacemaker pulse generator for providing a cardiac stimulating pulse comprising:

pulses having a frequency related to the voltage provided by said battery means; counter means for counting the voltage controlled oscillator pulses applied thereto, said counter means being reset to an initial count in response to said rate signal; and output means responsive to said counter means for providing said cardiac stimulating pulse at a voltage related to said battery voltage from the time said counter means is reset by said rate signal until said counter means reaches a predetermined value.

4,230,121

ELECTRICAL BODY STIMULATOR

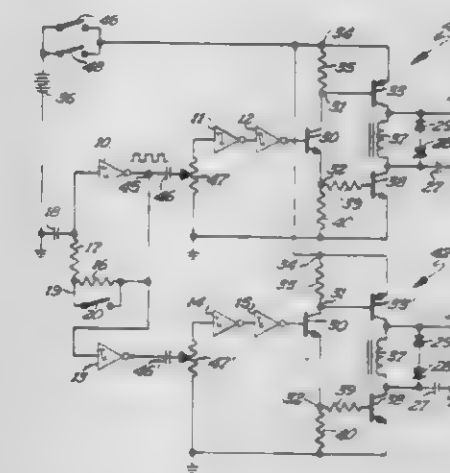
David J. Stanton, Anoka, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 29, 1979, Ser. No. 7,306

Int. Cl.³ A61N 1/36

U.S. Cl. 128—422

10 Claims



1. In an electrical body stimulator of the type having driving pulse generating means and driving pulse responsive means, including output means, for providing body stimulation signals, the improvement wherein said driving pulse generating means comprises:

- energy storage means;
- oscillating power supply means connected to said energy storage means for alternately charging and discharging said energy storage means; and
- threshold means including dual state means responsive to the charge level of said energy storage means for changing state in response to predetermined changes in said energy storage means charge, said driving pulse responsive means comprising means responsive to the period between changes of state of said dual state means for establishing the stimulation signal amplitude in accordance therewith.

4,230,122

TRANSCUTANEOUS MONITORING OF CRITICAL PERFUSION-EFFICIENCY SITUATIONS

Dietrich W. Lübbers, Dortmund, and Albert Huck, Marburg, both of Fed. Rep. of Germany, assignors to Max Planck Gesellschaft fuer Foerderung der Wissenschaften, Goettingen, Fed. Rep. of Germany

Filed Sep. 14, 1978, Ser. No. 937,946

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1977, 2737709

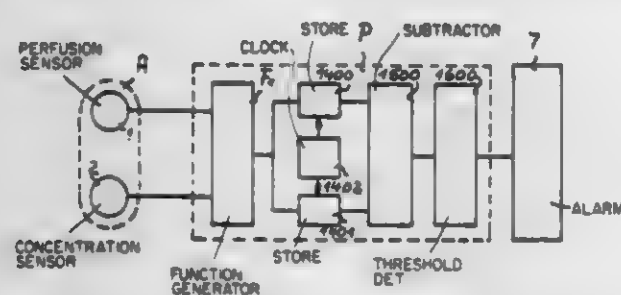
Int. Cl.³ A61B 5/00, 5/02

U.S. Cl. 128—635

34 Claims

1. An apparatus automatically detecting critical perfusion-efficiency situations, comprising, in combination, first means operative for transcutaneously sensing perfusion and generating a corresponding first signal; second means operative for transcutaneously sensing the concentration of an indicator substance transported by the blood perfused through the tissue

of interest and generating a corresponding second signal; an alarm generator; and signal-processing means connected to the first and second means for receipt of the first and second sig-



nals and connected to the alarm generator and operative for triggering the latter upon detection of signal changes meeting at least one predetermined rate-of-signal-change criterion.

4,230,123

NEEDLE SHEATH COMPLEX AND PROCESS FOR DECOMPRESSION AND BIOPSY

Irvin F. Hawkins, Jr., Mail Dept. Radiology Shands Teaching Hospital, Gainesville, Fla. 32601

Filed Oct. 31, 1978, Ser. No. 956,404
Int. Cl.³ A61B 6/00, 10/00

U.S. Cl. 128-658

5 Claims



1. A needle sheath complex for use in locating, removing matter from, and inserting devices in human bodies and animal bodies consisting of:

- a probe cannula of tubular shape and consistent diameter having a small enough outer diameter to penetrate sensitive organs, arteries, and other body structures without doing substantial damage;
- a stylus slidably located within said probe cannula, said stylus having a sharp piercing end and being enough longer than said probe cannula to project slightly from the end of said probe cannula to provide a cutting end;
- an outer sheath of tubular shape slidably located over said probe cannula having an inside diameter large enough to remove matter from or insert devices in said bodies, said outer sheath being long enough to extend from the target in the body to the outside of the body and said probe cannula being at least twice that length;
- Means for locking said stylus within said probe cannula in position, said means being removable from said probe cannula so that said outer sheath may be removed from said probe cannula whereby said outer sheath may be replaced with an outer sheath which is more rigid, less rigid, or larger in diameter, or capable of procedures different from the outer sheath removed without removing said probe cannula from the body.

4,230,124

OUTPUT DISPLAY FOR B-SCAN ULTRASONOSCOPE

Norman C. Pickering, and Nathaniel R. Bronson, II, both of Southampton, N.Y., assignors to High Stoy Technological Corporation, Bohemia, N.Y.

Filed Sep. 1, 1978, Ser. No. 939,090
Int. Cl.³ G01S 9/66

U.S. Cl. 128-660

13 Claims

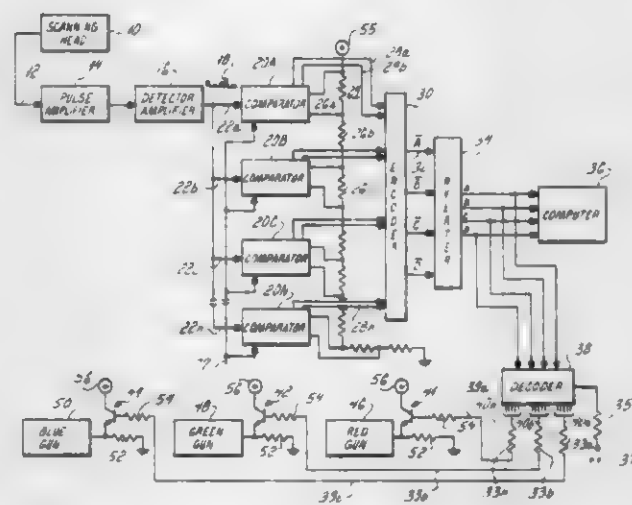
1. A B-scan ultrasonoscope for displaying a medium comprising:

- ultrasonic transmitter means for radiating ultrasonic signals into a medium;
- ultrasonic receiving means for receiving the echo-pulses

reflected from portions of the medium, and for providing electrical signals corresponding to the echo pulses, the amplitude of the electrical signals corresponding respectively to the intensity of the echo pulses;

conversion means for converting the amplitude of each electrical signal into a digital value, the digital values extending over a range of values corresponding to the intensity range of the echo pulses;

color display means capable of displaying colors ranging over a color scale;



decoding means for dividing said range of digital values into continuous incremental steps, and identifying the corresponding step of each digital value; and

coupling means for coupling alternate ones of said incremental steps to said color display means for causing each of said alternate steps to display a respective incremental discrete color from said color scale, with the remaining ones of the incremental steps providing a black output on the color display means, whereby the medium is displayed in colors outlined in bands of black to enhance visual acuity and identify surface interfaces within the medium.

4,230,125

METHOD AND APPARATUS FOR EFFECTING THE PROSPECTIVE FOREWARNING DIAGNOSIS OF SUDDEN BRAIN DEATH AND HEART DEATH AND OTHER BRAIN-HEART-BODY GROWTH MALADIES SUCH AS SCHIZOPHRENIA AND CANCER AND THE LIKE

Daniel E. Schneider, 61 E. 93rd St., New York, N.Y. 10028
Filed Jul. 9, 1979, Ser. No. 55,567

Int. Cl.³ A61B 5/04

U.S. Cl. 128-670

9 Claims

1. A method for effecting the prospective forewarning diagnosis of sudden brain or heart death or other brain-heart and growth malady in a person comprising the steps of:

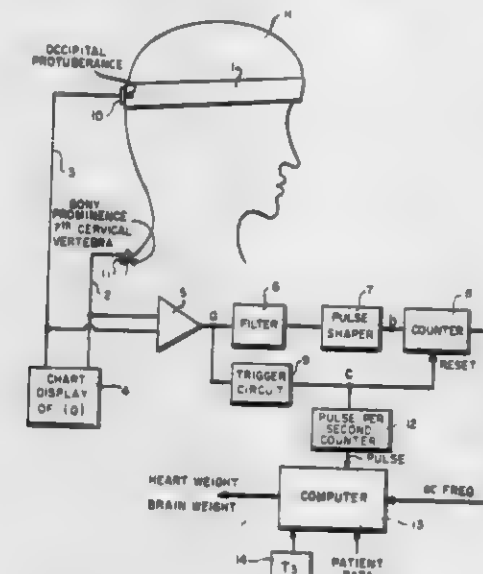
measuring the T-3 factor of the person;

measuring the alpha frequency of the brain of a person as a function of the person's pulse rate;

calculating the heart and brain weight as volume \times specific gravity as a function of the alpha frequency, pulse and the T-3 factor; and

comparing the measured T-3 factor and the calculated heart and brain weight as volume \times specific gravity to the normal values for the person's age;

whereby the deviation from the normal values is indicative of a prospective forewarning of sudden heart or brain



death or other brain-heart and growth malady and effects the forewarning diagnosis thereof.

4,230,126

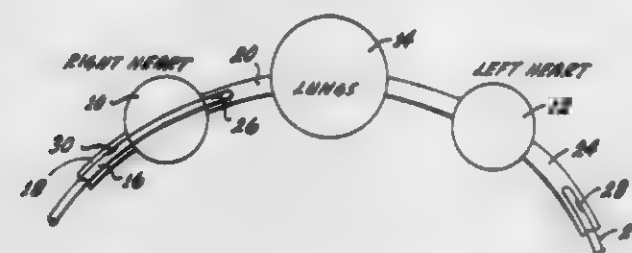
APPARATUS AND METHOD FOR MEASURING EXTRAVASCULAR LUNG WATER

Virgil B. Elings, P.O. Box 6075, Santa Barbara, Calif. 93111

Continuation-in-part of Ser. No. 940,114, Sep. 6, 1978, abandoned. This application Nov. 20, 1978, Ser. No. 962,308
Int. Cl.³ A61B 5/08

U.S. Cl. 128-671

44 Claims



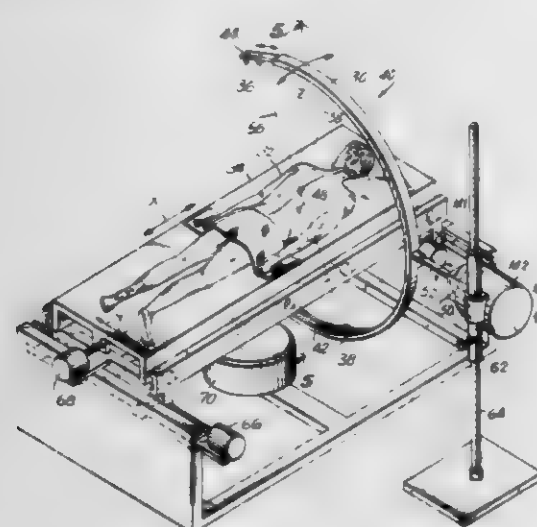
passageway means through said mounting means; and means for maintaining said stylet substantially sterile comprising normally closed slot means defined within said housing wall through which said means for manipulating said stylet projects; whereby said slot means is substantially closed, except within the immediate vicinity of said handle means, so as to maintain the interior of said housing substantially sterile.

4,230,129

RADIO FREQUENCY, ELECTROMAGNETIC RADIATION DEVICE HAVING ORBITAL MOUNT
Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y. 11209
Continuation-in-part of Ser. No. 643,661, Dec. 23, 1975, Pat. No. 3,991,770, which is a continuation-in-part of Ser. No. 595,094, Jul. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,102, Jan. 24, 1974, abandoned. This application Apr. 22, 1976, Ser. No. 679,431
Int. Cl. A61N 1/40

U.S. Cl. 128-804

5 Claims



1. Apparatus for treating tumors and the like in an animal host, comprising:

a yoke, an elongated member slidably mounted on said yoke for movement therealong on an arcuate path, a pair of radio frequency applicators mounted on said slidable member fixed in diametrically spaced relationship and directed toward each other, said applicators being adapted to be connected to a source of radio frequency electromagnetic power to set up a radio frequency electromagnetic field therebetween, means for moving said slidable member through said arcuate path with said applicators in said fixed spaced relationship to each other such that said applicators move through an arcuate path about an axis, and means for rotating said yoke whereby said applicators move through an arcuate path about a second axis intersecting said first named axis at a point at which a said tumor in an animal host is locatable.

4,230,130

COMBINE GRAIN LOSS SENSING
Richard W. Staiert, Geneseo, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Feb. 5, 1979, Ser. No. 8,996

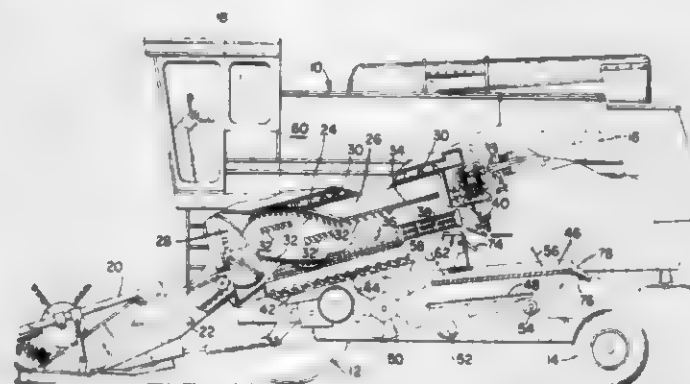
Int. Cl. A01F 12/00

U.S. Cl. 130-27 R

8 Claims

1. In an axial flow combine, the combination comprising: a generally cylindrical rotor casing having an open end for reception of crop material and further having a grate through which crop material may exit from the casing; a rotor journaled for rotation within said casing for threshing crop material introduced into said casing and impelling portions thereof out of said casing through said grate; a crop cleaning system including a chaffer sieve reciproca-

bly mounted beneath said grate for sifting crop material therethrough; and



a crop sensor mounted on said chaffer sieve for reciprocation therewith and disposed proximate to said grate for sensing flow of crop material therefrom.

4,230,131

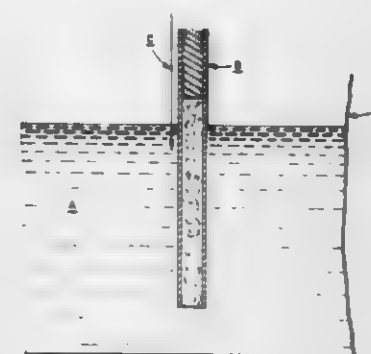
SELF-EXTINGUISHING CIGARETTES
Eli Simon, 7175 Little Harbor Dr., Huntington Beach, Calif. 92648

Filed Mar. 9, 1979, Ser. No. 11,129

Int. Cl. A24D 1/10

U.S. Cl. 131-4 A

4 Claims



1. A self-extinguishing cigarette comprising a wrapper enclosing a charge of tobacco wherein benzenephosphonic acid is added to the wrapper in an effective amount so as to cause said cigarette to self extinguish when lit an unattended.

4,230,132

CIGARETTE MAKING MACHINE

David Crisp, London, England, assignor to Rizla Limited, Glamorganshire, Wales

Filed Nov. 27, 1978, Ser. No. 963,993

Claims priority, application United Kingdom, Nov. 28, 1977, 49401/77

Int. Cl. A24C 5/02, 5/39, 5/42

U.S. Cl. 131-70

10 Claims

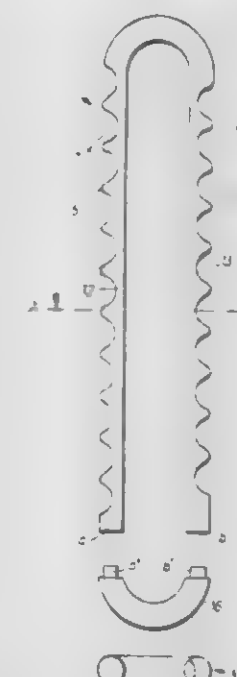
1. A cigarette making machine comprising:
a fixed member having a first semi-cylindrical surface;
a compression member having a second semi-cylindrical surface and arranged for translational movement between a first position in which said first and second surfaces are radially spaced and a second position in which said members abut, said first and second surfaces together forming a space in which a charge of tobacco is compressed into a cylindrical plug;
means defining a slot through which said charge of tobacco can be inserted, with the compression member in the first position, into a space between said first and second surfaces;
a nozzle communicating with an end of said cavity and adapted to receive the end of a preformed paper tube;
means for ejecting said cylindrical plug of compressed tobacco through said nozzle into said paper tube;

a lever pivotally secured to said compression member for translational movement together with said compression member between said first and second positions and for rotational movement relative to said compression member about a pivot point, said lever being operatively coupled to said ejection means for producing ejection of said plug of compressed tobacco in response to rotation of said lever;

restraining means cooperating with said lever to prevent rotational movement of said lever except when said compression member and said lever are in said second position; and

actuating means engaging said lever at a point spaced from

posite outer sides of the rods being undulated, the undulated outer side of one of the rods defining troughs staggered in the



longitudinal direction relative to the troughs defined by the undulated outer side of the other rod.

4,230,134

INSTRUMENT FOR USE IN HAIR CUTTING

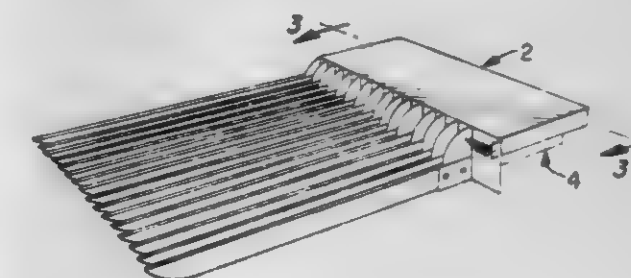
Edwin C. Pérez, R.F.D. 2 Buzon 198, Carretera 175, Rio Piedras, P.R. 00928

Filed Jul. 31, 1978, Ser. No. 928,277

Int. Cl. A45D 24/36

U.S. Cl. 132-45 R

3 Claims



1. A hand held device for use in holding the hair during a hair cutting procedure, comprising two elongated backing members positioned in surface-to-surface longitudinal sliding engagement, a plurality of spaced parallel teeth extending from each backing member in a direction transverse to the longitudinal lengths thereof, the teeth of the respective backing members being alternately positioned and all teeth lying in substantially the same plane, resilient means constantly urging the teeth of one of the backing members into engagement with those of the other backing member, and means for separating the teeth against the force of the resilient means.

4,230,133

HAIR CURLER

Bodo Aniszewski, Ahrensburger Weg 57, Hamburg, and Willy Ehmann, Friedrichstrasse 8a, Heidelberg, both of Fed. Rep. of Germany

Filed Apr. 25, 1978, Ser. No. 899,846

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719344; May 20, 1977, 2722976; Dec. 3, 1977, 2753987

Int. Cl. A45D 2/00

U.S. Cl. 132-40

4 Claims

1. A hair curler comprising two like rods extending in a longitudinal direction from one end to another end and a bridge connecting the one ends of the rods to form a hairpin-like shape, the rods being of rounded cross section in a plane transverse to the longitudinal direction and diametrically op-

4,230,135

SORTED COIN COUNTING APPARATUS

Nobuo Ueda, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1979, Ser. No. 665

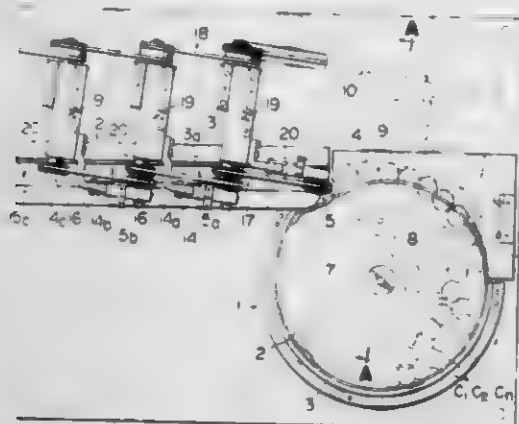
Int. Cl. G07D 3/02

U.S. Cl. 133-3 D

3 Claims

1. A sorted coin counting apparatus for counting the number of various kinds of such mixed coins falling into various selecting holes formed in the bottom of a coin selecting track, selectively in accordance with the kinds thereof, while being unidirectionally conveyed on said selecting track, comprising: a stacking cylinder for stacking therein the kind of coins which have fallen into the corresponding selecting hole; a counting

passage leading from said stacking cylinder; a counting conveyor belt mechanism for feeding the coins stacked in said stacking cylinder to said counting passage and for conveying the same on said counting passage; a counting gear shaped and positioned to be turned by increments by the coins conveyed



on said counting passage; and counting means made responsive to the rotation of said counting gear for indicating the number of coins, further comprising vibrating means for vibrating said stacking cylinder in a horizontal direction so that the coins may be stacked one on another in said stacking cylinder.

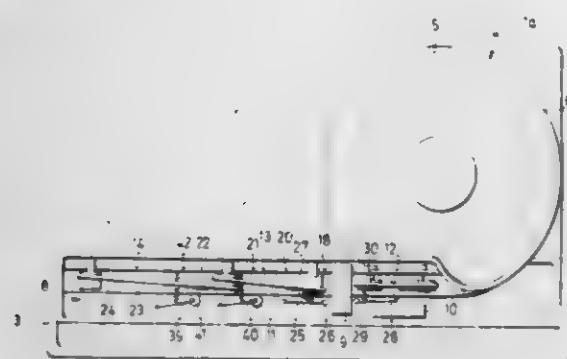
4,230,136

DEVICE FOR COUNTING AND SORTING COINS

Friedrich Heinrichs, Steinstrasse 66, D-5090 Leverkusen 3, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 799,095, May 20, 1977, abandoned. This application Mar. 29, 1979, Ser. No. 25,289
Int. Cl.³ G07D 3/02

U.S. Cl. 133—3 E



1. A device for counting and sorting coins of various sizes, comprising a supply container for unsorted coins; said supply container having a base in the form of a rotatable disc; a guide channel adjacent said supply container for guiding the coins therefrom individually and successively; said guide channel being provided with a continuous reference edge and having a base provided with openings which correspond in size to the size of the types of coin; a counter for detecting coins in the guide channel without contact; at least one lever mounted for pivotal movement about an axis running perpendicular to the direction of travel of the coins in the guide channel; and the said lever having a free end which is urged toward the reference edge by a spring.

4,230,137

APPARATUS AND METHOD FOR SLACK FLOW ELIMINATION IN A SLURRY PIPELINE

Thomas C. Aude, Orinda, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Apr. 24, 1978, Ser. No. 899,429
Int. Cl.³ G05D 7/03

U.S. Cl. 137—8

1. In a method for operating a pipeline traversing terrain at varying elevations including at least one relative high point of

the pipeline followed by a pipeline downgrade portion, the method including the steps of feeding batches of liquid with differing specific gravities into an upstream end of the pipeline, pressurizing the liquid sufficiently so as to flow it through the pipeline to the downstream end thereof and so that the flowing liquid substantially fills the entire cross-section of the pipeline, and withdrawing the liquid from the downstream end at substantially the same rate at which the liquid is fed into the upstream end of the pipeline, the improvement comprising the



step of preventing the liquid from flowing in the downgrade portion at a speed significantly greater than an average flow speed of the liquid throughout the full length of the pipeline by generating a sufficient back pressure in the liquid flowing in said downgrade portion when an interface between a first, downstream batch of liquid having a relatively lesser specific gravity and a second, upstream batch of liquid having a relatively larger specific gravity is in the vicinity of the downgrade portion so that the liquid flowing in said downgrade portion flows at the average flow speed.

4,230,138

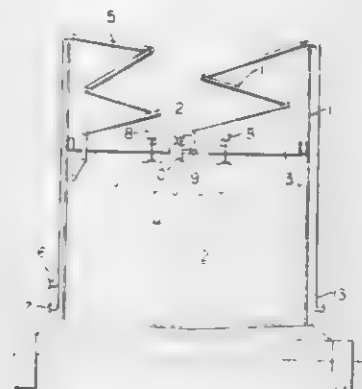
METHOD OF STORING HEAVY HYDROCARBON OIL AND VESSEL THEREFOR

Hiroshige Tanaka, Tokyo, Japan, assignor to Nihon Sekiyu Hanbai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1978, Ser. No. 886,906
Claims priority, application Japan, Mar. 31, 1977, 52-36590; May 12, 1977, 52-54786; Jan. 27, 1978, 53-8024
Int. Cl.³ F28D 1/06

U.S. Cl. 137—13

11 Claims



9. A method of storing materials including high temperature liquefiable hydrocarbon oils or mixtures of such oils with other materials comprising the steps of loading a liquid material including hydrocarbon oil having a pour point higher at least than the environmental temperature into a storage vessel in a state heated up to a temperature above its pour point, a heating means being embedded in an upper portion of the liquid material in the storage vessel, allowing the hydrocarbon oil to cool down to a temperature below the pour point and solidify in said vessel, storing the material in its solidified form, and heating the upper portion of the solidified material including the hydrocarbon oil up to a temperature above its pour point by the embedded heating means to prepare the vessel and heating means therein for a change in the amount of material stored in the vessel; said heating being carried out by said heating means which is mounted on and dependent from a floating body disposed in said vessel and supported by the stored materials,

and wherein said heating action occurs in a layer extending across said vessel.

4,230,139

DISC VALVE

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla. 73129

Filed Nov. 13, 1978, Ser. No. 959,719

Int. Cl.³ F16K 13/04

U.S. Cl. 137—74

15 Claims



1. In a valve including a valve body having a valve chamber therein containing a valve disc adapted to be turned between open and closed positions, and an annular groove in the valve body surrounding the valve chamber opposite the outer periphery of the disc when the disc is in the closed position, the improvement comprising:

a seat ring in said groove having a first portion relatively inflexible so as to maintain the seat ring in position within said groove and a second relatively flexible portion formed as one piece with the first portion and extending generally axially from the first portion, the second portion terminating in an unsupported free end such that the first portion of the seat ring provides support for one end of the second portion thereof and the other end of the second portion of the seat ring is unsupported against radial contraction, and wherein the second portion has an outer diameter less than the diameter of said groove to form a cavity around the second portion;

first means forming a first vent between the valve chamber at one side of said groove and said cavity at one end of the relatively flexible portion of the seat;

second means forming a second vent between the valve chamber at the opposite side of said groove and said cavity at the opposite end of the relatively flexible portion of the seat; and

elastomeric means in said cavity for closing the first vent when the second vent is exposed to the higher pressure and for closing the second vent when the first vent is exposed to the higher pressure so that the larger fluid pressure exerted at either side of the disc with the disc in a closed position is transmitted to said cavity to force the relatively flexible portion of the seat ring against the disc.

4,230,140

ENVIRONMENTAL FIRST STAGE SCUBA REGULATOR

Dennis L. Hart, Hacienda Heights, Calif., assignor to Under Sea Industries, Inc., Compton, Calif.

Filed Jan. 15, 1979, Ser. No. 3,400

Int. Cl.³ B63C 11/22

U.S. Cl. 137—81.2

6 Claims

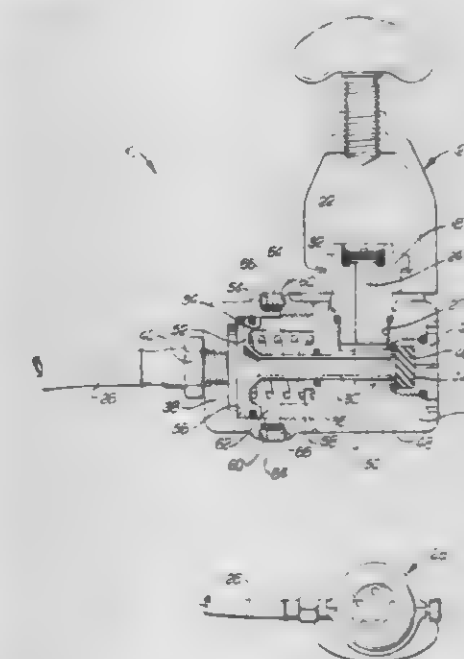
1. In a first stage regulator for use with a high pressure source of breathable gases and a second stage demand regulator:

- (a) a regulator body having a piston chamber;
- (b) a piston in the chamber and slidable therein, said piston dividing said chamber into two sides;
- (c) means forming an outlet from one side of the chamber;
- (d) valve means operable upon movement of the piston into said one side for opening a passage for breathable gases

from said high pressure source to said one side of said piston chamber and operable upon movement of the piston away from said one side for closing said passage;

(e) means forming an opening into the said other side of said piston chamber for exposing said other side of said piston chamber to ambient; the improvement which consists of:

(f) an inert barrier fluid in said other side of said piston chamber;



4,230,141

PULSATOR VALVES

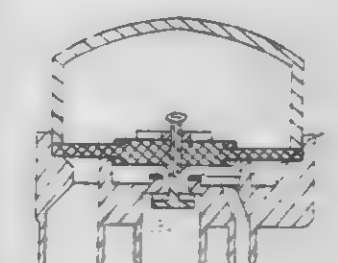
Evan M. Phillips, 26 Acacia Crescent, Hamilton, New Zealand

Filed Apr. 13, 1978, Ser. No. 896,145

Int. Cl.³ F16K 31/145, 11/02

U.S. Cl. 137—103

8 Claims



1. A milking machine pulsator valve comprising a valve body, a diaphragm mounted in said body for flexing movements when exposed on one surface thereof to pressure fluctuations, means for exposing said one surface of said diaphragm in use to a pressure alternating between atmospheric pressure and a lower pressure in pulse alternations, an annular valve seat separating said body into an outer chamber and an inner chamber, part of said diaphragm coacting with said annular valve seat to form an annular valve between said chambers, said outer chamber having an outer connection thereto and said inner chamber having a valve connection and a further connection thereto, said valve connection having an inner valve comprising an inner valve seat on an outer face of said valve connection and a cooperating valve member connected by a valve stem to said diaphragm to contact said inner valve seat and close said valve connection when said lower pressure is

initially applied to said one surface, said annular valve seat and said diaphragm being relatively positioned so that on application of said lower pressure to said one surface said diaphragm flexes off said annular valve after said co-operating valve member contacts said inner valve seat to close said inner valve and on application of atmospheric pressure to said one surface and application of a lower pressure to said inner chamber said diaphragm flexes to first close onto said annular valve seat while said inner valve is still closed sealing said further connection from both said outer connection and said valve connection and to then open said inner valve so that at least one of said annular valve and said inner valve being closed in all positions of said diaphragm to prevent direct flow of air between said outer connection and said valved connection.

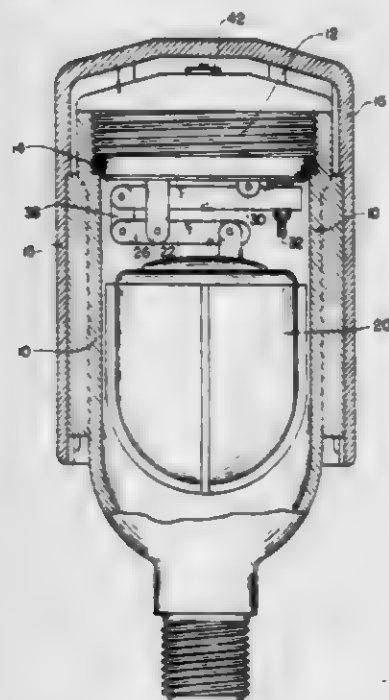
4,230,142

VENT/VACUUM BREAKER FLOAT VALVE ASSEMBLY
Myrl J. Saarem, Carson City, and Philip E. Parsons, Silver Springs, both of Nev., assignors to Richdel, Inc., Carson City, Nev.

Filed Dec. 13, 1978, Ser. No. 969,174
Int. Cl.³ F16K 31/24

U.S. Cl. 137-202

3 Claims



1. A valve assembly for venting gas contained in a pressurized liquid system during filling of the system and for breaking any tendency for vacuum effects to be created in the system during the draining of the liquid from the system, said assembly including: a valve body defining an inner chamber and adapted at one end to permit the valve assembly to be coupled to the system during use so that liquid in the system enters the inner chamber; a float assembly; a cap fitted into the other end of the valve body to enclose said other end and to support said float sub-assembly in said inner chamber; sealing means positioned between said cap and said other end of said body; said cap having a vent port extending into said inner chamber; a movable sealing member for selectively closing the vent port; a plurality of levers coupling the sealing member to the float sub-assembly to cause the sealing member to be forced against the vent in sealing relationship therewith as liquid enters the chamber; a spring loaded valve mounted in said cap in position to be closed when the inner chamber is pressurized but to open and break the vacuum effects of the chamber when the liquid therein is drained so as to reduce the internal pressure of the inner chamber; and a cover enclosing the cap and valve body to insulate the valve assembly and reduce the tendency of the liquid within the valve assembly to freeze.

4,230,143 CONTROL VALVE ARRANGEMENT FOR DENTAL EQUIPMENT

Heinrich Dettmann, Niederrhall, and Otto Mehrer, Öhringen, both of Fed. Rep. of Germany, assignors to Bürkert GmbH, Ingelfingen, Fed. Rep. of Germany

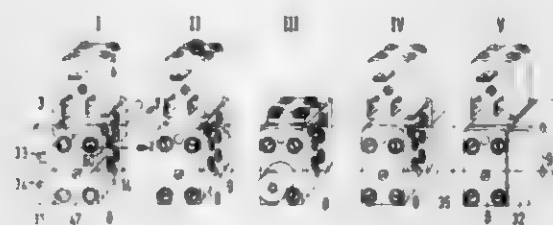
Filed Nov. 22, 1978, Ser. No. 962,821

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752938

Int. Cl.³ A61C 19/00

U.S. Cl. 137-270

10 Claims



1. A control valve arrangement for dental equipment, wherein at least two modular type control valve assemblies having at least three functional zones are combined into a control group disposed between end closure elements and arranged to be clamped to form an entity, wherein said modules are clamped together in one direction by longitudinal tie rods and have channels for control and supply media made up of channel sections having ports which are joined together, said channels arranged to extend in said one direction of said modules, further wherein said modules comprise substantially identical bodies having at least two sides with said ports disposed in said sides, which are arranged to be clamped together with each said module having said ports arranged symmetrically to a normal central plane (ZX) which extends in said one direction of clamping, each said module further being provided with a cross chamber terminating in a valve seat, said cross chamber having a geometrical axis (Y) which extends perpendicular to said one direction of clamping of said modules and is intersected at an intersection point at right angles by a central geometrical vertical axis (x) of said module, said module including a third geometrical axis (z) passing through said intersection point and extending at right angles to said geometrical axis (y) and said vertical axis (x), and that in the interior of each module there are provided further channel sections which extend between the ports disposed in said sides.

4,230,144

SEISMIC SUPPORT FOR PENDANTLY SUSPENDED BODY

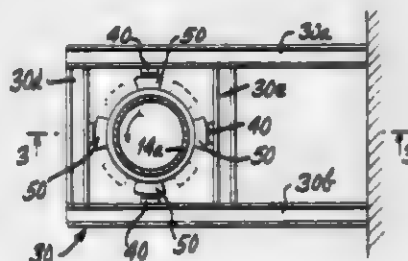
Dennis W. Chalmers, Charlotte, Vt., assignor to Hayward Tyler Pump Company, Chittenden, Vt.

Filed Jun. 6, 1979, Ser. No. 45,858

Int. Cl.³ F16L 3/00

U.S. Cl. 137-343

11 Claims



5. Apparatus for supporting a pendantly mounted sump pumping apparatus, or the like, against lateral or pendulous movement of its lower portion when submerged; in an excavation comprising:

means fixed on the wall of said excavation for surrounding the lower portion of the pumping apparatus;

a plurality of spaced abutting members fixed to and disposed about the periphery of said apparatus adjacent said surrounding means; and
a plurality of spaced abutment means mounted on said surrounding means for respectively abutting said abutting members with a small clearance fit to secure said apparatus against movement, the space between said abutting members and abutment means being such as to permit them to pass through their respective interstices.

4,230,145

FLUID CONTROL VALVE

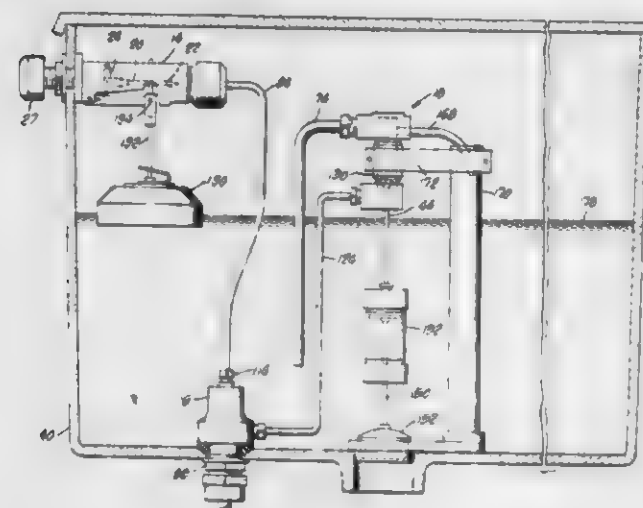
Edwin T. Badders, 3087 Riverside Dr., Pomona, Calif. 91766

Continuation-in-part of Ser. No. 745,673, Nov. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 553,590, Feb. 27, 1975, Pat. No. 3,994,029. This application Mar. 13, 1978, Ser. No. 885,593

Int. Cl.³ F16K 31/18, 33/00

U.S. Cl. 137-410

9 Claims



1. A valve assembly for selectively controlling fluid flow therethrough to rapidly create and discharge a pressure drop thereacross, said assembly comprising a valve support structure, a needle valve member carried by said valve support structure and having a tapered end portion, a chamber disposed in said valve support structure for the passage of fluid therethrough, valve inlet means disposed in said structure for communicating said chamber with a fluid supply, a valve stem slidably mounted within said chamber, an annular valve seat carried by said stem in axial alignment with said needle valve member for selective sealing engagement with the tapered end portion thereof, means for moving said needle valve member from said annular valve seat, means for moving said valve seat from said needle valve member upon said needle valve being moved from said valve seat, and means for moving said needle valve member toward said valve seat to reduce the flow of fluid through said chamber and cause said valve seat to be forced by said fluid flow into sealing engagement with said tapered end of said needle valve member.

3. The combination of claim 1 wherein said means for moving said needle valve comprises a control lever pivotally mounted on said valve housing and having a camming surface thereon, said needle valve being pivotally carried by said control lever such that rotation of said control lever causes said needle valve to undergo linear movement with respect to said valve seat and a follower rod adapted to abut said camming surface and impart rotational movement to said control lever.

5. The combination of claim 3 including a float member carried by said control lever for imparting rotational movement to said control lever causing said needle valve to move toward said valve seat upon said float being elevated with respect to said valve housing.

4,230,146

FUEL FEED SYSTEM

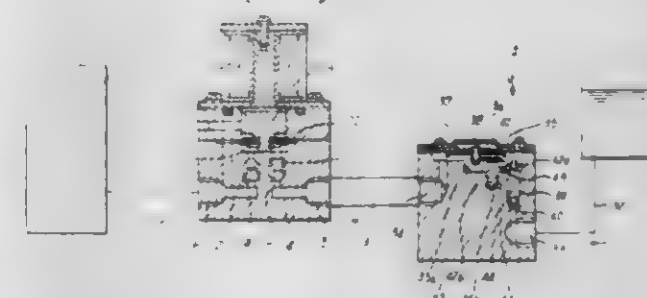
Hiroto Kobayashi, Kamakura, and Tsuneo Hashimoto, Shikujii, both of Japan, assignors to Walbro Far East, Inc., Kawasaki City, Japan

Filed Sep. 1, 1978, Ser. No. 938,766

Claims priority, application Japan, Sep. 10, 1977, 52-109053
Int. Cl.³ F16K 31/163

U.S. Cl. 137-494

5 Claims



1. In a liquid fuel system having a fuel tank, a fuel pump for supplying liquid fuel from the tank to a combustor, and a fuel control assembly between the tank and pump with the control assembly having a regulating chamber, an inlet to the chamber communicating with an outlet of the fuel tank, an outlet from the chamber communicating with an inlet of the pump, and a diaphragm in sealed relation with the chamber and having one face communicating with the atmosphere, and an opposed face communicating with the interior of the chamber and liquid fuel therein, the improvement in said control assembly comprising a valve between the chamber and the inlet to the chamber, said valve being movable to opened and closed positions to control the flow of fuel from the tank into the chamber and constructed and arranged to be urged toward its opened position by a force produced on the valve by fuel from the tank, means operably connecting the diaphragm with said valve and constructed and arranged so that atmospheric pressure acting on said diaphragm urges said valve toward its opened position and fuel in the chamber acting on said diaphragm urges said valve toward its closed position, and yieldable means constructed and arranged to urge said valve toward its closed position with sufficient force to overcome the bias of said diaphragm and fuel from the tank to close said valve when the pump is inoperative while permitting said valve to open when the pump is operating, due to a decrease in the force produced by the fuel in the chamber acting on said diaphragm.

4,230,147

CONSTANT FLOW VALVE

Jack J. Booth, William C. Branch, and Robert P. Kidd, all of Dallas, Tex., assignors to Booth, Inc., Carrollton, Tex.

Filed Feb. 8, 1978, Ser. No. 876,001

Int. Cl.³ G05D 7/01

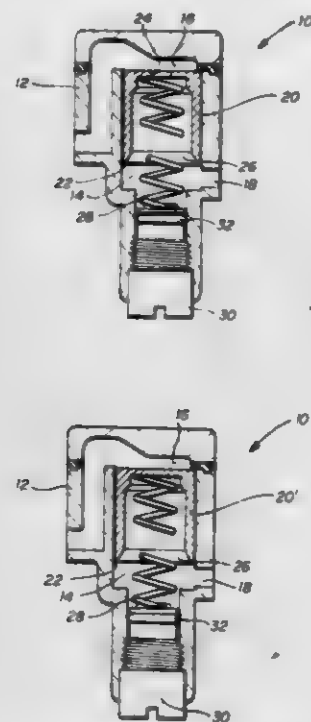
U.S. Cl. 137-504

8 Claims

1. A mechanism for automatically maintaining a uniform rate of fluid flow in a flow channel under varying pressures of a fluid source, comprising:

- (a) a chamber forming part of said flow channel having an inlet port and a single outlet port through the side wall of the chamber;
- (b) a piston disposed within said chamber sized to permit fluid flow around the periphery of the piston, said piston being axially displaceable within said chamber in response to the pressure of the fluid introduced into the chamber through the inlet port and radially displaceable by flow generated forces to maintain contact with the side wall of said chamber in the region of said single outlet port to

establish sliding contact of said piston over said outlet port to produce closure action of said outlet port; and



(c) spring means for yieldably opposing axial movement of said piston toward said outlet port.

4,230,148

CHECK-VALVE CONSTRUCTION

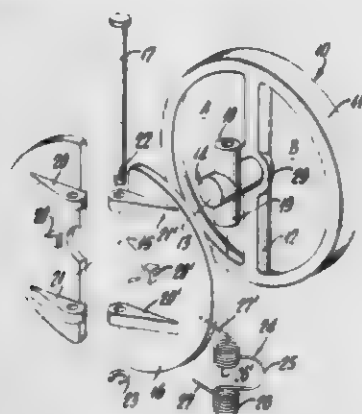
Francis H. Ogle, Jr., Chardon, Ohio, assignor to De Laval Turbine Inc., Princeton, N.J.

Filed Apr. 6, 1979, Ser. No. 27,845

Int. Cl.³ F16K 15/03

U.S. Cl. 137-512.1

11 Claims



1. A check-valve assembly, comprising an annular valve body with a fluid-flow passage bore extending therethrough between upstream and downstream ends of said body, said body having valve-seat formations including a seat post diametrically spanning the bore of said body and defining two opposed generally semicircular seat openings to share flow via said passage, hinge means carried by said post on an axis located downstream from said seat openings and parallel to said post, said hinge means having end clearance with the bore of said body, and two valve members hinged to said body via said hinge means, said valve members having a valveclosing position in coaction with said seat formations for blocking fluid flow in the upstream direction and said valve members having a valve-open position for passage of fluid flow in the downstream direction.

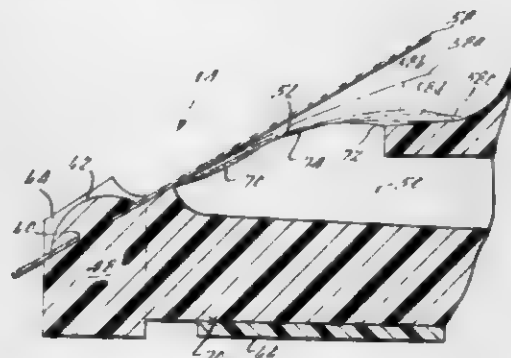
4,230,149
FLUID FLOW REGULATING VALVE AND SYSTEM
Roger P. Worthen, Farmington Hills, and Michael M. Walsh, Northville, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 22, 1978, Ser. No. 908,026

Int. Cl.³ F16K 17/24

U.S. Cl. 137-517

15 Claims



1. A fluid flow regulating valve comprising:
a body portion including a fluid passageway therethrough terminating in a contoured land, said land substantially disposed on a plane at an angle of less than 45 degrees from the direction of fluid flow and comprising a low pressure region, a high pressure region and an intermediate reed supporting region; and
compliant reed means overlaying said land and coating therewith to maintain a substantially constant fluid flow rate through said valve, said reed means operative to progressively conform to the contours of said land with increasing pressure drop thereacross, said reed means and low pressure region defining a first, distinct flow path therebetween, and said reed means and high pressure region defining a second, distinct flow path therebetween, spaced from said first flow path by the extent of said reed supporting region, a portion of said reed means conforming with said low pressure region to effect substantial closure of said first flow path at a first, relatively low predetermined pressure drop level and another portion of said reed means conforming with said high pressure region to effect at least partial closure of said second flow path at a second, relatively high predetermined pressure drop level.

4,230,150

TILTING DISC CHECK VALVE

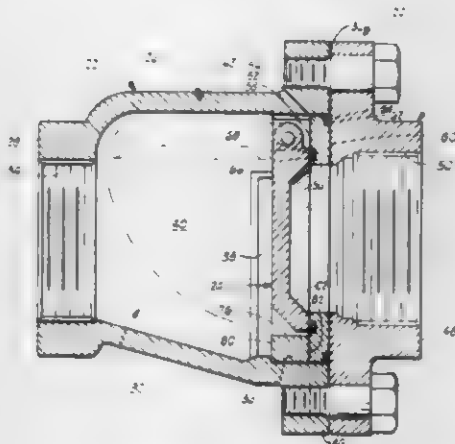
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla. 73129

Filed Feb. 22, 1979, Ser. No. 14,124

Int. Cl.³ F16K 15/03

U.S. Cl. 137-527

14 Claims



13. A valve assembly for a tilting disc check valve comprising:
a clapper assembly, comprising:

a clapper support member having the form of an interrupted circular ring whereby the clapper support member has a bore formed therethrough interruption extending from the clapper support member bore to an outer peripheral surface thereof and extending therebetween substantially symmetrically about a radius of the circular ring;

a clapper, sized to fit within the bore formed through the clapper support member; and
a tab, formed on the clapper and extending therefrom into the interruption in the clapper support member, the tab being pivotally connected to the clapper support member for pivotation of the clapper into and out of the bore formed through the clapper support member; and
a ring-shaped seal member adjoining one side of the clapper support member to engage the clapper when the clapper is pivoted into the bore formed through the clapper support member.

4,230,151

PINCH VALVE

Ulf R. S. Jonsson, Björkelund, Eggvall, Axvall, Sweden

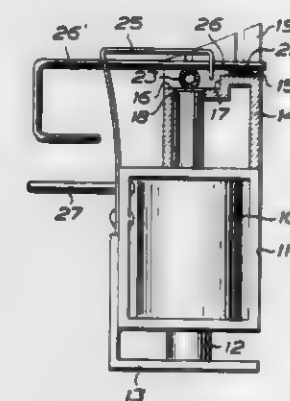
Division of Ser. No. 836,136, Sep. 23, 1977, abandoned. This

application Jan. 24, 1979, Ser. No. 6,235

Int. Cl.³ F16K 11/00

U.S. Cl. 137-595

6 Claims



1. A valve for controlling the flow of fluids through at least two conduits, comprising:

- (a) support means, including a base, for retaining said conduits in substantially parallel relationship, but at different distances from said base;
- (b) said support means including substantially parallel surfaces for supporting said conduits at said different distances from said base;
- (c) a wire which, in its normal position, pinches closed a first of said conduits against a first one of said surfaces, while retaining a second of said conduits, supported by a second one of said surfaces, in an open condition;
- (d) U-shaped leaf spring biasing means for urging said wire, to remain in its normal position, said wire passing through at least one leg thereof; and
- (e) actuating means for displacing said wire against the force of said spring biasing means, from its normal position to a second position, so as to pinch closed said second conduit between said wire and a portion of said second surface and subsequently open said first conduit.

4. The valve set forth in claim 1 wherein said wire comprises a portion extending beyond said at least one leg for manually displacing said wire from said normal position to said second position.

4,230,152

MULTI-FUNCTION CONTROL VALVE

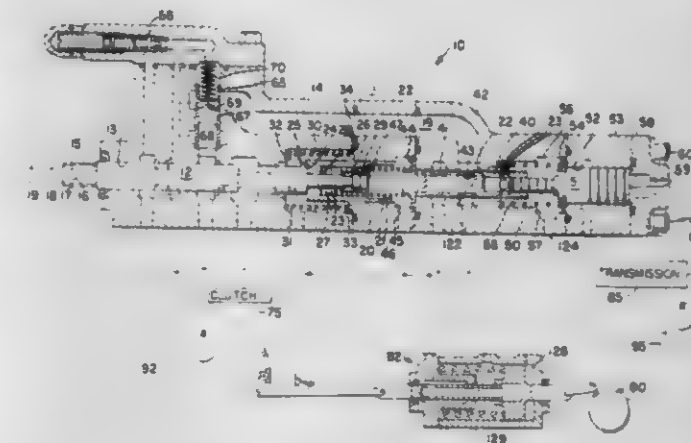
David F. Carl, and Gary A. Drone, both of Springfield, Ill., assignors to Flat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Jan. 16, 1978, Ser. No. 869,458

Int. Cl.³ F15B 13/07

U.S. Cl. 137-596

12 Claims



1. A multi-function control valve for controlling fluid flow and pressure in a fluid operated system comprising:
a valve body having a bore, an inlet port, an outlet port, at least one sump port and a service port normally in fluid communication with said sump port,
fluid pressure and flow regulating means carried by said valve body for regulating fluid pressure and flow there-through,
fluid pressure relief means carried by said valve body for limiting the pressure of fluid therein,
said valve body communicating said inlet port with said fluid pressure and flow regulating means, and communicating said fluid pressure relief means with said sump port,
a selectively positionable valve spool supported in the bore of said valve body for movement among positions to communicate said inlet port with said service port and to close communication between said service port and said sump port, and to close communication through said fluid pressure and flow regulating means and said sump port, and to communicate said inlet port with said fluid pressure relief means,
a fluid passageway formed in said valve body intersecting with said bore formed therein and connecting said fluid pressure and flow regulating means in fluid communication with said outlet port for passing fluid therethrough in a direction to apply a fluid pressure to control valve means,
control valve means supported in said bore for reciprocal movement in response to fluid pressure in said fluid passageway,
biasing means for applying a variable biasing force to said control valve means in a direction opposed to the direction of the force applied thereto by the fluid pressure in said fluid passageway, and
reaction means operatively connected between said valve spool and said biasing means for varying the biasing force of said biasing means in response to the positioning of said selectively positionable valve spool to control fluid pressure in said passageway.

4,230,153

BACK PRESSURE SYSTEM FOR SLURRY PIPELINE
Jay P. Chapman, Nampa, Id., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Nov. 7, 1977, Ser. No. 849,061

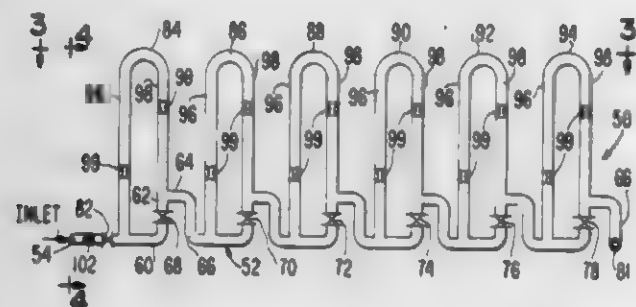
Int. Cl.³ F16K 11/22

U.S. Cl. 137-599

10 Claims

1. A back pressure system for a slurry pipeline comprising: a first pipe having a fluid inlet and a fluid outlet; a back pressure device for each of a number of spaced locations, respectively,

along said first pipe, each device including a generally inverted U-shaped second pipe having a pair of spaced, vertical sides and a pair of opposed open ends communicating with the first



pipe, each second pipe having means for providing an orifice choke therein; and a valve for each second pipe, respectively, each valve being across said first pipe between the ends of the respective second pipe.

4,230,154

COMBINED BALL AND THROTTLE VALVE

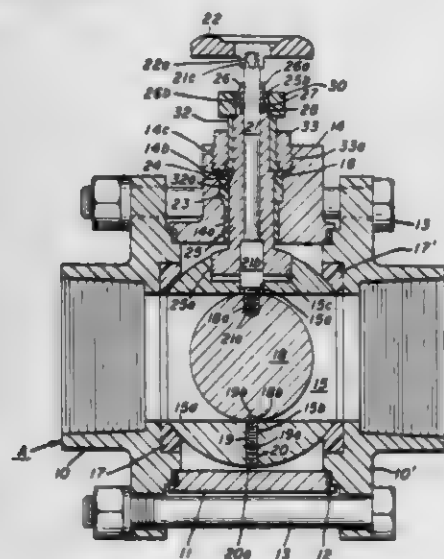
Adolphe W. Kalbfleisch, Box 64, Jeannette, Pa. 15644

Filed Dec. 15, 1978, Ser. No. 969,721

Int. Cl.³ F16K 43/00, 1/22

U.S. Cl. 137-614.17

5 Claims



1. An improved ball and throttle valve construction having a demountable housing assembly of interfitting body parts that define a through-extending fluid passageway therethrough which comprises, a ball valve having a fluid-flow bore open therethrough and being operatively positioned for rotative opening and closing movement within the fluid passageway, said ball having a latching recess portion in its outer wall, a side boss open through the housing assembly to said ball, a first stem operatively positioned to extend within said boss and having a latching spline at its inner end adapted to operatively engage within said latching recess portion, a second stem operatively extending co-axially along and outwardly from an outer end portion of said first stem and inwardly through said spline and the wall of said ball into said bore, a disc-like throttle valve element operatively extending across and within said bore for rotative movement therein, an inner end of said second stem being secured to said throttle valve element, said first and second stems having end portions projecting outwardly from said boss, operating means on said stems that are positioned outwardly of said boss for respectively turning them to rotate said ball within the passageway of the housing assembly and to rotate said throttle valve element within said bore, gland means operatively sealing said first and second stems within said boss, and detachable positioning means cooperating with the gland means for operatively retaining said first stem within said boss and second stem within the first stem enabling end-wise removal of said first stem from said boss and said second stem from said first stem, said first stem being of sleeve-like construction and having a central bore extending through said

latching spline, and said second stem extending along said central bore through the wall of and into said bore of said ball and having means for demountably securing said throttle valve element thereto.

4,230,155

TIMED ON-OFF SEQUENCE SHOWER VALVE

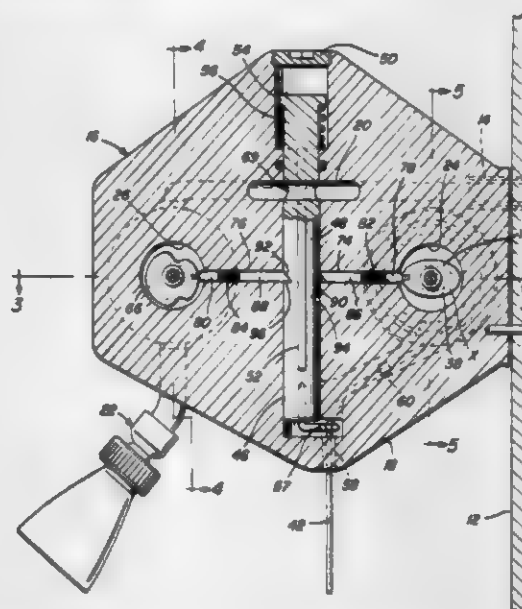
Joe G. Frye, Sr., and Teresa J. Frye, both of 7136 Deerwood Rd. N.W., Roanoke, Va. 24019

Filed May 8, 1979, Ser. No. 37,112

Int. Cl.³ B05B 1/30

U.S. Cl. 137-624.22

11 Claims



1. A shower valve assembly including a housing defining a water flow passage therethrough including inlet and outlet ends for communication with a water supply pipe and a shower head, a valve member supported from said housing for shifting between open and closed positions opening and closing said passage intermediate its opposite ends, said assembly including first and second latch means operative to releasably latch said valve member in said open and closed positions, respectively, water flow driven motor means operatively associated with said flow passage downstream from said valve member for releasing said first latch responsive to a predetermined amount of water flow through said passage, means yieldingly biasing said valve member toward said closed position, an actuator for said valve assembly shiftable between on and off positions, said valve assembly including selectively operable timer means, said timer means being operatively associated with said second latch for releasing the latter after a predetermined time subsequent to initial actuation of said timer means.

4,230,156

SOLENOID-ACTUATED VALVE

Virgil L. Frantz, Salem, Va., assignor to Graham-White Sales Corporation, Salem, Va.

Filed Oct. 17, 1978, Ser. No. 952,091

Int. Cl.³ F16K 11/04, 31/02

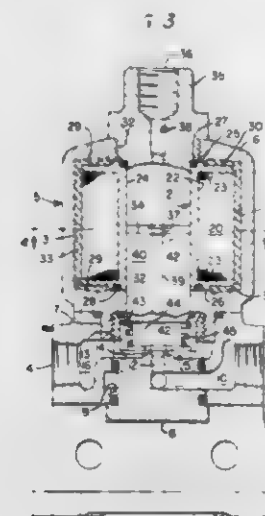
U.S. Cl. 137-625.5

6 Claims

1. A solenoid-actuated valve comprising a solenoid housing, a spool in said housing and having an axial bore, a plunger slidably reciprocable in and guided by said bore, a coil wound on said spool, and resin means in said housing and encapsulating said spool and coil, said resin means including inwardly flaring wedge means in said housing at opposite ends of said spool, and abutment means on and projecting beyond opposite ends of said spool and engaged by inner ends of said wedge

means, said wedge means acting against said housing and axially and laterally on said spool for wedging said spool and

the lip material in a state of compression and deformation substantially fills up said space.



therethrough said bore thereof against movement relative to said housing.

4,230,157

PIPE HAVING AN END PORTION, THE INNER WALL OF WHICH IS PROVIDED WITH A CIRCUMFERENTIAL GROOVE, IN WHICH A SEALING MEANS IS MOUNTED AND A PIPE JOINT CONSISTING OF THIS PIPE AND A SPIGOT END OF A SECOND PIPE INSERTED THEREIN
Christian Larsen, Gjerm; Per D. Frederiksen, Skanderborg, and Ebbe N. Sorensen, Højbjerg, all of Denmark, assignors to Warin B.V., Zwolle, Netherlands

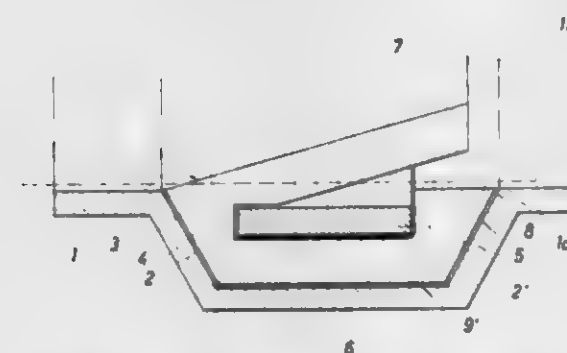
Filed Jan. 31, 1979, Ser. No. 8,035

Claims priority, application Denmark, Feb. 3, 1978, 502/78; Feb. 3, 1978, 503/78; Feb. 16, 1978, 705/78; Jun. 12, 1978, 2619/78; Jul. 14, 1978, 3173/78; Jan. 26, 1979, 347/79

Int. Cl.³ F16L 9/22; F16J 15/32; F16L 19/00

U.S. Cl. 138-155

19 Claims



1. A pipe joint comprising bell and spigot pipes, the inner wall of said bell pipe (1) having a circumferential groove (2) defining a space in which a sealing means (3) is mounted said sealing means (3) comprising a sealing ring (4) preferably of rubber, having a substantially V-shaped cross-section when undeformed consisting of at least two lip portions (6, 7), and a stiffening body (5) in cooperation with said sealing ring (4) for holding one of said lip portions in said groove (2), characterized in that the sealing means (3) has portions (6, 7, 52, 51, 51A, 51B, 51') providing a compression seal between said pipes, the lengths of the lip portions (6, 7) of said sealing ring (4) being such that both lip portions, when seen from the mouth of the bell pipe end portion, extend further into the pipe than said stiffening body (5), and in that the dimensions of said lip portions (6, 7) are such that there is more volume of lip material behind said stiffening body (5), when viewed from the mouth of the bell pipe end, than there is room for in the space defined by the circumferential groove space confined by the adjacent part of the bottom (2) of the groove, the exterior of the spigot pipe (1a) to be inserted into the bell pipe (1) the rearmost sidewall (2') of the groove and the stiffening body (5), so that

4,230,158

CLEANING MEANS FOR A WEAVING MACHINE
Otto Hintsch, Wallisellen, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

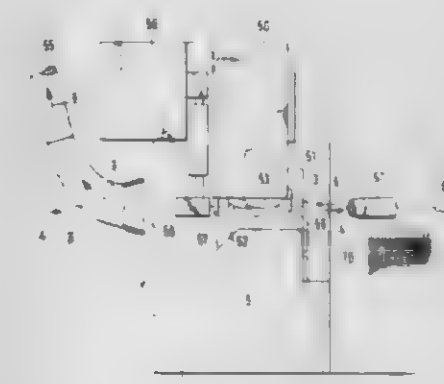
Filed Nov. 3, 1978, Ser. No. 957,088

Claims priority, application Switzerland, Nov. 7, 1977, 13504/77

Int. Cl.² D03J 1/04

U.S. Cl. 139-1 C

7 Claims



1. In combination with a weft picking mechanism of a weaving machine for picking a picking means in a predetermined picking direction into a shed formed in the weaving machine with a weft yarn trailing therefrom, said picking mechanism having a picking station wherein a weft yarn is engaged with the picking means, means for passing a stream of cleaning air over the weft yarn in said picking station in a direction opposite said predetermined picking direction and substantially parallel to the weft yarn to remove foreign matter from said picking mechanism.

4,230,159

HEDDLE FRAME

Yoichi Shimizu, Izumishi, Japan, assignor to Kabushiki Kaisha Maruyama Seisakusho, Sakaishi, Japan

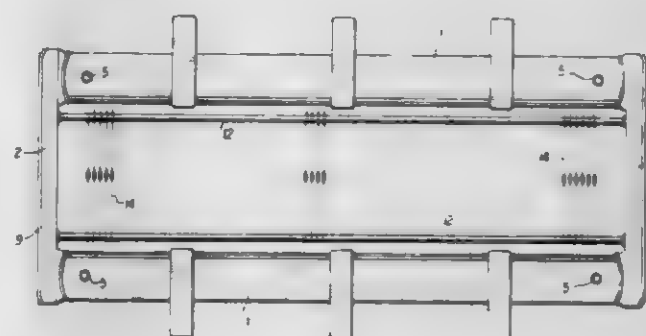
Filed Dec. 20, 1978, Ser. No. 971,557

Claims priority, application Japan, Jun. 21, 1978, 53-84033[U]

Int. Cl.² D03C 9/06

U.S. Cl. 139-91

5 Claims



1. A heddle frame comprising a pair of projections elongated respectively from an upper portion of an inner side of a side stay and a lower portion of said inner side of said side stay, and respectively inserted into an inner hollow end portion of a lateral beam; a pin freely rotatably connecting said lateral beam and said projection; the upper surface and the lower surface of said projection which respectively contacts the upper inner surface and the lower inner surface of said inner hollow end portion of said lateral beam being so made as to form a circular surface the center of which is on the axial horizontal center line of said pin.

4,230,160

ADJUSTABLE SUCK-BACK DEVICE FOR SANITARY PUMPS

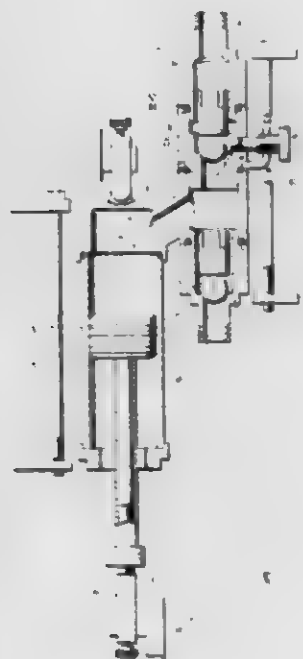
Lawrence W. Buckley, Baltimore, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

Filed Dec. 11, 1978, Ser. No. 968,261

Int. Cl.³ B65B 3/32; F04B 7/00

U.S. Cl. 141-116

19 Claims U.S. Cl. 141-302



1. A filling unit for filling containers with a predetermined amount of a product, comprising pump means including cylinder means, piston means slidable within said cylinder means and defining a variable pump space whose volume depends on the position of the piston means during its suction and discharge stroke, inlet valve means adapted to be connected with a supply of the product to be dispensed, outlet valve means adapted to be connected at its discharge side with a discharge nozzle, means providing a communication between said inlet and outlet valve means and said pump space, said inlet valve means including a movable member operable to close off the inlet side from said communication during the discharge stroke of said pump means, said outlet valve means including a movable valve member separate from the movable member of said inlet valve means and operable to close off the discharge side from said communication during the suction stroke of said piston means, and further means providing a suck-back effect between the discharge side of said outlet valve means and said communication by preventing complete closure of the valve member of said outlet valve means during the suction stroke of the piston means, said further means including a threaded adjusting member operable to engage said valve member in such a way that complete closure is prevented, characterized in that the further means forms a sanitary suck-back device and includes a support member on said outlet valve means provided with a threaded bore disposed external of and spaced from said outlet valve means whose axis extends generally transversely to the opening and closing movements of the valve member of said outlet valve means, said threaded member having a threaded portion and an unthreaded portion, said threaded portion being in threaded engagement only with said threaded bore in the support member while said unthreaded portion extends into an unthreaded bore provided in the outlet valve means to facilitate cleaning of the various parts thereof.

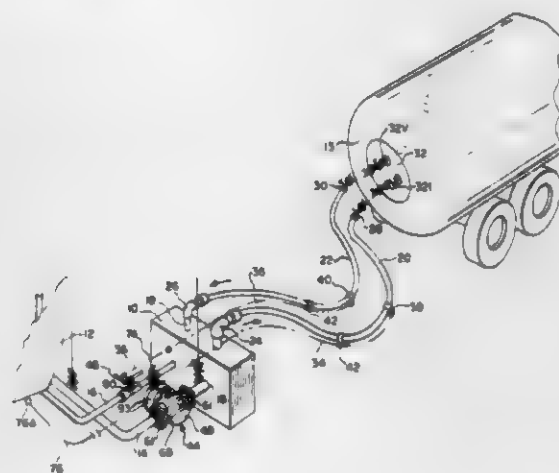
4,230,161

THERMAL MANUAL EMERGENCY SHUT OFF VALVE
Evans R. Billington, Glenview; Robert J. Batka, and Christ P. Korbilas, both of Chicago, Ill., assignors to Rego Company, Chicago, Ill.

Filed Oct. 13, 1978, Ser. No. 951,165

Int. Cl.³ B65B 3/26

9 Claims



1. A fluid transfer system for directing the transfer of fluid between a stationary fluid supply tank and a mobile fluid delivery tank and for stopping the transfer of fluid between the stationary fluid supply tank and the mobile fluid delivery tank in response to a predetermined emergency condition, said fluid transfer system comprising:

- (a) a rigid fluid transfer conduit connected to the stationary fluid supply tank;
- (b) a flexible fluid transfer conduit formed from elastic material and serially connected between said rigid fluid transfer conduit and the mobile fluid delivery tank;
- (c) flow check valve means mounted in said rigid fluid transfer conduit to close off the flow of fluid therethrough;
- (d) resilient means for urging said flow check valve means to a closed position;
- (e) manual means for opening said flow check valve means to a full-open position;
- (f) latch means for releasably holding said flow check valve means in said full-open position; and
- (g) emergency trip means for actuating said latch means to close said flow check valve means whenever said flexible fluid transfer conduit is stretched beyond a predetermined limit, said emergency trip means including a non-elastic elongated element having a first end connected to said latch means and a second end fixedly secured to a remote point on said flexible fluid transfer conduit such that said latch means is released by said non-elastic elongated element to close said flow check valve means whenever the distance between said latch means and said remote point is increased beyond a predetermined amount as a result of the stretching of said flexible fluid transfer conduit beyond said predetermined limit.

4,230,162

WOOD WORKING MACHINE

Robert M. Miller, Denver, Colo., assignor to Denver Wood Products Company, Denver, Colo.

Filed Dec. 28, 1978, Ser. No. 973,941

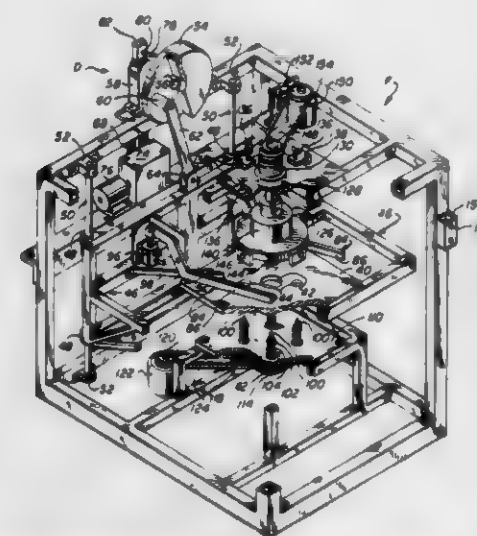
Int. Cl.³ B27C 9/04

U.S. Cl. 144-3 R

5 Claims

1. A machine for sequentially performing work operations on opposite sides of a work piece, said machine comprising: a vertically moveable work piece support; a clamping means on the work piece support for holding a work piece in position thereon; first wood working elements mounted below said support;

second wood working elements mounted above said support; drive means to reciprocatingly move said support from a rest position between said first and second elements up and down between said working elements for performing work operations sequentially on opposite sides of said work piece; a first solenoid to activate said clamping means; and



a switch means connected to the drive means to deactivate the clamping means after movement of said work piece support from said rest position to a lower position for working by said first wood working elements, back through said rest position to an upper position for working by said second wood working elements and back to said rest position, and to release the clamping means.

4,230,163

LOG-PLANING MACHINE

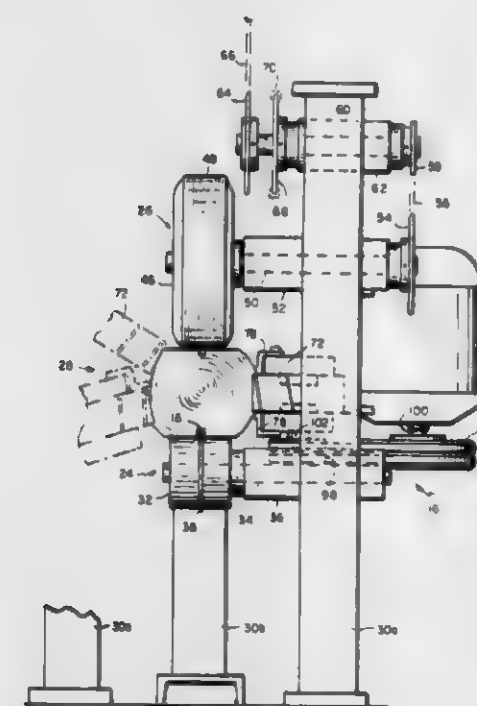
Edwin A. Bartoa, Colchester, Conn., assignor to Vermont Log Building, Inc., Hartland, Vt.

Filed Feb. 27, 1978, Ser. No. 881,361

Int. Cl.³ B27C 1/08

U.S. Cl. 144-116

39 Claims



1. The method of planing logs comprising supporting, guiding and moving a log along a predetermined rectilinear path in a substantially horizontal plane, supporting at least two cutters adjacent the path of movement of the log at different peripheral positions about the log and at longitudinally-spaced positions along the path of travel with one of the cutters preceding the other for rotation about their centers and arcuate movement toward and from the side of the log, moving the cutters

arcuately into engagement with the side of the log, yieldably supporting the cutters in engagement with the side of the log and, at said position of engagement, moving the one cutter transversely with respect to the path of movement of the log according to a predetermined pattern to form a cut of predetermined contour and depth and employing a pattern generated by the one cutter to effect movement of the other cutter transversely with respect to the path of movement of the log to reproduce the contour of the first cut at a different peripheral position on the surface of the log.

4,230,164

NESTED TEMPLATE SYSTEM FOR CUTTING ONE PIECE CLOSED FRAMES AND METHOD THEREFOR

John E. Mericle, 10528 Camino Palo Verde, Tucson, Ariz. 85715

Filed Feb. 12, 1979, Ser. No. 11,139

Int. Cl.³ B27C 5/10

U.S. Cl. 144-134 D

13 Claims



1. Apparatus for defining cuts to be made to obtain one piece frames from sheet material, said apparatus comprising in combination:

- (a) a plurality of concentric templates, each said template locating the interior and exterior perimeters and width of a one piece frame; and
- (b) means for securing each said template to the sheet material concentric with an adjacent one of said templates and spaced apart therefrom; whereby, said adjacent spaced apart templates define continuous bands of sheet material to be cut to obtain the one piece frames.

4,230,165

HYDROSTATIC DRIVE FOR LATHES

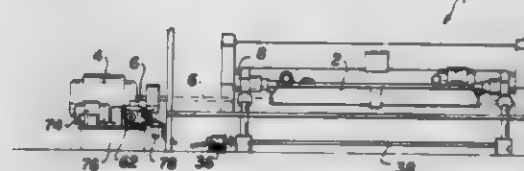
John E. Berryman, and John W. Metzner, both of Vancouver, Canada, assignors to P.S.I. Fluid Power Ltd., Vancouver, Canada

Filed Apr. 2, 1979, Ser. No. 26,324

Int. Cl.³ B27L 5/02

U.S. Cl. 144-209 R

11 Claims



1. A veneer lathe for peeling a log, comprising: a knife carriage; a mechanism for moving the carriage towards and away from the log; an electric motor for moving the carriage towards the log at a rate of speed related to the rotational speed of the log so as to peel a required thickness of veneer; a clutch for coupling the electric motor to the mechanism or disengaging the electric motor from the mechanism; a hydraulic motor connected to the mechanism for rapidly advancing the carriage towards the log or retracting the carriage from the log; and a by-pass valve which permits free rotation of the hydraulic motor when the clutch is engaged.

4,230,166

SKIITED NUT

Jacques Layellon, Paris, France, assignor to Simmonds, S.A., France

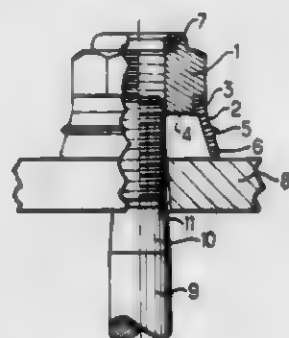
Filed Oct. 23, 1978, Ser. No. 953,578

Claims priority, application France, Dec. 14, 1977, 77 37693

Int. Cl.² F16B 39/26, 39/34

U.S. Cl. 151-7

3 Claims



1. In a skirted nut comprising a nut portion having a bearing face adapted to be applied onto the face of a member or part and a resilient skirt portion, the latter being substantially frusto-conical in shape and having a smaller base end region secured to the bearing face side of the nut portion and a larger base end region adapted to be applied onto the face of the member or part onto which the bearing face of the nut portion is adapted to be applied, the improvement comprising said skirt portion being formed by a wall having a substantially constant thickness throughout its height and including a rib integrally formed on the external surface of said skirt portion wall circularly extending around the entire periphery of said frusto-conical skirt portion at substantially the mid-portion of the height thereof, so as to be substantially within a plane which is perpendicular to the center axis of the frusto-conical skirt portion, said rib being substantially triangular in cross-section, whereby said skirt portion is prevented from turning upwardly and assuming an upwardly turned configuration during the threading of said nut portion as the bearing face of the nut portion moves toward the face of the member or part.

4,230,167

SNOW CHAIN BRACKET FOR VEHICLE WHEEL

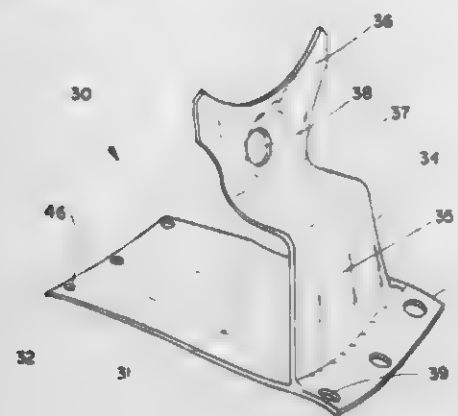
Earl D. Carver, 740 Alexander St., Greenwood, Ind. 46142

Filed Jan. 29, 1979, Ser. No. 7,364

Int. Cl.³ B60C 27/00

U.S. Cl. 152-233

10 Claims



1. A bracket for mounting snow chains to a vehicle wheel having a rim and attached spider comprising: a first wall with opposite end portions and extendable through said wheel between said rim and spider to position said end portions on opposite sides of said wheel; fastening means including fasteners on said opposite end portions operable to releasably engage and hold a snow chain extending radially around said wheel; and a second wall having a proximal end portion, an intermedi-

ate portion, and a distal end portion with said proximal end portion connected to said first wall adjacent one of said end portions, said second wall extends at said proximal end portion of said first wall toward said distal end portion which is joined thereto by said intermediate portion, said distal end portion includes a lug bolt hole and a pair of lug-engaging corner portions with stop surfaces to cooperatively limit relative motion of said second wall relative to the wheel.

4,230,168

POLYURETHANE TIRE FILLING MATERIAL WITH PLASTICIZER INCORPORATED THEREIN

Hiroshi Kaneda, Murayama; Yoji Watabe, Akikawa; Akio Souma, Murayama; Yasuyuki Ura; Michio Ishii, both of Kodaira, and Shiro Anzai, Murayama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,503

Claims priority, application Japan, Nov. 7, 1977, 52/132587

Int. Cl.³ B60C 17/00, 1/00; C08K 5/02, 5/10

U.S. Cl. 152-310

6 Claims

1. A tire filled with elastomeric material having high resilience, the material being produced by curing a mixture of (a) a polyoxypropylene polyol having an OH equivalent molecular weight of 900-1,800 and a functionality of 2-4, (b) a polyisocyanate, and (c) a chlorinated paraffin or dialkyl phthalate plasticizer miscible with the polyoxypropylene polyol in the presence of a catalyst where the equivalent ratio (NCO/OH) of isocyanate groups in the component (b) to hydroxyl groups in the component (a) is from 0.8-2.0 and the amount of the component (c) is 10-200 parts by weight per 100 parts by weight of the component (a).

4,230,169

NONREINFORCED TIRE HAVING STRENGTHENED ZONES

Jacques Bolleas, Clermont-Ferrand, and Albert Mathevet, Chamalieres, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

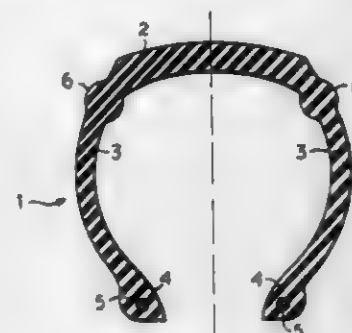
Continuation of Ser. No. 796,176, May 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 693,969, Jun. 7, 1976, abandoned. This application Mar. 5, 1979, Ser. No. 17,546

Claims priority, application France, Jun. 12, 1975, 75 18483

Int. Cl.³ B60C 9/00, 13/00

U.S. Cl. 152-353 R

5 Claims



1. A tire of elastic material having a tread extended on both sides by a shoulder and a sidewall terminating in a bead, said tire being without reinforcement in the tread and in the sidewalls, characterized by the fact that between each shoulder and the corresponding sidewall the tire has a zone whose rigidity in the circumferential direction is higher than the rigidity of the adjacent shoulder and the adjacent sidewall, said zone comprising an annular bulge.

4,230,170

APPARATUS FOR FITTING AND REMOVING AN AUTOMOBILE TIRE

Victor Duquesne, Quellinstraat 42, 2000 Antwerpen, Belgium

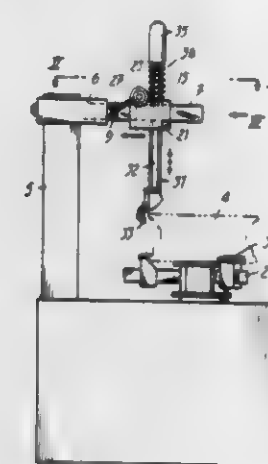
Filed Apr. 7, 1977, Ser. No. 785,478

Claims priority, application Belgium, Mar. 14, 1977, 255731

Int. Cl.³ B60C 25/06

U.S. Cl. 157-1.24

9 Claims



1. Apparatus, for fitting and removing an automobile tire, comprising:

- (i) a frame
- (ii) a table rotatably mounted on said frame and including jaws radially movable for gripping a wheel
- (iii) means for rotating said table
- (iv) means for radially moving said jaws
- (v) a column extending vertically from said frame
- (vi) a horizontal arm carried by said column and movable horizontally along its own longitudinal axis with respect to said column,
- (vii) a carriage movable along the arm
- (viii) a vertical bar carried by and vertically adjustable with respect to said carriage, said bar being provided with a tool for fitting and removal of a tire, and
- (ix) fixing means acting between the carriage and the arm, and between the vertical bar and the carriage, for simultaneously locking the carriage to the arm and locking the vertical bar to the carriage such that the tool becomes disposed, in two directions, at a predetermined distance from a wheel on said table, said fixing means comprising first and second relatively movable blocks included in said carriage and disposed one at each side of the arm and each defining a longitudinal guide for the arm, the guide defined by one said block being formed to provide a clearance in height of the block with respect to the arm, said one block having a vertical opening receiving the bar in contact with the arm, a shaft connecting the two blocks, and actuating means which serve to simultaneously draw the two blocks together to press the bar against the arm, and to raise said one block with respect to the other block for locking said one block to the arm with the bar in a predetermined position with respect to the arm.

4,230,171

DRAPERY PLEATING APPARATUS AND METHOD

George H. Baker, Sr., R.R. #1, Dunlap, Ill. 61525

Filed Feb. 28, 1979, Ser. No. 16,282

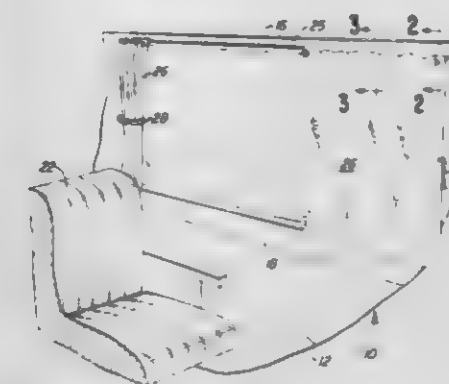
Int. Cl.³ A47H 5/00; E06B 3/94

U.S. Cl. 160-84 R

20 Claims

1. A drapery made of a sheet of material, a backing strip, a plurality of stiffening members attached to said backing strip in spaced apart relationship, a fastener extending from some of said stiffening members, said backing strip and plural stiffening

members being secured to said sheet of material near at least the upper edge portion thereof with said fasteners projecting



rearwardly therefrom, and brake means attached to at least one stiffening member.

4,230,172

MOLDING APPARATUS WITH A COMPRESSED AIR SQUEEZE PLATE

Nagato Uzaki, Toyokawa; Yasutaro Kawamura, Okazaki; Kimikazu Kaneto, Toyokawa, and Masaharu Hasizume, Chiryu, all of Japan, assignors to Sintokogio Ltd., Nagoya, Japan

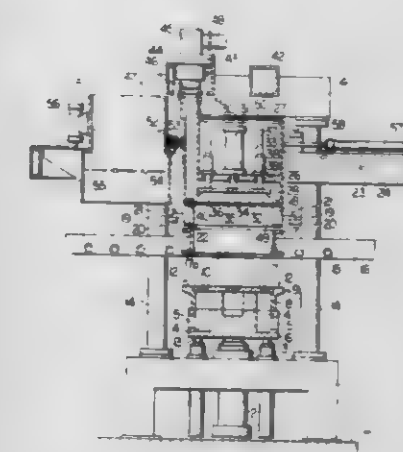
Filed Jul. 26, 1979, Ser. No. 60,861

Claims priority, application Japan, Mar. 8, 1979, 54-27561

Int. Cl.³ B22C 15/28

U.S. Cl. 164-192

10 Claims



1. A molding apparatus comprising: a pattern plate provided at desired portions thereof with vent bores; means for moving a mold flask to a position just above said pattern plate; an up-set frame disposed at a position above said mold flask just above said pattern plate, said up-set frame being movable up and down; a box-shaped cover member having a lower end opening and arranged to displaceably cover the upper opening of said up-set frame; means for lifting and lowering said pattern plate up and down relative to said cover member so that said up-set frame and said mold flask brought to said position may be cramped between said cover member and said pattern plate; an imperforate squeeze plate disposed in said cover member and movable up into and down and out of said cover member through said lower opening thereof, whereby said squeeze plate may be moved down into and up out of said up-set frame; and means for supplying a compressed air into the cramped mold flask through said lower end opening of said cover member and through said up-set frame when said squeeze plate has been retracted into said cover member, said means also adapted for supplying a compressed air onto said

squeeze plate to impart a squeezing power to said squeeze plate when said squeeze plate has been moved down into said up-set frame.

4,230,173

CLOSELY COUPLED TWO PHASE HEAT EXCHANGER

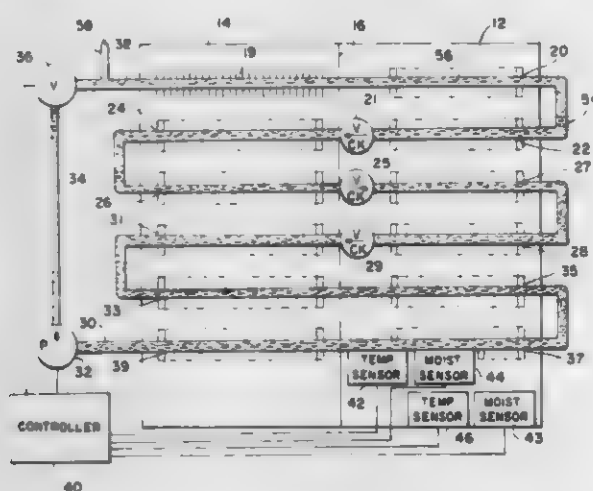
George Y. Eastman, Lancaster, and Donald M. Ernst, Leola, both of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Sep. 5, 1978, Ser. No. 939,802

Int. Cl.³ F28D 15/00

U.S. Cl. 165—1

13 Claims



1. A method of exchanging heat between two gases comprising:

- moving a hotter gas through a first enclosure;
- moving a cooler gas through a second enclosure which is isolated from the first enclosure;
- partially filling an enclosed, closed loop path, from which non-condensable gases have been removed and which passes alternately, at least two times, between the hotter and cooler gases and includes heat exchanger means to transfer heat to and from both gases, with an intermediate fluid selected to vaporize at temperatures between the temperatures of the two gases; and
- circulating said intermediate fluid within said enclosed, closed loop path, thereby transferring heat from the hotter gas to the cooler gas by utilizing the latent heat of vaporization of the intermediate fluid.

4,230,174

DAMPER ASSEMBLY

Marcus P. Esbank, P.O. Box 7576, Longview, Tex. 75601

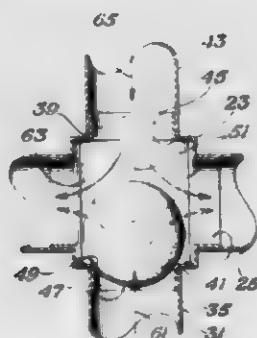
Continuation of Ser. No. 778,740, Mar. 17, 1977, abandoned.

This application Oct. 20, 1978, Ser. No. 953,266

Int. Cl.³ F25B 29/00

U.S. Cl. 165—27

5 Claims



1. In a heating and cooling system for a mobile home and the like, including a system of air ducts extending about the mobile home and communicating with the mobile home interior, a heating unit in the mobile home and including a hot air exhaust, a cooling unit in the mobile home and including a cold air exhaust; the improvement comprising:

- a. a plenum chamber including:
- i. a hot air inlet aperture in a first wall portion and con-

nected in communication with said hot air exhaust of said heating unit;

- ii. a cold air inlet aperture in a second wall portion opposite the said first wall portion and connected in communication with said cold air exhaust of said cooling unit; and
- iii. outlet openings in side wall portions and connected in communication with the system of air ducts;
- b. a smooth circular hot air valve seat disposed in fluid tight relationship with said hot air inlet;
- c. a smooth circular cold air valve seat disposed in fluid tight relationship with said cold air inlet;
- d. a large hollow, lightweight poppet disposed intermediate said hot and cold air valve seats and having respective smooth circular seat engaging means for sealingly fitting respective said hot and cold air valve seats, said large hollow poppet being moveable responsive to respective directions of air flow to and away from said hot and cold air valve seats so as to place at any respective flow of air only one of said seat engaging means sealingly against only one of said hot and cold air valve seats to permit flow from the other and opposite of said cold and hot air valve seats and to block reverse flow through said one of said hot and cold air valve seats; and
- e. guide means for freely guiding said hollow poppet between said hot and cold air seats for insuring properly and sealing seating of the respective seats and seat engaging means.

4,230,175

HEAT EXCHANGER ELEMENT

Dieter Dasselbeck, Bad Soden am Taunus; Eduard Hilscher, Idstein, and Klaus Speier, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

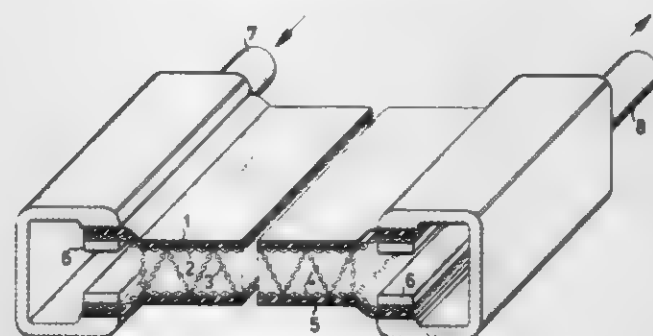
Filed Feb. 13, 1978, Ser. No. 877,285

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 27044543; Apr. 2, 1977, 27149015

Int. Cl.³ F28F 3/12

U.S. Cl. 165—46

7 Claims



- 1. A heat exchanger element comprising a flexible face fabric coated on one side with an impervious material, a flexible back fabric coated on one side with a liquid impervious material spaced from said face fabric with the uncoated sides thereof facing each other; a binder of flexible material positioned between and secured to the uncoated sides of said face and back fabrics; said face and back fabrics being formed of textile fabrics and said binder material being formed of binder filaments positioned between and secured to the uncoated sides of said textile fabrics to maintain said textile fabrics in spaced relation to each other; a feeder duct and a discharge duct for heat exchange medium communicating with the space between said face and back fabrics whereby said heat exchange medium is adapted to flow between said coated fabrics between said binder filaments.

4,230,176

FLOATING RADIATOR TANK TOP

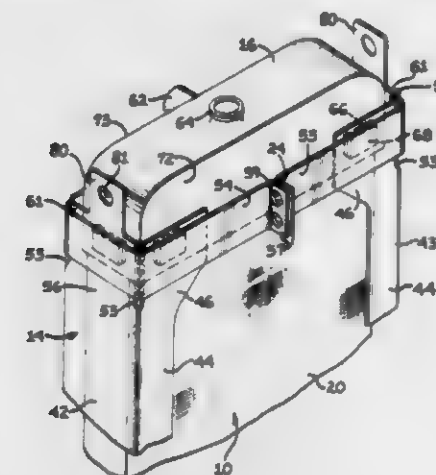
Donald R. Crews, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 24, 1978, Ser. No. 899,769

Int. Cl.³ F28F 9/00; F28D 1/00

U.S. Cl. 165—67

8 Claims



- 1. A unit core radiator having a bottom tank, a top tank, and a heat exchange core extending between said bottom tank and said top tank, a support on which said bottom tank is carried, side channel supports attached to said support and extending upwardly adjacent said heat exchange core and projecting in overlapping relationship to said top tank, low friction means carried by said top tank in contact with said overlapping side support for supporting said top tank relative to said side channel supports, means encircling said side channel supports and said top tank and means on said encircling means for tightening said encircling means to urge said side supports into frictional engagement with said low friction means on said top tank whereby passing heated fluid through said radiator expands said heat exchange core to force the top tank and the low friction means on the top tank to move longitudinally relative to the side support.

4,230,177

HEAT EXCHANGE WITH SEPARATELY SUPPORTED AND SEPARATELY REMOVABLE TUBULAR COILS

Karl-Erik Berkestad, Linköping, Sweden, assignor to Stal-Laval Apparät AB, Sweden

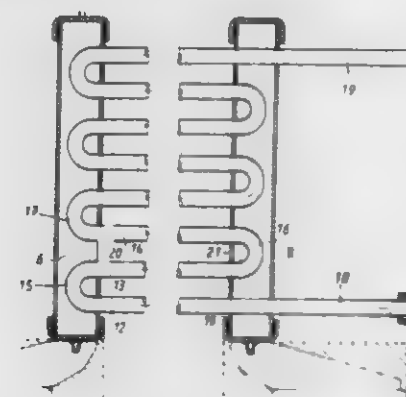
Filed Nov. 13, 1978, Ser. No. 960,242

Claims priority, application Sweden, Nov. 16, 1977, 7712575

Int. Cl.³ F28F 9/00

U.S. Cl. 165—67

15 Claims



- 1. A component heat exchanger which can be easily disassembled and reassembled to replace defective portions thereof, said heat exchanger comprising a multiplicity of individual sections positioned in side-by-side relationship, each individual section including two spaced apart elongated supporting members and a tubular coil supported therebetween, the side-by-side positioned individual sections thus forming two spaced apart sets of side-by-side positioned elongated supporting

members, each said elongated supporting member including a wall facing the corresponding supporting member of the individual section, said facing wall of each supporting member including spaced apart openings positioned in the longitudinal direction thereof, said tubular coil comprising a multiplicity of vertical spaced apart horizontal segments and interconnecting bent segments, said horizontal segments being positioned to extend through said openings in said facing walls of said supporting members so as to be supported by said supporting members, and wherein said individual sections are fixedly positioned in side-by-side relationship by separate clamping means which separately clamp together the elongated supporting members which form said two sets of elongated supporting members.

4,230,178

HEAT EXCHANGER WITH PUMP

Antonius M. M. Braat, Roosendaal, and Harry Lagerwerf, Rotterdam, both of Netherlands, assignors to B. V. Neratoom, Netherlands

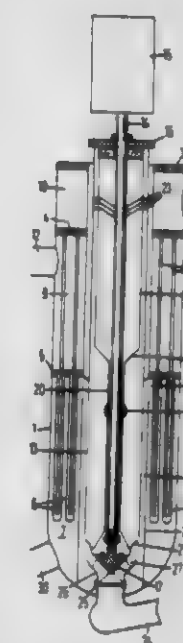
Filed May 16, 1979, Ser. No. 39,363

Claims priority, application Netherlands, May 19, 1978, 7805467

Int. Cl.³ F28D 7/12; F28F 13/12

U.S. Cl. 165—76

5 Claims



- 1. A heat exchanger, comprising a casing, a cylindrical inner jacket arranged centrally in said casing, an assembly of tubes of the bayonet type arranged as an annular bank around the cylindrical jacket in said casing, a supply opening for a first medium in the wall of said casing, a discharge opening for said first medium in the wall of said casing, means for conducting the first medium through said tubes from said supply opening to said discharge opening, a supply opening for a second medium in the wall of the casing, a discharge opening for said second medium in the wall of the casing, a pump impeller arranged centrally at the bottom of said casing for conducting said second medium from said supply opening thereof around said tubes to said discharge opening thereof, a pump shaft connected to said impeller and projecting upwardly inside said cylindrical inner jacket, and a motor disposed in situ for driving said pump shaft above said casing.

4,230,179

PLATE TYPE CONDENSERS

Haruo Uehara, Saga, and Michizo Miyoshi, Yokohama, both of Japan, assignors to Haruo Uehara and Tokyo Shibaura Denki Kabushiki Kaisha, both of Japan

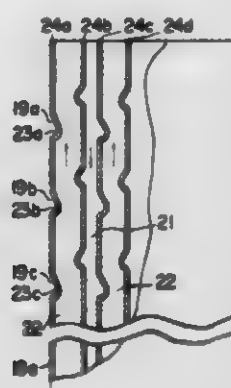
Continuation of Ser. No. 809,766, Jun. 24, 1977, abandoned.

This application Jul. 9, 1979, Ser. No. 55,779

Int. Cl.³ F28B 9/08

U.S. Cl. 165—113

6 Claims



1. In a plate type condenser of the type wherein a plurality of spaced metal plates are arranged to define a plurality of passages therebetween and heated medium to be condensed and medium to be heated thereby are passed through said passages in the opposite directions, the improvement which comprises a primary condensation section including a plurality of condensation elements and a plurality of condensate discharge grooves formed in said metal plate and extending along respective condensation elements and inclined with respect to said passages, said condensate discharge grooves being spaced from each other in the direction of flow of said heated medium and said medium to be heated by flat portions of said metal plates which do not protrude into the passage passing said medium to be heated, said condensate discharge grooves having a cross-sectional configuration which only protrudes into the passage passing said medium to be heated, and a secondary condensation section positioned on the downstream side of said primary condensation section for condensing the heated medium not condensed by said primary condensation section.

4,230,180

ISOLATING PACKER UNITS IN GEOLOGICAL AND GEOPHYSICAL MEASURING CASINGS

Franklin D. Patton, West Vancouver, and James D. McFarlane, Vancouver, both of Canada, assignors to Westbay Instruments Ltd., West Vancouver, Canada

Filed Nov. 13, 1978, Ser. No. 959,843

Int. Cl.² E21B 47/00, 33/124

U.S. Cl. 166—185

11 Claims

1. An isolating packer unit in a geological and geophysical measuring casing made up of a plurality of said units at different levels and through which can be moved instruments for taking measurements and samples in wells or bore holes at said different levels, each isolating packer unit comprising:

axially aligned and spaced measuring casings,

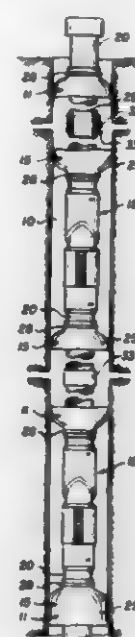
a coupler tube connected at opposite ends to ends of the casings to interconnect the casings, said casings and tube forming a common passageway through which an instrument can be moved to take measurements and samples,

a measuring port in the coupler tube permitting communication between the interior and exterior thereof,

a valve normally closing the measuring port and operable from within the tube by said instrument to open said port, an elongate elastic packer tube mounted on and concentric with each casing, said each casing extending through its packer tube and beyond the ends thereof,

securing means fastening the ends of each packer tube to the casing extending through the latter packing tube, and means for directing fluid from the top of the wall or bore hole in which the packer unit is located into both of said

packer tubes to expand the packer tubes to engage the wall of said well or bore hole to isolate the measuring port



of the coupler tube from the portions of the well or bore hole above and below the packer units.

4,230,181

IN SITU METHOD OF PROCESSING BITUMINOUS COAL

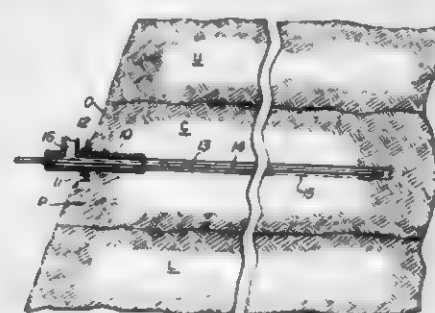
James R. Pennington, 1127 Oak Hills Way, Salt Lake City, Utah 84108

Filed Aug. 31, 1978, Ser. No. 938,420

Int. Cl.² E21B 43/24, 43/25

U.S. Cl. 166—259

10 Claims



1. A method for the in situ processing of deposits of bituminous coal having inclusions of uncarbonized vegetable matter randomly distributed throughout to recover values therefrom, comprising introducing into an area of a deposit of such bituminous coal a solvent for said uncarbonized vegetable matter; removing the pregnant solvent from said area after a time period sufficient to effect dissolution of much of said uncarbonized vegetable matter, to thereby leave voids within said area and to render said area substantially permeable to combustion gases; igniting coal within said area; and supplying a combustion-supporting gas to the ignited coal while removing products of combustion, to thereby establish at least one heat front which migrates throughout said area.

4,230,182

OIL RECOVERY METHOD EMPLOYING ALTERNATE SLUGS OF SURFACTANT FLUID AND FRESH WATER

Issam S. Bousaid, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,220

Int. Cl.³ E21B 43/22

U.S. Cl. 166—273

32 Claims

1. A method of recovering petroleum from a subterranean, petroleum-containing, permeable formation penetrated by at

4,230,185

ROD OPERATED ROTARY WELL VALVE

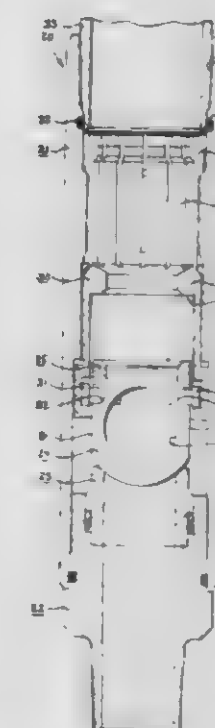
John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 31, 1978, Ser. No. 911,186

Int. Cl.² E21B 43/12

U.S. Cl. 166—332

3 Claims



least one injection well and by at least one production well, said formation containing water having a salinity in excess of about 20,000 parts per million total dissolved solids, including known or determinable divalent ion concentration, comprising injection into the formation a predetermined volume of surfactant fluid, said surfactant fluid comprising a continuous aqueous phase containing at least one surfactant and a discontinuous, non aqueous phase, said surfactant being slightly soluble in a fluid having a salinity of from 50 to 100 percent of the salinity of the water present in the formation, and reducing interfacial tension between the petroleum and water to a value less than 100 millidynes/centimeter, said surfactant fluid being injected via the injection well and displacing petroleum through the formation toward the production well from which it is recovered to the surface of the earth, wherein the improvement comprises:

injecting the surfactant fluid into the formation in from 2 to 15 separate slugs, and separating successive slugs of surfactant fluid from one another by injecting sequentially therewith, separate isolation slugs of fluid comprising fresh water having salinity less than 10,000 parts per million total dissolved solids.

4,230,183

METHOD FOR TREATING SUBTERRANEAN, CLAY-CONTAINING EARTH FORMATIONS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,314

Int. Cl.² E21B 43/22

U.S. Cl. 166—274

14 Claims

1. A method for treating a subterranean earth formation containing water-sensitive clays, to render the formation less sensitive to loss of permeability due to contact with fresh water, comprising:

contacting said earth formation with an effective amount of an aqueous fluid containing a chelated polyvalent transition metal ion, said metal being selected from the group consisting of cobalt, nickel, iron, chromium and copper, and comprising an organic chelating ligand selected from the group consisting of ethylenediamine, propylenediamine, α,α' -dipyridyl, and o-phenanthroline.

4,230,184

SULFUR EXTRACTION METHOD

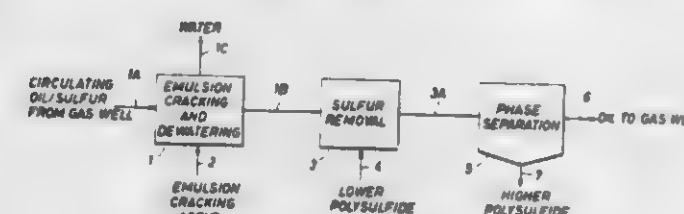
George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 1, 1978, Ser. No. 965,659

Int. Cl.² C10G 19/00, 29/08; E21B 21/00

U.S. Cl. 166—312

16 Claims



1. A process for extracting sulfur from a mineral oil-sulfur solution wherein the mineral oil is at least partly in the form of an emulsion with a minor quantity of water comprising treating said solution by adding an oil/water emulsion-breaking surfactant thereto, contacting the treated solution with an aqueous solution of a lower polysulfide of an alkali metal or ammonia to form a higher polysulfide of said alkali metal or ammonia, and separating the mineral oil from the higher polysulfide.

4,230,186

SIMPLIFIED SUBSEA PRODUCTION WELLHEAD

Harry R. Lewis, Jr., Aberdeen, Scotland, assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 11, 1978, Ser. No. 968,236

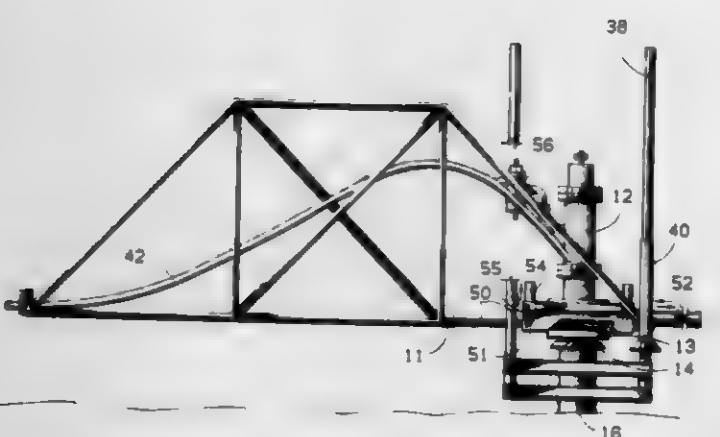
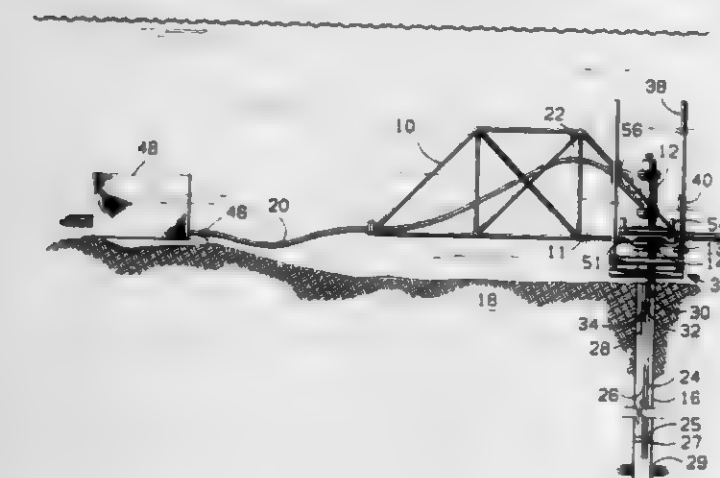
Int. Cl.² E21B 7/12

U.S. Cl. 166—342

6 Claims

1. A production wellhead means for use with a subsea well which comprises:
a frame structure;
a sub structure;
a diverter spool for attaching to a subsea well and having a longitudinal axis and attached to said sub structure;
support means for supporting said sub structure from said frame structure, said support means including means for

moving the said diverter spool in a direction along its longitudinal axis with respect to said frame structure and



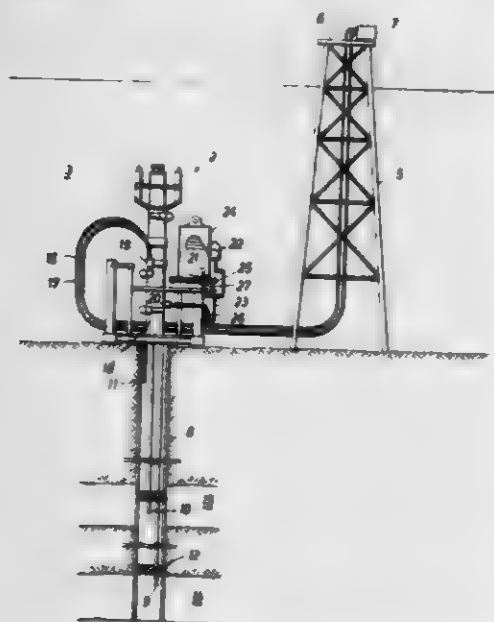
means for moving said diverter spool with respect to said frame structure in a direction substantially perpendicular to said axis of said diverter spool.

4,230,187

METHODS AND APPARATUS FOR SENSING WELLHEAD PRESSURE

Rodney K. M. Seto, Missouri City; Eugene L. Brickman, and Michael R. Fitzgibbons, both of Houston, all of Tex., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 19, 1979, Ser. No. 50,072
Int. Cl.³ E21B 43/01; F15B 20/00; F16K 17/36
U.S. Cl. 166—362 39 Claims



1. A method of monitoring and controlling a primary pressure in a subsea system containing a primary fluid, comprising establishing a secondary fluid isolated from said primary fluid by a yieldable barrier therebetween, establishing and maintaining an initial pressure on said sec-

ondary fluid substantially reducing the further compressibility of said secondary fluid, thereafter applying said primary pressure to said yieldable barrier for increasing the pressure on said secondary fluid in a manner functionally related to said primary pressure, deriving an indication of the pressure on said secondary fluid as a function of said primary pressure in said system, and controlling said primary pressure in response to said indication of the pressure on said secondary fluid.

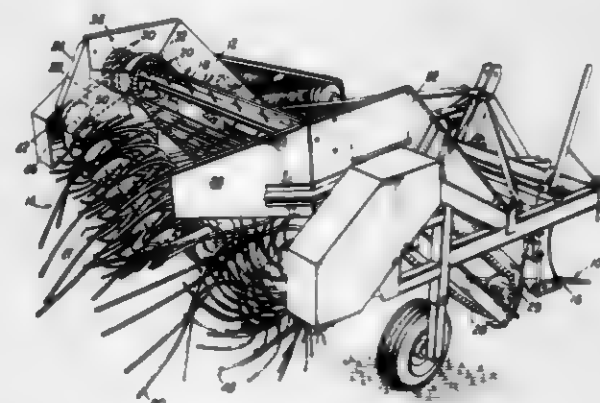
28. In a petroleum installation and the like, apparatus for monitoring a primary pressure on a petroleum fluid comprising a module including control circuitry immersed in a protective fluid, pressure transducer means within said module for generating a signal in response to a secondary fluid pressure, conduit means interconnected with said transducer means for containing a secondary fluid, isolator means interconnected with said installation and said conduit means and having piston means slidably separating said petroleum fluids and said secondary fluid and subjecting said secondary fluid to a secondary pressure functionally related to said wellhead pressure, and shutoff means within said isolator means for automatically retaining said petroleum fluid within said installation in the event of a leak in said conduit means.

4,230,188

PEANUT DIGGER-SHAKER-INVERTER

John R. Paulk, Fitzgerald, Ga., assignor to Paulk Manufacturing Co., Inc., Fitzgerald, Ga.

Filed Sep. 17, 1976, Ser. No. 724,306
Int. Cl.³ A01D 29/00
U.S. Cl. 171—101 6 Claims



1. In a root crop harvesting apparatus having digging means for digging root crop plants from their growing implantation in the ground, shaker-conveyor means receiving said plants for shaking them to remove debris while conveying them to elevated discharge disposition, and inverter means intercepting the discharged plants from the shaker-conveyor means for directing them in inverted position in a windrow behind the apparatus, the improvement wherein said inverter means comprises a pair of open-like inverting drums, each drum including a plurality of spaced spider discs mounted along a common central shaft, said spider discs having finger portions that constitute the majority of the diameter of said discs and that are curved in a direction away from the rear of said harvesting apparatus, means for rotating said open-like inverting drums about downwardly inwardly inclined axes that positions said spider discs at an angle that is substantially displaced from the horizontal plane of the ground, and a set of inverting tines operatively associated with each of said open-like inverting drums and positioned below the distal end of said finger portion to support the plants as they pass over and are gently agitated and bumped by the fingers of said discs while being positively urged along the inverting tines, said fingers of each of said inverting drums operatively extending along substantially half the length of its associated set of tines thereby exerting positive control on the moving plants after being dig-

charged onto the inverting means and subjecting said plants to an additional cleaning action during the inversion state so that the loosened soil falls freely between said spaced spider discs and through the inverting drums and not onto the inverted vines which have been deposited on the ground.

4,230,189

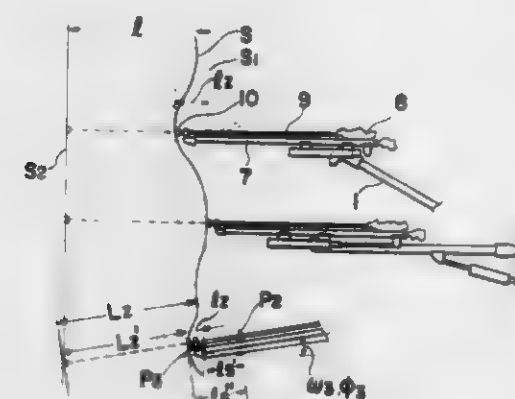
DRILLED HOLE END ADJUSTING ARRANGEMENT

Toru Mashimo, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Aki, Japan

Filed Jun. 7, 1978, Ser. No. 914,747
Claims priority, application Japan, Jun. 7, 1977, 52-66998
Int. Cl.² B23Q 5/00; E21C 5/00

U.S. Cl. 173—4

3 Claims U.S. Cl. 175—5



1. A drilled hole end adjusting arrangement for a drilling machine or the like which comprises;
a boom structure on which the drilling machine is operably mounted;
a memory unit for storing values of the position of the drilling machine at plurality of drilling points on a drilling plane immediately in front of a drill-working face and which are in a rectangular coordinate system;
a converter unit connected to said memory unit for converting the values for a drilling point supplied from said memory means into values of working distance and working direction angle of the boom structure in a boom coordinate system;
a positioning servo control unit connected to said converter unit and said boom structure for displacing said boom structure according to said values for the drilling point supplied from said converter unit for bringing the drilling machine to the drilling point of the drilling plane and also for displacing said boom structure so as to shift the drilling machine from said drilling point on the drilling plane into actual contact with the drill-working face at an actual drilling point;
a drilling machine control unit connected to said positioning servo control unit and said drilling machine for starting the drilling operation of the drilling machine upon receipt of a signal indicating that positioning of the drilling machine by the positioning servo control unit is completed;
a detector connected to said boom structure for calculating the values of the working distance and working direction angle of the boom structure from the position and direction of the drilling machine on said boom means after it has been displaced and shifted by the positioning servo control unit;
a first register for storing a drilling depth of a drilled hole from said drilling plane to a plane parallel with said drilling plane;
a first arithmetic unit connected to said first register and said converter unit for calculating the drilling depth at the direction angle of the boom structure positioned at the drilling point of the drilling plane; and
a second arithmetic unit connected to said first arithmetic unit and said detector for calculating the actual drilling depth from drilling depth supplied from said first arithmetic unit and the working values supplied from said arithmetic unit, and also connected to said drilling machine

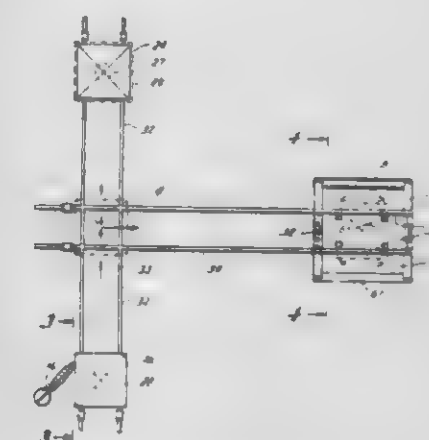
4,230,190

BLOW OUT PREVENTER HANDLING SYSTEM

David C. Guilan; Archie K. Haggard, and John P. Thomas, all of P.O. Box 1126, Houston, Tex. 77001

Continuation of Ser. No. 840,944, Oct. 11, 1977, abandoned, which is a division of Ser. No. 729,494, Oct. 4, 1976, Pat. No. 4,081,163. This application Oct. 13, 1978, Ser. No. 952,031
Int. Cl.² E21B 7/12

14 Claims



1. A system for testing and installing a blow out preventer on a floating vessel having a moon pool and a derrick over the moon pool, the derrick having an opening through which a portion of the blow out preventer can be moved and having means for lowering it into the moon pool comprising, retractable rotary table support beams disposed over the moon pool supporting a rotary table for rotating a drill string during rotary drilling operations, means releasably connecting the rotary table to the rotary table support beams, retractable substructure beams below the rotary table, test stump means means for positioning an upper section and a lower section of the blow out preventer on opposite sides of the longitudinal axis of the vessel, for placing the lower section of the blow out preventer on the test stump means and placing the upper section on the lower section, support shoulders extending from at least one of the upper and lower sections arranged to support the blow out preventer on the substructure beams, means operable to move the assembled blow out preventer through the derrick opening and space provided by the retracted substructure beams and over the moon pool, guide means operable to restrain swinging movement of the blow out preventer when moving it in the moon pool, whereby the upper section and the lower section of the blow out preventer can be positioned on opposite sides of the longitudinal axis of the vessel thereby minimizing forces due to the roll of the vessel, the upper section can be placed on the lower section and the blow out preventer assembled and tested on the test stump means and then moved through the derrick opening and space provided by the retracted rotary table support beams and over the moon pool and guided while being lowered until the support shoulders engage the retractable substructure beams, the rotary table support beams replaced and the rotary table connected to them, the upper section of the blow out preventer connected to the means to lower it, the blow out preventer lifted and the substructure beams retracted, and the blow out preventer then lowered in the moon pool.

4,230,191

MACHINE FOR MAKING UNDERGROUND EXCAVATIONS

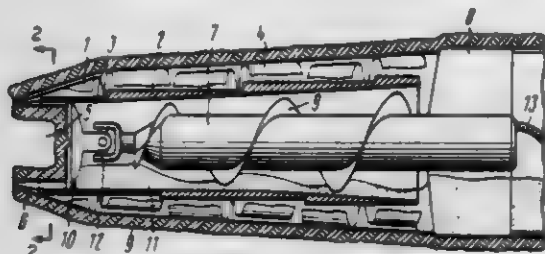
Valentin K. Svirschevsky, Krasny prospekt, 98, kv. 103; Andrei A. Trofimuk, Zolotodolinskaya ulitsa, 87; Gennady G. Vasiliev, ulitsa Novogodnaya 28, kv. 17, and Ivan P. Leonov, ulitsa Tikhvinskaya, 2, kv. 38, all of Novosibirsk, U.S.S.R.

Filed Jan. 24, 1979, Ser. No. 6,115

Int. Cl.² E21B 11/02, 1/06

U.S. Cl. 175—20

6 Claims



1. A machine for making underground excavations by compacting soil, comprising:

an eccentric shaft having journals eccentric relative to one another; a conical member provided in front of the eccentric shaft on the side of the face of the excavation being made;

tapered rolls mounted in a sequence, looking away from the face of the excavation being made behind said conical member, on said journals of said eccentric shaft, said rolls defining, in combination with said conical member, a conically expanding body, the tapered rolls being mounted for free rotation about said eccentric shaft;

a drive for rotating said eccentric shaft and for longitudinally moving said machine within the excavation;

a through longitudinal diffuser passage in said conical member;

a through longitudinal diffuser passage in said eccentric shaft, the cross-sectional area of said passage of the eccentric shaft enlarging in the direction away from the face of the excavation being made, and the smallest cross-sectional area of said passage of the conical member being smaller than the smallest cross-sectional area of said passage of the eccentric shaft so that said inside cross-sectional area of said passage of the conical member, during operation of the machine, is substantially within said inside cross-sectional area of the eccentric shaft, and both passages defining in combination a through passage for the transfer of soil partially removed during operation of the machine.

4,230,192

CORE SAMPLING APPARATUS AND METHOD

Fritz T. Pfannkuche, 2205 Dunstan, Houston, Tex. 77005

Filed Aug. 8, 1978, Ser. No. 932,027

Int. Cl.² E21B 9/20

U.S. Cl. 175—59

25 Claims

1. Coring apparatus for obtaining core samples from the bottom of a well bore comprising:

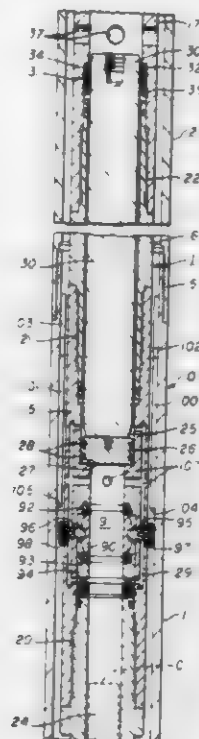
an outer barrel assembly the lower end of which is adapted for connection to a core bit, the upper end of which is adapted for connection to a drill string;

an inner barrel assembly concentrically disposed within said outer barrel assembly for limited axial movement therein and having first and second axially spaced and fluid communicating chambers therein;

slip joint means connecting said inner and outer barrel assemblies and having a tubular joint member, first and second axially spaced annular seal means between said slip joint means and a portion of said inner barrel assembly, the interior of said tubular joint member and the exterior of said portion of said inner barrel assembly forming an expansible annular chamber in fluid communication with

the interior of said inner barrel assembly through at least one port in the walls thereof;

valve means carried by said inner barrel assembly movable, in response to said axial movement of said inner barrel assembly, from an open position, in which said core sample may be received by said first chamber, to a closed



position, sealingly enclosing said core sample within said first chamber; and

pressure compensating means sealingly disposed within said second chamber allowing expansion of said second chamber for receiving expanding fluids from said core sample enclosed within said first chamber.

4,230,193

ROTARY DRILL BIT

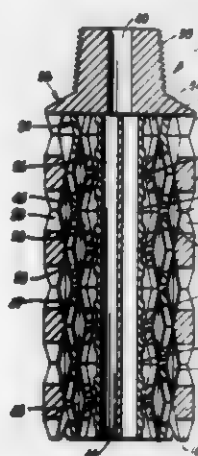
Clifford K. Logan, Jr., Oklahoma City, Okla., assignor to Arthur G. Burki and Thomas G. Wygant, both of Oklahoma City, Okla.

Filed Dec. 15, 1978, Ser. No. 969,810

Int. Cl.³ E21B 9/00

U.S. Cl. 175—379

13 Claims



1. An improved rotary drill bit comprising:

an elongated generally cylindrical outer drill member having an upper end and a lower end forming an annular cutting face and having a plurality of vertically spaced rows of diamond-shaped openings formed in the wall thereof, the diamond-shaped openings in adjacent rows being offset from each other and overlapping at their upper and lower ends whereby as said lower end of said

outer drill member wears away, cutting edges are continuously formed thereon by said diamond-shaped openings; at least one elongated generally cylindrical inner drill member disposed within said outer drill member having a length corresponding to said outer drill member, an upper end and a lower end forming an annular cutting face and having a plurality of vertically spaced rows of diamond-shaped openings formed in the wall thereof, the diamond-shaped openings in adjacent rows being offset from each other and overlapping at their upper and lower ends whereby as said lower end of said inner drill member wears away, cutting edges are continuously formed thereon by said diamond-shaped openings;

a non-perforate drilling fluid conduit disposed in said outer drill member for conducting drilling fluid from the upper ends of said outer and inner drill members solely to the lower ends thereof, said fluid conduit having diamond-shaped recesses formed in the outer surface thereof; and means for connecting said outer drill member, inner drill member and drilling fluid conduit to a string of drill pipe and for conducting drilling fluid to said drilling fluid conduit.

4,230,194

ROTARY DRILL BIT

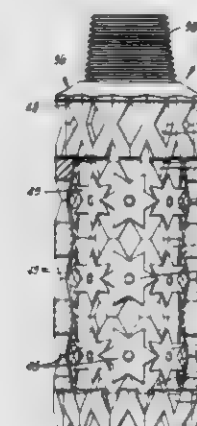
Clifford K. Logan, Jr., 7920 Hemingford Ct., Apt. A, Oklahoma City, Okla. 73120

Continuation-in-part of Ser. No. 969,810, Dec. 15, 1978, This application Feb. 23, 1979, Ser. No. 14,637

Int. Cl.² E21B 9/12

U.S. Cl. 175—379

16 Claims



1. An improved rotary drill bit comprising:

an elongated generally cylindrical outer drill member having an upper end and a lower end forming an annular cutting face;

an elongated generally cylindrical inner drill member disposed within said outer drill member having a length corresponding to said outer drill member, an upper end and a lower end forming an annular cutting face;

a plurality of vertically spaced rows of rotatable cutting members positioned around and between said inner and outer drill members and journaled thereto whereby as the lowermost row of said rotatable cutting members and said lower ends of said drill members wear away, the next adjacent row of cutting members is exposed;

a drilling fluid conduit disposed within said inner drill member for conducting drilling fluid from the upper ends of said inner and outer drill members to the lower ends thereof; and

means for connecting said outer drill member, inner drill member and drilling fluid conduit to a string of drill pipe and for conducting drilling fluid to said drilling fluid conduit attached to the upper ends of said outer drill member, inner drill member and drilling fluid conduit.

4,230,195

AUTOMATIC CONTROL METHOD AND DEVICE FOR A CONTAINER FILLING APPARATUS

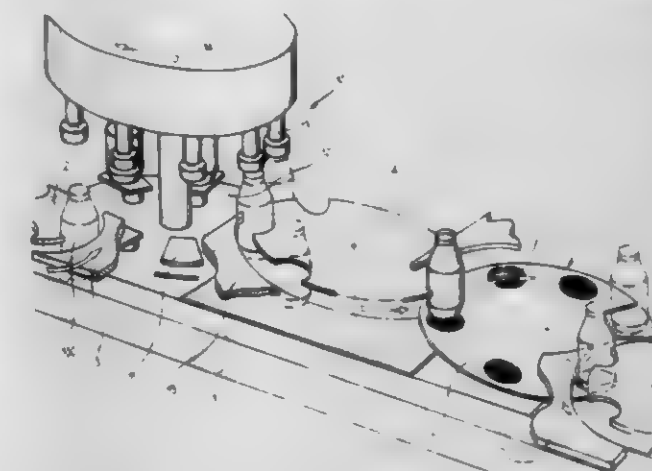
Jean-Jacques Graffin, La Ferte-Bernard, France, assignor to Serac S.A., La Ferte-Bernard, France

Filed Sep. 8, 1978, Ser. No. 940,874

Claims priority, application France, Sep. 9, 1977, 77 27407 Int. Cl.³ G01G 15/00

U.S. Cl. 177—1

20 Claims



1. A method of automatically controlling an apparatus for filling containers including a plurality of filling stations, each having a controllable filling device, each actuated individually for delivering a metered amount of filling material into continuously successively forwarded containers during a filling cycle, comprising the following steps:

sequentially automatically taking individual containers among the successive containers filled at stations in the filling apparatus;

weighing successively each of said thus taken filled containers at a movable control weighing station on a continuous conveying path for the containers;

comparing each said weighing to a predetermined value image of said metered amount of filling material to be delivered into each container;

establishing a correlation between each container which has been weighed at said control weighing station and the corresponding said filling station of said filling apparatus where each said weighed container has been filled; and automatically correcting, as a result of said control weighing, the corresponding said filling device of the filling apparatus.

4,230,196

LOAD WEIGHING AND ACCUMULATING SYSTEM AND METHOD FOR HYDRAULIC LOADER

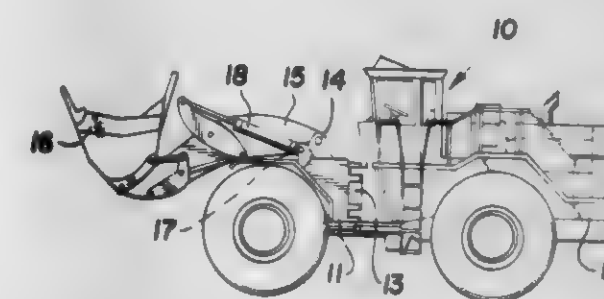
Edwin D. Snead, Box 798, Georgetown, Tex. 78626

Continuation of Ser. No. 841,383, Oct. 12, 1977. This application Sep. 22, 1978, Ser. No. 945,075

Int. Cl.³ G01G 19/10, 3/14

U.S. Cl. 177—141

30 Claims



1. A weight measuring and indicating system, for a loader having at least one hydraulic lift cylinder for elevating a load carrier, comprising

a transducer, for operative connection to said lift cylinder, for detecting instantaneous hydraulic pressure therein and for producing an instantaneous electric analog signal responsive to the instantaneous hydraulic pressure;
 converter means coupled to the output of said transducer means for converting said analog signal to a frequency signal consisting of pulses generated at a frequency proportional to said analog signal;
 a counter for counting and displaying the output pulses of said converter;
 control gate means coupling said counter to said converter;
 and clock means coupled to said gate means, for controlling the passing of converter output pulses to said counter whereby said counter display will be representative of the load in said carrier.

4,230,197

BUMPING AND JARRING TOOL

Kenneth H. Wenzel, 5203-76 Ave., Edmonton, Alberta, Canada (T6B 0A7)

Filed Oct. 24, 1978, Ser. No. 954,227

Claims priority, application United Kingdom, Oct. 24, 1977, 4422/77

Int. Cl.³ E21B 1/10

U.S. Cl. 175—297

14 Claims



1. A hydraulic bumping and jarring tool for a drill string, comprising:

an elongated tubular housing;
 an elongated tubular mandrel telescopically mounted in said housing, said housing and said mandrel being longitudinally movable with respect to one another between an open position and a closed position;
 a first pair of opposed cooperating impact faces one of which is located on said housing and the other of which is located on said mandrel to impart an upwardly directed impact or jar to the drill string when said pair of faces is brought into sudden contact at the open position;

a second pair of opposed cooperating impact faces one of which is located on said housing and the other of which is located on said mandrel to impart a downwardly directed impact or bump to the drill string when said second pair of faces is brought into sudden contact at said closed position;

said housing and said mandrel having an annular space therebetween filled with hydraulic fluid so as to define a hydraulic chamber, said hydraulic chamber having seals at its upper and lower ends;

valve means positioned on one of said housing and said mandrel and projecting into said hydraulic chamber dividing said hydraulic chamber into an upper portion and a lower portion;

said lower seal of said hydraulic chamber comprising a freely longitudinally movable member one side of which contacts said hydraulic fluid and the other side of which is subject to the ambient pressure of the well so as to impart the ambient pressure of the well to said hydraulic chamber;

volume varying means for increasing the volume of said

upper hydraulic chamber portion when said tool is opening and for decreasing the volume of said upper hydraulic chamber portion when said tool is closing;

said valve means acting during closing of said tool to permit unrestricted flow of said hydraulic fluid between said hydraulic chamber portions and acting during opening of said tool to restrict the flow of said hydraulic fluid between said hydraulic chamber portions so as to cause a pressure drop in said upper hydraulic chamber portion tending to keep said tool closed as said volume varying means continues to increase the volume of said upper hydraulic chamber portion, said valve means then acting to allow unrestricted flow of said hydraulic fluid so that said first pair of impact faces is sent into sudden contact to produce a jar; and,

lower seal engaging means for increasing the pressure in said lower hydraulic chamber portion by urging said lower seal toward said valve means when said valve means acts to restrict flow.

4,230,198

FLUID-STREAM DRIVEN GROUND VEHICLE

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 695,651, Jun. 14, 1976, abandoned, which is a continuation of Ser. No. 530,045, May 12, 1974, abandoned, which is a continuation-in-part of Ser. No.

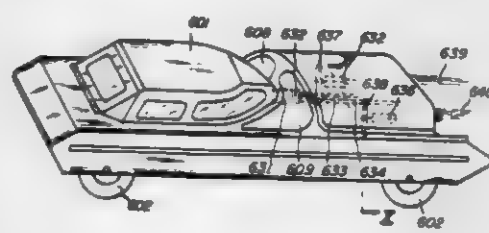
121,971, Mar. 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 782,349, Dec. 9, 1968,

abandoned, which is a continuation of Ser. No. 551,023, May 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 328,395, Dec. 5, 1963, Pat. No. 3,320,898. This application Jan. 3, 1978, Ser. No. 866,880

Int. Cl.² B62D 57/04

U.S. Cl. 180—7 P

2 Claims



1. A vehicle comprising:

a body;

at least one fluid-stream creating means on each lateral side of said body;

a fluid operated motor for driving each said fluid-stream creating means;

at least one rear wheel on each lateral side of said body;

at least one front wheel on each lateral side of said body;

a fluid operated motor for driving each said wheel;

means for producing at least four, separate, equal fluid flows; and

fluid-flow control means for selectively directing said four fluid flows to said wheel motors, respectively for low speed, four wheel drive, or combining said four fluid flows into two equal flows and either directing said two equal flows to two of said wheel motors on opposite lateral sides of said vehicle for high speed, two wheel drive or directing said two equal flows to said motors of said fluid stream creating means for fluid-stream created drive of said fluid-stream creating means.

4,230,199

APPARATUS FOR SHIFTING CENTER OF GRAVITY OF A WORK VEHICLE

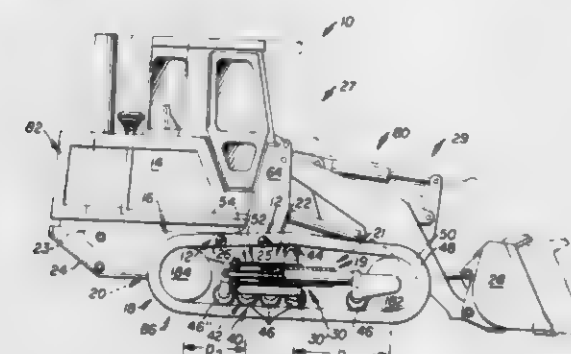
Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 12, 1978, Ser. No. 973,043

Int. Cl.³ B62D 55/06

U.S. Cl. 180—9.2 R

19 Claims



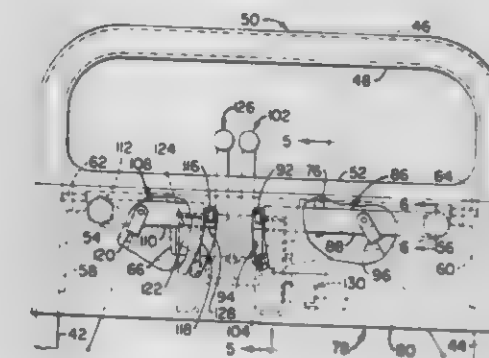
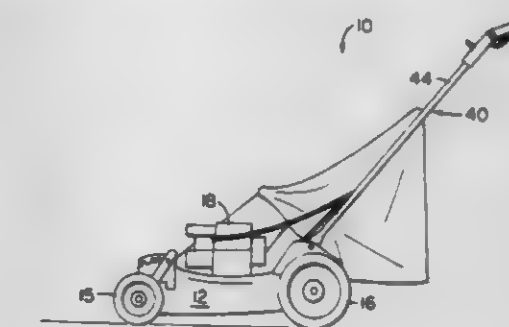
1. In a work vehicle (10) having a center of gravity (12), a body (14) and a lower portion (16) having first and second continuous track assemblies (18,20), said first and second track assemblies (18,20) each having a track frame (19,21) having first and second end portions (92,93;94,95), the improvement comprising:

said lower portion (16) having a subframe (102), said subframe (102) having first and second end portions (108,110) and being movably connected to said track frames (19,21) at locations sufficient for positioning said track assemblies (18,20) one relative to the other;

a plurality of links (122,122',124,124') each having first and second end portions (126,130;126',130';128,132';128',132'), each of said first end portions (126,126',128,128') being pivotally connected to said body (14), each of said second end portions (130,130',132,132') being pivotally connected to said lower portion (16); and

power means (125) for pivotally moving said body (14) relative to both of the track assemblies (18,20) for selectively, controllably shifting the center of gravity (12).

deadman control lever is in its released position, and respective lever-lock positions disposed in the paths of movement of the first and second levers when the deadman control lever is in its operative position; and first and second latch release means



respectively operatively connected to the first and second latches for selectively yielding the latter to their lever-unlock positions when the deadman control lever is in its operative position.

4,230,201

AIR RELEASE CONTROL IN SEISMIC ENERGY SOURCE AIR GUN

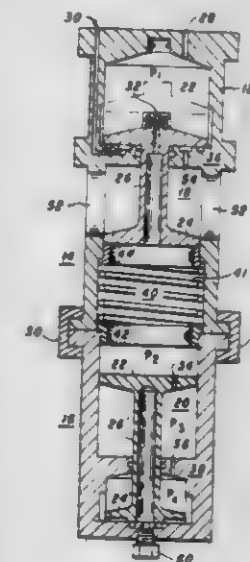
Marvin G. Bays, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 31, 1978, Ser. No. 929,883

Int. Cl.³ G01V 1/14, 1/38

U.S. Cl. 181—115

15 Claims



1. A seismic source apparatus comprising:
 a sectional annular housing having an inner chamber for storing compressed air;
 first air supply means for providing compressed air to said inner chamber;
 primary shuttle means disposed within said housing having a first annular piston,
 a second annular piston, and

4,230,200

TWO-STAGE DEADMAN CONTROL FOR WALK-BEHIND MOWERS

Donald L. Carolan, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed May 21, 1979, Ser. No. 40,627

Int. Cl.³ B62D 51/04; B60K 26/00

U.S. Cl. 180—272

14 Claims

1. A self-propelled walk-behind implement and controls therefor including a normally disengaged tool drive clutch; a normally disengaged traction drive clutch; a guide handle having a first transverse grip portion; first and second clutch control levers respectively pivotally mounted on the handle for movement between forward clutch-disengage and rearward clutch-engage positions; first and second actuator means respectively coupled between the first lever and tool drive clutch, and between the second lever and traction drive clutch; lever latch means mounted on the handle for selectively retaining the first and second levers in their respective clutch-engage positions and including a deadman control lever including a second transverse grip portion and being vertically pivotally mounted on the handle for movement between a normal released position, wherein the second transverse grip portion is elevated above the first grip portion and an operative position wherein the second grip portion is held against the first grip portion; said lever latch means further including first and second resiliently yieldable latches operatively connected to the deadman control lever and mounted for movement, in response to movement of the deadman control lever, between respective normal lever-unlock positions, disposed out of the paths of movement of the first and second levers when the

an elongated shaft having an orifice centrally located therethrough and connected to said first and second annular pistons such that said first and second annular pistons are located in an opposed parallel relationship to one another;

actuating means for causing said primary shuttle to move within said housing;

second air supply means operably associated with said actuating means for supplying compressed air underneath said first annular piston of said primary shuttle for effectuating movement of said primary shuttle;

sealing means connected to said inner chamber for providing a means for sealing said first annular piston;

resilient supporting means for providing a means for sealing said second annular piston;

elastic means for supporting said resilient supporting means, biased to resist downward motion, such that when said second annular piston rests upon said resilient supporting means a sealing effect will occur;

secondary shuttle means disposed within said inner chamber and having

a first annular piston with an orifice extending therethrough,

a second annular piston, and

a hollow shaft connecting first and second annular pistons such that said first and second annular pistons are located in space parallel relationship to one another.

4,230,202

ROOFING AID

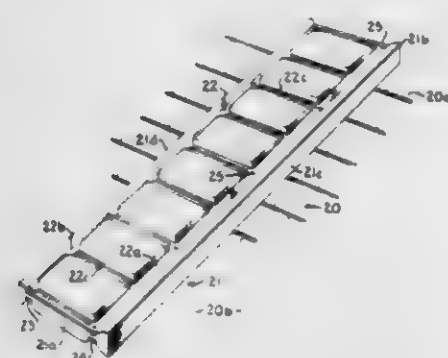
Anthony J. Kudra, III, 4837 Farley, Kansas City, Mo. 64129

Filed May 18, 1979, Ser. No. 40,193

Int. Cl.² E06C 7/08, 1/04, 7/46

U.S. Cl. 182-45

18 Claims



1. A frictionally engaging, protective seating and working device for use on a rooflike surface comprising, in combination:

a relatively thick, resilient pad of surface adherent, non-skid, foam rubberlike material,

an open centered, strong, substantially rigid, integral first frame member positioned on one side of said pad,

said first frame member configured to substantially outline the shape of the pad but circumferentially inwardly positioned from the periphery of said pad whereby to be of lesser dimension with respect to said pad periphery,

second frame means on the other side of said pad connected to at least portions of said first frame member through said pad,

the said connections of such character as to embed the first frame member and second frame means within said pad, whereby:

on the side of the pad carrying the first frame member, portions of the pad protrude both centrally outwardly and circumferentially peripherally outwardly from said first frame member, and

on the side of the pad carrying the second frame means, portions of the pad protrude centrally and peripherally outwardly past said second frame means.

4,230,203

TREE CLIMBING APPARATUS

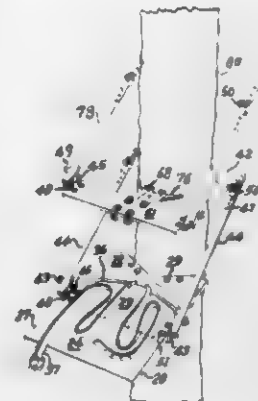
George B. Sweat, 4121 Aldington Dr., Jacksonville, Fla. 32210, and Alvin E. Warren, 1115 Lane Ave., North, Jacksonville, Fla. 32205

Filed May 1, 1978, Ser. No. 901,503

Int. Cl.² A63B 27/00; A45F 3/26

U.S. Cl. 182-134

13 Claims



1. A combination tree climbing and seating apparatus for an occupant wherein the occupant's legs furnish the sole power to move the occupant up the tree comprising: a lower climbing support including a foot platform provided with front and back end portions and a top surface extending generally horizontally, platform brace means connected to said foot platform and selectively engageable with the tree when the weight of the occupant is supported thereon, said platform brace means being disengageable from the tree by tilting said lower support upwardly by the occupant, and foot engageable means attached to said top surface adjacent said front end portion for firmly engaging an occupant's feet to allow the occupant to raise or lower said foot platform by lifting the occupant's legs to disengage said platform brace means and lowering the occupant's legs to re-engage said platform brace means on the tree and a climbing upper support including a seat platform having a top surface extending generally horizontally on which an occupant sits with the occupant's back against the tree when said apparatus is used for sitting and facing the tree with the occupant's knees spaced apart and straddling the tree as the occupant's legs are lifted to disengage said platform brace means and lowered to re-engage said platform brace means on the tree during climbing use of said apparatus, seat brace means connected to said seat platform and selectively engageable with the tree when the weight of the occupant is supported thereon, said upper support brace means being disengageable from the tree by tilting said upper support upwardly by the occupant, said platform brace means including a first front blade means connected to said foot platform for engaging the front of the tree, a first back blade means for engaging the back of the tree, and a pair of elongated members disposed on either side of the tree for attaching said first back blade means to said foot platform, said seat brace means including short connecting means located generally medially of and extending away from said seat platform and towards the tree to dispose said seat platform spacedly outwardly from the tree, said seat brace means further including a second front blade means connected to said short connecting means for engaging the front of the tree, a second back blade means for engaging the back of the tree, and a pair of elongated members disposed on either side of the tree for attaching said second blade means to said seat platform, said seat platform being disposed above said foot platform substantially above said foot engageable means when said platform brace means and said upper support brace means are disposed in weight bearing relationship on the tree trunk, said foot platform pair of elongated members being longer than said seat platform pair of elongated members, said seat platform terminating generally medially of said foot platform, said short connecting means being sufficiently short to minimize the spaces on either side of said short connecting means and the

respective said elongated members of said upper support for the occupant's legs during climbing and descending and to maximize the available foot room on said foot platform for the occupant during sitting of the occupant on said seat platform with the occupant's back to the tree when said apparatus is used for sitting of the occupant.

4,230,205

ELEVATOR SYSTEM

Richard H. Darwent, Hopatcong, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 10, 1978, Ser. No. 904,685

Int. Cl.¹ B66B 7/10

U.S. Cl. 187-22

1 Claim



4,230,204

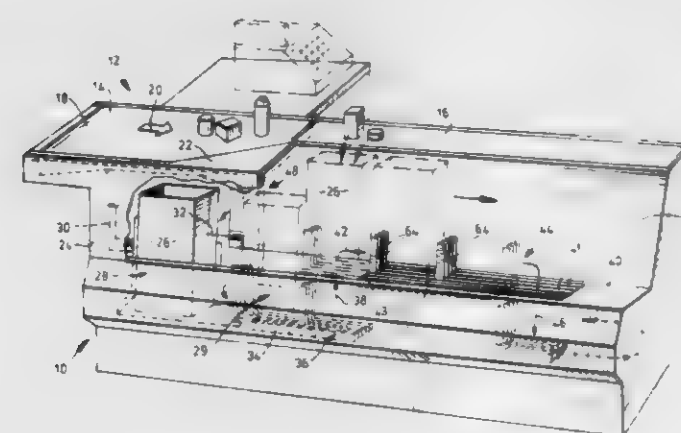
CHECKOUT COUNTER WITH BAG DELIVERY MEANS
Marinus J. M. Langen, Rexdale, and Edgars H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Limited, Rexdale, Canada

Filed Jul. 5, 1979, Ser. No. 55,046

Int. Cl.¹ B65B 67/12

U.S. Cl. 186-66

6 Claims



1. A checkout counter comprising:

(a) a counter top supported in a generally horizontally disposed first plane, said counter top having an input section extending inwardly from one end thereof toward the other end thereof and a packing section extending rearwardly from the input section,

(b) a packing platform extending longitudinally of said counter rearwardly from said input section in a generally horizontally disposed second plane spaced below said first plane to support an upwardly opening bag with its open end disposed at a convenient loading height with respect to said packing section,

(c) means in said counter below said input section adapted to dispense an open bag in a generally upright upwardly opening configuration in a generally horizontally disposed third plane spaced below said second plane a distance sufficient to permit said bag to assume a generally upright configuration when disposed below said input section of said counter top,

(d) elevator means disposed adjacent said dispenser means for movement between a lowered position and a raised position, said elevator means being arranged to receive a bag dispensed into said third plane as aforesaid when in said lowered position and being operable to raise a bag from said third plane to an elevated position in which it is supported in said second plane in alignment with said packing platform when said elevator means is moved from said first position to said second position; and

(e) conveyor means extending along said packing platform and adapted to engage a bag disposed in said elevated position and drive it in a direction away from said input section along the packing platform toward said other end of said counter top.

1. An elevator system, comprising:

an elevator car,

a counterweight,

means mounting said elevator car and counterweight for guided vertical movement in predetermined travel paths, including hoist roping interconnecting said elevator car and counterweight, a traction sheave, and drive means, and a chain compensation system free of any driving means said chain compensation system including:

at least one rotatable chain wheel disposed below the travel paths of said elevator car and counterweight,

at least one compensating chain having a plurality of interconnected links, said at least one chain being reeved about said at least one chain wheel and connected to said elevator car and counterweight,

mounting means for said at least one chain wheel, including spring means biased to divide the support of said at least one chain wheel between said spring means and said at least one compensating chain,

means for adjustably selecting the division of the support of the chain wheel between the spring means and the compensating chain, with said means being adjusted to support a substantial portion of the weight of the chain wheel on the spring means, while retaining at least enough weight on the compensating chain to enable the compensating chain to rotate the chain wheel without slippage in response to movement of the compensating chain, to reduce chain vibration due to chordal action of the chain links, and to reduce airborne noise due to the chain entering and leaving the chain wheel by reducing the weight exerted by said chain wheel on said compensating chain, which reduces the tension in the chain.

4,230,206

TRANSISTORIZED ELEVATOR CONTROL BUTTON

Kenneth R. Brooks, Brooklyn, N.Y., assignor to Otis Elevator Company, Hartford, Conn.

Filed Oct. 17, 1978, Ser. No. 952,223

Int. Cl.¹ B66B 1/46

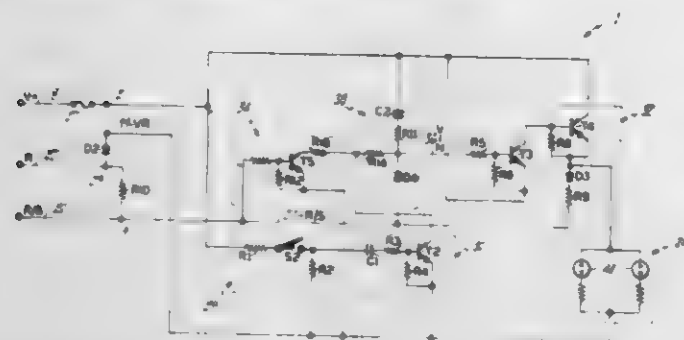
U.S. Cl. 187-29 R

10 Claims

1. Apparatus adapted for connection to a single conductor, for generating a control signal thereon from a latched, activated state, and resettable from said state in response to a reset signal selectively applied to the conductor, said apparatus comprising,

a switch selectively activated for generating the control signal upon the conductor,

latch means, in circuit with the conductor and said switch, for supplying a signal to maintain said switch in said activated state in response to said control signal, said latch means characterized in that it also generates said maintaining signal in response to said reset signal,



reset means for generating a signal to deactivate said switch, in response to the reset signal, as long as said latch means supplies said maintaining signal to said switch, in response to the reset signal, whereby both said switch and said latch means are returned to normally deactivated states when the reset signal is removed from said conductor.

4,230,207

DISC BRAKE PAD

Kurt Stahl, Wahnstr. 19-21, 5000 Köln 21, Fed. Rep. of Germany

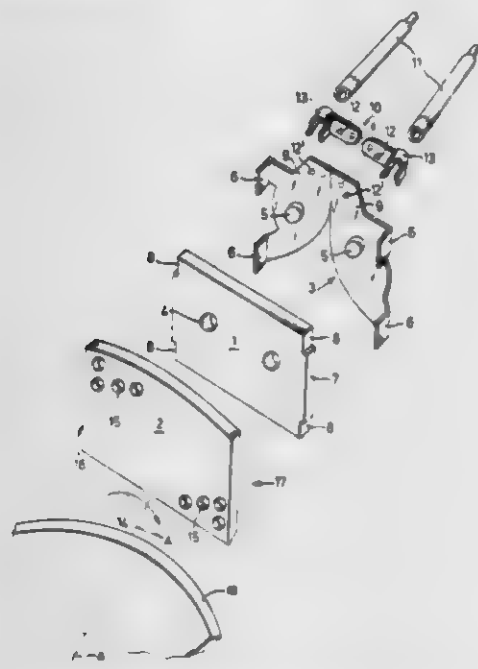
Filed Aug. 1, 1978, Ser. No. 929,985

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1977, 2734585

Int. Cl.² F16D 69/00

U.S. Cl. 188-73.1

5 Claims



1. In a disc brake pad assembly including a carrier body and a friction element affixed to the carrier body and having a work face for cooperation with a brake disc which has a major direction of rotation and a rotary axis; said friction element having a leading side and a trailing side with respect to said major direction of rotation; said carrier body having two oppositely located narrow sides spaced from one another in a circumferential direction of the brake disc; the improvement wherein said carrier body is hard porcelain; the improvement further comprising means defining a plurality of blind recesses provided in said friction element and being open solely towards said work face; said recesses being grouped such as to occupy solely zones adjacent said leading and trailing sides of said friction element and the recesses arranged in the zone adjacent said leading side being situated at a greater distance from said rotary axis than the recesses arranged in the zone adjacent said trailing side; and a protective covering attached

to said carrier body and extending over a rear face of said carrier body oriented away from said friction element; said protective covering further extending over at least one part of said narrow sides of said carrier body.

4,230,208

MOISTURE REMOVAL ASSEMBLY

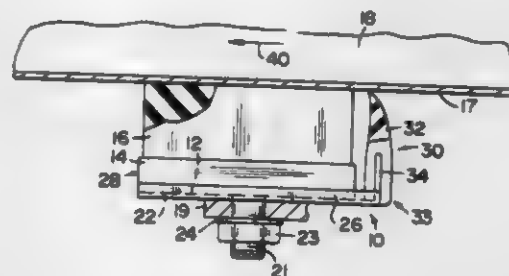
John T. Gale, 3785 44th Ave., North, St. Petersburg, Fla. 33714

Filed Jul. 5, 1979, Ser. No. 54,858

Int. Cl.² F16D 69/00

U.S. Cl. 188-73.1

7 Claims



1. A moisture removal assembly of the type primarily designed to be mounted adjacent a wheel rim engaging brake shoe and pad, said assembly comprising: base means, dimensioned and configured for mounting engagement with the brake shoe, wiper blade means attached to said base means and extending outwardly therefrom into sliding engagement with the wheel rim, a stabilizing means secured to said base means and disposed to extend outwardly therefrom into at least partial overhanging relation to the brake shoe, whereby relative rotation between the brake shoe and said base means is limited through disposition of said stabilizing means, stabilizing means comprises at least two stabilizing elements projecting outwardly from opposite side portions of said base means in overlapping relation to opposite side portions of the brake shoe, said blade means formed from a substantially flexible material and disposed in spaced apart relation from the brake shoe and pad so as to engage the wheel rim prior to the pad when the wheel rim rotates in a predetermined direction, whereby moisture is removed from the wheel rim prior to engagement with the brake pad so as to avoid slippage therebetween.

4,230,209

MEANS OF STRINGING TROLLEY WIRES

Yasushi Ohura, Tokyo; Susumu Ohwada, Yokohama; Akira Nakamura, Suita; Mitsuo Kitanishi, Nishinomiya; Yakuharu Nakamura, and Akio Tamura, both of Hitachi, all of Japan, assignors to Japanese National Railways, Tokyo; Sumitomo Electric Industries, Ltd., Osaka and Hitachi Cable Ltd., Tokyo, all of Japan

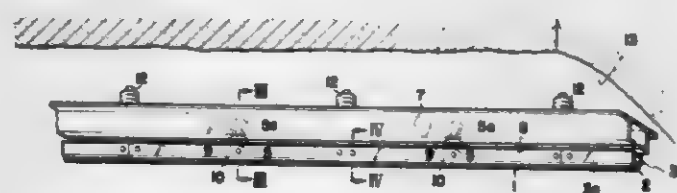
Filed Oct. 12, 1978, Ser. No. 950,614

Claims priority, application Japan, Oct. 20, 1977, 52/125080

Int. Cl.² B60M 1/20

U.S. Cl. 191-40

5 Claims



1. Means of stringing trolley wires in a railway tunnel comprising a supporting portion fixedly installed at the inner surface of the railway tunnel, said supporting portion comprising a long box member having an opening formed at the bottom thereof,

resilient portions supported at predetermined intervals by said supporting portion, each of said resilient portions comprising a spring member and supporting rod which is protruded through said opening of said box member and adapted to move longitudinally and incline in compliance with the condition of the trolley wires, and a sliding portion supported by said resilient portions, said sliding portion comprising a pair of long ears each having a lengthwise rigid structure and rotatively supported by said supporting rods and long trolley wires each clamped by said pair of said long ears to provide the sliding surface of said trolley wires with a lengthwise rigid structure.

4,230,210

CLUTCH FOR A TEXTILE MACHINE

Otto Hintzsch, Wallisellen, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

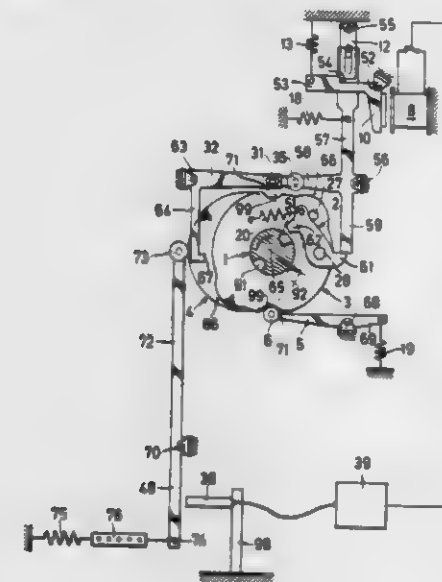
Filed Jul. 19, 1978, Ser. No. 926,194

Claims priority, application Switzerland, Jul. 21, 1977, 009049/77

Int. Cl.² F16D 11/06

U.S. Cl. 192-28

14 Claims



1. A clutch for moving a mechanical element of a textile machine, said clutch comprising an intermittently rotatable input shaft having at least one recess therein; a cam plate rotatably mounted on said shaft, said cam plate having at least one non-circular surface on a periphery thereof; a pawl pivotally mounted on said cam plate for movement between an inoperative position spaced from said recess and an operative position engaged in said recess; at least one controlled abutment movable from a first position in the orbit of said pawl to restrain said pawl from said recess and to a second position spaced from said orbit; input means for movement into engagement with said non-circular surface of said cam plate to effect rotation of said cam plate independently of said shaft; a spring biasing said input means into engagement with said cam plate; and a limit stop on said cam plate for limiting movement of said pawl into said inoperative position, said stop being positioned to limit movement of said input means relative to said non-circular surface.

4,230,211

FREE WHEEL HUB APPARATUS FOR VEHICLES
Hiromi Goto, Chiryu, and Tooru Kagata, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

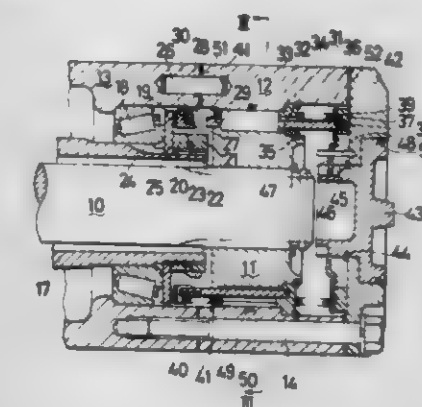
Filed Jan. 18, 1978, Ser. No. 870,356

Claims priority, application Japan, Jan. 26, 1977, 52/7590

Int. Cl.² F16D 41/08

U.S. Cl. 192-35

4 Claims



1. A free wheel hub apparatus for a vehicle including a wheel hub and an axle shaft, comprising: a body member integrally connected and rotatable with said wheel hub, an inner member disposed within said body member and integrally rotatable with said axle shaft, a bearing member interposed between an outer periphery of said inner member and an inner periphery of said body member so as to rotatably engage said inner member and said body member, a plurality of rollers interposed between said outer periphery of said inner member and said inner periphery of said body member, a cage member loosely penetrating said bearing member and including openings within which said plurality of rollers are disposed, a knuckle member non-rotatably mounted on said vehicle with respect to a rotational direction of said shaft, first frictional means attached to one end of said cage member and operatively engaging or disengaging said cage member with said knuckle member according to an axial movement of said cage member; said frictional means attached to another end of said cage member for engaging or disengaging said cage member with said body member according to said axial movement of said cage member; and means for axially moving said cage member.

4,230,212

REAR HUB FOR A BICYCLE

Kimihito Tsuchie, and Takafumi Harada, both of Sakai, Japan, assignors to Shimano Industrial Company, Limited, Osaka, Japan

Filed Nov. 2, 1978, Ser. No. 957,019

Claims priority, application Japan, Nov. 17, 1977, 52/154896[U]

Int. Cl.² B62M 9/12; F16D 41/12; F16H 55/30

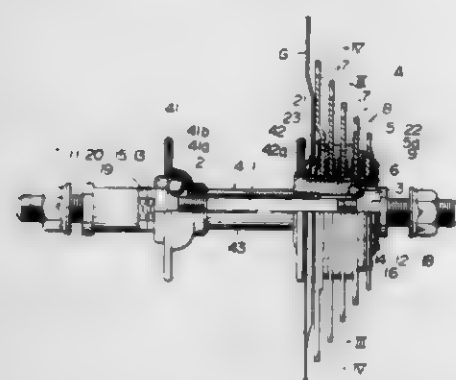
U.S. Cl. 192-64

8 Claims

1. A rear hub for a bicycle comprising:

- a hub shaft;
- a pair of bearings;
- a hub shell rotatably supported to said hub shaft through said bearings, said hub shell being provided at both axial ends thereof with a pair of hub flanges and with a cylindrical bearing member extending axially outwardly of one of said hub flanges, said cylindrical bearing member having at its outer periphery a plurality of first engaging grooves and a plurality of second engaging grooves, both said first and second grooves extending axially of said cylindrical bearing member;

(d) a multi-stage sprocket assembly comprising: a plurality of different diameter sprockets, a plurality of spacers for keeping said sprockets spaced at regular intervals, and at least one connector for connecting said sprockets through said spacers and for rotatably supporting said sprockets, said connector having a rod-like shape and being insertable into one of said first engaging grooves, said connector being provided at its lengthwise intermediate portion with a plurality of engaging projections which engage with said spacers and support said spacers non-rotatably with respect to said connector, at its one lengthwise end with a stopper for restraining said sprockets and spacers from



moving in one axial direction of said connector, and at its other lengthwise end with an annular holding plate, said holding plate serving to restrain said sprockets and spacers from moving in the other axial direction of said connector and being detachably mounted with respect to said connector, each of said sprockets having a central bore fit onto said cylindrical bearing member, said central bore having at its inner periphery pawls in mesh with said second engaging grooves of said cylindrical bearing member respectively; and

(e) mounting means for detachably mounting said multi-stage sprocket assembly to said cylindrical bearing member.

4,230,213

LIQUID REJECTING COIN CHUTE

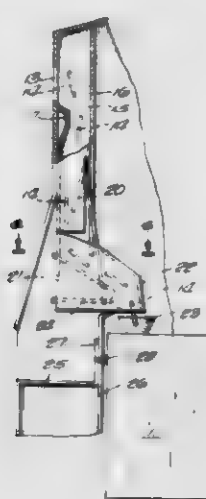
Carl E. Spring, La Crosse, Wis., assignor to La Crosse Cooler Company, Inc., La Crosse, Wis.

Filed Dec. 26, 1978, Ser. No. 973,510

Int. Cl.³ G07F 3/04

U.S. Cl. 194-1 K

5 Claims



1. In a coin-operated dispensing machine having a coin chute and an electrical coin mechanism which is subject to malfunction when exposed to entry of liquid through the coin chute, the improvement for protecting the coin mechanism from such liquid, including a vertically oriented chute having a front face with a coin slot therethrough and walls which obstruct direct flow of liquid injected in said coin slot into said coin mechanism, said coin slot comprising a round hole through which

coins are admitted to the chute while vertically oriented and said chute providing a gravity free fall zone for liquid and coins entering said coin slot, an opening for liquid at the bottom of the chute through which the liquid is discharged and a liquid pervious gate extending across the chute and offset below said coin opening and above the liquid opening for diverting coins from the path of liquid and for delivering the coins to the coin mechanism, said gate having a deflecting surface inclined at an angle relative to the chute to intercept free falling coins and guide the coins with the faces of the coins generally parallel to the deflecting surface toward a coin spout which is horizontally offset from the liquid outlet and for discharge into the coin mechanism

4,230,214

COIN OPERATED CIGARETTE CASE

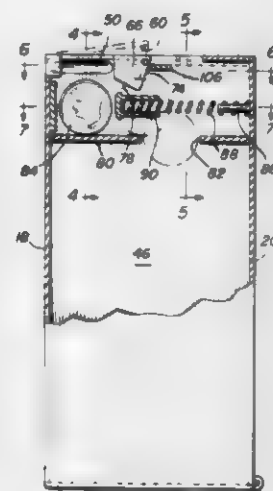
Armando G. Cortez, P.O. Box 31413, El Paso, Tex. 79931

Filed May 15, 1979, Ser. No. 39,570

Int. Cl.³ G07F 5/02

U.S. Cl. 194-59

10 Claims



1. A coin operated cigarette case, said case defining a housing in which to receive a plurality of cigarettes and defining an outlet opening through which a cigarette may be discharged from the interior of said housing, flush closing door means for said opening shiftable between a flush closed position and open position, said housing defining coin slot means for receiving coins therein and temporarily positioning coins within predetermined position within said housing, and coin displacement means supported within said housing for shifting between inactive and active positions and manually shiftable between said positions from the exterior of said housing, said door including abutment means engageable by said coins, upon displacement of the coins by said coin displacement means during its movement from said inactive position to said active position, to shift said door means from said flush closed position toward said open position.

4,230,215

CONTROL SYSTEM FOR AN MP REFINING UNIT RECEIVING MEDIUM SWEET CHARGE OIL

Avilino Sequeira, Jr., and Frank L. Barger, both of Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 19, 1978, Ser. No. 952,899

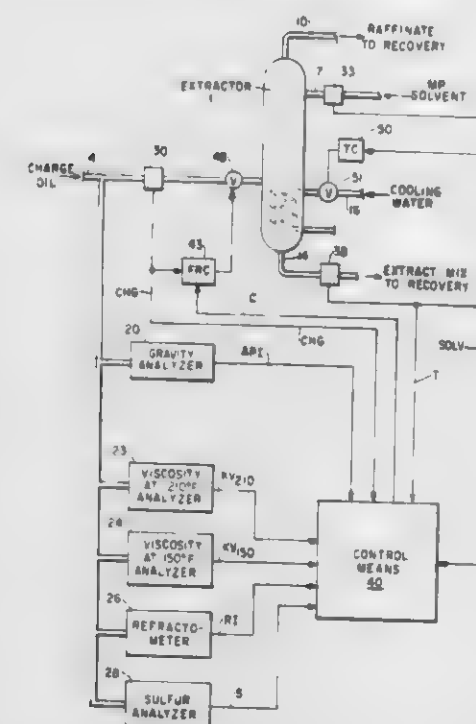
Int. Cl.³ C10G 21/00; C06G 7/58

U.S. Cl. 196-46

9 Claims

1. A control system for an MP refining unit receiving medium sweet charge oil and N-methyl-2-pyrrolidone, one of which is maintained at a fixed flow rate while the flow rate of the other is controlled by the control system, wherein said refining unit treats the received charge oil with the received methyl-2-pyrrolidone to yield extract mix and raffinate, comprising gravity analyzer means for sampling the medium sweet charge oil and providing a signal API corresponding to the

API gravity of the medium sweet charge oil, refractometer means for sampling the medium sweet charge oil and providing a signal RI corresponding to the refractive index of the charge oil, viscosity analyzer means for sampling the medium sweet charge oil and providing signals KV₁₅₀ and KV₂₁₀ corresponding to the kinematic viscosities, corrected to 150° F. and 210° F., respectively, sulfur analyzer means for sampling the medium sweet charge oil and providing a signal S corresponding to the sulfur content of the medium sweet charge oil, flow rate sensing means for sensing the flow rates of the me-



dium sweet charge oil and of the N-methyl-2-pyrrolidone and providing signals CHG and SOLV, corresponding to the medium sweet charge oil flow rate and the N-methyl-2-pyrrolidone flow rate, respectively, means for sensing the temperature of the extract mix and providing a corresponding signal T, and control means connected to all of the analyzer means, to the refractometer means, and to all the sensing means for controlling the other flow rate of the charge oil and the N-methyl-2-pyrrolidone flow rates in accordance with signals API, KV₂₁₀, KV₁₅₀, S, RI, CHG, T and SOLV.

4,230,216

APPARATUS FOR INTERMEDIATELY STORING PRODUCTS ON STORAGE DEVICES

Klaus Wiens, Bad Dürkheim, Fed. Rep. of Germany, assignor to Paper Converting Machine Company, Green Bay, Wis.

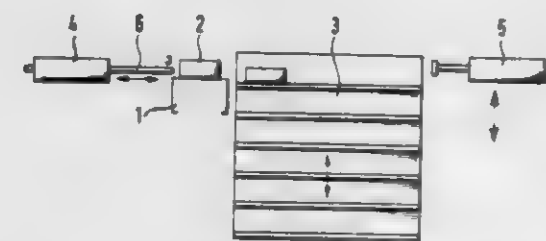
Filed Jan. 18, 1979, Ser. No. 4,574

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802339

Int. Cl.³ B65G 1/06, 1/10

U.S. Cl. 198-347

8 Claims



1. Apparatus for intermediately storing products on a storage device, such as a pallet or the like, comprising:

(a) an inserter member for displacing products from a conveyor to a storage device, positioned on one side thereof and arranged for displacement transversely of the conveyor, said inserter member having a displaceable plunger combined with a planar support surface;

(b) means for discharging stored products onto said planar surface; and

(c) a stripper member positioned relative to said support surface for returning the intermediately stored products to the conveyor in conjunction with displacement of said plunger.

4,230,217

BOTTLE ALIGNING MACHINE

Kyuhei Ayaha, Tokushima, Japan, assignor to Shikoku Kakooki Co., Ltd., Tokushima, Japan

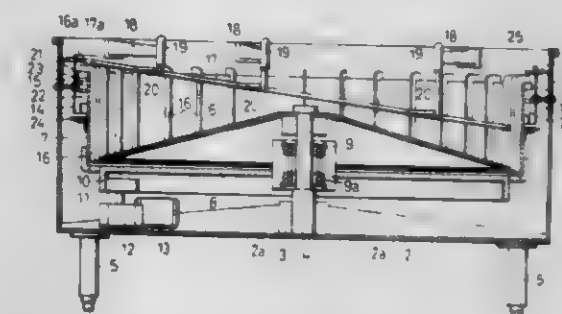
Filed Nov. 13, 1978, Ser. No. 960,270

Claims priority, application Japan, Nov. 16, 1977, 52-154575[U]

Int. Cl.³ B65G 47/24

U.S. Cl. 198-397

5 Claims



1. In a machine for receiving empty bottles and feeding the bottles out in a row with the mouth up to receive a liquid of the type including:

a fixed outer cylinder (1) having a cylindrical inner wall; a rotary inner cylinder (7) coaxial with the cylindrical inner wall;

a conical bottle rolling table (6) disposed inside the cylinder for receiving the bottles supplied to the inner cylinder from above;

bottle guiding means extending from the bottle rolling table (6) along the inner periphery of the inner cylinder (7) to a position thereabove;

bottle delivering means provided on the inner periphery of the inner cylinder (7) for raising the bottles along the bottle guiding means to a position above the inner cylinder (7) and pushing out the bottles in a horizontal position over the upper edge of the inner cylinder (7);

a bottle support (24) secured to the outer periphery of the inner cylinder (7); and

means for dropping the bottles pushed out from the inner cylinder, bottom down under gravity onto the bottle support;

the improvement comprising:

said means for dropping the bottles onto the bottle support (24) includes intermediate bottle receiving means arranged above the bottle support (24) between the cylindrical inner wall and the inner cylinder (7) for receiving and guiding the bottles pushed out from the inner cylinder (7) in a horizontal position, and bottle position and adjusting means provided on the outer periphery of the inner cylinder (7) for moving the bottles forward along the intermediate bottle receiving means while holding them in different positions in accordance with their orientation, and dropping them bottom down from the terminal end of the intermediate bottle receiving means onto the bottle support (24).

4,230,218

APPARATUS FOR TRANSPORTING LAYERS OF SHEETS

Otto Kunzmann, Neuffen, Fed. Rep. of Germany, assignor to Bielomatik Leuze & Co., Fed. Rep. of Germany
Filed May 24, 1978, Ser. No. 909,248
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724980

Int. Cl.³ B65G 47/31, 15/14, 37/00

U.S. Cl. 198—461

16 Claims



1. An apparatus for transporting articles, comprising: a belt conveyor adapted to run at a substantially constant velocity;
- a belt run, formed by upper and lower belts, which is disposed upstream of the belt conveyor, although overlapping the belt conveyor at least in part;
- means for intermittently driving the belt run at velocities different than that of the belt conveyor; and,
- means for cyclically increasing and decreasing the distance between the upper and lower belts for loading and engaging the articles, and for raising only the downstream end of the upper belt to release the articles in the overlapped region.

4,230,219

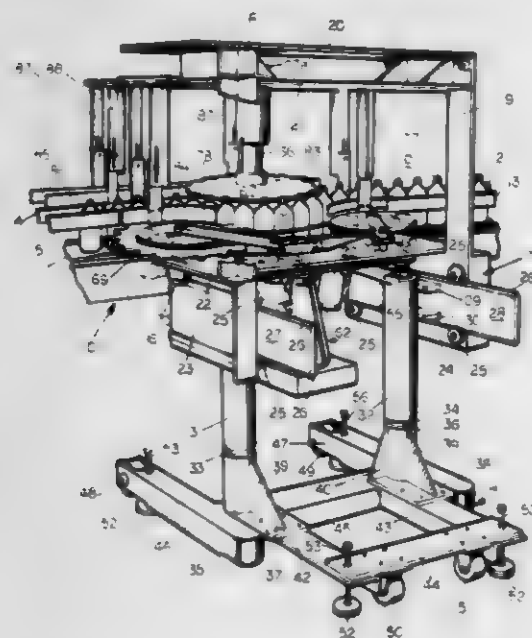
CAVITY IDENTIFICATION HANDLING SYSTEM

John J. Pezzin, Toledo, Ohio, and Darin O. Riggs, Ottawa-Lake, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Jun. 21, 1979, Ser. No. 50,914

Int. Cl.³ B65G 37/00

U.S. Cl. 198—481

10 Claims



7. In apparatus for handling generally cylindrical articles through an inspection position, comprising: a driven, horizontal conveyor for supporting and moving a line of upright articles;
- an inspection device carried on a generally horizontal platform at one side of said conveyor;
- spaced, fixed guide rails overlying said conveyor for maintaining the articles in a generally straight line on said conveyor;

said guide rails being interrupted to form a gap in the area opposite the location of said platform;

movable guide means in said gap for guiding articles offline of said conveyor onto said platform to thereby successively move the articles past the inspection position;

movable mounting means for said guide means and said inspection device for movement, as a unit, laterally toward and away from said conveyor; and

straight line guide means carried by said movable mounting means and movable into alignment between the fixed guide rails to fill said gap on said conveyor when said movable mounting means is moved away from said conveyor a predetermined distance.

4,230,220

VERTICAL BULK-CONVEYING APPARATUS AND BULK DELIVERING SYSTEM UTILIZING THE CHARACTERISTICS THEREOF

Fujio Iino, Tokyo, Japan, assignor to Kabushiki Kaisha Mitsu Mitke Seisakusho, Tokyo, Japan

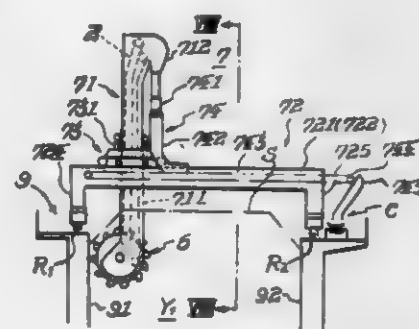
Filed Jul. 7, 1978, Ser. No. 922,790

Claims priority, application Japan, Jul. 26, 1977, 52-88811; Jan. 24, 1978, 53-5797

Int. Cl.³ B65G 15/14, 63/00

U.S. Cl. 198—509

2 Claims



1. A vertical bulk cargo delivering system comprising: a vertical bulk-delivering unit (71) including a vertical bulk-conveying apparatus comprised of an integral combination of a vertical conveyor (2) and a highspeed bulk projector (5), and a rotary bucket wheel type bulk feeder (6) arranged on one side of said bulk projector, said bulk projector (5) including a bulk receiving chute (53) having bulk inlet mouth (530) opening toward the bulk charging port (63) of said bulk feeder, said vertical conveyor (2) being arranged in a substantially vertical space defined in a tubular casing frame and including two endless conveyor belts (2a, 2b) adapted to be driven upwardly in a substantially vertical direction in a face-to-face overlapping relation closely engaging each other along the opposite side edges thereof so as to serve the purpose of conveying bulk material as held between the opposing faces of the two conveyor belts vertically upward, said two conveyor belts being guided at the bulk-receiving bottom end so as to turn around in directions opposite to each other, said tubular casing frame including a vertical frame section and a lower frame section tiltably jointed thereto and being formed at the bottom end with an overhanging portion, said bulk projector (5) being carried on said overhanging portion of said tubular casing frame to serve to project bulk material rapidly under the effect of centrifugal force in an inclined upward direction to the bottom belt junction where the two endless conveyor belts come to join each other; a rotary boom type unloader (8) arranged for movement along a cargo handling place and including a luffing boom (82); and a unit support frame (79) mounted on said luffing boom at the free end thereof so as to be held at all times in a horizontal position and supporting said delivering unit (71) for vertical movement and rotation about the vertical axis thereof.

4,230,221

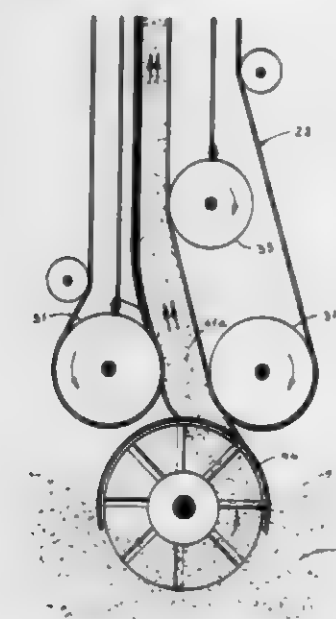
ELEVATOR-CONVEYOR FOR BULK MATERIAL

Isaac Beresinsky, Haifa, Israel, assignor to Moledeth Development Co., Ltd., Haifa, Israel
Filed Jun. 15, 1977, Ser. No. 806,962
Claims priority, application Israel, Jun. 17, 1976, 49821

Int. Cl.³ B65G 15/14

U.S. Cl. 198—513

6 Claims



1. In an elevator-conveyor for conveying bulk material over a predetermined path, at least a portion of which path is in a vertical or near vertical direction and comprising a pair of juxtaposed belts between which the bulk material is to be located and air pressure means adapted to act directly on one or both of the outer belt surfaces when the belts are in the vertical or near vertical direction so that the belts are pressed towards one another and against the interposed bulk material so as to enclose the same and so that the juxtaposed longitudinal edge portions of the belts are pressed against each other, the improvement wherein a terminal portion of the elevator-conveyor designed to be located in the vertical or near vertical direction comprising a pair of spaced apart lower drums at the lower end of the conveyor and over which the juxtaposed belts pass, and an upper drum engaged with one of the belts, the relative position of the drums causing the belts to form oppositely facing substantially straight terminal portions of said belts which are disposed at an acute angle with respect to each other and define therebetween a substantially wedge shaped feed zone, said angle not being greater than that which allows entrainment of the material therein, said zone opening outwardly from a position where the belts are substantially in contact towards a feed end of the conveyor where the belts define a maximum thickness of the feed zone, said straight terminal portions having lengths substantially greater than the maximum thickness of said feed zone, and a feed mechanism for gathering and projecting said bulk material into said feed zone.

4,230,222

GRAIN CONVEYOR ASSEMBLY

Philip G. Clark, 726 Ash Rd., Worthington, Minn. 56187
Filed Jan. 22, 1979, Ser. No. 5,478

Int. Cl.³ B65G 37/00

U.S. Cl. 198—580

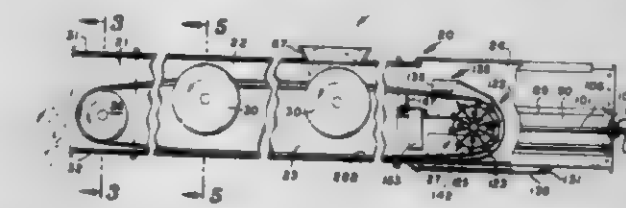
10 Claims

1. A conveyor assembly for conveying material along a forward longitudinal path of travel, comprising: a head section having a head section pulley assembled for rotation about a horizontal lateral axis;
- a tail section having a tail pulley assembled for rotation about a horizontal lateral axis;
- one pulley being a drive pulley and the other pulley being an idler pulley;

a plurality of intermediate conveyor sections assembled between the head section and the tail section;

an endless flexible conveyor belt trained longitudinally over the head section pulley and the tail pulley and extending through the intermediate section and having an upper forward run from the tail pulley to the head section pulley, and a lower return run from the head section pulley to the tail pulley;

a plurality of conveyor belt rollers assembled in said intermediate sections for rotation about horizontal, lateral axes and positioned to carry a portion of the forward run of the conveyor belt, each said roller having a laterally concave surface whereby the conveyor belt forward run assumes a lateral concave profile as it travels over the roller to assist in maintaining material on the conveyor belt forward run;



said head section pulley comprising the drive pulley, said tail pulley comprising the idler pulley, and including a tail pulley shroud having a shroud housing substantially enclosing the tail pulley and the rear portion of the conveyor belt forward run and the rear portion of the conveyor belt return run, said tail pulley having a plurality of paddles mounted in straddling relationship to the conveyor belt traveling over the tail pulley and extending radially outward thereof, said shroud having a funnel-shaped outlet opening directed toward the rear portion of the forward run of the conveyor belt, said paddles positioned to sweep accumulated spilled material from the lower portion of the shroud housing to the upper portion and then through the outlet to discharge it on the forward run of the conveyor belt.

4,230,223

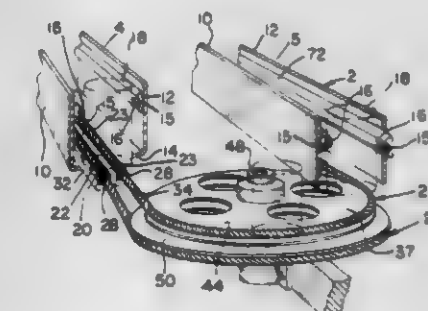
PLURAL CABLE CONTAINER CONVEYOR AND TURN THEREFOR

Louis Flajnik, Berwyn, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 727,069, Sep. 27, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 940,927
Int. Cl.³ B65G 17/00

U.S. Cl. 198—817

5 Claims



1. A conveyor for a plural cable conveyor system comprising horizontal straight runs providing horizontally coplanar support surfaces for cans deposited therein and an interconnecting turn,
- said turn comprising two superposed pulleys including an upper pulley and a lower pulley, each independently rotatable on a common vertical axis;
- the upper pulley being of smaller diameter than the lower pulley and having an upper can-supporting surface;
- a first conveying cable having a length extending from one of said runs about said upper pulley and into the other straight run and having a sector in the plane of its straight

runs projecting above the top surface of the upper pulley for supporting with said top surface of the upper pulley the bottom of a container and carrying it around said turn; and

a second cable trained about the lower pulley and coplanar with said first cable in the first run and descending at an acute angle with respect to the plane of the first cable into the turn below the upper pulley and emerging beyond the turn at an acute angle into the plane of said first cable and thereat advancing under the containers exiting from the turn and with said first cable supporting and carrying said containers in the other straight run; and

guide means disposed in offcenter relation with respect to said first cable for shifting the containers radially inwardly into said upper pulley in said turn to a position for entire support of the containers solely by the upper pulley and first cable in said turn, said first cable in said turn being disposed radially outwardly of the vertical central axis of said containers, and said first cable protruding slightly above said top surface of the first pulley and supporting said containers in the turn radially outwardly of the central vertical axes of such containers with reference to said axis of rotation of the pulley thereby slightly tilting the containers in the turn toward the axis of rotation of the pulleys, whereby centrifugal forces acting on the containers so tilted tend to bias said containers to upright positions in the turn thereby minimizing the pressure of the contact of the containers with said guide means and thus minimizing or precluding scuffing of any decorative art work or coating on the containers.

4,230,224

CIGARETTE AND LIGHTER CASE

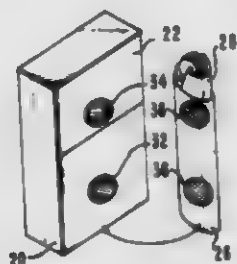
Patrick W. Weeks, 47-360 F Hui Iwa St., Kaneohe, HI. 96744

Filed Feb. 16, 1979, Ser. No. 12,711

Int. Cl.³ A24F 15/10; B65D 85/10

U.S. Cl. 206—87

5 Claims



1. A combination cigarette case and lighter case, comprising: a cigarette case adapted to receive a package of cigarettes, said case including a lid movable between open and closed positions; a tubular lighter case of non rigid material adapted to receive a cigarette lighter and to fit snugly therearound; and means for removably securing said lighter case to said cigarette case and for holding said lid in a closed position comprising a first set of fasteners carried by the cigarette case and a co-operable first set of fasteners carried by said lighter case; and a second set of fasteners carried by said lid and a co-operable second set of fasteners carried by said lighter case said first sets and second sets of fasteners being releasably engageable so that when said sets are engaged the lighter and said lighter case will be secured to said cigarette case and said lid will be held in a closed position.

4,230,225
STORAGE CONTAINER FOR RECORDING TAPE CARTRIDGE

Shuhei Okada, Toyonaka; Masana Uozumi, Takatsuki; Masanori Matsuura, Yawata, and Masazumi Sadaike, Ibaraki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

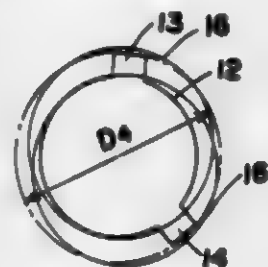
Filed Dec. 18, 1978, Ser. No. 970,395

Claims priority, application Japan, Dec. 19, 1977, 52/171461[U]

Int. Cl.³ B65D 85/672

U.S. Cl. 206—387

22 Claims



1. A storage container for a magnetic recording tape cartridge which has a pair of tape hubs, each having a plurality of hub-toothings equally spaced and having inner facing end faces and projected radially inwardly within a drive shaft inserting hole of the hub, said container comprising:

an open receptacle container body having a pair of side walls, a bottom wall and an end wall connected with each of said side walls at one end thereof; a lid member connected with said receptacle container body for rotation to close the container; and a pair of hub locking members disposed in either the receptacle container body or the lid member so as to lock said hubs against rotation, each of the hub locking members comprising a column like boss engageable within the drive shaft inserting hole of the hub, and two engaging keys substantially radially outwardly projected from said boss, wherein the improvement is characterized in that said boss has a substantially conical top portion and said keys are arranged in such a manner that at least one of said engaging keys extends into a space between two adjacent hub-toothings while the outermost portion of the other engaging key is located in radial alignment with the end face of any one of said hub-toothings.

4,230,226

EMERGENCY PRESCRIPTION KIT FOR TRAVELERS

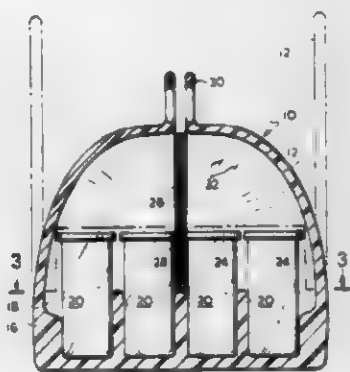
Eldon L. Boe, 6455 LaJolla Blvd. 103, La Jolla, Calif. 92037

Filed Aug. 8, 1978, Ser. No. 932,029

Int. Cl.³ B65D 1/36, 71/00, 75/54

U.S. Cl. 206—570

2 Claims



1. An emergency preescription kit for travelers comprising and characterized by:

(a) a carrying case of tough, waterproof material, said case having a base, flexible side walls with a pair of handles entirely unitary with said walls, said case having a top opening positively closed by a zipper;

(b) said case being internally compartmented by a single layer grid holding a plurality of containers in spatially ordered arrangement on said base;

(c) said walls having form-retaining thicker lower portion with internal pockets formed thereabove adjacent to said containers with drug informational pamphlets therein; and

(d) said containers having corresponding drugs therein and container contents-identifying means visible through said top opening, the majority at least of said drugs being a standardized multiple prescription which can be professionally and quickly written on block by a user's physician as a necessary complement of drugs for a traveler, whereby a user-traveler's anticipated emergency medical needs may be met and the physician's time is reduced to that necessary for any additions and deletions of drugs contra-indicated for a particular individual's use.

4,230,227

SHIPPING CONTAINER

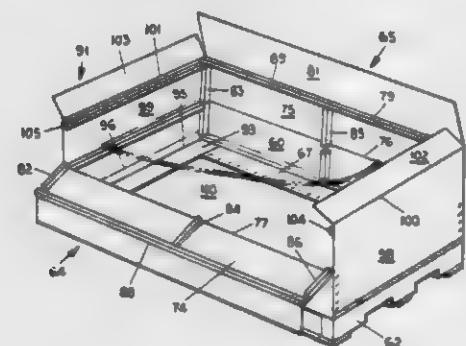
James L. Kowall, and Paul M. Taylor, both of Grand Rapids, Mich., assignors to Powerpak, Inc., Grand Rapids, Mich.

Filed Oct. 24, 1979, Ser. No. 84,970

Int. Cl.³ B65D 6/26, 19/20

U.S. Cl. 206—600

21 Claims



1. A folding box comprising:

a base;

a pair of first opposing panels secured to said base, said first panels including a score line adjacent said base and dividing each first panel into a side wall foldable into a generally perpendicular position relative to the base along said score line and a base flap secured to said base;

a pair of second opposing panels, each including a score line adjacent said base and dividing each second panel into a bottom flap overlying the surface of said base and an end wall foldable into a generally perpendicular position relative to the base along said score line;

at least one rigid horizontal reinforcing member secured to each of said end walls, said at least one rigid horizontal reinforcing member having a length equal to that of the end wall;

rigid vertical supports provided along lateral edges of the side walls and secured thereto, said rigid vertical supports each having a bottom surface which seats against the bottom flap of a second panel when the side walls are in an upright position, thereby frictionally holding the second panels on the base;

a rigid brace disposed laterally on each of said side walls adjacent an upper edge thereof and secured thereto for further rigidifying said framework; and

means forming a rigid interlocking vertical connection between said at least one rigid horizontal reinforcing member, said laterally-disposed rigid brace and said rigid vertical supports;

whereby said rigid vertical supports, said laterally-disposed rigid brace and said at least one rigid horizontal reinforcing member cooperate, when interlocked, to form a rigid framework for said container and when said vertical supports, said laterally-disposed rigid brace and said rigid horizontal reinforcing member are not interlocked, said score lines permit folding of said side and end walls to a

collapsed position, thereby facilitating storage of said container.

14. A folding box comprising:

a base;

a pair of first opposing panels secured to said base and pivotally connected thereto to form opposing side walls;

a pair of second opposing panels each including an end wall foldable into an upright portion along a first score line adjacent said base and a bottom flap arranged to overlie a portion of a top surface of said base and secured thereon;

two horizontal support members fixed to each end wall between a top edge thereof and the bottom flap;

a laterally-arranged brace disposed across the upper edge of each first panel;

vertical supports including two axially arranged struts secured to the lateral edges of each first panel and longitudinally spaced apart to define a first slot;

said vertical supports forming a second slot defined by said laterally-arranged brace and a top surface of a strut of said vertical supports; and

said horizontal support members received by said first and second slots in an interlocking relationship when the box is assembled;

whereby said interlocked vertical and horizontal supports form a rigid framework for said container and provide for easy assembly of said container.

4,230,228

PIN TYPE SOLID BUTT ROTARY COUPLER

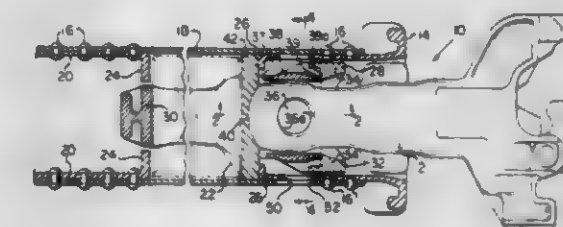
John W. Kaim, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Oct. 23, 1978, Ser. No. 953,922

Int. Cl.³ B61G 9/00

U.S. Cl. 213—62 A

5 Claims



1. In a rotary type railroad car coupler assembly including a sill, a striker secured to said sill, a coupler having a head and a shank, a draft gear, a yoke positioned so as to act in concert with said draft gear and said striker to transmit draft forces from said coupler to said sill, said yoke having a substantially cylindrical cavity therein, a yoke collar disposed in said cavity, said yoke collar having two substantially opposing ends and two substantially opposing pin apertures therein, said yoke collar acting to receive at least a portion of said shank end to transmit draft forces from said coupler head to said yoke, and a pin connecting said yoke collar and said shank whereby said yoke collar and said shank are free to rotate within said yoke cavity, said pin being fitted into both of said pin apertures in said yoke collar, the improvement which comprises a yoke collar constructed so that said collar is capable of being reversibly disposed within said yoke cavity, and said yoke invertibly disposed within said striker and said sill.

4,230,229

SNAP ON BOTTLE CAP

Harry Crisci, New Castle, Pa., assignor to Northern Engineering & Plastics Corporation, New Castle, Pa.

Continuation-in-part of Ser. No. 967,390, Dec. 7, 1978. This application Feb. 21, 1979, Ser. No. 13,269

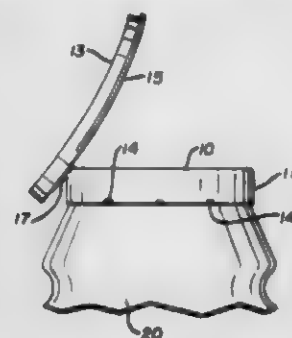
Int. Cl.³ B65D 41/48

U.S. Cl. 215—253

5 Claims

1. A resilient deformable cap comprising a planar top, an annular flange depending from the peripheral edge of the top

and having a lower peripheral edge, an annular rib on the inner surface of said annular flange, a reinforcing ring positioned in closely spaced relation to and around the outer surface of said annular flange, said ring having a bottom peripheral edge located beneath said annular flange lower peripheral edge, a vertical hinge portion in said annular flange, said hinge portion being defined by a pair of circumferentially spaced vertical slots defined in said annular flange and extending from said top peripheral edge to said annular flange lower peripheral edge so that said hinge portion is flexible radially outwardly of said annular flange, a portion of said reinforcing ring being integrally attached to said annular flange at said hinge portion and a plurality of circumferentially spaced frangible elements closely connecting the remainder of said reinforcing ring with



the remainder of said annular flange, said hinge portion of said annular flange being normally held in position to be in circumferential alignment with the remainder of said annular flange by said reinforcing ring, said hinge portion of said annular flange being deformable by movement of said reinforcing ring so that moving said reinforcing ring to break said frangible elements deforms said hinge portion outwardly and upwardly of said annular flange so that said deformed hinge portion in combination with said reinforcing ring forms a fulcrum of a pull tab upon which pulling force is exerted via said reinforcing ring, said hinge portion and said planar top remaining intact the remainder of said annular flange being permitted to expand radially outward under the influence of said pulling force being exerted thereon via said pull tab.

4,230,230

PLASTIC OVERCAP FOR BOTTLE PACKAGE

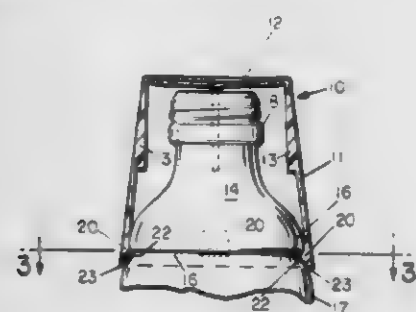
George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 1, 1979, Ser. No. 34,716

Int. Cl.³ B65D 41/16, 41/18, 41/22

U.S. Cl. 215-321

5 Claims



1. A container package comprising the combination of a container having an annular body wall including a neck and closure receiving finish at one end defining an opening and a closure engaged thereon closing the container, the annular body wall including an annular bead spaced below the finish and having an apex thereon and groove of lesser diameter below said apex,

an overcap of generally cup-shaped configuration made of a deformable plastic material, said overcap including an integral end wall and annular side wall, the latter defining a circular rim opening opposite the end wall,

a plurality of inwardly protruding lugs on the inside of said annular side wall approximately adjacent said rim end thereof, each of said lugs including an axial, downwardly

and inwardly tapering rib and apex, the apex of said lugs being described to lie along a generally circular line projection, the diameter of said circular line projection being less than the diametrical apex dimension of said annular bead on the container wall, the lugs of the overcap engaging collectively over said bead on the container and axially beyond the apex in a cup-inverted fashion placing the annular section of the overcap side wall in tension and distorting the arcuate configuration of the side wall segment between two adjacent lugs thereon to a segment of increased radius.

4,230,231

CLOSURE CAP

Robert R. Burnett, Sunrise, and John W. Box, Miami, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

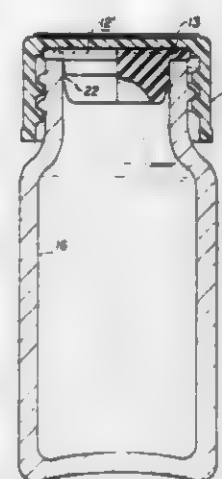
Continuation-in-part of Ser. No. 930,157, Aug. 1, 1978. This

application Apr. 16, 1979, Ser. No. 30,158

Int. Cl.³ B65D 39/08

U.S. Cl. 215-329

10 Claims



1. For use in the medical and biochemical art field, a reusable and removable closure cap for sealing a vial which has a uniformly dimensioned cylindrical opening exteriorly threaded at one end, comprising as a single integral unit a rigid tubular cover of plastic material interiorly threaded for registering with the threads on said vial, said cover being closed at only one end, a plug-type stopper of highly elastic and relatively soft material having a flat top area and a coaxially positioned bottom tapered portion, that part of said stopper which is below said flat top area having an annular lip intermediate the ends thereof which has a lateral dimension larger than the diameter of said cylindrical opening, but smaller than the lateral dimension of said flat top area, said tapered portion being adapted to enter the open end of said vial and to provide with said lip a liquid and air-tight seal for the contents of said vial, and a pressure-sensitive material of strong-bonding adhesive qualities bonding the central top portion of said rigid tubular cover in its interior to the central flat top portion of said highly elastic stopper, said stopper being characterized by its ability at room temperature to stretch under low stress and to return rapidly to its original shape upon release of stress.

4,230,232

BOTTLE WITH CLOSURE CAP

Herbert A. Atkins, Maidenhead, England, assignor to Beecham Group Limited, Great Britain

Filed Mar. 19, 1979, Ser. No. 21,711

Claims priority, application United Kingdom, Mar. 18, 1978, 10799/78

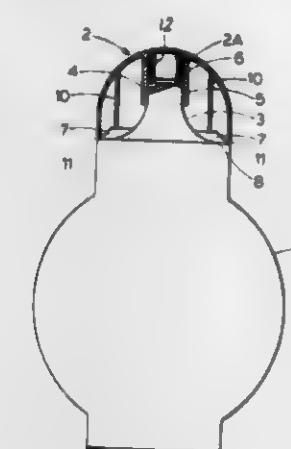
Int. Cl.³ B65D 41/04

U.S. Cl. 215-330

4 Claims

1. A capped bottle which comprises a bottle having a threaded neck portion of circular horizontal cross-section positioned on a shoulder portion of non-circular horizontal

cross-section in head-and-shoulders relationship, a cap threadably engaging said neck portion, the cap having a tubular socket part which screws onto the neck of the bottle and a skirt part enveloping the tubular socket part and conforming at the hem of the skirt part with the horizontal cross-sectional shape of the shoulder, a notch bearing member on one of the cap and the bottle and a protuberance on the other of the cap and the



bottle, said notch bearing member and said protuberance cooperating such that the protuberance bears on said member after the start of the threading movement of the cap onto the neck of the bottle, at least one of the protuberance and notch bearing member deforming to accommodate said threading movement until the protuberance snaps into the notch to terminate said movement, and out of the notch at the start of the threading movement of the cap off the neck of the bottle.

4,230,233

END PANEL FOR CARTON

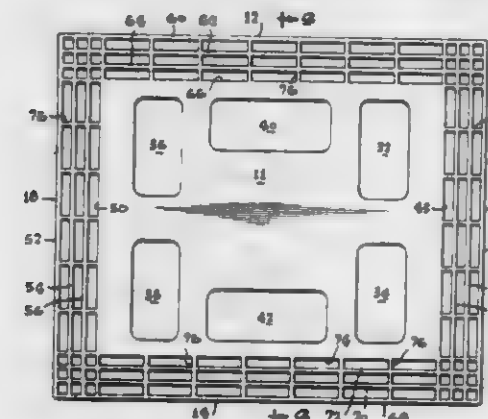
Robert P. Orr, Tiburon, Calif., assignor to Bendix Forest Products Corporation, San Francisco, Calif.

Filed Nov. 6, 1978, Ser. No. 958,292

Int. Cl.³ B65D 5/12, 8/18

U.S. Cl. 217-36

9 Claims



1. In a container having top, bottom and side panels: a pair of end panels to which said top, bottom and side panels are fastened, each said end panel comprising a molded frame of high density plastic, said frame including a face panel of area significantly more than half of the area of said end panel, top, bottom and side rim sections attached around the periphery of said face panel and of a depth equal to the desired thickness of said end panel, said face panel being attached to the inside edges of said rim sections, a plurality of ribs extending across said face panel between at least two of said rim sections, each of said side rim sections comprising an inside wall extending the entire height of said end panel, an outside wall, a plurality of internal walls spaced between and parallel to said inside and outside walls extending the entire height of said end panel and a plurality of reinforcing

ing cross members extending between said inside wall and said outside wall, each of said top and bottom rim sections comprising an inside wall extending the entire width of said end panel, an outside wall intersecting the outside walls of said side rim sections, a plurality of internal walls spaced between and parallel to said inside and outside walls of said top and bottom rim sections and extending the entire width of said top and bottom panels and a plurality of reinforcing cross members extending between said inside and outside walls, said face panel being attached to and framed by adjoining internal edges of said inside walls of said top, bottom and side rim sections.

4,230,234

METER BOX ASSEMBLY

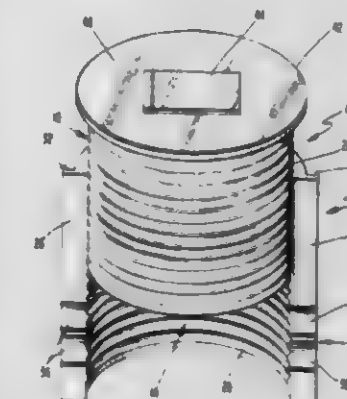
James B. Taylor, P.O. Box 814, Jeffersonville, Ind. 47130

Filed May 9, 1979, Ser. No. 37,320

Int. Cl.³ B65D 25/20, 8/04, 8/14, 6/26

U.S. Cl. 220-18

14 Claims



1. Meter box apparatus for containing and securing an underground utility meter, the apparatus comprising: a cylindrical meter box for use as a meter pit, said meter box being fabricated in two complementary sections of substantially semicircular cross section and including means for assembling the two sections; a meter box cover including a cylindrical body, said cylindrical body being insertable into said cylindrical meter box; mutually interacting means respectively integral with said meter box and said cover for adjusting the height of said apparatus; and meter-securing means adjustably positionable to selectable, predetermined positions with respect to the height of said meter box and secured between said two sections.

4,230,235

BEVERAGE CAN HANDLE

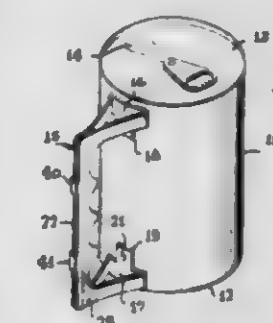
Paul E. Di Amico, 1180 S. Palm Canyon Dr., Palm Springs, Calif. 92262

Filed Apr. 20, 1979, Ser. No. 31,857

Int. Cl.³ B65D 25/28

U.S. Cl. 220-94 R

8 Claims



1. Handle means and beverage can combination comprising: a beverage can having a sidewall of cylindrical configura-

tion of substantially equal cross sectional thickness presenting a continuous, circular exterior surface separated by a top end and bottom end;

handle means permanently secured to said beverage can exterior surface having a first position flush thereagainst and a second position folded over upon itself to outwardly project from said beverage can exterior surface without reduction of beverage can wall thickness;

said handle means comprising a pair of spaced apart end strips adjacent said top and said bottom respectively with a pair of side elements vertically disposed joining the respective opposite ends of said end strips so that a central opening is defined therebetween;

said end strip adjacent said beverage can bottom is co-extensive therewith so as to cooperatively support said beverage can on a flat surface;

said handle means further having an oval configuration in its first position and a substantially U-shaped configuration in its second position.

4,230,236

TABLET DISPENSER

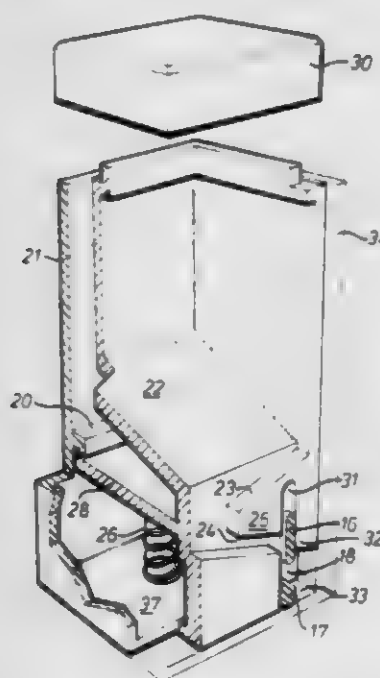
Clive Boulter, West Bridgford, England, assignor to The Boots Company Limited, Nottingham, England

Filed Jun. 21, 1979, Ser. No. 50,874

Int. Cl.³ B65G 59/06

U.S. Cl. 221-190

8 Claims



1. A tablet dispenser for use in repeatedly dispensing a predetermined number of generally cylindrical tablets of uniform size randomly orientated in the dispenser, the dispenser comprising an outer case with a base and an inner part slidably mounted in the outer case for linear movement between a dispensing position and a non-dispensing position, the inner part being biased away from said base towards a resting position, the inner part and outer case together defining a container for the tablets, a dispensing gate for housing a predetermined number of tablets, a channel having a bottom sloping downwardly towards the gate, said channel having a portion open to the container and being defined between the inner part and the outer case, and at least one ramp surface at the bottom of the container leading to said portion of the channel so as to direct tablets into the channel supported on their peripheries in a single tablet width column, so that they roll down the channel towards the gate, the inner part being operated against said bias to cause relative movement between the gate and channel, from one position wherein said gate is in register with the channel and another position wherein the gate is in register with a dispensing outlet located in the lower part of the dispenser.

4,230,237

TABLET DISPENSER

Erik de Wit, Vienna, Austria, assignor to Hermes Südstoff AG, Zurich, Switzerland

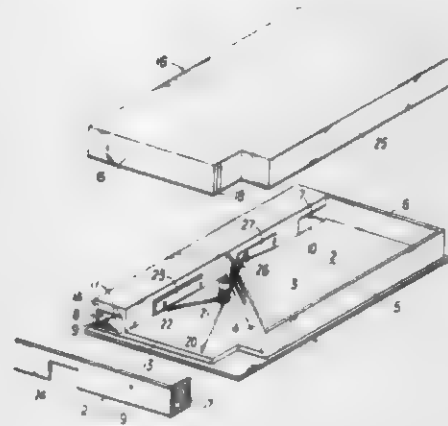
Filed Nov. 21, 1978, Ser. No. 962,689

Claims priority, application Austria, Nov. 28, 1977, 8508/77; Aug. 25, 1978, 6208/78

Int. Cl.³ B65D 83/04

U.S. Cl. 221-298

7 Claims



1. A tablet dispenser comprising: wall means defining a feed duct dimensioned to permit passage therethrough in a given direction of tablets to be dispensed by said tablet dispenser, said feed duct being defined with a discharge opening at one end thereof; slide means movable to open and close said discharge opening to enable selective dispensing of tablets therefrom; clamping means operable to prevent movement within said duct means in said given direction of tablets located beyond a predetermined distance upstream of said discharge opening, said clamping means comprising a portion of said wall means adapted to be displaced inwardly of said duct means; spring means operably engaged between said slide means and said portion of said wall means to effect displacement of said portion inwardly of said duct means when said slide means is moved to open said discharge opening; and holding means located along said duct means further upstream than said clamping means operable when said discharge opening is closed by said slide means to prevent within said duct means reverse movement of said tablets in a direction upstream of said given direction, said holding means being operably connected with said slide means for movement out of its effective position when said discharged opening is opened.

4,230,238

FUNNEL PITCHER ENABLING BATTER TO BE PREPARED AND POURED INTO A COOKING UTENSIL

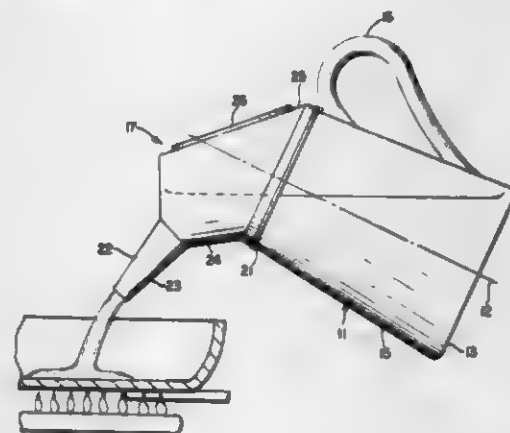
Warren Wilson, 644 Paramus Park Mail, Paramus, N.J. 07652

Filed Nov. 13, 1978, Ser. No. 960,461

Int. Cl.³ B67D 5/38

U.S. Cl. 222-158

5 Claims



1. A utensil for enabling batter to be prepared and poured

into a cooking utensil comprising an upstanding vessel portion for ingredients of the batter, said vessel portion having a flat bottom, a vertically extending longitudinal axis and a region through which batter flows at right angles to the axis, a pouring portion extending above the region so that batter flows through the region to the pouring portion when the axis is tilted approximately to the horizontal, said pouring portion having a spout with a lower straight edge at a predetermined angle above the horizontal when the vessel portion axis is vertical, said pouring portion having a straight sloping side leading from the region on one side of the vessel portion to the lower edge to provide a guide for the batter from the vessel portion through the spout into the cooking utensil when the vessel axis is tilted approximately to the horizontal, said straight edge extending from an intersection with the sloping side to the end of the spout, said straight side being at a greater angle to the horizontal than the lower straight edge when the axis is vertical, the pouring portion including a face inclined at approximately 45 degrees above the horizontal when the axis is vertical, the face extending from the region and the side opposite from the one side of the vessel portion to a downwardly extending retaining wall for the batter, the retaining wall extending to an upper side of the spout, said face having an opening positioned to enable the user of the utensil to see the contents as the contents are poured through the spout into the cooking utensil, said region and opening being positioned relative to each other and having an area sufficiently large to enable ingredients of the batter to be easily poured through them into the vessel portion said predetermined angle being approximately 23 degrees such that dripping of batter from the spout is prevented after pouring and when the axis is returned to the vertical and the batter is prevented from flowing through the opening during pouring of the batter through the spout.

4,230,239

CYCLICALLY OPERABLE DISPENSER PROVIDING A DOUBLE CLOSURE BETWEEN DISPENSING CYCLES

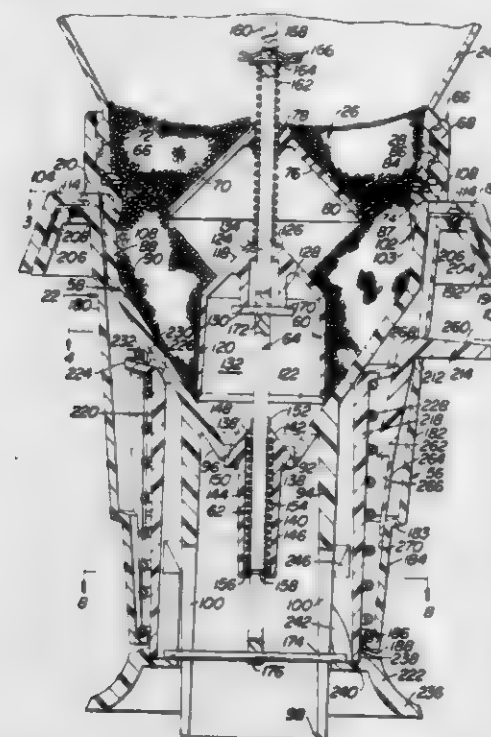
Peter L. Birrell, South Delta, Canada, assignor to Acro-Matic, Inc., Warrington, Pa.

Filed Mar. 13, 1978, Ser. No. 886,192

Int. Cl.³ G01F 11/28

U.S. Cl. 222-185

9 Claims



1. A cyclically operable mechanism for dispensing measured quantities of a flowable material from a reservoir of such material comprising:

a funnel having an inlet, an outlet smaller than said inlet, and an interior wall tapering from said inlet to said outlet;

a reciprocable rod extending through said outlet;

a metering member mounted above said outlet on said rod

for relative movement with respect to said rod between a charging position, in which said metering member is spaced a predetermined distance from said interior wall, and a dispensing position in which said metering member abuts said interior wall to form a dispensing chamber therewith;

a closure member mounted below said outlet on said rod for relative movement with respect to said rod between a closed position, in which said outlet is closed, and an open position in which said outlet is opened;

means, operatively connected to said rod, for reciprocating said rod from an upper position, in which said metering member is in said charging position and said closure member is in said closed position, through a first intermediate position, in which said metering member is in said dispensing position and said closure member is in said closed position, through a second intermediate position, in which said metering member is in said dispensing position and said closure member is in said open position, to a final position in which said metering member is in said dispensing position and said closure member is in said closed position; and

means, operatively connected to said rod, for recycling said rod to said upper position.

4,230,240

DISPENSING VALVE PARTICULARLY FOR VISCOUS PRODUCTS AND HAVING A DOME-SHAPED APPLICATOR

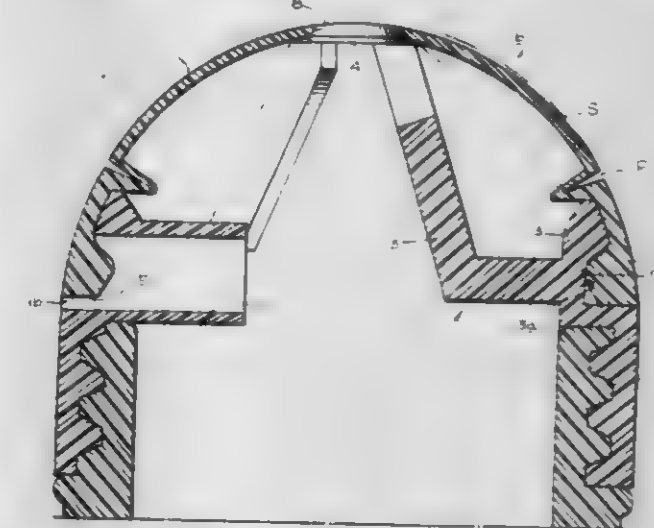
Robert H. Lauwe, 237 Green Ridge Rd., Franklin Lakes, N.J. 07417

Continuation-in-part of Ser. No. 969,796, Dec. 15, 1978. This application Jul. 17, 1979, Ser. No. 58,247

Int. Cl.³ B05B 11/04

U.S. Cl. 222-212

7 Claims



1. A dispensing valve having a base comprising a circular rim, means for connecting said rim to a squeeze bottle's mouth, a circular wafer, and spokes connecting with and radiating from the wafer's bottom and extending radially to the rim in a plane below said bottom and positioning the wafer on and normal to the rim's axis, said wafer having a small diameter as compared to the rim's diameter and forming an annular space between the wafer and rim; and a cap comprising an elastically flexible annular diaphragm having a central portion positioned above said plane, said portion having a central opening with a periphery normally resting on the periphery of said wafer, and said diaphragm having a depending flange connected to said rim, said peripheries having substantially mating conical surfaces; wherein the improvement comprises said diaphragm being upwardly dome-shaped so it has an outer applicator surface that is ball-like in appearance.

4,230,241

LADLE FOR DELIVERING A PLURALITY OF ALIQUOTS OF MOLTEN METAL

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

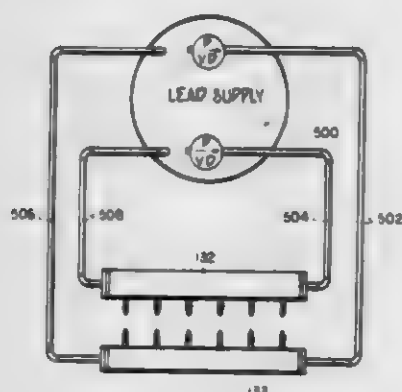
Division of Ser. No. 752,644, Dec. 20, 1976. This application

Mar. 5, 1979, Ser. No. 17,868

Int. Cl.³ B22D 39/02, 41/04

U.S. Cl. 222-252

13 Claims



1. A ladle for casting lead battery parts by simultaneously delivering a plurality of preselected aliquots of molten lead to each of a plurality of part molds comprising:

- (a) a ladle chamber, movable between standby and pouring positions;
- (b) a plurality of delivery orifices, disposed in said chamber, one for each part mold to be supplied;
- (c) means for circulating molten lead through said ladle chamber when said chamber is in the standby position; and
- (d) means for isolating molten lead within said chamber and for delivering said molten lead to said orifices as said chamber is moved to pouring position.

4,230,242

TRIPLE SEAL VALVE MEMBER FOR AN ATOMIZING PUMP DISPENSER

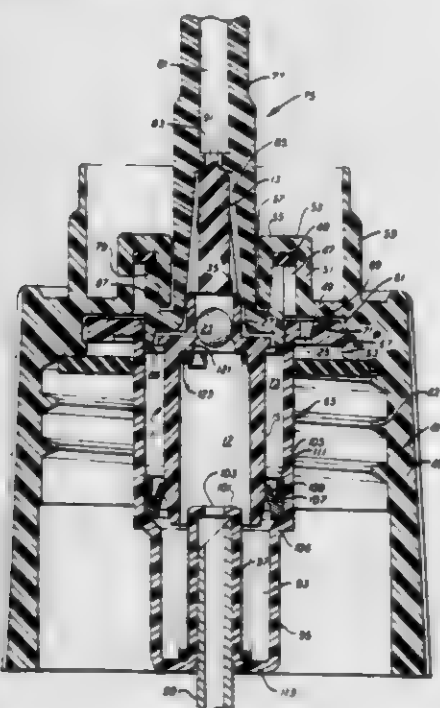
Philip Meshberg, 2500 S. Ocean Blvd. Bldg. 3, Apt 1-A, Palm Beach, Fla. 33480

Filed Mar. 26, 1979, Ser. No. 24,070

Int. Cl.³ G01F 11/04

U.S. Cl. 222-321

4 Claims



1. In an atomizing dispensing pump comprising:
- (a) means defining a pump chamber of substantially fixed

volume having an inlet, said pump chamber having an opening at the inner end thereof;

- (b) valving means disposed at said inlet for preventing a back flow from said pump chamber;
- (c) a pump stem having a piston on the end thereof disposed for reciprocal motion in said pump chamber;
- (d) said pump stem having a passageway therethrough with a dispensing outlet at the outer end of said passageway and an axial inlet port located inwardly thereof;
- (e) a rigid valve member having an outer end portion cooperating with said axial inlet port to close off said port and an inner portion of a predetermined cross-sectional sealing area and of a length corresponding to the range of movement of said piston;
- (f) an annular member forming a throat disposed at said opening at the inner end of said chamber, said inner portion of said valve member cooperating with said annular member to form means sealing the inner end of said pump chamber with a surface to surface seal at said throat, as said pump is operated by depressing said pump stem, to prevent any flow from said pump chamber through said throat when said pump is dispensing;
- (g) detents formed on the inside of said pump body to retain said annular member in place.
- (h) means for supplying liquid in a container to said valving means;
- (i) means biasing said valve member outwardly so that the first end portion thereof closes off said inlet port, and thereby also biasing said pump stem outwardly;
- (j) the cross-sectional area closed off at said inlet port being smaller than the cross-sectional area of said second end portion of said valve member at the point where it is sealingly guided;
- (k) said rigid valve member being;
- (l) an integrally molded plastic having:
 - (i) said outer part terminating in a sealing tip for sealing against said inlet port, said outer part being of a first cross section;
 - (ii) said inner part containing therein a hollow recess open at its inner end for accepting said means biasing, said inner part being of a larger cross section than said outer part, the radially outer portion of said inner part adapted to seal against said annular member;
 - (iii) an intermediate portion forming a generally cylindrical recess between said inner and outer parts, said recess in communication with said hollow recess in said inner portion;
- (iv) a narrowed throat formed at the area of communication between said hollow recess and said cylindrical recess;
- (v) said intermediate portion having openings therein in the vicinity of its outer end permitting communication between said cylindrical recess and the area above said inner portion; and
- (vi) a ball having a diameter which is less than the diameter of said cylindrical recess but greater than the diameter of said throat snapped into said cylindrical recess to thereby form therewith a check valve, said valve member thereby forming the valving means at the inlet to said pump chamber.

4,230,243

AEROSOL CONTAINER WITH FLAMELESS DELIVERY VALVE

Joseph G. Spitzer, 44 Coconut Row, Palm Beach, Fla. 33480; Lloyd I. Osipow, 2 Fifth Ave., New York, N.Y. 10003; Marvin Small, 1100 Park Ave., New York, N.Y. 10021, and Dorothea C. Marra, 107 Fernwood Rd., Summit, N.J. 07901

Continuation-in-part of Ser. No. 754,471, Dec. 27, 1976, Pat. No. 4,124,149. This application Aug. 8, 1978, Ser. No. 932,067

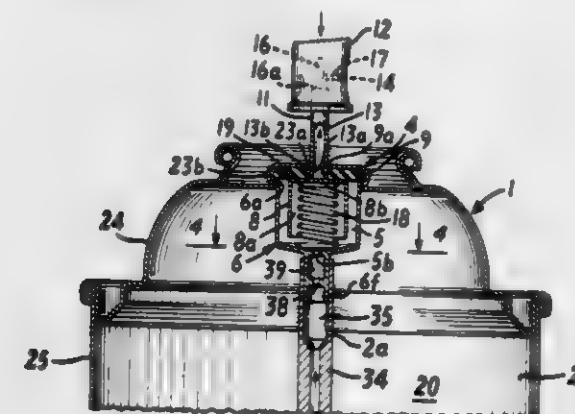
Int. Cl.³ B65D 83/14

U.S. Cl. 222-402.18

23 Claims

1. An aerosol container for use with compositions containing

liquefied flammable propellants, and having a delivery valve that delivers a spray that in either flameless or at worst has an abnormally low flame extension, whether the container is in an upright position or in a fully inverted position, comprising, in combination, a pressurizable container having at least one storage compartment for a liquefied aerosol composition and a liquefied propellant; a delivery valve movable manually between open and closed positions, and including a valve stem, a valve stem passage, a valve stem orifice at the beginning of the valve stem passage, and a delivery port; a mixing chamber having at least one liquid tap orifice and at least one vapor tap orifice in flow connection with the storage compartment for reception therefrom and mixing together in the chamber liquid aerosol composition and gaseous propellant, respectively; an



aerosol-conveying passage in flow connection at one end with the mixing chamber and at the other end with the valve stem orifice, manipulation of the delivery valve opening and closing the passage to flow of liquid aerosol composition and gaseous propellant from the storage compartment to the mixing chamber and delivery port; and at least two flow constrictions disposed across the passage in the line of flow from the mixing chamber to the valve stem orifice, each constriction having an open area within the range from about 0.05 to about 0.4 mm², and at least two expansion chambers, one following each constriction, each having a diameter of at least 25% greater than that of the preceding constriction, thereby increasing the gas-liquid volume ratio in the mixture leaving the delivery port and reducing the flammability of the delivered spray.

4,230,244

FLUID-FLOW LIMITING APPARATUS FOR USE WITH INTRAVENOUS-SOLUTION ADMINISTERING EQUIPMENT

Nick Zissimopoulos, Schaumburg, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 878,970, Feb. 17, 1978, Pat. No. 4,185,759. This application Aug. 30, 1979, Ser. No. 71,411

Int. Cl.³ A61M 5/14

U.S. Cl. 222-450

12 Claims



1. In a controller for use with a cassette having:

- (1) metering means for holding a predetermined volume of fluid;
- (2) closable inlet means in fluid communication with said metering means for permitting the flow of a fluid into said metering means; and
- (3) closable outlet means in fluid communication with said metering means for permitting the flow of fluid out of said metering means, said controller having:
 - (a) first rigid member means, movable between a first position and a second position, said first member means for, when in said second position, closing said inlet means;
 - (b) second rigid member means, movable between a third position and a fourth position, for, when in said fourth position closing said outlet means; and
 - (c) actuating means, connectable to and operated on a source of power, for selectively moving said first member means to said second position to close said inlet means and alternately moving said second member means to said fourth position to close said outlet means, the improvement comprising rocker arm means pivotally attached at a location adjacent to electromagnet means, said rocker arm means carrying at their ends separate, first and second magnets defining poles of opposite polarity extending outwardly in generally normal relationship to said rocker arm means, said electromagnet means including ferromagnetic material, magnetizable by said electromagnetic means, said ferromagnetic material defining a pair of arms which assume the same polarity upon magnetization, said arms being each positioned adjacent said first and second magnets to attract and repel said magnets dependent upon the induced polarity of said ferromagnetic material, said first and second rigid member means being carried by the rocker arm means.

4,230,245

PARCEL CARRIERS FOR MOTOR CYCLES

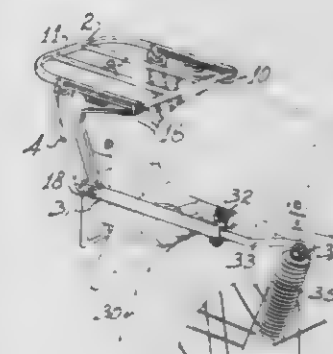
Juri Pold, and Ilmar Pold, both of 24 Ozone Street, Alberton, Australia

Continuation-in-part of Ser. No. 629,702, Nov. 6, 1975. This application Mar. 30, 1978, Ser. No. 891,762

Int. Cl.³ B62J 7/04

U.S. Cl. 224-39

2 Claims



1. A parcel carrier for motor cycles of various sizes employing a parcel support frame of one uniform size arranged to be held rearward of a motor cycle seat and above a rear wheel of a motor cycle of any conventional size at a shock absorber of said cycle, said frame having associated therewith side supports arranged to provide sole support for the parcel frame, said side supports being positioned on each side of said frame, to be on each side of the rear wheel of said motor cycle and be secured to the structure of the motor cycle at two spaced apart locations wherein: each of the side supports is comprised of separable portions including a side strut; said side strut having an upper portion interlocking with and being removably secured to said frame; a stabilizing arm sized for use with said motor cycle; said stabilizing arm having a rearward portion and a forward end, said rearward portion interlocking with

and being separable from a lower portion of the side strut and said forward end being secured to an upper end of said shock absorber of the motor cycle, and a bracket sized for use with the said motor cycle secured at an outer end in a removable manner to a lower forward portion of said side strut and extending inwardly from its secured outer end to an inner end which is adapted to be secured directly to the structure of the motor cycle; and

wherein said side strut has a forwardly extending extension arm thereon, with a forwardly open bore formed therein, said stabilizing arm having its rearward portion telescopically received in said open bore and arranged to allow relative freedom of movement in a forward to rearward orientation between the stabilizing arm and the side support to adjust the parcel carrier to the size of the said motor cycle, and being further arranged to lock the side support against any substantive rotational freedom of movement about any transverse horizontal axis relative to the stabilizing arm.

4,230,246

SPARE TIRE CARRIER

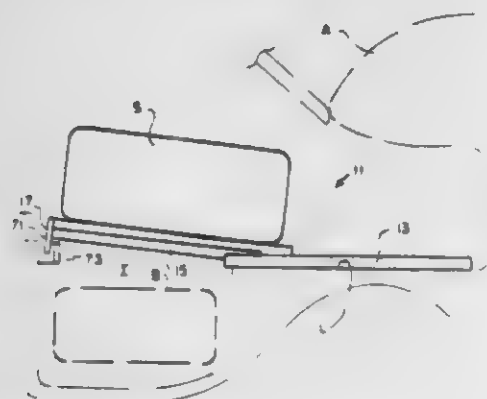
Thomas S. Wilson, 209 S. Holmes, Memphis, Tenn. 38111

Filed Apr. 11, 1979, Ser. No. 29,137

Int. Cl.³ B60R 9/00, 7/02

U.S. Cl. 224-42.21

6 Claims



1. An apparatus for being positioned within the trunk of an automobile and for supporting a spare tire for the automobile, said apparatus comprising:

- (a) substructure means for attachment to structure of the automobile within the trunk thereof in a location which will not hinder the loading and unloading of the trunk, said substructure means including track means;
- (b) superstructure means for selectively supporting the spare tire, said superstructure means including race means for coacting with said track means to guide said superstructure means between a first position in which said superstructure means is positioned substantially over said substructure means to position the spare tire in a location where it can be easily removed from the trunk; and
- (c) tongue means attached to said superstructure means for engaging structure of the automobile when said superstructure means is in said second position; said substructure means including a plurality of roller means for slidably supporting said superstructure means; said track means including first and second track members; said race means including first and second race members for coacting with said first and second track members respectively; said substructure means including a pan member having an upper surface and having opposing first and second upturned side edges; said first track member being defined in part by said first upturned side edge of said pan member; said second track member being defined in part by said second upturned side edge of said pan member; said roller means being attached to said upper surface of said pan member between said first and second side edges thereof.

4,230,247 COMBINATION FOLDABLE GOLF CLUB CARRIER AND SCORE KEEPING DEVICE

Gerald W. Lowe, 9330 Tropico Dr., La Mesa, Calif. 92041

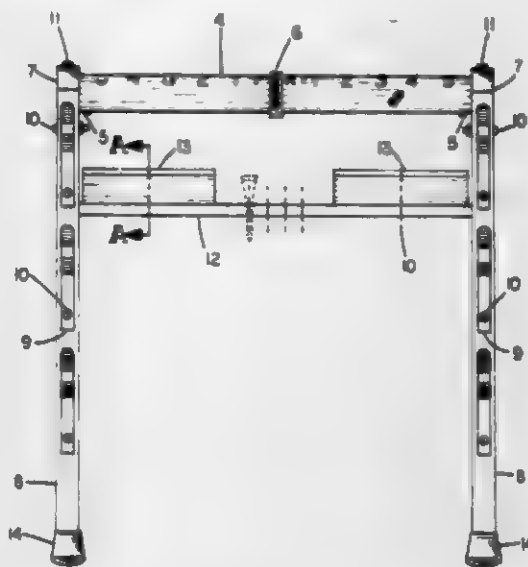
Filed Jul. 7, 1978, Ser. No. 922,535

The portion of the term of this patent subsequent to Jul. 19, 1994, has been disclaimed.

Int. Cl.³ B65D 71/00

U.S. Cl. 224-45 R

2 Claims



1. A device designed to relieve the golfer of inconveniences caused by unnecessarily heavy and bulky conventional golfing equipment; said device, which is easy to carry around golf courses and convenient to handle when transporting to and from the golf course, having structure consisting primarily of two identical A-frame assemblies containing a vertex block at each end with a hole to receive and secure by fasteners an extended dowel end of a handle, each of said vertex blocks having tapered sides, the tapered sides of said vertex blocks slip into aluminum legs and each vertex block held accurately by one fastener on which each of said legs can be pivoted from a 13 degree open angle, to an inward 0 degree closed position where said legs would lie parallel to each other, each of said legs secured thereon approximately four thin spring steel gripper clips which are equally spaced vertically and aligned so that a horizontal positioning of golf clubs can be easily achieved and also so that said golf clubs may be securely held within said clips; the device further including a narrow tray which is connected to the bottom surfaces of said vertex blocks and serving as a short-legged structural channel stiffener for the device, two pieces of soft plastic tubing, each of proper length to hold two golf balls and being secured to said tray, with each said pieces of tubing being split in a straight line along the top, the sides of each of the splits being overlapped, thus resulting in a slight diameter reduction and causing a contracting action in order to retain golf balls when inserted therein; each of said split pieces of tubing normally extending longitudinally along said tray and being secured to said tray by centrally located fasteners which permit the pieces of tubing to be rotated to facilitate golf ball insertion and removal without interference with the said handle or the golf clubs.

4,230,248

SKI RACK

Robert J. Finnegan, Williston, Vt., assignor to Barreca Products Co., Inc., Shelburne, Vt.

Filed Mar. 15, 1979, Ser. No. 20,748

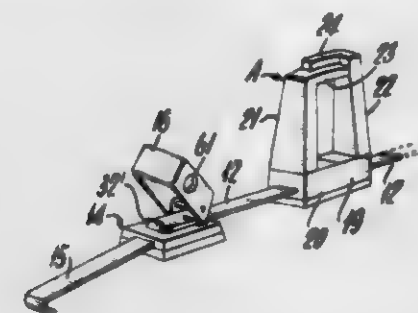
Int. Cl.³ B60R 9/04; B60P 3/00

U.S. Cl. 224-323

11 Claims

1. In a ski rack of the character indicated, comprising a frame with an elongate base and transversely spaced upstanding side walls connected by said base, a first post member mounted to said frame and extending generally perpendicularly above said frame, said post member including a vertical portion and an upper longitudinally offset arm extending gener-

ally parallel to said base to define a ski-locating profile for a pair of edge-mounted skis with the combined width of said pair contained beneath said arm, and a second post member having a mounting portion mounted to said frame and between said walls at a mounting region longitudinally offset from said first post member, said second post member including a vertical portion extending generally perpendicularly to effectively close the ski-accommodating space beneath said arm, the improvement in which the mounting of at least one of said post members includes first and second longitudinally spaced trans-



verse pins extending between said side walls and through first and second longitudinally spaced portions of the mounting region of said one post member, horizontally extending slot means in at least one of said mounting regions for establishing a pin-limited range of longitudinal displacement for said one post member, and generally vertically extending slot means accommodating one of said pins in the other of said mounting regions, whereby said one post member has both a limited range of longitudinal displaceability and a limited range of angular displaceability about the instantaneous axis of said other pin.

4,230,249

HAND-HELD FASTENER DRIVING TOOL

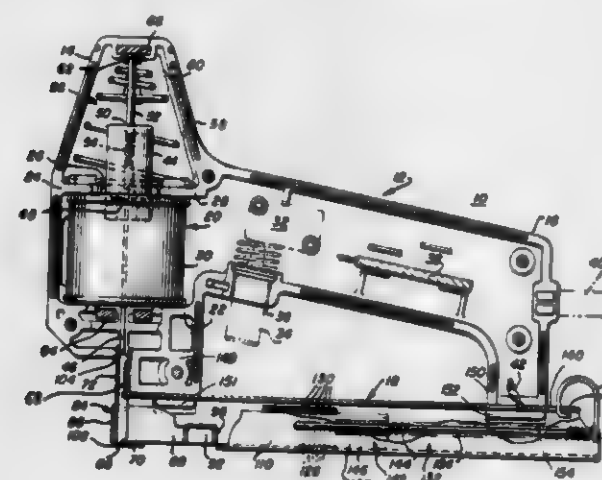
John R. Nasiatka, Northbrook; Ronald Austin, Hazelcrest, and Ernest F. Schauder, Franklin Park, all of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.

Filed Jul. 5, 1978, Ser. No. 921,979

Int. Cl.³ B25C 5/06

U.S. Cl. 227-123

34 Claims



1. In a fastener driving tool of the type including a housing defining a handle portion and a head portion, a drive track defined in said head portion, a driver blade mounted in said drive track and means for reciprocating said blade in said track, the improvement comprising a plunger secured to said blade mounted in said head portion and reciprocated therein by said reciprocating means, one piece biasing means for biasing said plunger to an at rest position, said biasing means including a first portion of a first predetermined flexibility and a second portion of a second predetermined flexibility a work-piece engaging jaw removably secured to said head portion and defining a portion of said drive track, said jaw includes

first and second workpiece engaging portions of different configurations for engaging different workpieces.

4,230,250

SOLDER EXTRACTOR

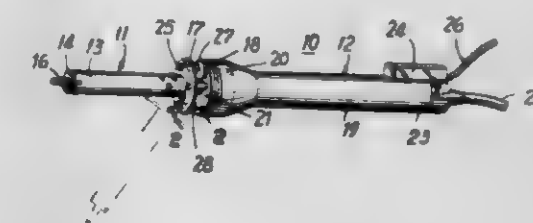
William E. Schen, Jr., 22 Sedgemore Rd., Center Moriches, N.Y. 11934

Filed Apr. 30, 1979, Ser. No. 34,410

Int. Cl.³ B23K 3/02

U.S. Cl. 228-20

8 Claims



1. A solder extractor device comprising a rear section including a longitudinally extending hollow handle section housing a receiver receptacle connectable to a suction source and having a front inlet opening, a front section including a bracket supporting a heater member engaging a forwardly projecting tubular tip member and a rearwardly extending coupling tube coupled to said tip member support means connecting said front section to the forward position of said rear section for swinging between a first position with the rear of said coupling tube in registry with said receiver inlet opening and a second position with the rear of said coupling tube out of registry with said inlet opening and means for releasably locking said front section in its first position.

4,230,251

AUTOMATIC APPARATUS FOR THE TREATMENT OF LINKS OF METALLIC CHAINS

Gustavo Braconi, 250 Ponte alla Chiassa, 52010 Arezzo, and Giuseppe Valli, 15 Via Tommaso Sgricci, 52100 Arezzo, both of Italy

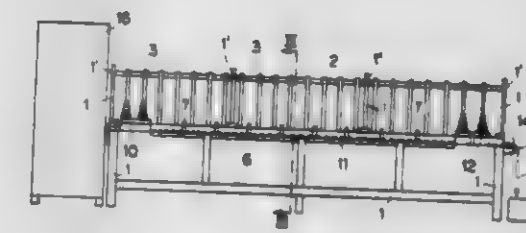
Filed Jan. 2, 1979, Ser. No. 278

Claims priority, application Italy, Jan. 10, 1978, 47572 A/78

Int. Cl.³ B23K 1/14; B21L 3/02

U.S. Cl. 228-41

6 Claims



1. Automatic apparatus for the treatment of links of metallic chains, said apparatus comprising, in operative sequence: means for the automatic application, by shaking, of the soldering powder to one or more chains being treated; means for the automatic removal, by shaking, of the excess of the powder thus applied so that there remains, retained in the interstices of the individual links, only the quantity necessary for the subsequent soldering; and means for the automatic application, by shaking, of an isolating powder, such as talcum or the like, as to isolate the links one with respect to the other, said application and removal means comprising movable brackets shaking said chains and at the same time guiding them in a mixed

transversal and longitudinal movement in an almost horizontal plane.

4,230,252

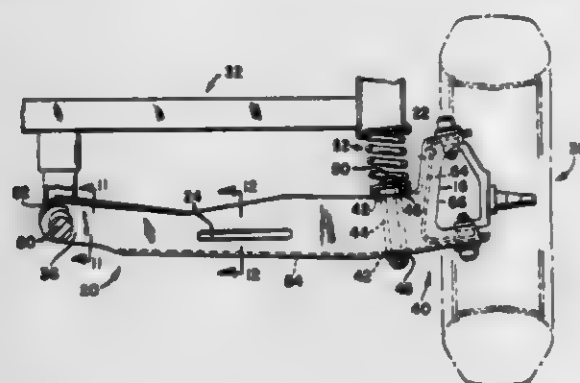
METHOD FOR CONSTRUCTING A SUSPENSION MEMBER

Donald E. Meyer; James J. Colpaert, both of Granger; Frederick R. Fischer, South Bend; Michael E. Gatt, Osceola, and David P. Koehler, South Bend, all of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 25, 1978, Ser. No. 899,946
Int. Cl.³ B21D 39/00

U.S. Cl. 228-152

12 Claims



1. A process for constructing a suspension member for a vehicle comprising in sequence the steps of:

- (a) providing a single flat sheet;
- (b) deforming said single flat sheet to form a pocket at one end of said single flat sheet, said pocket defining a predetermined width; and
- (c) folding said single flat sheet to substantially define at first a middle section extending from the pocket to the other end, said middle section including a width substantially equal to said predetermined width and secondly a polygon cross section with said middle section forming a side of said polygon;
- (d) said folding step imparting a curve to said middle section to offset the other end of said middle section from said pocket.

4,230,253

METHOD OF MAKING A CALIPER BRAKE ROTOR

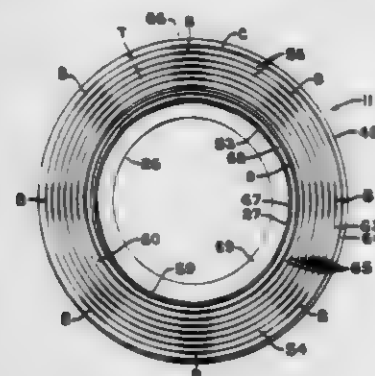
John J. Enright, Troy, and William T. Holzworth, Springfield, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 950,491, Oct. 11, 1978. This application Oct. 31, 1979, Ser. No. 89,843

Int. Cl.³ B23K 31/02

U.S. Cl. 228-152

4 Claims



1. A method of making a rotor for a caliper brake comprising:

- (1) wrapping an elongated steel strip in a coil to form a disc with a central opening and an outer periphery;
- (2) welding the ends of said strip to said disc;
- (3) adhering the overlapping surfaces of said coils together;
- (4) machining the outer periphery and central opening to

taper the ends of said strips and provide a uniform diameter of said central opening and of said outer periphery of the rotor; and

- (5) welding said disc to a cylindrical adaptor for fastening said rotor to a wheel.

4,230,254

METHOD OF MAKING A MODULAR TRUCK BODY

Bernard E. Proeschl, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

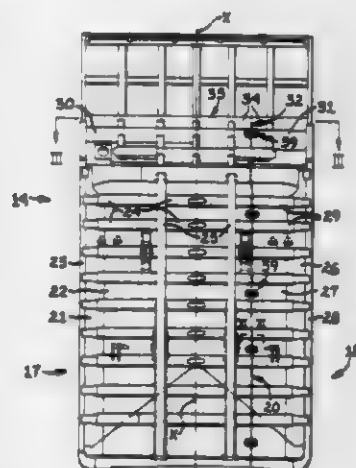
Division of Ser. No. 850,433, Nov. 10, 1977, Pat. No. 4,162,096.

This application Dec. 6, 1978, Ser. No. 966,841

Int. Cl.³ B23K 31/02; B23P 21/00

U.S. Cl. 228-182

7 Claims



1. A method for making a truck body disposed on a longitudinal axis thereof comprising the steps of

- fabricating a unitary first module to have a generally L-shaped cross section defining a generally vertical first side section and a generally horizontal first bottom section,
- fabricating a unitary second module to have a generally L-shaped cross section defining a generally vertical second side section and a generally horizontal second bottom section having a lateral width substantially less than the lateral width of said first bottom section,

disposing and aligning said first and second modules in side-by-side relationship to define a separation line between said first and second bottom sections extending the full length thereof and laterally disposed in substantial offset relationship relative to the longitudinal axis of the composite first and second modules forming said truck body, releasably attaching said first and second modules together at said separation line to form a pre-assembled and fully aligned truck body,

securing a back-up plate to a free edge of said first bottom section, to overlie an edge of said second bottom section, after said attaching step,

detaching and separating said first and second modules from each other at said separation line,

shipping said separated first and second modules to a remote location,

again disposing and aligning said first and second modules in side-by-side relationship at said separation line while simultaneously guiding such alignment by overlapping said separation line with said back-up plate,

again releasably attaching said first and second modules together at said separation line, and

fixedly securing said first and second modules together at said separation line to form a structurally integrated truck body, including the step of welding said back-up plate to said first and second modules adjacent to said separation line.

4,230,255

PROTECTIVE SHELL FOR NUCLEAR REACTOR AND METHOD FOR ASSEMBLING THE SHELL

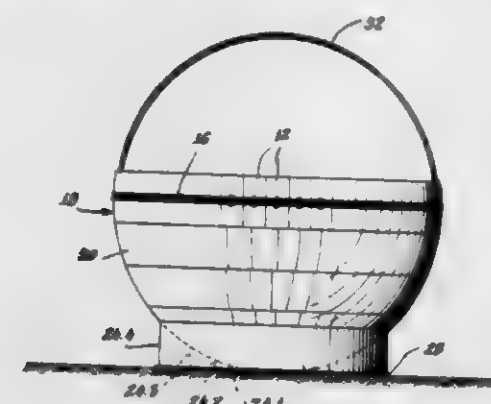
Leland E. Coulter, New Canaan, Conn., assignor to Teledyne, Inc., Los Angeles, Calif.

Division of Ser. No. 607,181, Aug. 25, 1975. This application Sep. 21, 1978, Ser. No. 944,266

Int. Cl.³ E04G 11/04

U.S. Cl. 228-184

10 Claims



1. The method of assembling a large hollow spherical shell for housing a nuclear reactor or the like comprising the steps of forming a plurality of spherical segments to be assembled into the shell for enclosing a nuclear reactor or the like therein;

joining a first group of spherical segments comprising the lower hemispheric portion of the sphere to each other and to a support base;

assembling a hoop above the lower hemispheric portion, said hoop having an outer radius commensurate with that of the inner radius of said spherical shell;

temporarily securing a plurality of vertically oriented spherical segments to said hoop to form a first vertical arch extending along the desired shape of the shell from one side of the lower hemispheric portion to an opposite side; joining said plurality of spherical segments to each other and to said lower hemispheric portion to form a first vertical self-supporting arch;

disengaging said hoop from said arch; moving the hoop to an adjacent vertical support position and forming a second vertical arch of joined spherical steel segments in the same manner and joining said second to said adjacent first arch;

and then repeating said arch-forming hoop steps until the upper hemispherical portion of the spherical shell has been formed on and joined to the lower hemispherical portion.

4,230,256

METHOD OF BONDING A COMPOSITE BODY TO A METALLIC ELEMENT

Bruce S. Dunn, Schenectady, and Robert R. Dubin, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

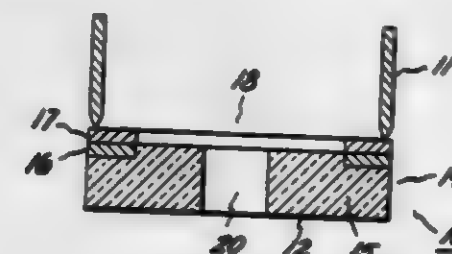
Division of Ser. No. 808,813, Jun. 22, 1977, Pat. No. 4,142,945.

This application Nov. 6, 1978, Ser. No. 958,039

Int. Cl.³ B23K 20/00

U.S. Cl. 228-193

6 Claims



1. A method of bonding a composite body to a metallic

element which comprises providing a composite body with opposite major surfaces and an edge surface, a solid ion-conductive electrolyte material, a surface portion of an ion-insulating material, and a deformable metallic element bonded to at least a portion of one major surface, providing a deformable metallic casing with an open end having a sharp edge, positioning the sharp edge of the open end of the casing against the deformable metallic element of the composite body, heating the composite body and casing in an inert atmosphere at temperature in the range of 300° to 600° C., and pressing the casing against the deformable metallic element in a range from 100 to 4,000 pounds per square inch to effect bonding between the composite body and the casing.

4,230,257

METHOD OF AND APPARATUS FOR APPLYING SOLDER TO METALLIC BLANKS

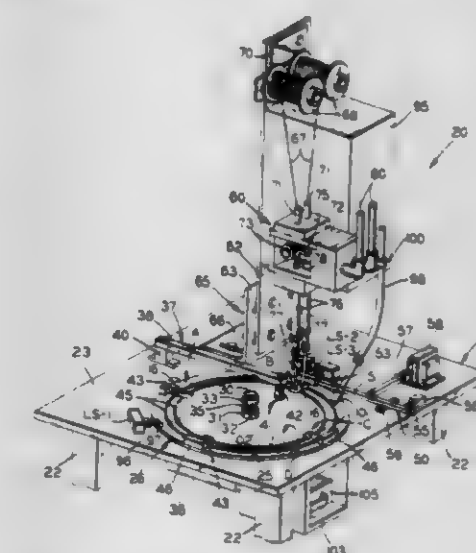
Charles W. Genson, Bowling Green, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Dec. 1, 1978, Ser. No. 965,603

Int. Cl.³ B23K 1/02

U.S. Cl. 228-244

10 Claims



1. A method of applying solder to metallic blanks comprising: supporting a metallic blank in a substantially horizontal plane and moving the same bodily in a generally horizontal path successively through a series of operations, feeding an increment of a solid strip of solder against the blank by advancing said strip between a pair of feed wheels rotating in one direction, heating the blank and thereby an end portion of said solder strip bearing thereagainst substantially to the softening point of the solder to form a molten end portion, and reversing the rotation of said feed wheels to retract said solder strip and separate said molten end portion from the remainder of said strip to form a globule deposited on said metallic blank.

5. A solder applying apparatus comprising: a table, a turntable mounted on said table for holding and indexing a metallic blank in a substantially circular path successively through a series of work stations, a frame on said table, a supply of solder in strip form mounted on said frame, means on said frame above said table for intermittently feeding an increment of said solder strip against said blank at one of said work stations, means at said one work station for heating said blank and thereby said increment of solder strip via conduction through said blank substantially to the softening point of said solder to melt said solder increment onto said blank as an integral part thereof, said feeding means comprising a drive wheel and an idler wheel between which said solder strip extends, and means rotating said drive wheel in one direction to advance said strip against said blank and subsequently rotating said drive wheel in an opposite direction to retract said solder strip for severing the same from said molten increment of solder.

4,230,258

TRAY FOR A SHRINK-WRAP PACKAGE

Douglas C. Lane, Hyde, Nr. Manchester, England, assignor to Lancashire Box Company, Limited, Hyde, Nr. Manchester, England

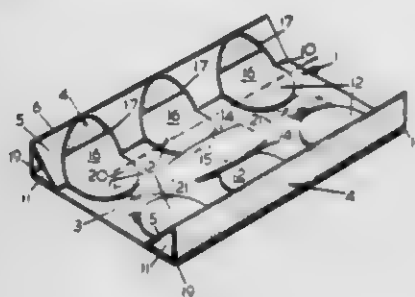
Filed Jun. 25, 1979, Ser. No. 51,570

Claims priority, application United Kingdom, Jun. 28, 1978, 28193/78

Int. Cl.³ B65D 5/20, 71/08

U.S. Cl. 229—30

10 Claims



1. A tray erectable from a blank of sheet material and for use in a shrink-wrap package, the tray comprising a first panel constituting a base, a second panel joined along one edge to an edge of the first panel and constituting a side panel of the tray, and a third panel joined along one edge to a second edge opposing said one edge of the second panel and extending between said second edge of the second panel and the base of the tray, a portion of the third panel being pierced to expose a cut edge which is profiled to conform substantially with a contour of an item it is desired to package on the tray whereby in use said contour abuts said edge to assist in retention of said item in position on the tray.

4,230,259

SELF-LOCKING CARTONS

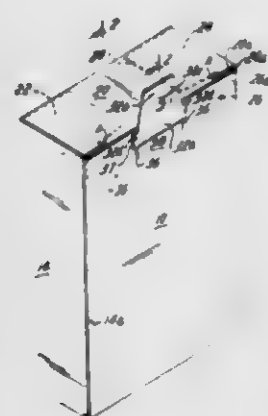
Milton W. Herzog, Valley Stream, N.Y., assignor to H. Goodman & Sons Inc., Kearny, N.J.

Filed Jun. 4, 1979, Ser. No. 45,214

Int. Cl.³ B65D 5/08, 5/06

U.S. Cl. 229—38

9 Claims



1. A hang-up carton having a body portion formed of plural walls including first and second walls, a top panel hinged to said first wall and forming a closure across said body portion, a flap extending from said top panel along the inside of said second wall, an incision through the second wall spaced from the top panel, and a hang-up tab secured to said flap by a hinged connection which forms a reverse bend extending through the incision when the hang-up tab is in use, said hang-up tab having a first portion disposed by said reverse bend generally along the outside of said second wall and said hang-up tab projecting above the top of said closure when the hang-up tab is in use, the projecting portion of the hang-up tab being apertured to admit a merchandise-suspending rod, the carton being proportioned so that said top panel faces upward when the carton depends from the hang-up tab.

4,230,260

FOLDABLE PROTECTIVE PACKAGING SLEEVE OR CARTON

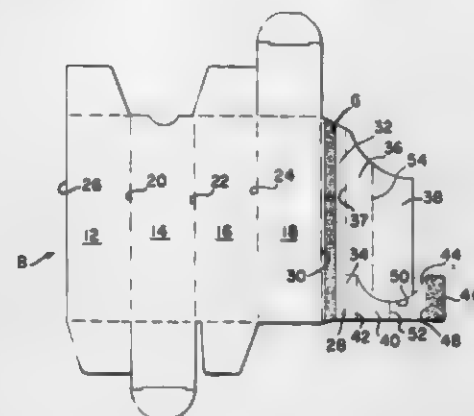
Robert G. Kramer, Cincinnati, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,527

Int. Cl.³ B65D 25/14, 5/58

U.S. Cl. 229—39 B

12 Claims



1. A foldable protective packaging sleeve or carton of paper-board material for an electronic tube or the like, wherein in the erected condition thereof said sleeve or carton comprises: two pairs of generally parallel panels, the panels of one of said pairs of panels constituting first and third side walls and the panels of the other of said pairs of panels constituting second and fourth side walls around said carton, said second, third, and fourth side walls extending successively from said first side wall along successive mutually parallel fold lines, said fourth side wall having an assembly panel integral therewith and extending beneath and adhered to an adjacent inside portion of said first side wall, said assembly panel including an elongate, relatively narrow band portion extending along said adjacent inside portion of said first side wall for substantially the entire length thereof and a short, relatively wide band portion disposed beneath and adhered to said adjacent inside portion of said first side wall at one end thereof, said relatively narrow band portion having a flexible cushioning flap integral therewith and extending from one edge thereof to a free or unattached edge toward said third side wall, said relatively wide band portion having a dome support member integral therewith and extending from one edge thereof to and adhered to an inside portion of said third side wall opposite from said first side wall whereby said dome support member extends from said first side wall to said third side wall adjacent one end of said carton and is secured at opposite ends thereof to said carton, said flexible cushioning flap being deflectable toward said one of said second and fourth side walls by one side of a tube inserted into said carton to minimize impact between the tube and any resistance which might be encountered on said one of said second and fourth side walls, said dome support member having a hinged projection along which it is adhered to said third side wall.

4,230,261

LUNCH BOX CARTON AND A BLANK FOR FORMING SAME

John J. Austin, Hinsdale, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 16, 1979, Ser. No. 30,009

Int. Cl.³ B65D 5/46, 25/22

U.S. Cl. 229—52 B

16 Claims

1. A lunch box carton of generally inverted truncated pyramidal configuration having a recloseable gabled top portion comprising:

a generally rectangular, tubular sidewall including alternatively hinged side panels and locking side panels, each of said side panels and said locking panels being tapered from the top edge to the bottom edge thereof, each said locking side panel including a generally

triangular cut-out portion disposed at the upper edge thereof;

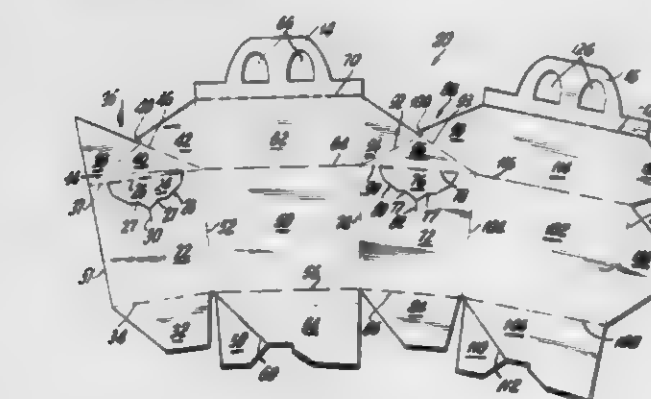
a bottom panel hingedly connected to said sidewall;

two top panels, each respectively hingedly connected along a bottom edge thereof to the top edge of a side panel;

a handle hingedly connected to the top edge of each top panel; and

two locking top panels, each being formed from three hingedly connected triangular sections, said sections including a base triangle and two opposed equilateral support triangles, with the bottom edge of each said base triangle being respectively hingedly connected to the top edge of a locking side panel, and with a side edge of each said support triangle being respectively hingedly connected to the side edges of said top panels, and with an apex of each said triangular section being disposed at a common point at the top center of said locking top panel, said common point being disposed below an imaginary line connecting the uppermost corners of said support triangles, with each of said top panels and said locking top panels being tapered from the top edge to the bottom edge

thereof such that the open configuration of said carton defines a generally inverted truncated pyramidal configuration to enable stacked nesting of a plurality of cartons whereby, in the closed condition of the carton, the upper edges of said top panels are in abutting relationship forming a gabled configuration, the handles extend above said gabled top portion, and each locking top panel is folded so as to be disposed in coplanar relationship with the associated locking side panel, with the upper end of each said locking top panel extending above the plane defined by the top edges of said side panels, such that said locking top panels function to maintain said top panels in the gabled configuration, and with the lower end of each said locking top panel defining a generally triangular locking tab of greater cross-sectional area than the cross-sectional area of the cut-out portion in the associated locking side panel, with each said triangular locking tab being interengaged with the associated locking side panel by having a portion thereof extending through said cut-out portion internally of said locking side panel for maintaining said gabled top portion in a locked position.

4,230,262
CONTINUOUS STRIP OF SEALED ENVELOPES WITH INNER DOCUMENTS

Andre M. J. Denay, Chevilly Larue, and Pierre M. J. Bouge, Paris, both of France, assignors to Herve et Fils, S.A., Paris, France

Filed Jan. 19, 1978, Ser. No. 870,783

Claims priority, application France, Jan. 26, 1977, 77 02163

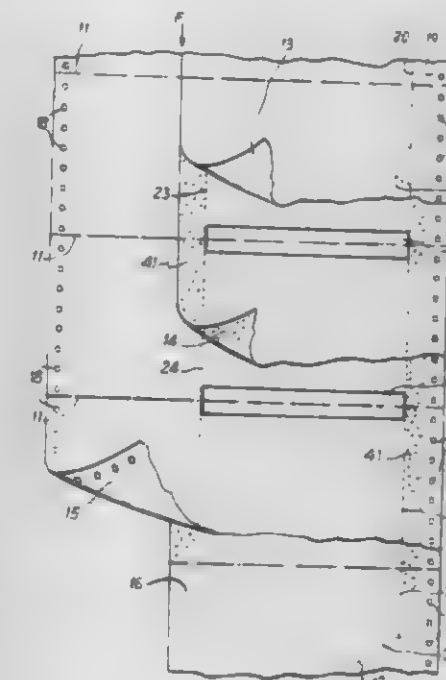
Int. Cl.³ B65D 27/10

U.S. Cl. 229—69

4 Claims

1. A complex continuous strip folded accordion-wise into a plurality of successive flaps of which each flap constitutes a correspondence envelope comprising a plurality of continuous sheets laterally joined together, said plurality of sheets including an upper sheet constituting the front wall of successive envelopes, a lower sheet constituting the back wall of said

envelopes, and at least one intermediate sheet constituting an inner document having an outer marginal edge portion, said intermediate sheet adhesively secured to said upper and lower sheets, said complex strip being provided on each of its lateral sides with drive perforations situated in a marginal zone, said inner document having said outer marginal edge portion extending to the outside of the sealed envelopes of the strip in



order to detect its presence and identity, said outer marginal edge portion of said inner document also being provided with said drive perforations, said at least one intermediate sheet, which constitutes said inner document whose presence must be checked, being wider than the upper and lower sheets so as to provide said outer marginal edge portion along one side, said outer marginal edge portion having a length corresponding substantially to the length of said envelope.

4,230,263

APPARATUS FOR ACCOMPLISHING UNLIMITED RELATIVE ROTATION OF THE ENDS OF A FILIFORM TRANSMISSION ELEMENT

Johan E. H. Westberg, Lidingö, Sweden, assignor to Separex Teknik AB, Stockholm, Sweden

Filed Aug. 2, 1978, Ser. No. 930,389

Claims priority, application Sweden, Aug. 3, 1977, 7708858

Int. Cl.² B04B 9/00

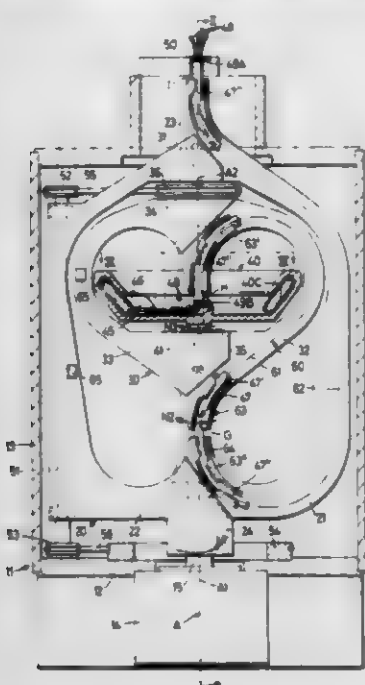
U.S. Cl. 233—23 R

13 Claims

1. Apparatus for accomplishing unlimited unidirectional relative rotation of the ends of a filiform, flexible transmission element, comprising:

a base,
a first rotor which is rotatable relative to the base about a first axis (A1),
a second rotor which is rotatable relative to the first rotor and the base about a second axis (A3), said second axis being substantially parallel to the first axis,
a third rotor which is rotatable relative to the base and the first and the second rotors about a third axis (A2) substantially parallel to the first and second axes (A1, A3), and drive means operable to rotate the first and third rotors in opposite directions relative to the base and to rotate the second rotor in the same direction as the third rotor at a rotational speed (N3) equal to twice the sum of the rotational speeds (N1, N2) of the first and third rotors,
first fastening means for non-rotatably fastening one end of the transmission element to the base near the first axis (A1),
second fastening means for non-rotatably fastening the other end of the transmission element to the second rotor near the second axis (A3).

means for holding a first length of the transmission element in position on the first rotor along a bight line extending from a point (I) near the first fastening means out around the region occupied by the second rotor and back to a point (G) near the first axis (A1), the ends of the bight line pointing in the same direction,
means for holding a second length of the transmission element in position on the third rotor along a second bight



line having its ends pointing in the same direction and forming a continuation of the first bight line, said second bight line at one end thereof (H) extending from the second rotor near the second fastening means and out around the region occupied by the second rotor inwardly of the first bight line and back to a point (G) near the third axis (A2) where it merges with the first bight line, the transmission element being rotatable relative to the first and second rotors in said holding means.

4,230,264

METHOD AND APPARATUS FOR CENTRIFUGAL SEPARATION OF COMPONENTS OF SOLUTION

Tetsuo Matsumoto, Hyogo, Japan, assignor to Akira Okumura, Hyogo; Shigemitsu Yamada, Tokyo and Fumiko Uozumi, Hyogo, all of, Japan

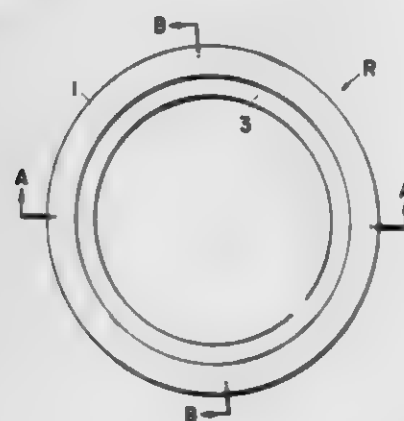
Filed Feb. 16, 1979, Ser. No. 12,819

Claims priority, application Japan, Feb. 17, 1978, 53/17909; Sep. 29, 1978, 53/121065

Int. Cl.³ B04B 11/06

U.S. Cl. 233-27

4 Claims



1. A method for centrifugal separation of components of a solution, using a centrifugal rotor including a hollow body having at least two annular peripheral grooves formed in the inside thereof with a suitable distance held therebetween and a series of depressions formed in the inside wall of said rotor body, in which one of said annular grooves and the depression

at one end of said series are communicated with each other and the other of the annular grooves and the depression at the other end of said series are communicated with each other, while the respective adjacent depressions are communicated with each other but the depressions at said one end and said other end of said series are not communicated, said method comprising injecting the solution into one of said annular grooves, moving the solution successively through the respective depressions, under the centrifugal effect of the rotor, while subjecting the components of the solution to the centrifugal separation, making the separated precipitate component to deposit in the depressions and discharging the supernatant component from the other annular groove.

4,230,265

ADAPTIVE THRESHOLD OPTICAL READER

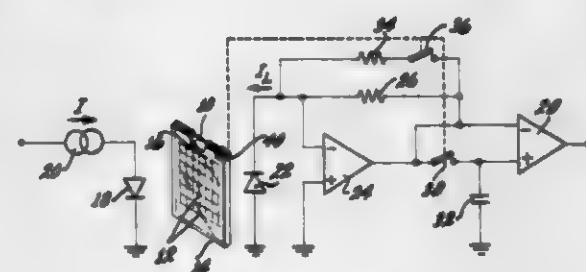
Richard J. Casaly, Santa Monica, Calif., assignor to Transaction Technology, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 943,201, Sep. 18, 1978. This application May 7, 1979, Ser. No. 36,686

Int. Cl.³ G06K 7/14; G08C 9/06; G06K 9/00

U.S. Cl. 235-455

21 Claims



1. An adaptive threshold optical reader for detecting optically encoded information when positioned within an optical path, including

- a light source for producing light energy along the optical path,
- a light detector responsive to the light energy along the optical path and for producing an output signal in accordance with the light energy detected by the light detector, means responsive to the output signal from the light detector and with the means having at least two states and with the means in a first state producing an adaptive threshold signal when there is no optically encoded information positioned within the optical path and with the adaptive threshold signal representative of the output signal from the light detector with a threshold level of optically encoded information and adaptive to optical changes and with the means in a second state for producing an information signal representative of the output signal from the light detector when there is optically encoded information positioned within the optical path,

means responsive to the adaptive threshold signal for storing the adaptive threshold signal, and

means responsive to the stored adaptive threshold signal and the information signal for detecting the presence of optically encoded information in the information signal above a threshold level in accordance with the stored adaptive threshold signal.

4,230,266

METHOD AND APPARATUS OF CAVITY IDENTIFICATION OF MOLD OF ORIGIN OF A GLASS CONTAINER

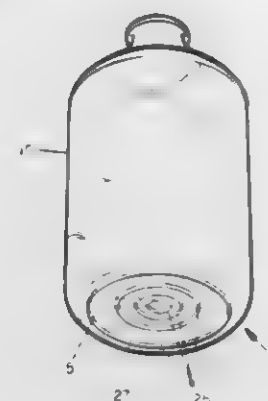
John W. Juvinall, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 864,080, Dec. 23, 1977. This application Apr. 25, 1979, Ser. No. 33,080

Int. Cl.³ G06K 19/06; G01V 9/04

U.S. Cl. 235-490

5 Claims



1. A glass container with an integrally molded concentric ring code, said code being defined by the presence or absence of rings within possible ring positions, and with the limitation that no two rings occupy adjacent possible ring positions.

4,230,267

HEATING SYSTEM FOR BUILDING STRUCTURES

Anton A. Dotschkal, and James J. Massaro, both of Newark, N.Y., assignors to Irvine Enterprises Inc., Sodas, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,293

Int. Cl.³ F24B 9/04

U.S. Cl. 236-9 A

10 Claims



1. A heating system for a building structure comprising in combination:

- a. a first heating unit comprising an enclosed natural fuel burning device;
- b. a heat exchange member having an inlet and an outlet for a heating medium situated within said enclosed natural fuel burning device;
- c. a first pumping means in fluid conducting relationship with the inlet of said heat exchange member;
- d. first control means for sensing the temperature of the heating medium at the outlet of said heat exchange member and for activating and deactivating said first pumping means responsive to the sensed temperature;
- e. a first flow control means in fluid conducting relationship with the outlet of said heat exchange member for controlling the direction of flow of the heating medium;
- f. a second heating unit having an inlet and outlet for heating said medium;
- g. second pumping means in fluid conducting relationship with the inlet of said second heating unit;
- h. second control means for sensing the ambient temperature within the building structure and activating or deactivating

ing said second heating unit and said second pumping means responsive to the sensed temperature;

- i. second flow control means in fluid conducting relationship with the outlet of said second heating unit for controlling the direction of flow of the heating medium; and
- j. heat radiation means in fluid conducting relationship with said first and second flow control means and said first and second pumping means.

4,230,268

FORCED AIR FIREPLACE FURNACE

Ralph E. Gorman, R.R. 4, Siloam Springs, Ark. 72761, and Robert W. Bruce, Rte. 4, Fairfield, Ill. 62837

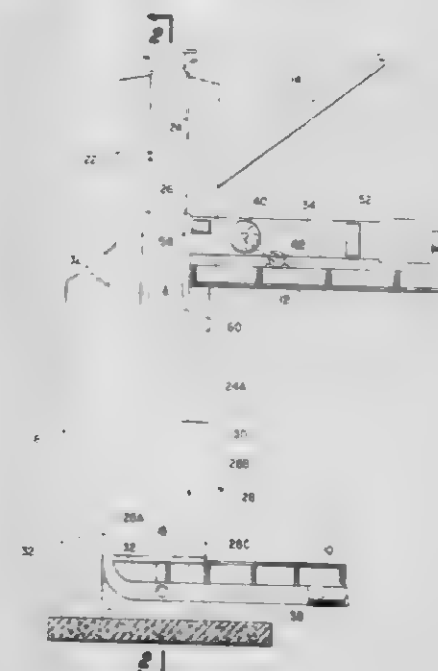
Continuation of Ser. No. 658,262, Feb. 17, 1976, abandoned.

This application Dec. 12, 1977, Ser. No. 859,944

Int. Cl.³ F24B 7/00

U.S. Cl. 237-51

1 Claim



1. A heating system for a building having a floor, a roof, a horizontal ceiling below the roof, and an attic between the ceiling and the roof comprising:

- a fireplace supported on the floor having a hearth open in front;
- a vertical chimney extending from the upper portion of the hearth, passing through the building ceiling and attic and communicating with the building exterior and terminating above the building roof;
- a metal firebox positioned in the hearth in spaced relation therewith, the firebox being open in the front and closed on the sides, the back and bottom, and having an opening in the top;
- a hearth plenum chamber formed by the spaced relation of said hearth and said metal firebox, the plenum chamber surrounding the sides, back and top of said metal firebox;
- a vertical flue liner of heat conducting metal within said chimney affixed at its lower end to said opening in the top of said metal firebox, the flue liner being of sufficient height to pass through the building ceiling and at least part way through the building attic, the upper end of the flue liner communicating with the upper end of said chimney whereby smoke produced by combustion of consumable fuel in said firebox is conducted to the exterior of the building, the exterior dimensions of the flue liner being less than the interior dimensions of said chimney providing a vertical chimney plenum chamber, the lower end of the chimney plenum chamber communicating with the upper end of the hearth plenum chamber, the chimney plenum chamber extending at least partially within the building attic;
- an elongated horizontal forced air heat distributing chamber positioned in the building attic above the ceiling and

below the roof and having communication within the attic at one end with said vertical chimney plenum chamber; a plurality of air distribution ducts connected to the other end of said heat distributing chamber for conducting air to selected places of discharge in the building; a motor driven fan positioned in said horizontal forced air heat distributing chamber; at least one return air duct extending from a selected place in the building and communicating with the lower portion of said hearth plenum chamber whereby return air from said selected place is recycled to the hearth plenum chamber; said plenum chamber includes a portion below the bottom of said hearth firebox and said return air duct extends horizontally below the building floor and communicates upwardly with the lower portion of said hearth plenum chamber whereby said fan, when energized, draws air from said return duct through said hearth plenum chamber and circulates heated air through said chimney plenum chamber and thence through said forced air heat distributing chamber, and through said air distribution ducts to distribute heat from fire in said hearth to the interior of the building.

4,230,360

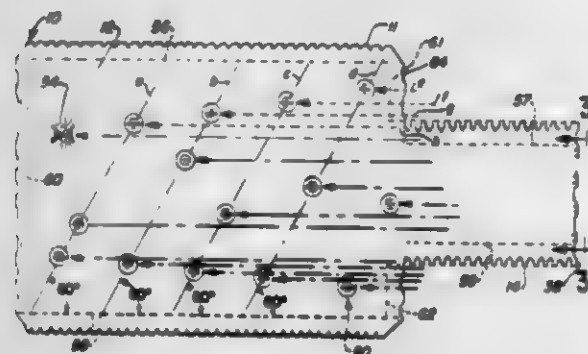
TRACTION DEVICE

Joseph Uchanski, 2222 N. Monticello St., Chicago, Ill. 60647
Filed Dec. 15, 1978, Ser. No. 970,067

Int. Cl.³ E01B 23/00

U.S. Cl. 238-14

10 Claims



1. A device for improving traction underneath a slipping wheel of a vehicle disabled on a slippery road surface, comprising a body of substantially rectangular sheet of expanded metal sheet, and an elongated tongue extending from one of the transverse edges of said sheet to initiate interengagement between the surface of said slipping wheel and said road surface, said body including a plurality of randomly spaced protrusions, each being located along an individual line parallel to the longitudinal axis of said body, each line being spaced from an adjoining line by a distance which is at least equal to the width of the protrusion, said sheet having a wheel engaging surface and a road engaging surface.

4,230,370

MULTINOZZLE BLOCK FOR SPRAYING TOOL SURFACES

Henri Poret, Cleon, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Continuation-in-part of Ser. No. 749,096, Dec. 9, 1976, abandoned. This application Nov. 9, 1978, Ser. No. 959,019
Claims priority, application France, Dec. 9, 1975, 75 37545

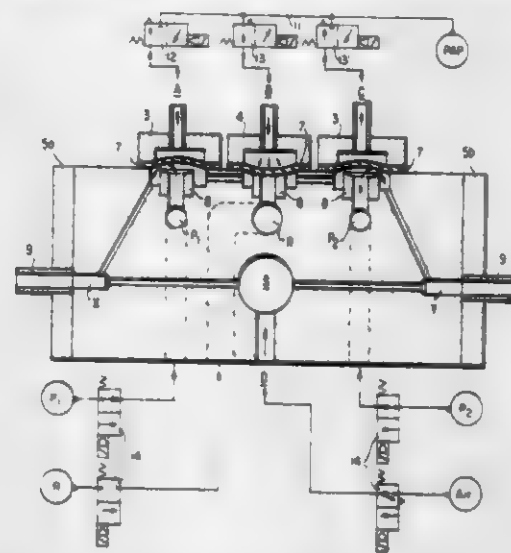
Int. Cl.³ B22D 17/20; F16N 11/00

U.S. Cl. 239-67

4 Claims

1. A multinozzle block for spraying the surfaces of tools, said block being traversed by first and second passages for supplying spray materials and spraying air, respectively, a group of valves disposed on at least one of the faces of said block;

elastic obturating membranes being disposed in each of said valves, outlets for spraying air and materials in said block connected to said first and second passages pneumatic logic control means for putting said first and second passages in programmed fluidic communication with said outlets for spraying air and materials through operation of said obturating membranes of said valves, nozzles grouped on at least one of the other faces of said



block and communicating with respective outlets for spraying air and materials, and means for purging and washing said first and second passages comprising a built-in rinsing system having a rinsing liquid supply passage separate from said first and second passages in programmed fluidic communication with said passages by at least one of said valves with an elastic obturating membrane and communicating via at least one other valve of said valves with an elastic obturating membrane, under pneumatic logic control, with said passages.

4,230,371

APPARATUS FOR DEPOSITING A UNIFORM THICKNESS LAYER OF PARTICULATE MATERIAL

Jeannik Marcault, Colombes, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

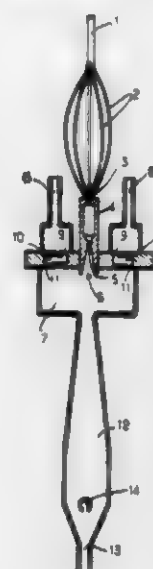
Filed May 30, 1979, Ser. No. 43,655

Claims priority, application France, May 31, 1978, 78 16272

Int. Cl.³ B05B 7/14, 15/02

U.S. Cl. 239-113

10 Claims



1. Apparatus for depositing in an even and uniform layer a particulate material on a substrate, said apparatus including (a) a housing including a longitudinal exit slit, and (b) means for moving said particulate as a gaseous suspension to said exit slit, said means including (1) a chamber in said housing,

- (2) a main conduit into which said suspension is received, and
- (3) a plurality of secondary conduits, dividing from one end of said main conduit, and each said secondary conduit being of equal length and internal diameter with the other end connected to said chamber within a length coextensive with said exit slit and at equally spaced intervals therealong.

4,230,272

CROP SPRAYING APPARATUS

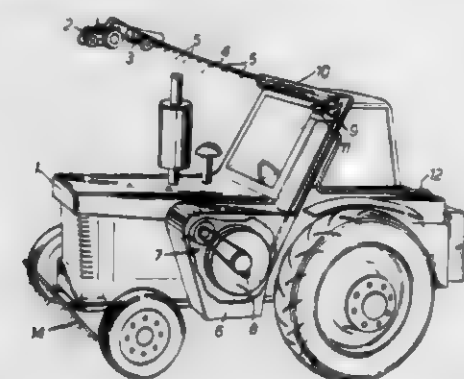
Thomas B. Snell, Hill View, Penn La., Hardington Mandeville, Yeovil, Somerset, England

Filed Jun. 6, 1978, Ser. No. 913,158

Int. Cl.² A01G 25/02

U.S. Cl. 239-121

12 Claims



1. Spraying apparatus comprising a flexible pipe equipped with spray issuing means at intervals along at least some of its length, a storage device for such a pipe including a pulley assembly having two sets of pulley wheels in an arrangement equivalent to a multifold purchase, the two sets being relatively movable to pay out or take in the pipe which is passed around the pulleys wheels, means for suspending the pipe clear of the ground, means for controlling the extent of pipe paid out from or taken into said storage device, and means for pumping spray medium along at least the paid out portion of said pipe in use of the apparatus, the suspending means including, at one end of the pipe at least, a vehicle movable transversely to the length of the suspended pipe whereby the ground can be swept by the spray medium

4,230,273

FUEL INJECTION VALVE AND SINGLE POINT SYSTEM
William B. Claxton, W. Bloomfield, Mich., and Joseph C. Cromas, Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 7, 1978, Ser. No. 875,828

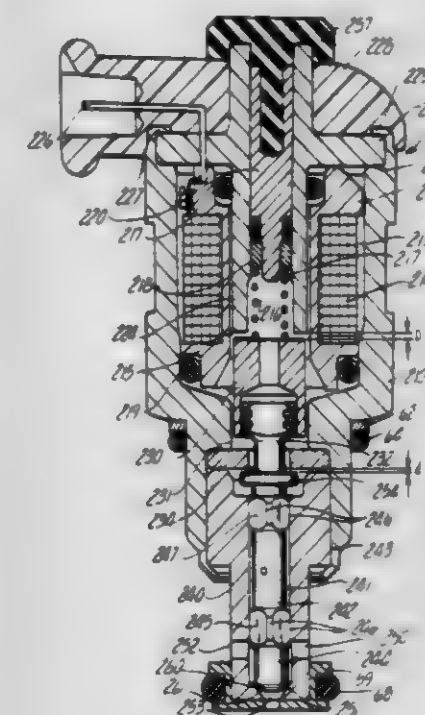
Int. Cl.² F02M 51/08, 61/06, 61/14

U.S. Cl. 239-125

10 Claims

1. A fuel metering assembly including a rapid substitution injection valve for single point and multipoint fuel injection systems, said valve assembly comprising:
an independently formed injector jacket having a fuel inlet passage for receiving pressurized fuel and for communicating said fuel to an accumulation chamber defined by an inside wall of said fuel injection jacket; said injector jacket further having a fuel exit passage directly connected to the accumulation chamber for communicating said fuel from the accumulation chamber, the inlet and exit fuel passages supplying said accumulation chamber with a circulating quantity of fuel under a substantially constant pressure;
a rapid substitution injection valve including a solenoid and armature which are operably enabled by electronic control signals to the solenoid to produce relative movement between said armature and solenoid;
a needle valve slideably reciprocable in a bore of a valve housing and having a valve tip that seals a metering orifice located at one end of the valve housing, said needle valve

afixed to said armature such that the control signals will open and close the metering orifice;
at least one inlet orifice formed in the valve housing and disposed such that said inlet orifice is proximate to the valve tip and metering orifice, said proximity causing the inlet orifice to provide substantially no restriction to a metered fuel flow through the inlet orifice to the metering orifice;



4,230,274

LANCE FOR REMOVING SKULLS FROM STEELMAKING VESSELS

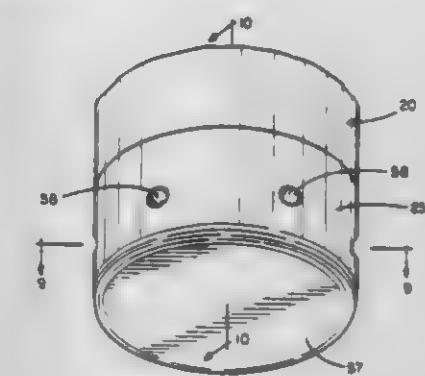
Nicholas M. Rymarchyk, Wexford, and Leo L. Meinert, Baden, both of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Filed Jul. 10, 1978, Ser. No. 922,943

Int. Cl.² C21C 5/32

U.S. Cl. 239-132.3

9 Claims



1. For use with a metal refining vessel having a hearth portion adapted to contain a molten metal charge and a nose section thereabove containing an opening through which the vessel is charged, the improvement of a lance extending through said opening for injecting an oxidizing gas from said lance against an inner wall of said nose section to prevent and remove nose skull build up comprising:
an outer pipe assembly,
an inner pipe assembly, and

an intermediate pipe assembly, said assemblies being interconnected to provide a central gas conduit, and water inlet and outlet passages, a nozzle including a bottom and associated side wall extending generally upwardly therefrom, said nozzle being connected to said pipe assemblies including a central gas chamber communicating with said gas conduit, a by-pass chamber in said nozzle communicating with said water outlet and inlet passages, and a plurality of circumferentially spaced gas ports in said nozzle communicating with said central gas chamber and positioned extending outwardly through the side wall of said nozzle to direct a gas substantially outwardly against said inner wall of said nose section, the bottom wall of said nozzle being imperforate so that gas in said central gas chamber flows outwardly only through said circumferentially spaced gas ports.

4,230,275

SELF-GUIDED REVERSIBLE TWO SPEED ROW CROP IRRIGATOR

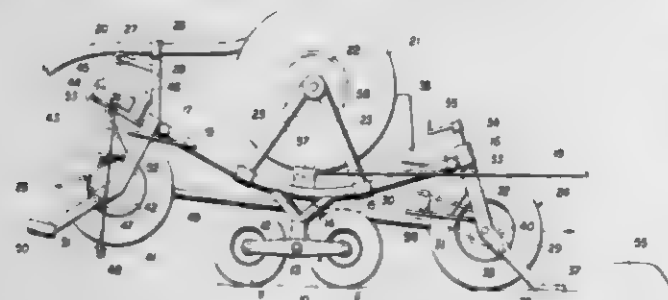
Hubert Tidwell, Box 57, Wellington, Utah 84542

Continuation-in-part of Ser. No. 929,550, Jul. 31, 1978, Pat. No. 4,185,774. This application May 4, 1979, Ser. No. 36,065

Int. Cl.³ B05B 3/18

U.S. Cl. 239-184

8 Claims



1. A row crop irrigator comprising a wheeled carriage having a fulcrum, a piping frame rockably supported on the fulcrum and extending fore and aft thereof, a hose reel mounted upon the piping frame above the fulcrum and being rockable with the piping frame and including tubular supports communicating with the interior of the piping frame whereby a hose coiled on said reel may deliver irrigation water through said supports to the interior of the piping frame, fore and aft transverse irrigation booms on the piping frame near the front and rear thereof and on opposite sides of the wheeled carriage, a slow speed powered traction wheel unit bodily mounted on one end of the piping frame and including a ground-engaging reversing element, and a higher speed powered traction wheel unit bodily mounted on the other end of the piping frame, and transmission means drivingly interconnecting said powered traction wheel units whereby both units can be driven at said slow speed.

4,230,276

HEADLAMP CLEANING ASSEMBLY

David V. Tinder, Madison Heights, and Walter E. Mack, Livonia, both of Mich., assignors to McCord Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 623,798, Oct. 20, 1975, Pat. No. 4,026,473. This application Jul. 27, 1976, Ser. No. 708,932

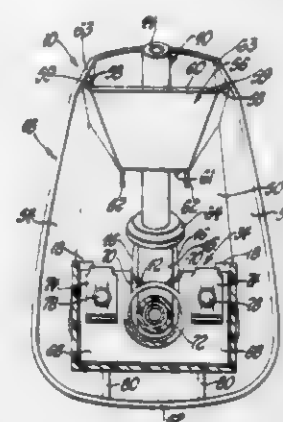
Int. Cl.³ B05B 1/10, 3/14; B08B 3/02

U.S. Cl. 239-229

20 Claims

1. An assembly for directing fluid toward a surface comprising: a flexible tube having an emitting first end for emitting fluid and for flailing in response to such emission of fluid from said emitting end and an anchored second end, cage means defining an opening surrounding said emitting end of said tube and in spaced relationship thereto for restricting the flailing movement of said tube, said cage means defining a throat spaced from and between said anchored end of said tube and

said emitting end of said tube so that said cage means diverges from said throat whereby the flailing movement of said tube is more restricted between said throat and said anchored end than between said throat and said opening which surrounds



said emitting end of said tube, said cage means including a cross section having spaced walls with parallel portions in a direction extending upwardly toward said emitting end of said tube to said throat.

4,230,277

TRIGGER TYPE SPRAYER WITH INTEGRALLY FORMED LOCKING NOZZLE COVER

Tetsuya Tada, 6-3, 2-chome, Kakinokizaka, Meguro-ku, Tokyo, Japan

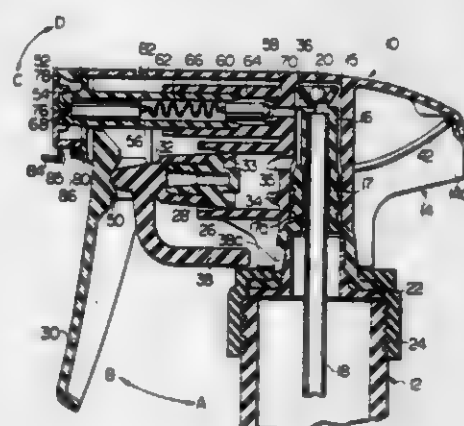
Division of Ser. No. 841,572, Oct. 12, 1977, Pat. No. 4,153,203.

This application Dec. 4, 1978, Ser. No. 966,022

Int. Cl.³ B05B 9/043

U.S. Cl. 239-333

22 Claims



1. In a trigger type sprayer which comprises a sprayer body provided with a cylinder through which a piston slides, and engaged with a liquid container; a trigger rotatably coupled to said sprayer body; a nozzle on said sprayer body, said nozzle having an ejection hole at an end portion thereof to eject a liquid spray and spring means coupled to said trigger for urging said trigger outward;

the improvement wherein said sprayer further comprises:

a nozzle cover integrally formed with said nozzle and connected to said nozzle through an integral hinge, said nozzle cover having a free end opposite said integral hinge and said nozzle cover including a seal section located intermediate said integral hinge and said free end of said nozzle cover for sealing said ejection hole of said nozzle in liquid-tightness by abutment against said ejection hole;

an engagement section formed in said nozzle;

a first lock section formed at the free end of said nozzle cover and which includes means for snap-fit engagement in said engagement section in said nozzle, said first lock section, when snap-fitted in said engagement section of said nozzle, locking said nozzle cover in said nozzle with said seal section in sealing abutment with said ejection hole;

an engagement hole formed in the upper surface of said sprayer body; and a second lock section formed in said nozzle cover and which includes means for snap-fit engagement in said engagement hole in said upper surface of said sprayer body, said second locking section, when snap-fitted in said engagement hole, locking said nozzle cover to said sprayer body.

4,230,278

APPARATUS FOR REDUCING HYDROCARBON FUEL REQUIREMENT FOR HABER AMMONIA SYNTHESIS

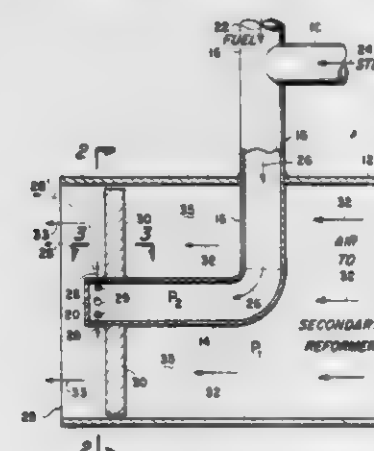
Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Oct. 23, 1978, Ser. No. 953,486

Int. Cl.³ B05B 7/06; C01C 1/04

U.S. Cl. 239-427.5

4 Claims



1. Apparatus for supply of gases to a secondary reformer of a HABER ammonia system, to reduce total hydrocarbon fuel requirement, comprising:

(a) a first cylindrical conduit of diameter D1;

(b) a second cylindrical conduit of diameter D2, less than D1, coaxial with and inside of said first conduit, forming a first annular space therebetween;

(c) the downstream end of said second conduit closed and a plurality of circumferentially-spaced orifices of diameter K1 in the second conduit wall upstream of said closed end;

(d) means to conduct a flow of air to said first conduit and at a selected pressure P1, temperature, and flow rate through said first annular space;

(e) means for conducting a combustible fuel, such as methane or natural gas, at a pressure P2 greater than P1, to flow through said second conduit, and through said orifices, at a flow rate such that the resulting concentration of methane or natural gas in the air in said first annular space will be less than the lower explosive limit; and (f) including means to obstruct said air flow within said first annulus away from the radial flow path of said combustible fuel from said circumferentially-spaced radial bars attached to the outer surface of said second conduit upstream of said closed end and extending from the outer surface of said second conduit substantially to the inner surface of said first conduit, each of said bars aligned with one orifice; whereby fuel from said orifices can, in the shadow of said radial bars, progress substantially across said first annular space, thus providing a more uniform mixture of fuel and air.

4,230,279

HAIR DRYER ATTACHMENT

John R. Forsberg, Arlington Heights, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Jun. 8, 1979, Ser. No. 46,622

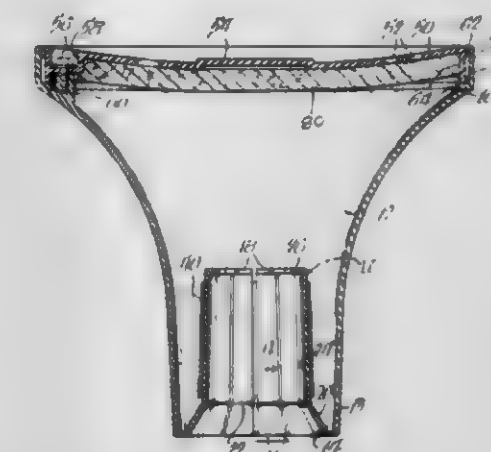
Int. Cl.³ A45D 20/12

U.S. Cl. 239-559

6 Claims

1. A hair dryer attachment device for spreading and reducing the velocity of an air stream emitted from a hair dryer

nozzle comprising a generally diverging, substantially hollow body portion leading from an open, narrower inlet end to a wider, open outlet end, means for attaching said device to a hair dryer connected to and extending inwardly from said inlet end and affixed to an area adjacent to said inlet end, said attaching means comprising a plurality of flexible fingers, said



flexible fingers being biased to grasp a hair dryer nozzle and extending from said place of affixation first generally inwardly and oblique to the longitudinal axis of said device, and then extending in a direction generally parallel to said axis, and a face plate affixed to said body portion at said outlet end comprising a solid center portion and defining a plurality of air stream exit diffusing means.

4,230,280

VEHICULAR SPREADER WITH DIGITAL ELECTRONIC GROUND SPEED LINK

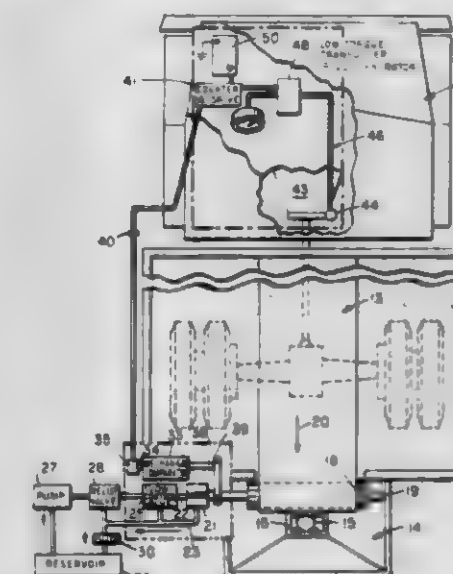
Theodore M. Leigh, Cedar Rapids, and James L. Rawson, Atkins, both of Iowa, assignors to Highway Equipment Company, Cedar Rapids, Iowa

Filed Dec. 11, 1978, Ser. No. 968,376

Int. Cl.³ A01C 19/00; E01C 19/20

U.S. Cl. 239-677

11 Claims



1. In a control system for a vehicular spreader having a source of material to be spread, distribution means, delivery means for delivering material from said source to said distribution means and power means for actuating said delivery means, the improvement comprising: low-torque transducer means sensing the ground speed of said vehicle for generating a train of electrical pulses having a repetition rate representative of the ground speed of said vehicle; stepper motor means actuated by said train of electrical pulses; comparator means responsive to the angular velocity of said stepper motor means and said power means for generating an error signal representative of the difference between the speed of said delivery

means and the speed of said vehicle; and control means responsive to said error signal for controlling the speed of said power means to track the speed of said vehicle.

4,230,281

SCRAP CHOPPER

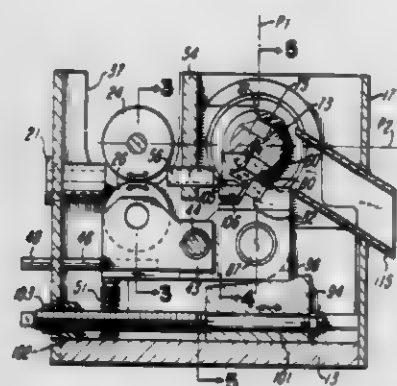
Herbert M. Hill, 5801 Lathrop Pl., Cincinnati, Ohio 45239, and Donald R. Shrader, P.O. Box 301, Oxford, Ohio 45056

Filed Jan. 22, 1979, Ser. No. 4,995

Int. Cl.³ B02C 13/06, 18/06

U.S. Cl. 241-142

19 Claims



1. A scrap chopper adapted to receive a narrow strip of scrap metal being fed from a slitting machine, said chopper comprising means for directing the strip along a predetermined path, a stationary cutting bar having a substantially straight cutting edge, a rotor including a rotary cutting bar having a substantially straight cutting edge, means supporting said rotor for rotation on an axis to orbit said rotary cutting bar adjacent said path, means supporting said stationary cutting bar adjacent said path and with its corresponding said cutting edge forming an acute angle with respect to each of two perpendicular reference planes including said axis of rotation, said rotor having means positioning said rotary cutting bar with its corresponding said cutting edge extending at an acute angle with respect to each of two perpendicular reference planes including said axis of rotation, each of said cutting edges having a non-uniform progressively changing radius with respect to said axis of rotation, and means for driving said rotor to produce effective scissors-like shearing of the strip by said cutting edges.

4,230,282

COMMUNUTING PLANT

Egon Haase, Balzers, Liechtenstein, assignor to MOCO Maschinen- und Apparatebau GmbH & Co. KG, Mannheim, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,947

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1977, 2730188

Int. Cl.³ B02C 18/06

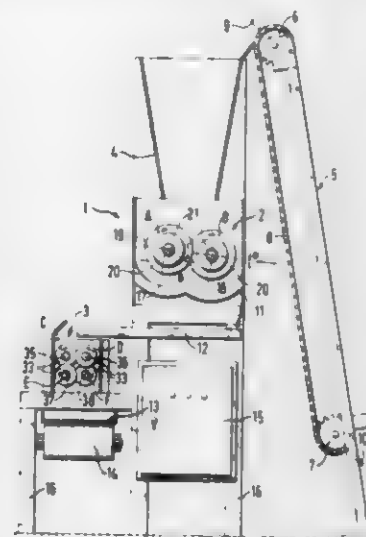
U.S. Cl. 241-159

9 Claims

1. A comminuting machine for comminuting material comprising:

- (a) a first parallel rotary shaft and a second parallel rotary shaft;
- (b) means for rotating said parallel rotary shafts in opposite directions;
- (c) a plurality of cutting disks disposed on said first and second parallel shafts, said cutting disks each being provided on both peripheral edges thereof with a plurality of spaced apart, arcuate cutting edges, said arcuate cutting edges having a circumferential length corresponding to a central angle of between 20° and 80°; and
- (d) a plurality of cutting disk spacers removably disposed alternately with said cutting disks on said parallel shafts so that said spacers rotate with said shafts, said cutting disk spacers having a diameter smaller than a diameter of the cutting disks, said cutting disks on said parallel shafts

being allocated to each other in pairs only, and upon rotation, touch each other on a corresponding, peripheral, arcuate cutting edge surface when in register and adjacent to each other, said cutting disk spacers having portions defining a space therebetween for the passage of comminuted material, said cutting disk spacers being provided on



an end face portion with a cross-sectional configuration which is relatively the same as a cross-sectional configuration of an abutting associated cutting disk, said cutting disk spacers being conical in their axial length, and complementary conical cutting disk spacers on said parallel shafts each tapering in an opposite axial direction.

4,230,283

YARN-INTRODUCING AND TAKE-UP DEVICE APPLIED TO A WINDING MACHINE

Masayoshi Hamaguchi; Hiroshi Watanabe, both of Otsu, and Itaru Hasegawa, Mishima, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

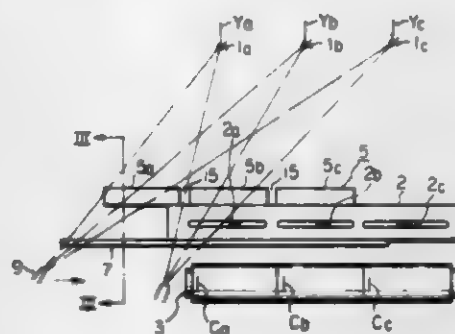
Filed Dec. 11, 1978, Ser. No. 968,296

Claims priority, application Japan, Dec. 12, 1977, 52/148216

Int. Cl.³ B65H 54/02, 54/20

U.S. Cl. 242-18 PW

7 Claims



1. A yarn-introducing and taking-up device attached to a winding machine provided with a common bobbin holder for mounting a plurality of bobbins thereon at respective winding positions, a traverse mechanism provided with a plurality of working units arranged at respective positions corresponding to said winding positions respectively, each of said working units provided with a traverse guide, a plurality of fulcrum yarn guides disposed at respective positions above said traverse mechanism, said traverse mechanism located at a position between said common bobbin holder and said fulcrum yarn guides, means for driving said bobbins mounted on said common bobbin holder, means for collecting a plurality of yarns fed via the respective fulcrum yarn guides, said collecting means being capable of being displaced along a longitudinal axis of said common bobbin holder from an outside position of a free end of said common bobbin holder toward a supporting side of said common bobbin holder, yarn catching slits for

holding yarns fed from the respective fulcrum yarn guides on the respective bobbins mounted on said common bobbin holder, said device comprising a yarn-introducing guide disposed at a position between said group of fulcrum yarn guides and said traverse mechanism, said yarn-introducing guide comprising a plurality of guide units aligned in a row parallel to the axis of said common bobbin holder, with a slit between two adjacent guide units, each of said guide units provided with a sliding surface adapted to permit yarn to slide thereover while projecting the path of said yarn forward from an imaginary plane passing guide points of said fulcrum yarn guides and said traverse guides, said guide units arranged at respective positions satisfying the condition that, when said collecting means collects yarns fed via said fulcrum yarn guides and is displaced from said outside position toward said supporting side of said common bobbin holder, said yarns are capable of passing through the respective slits one by one so that each yarn is introduced into the corresponding working unit of said traverse mechanism in such a condition that only one yarn is capable of passing through the corresponding slit while the free passage of the other yarn or yarns through said corresponding slit is prevented by contact with a portion of said yarn-introducing guide, said displacement of said collecting means being continued until the last one of said yarn is introduced into the corresponding working unit of said traverse mechanism.

zone spaced from said collet and said rolls to a second zone adjacent said rolls; nozzle means for directing a stream of fluid into said second zone to move said strand into contact with said rolls to initiate the advancement of said strand by said rolls; and actuator means for moving said strand advancing along said path into said strand engagement section to initiate collection of said strand upon said collet.

4,230,285

TRAVERSING DEVICE FOR THREAD WINDING APPARATUS

Erich Lenk, Remscheid, Fed. Rep. of Germany, and Donald J. Dobbins, Waxhaw, N.C., assignors to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

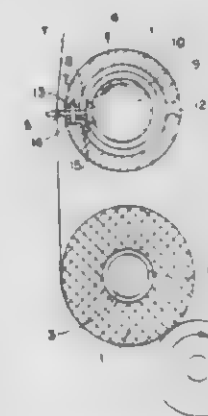
Filed Sep. 26, 1979, Ser. No. 79,047

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843208

Int. Cl.³ B65H 54/28

U.S. Cl. 242-43 R

10 Claims



1. In a thread winding apparatus having a traversing device which includes a housing, a rotatably driven cam roller mounted within said housing, traversing thread guide means engaging said cam roller for reciprocating movement along said roller and projecting outwardly of said housing to receive and guide the thread being wound, and an elongated traverse slot in said housing arranged to extend along the cam roller to provide an opening in which said thread guide means reciprocates in a substantially straight line, the improvement which comprises: means to generate and direct an air stream to flow outwardly from said slot, thereby preventing any portion of the thread as it is wound from entering the housing.

4,230,284

METHOD AND APPARATUS FOR COLLECTING STRANDS

Cecil R. Cunningham, Anderson; Ray M. Fulmer, and Gordon E. Cherry, both of Aiken, all of S.C., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Jul. 11, 1979, Ser. No. 56,653

Int. Cl.³ B65H 54/02, 67/04

U.S. Cl. 242-18 G

16 Claims



1. Apparatus for the initiation of collection of a strand comprising:

- a rotatable collet having a package collection region and a temporary collection region associated with a strand engagement section;
- a pair of rolls adapted to advance said strand when said strand is not being collected on said collet, said rolls being spaced from said collet, said rolls and said collet being oriented such that said strand is advanced along a path immediately adjacent said strand engagement section when said strand is advanced by said rolls;
- a movable member adapted to move said strand from a first

4,230,286

CORE HOLDER FOR REELING

Richard J. Charles, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 921,579, Jul. 3, 1978, Pat. No. 4,174,077. This application Jun. 18, 1979, Ser. No. 49,286

The portion of the term of this patent subsequent to Nov. 13, 1996, has been disclaimed.

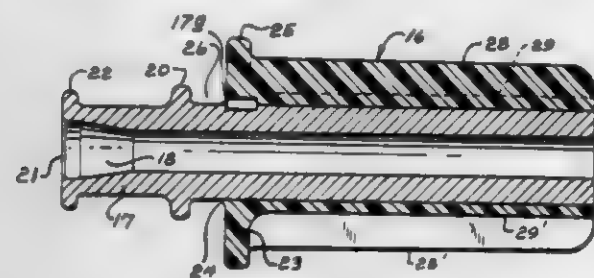
Int. Cl.³ B65H 75/02, 19/12, 19/30

U.S. Cl. 242-68,6

2 Claims

1. A core holder for reeling comprising a relatively elongated metal tube having a radially extending flange adjacent to but spaced from one end of said tube, a plastic sleeve fixed on

said tube adjacent the other end of said tube and terminating a spaced distance from said flange, said sleeve having radially



outwardly projecting therefrom a plurality of longitudinally extending ribs.

4,230,187

APPARATUS FOR THE MECHANICAL NEEDLING OF PILE FABRICS

Axel Schneider, Krefeld, Fed. Rep. of Germany, assignor to Scheibler Peltzer GmbH & Co., Krefeld, Fed. Rep. of Germany

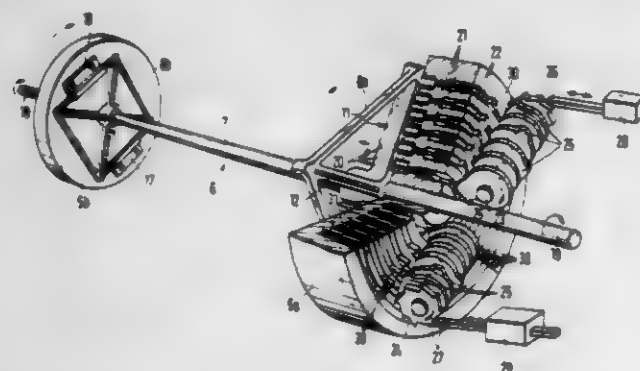
Filed Dec. 18, 1978, Ser. No. 970,797

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756468

Int. Cl.³ B65H 75/02

U.S. Cl. 242-77.1

16 Claims



1. An apparatus for the mechanical needling of pile fabrics onto a winding frame comprising:

- a pair of rotatable suspension frame, each suspension frame being arranged at opposite ends of an axle and including radially disposed rows of equally spaced fabric engaging hooks movable parallel to said axle and defining concentric rings of hooks,
- actuating means for moving the individual hooks toward the opposite end of said axle in a sequence beginning with the radially innermost hooks and progressing to the radially outermost hooks in synchronization with the rotation of said suspension frames,
- said actuating means including ejector means rotatable with said suspension frames, cam means movable into the path of movement of said ejector means and means for moving said cam means into the path of movement of said ejector means for selectively moving said individual hooks toward said opposite end of said axle.

4,230,188

RE-TIGHTENER WITH PYROTECHNIC PROPELLANT CHARGE FOR SAFETY-BELT AUTOMATIC WIND-UP DEVICES

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 26,077

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814487

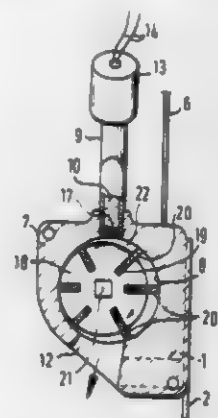
Int. Cl.³ A62B 35/00; B65H 75/48

U.S. Cl. 242-107

3 Claims

1. In a retightener for safety-belt automatic wind-up devices having a winding shaft mounted in a bearing block, a safety belt wound around the shaft, a retightening element connected

to the shaft, with a pyrotechnic propellant charge which when activated by firing the charge generates an explosive pressure on the retightening element, said retightening element being in the form of a turbine wheel connected to the winding shaft to tighten the safety belt around the body of a motor vehicle passenger to be protected and a liquid medium disposed intermediate the retightener and the pyrotechnic charge, the improvement comprising a turbine housing disposed around the turbine wheel with a hollow space on one side between the turbine wheel and the wall of the housing to form a turbine pressure chamber, a receptacle containing liquid medium with the outlet of the receptacle opening into the turbine pressure vessel, and with the outlet of the receptacle aligned substan-



tially tangentially to the turbine wheel, wherein the turbine wheel is eccentrically mounted in a symmetrical housing bore of the turbine housing, and wherein the turbine wheel has vanes which can be displaced under the action of springs, which vanes are braced against the wall of the housing bore, and wherein the turbine housing has an outlet opening for the discharge of liquid on the side opposite the outlet of the receptacle for introduction of liquid medium into the turbine pressure chamber, and wherein a cross-section of said hollow space has a crescent shape with one end of the crescent terminating beyond the outlet of the receptacle for introduction of liquid medium into the turbine pressure chamber and the other end of the crescent terminating beyond said outlet for the discharge of liquid.

4,230,289

AUTOMATIC WIND-UP ROLLER FOR SAFETY BELTS

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

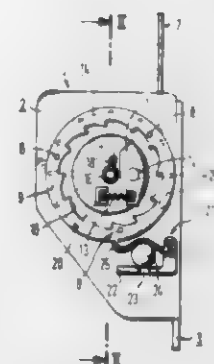
Filed May 29, 1979, Ser. No. 43,233

Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823487

Int. Cl.³ A62B 35/02; B65H 75/48

U.S. Cl. 242-107.4 A

9 Claims



1. Automatic wind-up roller for a safety belt of a vehicle with means to block a belt shaft on which the safety belt is wound in case of danger, having a housing, a belt shaft rotatably supported in the housing, a safety belt rolled around the belt shaft, a release mechanism which is activated when a predetermined acceleration or deceleration of the vehicle is

exceeded, a control lever activated by the release mechanism, a control disc rotatable with respect to the belt shaft, said control disc having elastic, yielding control teeth which couple with the control lever when the latter is activated, and a locking mechanism activated by said control disc to block said belt shaft.

4,230,290

AIRPLANE ANGLE OF ATTACK AND DIRECTION OF FLIGHT INDICATOR

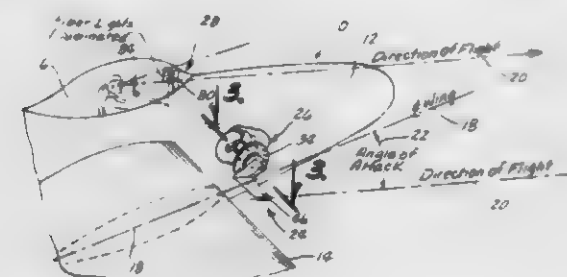
Ray T. Townsend, Des Moines, Iowa, and Orville Vandeweg, Tempe, Ariz., assignors to Townsend Engineering Company, Des Moines, Iowa

Filed May 1, 1978, Ser. No. 901,717

Int. Cl.² B64D 43/00, 45/00

U.S. Cl. 244-1 R

20 Claims



18. In combination with an airplane having a fuselage and a cockpit area, a device for determining the vertical direction of flight of the airplane comprising, air actuated means in communication with air outside said fuselage and being responsive to the angle of attack of the airplane moving through the air, visible indicator means in said cockpit area, means connecting said air actuated means and said visible indicator means whereby changes in the angle of attack of the airplane moving through the air can be visually observed on said visible indicator means, and a sighting device in said cockpit area arranged in relation to said indicator means such that a line of sight may be established through said sighting device and said indicator means, said line of sight corresponding to the vertical direction of flight of said airplane.

20. The method of determining the vertical direction of flight of an airplane having an airplane control center with respect to the direction of flight, comprising, measuring the angle of attack of the airplane at the exterior of the airplane, providing means movably responsive to the changes in the angle of attack measured at the exterior of the airplane, visually projecting the angle of attack of said airplane at said airplane control center on an indicator means, and sighting through a sight means and said indicator means to establish a line of sight corresponding to the vertical direction of flight of said airplane.

4,230,291

TUNED SPRING-MASS VIBRATION ABSORBER

John Marshall II, deceased, late of Cheshire, Conn. (by Richard N. James, agent), assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 7, 1978, Ser. No. 913,720

Int. Cl.² B64C 27/04; F16F 15/06

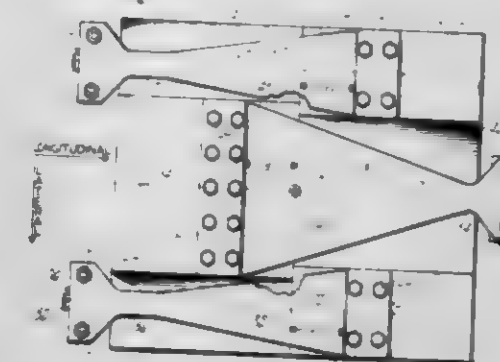
U.S. Cl. 244-17.11

8 Claims

1. A tuned spring-mass vibration absorber adapted for use in a helicopter fuselage comprising:

- (A) a dynamic mass member of selected mass and shaped to define at least one flat surface and a selectively positioned mass center of gravity,
- (B) means suspending said dynamic mass member from the fuselage comprising:
 - (1) three leaf spring members comprising a center spring member with side spring members on opposite sides

thereof and each spring member being of constant thickness and having a wide end and tapering gradually therefrom to a narrow end and extending in parallel relationship to one another and with the width of the center spring member being twice that of the side spring members and with the center spring member being oriented in the opposite direction to the side spring members,



- (2) first means pivotally connecting the narrow ends of said leaf spring members to the fuselage so that no moment reactions are imparted to the fuselage from the spring members, and
- (3) second means rigidly connecting the wide ends of said spring members to said mass member flat surface and at stations in spaced relation to the mass member center of gravity so that said mass member is suspended from said spring members for vertical motion with respect to the fuselage.

4,230,292

PROPULSION/CONTROL FOR VTOL VEHICLE

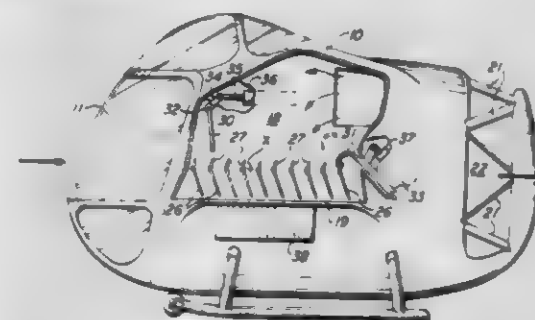
Robert R. Van Nimwegen, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 9, 1978, Ser. No. 914,248

Int. Cl.² B64C 15/06

U.S. Cl. 244-23 D

11 Claims



1. In an aircraft of the vertical takeoff and landing type having a body, the combination comprising:

- (a) means forming an air duct in said body with an inlet at a predetermined point in the body and downwardly directed outlets at opposite sides of said body;
- (b) an engine in said body;
- (c) a fan in said air duct adjacent said inlet and connected for operation by said engine to cause a flow of air through said duct;
- (d) a cascade of deflector blades in said duct adjacent each of said outlets, said blades being adjustable about axes disposed in a plane coextensive with the axis of rotation of said fan to direct airflow from said outlets at selected angles to the vertical; and
- (e) door means in said air duct in advance of said outlets, said door means being adjustable to change the effective positions of said outlets relative to the center of gravity of said body.

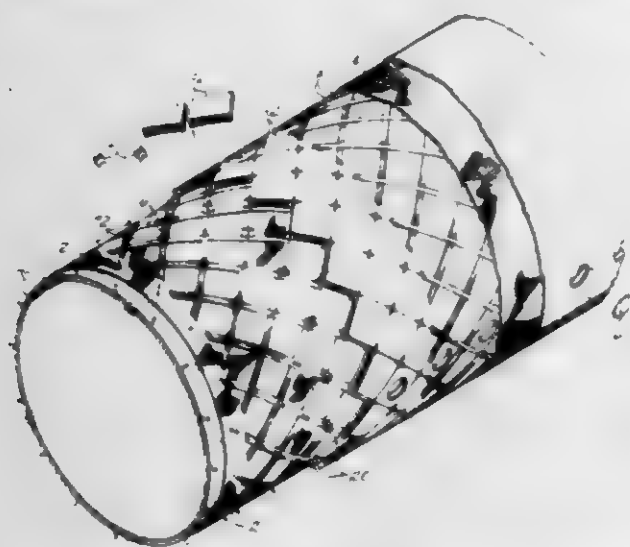
4,230,293

COMPOSITE STRUCTURE AND METHOD OF MAKING
Robert A. Hamm, Bellevue, and Philip C. Whitener, Seattle,
both of Wash., assignors to Boeing Commercial Airplane
Company, Seattle, Wash.

Filed Aug. 2, 1978, Ser. No. 930,457
Int. Cl.² B64C 1/00

U.S. Cl. 244—119

27 Claims



1. A hollow elongate double walled composite structure comprising: a plurality of components including an inner skin of filaments wound essentially circumferentially and longitudinally, an outer skin of filaments wound essentially circumferentially and longitudinally, patterned reinforcing strips of crisscrossing filaments to reinforce the inner skin, patterned reinforcing strips of crisscrossing filaments to reinforce the outer skin, reinforcing plugs located to extend between and to contact the skins at the intersection of the crisscrossing reinforcing strips, and contoured reinforcing panels embedded between contiguous reinforcing plugs and the skins; and a resin joining all the components together to make up a composite structure.

4,230,294

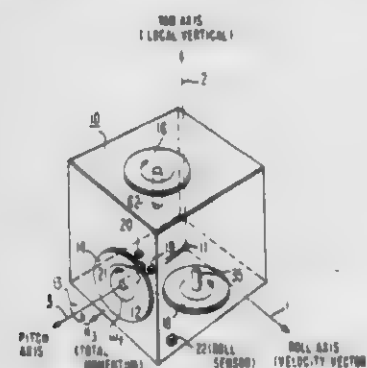
**CLOSED LOOP ROLL CONTROL FOR MOMENTUM
BIASED SATELLITES**

Josef S. Pistiner, Lafayette Hill, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 23, 1979, Ser. No. 60,029
Int. Cl.³ B64G 1/38

U.S. Cl. 244—170

9 Claims



1. An attitude control system for a momentum biased satellite having pitch, roll and yaw axis that are each mutually perpendicular to each other and further having a pitch axis control loop including a motor for driving a bias momentum wheel about an axis parallel to the pitch axis, and further including means to sense motion of said satellite with respect to said pitch axis and provide a signal manifesting such motion, and means responsive to said sensor signal for correcting pitch axis motion errors relative to a predetermined reference, said system comprising:

a first wheel oriented to spin about an axis parallel to said yaw axis in one rotation direction;
a second wheel oriented to spin in the opposite direction from said one rotation direction about an axis parallel to said first wheel axis;
a first means for driving said first wheel at a predetermined constant speed;
a second means for driving said second wheel at a variable speed, said second means including sensor means oriented to sense motion of said satellite with respect to said roll axis and to generate a signal manifesting roll axis motion; and
means including a closed loop control responsive to said signal manifesting roll axis motion for controlling the speed of said second motor to rotate said satellite about said roll axis to reduce errors in motion relative to said predetermined reference.

4,230,295

**DEVICE TO SUPPORT RUDDERS AND TRAILING EDGE
FLAPS OF AIRCRAFT AND WATERCRAFT**

Richard Eppler, Leibnizstrasse 84, 7000 Stuttgart 1, Fed. Rep. of Germany

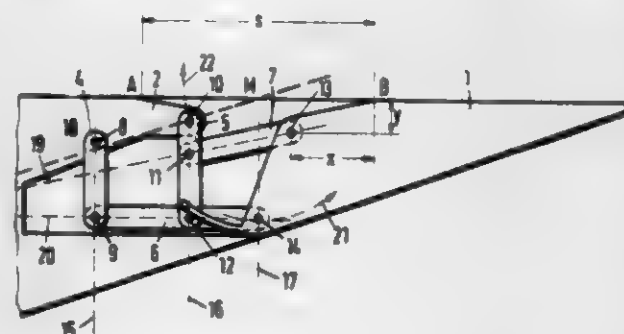
Filed Dec. 11, 1978, Ser. No. 968,237

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755442

Int. Cl.² B64C 9/02, 3/50

U.S. Cl. 244—213

10 Claims



1. A supporting device for first and second articulated elements having external surfaces thereon, between which elements a gap is formed and between the external surfaces of which a cover for the gap tangentially extends, the first and second elements being movable between an undeflected zero position relative to each other and deflected positions relative to each other, the supporting device comprising a multi-bar arc extending between the first and second elements, said multi-bar arc being disposed entirely internally of the cover and the external surfaces of the first and second elements, said multi-bar arc including:

- (a) first, second, third and fourth levers;
- (b) first, second, third, fourth, fifth, sixth and seventh bearing points on said levers, said first bearing point providing a connection between said first lever and the first element, said second bearing point providing a connection between said first and third levers, said third bearing point providing a connection between said second lever and said first element, said fourth bearing point providing a connection between said second lever and said fourth lever, said fifth bearing point providing a connection between said second and third levers, said sixth bearing point providing a connection between said fourth lever and the second element and said seventh bearing point providing a connection between said third lever and the second element;
- (c) said first and second bearing points defining a straight line, said third and fifth bearing points defining another straight line and said seventh bearing point and a point at the center of the cover defining yet another straight line; and
- (d) said straight lines, when the first and second elements are in the undeflected zero position, each intersect at a com-

mon point whereby, as the elements move relatively into deflected positions, the cover maintains a constant length and approximately a constant curvature over such length.

4,230,296

HOLDING DEVICE FOR HUNTING EQUIPMENT

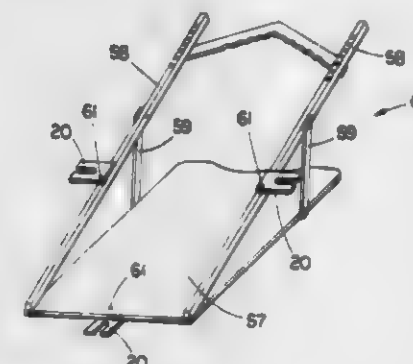
Gary M. Staley, 6708 Cliftwood, Evansville, Ind. 47712, and
Monty S. Cox, R.R. 1, Box 161B, Rucker Rd., Henderson,
Ky. 42420

Filed Feb. 21, 1979, Ser. No. 13,143

Int. Cl.² A47F 5/00

U.S. Cl. 248—309 R

7 Claims



1. In combination:

a tree stand of the style including:

- (a) a substantially flat, horizontally disposed base platform;
 - (b) two side rails joined adjacent to the front edge of said base platform and inclined upwardly as they extend beyond the rear edge of said base platform; and
 - (c) two vertical supports each joined to a side edge of said base platform between said front edge and said rear edge and to a different one of said side rails; and
- a plurality of holding devices attached to said tree stand for holding hunting implements in a ready-for-use position, each of said holding devices comprising:
- (d) a substantially, flat main body portion having a substantially constant thickness throughout;
 - (e) two tab portions symmetrically disposed on opposite sides of a centerline of said main body portion and joined to said main body portion and outwardly extending from a common edge of said main body portion;
 - (f) said common edge and said two oppositely disposed tab portions defining an elongated open region centered on said centerline; and
 - (g) clearance aperture means for receipt of an attaching member for securing said holding device to a structural support member.

4,230,297

**MOUNTING BRACKET FOR FLUORESCENT FIXTURES
AND THE LIKE**

O. Lawrence Comer, Wyndell G. Muse, both of Americus, and
Tommy Clare, Smithville, all of Ga., assignors to Metalux
Corporation, Americus, Ga.

Filed Oct. 6, 1976, Ser. No. 730,220

Int. Cl.² B42F 13/00

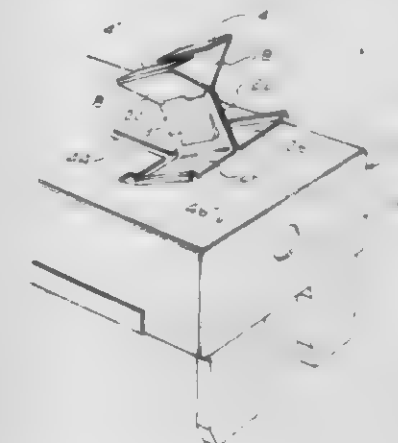
U.S. Cl. 248—317

9 Claims

1. A bracket device for hanging a lighting fixture or the like form a support beam having a support surface, said bracket device including:

- (a) a pair of engagement members each including a generally flat engagement surface connected together by pivot means for movement between a first open position at which said engagement surfaces are substantially separated from one another and a second closed position at which said engagement surfaces are disposed adjacent one another and in a coplanar relationship;
- (b) a pair of extending members connected, respectively, to

said engagement members to extend oppositely therefrom with respect to said pivot means;
(c) a pair of bearing members connected respectively to said extending members, each said bearing member including a



generally flat bearing surface, with said bearing members being arranged to dispose said flat bearing surfaces in a coplanar relationship parallel to the plane of said engagement member at said second closed position thereof.

4,230,298

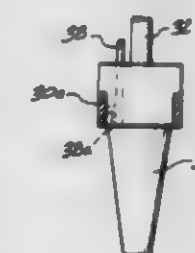
**APPARATUS FOR THE PREPARATION OF HOLLOW
PLASTIC ARTICLES**

Emery I. Valyl, 5200 Sycamore Ave., Riverdale, N.Y. 10471
Division of Ser. No. 911,359, Jun. 1, 1978, Pat. No. 4,207,134,
which is a continuation-in-part of Ser. No. 641,638, Dec. 17,
1975, Pat. No. 4,115,494, which is a division of Ser. No. 479,287,
Jun. 14, 1974, Pat. No. 3,970,419, which is a continuation-in-part
of Ser. No. 473,580, May 28, 1974, Pat. No. 3,966,378. This
application Jan. 24, 1979, Ser. No. 5,958

Int. Cl.³ B29C 1/12, 17/07

U.S. Cl. 249—65

4 Claims



1. A core rod for use with a parison thereon having an end portion and side walls extending from said end portion and terminating in a neck region, said rod including an expandable sleeve at the neck region thereof arranged to grip the neck of the parison internally and hold the parison on the core rod for transfer of the parison from a first station to a second station in the absence of an external holding force, and means for expanding said sleeve operatively connected thereto, wherein said means includes a main fluid passageway and a second fluid passageway leading from the main fluid passageway wherein said second fluid passageway is operatively connected to said sleeve, whereby said sleeve is caused to expand against the inside of the parison neck by fluid pressure conveyed through said second passageway and whereby said parison is held on said sleeve in the absence of an external holding force, and said main fluid passageway is operatively connected to both said second passageway and the core rod beneath the neck region for conveying fluid pressure to the inside of said parison.

4,230,299

**PRESSURE BALANCED GATE VALVE HAVING
SELECTIVE ACTUATOR SYSTEMS**Elwood K. Pierce, Jr., Coldspring, Tex., assignor to Petroleum
Designers, Inc., Houston, Tex.

Filed Jul. 3, 1978, Ser. No. 921,824

Int. Cl.³ F16V 31/143

U.S. Cl. 251-14

26 Claims



1. A pressure balanced gate valve mechanism for controlling flow of fluid, said valve mechanism comprising:

a valve body defining a valve chamber and inlet and outlet flow passages intersecting said valve chamber, said valve body being formed to define seat recess means within said valve chamber about said inlet and outlet flow passages; seat carrier means being positioned within said valve chamber and being formed to define seat retainer means, said seat carrier means defining gate guide means; seat means being received by said seat retainer means of said seat carrier means and being at least partially received within said seat recess means;

bonnet means forming a closure for said valve chamber and containing first packing means, said bonnet means defining stop and back-face surface means;

gate means being movably positioned between said seat means and defining sealing surface means, said gate means defining port means for registry with said inlet and outlet passage means in the open position of said valve mechanism;

manual operator means for moving said gate and including actuator stem means being extended through said bonnet and being sealed with respect to said bonnet by said first packing means, stop and back-face seal means being defined by said actuator stem means and being engageable with said stop and back-face surface means at one of the open and closed positions of said gate means;

second packing means being supported by said valve body; a pair of pressure balancing stem means being connected to said gate means and extending at least partially through said valve body, said second packing means sealing said pressure balancing stem means with respect to said valve body said pressure balancing stem means are received within a pair of balancing chambers, said chambers are in fluid communication through a fluid line which is connected to a remote pressure source, at least one pressure balancing chamber being positioned at least partially within said actuator housing and outwardly of said first packing means, said one pressure balancing chamber is also formed within said operator, whereby the volume of fluid displaced by said pressure balancing stem means is equal and a balanced condition is maintained in each chamber during movement of said gate means;

said valve body defining second stop and back-face seal surface means; and

stop and back-face seal means being defined by said pressure balancing stem means and establishing sealing and gate positioning engagement with said second stop and back-face seal surface means in the other one of said open and closed positions of said gate means.

7. A pressure balanced gate valve as recited in claim 1, wherein:

packing retainer means is provided to retain said second packing within said valve, said packing retainer defining the other pressure balancing chamber, the other of said pressure balancing stem means extending into said said other pressure balancing chamber

seal means establishes a seal between said pressure balancing stem means and said packing retainer means;

said operator means is adapted to impart reciprocal movement to said actuator stem, said operator means is capable of being rendered inoperative; and

with said operator means rendered inoperative, force applied to said pressure balancing stem means in a direction toward said gate means imparts movement of said pressure balancing stem means and said gate means to a selected position thereof.

4,230,300

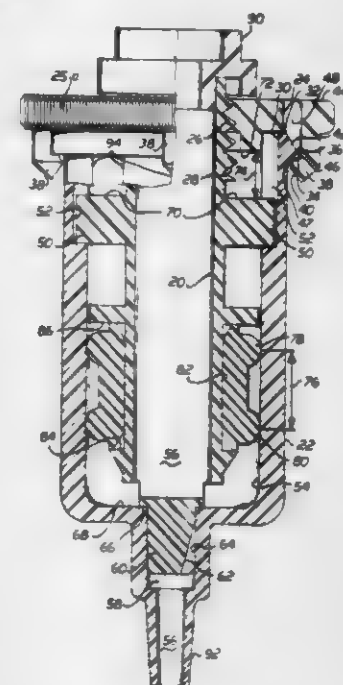
FLOW METERING AND SHUT-OFF VALVEHarold L. Wiltse, Baldwin Park, Calif., assignor to Mary Louise
Wiltse, Baldwin Park, Calif.

Filed Jun. 11, 1979, Ser. No. 47,052

Int. Cl.³ F16K 1/04

U.S. Cl. 251-205

20 Claims



6. A valve having a flow passageway therethrough for controlling the flow of fluid in an intravenous flow line including:

means for connecting said valve to a source of the fluid;

means for connecting said valve to a receiver of said fluid;

a first valve portion having an axis and defining at least a portion of said flow passageway therethrough;

a second valve portion defining at least a portion of said flow passageway therethrough;

means to control the flow of fluid through said valve which depend on the relative axial positioning of said first and second valve portions; and

means to vary the relative axial positioning of said first and second valve portions including a threaded portion on said first valve portion, a collar threadably engaged with said threaded portion of said first valve portion and radially slidably engaged with said second valve portion, and means to prevent relative rotation between said first and second valve portions.

4,230,301
VALVEDon R. Miller, Ashland, Ohio, assignor to U-Brand Corporation,
Ashland, Ohio

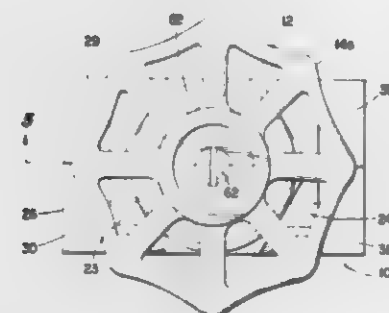
Division of Ser. No. 835,637, Sep. 22, 1977, Pat. No. 4,167,195.

This application Mar. 1, 1979, Ser. No. 16,683

Int. Cl.³ F16K 27/12

U.S. Cl. 251-367

1 Claim



1. In a valve of the character described, a valve body having an externally threaded upright portion, a valve stem disposed in said upright portion and reciprocally movable therein, a bonnet threadably secured to the threads of said upright portion and means constituting stops for limiting downward movement of said bonnet relatively to said upright portion, when said bonnet is being secured to said upright portion, whereby to prevent breakage of said bonnet, said means comprising vertically-extending ribs disposed below said threads and extending radially from diametrically-opposite sides of said upright portion, and adapted to be engaged by said bonnet when said bonnet is moved downwardly.

4,230,302

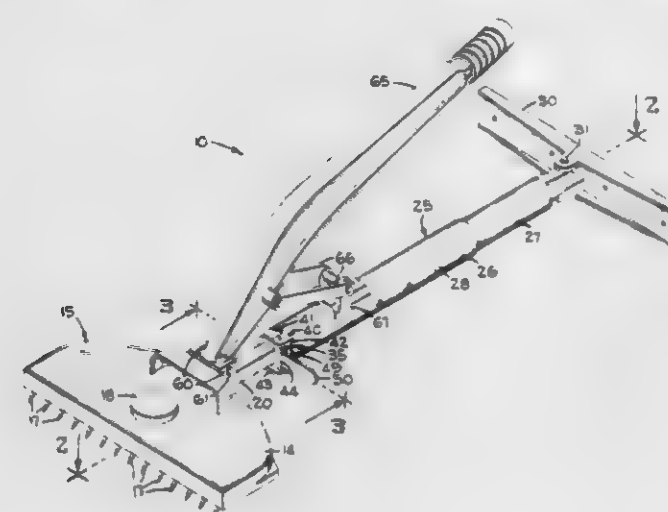
CARPET STRETCHERMillard Crain, Jr., Pleasanton, Calif., assignor to Crain Cutter
Co., Inc., Santa Clara, Calif.

Filed Jul. 19, 1979, Ser. No. 58,959

Int. Cl.³ A47G 27/04

U.S. Cl. 254-212

11 Claims



1. A carpet stretcher comprising:

- a pin head;
- a sliding bar fixed to said pin head and extending rearwardly therefrom;
- a tubular assembly freely receiving said sliding bar in the axial direction thereof;
- a wall engaging member mounted on the rearward end of said tubular assembly;
- a sliding bar locking mechanism fixed to the forward end of said tubular assembly, said sliding bar locking mechanism including a movable locking lever extending transversely relative to said sliding bar and formed with an aperture to receive said sliding bar, said locking lever

being movable to retain said sliding bar in a fixed position relative to said tubular assembly and being movable to release said sliding bar for enabling said sliding bar to be freely movable relative to said tubular assembly;

(f) a handle pivotally connected to said pin head and projecting in the general direction of said tubular assembly; and

(g) linkage interconnecting said handle and said tubular assembly, the movement of said handle enables said locking lever to be released from locking engagement with said sliding bar.

4,230,303

STAY NAIL BAR

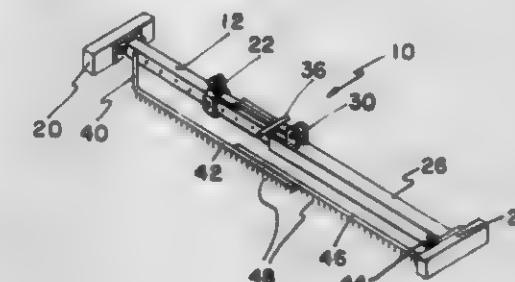
Duane K. Schiltz, 3351 W. 8th, Wichita, Kans. 67203

Filed Oct. 9, 1979, Ser. No. 82,609

Int. Cl.³ A47G 27/04

U.S. Cl. 254-212

10 Claims



1. A stay nail bar comprising a first member, a first wall abutting block attached to an end of said first member, adjustable bracket means slidably attached to said first member for positioning said bracket means at a predetermined location on said first member, a second tubular member slidably mating with said first member for telescoping movement of said second tubular member along the exterior surface of said first member, a second wall abutting block attached to an end of said second tubular member, a lever member pivotally attached to said adjustable bracket means, a lever link pivotally attaching to said lever member and to said second tubular member such as movement of said lever member around the pivotation point with said first member causes telescoping movement of said second tubular member along the exterior surface of said first member, a first prong receiving bar connected to said first member and downwardly extending therefrom and including a section in generally parallel relationship with said first member, a second prong receiving bar connected to said second tubular member and downwardly extending therefrom and including a section in generally parallel relationship with said second tubular member, a plurality of operative prongs attached to the section of the first prong receiving bar and second prong receiving bar in parallel relationship with the first member and second tubular member, respectively, to hold a carpet steadfastly in place while stretching same.

4,230,304

**ARRANGEMENT TO OBTAIN EQUAL TRAVEL OF
HYDRAULIC CYLINDERS**

Dirk Tol, Oud Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 974,038

Claims priority, application Netherlands, Dec. 12, 1977, 7713705

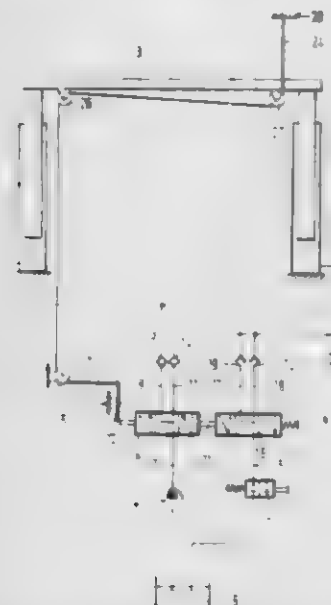
Int. Cl.³ B66F 7/20

U.S. Cl. 254-89 H

1 Claim

1. An arrangement to obtain an equal travel of hydraulic cylinders in a hydraulic car lift having at least two single acting lifting cylinders powered by a common pressure source and with which a lifting platform is moved, is maintained in a substantially horizontal position by means of a leveling arrangement, and both cylinders being connected to a control arrangement which itself is controlled by the leveling arrangement.

ment which is influenced by the position of the platform, wherein the control arrangement is formed by two control valve members which are rigidly interconnected and controlled by the leveling arrangement, wherein one of the control members forms an upward control member which only controls the upward movement of the platform and the other control member forming downward control member only controlling the downward movement, the upward control member being connected to the pressure pump and the downward control member being connected to a discharge valve.



said upward control member being respectively connected to said cylinders by a pair of pipelines and said downward control member being respectively connected to said cylinders by a second pair of pipelines, and wherein a pair of non-return valves are respectively inserted in the two pipelines from the upward control member to the corresponding cylinders which open in the direction towards the cylinders and a second pair of non-return valves are respectively inserted in the two pipelines from the downward control member to the corresponding cylinders which open in the direction towards the downward control member.

4,230,305

FISH GRABBER FOR USE IN ELECTRICAL WIRE INSTALLATION

Stephen S. Comroe, 1208 Lindsay La., Rydal, Pa. 19046
Filed Sep. 19, 1979, Ser. No. 76,838
Int. Cl.³ B65H 59/00
U.S. Cl. 254—134.3 FT

4 Claims



1. An electrical installation tool for use in electrical wire installation in areas of varying or unknown configuration, said tool comprising a hollow flexible housing, a flexible movable cable passing through said housing and having a handle end and fish wire end, a bundle of flexible loops, each having an outer end secured to said cable fish wire end, with free ends of each of the loops being fixedly held together in a movable junction to form a loop bundle, and wherein the loop bundle comprises flexible loops flaring outwardly, and means to grasp said handle end of said cable to move the fish wire cable in a

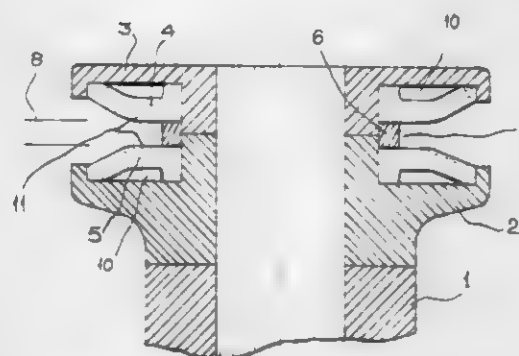
direction inwardly or outwardly of said housing, thereby to vary the flaring of said loop bundle to allow passage thereof or expansion or contraction thereof to adapt the loop bundle to varying or unknown configurations.

4,230,306

SELF-TAILING WINCH

Raymond J. Porter, Panania, Australia, assignor to Barlow Marine Limited, New South Wales, Australia
Filed Feb. 21, 1979, Ser. No. 13,309
Claims priority, application Australia, Feb. 21, 1978, PD3463; Oct. 16, 1978, PD6382
Int. Cl.³ B66D 1/30
U.S. Cl. 254—371

6 Claims



1. In a self-tailing winch for a sheet of the kind having in combination a stationary frame, a rotatable input shaft supported by said frame, a rotatable drum supported by said frame, a reduction gear train connecting said input shaft to said drum so that said drum is driven by said shaft, sheet gripping means attached to and axially aligned with the upper end of said drum for rotation therewith, said gripping means having inner annular surfaces defining an annular groove between them, whereby said groove defines a constant winding diameter for said sheet, said groove having an effective root diameter substantially equal to or less than the winding diameter of said drum, a stationary member anchored to said frame near the top of said drum, and sheet deflector means supported by said stationary member and adapted to feed a sheet from said drum to said groove, the improvement wherein said gripping means comprises a pair of juxtaposed toroidal gripping diaphragms each composed substantially of elastomeric material, said diaphragms abutting respectively, at least in part, a surface of said stationary member and a surface of support means co-extensive with said upper end of said drum, with a free space interposed between each said diaphragm and a respective one of said last-mentioned surfaces, whereby the initial feeding of said sheet to said groove deflects said diaphragms into the respective free spaces against a lesser reactive force, and whereby upon the resultant filling of said spaces the further motion of said sheet towards the root of said groove distorts said diaphragms against a greater reactive force.

4,230,307

COOLING APPARATUS FOR COPPER CONVERTER OPENING

Thomas P. Philip, Nababeep, South Africa, assignor to O'Okiep Copper Company Limited, Nababeep, South Africa
Filed Sep. 22, 1978, Ser. No. 944,699
Claims priority, application United Kingdom, Sep. 26, 1977, 40057/77

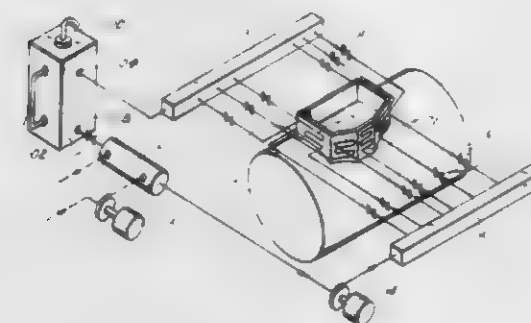
Int. Cl.³ C21B 7/10

U.S. Cl. 266—46

5 Claims

1. In a method for cooling a mouth of a converter through which contents of said converter are discharged at high temperature, the improvement comprising: maintaining in a storage zone as a cooling medium a combustible liquid of high temperature cracking characteristics;

cooling said cooling medium;
introducing said cooled cooling medium in a first header zone maintained at a preselected temperature or pressure;
selectively admitting said cooled cooling medium, to a plurality of individually segmented zones, in conduits in the form of a serpentine pipe exposed to the high temperature and embedded within a refractory material, said zones being disposed in combination with said mouth and said refractory material lining said mouth such that said individually segmented zones may be cooled;
providing for expansion and contraction of said pipe within each segment independently of said refractory material lining said mouth and in heat exchange relationship therewith;
admitting a heated cooling medium to a second header zone from said individually segmented zones, said second header zone being maintained under a predetermined pressure; and
introducing said heated cooling medium into said storage zone for recycle of same.



4. A cooling device for a converter holding and discharging hot copper contents through an opening thereof at high temperature, the combination comprising a holding vessel for a cooling medium, means for cooling said cooling medium and a first header vessel for a cooled cooling medium, said means for cooling being responsively interconnected to means for pumping said cooled cooling medium to said first header vessel;
means for selectively admitting said cooling medium to a plurality of individually segmented cooling arrays disposed around a periphery of said opening in response to a pressure maintaining means downstream from each of said segmented cooling arrays comprising conduits floatingly disposed within heat exchange fins, and said heat exchange fins restrainingly disposed within a refractory material for said opening;
means for controlling said cooling medium flow in said individually segmented cooling arrays interconnected with said pressure maintaining means and including additional means for maintaining the pressure in a second header vessel;
and means for reintroducing said cooling medium into said holding vessel.

4,230,308

AUTOMATED CASTING LINE SUPPLY SYSTEM

Eugene Gueguen, 14 rue de la Gare, 55000 Bar Le Duc, France

Filed Mar. 22, 1978, Ser. No. 889,135

Int. Cl.³ C21D 11/00

U.S. Cl. 266—92

10 Claims

1. Molten metal supply system, particularly for filling molds or boxless moldings upon a continuous casting line, the supply system comprising in combination:

a chassis which is normally stationary during the casting operation but displaceable upon a rollway, such as rails, positioned parallel to a portion of the path of a mold bearing conveyor equipped with a step-by-step advancing means, the said chassis being provided with a cart movable between two abutments, the cart being provided with a heated ladle constituting a reserve of metal permanently maintained in molten state, the ladle comprising one or

more closing rods controlling delivery of the molten metal contained within the ladle,
one or more pouring troughs disposed in said mobile cart and adapted to lead the metal delivered from the ladle to casting orifices of the molds or boxless molding devices, said troughs further being adjustable in a direction perpendicular to the displacement direction of the mobile cart



and angularly adjustable in a horizontal plane around a pivot,
means adapted to control the quantity of metal delivered by the one or more closing rods, and
indexing means adapted to control the mobile cart displacement means to provide precise positional alignment between the one or more pouring troughs and the one or more casting orifices of the molds.

4,230,309

GAS SPRING WITH AUTOMATIC LOCKING MECHANISM

Klaus Schnitzius, Rheinbrohl, Fed. Rep. of Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany
Filed Dec. 7, 1977, Ser. No. 858,154
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1976, 2659488

Int. Cl.² F16F 9/02, 9/06

U.S. Cl. 267—120

8 Claims



1. A gas spring, comprising:

4,230,310

COMPRESSIBLE HOLDING MEMBER

Joey Henggeler-Achermann, Winterthur, Switzerland, assignor to Lega-Norm AG, Winterthur, Switzerland

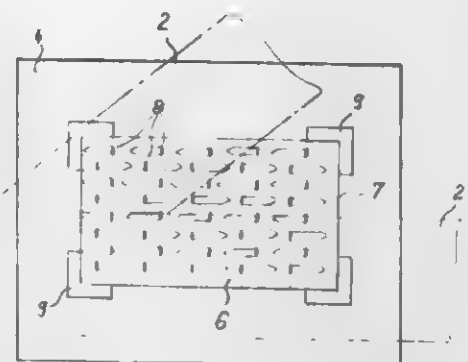
Filed Jun. 20, 1978, Ser. No. 917,186

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1977, 2727859; Dec. 19, 1977, 2756530

Int. Cl.³ B23Q 3/02, 3/18

U.S. Cl. 269—316

13 Claims



1. A device for the purpose of manufacturing a truss system of wood wherein the parts of the truss are to have nails forced into them with a press, the device comprising a setting plate, a nail plate including a base plate formed with at least three corners and carrying nails projecting perpendicularly therefrom to be forced into the truss system with the press so as to secure said nail plate thereto, and at least one selfadhesive holding member adhesively fixed to said setting plate for locating said base plate on said setting plate, said holding member being formed from resilient plastic material having a planar configuration and having an adhesive substance on one planar face thereof and including means at one side thereof for lying against the edge of said base plate at at least two points respectively on both sides of at least one said corner thereof and is compressible so that when the press forces the nails into the wood, said base plate can also be forced into the wood.

4,230,311

STORAGE PALLET ARRANGEMENTS FOR FOLDED PAPER ITEMS

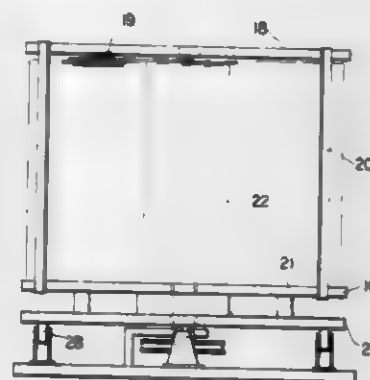
Hans G. Faltin, 4135 Wilshire Dr., York, Pa. 17402

Filed Jan. 23, 1979, Ser. No. 5,879

Int. Cl.³ B65H 5/22

U.S. Cl. 271—3.1

9 Claims



1. A storage pallet assembly holding a plurality of folded paper items of at least two pages with a fold and open ends, comprising in combination, a bottom support member presenting only a horizontally disposed planar surface facing upwardly to receive said items in a stacked relationship thereupon and having a central vertical axis about which the items may be symmetrically disposed in a helical shingled array with the center of gravity along said axis so that the support member may be rotated for loading and unloading a stack of said items, and a stack of items in a shingled helical array on said support member symmetrically arrayed in a helix about said

- (a) a cylinder member having an axis of elongation, a closed, axially inner end wall and an annular, axially outer end wall and defining therein a sealed cavity, said cylinder including means defining a first transverse cross section over an axially inner portion of said cavity and means defining a second, smaller transverse cross section over an axially outer portion of said cavity;
- (b) a piston rod member received through said annular outer end wall in sealing engagement therewith for axial movement within said cavity;
- (c) first and second axially spaced piston means carried by said piston rod within said cavity, with said first piston means being located axially inwardly of said second piston means, for movement between an axially inner position at which at least said second piston means is located within said axially inner cavity portion and an axially outer position at which said first piston means is located within said axially inner cavity portion and said second piston means is located within said axially outer cavity portion, said piston rod member and said first and second piston means jointly constituting a piston assembly;
- (d) said first and second piston means having transverse cross sections which match the transverse cross sections of said axially inner and axially outer cavity portions, respectively, for slidable sealing engagement therewith;
- (e) a fluid within said cavity;
- (f) means for permitting fluid flow from one side of said first piston means to the other when said first piston means moves axially in said cavity;
- (g) first flow control means for controlling fluid flow from one side of said second piston means to the other when said second piston means is located within said axially outer cavity portion, said first flow control means being responsive, when said second piston means is in said axially outer cavity portion, to (1) axially inward movement of said second piston means for restricting fluid flow from the axially inner side to the axially outer side of said second piston means and to (2) axially outward movement of said second piston means for permitting fluid flow from the axially outer side to the axially inner side of said second piston means; and
- (h) second flow control means for controlling fluid flow from the axially inner side to the axially outer side of said second piston means when said second piston means is located in said axially outer cavity portion, said second flow control means including (1) a bore in said piston assembly by-passing said first and second piston means and connecting that part of the cavity inward of said piston assembly to that part of the cavity outward of said piston assembly and (2) valve means normally biased to a closed position, at which fluid flow through said bore is prevented, said valve means being responsive, when said second piston means is in said axially outer cavity portion, to the application of sufficient axially inward force to the piston rod member to overcome the biasing force of said valve means to move said valve means to an open position, at which fluid flow through said bore from the axially inner side to the axially outer side of said second piston means is permitted;
- (i) whereby when moved to said axially outer position said piston rod member will remain in said axially outer position until an external force sufficient to overcome the biasing force of said valve means is applied to the piston rod member to move it inwardly of said axially outer position.

4,230,313

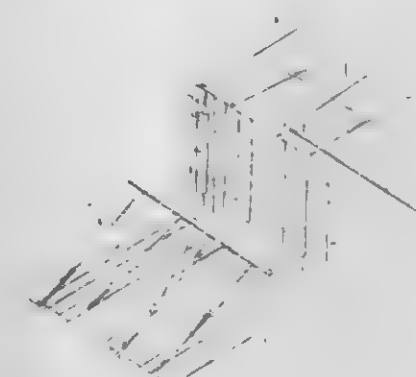
EXERCISE DEVICE

Thomas M. Chupp, Jr., 2479 Jewell Dr., Marietta, Ga. 30066
Division of Ser. No. 789,588, Apr. 21, 1977, Pat. No. 4,182,509,
This application Apr. 5, 1979, Ser. No. 27,323

Int. Cl.³ A63B 23/02

U.S. Cl. 272—93

2 Claims



axis unsupported by any other member than said planar surface and having the open ends forward toward the lowermost end of the helical array and with fold trailing toward the upper end of the helical array and with each subsequent member being shingled upon the next preceding item with open ends overlapping the fold of the preceding item so that the topmost item has an accessible folded edge directed toward the uppermost end of the helical array for grasping to remove the shingled items individually or in shingled sequence from the top of the helical array where they are not weighted down by other items and thus can be unloaded faster with less inertia from said simplified storage pallet, wherein a tape member is wound helically under each one of the stored items stacked on said pallet, thereby providing means accessible from the top of the stack of items for lifting a leading edge of each item during removal from the stack.

4,230,312

ITEM SORTER POCKET FLAG AND SWITCH APPARATUS

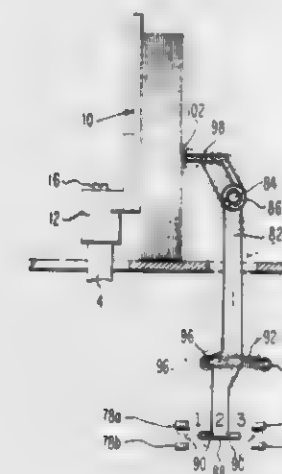
William B. Templeton, Howell, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 23, 1978, Ser. No. 953,647

Int. Cl.³ B65H 31/04

U.S. Cl. 271—215

7 Claims



1. Item sorter pocket flag and switch apparatus for the pocket receptacle of a sort r reader comprising;

- a rack,
- means engaging said rack for moving the latter in opposite directions along a horizontal, linear path,
- an item pocket flag carried by and moveable with said rack and adapted to act as a vertical support for items incapable of being self supporting,
- a flexible member disposed adjacent to said flag and providing complimentary vertical support for said items,
- switch means including an arm rotatable about an axis spaced intermediate ends of the arm, a first end of the arm supporting said flexible member, said switch means including oppositely disposed photo optical means having a fixed position relative to said axis, interruptor means secured to the second end of said arm to operably energize and deenergize said photo optical means and produce signals as the interposition of items between said pocket flag and said flexible member causes said flexible member to move relative to said flag, and
- reversible drive means operably coupled to said rack engaging means and controlled by the signals to provide a relatively constant minimal spacing between said flag and said flexible member throughout the length of said rack by adjustably moving said rack to accommodate additional items.

1. An exercise device comprising:

a frame comprising a bottom frame and a vertically extending side frame contiguous at its base with a first edge of said bottom frame;

a horizontal bar;

bar-supporting members connected to said vertically extending side frame and supporting said horizontal bar; and

self-tightening clamping means for securing said frame to a door;

said clamping means comprises:

a second side frame hinged at its base with a second edge of said bottom frame and biased towards said first side frame by means of a bias spring connected between said second side frame and said bottom frame so as to define a door-receiving space between said first side frame and the upper edge of said second side frame.

4,230,314

SKATE BOARD GAME

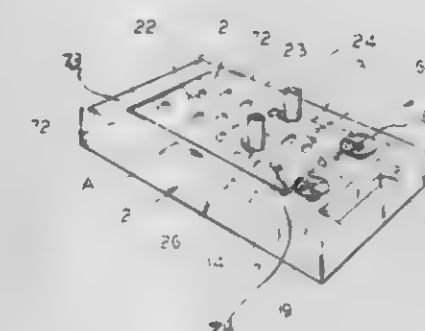
Gordon A. Barlow, Evanston, and John R. Krutsch, Glenview, both of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Oct. 12, 1978, Ser. No. 950,741

Int. Cl.³ A63F 9/14

U.S. Cl. 273—1 E

10 Claims



1. A skate board game comprising:

an endless tape;

apertures in said endless tape;

at least one miniature skate board mounted on said endless tape;

means for moving said endless tape past said at least one miniature skate board;

means for steering said at least one miniature skate board to avoid aligning portions of said at least one miniature skate board with said apertures;

a storage container on said at least one miniature skate board;

pellets stored within said storage container; and

means to enable said pellets to fall from said storage container through said apertures in said endless tape when said storage container on said one miniature skate board and said apertures are aligned.

4,230,315

POSITIVE TURRET INDEXING APPARATUS

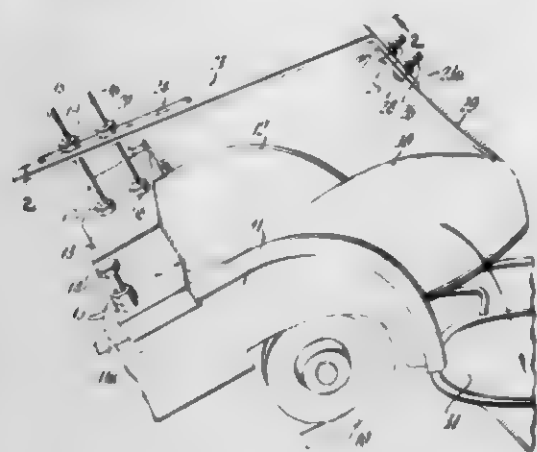
Thomas M. Camilleri, 277 Avenue W, Brooklyn, N.Y. 11223

Filed Dec. 26, 1978, Ser. No. 973,102

Int. Cl.³ A63D 5/00

U.S. Cl. 273—54 R

9 Claims



1. In a bowling pin setting machine, a cross conveyor belt bounded by stationary vertical side walls, and a turret indexing paddle beyond and below the exit of the conveyor belt, wherein the improvement comprises a bracket, means supporting said bracket above the conveyor belt, an arm attached to said bracket having an end extending beyond the conveyor belt exit, the arm having downwardly projecting means at said end adapted to deflect a pin exiting from said conveyor belt down onto said turret indexing paddle.

4,230,316

METHOD OF PLAYING A BASEBALL BOARD GAME

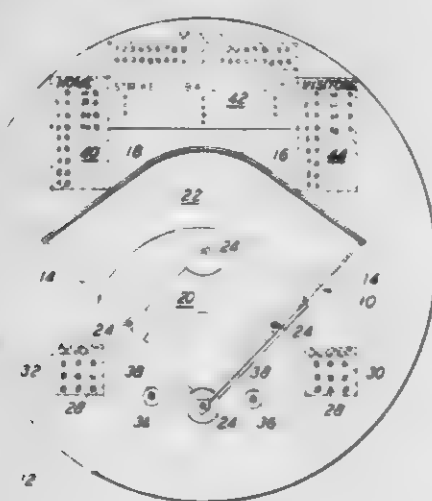
Charles Harper, Site 12, Box 5, R.R. #1, Lively, Ontario, Canada (POM 2E0)

Continuation-in-part of Ser. No. 769,677, Feb. 17, 1977, abandoned. This application May 30, 1978, Ser. No. 910,856

Int. Cl.³ A63F 3/00

U.S. Cl. 273—93 R

2 Claims



1. A method for playing miniature baseball utilizing a game board having a playing surface thereon, said playing surface delineating a play action area from a non-play action area, said game board having a plurality of apertures residing at the boundary between said play action area and said non-play action area, a die having indicia in the form of words disposed on the faces thereof, said words describing the baseball occurrences "homer," "single," "ball," "strike" and "out," a marker for removable insertion into said apertures, whereby the

method comprises the step of throwing the die onto the surface of the game board, followed by the step of scoring the results described by the chance landing of the die in either the play action area or the non-play action area, followed by the steps whereby said marker may be manually advanced in accordance with the standard rules of baseball from one base to an adjacent base as directed by the baseball game occurrence indicated by the indicia on the uppermost die face in progressive fashion, normally only when said die lands in said play action area, the die when landing in the non-play action area scoring as a "ball" regardless of what indicia appears on the uppermost die face, and whereby said marker may be normally advanced in said progressive fashion when said die lands upon said non-play action area in accordance with said standard rules of baseball only if such landing results in the scoring of the fourth "ball" before the occurrence of an "out".

4,230,317

SOUND ACTUATED COMPETITIVE GAME APPARATUS

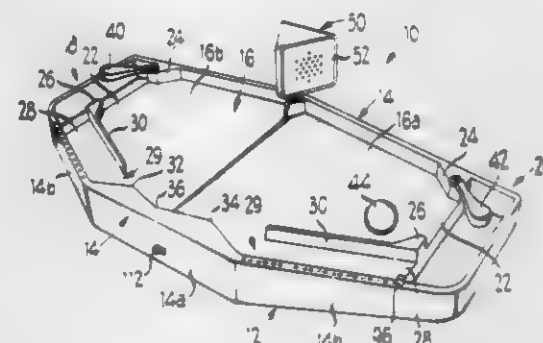
Jeffrey D. Breslow, Highland Park; Alan A. Hicks, Chicago; Eugene Jaworski, Park Ridge, and Burton C. Meyer, Downers Grove, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,406

Int. Cl.³ A63D 3/02; H01H 35/24

U.S. Cl. 273—119 A

12 Claims



1. A competitive game apparatus for two or more players, comprising:
a frame defining a playing area;
means defining at least a pair of player stations at opposed locations on the playing area;
at least one playing object;
propelling means generally adjacent each of said player stations;
drive means for actuating said propelling means in a timely manner for directing the play object generally toward the opposing player's station;
means for inhibiting operation of said drive means for a predetermined interval;
control means responsive to audible signals for energizing said drive means in response to a signal produced by a player of the game from a remote location, said control means including a sound transducing means for generating electrical impulses in response to received sounds, means for amplifying said generated electrical signals, timing means responsive to said amplifying means for actuating said drive means for a selected time interval and feedback means for initializing said inhibiting means at the end of said selected time interval whereby the players compete by alternatively actuating their associated propelling means to drive the playing piece toward an opponent.

4,230,318

SHOOTER BOARD GAME

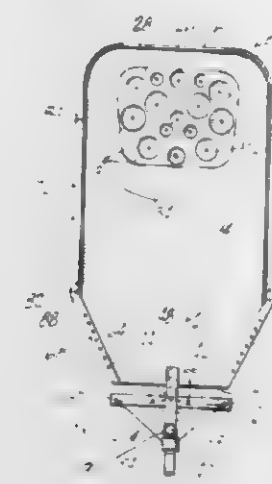
Kenneth E. Dimond, 311-615 Colborne St., New Westminster, Canada (V3L 2E1)

Continuation-in-part of Ser. No. 828,624, Aug. 29, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,969

Int. Cl.³ A63D 3/02

U.S. Cl. 273—119 R

4 Claims



1. A shooter board game, which comprises:
a. a board member having an upper planar playing surface, a pair of sides, and a pair of ends, and flange members secured to said pair of sides and one of said pair of ends extending upwardly from said planar surface, the other side of said pair of ends extending along a straight line;
b. a target area disposed on said upper surface of said board member adjacent said one end thereof;
c. a shooter assembly selectively positionable away from touching engagement with said board member and in touching engagement with said board member at said other of said pair of ends, said shooter assembly including a cross-shaped element, said cross-shaped element having a first elongated arm, a second elongated arm, said second arm joined to a lower surface of said first arm, said first arm having a straight marginal edge, a block member slidably disposed on said first arm, wherein said one of said playing pieces is projectable intermediate said flange members disposed at said pair of sides of said planar surface and towards a portion of said flange members disposed at said one of said pair of ends of said planar surface where said straight marginal edge is selectively located adjacent to said other of said pairs of ends, and a V-shaped element disposed on a surface of said block member, said one of said playing pieces being disposed within said V-shaped element, and a first elastic band member communicating between one said block and one end of said second arm, and a second elastic band member communicating between said block and another end of said second arm, and a pair of stop members extending upwardly from said second arm, said pair of stop members being aligned parallel to said straight edge, said stop members engaging said elastic bands thereby restricting forward motion of said block member;
d. two sets of a plurality of disc shaped playing pieces, one of said playing pieces at a time removably received onto said shooter assembly to be forwarded projected across said upper surface towards said target area;
e. two scoring tracks, each said track including an elongated bar member having a plurality of longitudinally aligned apertures disposed in its upper surface, said apertures being numbered from a minus numerical indicia at one end to a positive numerical indicia at another end of said bar each of said two scoring tracks located at said flange members disposed at said pair of sides of said planar surface;

f. four first colored pegs, two of set pegs removably received in said end apertures of each said track; and
g. two second colored pegs, one of said second pegs removably received in said apertures of each of said bars between said first colored pegs.

4,230,319

PUTTING STROKE PRACTICE DEVICE

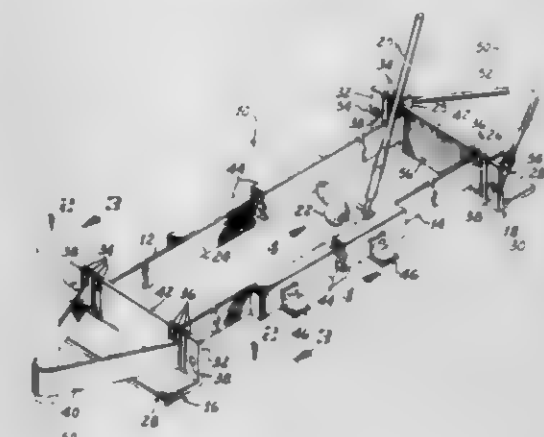
Max E. Lindner, 2516 N. 22nd Dr., Phoenix, Ariz. 85009

Filed Aug. 28, 1978, Ser. No. 937,167

Int. Cl.³ A63B 69/36

U.S. Cl. 273—192

7 Claims



1. A putting stroke practice device comprising:
(a) a spaced pair of support brackets each having a vertical surface, said support brackets positionable with their respective vertical surfaces facing each other;
(b) a pair of elongated strap members each having opposite planar surfaces and each formed of thin flexible material, said pair of strap members each extending between said pair of support brackets in spaced parallel relationship with the opposite planar surfaces of said strap members being vertically disposed;
(c) said pair of strap members and said pair of support brackets restingly positionable on any surface which is suitable for putting for enclosingly defining a portion of that surface as having a putter swing area and an intended travel path of a struck golf ball;
(d) connection means formed adjacent each of the opposite side edges of the vertical surfaces of said pair of support brackets for demountably connecting said pair of strap members to said pair of support brackets, said pair of strap members adjustably positionable in said connection means for varying the spacing between said pair of support brackets and for varying the spacing between said pair of strap members; and
(e) anchoring means extending rearwardly from each of said pair of support brackets for demountably attaching said support brackets to fixed objects.

4,230,320

GAME BOARD WITH CORRESPONDING CARDS

Norman W. Crew, Jr., 14 Porters Core Rd., Hingham, Mass. 02043

Filed Sep. 18, 1978, Ser. No. 942,948

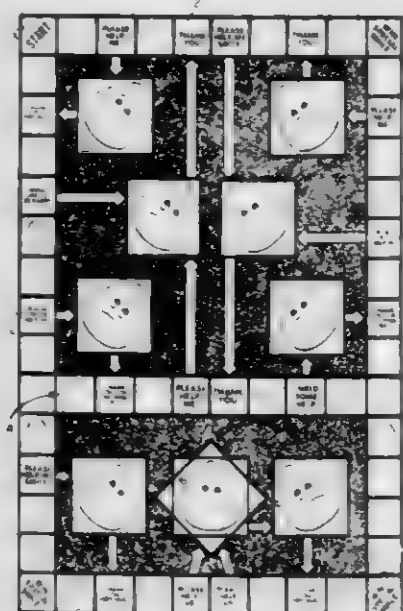
Int. Cl.³ A63F 3/00

U.S. Cl. 273—243

9 Claims

1. A game comprising a game board on the surface of which is provided a closed circuit of a plurality of individual, serially arrayed first player spaces, a starting space within said closed circuit, a row of a plurality of individual, serially arrayed first player spaces interconnecting two spaced-apart, somewhat oppositely located of said first player spaces in said closed circuit, a plurality of second player spaces adjacent to said closed circuit and said row of first player spaces, each of which said second player spaces is interconnected by directional arrows with at least two of said first player spaces and said

arrows pointing in only one direction from one said first player space to another of said first player spaces, said first and second player spaces carrying suitable indicia thereon, at least one each third and fourth player spaces adjacent to said closed circuit and row of first player spaces and interconnected with one another by a directional arrow pointing in only one direction, said third player space being a double space and connected by direction arrows to two adjacent first player spaces, the directional arrows pointing only from the first player



spaces to the third player space, and said fourth player space being additionally connected by directional arrow pointing only to a first player space, indicia on said third and fourth player spaces, a first plurality of cards carrying indicia corresponding to the indicia carried by said second and third and fourth player spaces, a second and third plurality of cards carrying other suitable indicia, a playing piece for each player, and means operable to determine the number of player spaces to be moved on the game board by a player.

4,230,321

FAMILY RELATIONSHIPS CARD GAME

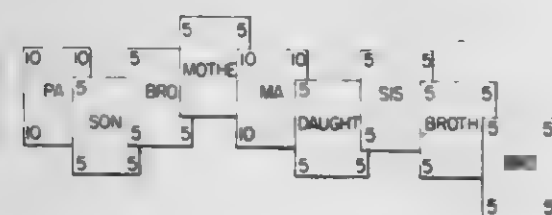
Mildred E. Smith, 1609 Madison St., NW., Washington, D.C. 20011

Continuation-in-part of Ser. No. 850,396, Nov. 10, 1977, abandoned. This application May 10, 1979, Ser. No. 37,887

Int. Cl.³ A63F 1/00

U.S. Cl. 273-308

6 Claims



1. A card game adapted for teaching family relationships comprising a first distinctive group of cards carrying indicia identifying the individual members of plural generations of a family and including a plurality of cards for each such member; and a second group of cards distinctive from the first group each carrying indicia descriptive of the relationship existing between a given pair of different family members within said plural generations from a player's perspective and including a plurality of such cards for each such relationship for linking during play the association of pairs of said family member cards in a predetermined pattern.

4,230,322

NO BOUNCE DART

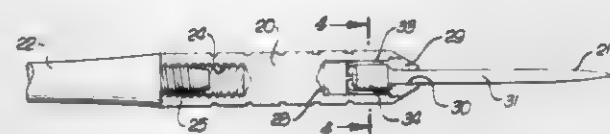
Walter E. Bottelsen, 7259 Del Norte, Goleta, Calif. 93017

Filed Jan. 22, 1979, Ser. No. 5,142

Int. Cl.³ A63B 65/02

U.S. Cl. 273-420

6 Claims



1. In a dart, the combination of:
an elongate body having at one end, means defining an interior cavity of larger cross-section area and an axial passage of smaller cross-section area, and at the other end, means for mounting a tail;
a point with a head positioned in said cavity and a shaft slidable in said passage for reciprocating movement of said head between a first position with said head remote from the bottom of said cavity and a second position with said head engaging said cavity bottom;
said point and body including interengaging means disposed about substantially the entire periphery of said head and cavity resisting movement of said head from said first to said second position and maintaining engagement between said head and the wall of said cavity as said head moves from said first to said second position.

4,230,323

AUTOMATIC RECORD PLAYER

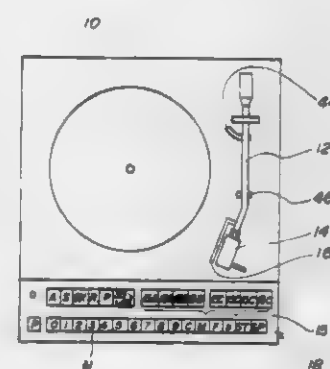
Sigeki Tsuji, Tenri; Hiromichi Shiozaki, and Elji Yamasaki, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 26, 1978, Ser. No. 945,898

Int. Cl.³ G11B 17/06

U.S. Cl. 274-9 RA

25 Claims



1. An automatic player comprising:
support means for supporting a disc;
disc drive means for rotating said disc on said support means;
pickup means for performing play operation;
pickup means drive means for shifting said pickup means to a desired address on said disc;
pickup means position detecting means for producing a signal indicative of an address of said pickup means on said disc;
input means for introducing a preselected address to be played into the automatic player;
storing means for storing said preselected address;
comparing means for comparing said preselected address stored in said storing means with the signal produced by said pickup means position detecting means and providing an output signal upon coincidence thereof;
control means for activating said pickup means drive means in response to said output signal of said comparing means so that said pickup means is positioned at said preselected address;
non-recorded section detection means connected to said

pickup means, for detecting a non-recorded section formed between two adjacent tracks recorded on said disc;
converting means for calculating an address of said non-recorded section using the signal produced by said pickup means position detecting means and the signal transmitted by said non-recorded section detection means and transmitting said address to said storing means for storage therein; and
further input means for selecting at least one desired track to be played.

4,230,324

DEVICE FOR SEALING AN ANNULAR OPENING BETWEEN A SHAFT AND HOUSING SURROUNDING THE SHAFT

Karl G. Derman, Partille, Sweden, assignor to K. G. Derman AB, Partille, Sweden

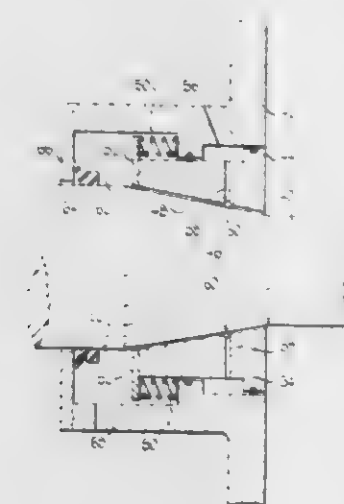
Filed Dec. 22, 1978, Ser. No. 972,337

Claims priority, application Sweden, Dec. 23, 1977, 7714719

Int. Cl.³ F16J 15/46

U.S. Cl. 277-74

8 Claims



1. The combination comprising a shaft extending through an opening in a housing mounted for rotation relative to one another, a unitary, annular sealing ring mounted in the annular space between the shaft and the housing in sealing relation with the housing, said unitary annular sealing element having a first conical surface confronting a second conical surface on the shaft which in a first position is in sealing engagement therewith, means for supplying a pressure fluid to the annular space between said confronting conical surface at a pressure higher than the pressure in the zones on opposite sides of said sealing ring thereby to displace said annular sealing ring in an axial direction to a second position whereby the pressurized fluid exits from the annular space between the conical surfaces and thereby effectively separates the lower pressure zones on opposite sides of said sealing ring.

4,230,325

CONJUGATE TWO-PIECE PACKING RING WITH LIMITER

Payson M. Butler, 14360 Rios Canyon Rd., Space 57, and Jack O. Butler, 1244 E. Main St., both of El Cajon, Calif. 92021

Filed Oct. 10, 1978, Ser. No. 949,624

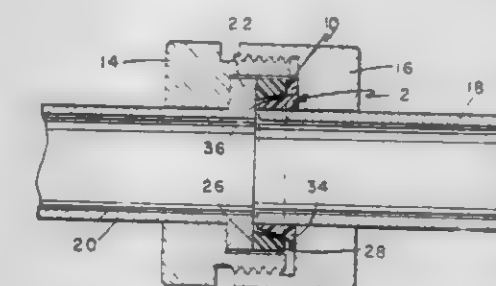
Int. Cl.³ F16J 15/10

U.S. Cl. 277-117

2 Claims

1. A conjugate packing ring for sealing fixed and cylindrical elements, using a gland nut, said packing ring, comprising: a substantially rigid, slightly compressible inner ring, of non-metallic material and discrete from said elements, having a cylindrical bore for snug reception of one of said elements and having a smooth external, tapered surface and having two flat faces normal to the axis of said bore; and
an outer ring, of non-metallic material and discrete from said

elements, encircling said inner ring and having a tapered bore receiving the tapered external surface of the internal ring in intersealing relationship therewith and having two flat end faces and being capable of near zero expansion in use with a gland nut pressing said inner ring between said outer ring and said one of the elements, said inner ring



having an annular shoulder extending radially outwardly of the inner ring and between the larger end of said tapered external surface and the flat end face at that end, said shoulder limiting the penetration of the inner ring into the outer ring and providing sealing contact with the corresponding one of said end faces of said outer ring when said gland nut is sufficiently tightened.

4,230,326

SEALING ASSEMBLY FOR BALL OR ROD MILLS AND THE LIKE

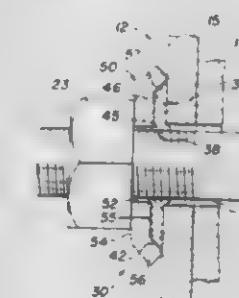
Leonard D. White, Vancouver, Canada, assignor to Lister Bolt & Chain Ltd., Richmond, Canada

Filed Aug. 17, 1978, Ser. No. 934,652

Int. Cl.³ F16L 5/02, 59/12

U.S. Cl. 277-166

10 Claims



1. A sealing assembly for use on a bolt projecting through a hole in a wall enclosing slurry or the like and comprising an annular seal formed of a deformable material adapted to be inserted over the bolt into contact with an outer surface of the wall, said annular seal having a central opening bordered by a peripheral sealing edge and an outer face encircled by a bevelled sealing edge, the outer face and the sealing edge defining between them an included angle greater than 90°, and a substantially non-deformable washer adapted to be fitted to the bolt to bear against the outer face of the annular seal, said washer having an inner face and an inwardly inclined sealing edge shaped to engage the bevelled sealing edge of the annular seal, so that said annular seal can be compressed against the outer surface of the wall and extruded radially towards the bolt in response to a clamping force applied when a nut is tightened on the bolt to wedge the inclined sealing edge against the bevelled sealing edge whereby the peripheral sealing edge is forced into slurry-type engagement with the bolt.

4,230,327

DRILL CHUCK

Günter H. Röhm, Heinrich-Röhm Str. 50, 7927 Sontheim, Fed. Rep. of Germany

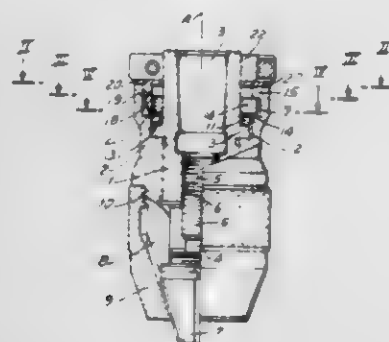
Filed Apr. 4, 1979, Ser. No. 26,886

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815026; Apr. 26, 1978, 2818247

Int. Cl.³ B23B 31/12

U.S. Cl. 279-61

10 Claims

**1. A chuck comprising:**

- a chuck body defining a chuck axis and formed with an annular body surface centered on said axis, lying in a plane substantially perpendicular to said axis, and facing in one axial direction;
- a plurality of generally angularly equispaced and radially displaceable jaws on said body;
- a tightening sleeve rotatable on said body about said axis; means including formations on said jaws, on said body, and on said sleeve for displacing said jaws radially inwardly on rotation of said sleeve on said body in one rotational sense and for permitting radial outward displacement of said jaws on rotation in the opposite sense;
- an array of radially extending sleeve teeth on said sleeve angularly spaced about said axis and defining intertooth gaps, each sleeve tooth having a sleeve-tooth surface generally parallel to, axially confronting, and axially spaced from said annular body surface;
- a bearing ring centered on said axis and received between said sleeve teeth and said annular body surface, said ring being at least limitedly rotatable about said axis relative to said sleeve and having a ring surface axially confronting and spaced from said annular body surface;
- an array of radially extending ring teeth on said ring and similar to said array of sleeve teeth, each ring tooth having one axially directed face engageable with said sleeve-tooth surfaces and another oppositely axially directed face confronting and axially spaced from said annular body surface;
- a plurality of roller elements between and riding on said body and ring surfaces; and
- a locking element engaging through at least one of said intertooth gaps and holding said ring teeth in axial alignment with said sleeve teeth with said one faces of said ring teeth bearing flatly on said sleeve-tooth surfaces, whereby said locking element prevents rotation of said ring relative to said sleeve.

4,230,328

DEVICE FOR CONNECTING AN EJECTION PIN OF AN INJECTION MOLDING TOOL OR THE LIKE TO AN EJECTOR DEVICE

Hans K. Müller, 12 5:e Villagatan, 502 44 Borås, Sweden

Filed Oct. 25, 1978, Ser. No. 954,724

Claims priority, application Sweden, Apr. 27, 1978, 7804845

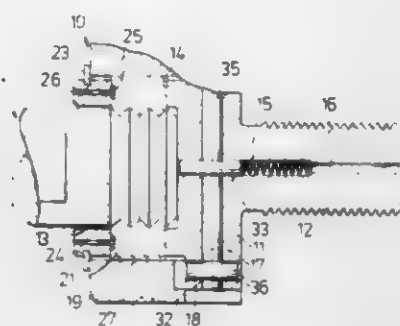
Int. Cl.³ B23B 31/16

U.S. Cl. 279-71

5 Claims

1. A device to connect (a) an ejector pin of a mold for injection molding, and (b) an ejector device of an injection molding machine, comprising in combination:

- (i) a holding means having jaws radially movable therein for clamping and unclamping said ejector pin,
- (ii) manually operable actuation means for moving said jaws at least to the unclamping position thereof,
- (iii) at least one spring acting to urge said jaws towards the clamping position thereof,



- (iv) a latching means to hold said jaws in the unclamping position thereof, and
- (v) a release means mounted in said holding means to cooperate with said ejector pin such that when actuated by said ejector pin said latching means will allow said springs to bring said jaws into the clamping position thereof to lock said ejector pin.

4,230,329

MOBILE CART

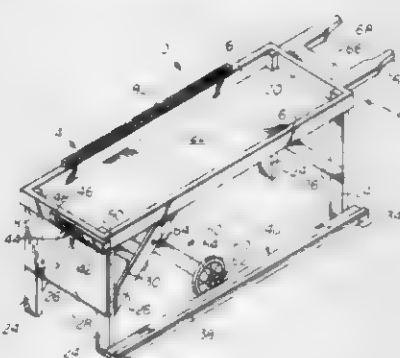
Aldus Johnson, Lafayette, La., assignor to William H. Lambert, Lafayette, La.

Filed Oct. 16, 1978, Ser. No. 951,960

Int. Cl.² A47B 31/04; B62B 1/12, 1/14

U.S. Cl. 280-43.17

5 Claims



1. A portable Mobile Cart for supporting and transporting doors, panels and other planar-shaped articles and woodworking tools used in building construction, and for use as a portable workbench for performing installation operations on such articles, said cart comprising:

- (a) A support frame for receiving and supporting a planar-shaped article in horizontal position and for transporting woodworking tools, said frame having
 - (1) an upper surface for supporting the article, and
 - (2) a plurality of legs for supporting said upper surface,
- (b) a first support means mounted with said support frame legs for positioning, transporting and supporting a planar-shaped article parallel to the vertical axis of said cart,
- (c) a second support means mounted with said support frame upper surface for retaining a planar-shaped article being carried by said first support means,
- (d) a means for mobilizing said cart, and
- (e) a handle means for enabling said cart to be moved as desired.

4,230,330

SKATEBOARD

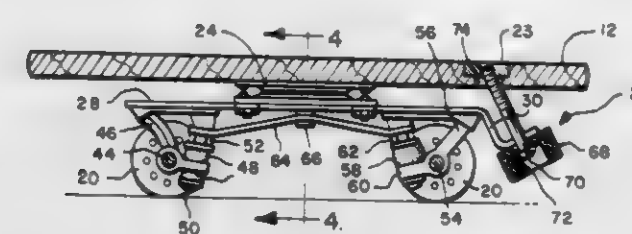
Clifton C. Muhammad, Chicago, Ill., assignor to Carter Bros. Iron Works, Inc., Ill.

Filed Feb. 13, 1978, Ser. No. 877,316

Int. Cl.³ A63C 17/02

U.S. Cl. 280-87.04 A

10 Claims U.S. Cl. 280-281 B

**1. A skateboard comprising:**

- a chassis;
- two parallel axles mounted below said chassis;
- four wheels, two of which are rotatably mounted to each axle;
- a board rotatably mounted to said chassis adapted to support a rider, said board extending beyond at least one of said axles to provide an overhanging portion;
- a stop pad removably mounted to said chassis in the vicinity of the overhanging portion of said board, said stop pad adapted to generally face the ground when said skateboard is in an operational position; and
- removable locking means for fixing the rotational position of said board with respect to said chassis, said locking means also mounting said stop pad to said chassis.

4,230,332

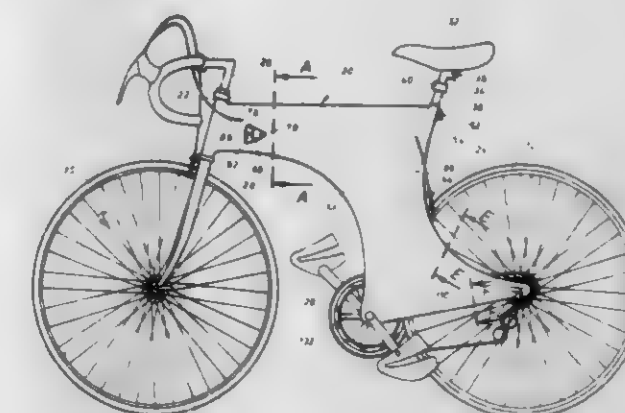
BICYCLE FRAME

Ferdinand A. Porsche, Gut Heuberg, Winkl 5, St. Georgen, A-5662 Gries im Pinzgau, Austria

Filed Feb. 14, 1979, Ser. No. 12,180

Int. Cl.¹ B62K 19/08

9 Claims



1. A bicycle frame comprising a hollow tubular steering support column which is formed to receive and rotatably support a handlebar and front wheel fork assembly, a hollow tubular seat support column which is formed to receive and adjustably support a seat assembly, the frame having the form of a hollow panel connected to and extending between said columns, said hollow panel being formed of two side panels which are disposed in spaced apart parallel relation to each other and surround the steering support column and the seat support column, each of said side panels being a three-ply laminate which has thin sheets of material bonded to opposite surfaces of a lightweight core.

4,230,333

TOW STABILIZER

Roland Persyn, Le Hameau des Muriers, Carbon Blanc, France (33560)

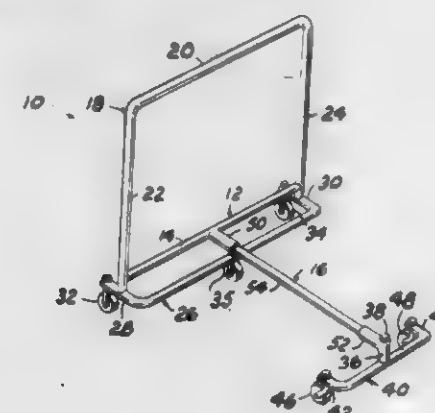
Filed Oct. 6, 1977, Ser. No. 839,935

Claims priority, application France, Oct. 12, 1976, 76 31313; Apr. 6, 1977, 77 12110

Int. Cl.² B60D 1/06

U.S. Cl. 280-406 A

11 Claims



1. An occupant propelled toy vehicle, comprising:
 - a generally horizontally disposed substantially T-shaped frame having a cross bar portion and a stem portion;
 - hand grip means projecting vertically above said cross bar portion in coextensive parallel relation;
 - tailpiece means connected with the end of said stem opposite said cross bar portion for supporting the feet of an occupant,
 - said stem portion being formed from flexible material capable of being arcuately bent and returning to a position of repose in a horizontal plane in response to lateral force applied thereto by the occupant while standing on said tailpiece means; and,
 - wheel means for supporting said frame.

1. A tow stabilizer for a tow frame for coupling to a towing vehicle, said vehicle having a coupling attached thereto for connection with said tow frame, comprising:
 - spring means including first and second ends, said spring means extending along a substantially horizontal axis of the tow frame relative to the vehicle roadway;
 - clamping means including means for connection to said towing vehicle, said clamping means including an axle having an axis which is substantially parallel to the roadway, and extending in a direction transversely to the horizontal axis of said tow frame, said clamping means including locking pins and apertures for receiving said locking pins;
 - said first end including means pivotally connecting said spring means with said axle for movement in a vertical

plane relative to said clamping means, said spring means being positioned between said locking pins, and said locking pins controlling the amount of movement of said spring means in the vertical plane;

said clamping means being pivotally mounted about a vertical axis and including friction means, said friction means braking the pivotal displacements of said clamping means; a pair of arms connected together at one end thereof and with said coupling, the other end of said arms extending in a plane substantially parallel to the roadway and diverging from said coupling;

a crosspiece, flexible connections connecting said crosspiece with the other end of said arms; and

a rigid tension member connected with the center of said crosspiece and second end of said spring means and connecting said spring means with said arms by means of said flexible connections with said arms forming said tow frame to distribute the tensile stress produced over each of said shaft arms.

4,230,334

CANTILEVERED MEDIAL TRAILER

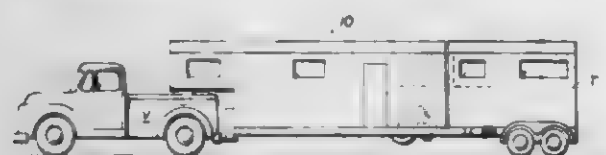
Vern D. Mabry, Jr., 2560 Crowdis La., Ruscue, Calif. 95672

Filed Jan. 22, 1979, Ser. No. 5,386

Int. Cl.³ B62D 53/04

U.S. Cl. 280—415 R

7 Claims



1. A medial cantilevered trailer supported solely by a towing vehicle and a depending trailer comprising means for detachably connecting the front end of said medial cantilevered trailer to said towing vehicle, retractable means for supporting the front and rear ends of said medial cantilevered trailer in a stationary position, a three way bar and scissors hitch including a ball and socket arrangement on the rear end of said medial cantilevered trailer, and the front end of said depending trailer for supporting said medial cantilevered trailer with said retractable means in a retracted position for towing of said trailers by said towing vehicle.

4,230,335

TELESCOPING DRAWBAR FOR TANDEM TRACTOR TRAILERS

John J. Glassmeyer, Glenwood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Feb. 22, 1979, Ser. No. 14,185

Int. Cl.³ B62D 53/04

U.S. Cl. 280—423 A

21 Claims



1. A telescoping connection extending from a dolly for use in connecting a leading trailer to a tandem-connected trailer, the improvement comprising:

a drawbar,

said drawbar comprising tubular means with portions telescoped to overlap each other,

said tubular means comprising a first tubular section with means securely attached to said dolly and having end means spaced from said dolly and providing an inside surface,

said tubular means comprising second tubular section with a connecting end fitted within the said first tubular section, said second tubular section having a telescoped end having an outside surface,

locking and alignment means with means attached to said inside surface of the end means of the first tubular section, and, associated locking and alignment means attached to the outside surface of the telescoped end of the second tubular section,

said locking and alignment means providing cooperating guide surface means for accurately positioning the ends of the first and second tubular sections,

said guide surface means providing a locking arrangement between the first and second tubular sections when the guide surface means are in contact,

each locking and alignment means comprising:

locking wedge means rigidly affixed to one section of said tubular means and having guide surfaces extending in a tapered fashion, and

stops means on the other section having a substantially U-shaped cutout and providing inclined surfaces for cooperation with said locking wedge in locking and aligning the tubular sections.

4,230,336

BALL COMPONENT FOR COUPLING APPARATUS

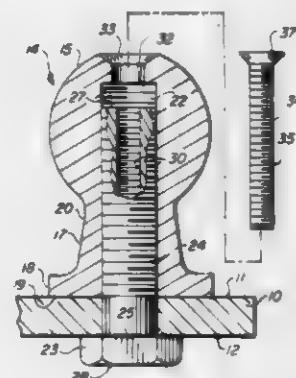
Walter C. Avrea, 1405 Whalers Way, Tempe, Ariz. 85283, and Robert N. Hansen, 14 W. Main, Avondale, Ariz. 85323

Filed Dec. 4, 1978, Ser. No. 965,690

Int. Cl.³ B60D 1/06

U.S. Cl. 280—507

7 Claims



1. In a coupling apparatus including a ball component having

a base,

a ball element carried by said base, and

an internally threaded bore extending upwardly from said base, and including an attachment bolt having an externally threaded shank having first and second ends and matingly engageable within said internally threaded bore,

the threads of the internal threaded bore extending upwardly from said base and of the externally threaded shank of the attachment bolt having a thread pitch of a first value, and

a head carried at the first end of said shank, for attachment to a support member having

a top surface for receiving said base thereagainst,

a bottom surface for receiving said head thereagainst, and an opening for receiving said shank therethrough, and for detachable engagement with a complementary coupler component having a socket for receiving said ball element, improvements therein for detachably securing said ball component to said support member, said improvements comprising:

(a) locking member including

i. an elongate shank,

ii. a head carried at one end of said shank, and

iii. external threads formed on said shank;

(b) internal threads are formed in a bore formed in said externally threaded shank from the second end thereof matingly engageable with the threads on said elongate shank, the external threads of the shank of the locking member and the internal threads formed in the bore formed in the shank of the attachment bolt having a thread pitch having a second value substantially different from that of the first value; and

(c) a bore in said ball component coaxial with said externally threaded shank for receiving said elongate shank therethrough said head of the locking member when screwed into the bore formed in the shank of the attachment bolt engaging the ball component, whereby attempted rotation of the attachment bolt to loosen same will jam the head of the locking member against the ball component to resist further attempts to loosen the attachment bolts.

4,230,337

SKI BINDINGS AND SKI BRAKES ASSOCIATED THEREWITH

Ralf Storandt, Leonberg, Fed. Rep. of Germany, assignor to Verrinigte Baubeschlagfabriken Gretsche Co. GmbH, Fed. Rep. of Germany

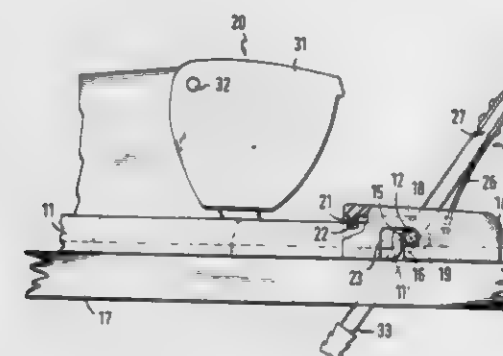
Filed Oct. 24, 1978, Ser. No. 954,128

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756525

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605

38 Claims



1. A ski brake arrangement comprising a ski brake having at least one brake arm, said ski brake being detachably associated with a base plate of a ski binding; a second plate having upper surface means adapted in operation to support a part of the sole of a ski boot, said second plate being connectable to and detachably associated with the base plate by means of cooperating clip elements provided respectively on said second plate and said base plate, and support means defined between said base plate and said second plate for detachably receiving pivot axle means associated with said brake arm with said pivot axle means disposed substantially parallel to the upper surface of said base plate and substantially transverse to the longitudinal direction thereof, whereby to support said brake arm for corresponding pivotal movement.

4,230,338

SAFETY SKI BINDING

Erwin Weigl, Brunn, and Karl Stritzl, Vienna, both of Austria, assignors to Polyair Produkt Design Gesellschaft m.b.H., Kittsee, Austria

Filed Nov. 30, 1978, Ser. No. 965,040

Claims priority, application Austria, Dec. 6, 1977, 8739/77

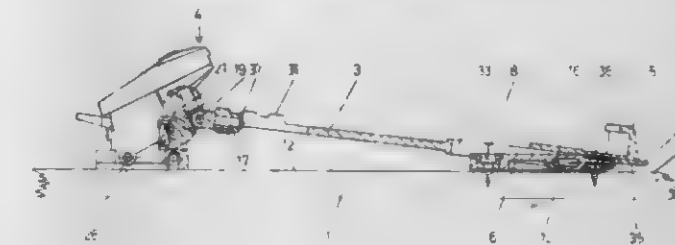
Int. Cl.³ A63C 9/081

U.S. Cl. 280—618

14 Claims

1. A safety ski binding comprising a soleplate, a toe holder, which is disposed at a forward end of the soleplate and cooperates with the toe portion of the boot, and a releasing device, which cooperates with the rear end of the soleplate and permits a release of the skiing boot, wherein the soleplate is pivoted to an adapter on an axis which is substantially transverse to the longitudinal direction of the soleplate and said adapter is

adapted to be pivoted to the ski for a movement together with the soleplate about an axis which is at right angles to the plane of the soleplate, characterized in that a spring-biased releasing device (4) is adapted to be pivotally moved in vertically upward and lateral directions, the soleplate is mounted on a pivot



(16) which is transverse to the longitudinal direction of the soleplate (3) and displaceable in said longitudinal direction, and the rear end of the soleplate (3) is connected to the releasing device (4) by an articulated joint, which is inseparable under operating conditions.

4,230,339

COLLAPSIBLE WHEEL-CHAIR UNDERCARRIAGE

Emil Edholm, S-74041 Morgongava, Sweden

Filed Jun. 29, 1978, Ser. No. 920,626

Claims priority, application Sweden, Jun. 30, 1977, 7707563

Int. Cl.³ B62B 3/00

U.S. Cl. 280—647

9 Claims



1. A collapsible wheelchair undercarriage which comprises a seat attachment, a wheeled chassis and collapsible intermediate members movably supporting said seat attachment on said wheeled chassis, said seat attachment being provided with means for suspending said wheelchair undercarriage, and hauling strap means located between and attached to said seat attachment and said chassis for lifting and lowering said chassis relative to said seat attachment.

4,230,340

TRAILER FOR COUPLING TO ROAD VEHICLES

Francois Wasservogel, Treffort, 01370 Saint-Etienne-du-Bois, France

Filed Dec. 18, 1978, Ser. No. 970,535

Int. Cl.³ B62B 5/00

U.S. Cl. 280—656

4 Claims

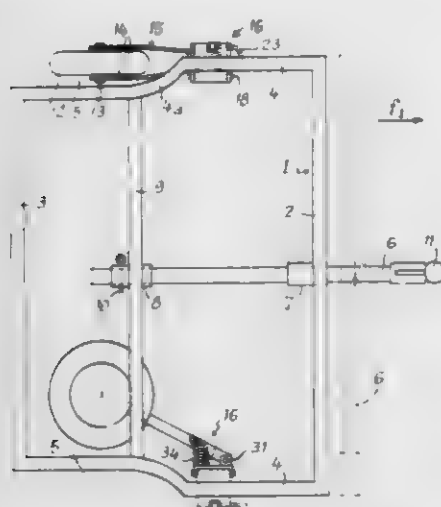
1. A trailer for motor vehicles, comprising:

a substantially flat bed having a first portion of predetermined width and a narrower rear portion having side edges spaced inwardly of the side edges of said first portion to define clearance spaces at the rear edges of said bed;

a tow bar removably secured to said bed;

a pair of ground wheels and mounting means pivotally mounting said ground wheels to said bed for pivotal movement about fore-and-aft axes below and adjacent the side edges of said first portion, each of said mounting means extending rearwardly from its axis whereby said

wheels and mounting means may be selectively pivoted about said axes to position said wheels in running position



below said clearance spaces or folded position within the outline of said rear portion of said bed.

4,230,341

VEHICLE SUSPENSION SYSTEM

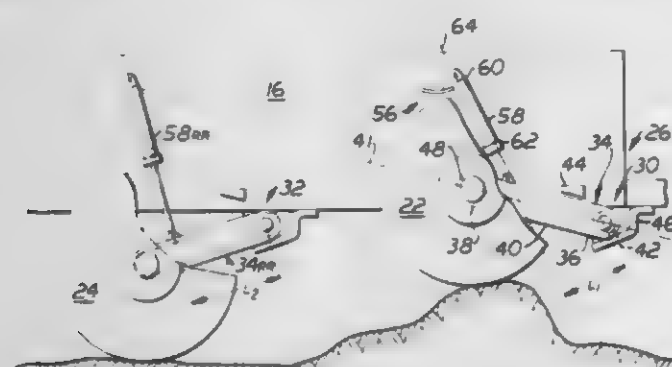
Cullen P. Hart, and Thomas C. Meisel, Jr., both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 25, 1978, Ser. No. 945,270

Int. Cl.¹ B60G 17/04

U.S. Cl. 280—702

5 Claims



1. A suspension system for a vehicle (10) having front (18,22) and rear (20,24) ground engaging wheels, comprising:
 - a frame (12) having a left member (14) with front and rear axle openings therein and a right member (16) with front and rear axle openings therein;
 - a front axle (50) extending between the left and right frame members (14,16) with its end portions protruding through the front axle openings;
 - a rear axle (50) extending between the left and right frame members (14,16) with its end portions protruding through the rear axle openings;
 - a speed differential (52) drivingly connected to the axles (50);
 - pivot means (30) for individually, pivotally mounting each of said wheels (18,20,22,24), said pivot means (30) including a plurality of pivotal bearings (42); and
 - a plurality of lever arms (34) each having a first end portion (36) connected to the frame (12) by a respective pivotal bearing (42) and pivotally connected to a respective end portion of the axles (50), a second end portion (38) rotatably connected to a respective one of the wheels (18,20,22,24) and an inner portion (38), each of said wheels (18,20,22,24) being driven through the respective inner portion (38) of the lever arm (34) by the axles (50) and speed differential (52); and
 - fluid control means (56) associated with each of the wheels (18,20,22,24) including a plurality of fluid cylinders (58) each having a first end portion (60) pivotally connected to the frame (12) and a second end portion (62) pivotally

connected to a respective lever arm (34), said cylinders (58) being angularly oriented from the vertical whereby the ratio between the cylinder displacement and wheel displacement is proportionately reduced as the wheel is raised above the level vehicle position and increased as the wheel is lowered below the level vehicle position, said cylinders (58) attached to said left frame member (14) being in fluid communication with one another and said cylinders (58) attached to said right frame member being in fluid communication with one another, said fluid control means proportionately increasing the supporting force exerted on the frame by each wheel (18,20,22,24) in response to increasing downward movement of the wheel from a first location and proportionately decreasing the supporting force exerted on the frame by each wheel in response to increasing upward movement of the wheel from the first location, said frame (12) always moving elevationally less than one-half the height of an obstacle during movement of one of the wheels (18,20,22,24) over the obstacle.

4,230,342

PASSIVE SEAT BELT SYSTEM

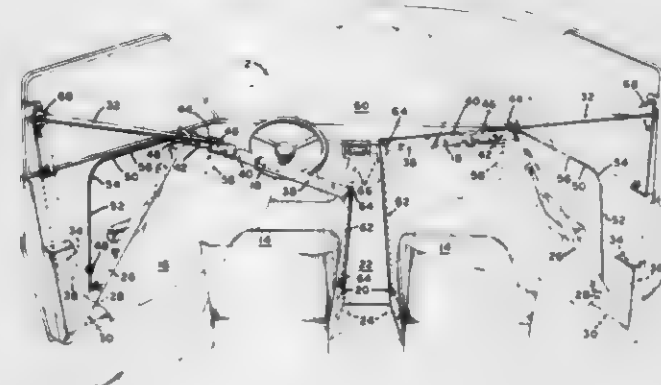
Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 12, 1978, Ser. No. 924,026

Int. Cl.¹ B60R 21/10

U.S. Cl. 280—803

11 Claims



1. A vehicle passive seat belt restraint system comprising:
 - a seat belt adapted for restraining an occupant positioned in a seat in said vehicle, said seat belt comprising a lap portion adapted to be secured around the lap of said occupant and a shoulder portion adapted to be secured around the upper torso of said occupant;
 - a lap belt retractor mounted on a door of said vehicle adjacent to said seat, one end of said lap belt portion being wound on said lap belt retractor and the opposite end of said lap belt portion being connected to a connecting means positioned at a location spaced from said door;
 - a shoulder belt retractor mounted on said door, one end of said shoulder belt portion being wound on said shoulder belt retractor and the opposite end of said shoulder belt portion being connected to said connecting means whereby said lap and shoulder belt portions are connected to each other at a location spaced from said door;
 - said seat belt further comprising a connecting portion having a first end connected to said vehicle at the side of said seat opposite said door and a second end connected to said connecting means;
 - movable means slidably engaging said lap portion at a location intermediate its ends, said movable means permitting said seat belt to move therethrough;
 - track means mounted on said door, said movable means being movable in said track means;
 - means for moving said movable means from a first position at which said seat belt is in position to restrain said occu-

pant, to a second position at which said lap portion, said shoulder portion and said connecting portion of said seat belt are in non-restraining positions;

a second track means located in said vehicle at the side of said seat opposite said door and a second movable means movable in said second track means, said second movable means slidably engaging said connecting portion of said seat belt, said second movable means being movable from a first position adjacent the rear of said seat to a second position adjacent the front of said seat, said second movable means being in its first and second positions when said first movable means is in its first and second positions, respectively;

a seat belt retractor connecting said first end of said connecting portion of said seat belt to said vehicle at said opposite side of said seat; and

second moving means for moving said second movable means, movement of said movable means along said track means mounted on said door resulting initially in unwinding of said lap belt portion from said lap belt retractor, followed by unwinding of said connecting portion from its associated retractor, thereby permitting easy ingress to and egress from said seat.

4,230,343

PASSIVE VEHICLE PASSENGER RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

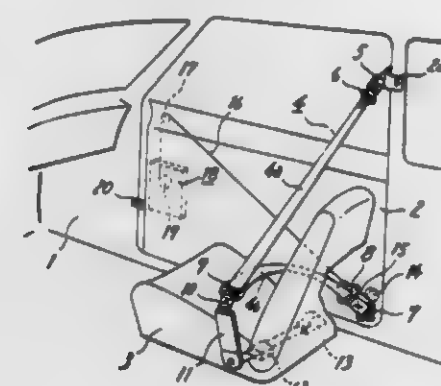
Filed Jan. 25, 1979, Ser. No. 6,336

Claims priority, application Japan, Mar. 9, 1978, 53-029074

Int. Cl.¹ B60R 21/10

U.S. Cl. 280—803

4 Claims



1. A passive vehicle passenger restraint belt system comprising a continuous belt having one end connected to the upper rear corner of a vehicle door and including a shoulder belt portion leading from that end to and passing freely through a control ring and a lap belt portion leading from the control ring to and passing freely through a transfer guide ring and thence to an anchor on the lower rear portion of the door; a control belt having one end connected to the control ring and leading from the control ring to a location inboard of and generally below and rearwardly of a passenger position on the seat and thence into an emergency locking retractor; a first flexible transfer element having one end secured to the transfer guide ring and the other end wound onto a winding device located on the lower rear portion of the door; and a second flexible transfer element having one end secured to the transfer guide ring and leading from the guide ring generally forwardly and upwardly along the door, around a guide element and thence to driving means for pulling the guide ring forwardly and upwardly along the door in response to opening motion of the door and for releasing the transfer guide ring for movement rearwardly and downwardly along the door by rewinding of the first transfer element on the winding device in response to closing motion of the door.

4,230,344

BUSINESS FORM WITH ELECTRICALLY CONDUCTIVE LAYER

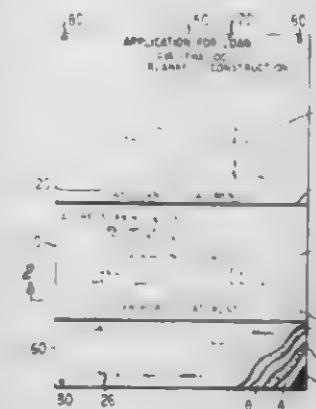
Vincent G. Bell, Jr., Berwyn; Thomas P. Burke, Harleysville, both of Pa.; George D. Margolin, Newport Beach, and Victor V. Vurpillat, Laguna Niguel, both of Calif., assignors to Century Data Corporation, King of Prussia, Pa.

Filed Feb. 21, 1978, Ser. No. 879,113

Int. Cl.¹ B42D 15/00

U.S. Cl. 283—6

31 Claims



1. A business document comprising in combination:
 - a first layer;
 - a second layer overlying said first layer, said first and second layers having substantially different electrical conductivity and color; at least one of said layers is opaque to light; one of said layers being electrically vaporizable upon exposure to an electrical discharge; and
 - a third layer put down over a portion of said second layer organizing said second layer into segments.

4,230,345

COUPLING FOR VACUUM SYSTEMS

Wallace G. Boelkins, Grand Rapids, Mich., assignor to Uni-Mist, Inc., Grand Rapids, Mich.

Filed Dec. 6, 1978, Ser. No. 966,788

Int. Cl.² A47I 9/24

U.S. Cl. 285—7

19 Claims



1. A vacuum system quick disconnect coupling, comprising:
 - a socket member including a body, said body having a front face and defining a through bore having a seat opening at said front face;
 - a cover having an outer and an inner face and depending ears;
 - pivot means on said socket member for pivoting said cover to said socket member;
 - a socket member seal dimensioned to seal said through bore at said front face;
 - a retainer extending through said seal for securing said seal to the inner face of said cover;
 - a plug member including a body defining a tubular nipple dimensioned to be received within said socket member through bore, said ears of said cover engaging and guiding said plug member during movement into said socket member through bore;
 - plug member seal means carried by said plug member and surrounding said tubular nipple, said seal means engaging said socket member front face and surrounding said through bore when said nipple is disposed within said through bore, said plug member seal means comprising a one-piece resilient member having a generally tubular portion defining a peripheral groove and terminating in a flat face, said resilient member dimensioned to seal against said seat; and

lock means on said cover for engaging and locking said plug member to said socket member when said nipple is disposed within said through bore.

4,230,346 ROOF DRAIN

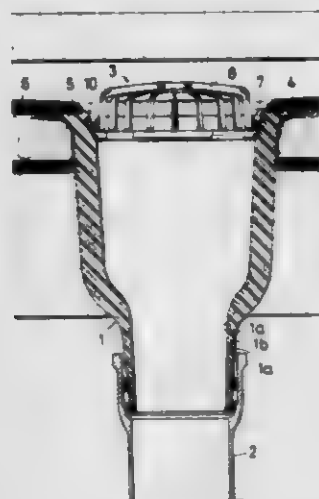
Klaus Göbel, Am Forst, 55 Trier-Irsch, Fed. Rep. of Germany
Division of Ser. No. 600,189, Jul. 29, 1975, abandoned. This application Sep. 6, 1977, Ser. No. 830,403

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1974, 2437191

Int. Cl.³ E04D 13/04; F16L 5/02; B29D 27/04

U.S. Cl. 285—42

4 Claims



1. In a roof drain for installation in a roof subjected to varying ambient atmospheric temperatures for receiving water from the roof including a connection collar bondable to adjacent roofing material of the roof and having an aperture therein and a tubular drain body disposed with its drain channel substantially in alignment with the connection collar aperture and having on one end thereof an external flange adjacent to such connection collar aperture, the improvement comprising the drain body flange being joined by a contiguous integral liquidtight bonded joint to the margin of the connection collar aperture, said joint being leakproof over the range of ambient atmospheric temperatures to which the roof is subjected by such drain body flange being molded in contact with the connection collar aperture margin and because the drain body flange material and the collar aperture margin material, while different, have approximately equal coefficients of thermal expansion, which prevents appreciable differential expansion of the drain body flange and the connection collar aperture margin tending to rupture said joint therebetween.

4,230,347

TEE CONNECTION FOR WELL WATER STORAGE TANKS

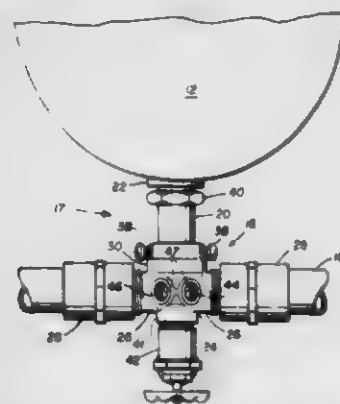
Clifford C. Williams, Iowa City, Iowa, assignor to Klasing Industries, Inc., Joliet, Ill.

Filed Mar. 13, 1978, Ser. No. 885,354

Int. Cl.² F16L 55/00

U.S. Cl. 285—119

9 Claims



1. The combination of a water storage tank and a tank tee fitting for removably connecting the tank to a supply line that

carries water from a source to a discharge point, said tank tee fitting comprising:

a pipe fitting having a hollow body, two integral tubular main branches extending longitudinally from said body in opposite directions, and a tubular side branch extending laterally from said body,

means on the outer ends of said main branches for connecting the branches in such a supply line,

a pair of contiguous tubular bosses on said body centrally thereof and communicating with the interior thereof, said bosses extending upwardly from the body at acute angles to the vertical and angularly with respect to each other,

means on said bosses for connecting a water pressure-responsive device to each of them in communication with the interior of said body,

a cylindrical tube having one end slidable in said side branch and removably received therein, said end having a peripheral groove formed therein,

means on the opposite end of said tube for connecting the tube to an inlet of said tank,

a sealing ring interposed between said side branch and said one tube end to seal the joint between the tube and the pipe fitting, and

set screw means in threaded engagement with said side branch and removably received in said groove in the tube to lock said joint,

whereby said tank is connectable to supply lines disposed at differing angles with respect to the tank, the tank may be disconnected from a supply line to which it is connected by loosening said set screw means to remove the same from said groove and removing said one end of the tube from said side branch, and a tank having said tube connected thereto thereafter may be connected to the supply line by reversing the latter procedure.

4,230,348

APPARATUS FOR SEALING FLANGE JOINTS

Vonnie S. Moore, Alvin, Tex., assignor to Team Inc., Alvin, Tex.

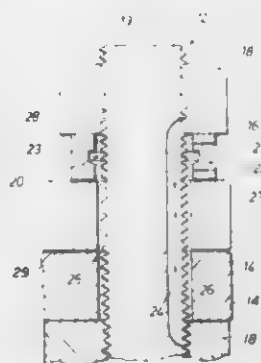
Continuation of Ser. No. 661,996, Feb. 27, 1976, abandoned.

This application Jul. 21, 1978, Ser. No. 927,585

Int. Cl.² F16L 13/00

U.S. Cl. 285—297

1 Claim



1. An assembly for use with flanged connections with circumferentially spaced matching apertures in the mating flanges for receiving bolts to connect the flanges for enabling repair of the connection if leaks occur therein without disassembly or further necessary work on the assembly, comprising:

(a) at least one bolt mounted through an aperture in the flanges of the flanged connection, said bolt being formed to define an elongated slot intermediate the extremities thereof for extending into communication with the joint between the flanges of the flanged connection;

(b) an injection ring positioned about an end of said bolt, said ring have a semicircular channel in the inner periphery thereof and a radially extending injection aperture extending through the ring and communicating with one end of said channel

(c) lock nut means on said end of said bolt threadingly and sealingly connecting said injection ring on said bolt wherein said ring may be rotated relative to said bolt from an operative position where said slots are in registry with

said semicircular channel to an inoperative position where said channel and said slots are out of registry and communication of said sealant between said slot in said bolts and said channel in said ring is prevented; and
(d) a nut threadingly and sealingly engaging with a second end of said bolt for sealingly engaging with the outer surface of a flange of the flanged connection whereby threading said nut onto said bolt urges the assembly into sealing engagement and wherein said slot does not extend beyond said nut and lock nut means.

4,230,349 JOINT

Olov M. Normark, Astrakängtan 2, Vällingby, Sweden (S-162 32)

Continuation of Ser. No. 754,413, Dec. 27, 1976, abandoned.

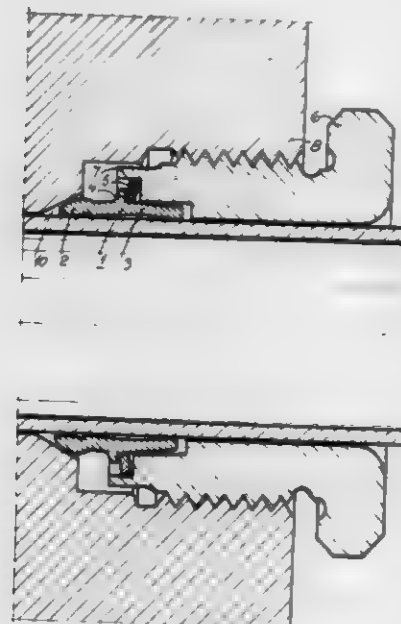
This application Oct. 30, 1978, Ser. No. 955,763

Claims priority, application Sweden, Dec. 30, 1975, 7514798

Int. Cl.³ F16L 19/08

U.S. Cl. 285—342

8 Claims



1. A pipe coupling for interconnecting an embraced tubular member (9) and an embracing tubular member (8) telescoping one another to form a sealed interlocking joint therebetween, completely enveloped by said tubular members, comprising:

(a) flexible shim means (3) for application about said embraced member (9) and arranged to slide axially between said tubular members and having a bow-shaped smooth surface facing said embraced tubular member;

(b) a deformable substantially ovular bulging nose portion (2) connected to said shim means for engaging a camming surface connected with said embracing member and external surface of said embraced tubular member without biting into said external surface and said camming surface; and

(c) a force-applying means (6) engaging at least one of said members (8, 9) axially relative thereto, effective initially to slide said nose portion into engagement with said camming surface and to flatten the bow-shaped surface of said shim means against the surface of said embraced member and thereafter upon continued application of the sliding force to deform said nose portion (2) to form a compacted sealing portion interlocking said members (8, 9).

4,230,350

OVEN DOOR LATCH

James W. Gee, and Richard J. Arntz, both of Cleveland, Tenn., assignors to Magic Chef, Inc., Cleveland, Tenn.

Filed Apr. 5, 1979, Ser. No. 27,446

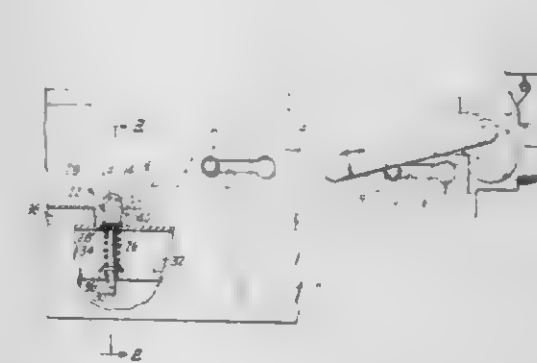
Int. Cl.² E05C 1/06

U.S. Cl. 292—144

4 Claims

1. In a range having an oven opening and a hinged door arranged to close said opening:

a bolt member slidably mounted on said range for movement along an edge of said opening;
a keeper on said door projectable into the path of movement of an end of said bolt when said door is closed;



said end of said bolt being of wedge shape to engage and urge said keeper inwardly; and
said keeper being resiliently mounted on said door for yieldable inward movement thereon when engaged by said wedge-shaped end of said bolt.

4,230,351

LINK AND LEVER OPERATED TOGGLE LATCH MECHANISM

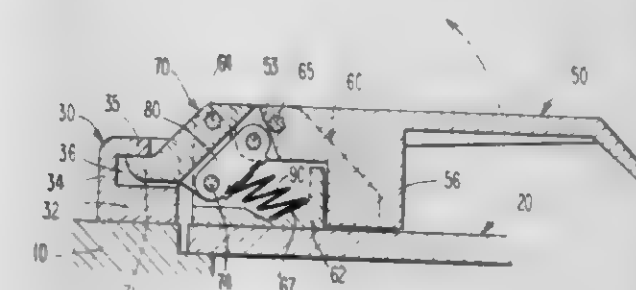
Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.

Filed May 15, 1978, Ser. No. 906,074

Int. Cl.³ E05C 3/08

U.S. Cl. 292—223

1 Claim



1. A latching device for a door, said latching device comprising:

a. keeper means secured to the frame of the door;

b. pawl means, lever means and toggle link means and compression spring means mounted on said door in a position such that the nose portion of said pawl means may engage said keeper means when said door is moved toward and into closed position, said toggle link means connecting said pawl means to said lever means;

c. said pawl and lever means being structurally related to be rotated manually about first and second fixed pivot points and held between over-the-center latching and unlatching positions by said toggle link means;

d. said compression spring means engaging said toggle link means and adapted to bias said pawl and lever means in each of its over-centered latching and unlatching positions;

e. said keeper means having a recess for receiving the nose portion of said pawl means, said recess having an upper keeper portion against which the nose portion of said pawl means is adapted to bear;

f. said keeper means adapted to be engaged by the nose portion of said pawl means when said lever means is manually operated to move said pawl means to latching position;

g. said keeper means having a base portion which projects toward said pawl means relative to said upper keeper

portion and is adapted to be engaged by the nose portion of said pawl when said lever means is in unlatched position and said door is moved or slammed toward shut position, said nose portion of said pawl engaging said projecting base portion and starting movement of said lever and pawl toward latching position, said compression spring means become further compressed during the first portion of said movement toward latching position, said compression spring means, after said toggle link means passes through center position, functioning to apply a force to continue the movement of said lever and pawl toward its over-the-center latched position.

4,230,352

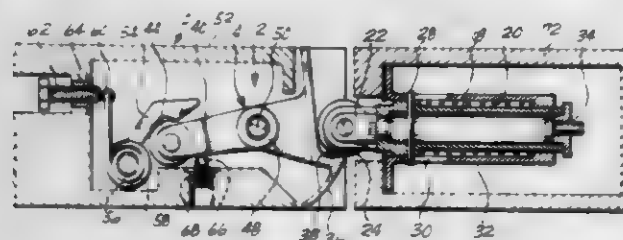
DECOMPRESSION RELEASE DOOR LATCH AND STOP
Francis Sealey, Bellevue, and Stephen T. Steadman, Redmond, both of Wash., assignors to Boeing Commercial Airplane Company, Seattle, Wash.

Filed Apr. 2, 1979, Ser. No. 26,102

Int. Cl.³ E05B 15/00; E05C 19/02

U.S. Cl. 292-341.17

13 Claims



1. A pressure responsive release door latch and latch stop mechanism mounted in a door member and a door jamb member, with the mechanisms comprising: a door latch mounted to one of the members; a linkage having a door latch stop at one end, a cam with roller at the other end and intermediate pivotable mounting to the other member; a pivotably mounted rocker arm located to contact the side of the cam roller; and resilient means for acting on the cam through the rocker arm to hold the door stop in position for normal operation and to permit rotation of the linkage to release the latch in response to a pressure differential acting across the door.

4,230,353

CARPET DOOR STOP

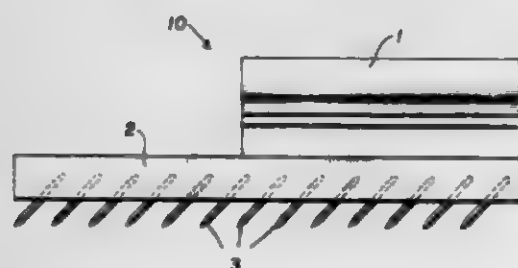
Keith D. Bjorgum, 2341 Estrellita Way, Sacramento, Calif. 95825

Filed May 3, 1978, Ser. No. 902,432

Int. Cl.³ E05C 17/34

U.S. Cl. 292-343

2 Claims



1. A door stop for use in carpeted rooms comprising a handle member, a base member disposed on and below said handle member, said base member having substantially planar and parallel top and bottom portions and perpendicular planar side walls therebetween and means to engage a carpet in the room to provide resistance to a door being opened when one of the said side walls is placed in proximate position to a vertical face of the door.

4,230,354

PICK UP AND DISPOSAL KIT FOR PET ORDURE

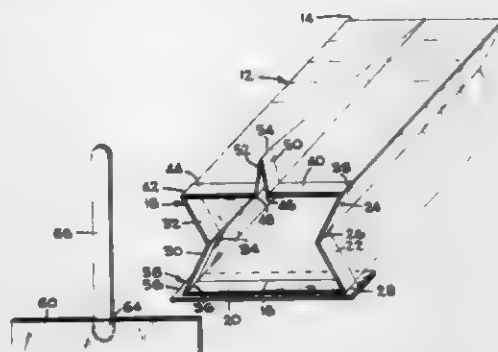
Eleanor Claras, 239 Greenmeadow Way, Palo Alto, Calif. 94306

Filed Oct. 26, 1978, Ser. No. 955,014

Int. Cl.³ A01K 29/00; A47L 13/52

U.S. Cl. 294-1 B

4 Claims



1. An ordure pick up and disposal kit comprising an impervious flexible bag defining a mouth at one end thereof, a semi-rigid substantially continuous band secured to said bag in circumscribing relation to said mouth, said band having a uniform width throughout its length and having a straight edge so that said mouth resides in a single plane, said band including a substantially undeformed linear portion having first and second ends and being conformable to a generally planar ordure supporting surface, said band having means forming a foldable gripping tab opposite said linear portion and extending exteriorly of said bag, said band having first and second side portions extending from said gripping tab forming means to the respective ends of said linear portion for spacing said linear portion from said gripping tab, and means for transporting ordure over said linear portion into the interior of said bag, said transporting means including a substantially rigid ply substantially coextensive in length and width with said undeformed linear portion so as to afford compact storage of the kit, said ply being separable from said undeformed linear portion for effecting ordure transport over said linear portion into the interior of said bag.

4,230,355

TRAPPERS TOOL AND METHOD OF USE

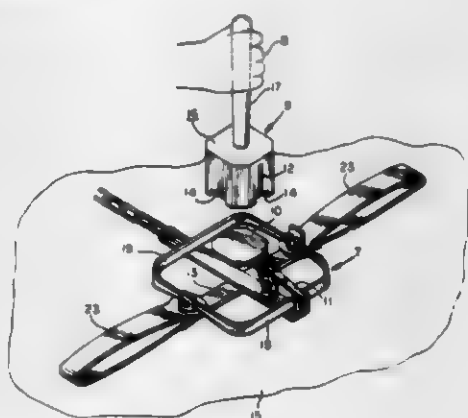
Raymond W. Petrunich, 1121 Sloan St., Scranton, Pa. 18504

Filed Sep. 13, 1979, Ser. No. 74,925

Int. Cl.³ B25B 27/00

U.S. Cl. 294-15

9 Claims



1. A tool for handling cocked animal traps and the like, said traps of the type which operate by contact of an animal with a pan mounted on the frame of the trap, said contact causing release of a triggering dog, which allows operation of spring-loaded animal-holding means, said tool comprising:
an enclosure member adapted to overfit the pan of the trap;
a handle member for said enclosure member, said handle member having a length greater than the span of the jaws of the trap.

4,230,356

TILE-GROUT APPLICATOR

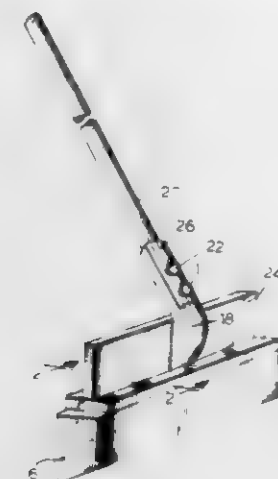
John D. O'Connor, 19720 NW 5th Ave., Miami, Fla. 33169

Filed Oct. 23, 1978, Ser. No. 953,852

Int. Cl.³ A47F 13/06

U.S. Cl. 294-19 R

3 Claims



1. A tool useful for applying grouting, comprising:
a rigid supporting bar having an upper surface and a lower surface, said bar including an elongated flange disposed outwardly and substantially perpendicular to the lower surface;
a handle;
means connected to the upper surface of said support bar for connecting said handle to said support bar; and
a flexible blade, said blade including an upper surface and a lower surface, said blade having a groove disposed in said upper surface, said groove length being substantially the length of said support bar flanged such that said flange may fit in said groove when said blade is stretched to firmly hold said blade to said support bar, said lower surface of said blade being tapered in shape to provide a blade angle of from 30 degrees to 45 degrees.

4,230,357

TOOL FOR MANUAL RELOCATION OF ELECTRICAL CABLES

Mahlon L. Bosch, and Marvin D. McKelvy, both of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Jan. 5, 1979, Ser. No. 1,169

Int. Cl.³ B25B 27/00

U.S. Cl. 294-19 R

3 Claims



1. A cable tool, comprising:

an elongated rod;
cable pick up structure secured to said rod adjacent one end thereof and including
a pair of cable-lifting fingers fixedly attached to said rod and in spaced, generally opposed relationship to one another, each of said fingers having an arcuate section and a terminal section,
said terminal section including a substantially rectilinear segment oriented at an angle relative to the adjacent portion of said arcuate section,
said segments also being oriented in a downward direction, away from the end of said rod, and inwardly toward one another.

4,230,358

HIGHLY AUTONOMOUS CROSS-COUNTRY WORKSHOP AND SERVICING VAN

Paul E. R. Legueu, 85 Av. de Mazy, 44380 Pornichet, France

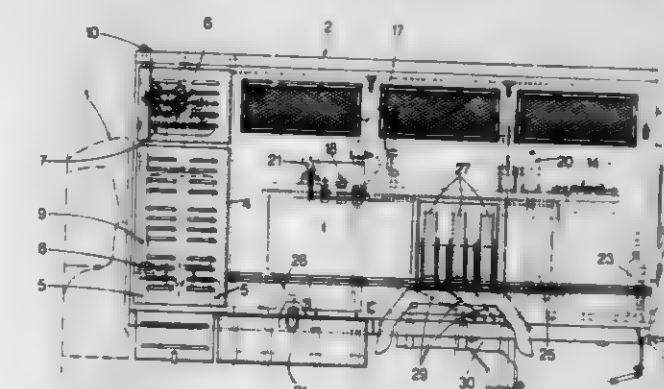
Filed Jul. 12, 1978, Ser. No. 923,893

Claims priority, application France, Jan. 11, 1978, 78 00640

Int. Cl.³ B60P 3/14

U.S. Cl. 296-24 R

8 Claims



1. A highly autonomous cross-country workshop and servicing van intended to travel in regions devoid of service and repairing stations for automobile vehicles, said van comprising:
(a) chassis means;
(b) a driving cab and body mounted upon and interconnected by said chassis, said body comprising a front end wall adjacent said cab but spaced therefrom and having passage openings formed therein;
(c) an electric generating set removably mounted on said vehicle between said cab and said front wall by means of skis, releasable fixing means connecting said skis to said generating set, said set being thereby capable of being used on the ground in an autonomous manner;
(d) equipment fixed inside said body; and
(e) power transfer lines and pipes connecting said generating set to said equipment, said power transfer lines and pipes passing through said passage openings in said front end wall.

4,230,359

FRONT END LOADER

Fred T. Smith, Palos Verdes Peninsula, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 711,876, Aug. 5, 1976, Pat. No. 4,088,234, which is a division of Ser. No. 497,129, Aug. 12, 1974, Pat. No. 3,988,979. This application Mar. 16, 1978, Ser. No. 887,037

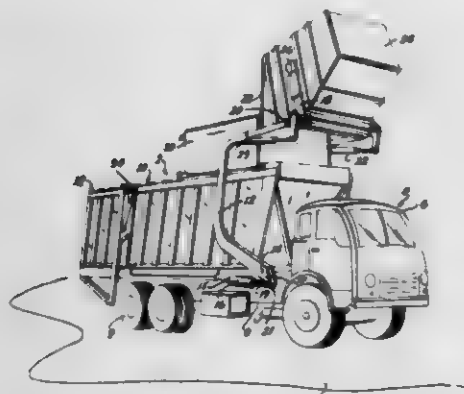
Int. Cl.³ B60P 7/02

U.S. Cl. 296-101

10 Claims

1. In combination in a refuse loader,
a refuse storage body having a roof and having an opening in the roof,
a door movable to open and close the opening in the roof, means for supporting the door for pivotable movement between a horizontal position closing the opening and a vertical position exposing the opening,

hydraulic means operatively coupled to the support means for providing a movement of the door between the horizontal and vertical positions, means operatively coupled to the hydraulic means for providing a first positive force on the door during the movement of the door to the horizontal position to provide for a packing into the storage body of refuse introduced into the storage body through the opening in the roof, means operatively coupled to the hydraulic means for increasing, automatically and without manual intervention,



the positive force on the door to a greater force than the first positive force near the end of the movement of the door to the horizontal position to insure the packing into the storage body of the refuse introduced into the storage body through the opening in the roof, and latching means operatively coupled to the door and to the top of the storage body for latching the door to the storage body upon a movement of the door to the horizontal position and for providing an unlatching of the door from the storage body upon the initiation of a movement of the door to the opened position.

4,230,360

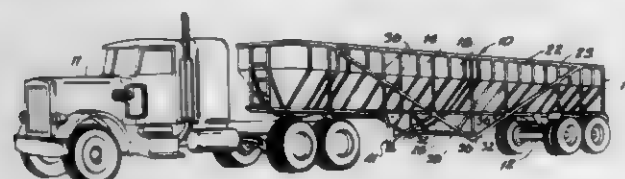
BULK MATERIAL BED

Leonard J. Eisenman, Box A, Eisenman Rd., Boise, Id. 83706
Filed Mar. 6, 1979, Ser. No. 17,946

Int. Cl.³ B62D 27/00

U.S. Cl. 296—181

16 Claims



1. A bulk material bed comprising: parallel elongated side walls joined on opposite ends by front and rear end walls and a bottom wall joining lower edges of the side and end walls; horizontal top rails extending along the elongated side walls; first diagonal truss members each affixed at a top end to a top rail adjacent the front end wall and extending therefrom angularly downward to a bottom end elevationally below the bottom wall and located adjacent the longitudinal center of the bed; second diagonal truss members each affixed at a top end to a top rail adjacent the rear end wall and extending therefrom angularly downward to a bottom end elevationally below the bottom wall of the bed and located adjacent the longitudinal center of the bed; structural means operatively connecting the respective bottom ends of said first and second diagonal truss members to one another; and web members interconnecting the top rails and said truss members.

4,230,361
VEHICLE BODY CONSTRUCTION
Roland Nachbur, Turgi, and Dieter Faist, Zurich, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

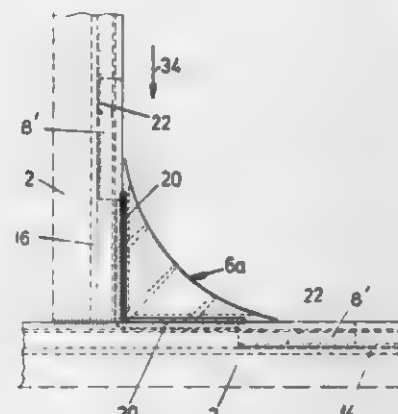
Filed Oct. 30, 1978, Ser. No. 955,772

Claims priority, application Switzerland, Nov. 3, 1977, 13414/77

Int. Cl.³ B62D 27/00

U.S. Cl. 296—193

19 Claims



1. A vehicle body construction for use in a vehicle having at least one wheel axle comprising a plurality of horizontal and vertical extending metal sections connected together, the improvement comprising:

a first horizontal metal section having a first guide means; a second horizontal metal section having a second guide means, said second horizontal metal section being disposed substantially parallel to said first horizontal metal section; a first vertical metal section having a third guide means and a fourth guide means, said first vertical metal section being disposed substantially perpendicular to and extending between said first and said second horizontal metal sections; connecting means for securing said first vertical metal section to said first and said second horizontal metal sections; said connecting means including fifth guide means for matingly engaging said first guide means with said third guide means and said second guide means with said fourth guide means.

4,230,362

CHILD'S TABLE SEAT

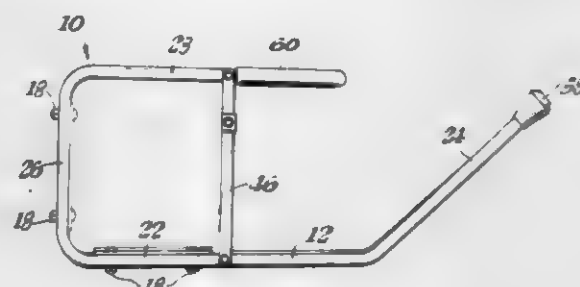
George J. Euwema, 1880 NW. 40th Ct., and George W. Euwema, 1920 NW. 40th Ct., both of Fort Lauderdale, Fla. 33309

Filed Dec. 11, 1978, Ser. No. 968,383

Int. Cl.³ A47B 39/00

U.S. Cl. 297—174

3 Claims



1. A table seat for a child, comprising:

a frame means including a pair of generally U-shaped support members in spaced relation to each other and an angularly upward disposed bearing leg extending from said support members; each said generally U-shaped support members having a first leg portion, a second leg portion generally parallel to said first leg portion, and an upwardly extending portion connecting said first leg portion to said second leg portion;

a seat means secured transversely between the pair of said first leg portion of said support members at the rearward end of said first leg portion, said seat means including a forward and rear portion; a back means secured between the pair of said upward extending portion of said U-shaped support members; a brace means extending vertically and attached between each said first leg portion and said second leg portion, forward of said seat means for maintaining a spaced relation between said first leg portion and said second leg portion when a child is in said seat; and a restraining means having a horizontal member secured between the pair of said second leg portion and a vertical member secured at a first end to said seat means and at a second end to said horizontal member for keeping a child in said seat when attached to a table; said generally U-shaped support members positioned with each said first leg portion, said second leg portion and said upwardly extending portion positioned in a diverging manner from the rear of said seat means.

4,230,363

CANOPY FOR FURNITURE FRAMES

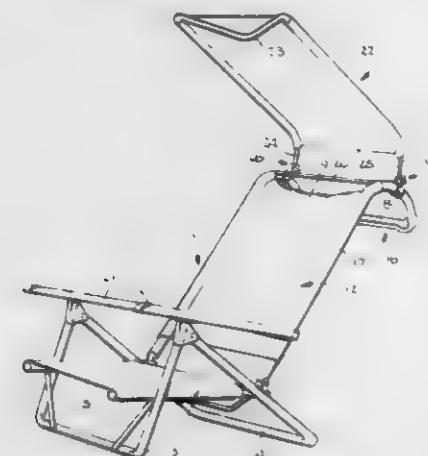
Donald J. Borichevsky, Wells, Vt., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.

Filed May 5, 1978, Ser. No. 903,114

Int. Cl.³ A47C 7/10

U.S. Cl. 297—184

7 Claims



1. The combination of

a collapsible furniture frame having a pivotally mounted back rest portion including a frame having a back support surface and an end portion terminating in a plane spaced from the plane of said back supporting surface, said end portion including a pair of parallel portions, a cross-bar connecting said parallel portions together at the ends thereof and a stiffening rod secured within and to said parallel portions; a canopy pivotally mounted on said end portion of said furniture frame, said canopy including a skeletal frame having a pair of parallel legs; and means for pivotally mounting said canopy to said end portion, said means including a pair of clamps, each said clamp including a one piece plate disposed about a respective parallel portion of said backrest end portion and having a slot receiving said stiffening rod to locate said plate, a bolt passing through two ends of said plate and a respective one of said canopy legs, and means threaded on said bolt to tighten said plate ends against said respective canopy leg.

999 O.G.—55

4,230,364

MULTIPURPOSE CHAIR

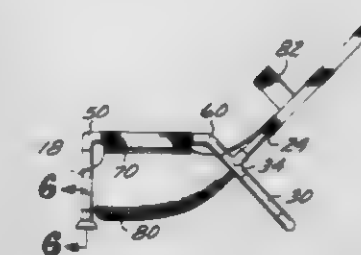
Charles F. Parker, 2041 Tevis Ave., Long Beach, Calif. 90815

Filed Apr. 12, 1978, Ser. No. 895,813

Int. Cl.² A47C 7/00, 31/00

U.S. Cl. 297—468

9 Claims



1. A portable chair constructed of water insensitive materials and having a pair of front legs joined by a transverse front cross bar and terminating in lower extremities equipped with suction devices for vacuum adhesion to a floor wherein said front cross bar is located well above the level of said floor, a pair of inclined back support rails joined together at extremities remote from said front legs by a transverse rear cross bar and oriented to provide supine back support, rear support means directly connected to said back support rails and providing rear support relative to said floor, side support rails that extend forwardly from said rear support means to said front legs above the level of said forward cross bar wherein said rails, said legs and said support means are all joined together in fixed immobile arrangement, and are constructed of short sections of hollow, plastic tubing, including joints formed by elbows and T-shaped sections, and a flexible porous sheet of webbing extending from said transverse front cross bar sharply downward to a level closely approaching said floor immediately behind said suction devices and from there upward and rearward to said rear cross bar and upward laterally to said side support rails.

4,230,365

ARTICLE OF FURNITURE AND METHOD OF MANUFACTURE

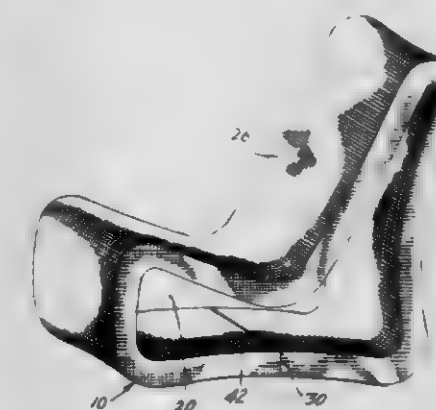
Alexander Messinger, 3725 Lankenau Rd., Philadelphia, Pa. 19131

Filed Jan. 18, 1979, Ser. No. 4,438

Int. Cl.² A47C 7/02, 27/00

U.S. Cl. 297—457

21 Claims



1. An article of furniture, comprising:

a self-supporting peripheral frame, defining a body contour and an open central region, the entire frame bordering said open region; and, a fabric sleeve, substantially covering said peripheral frame and providing a body support surface.

4,230,366

AUTOMOTIVE SEAT WITH BUILT-IN CHILD RESTRAINT

Günter Rude, Wettstetten, Fed. Rep. of Germany, assignor to Audi NSU Auto Union AG, Neckarsulm, Fed. Rep. of Germany

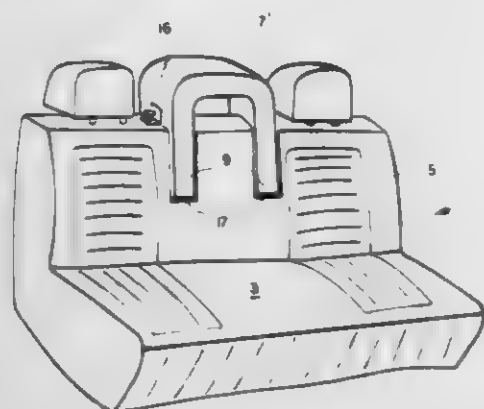
Filed Jan. 23, 1979, Ser. No. 5,779

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803574

Int. Cl.² A62B 35/00

U.S. Cl. 297-487

15 Claims



1. In combination with an automotive-vehicle seat having a seat part with an upper sitting surface and a back part with a front leaning surface, a child restraint comprising: a rigid U-shaped bar element; and means for displacing said bar element relative to said parts between a use position above said upper surface, open backwardly, and in front of said front surface and a storage position generally level with one of said surfaces, whereby a child sitting on said seat behind said bar in said use position is surrounded by said bar.

4,230,367

METHOD OF OBTAINING OIL FROM OIL SHALE DEPOSITS

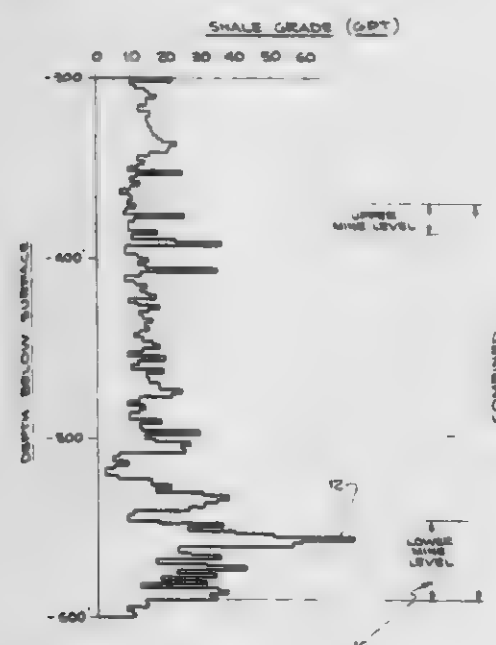
Harry E. McCarthy, Golden, Colo., assignor to Science Applications, Inc., La Jolla, Calif.

Filed Apr. 7, 1978, Ser. No. 894,330

Int. Cl.³ E21C 41/10

U.S. Cl. 299-2

10 Claims



1. A process for extracting oil and/or gas from an oil shale formation having at least one generally horizontally extending layer of oil-rich shale having a grade of at least 25 gallons of oil per ton, and being predominantly formed of kerogen phase

continuous oil shale, with most of the rest of said formation being of a lesser grade, comprising the steps of:

- excavating said generally horizontally extending layer of oil-rich shale;
- excavating a second generally horizontally extending layer of oil shale in general vertical alignment with said first leaving pillars to support said formation, with the pillars comprising less than forty per cent of the volume of each of said layers;
- explosively rubblizing the oil shale in said pillars and between said two sections; so that there are no regions within the rubblized mass having substantial volumes of kerogen phase continuous oil shale which could compress and block gas flow;
- retorting the rubblized oil shale in situ to obtain oil therefrom; and
- retorting said excavated oil-rich shale above ground.

4,230,368

METHOD FOR DISPLACING LARGE BLOCKS OF EARTH

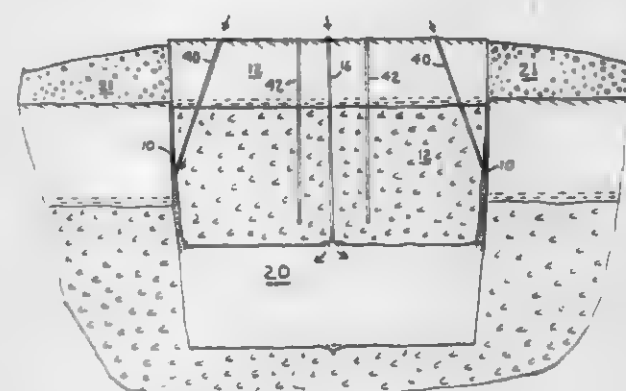
James M. Cleary, Jr., 92 McCallum Dr. - Box 541, Falmouth, Mass. 02541

Filed Feb. 12, 1979, Ser. No. 11,631

Int. Cl.³ E21C 41/04, 41/12

U.S. Cl. 299-2

28 Claims



- 1. A method for displacing a very large block of earth materials over substantial vertical distances which comprises: delineating said block on lateral sides by fracturing and (or) cutting lateral separations, where the lateral sides may range from 35° to 90° inclination, and where opposite lateral sides of said block are either roughly parallel or moderately convergent downward;
- filling said lateral separations with a gelled slurry whose density exceeds 1600 kg/m³ for the major portion of the displacement, where the slurry is composed principally of water and locally excavated solids in a broad size range including clay, silt, and sand; and
- causing substantial upward displacement of the block by feeding pressurized fluid to the underside of the block.

4,230,369

PAVEMENT PLANING METHOD AND APPARATUS

Raymond A. Gurries, Reno, Nev., assignor to The Gurries Company, Sparks, Nev.

Continuation-in-part of Ser. No. 873,249, Jan. 30, 1978, abandoned. This application Dec. 26, 1978, Ser. No. 973,163

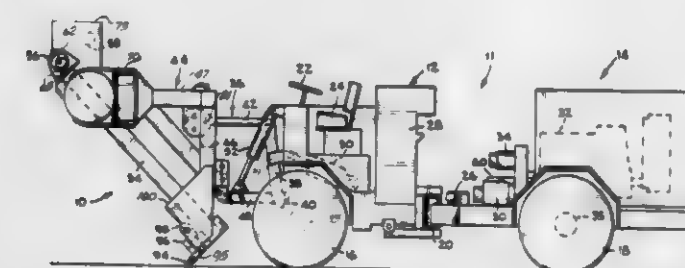
Int. Cl.² A01B 35/00; E01C 23/09

U.S. Cl. 299-14

30 Claims

- 1. A pavement planer comprising: a transversely elongated cutter blade disposed at an acute angle between 45° and 55° to the surface of a pavement, the cutter blade extending in a downward and forward direction along a cutting plane to a cutting edge that lies in the cutting plane;
- a support frame;

means for mounting the cutter blade on the support frame to permit reciprocation approximately in the cutting plane; means mounted on the support frame for intermittently applying a unidirectional force at sonic frequency to the cutter blade parallel to the cutting plane in the forward direction; and



means for continuously transporting the frame in the forward direction while applying the unidirectional force to advance the cutter blade incrementally in the forward direction when the cutter blade engages a pavement.

4,230,370

EQUIPMENT FOR LAYING ELONGATE MATERIAL

Brian W. Cartledge, Codnor; Barry Millhouse, Stonebroom, and Michael E. Cheese, Underwood, all of England, assignors to Coal Industry (Patents) Limited, London, England

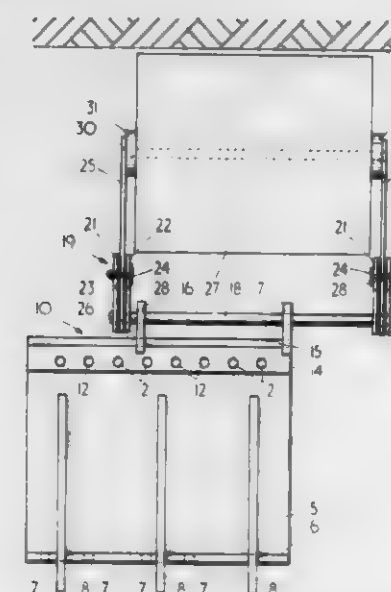
Filed Jan. 11, 1979, Ser. No. 2,643

Claims priority, application United Kingdom, Feb. 28, 1978, 97849/78

Int. Cl.² E21C 35/20; E21D 19/02

U.S. Cl. 299-33

10 Claims



- 1. Equipment for laying a layer of elongate material adjacent to a newly exposed rock or mineral surface formed by a mining machine cutter as the machine traverses along a working face, comprising a support bracket for fixed attachment to the mining machine, the support bracket providing a horizontally extending slideway, a slide component slidable along the slideway for movement transverse to the direction of machine traverse, securing means for fixing the position of the slide component along the slideway, support arm means extending from the slide component, the support arm means constituting storage means for a coil of elongate material such that in use as the machine traverses along the working face the elongate material is unwound from the coil and laid adjacent to the newly exposed rock or mineral surface.

4,230,371

EQUIPMENT FOR LAYING A LAYER OF ELONGATE MATERIAL

Roy L. Bell; Dennis A. Gillard, both of Burton-on-Trent; Peter Watt, Newark; Brian Cartledge, Codnor; Barry Millhouse, Stonebroom; Michael E. Cheese, Underwood, and Eric Dring, Pleasley, all of England, assignors to Coal Industry Limited, London, England

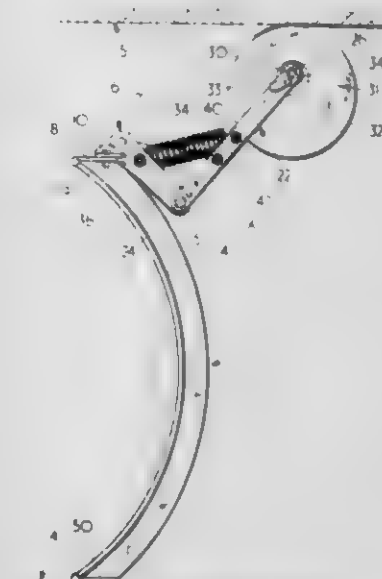
Filed Apr. 6, 1979, Ser. No. 27,699

Claims priority, application United Kingdom, Apr. 11, 1978, 14197/78

Int. Cl.² E21C 35/20; E21D 19/02

U.S. Cl. 299-33

6 Claims



- 1. Equipment for laying a layer of elongate material adjacent to a newly exposed rock or mineral surface formed by a mining machine cutter as the machine traverses along the working face, a loading member for cut rock or mineral being positioned adjacent to the rear of the cutter, comprising support bracket means fixedly securable to the loading member, arm means pivotally mounted on the support bracket means and constituting support means for a store of elongate material, and means for urging the arm means towards said newly exposed rock or mineral surface formed by the mining machine cutter such that in use as the machine traverses along the working face elongate material is dispensed from the store and laid adjacent to the newly exposed rock or mineral surface.

4,230,372

DUAL ROCK CUTTER WHEEL TRENCHER

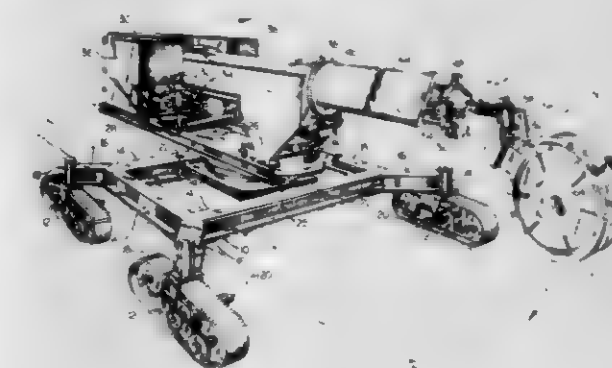
Edward N. Marten, Von Ormy, Tex., assignor to H. B. Zachry Company, San Antonio, Tex.

Filed Dec. 4, 1978, Ser. No. 966,338

Int. Cl.² E21C 29/24, 25/16

U.S. Cl. 299-39

10 Claims



- 1. Apparatus for cutting a trench in rock comprising:

a supporting base, traction means carried by and movably supporting said base, a turntable carried by said base by means for translatablely moving said turntable relative to said base, an extendable boom pivotally supported by said turntable, whereby said boom may pivot about a horizontal axis, means for rotating said boom about its longitudinal axis, and a double rock cutter carried by said boom, said rock cutter including a pair of rock cutter wheels attached to a shaft, said shaft having a length, and said boom having a width less than the maximum distance between outside teeth on said cutter wheels.

4,230,373

BRAKE SYSTEM

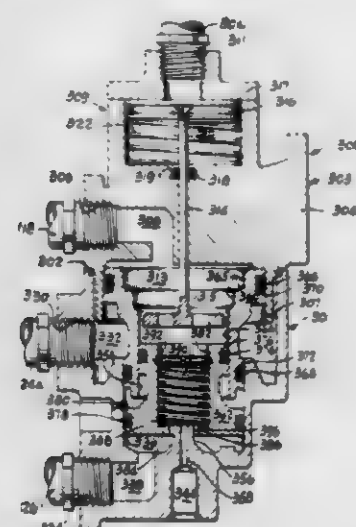
Ronald S. Plantan, Wickliffe, Ohio, assignor to White Motor Corporation, Farmington Hills, Mich.

Filed Dec. 1, 1978, Ser. No. 965,416

Int. Cl.³ B60T 8/26

U.S. Cl. 303—7

23 Claims



20. A brake proportioning system for the tractor unit of a tractor trailer type vehicle comprising:

- a source of pressurized fluid;
- fluid pressure operated brake actuators for engaging front and rear wheel brakes on said tractor;
- front and rear valve means for controlling the flow of pressurized fluid from the source to the front and rear brake actuators respectively;
- fluid pressure proportioning means responsive to trailer-unattached and trailer-attached conditions;
- at least one flow control member in said fluid proportioning means for reducing the output pressure of one of said valve means when said fluid proportioning means is sensing one of said conditions; and
- fluid biasing means urging said flow control member towards a position wherein the output pressure of the one valve means is reduced.

4,230,374

BRAKE CONTROL APPARATUS FOR RAILWAY CARS

William R. King, 1909 Sunshine Sq., Longview, Tex. 75601

Continuation of Ser. No. 775,379, Mar. 7, 1977, Pat. No.

4,143,923. This application Jul. 12, 1978, Ser. No. 924,068

Int. Cl.³ B60T 8/18

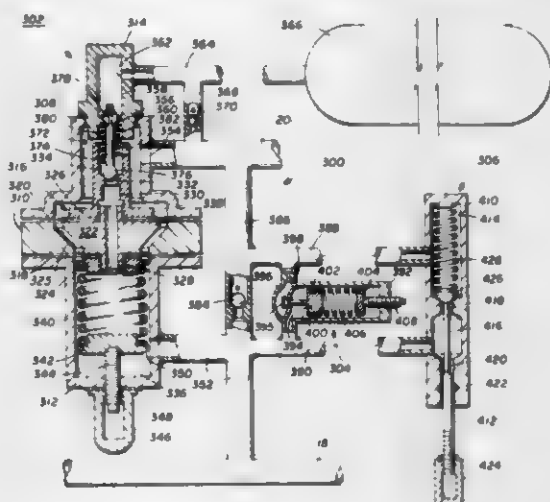
U.S. Cl. 303—22 R

3 Claims

1. A method of controlling the pressure drop transmitted from a pressurized train brake pressure supply line with a brake valve therein to a pressurized brake cylinder line of a railway car with sprung and unsprung portions, comprising the steps of:

- connecting a first chamber to the brake pressure supply line;

- connecting a second chamber to the brake cylinder line;
- movably abutting the first and second chambers with diaphragm means having surfaces of different areas, with the relatively larger area abutting the second chamber;
- interconnecting the first and second chambers with a first valve means responsive to the relative positioning of the sprung and unsprung portions of the railway car, which positioning corresponds to the loading condition, to permit fluid flow between the first and second chambers when the railway car is loaded so that the brake cylinder line experiences a pressure drop substantially equal to that in the brake pressure supply line;
- providing a second valve means responsive to predeter-



mined positioning of the diaphragm means to permit fluid flow between the first and second chambers while the first valve means is closed and the diaphragm means is unbalanced so that the brake cylinder line on an unloaded railway car experiences a pressure drop relatively smaller than that experienced in the brake pressure supply line by the inverse ratio of surface areas of the diaphragm means abutting the second and first chambers, respectively; and

- interconnecting the first and second chambers with a first check valve means responsive to pressure differential for equalization upon a pressure rise in the brake pressure supply line so that the railway car brakes can be released.

4,230,375

ANTI-SKID BRAKING SYSTEM

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

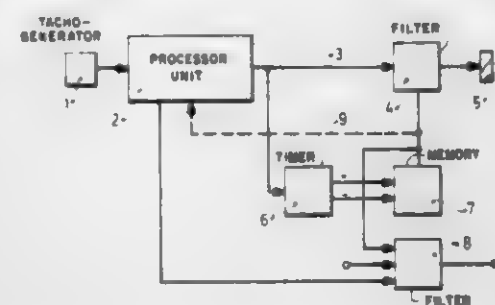
Filed Feb. 14, 1978, Ser. No. 877,648

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706278

Int. Cl.³ B60T 8/02

U.S. Cl. 303—105

10 Claims



1. An anti-skid braking system for a vehicle having wheel brakes including a pressure inlet valve and including:
 - a wheel motion transducer, associated with a vehicle wheel, for generating wheel signals related to wheel rotation;
 - a brake force generator for actuating said wheel brakes with variable force;
 - a processor unit for receiving said wheel signals from said wheel motion transducer and for generating first control signals for said brake force generator;
 - at least one signal filter for receiving said first control signals from said processor unit and for generating second control

signals which are selectively timed with respect to said first control signals; and

- a timing circuit for receiving said first control signals and for generating filter switching signals which are applied to said signal filter to change the time constant thereof and cause said selective timing of said second control signals.

4,230,376

ANTI-LOCK BRAKE CONTROL SYSTEM II

Malcolm Brearley, Solihull, and Alfred K. White, Birmingham, both of England, assignors to Girling Limited, Birmingham, England

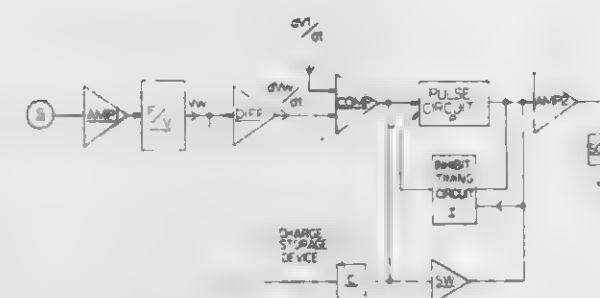
Filed Apr. 5, 1978, Ser. No. 893,799

Claims priority, application United Kingdom, Apr. 5, 1977, 14239/77

Int. Cl.³ B60T 8/02

U.S. Cl. 303—106

11 Claims



1. An anti-lock brake control system for vehicles with braked wheels comprising a wheel speed sensor for producing a signal proportional to wheel speed, a differentiator that receives the wheel speed signal from said sensor and produces a corresponding acceleration/deceleration signal, a comparator that receives said acceleration/deceleration signal and responds by producing an output pulse while said acceleration/deceleration signal exceeds a predetermined deceleration threshold, a pulse circuit that is triggered by said output pulse signal and produces a brake pressure release pulse of a predetermined maximum duration, and an inhibit timing circuit that inhibits re-triggering of the pulse circuit for a predetermined duration after said brake pressure release pulse has terminated irrespective of the duration of said brake pressure release pulse.

4,230,377

PRESSURE CONTROL VALVE UNIT

Hermann J. Goebels, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

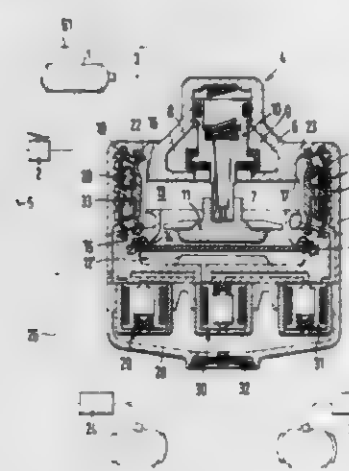
Filed Feb. 14, 1979, Ser. No. 12,186

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810151

Int. Cl.³ B60T 8/06

U.S. Cl. 303—118

11 Claims



1. A pressure control valve unit for an anti-locking protection apparatus in motor vehicle wheel brakes control pressure

means which is actuatable in direct proportion to a reactive pressure in a pressure exchange chamber attachable on one side to a reserve supply line and on the other side to a relief point and which control pressure controls the brake pressure in at least one wheel brake cylinder, a valve unit housing, said pressure exchange chamber positioned in said valve unit housing, a switching diaphragm in said pressure exchange chamber, relay valve means having a switching member under control pressure on one side of said switching diaphragm and a monitor member for a brake cylinder line communicating with the outside air on the other side of said switching diaphragm.

4,230,378

RESILIENT SUPPORT PAD FOR CRAWLER TYPE VEHICLES

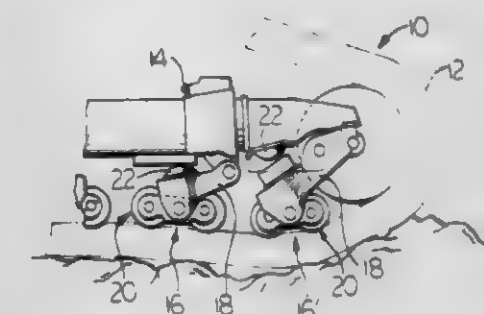
Robert J. Purcell, and James R. Sturges, both of Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 785,625, Apr. 7, 1977, abandoned. This application Mar. 13, 1978, Ser. No. 886,185

Int. Cl.² B62D 55/16; F16F 1/44; B60G 11/22

U.S. Cl. 305—22

24 Claims



1. A unitary resilient support pad (22) for use on a vehicle (10), the support pad (22) comprising:

a base portion (24), an intermediate portion (26), and a cap portion (28) each of a generally round horizontal cross sectional configuration and defining an overall height H_t , the base portion (24) being of a columnar configuration and having a preselected height H_b , the intermediate portion (26) having outer annular walls (34) sloping generally inwardly, the cap portion (28) being of a general domed configuration, and the preselected height H_b of the base portion (24) being in a range of about 3.5% to about 26% of the overall height H_t ; and wherein the base portion (24) has a bottom surface (25) having a preselected area defined by the expression "Area = T/C " wherein: C = a constant in a range of about 3500 to about 8300 kPa. T = total weight of the vehicle (10) upon which the pad (22) is to be used.

4,230,379

ANTIFRICTION BEARING CONSTRUCTION

Sören E. H. Edström, Uppsala, Sweden, assignor to Kockums Industri Aktiebolag, Sweden

Filed Nov. 17, 1978, Ser. No. 961,688

Claims priority, application Sweden, Nov. 17, 1977, 7712980

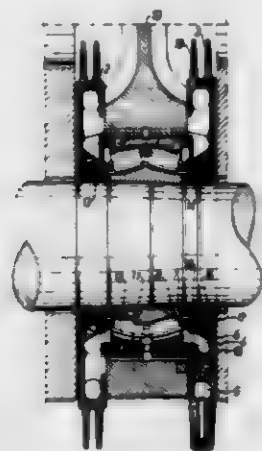
Int. Cl.³ F16C 33/66

U.S. Cl. 308—187

2 Claims

1. An antifriction bearing assembly comprising:
 - (a) an annular outer race adapted to be supported for orbiting about an axis remote therefrom;
 - (b) an inner annular race disposed in said outer race and defining an annular lubricant-receiving space therewith;
 - (c) antifriction bearing elements disposed between said races in engagement therewith;
 - (d) wall means in fluid-tight relation to said outer race and orbital therewith, said wall means having separate inner compartments in fluid communication with each other, and in fluid communication with said annular lubricant-receiving space, said compartments being defined in part by radially extending circumferentially spaced flanges secured to said wall means; and

(e) a series of inserts secured to said wall means which respectively define with inner surfaces of said compartments a series of lubricant channels opening toward each other



into the annular lubricant-receiving space, and said inserts also having a plurality of lubricant holes therethrough for conducting lubricant from the bearing elements to a reservoir in communication with said inner compartments.

4,230,310

PHONOGRAPH RECORD HOLDER

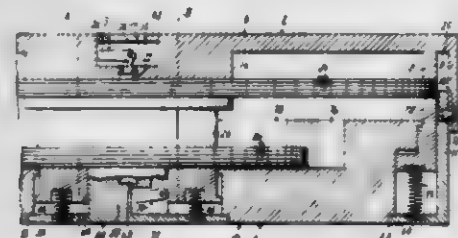
Richard C. Olson, 913 Fair Oaks Ct., Liberty, Mo. 64068

Filed Apr. 25, 1979, Ser. No. 33,042

Int. Cl.³ B65D 85/57

U.S. Cl. 312-9

7 Claims



1. A phonograph record holder comprising:

- a. a circular case divided normally to its axis into two sections each of which has an open end normally confronting the other section, and being closed at its opposite end to form a base, each of said sections being adapted to carry one or more disc-type phonograph records therein normally to its axis,
- b. connecting means operable to secure the open ends of said case sections in interengaging relation to close said case, with the records contained in each section confined to their respective sections, said connecting means being adjustable to secure said sections together at varying degrees of axial interengagement, whereby to compensate for variable numbers of records carried in each of the case sections, and
- c. loading means carried within the case and operable, as said case sections are moved coaxially into interengagement to close said case, to exert an axial load on the record or stack of records carried in each case section, whereby to secure said records against movement relative to each other, or relative to said case.

4,230,381

TWO PIECE CABINET COVER

John P. Rhoades, San Antonio, Tex., assignor to Stainless Container Company, San Antonio, Tex.

Filed Jul. 20, 1979, Ser. No. 58,970

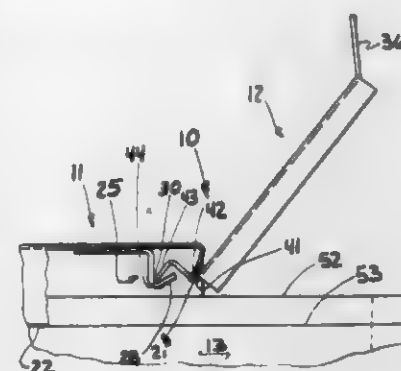
Int. Cl.³ E05D 15/58; B65D 43/00

U.S. Cl. 312-295

19 Claims

1. A two-piece openable cover for normally closing an upward facing opening in a cabinet box, comprising

- (a) a retaining lid having a top panel, side flanges depending from the top panel, a downward extending retaining flange along and depending from one of the edges of the top panel, and a stop edge on the bottom of the retainer flange;
- (b) an internal retainer clip mounted to the underside of said top panel in a position adjacent and parallel to but spaced just inwardly from said retainer flange, said clip having a leg extending downward from the top panel, a foot extending from the leg and generally toward the retainer flange, and a toe on the distal end of the foot, said toe being spaced inwardly of the retainer flange; and
- (c) a captured lid having a cover panel, a handle adjacent to a first edge of the cover panel, an upright flange extending generally perpendicular to the cover panel from a second and relatively opposite edge thereon, and an arm extend-



ing generally perpendicular from the upright flange and away from the cover panel; and in which

- (d) said lids are positively interconnectable in either of
 - (1) a limited pivotal connection in which the captured lid upright flange and arm are captured within and between the retainer lid retainer flange and retainer clip, said upright flange and arm being abutable against the retainer flange and clip respectively for providing only limited pivotal movement of the captured lid with respect to the retainer lid, so that said captured lid is self-closing when so-pivotaly connected, and
 - (2) a sliding connection in which the captured lid upright flange and arm are captured inwardly of the retainer clip and under the top panel, said lids being relatively slidable with respect to each other with the captured lid going underneath the retainer flange and the clip into a position underneath the retainer lid.

4,230,382

PLASTICS DRAWER FOR FURNITURE

Erich Wenzlick, Durlangen, and Hermann Rothfuss, Waiblingen, both of, Fed. Rep. of Germany, assignors to BBP Kunststoffwerk Marbach Baier & Co., Fed. Rep. of Germany

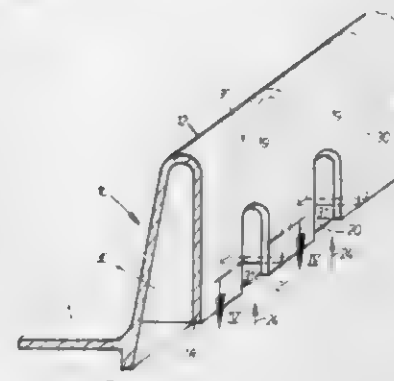
Filed Sep. 15, 1978, Ser. No. 943,272

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742328; Nov. 17, 1977, 2751412; Aug. 4, 1978, 2834152

Int. Cl.² A47B 88/00; A47F 5/00

U.S. Cl. 312-330 R

35 Claims



1. In a drawer, made of plastics material, for furniture, comprising:

- (i) a base
 - (ii) a front wall including an inner wall portion which is smooth and continuous and which is integrally joined to said base
 - (iii) support means provided at least adjacent to longitudinal ends of said front wall, said support means being spaced forwardly of said inner wall portion, said support means including an opening therein,
 - (iv) a facing abutting an outer face of said support means, and
 - (v) locking means projecting from the facing and adapted to extend each through the opening of a respective support means and to abut an inner face of said support means, thereby to secure the facing to the support means,
- the improvement which comprises:

- (a) that part of said support means which includes said opening is a wall extending in the longitudinal direction of the front wall of the drawer,
 - (b) said locking means each include a stem portion to extend through said opening, and a head portion to abut the inner face of the support means,
 - (c) the width of said opening measured in the longitudinal direction of the front wall is greater than the width of the stem portion measured in that direction, and
 - (d) the length of said opening measured in the height dimension of the front wall is greater than the height of the stem portion,
- whereby said facing is adjustable on said front wall both in the longitudinal direction and in the height dimension of the front wall.

4,230,383

INTEGRAL CONTACT

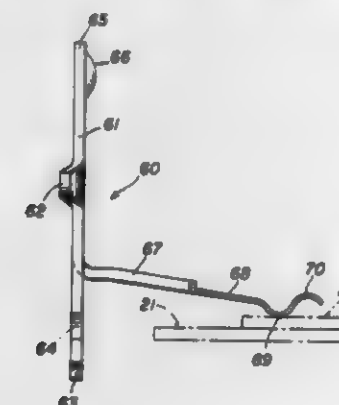
Philip J. Burnstein, Skokie; George R. Pariza, Batavia, and Stephen L. Siegel, Hanover Park, all of Ill., assignors to Pittway Corporation, Aurora, Ill.

Filed Nov. 9, 1978, Ser. No. 959,337

Int. Cl.³ H05K 1/18; H01R 4/28

U.S. Cl. 339-17 R

15 Claims



1. An integral contact for providing electrical connection between a circuit and a circuit element mounted in a housing, said contact comprising a flat elongated body, an ear on said body at one end thereof for electrical and mechanical connection to the circuit, a pair of spaced-apart legs on said body substantially coplanar therewith at the end thereof opposite said ear mountable in the housing, an arm extending laterally from said body at an oblique angle thereto between said ear and said legs, and bifurcated fingers carried by said arm for springingly electrically engaging the circuit element.

4,230,384

ELECTRICAL CONTACT

John W. Anhalt, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,245

Int. Cl.³ H05K 1/00; H01R 11/22, 4/10

U.S. Cl. 339-17 R

8 Claims

1. A printed circuit board assembly comprising:
a printed circuit board having a through hole internally

plated with an electrically conductive material;
a terminal press fit into said hole, said terminal including a binding post or the like, a resilient support and a connecting part therebetween;
said resilient support being located in said hole and consisting of a pair of longitudinal torsion members arranged in wedge-like orientation in transverse cross-section;
said connecting part having one end fixed relative to each of an adjacent pair of ends of said torsion members and another end fixed relative to said binding post, said connecting part being tapered from a larger cross section at said one end to a smaller cross section at said other end to permit said support to be press fit into said hole;



said torsion members having facing surfaces and surfaces not facing, each of said surfaces not facing including an outer longitudinal edge engaging the conductive material on the interior of said hole;
said facing surfaces having inner longitudinal edges engaging with each other at a fulcrum point and inner longitudinal edges spaced from each other; and
said torsion members rotating toward each other around said fulcrum point when said support is press fit into said hole whereby a side wiping action occurs between said outer longitudinal edges and the conductive material on the interior of said hole.

4,230,385

PRINTED CIRCUIT BOARD, ELECTRICAL CONNECTOR AND METHOD OF ASSEMBLY

J. Preston Ammon, and Harry R. Weaver, both of Dallas, Tex., assignors to Elfab Corporation, Dallas, Tex.

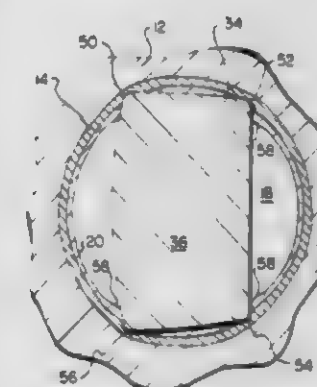
Continuation of Ser. No. 805,727, Jun. 13, 1977, abandoned.

This application Feb. 6, 1979, Ser. No. 9,957

Int. Cl.³ H05K 1/08

U.S. Cl. 339-17 R

31 Claims



1. In a printed circuit board of the type comprising an insulative mounting substrate having conductive circuitry formed thereon and plated through holes which are usually coated with solder, constructed therein, which plated through holes are adapted for receiving electrically connecting and rigidly mounting press fit contact terminals in tight frictional engagement therein, said contact terminals having a cross sectional size greater than the inside diameter of said plated through hole, the improvement comprising insulative coating masking the exposed surfaces of the conductive circuitry and plating of said plated through holes in a thin film laminar configuration therein replacing the presence of solder upon said circuitry and within said plated through holes and adapted for penetration in the plated through holes by direct press fit insertion of the contact terminals therein for effecting a tight electrical and rigid mechanical interengagement between the conductive

circuitry within the plated through holes and the contact terminal.

4,330,385

SELF LOCKING SAFETY SOCKET

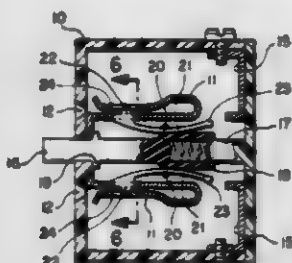
Ivan A. Farnworth, 441 S. State, and Ivan R. Farnworth, 946 S. 500 East, both of Orem, Utah 84057

Filed Jan. 12, 1979, Ser. No. 2,942

Int. Cl.³ H01R 13/44

U.S. Cl. 339—42

10 Claims



1. A safety socket assembly comprising a non-conductive housing containing:

- a pair of parallel conductive prong receptacles adapted to receive the prongs of an electrical plug each of said receptacles containing an aperture in a wall therein adapted to receive locking means,
- a pair of corresponding electrical terminals spaced from, but electrically connectable to said prong receptacles,
- a rearwardly displaceable, non-conductive, non-rotatable peg axially aligned between said prong receptacles said peg extending forwardly from the front of said housing when the peg is in its forward position,
- alignment means to keep said peg in axial alignment between said prong receptacles,
- spring means interspersed between said peg and the rear of said housing exerting a forward force on said peg,
- a pair of flexible, conductive contacts each contact being attached to opposite sides of said peg, and located adjacent a prong receptacle, each contact having a forward locking head and a rear contact tail, said locking head being in alignment with and tensioned to snap into a prong receptacle aperture in a locking relationship when the peg is in its forward position, said contacts being sized and shaped such that when said locking heads are located in said prong receptacle wall apertures with the peg in its forward position the tails of said contacts are not in engagement with the corresponding electrical terminal, but when the locking heads are flexed out of the prong receptacle wall apertures and the peg rearwardly displaced compressing said spring means, the locking heads of said flexible contacts will be electrically engaged with the walls of said prong receptacles and the tails of said flexible contacts will be electrically engaged with the corresponding terminals.

4,230,387

CONTINUOUS CONNECTOR

Irwin Zahn, New York, N.Y., assignor to General Staple Company, Inc., New York, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,057

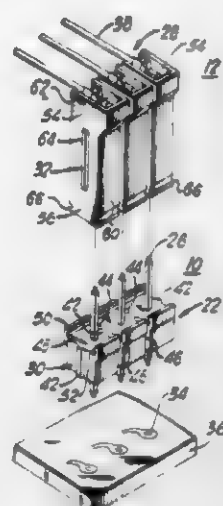
Int. Cl.³ H01R 9/22, 13/48

U.S. Cl. 339—59 M

6 Claims

1. An endless connector arrangement comprising:
 - a first continuous length of insulating material, said first length of insulating material having electrical contacts spaced therealong and being provided with severance means intermediate said contacts for selectively severing said first length of insulating material at locations intermediate said contacts;
 - a second continuous length of insulating material, said second length of insulating material having electrical contacts spaced therealong and being provided with sever-

ance means intermediate said contacts for selectively severing said second length of insulating material at locations intermediate said contacts;



one surface of said first length of insulating material and one surface of said second length of insulating material having interconnection means for removably joining said first and second lengths of insulating material.

4,230,388

CONNECTION HOUSING FOR ALIGNED BUS BARS

Jean-Pierre Thierry, Genlis; Alain Deblonne, Pont de Pany, and Daniel Nourry, Dijon, all of France, assignors to La Telemecanique Electrique, France

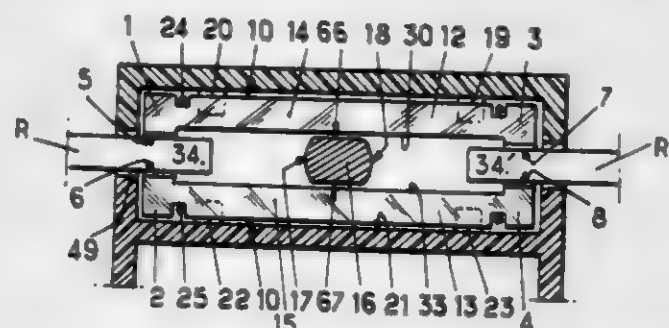
Filed Jul. 30, 1979, Ser. No. 62,083

Claims priority, application France, Jul. 31, 1978, 78 22563

Int. Cl.³ H01R 11/09

U.S. Cl. 339—74 R

7 Claims



1. In a connecting means, for the electrical coupling of ends of first bus bars of rectangular section, placed parallel at the interior of a protection sheath, to other similar bus bar ends placed opposite to said first bus bars, said means comprising conductive clips which are each applied resiliently on the ends of two bars situated in a same plane, and housings in insulating members disposed between the bus bar ends and parallel to the bars serving for the support and insulation of the said clips, the improvement that, with each pair of ends of coplanar bars there is associated at least one clip constituted by two rigid contact bridges perpendicular to said plane, the extremities of which bridges, placed opposite to each other and carrying contact buttons, are submitted locally to the action of a resilient element which urges them together, respective arms of said contact bridges being disposed at each side of a rotary locking element which has cam surfaces cooperating when in a predetermined position with said arms to separate them, said rotary locking element being pivoted in two bearings on insulating elements at each side of a housing for said clips.

4,230,389

FLEXIBLE ELECTRICAL CONNECTOR ASSEMBLY

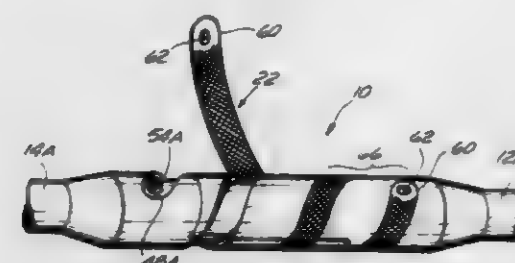
Edward J. Kotski, Hackettstown, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,088

Int. Cl.³ H01R 13/54, 23/06

U.S. Cl. 339—75 M

6 Claims



1. In an electrical connector assembly of a type for separably connecting sections of a multiple conductor power cable having first and second live conductors to produce a flexible power cable of required length, at least one live conductor of a first one of said sections being electrically connected to a corresponding live conductor of a second one of said sections with matable first and second electrical connector elements electrically connected to said first and second live conductors, respectively, comprising:

- first and second separable matable sections, said first and second sections being disposed about said first and second electrical connector elements, respectively, so as to allow an electrical connection therebetween when said first and second sections are joined together, each of said first and second matable sections having an exterior surface including a portion of a recess, said recess portions together providing, upon engagement of said matable sections with each other, said exterior surface of said connector assembly with a recess which is spirally shaped relative to the longitudinal axis of said matable sections; and
- an elongate flexible braided strap for electrically connecting corresponding individual first and second ground conductors associated with said first and second sections, respectively, said strap adapted to be disposed in said recess and to be electrically connected between said corresponding first and second ground conductors.

4,230,390

DOUBLE ACTION, ELECTRICAL CONNECTOR COUPLING DEVICE

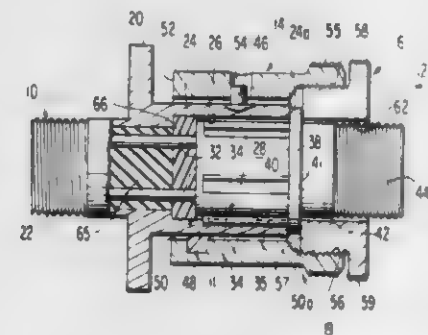
Royzell F. Wells, Littleton, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Feb. 8, 1979, Ser. No. 10,345

Int. Cl.³ H01R 4/54; F16L 23/00

U.S. Cl. 339—90 R

10 Claims



1. In a connector comprising a cylindrical female receptacle member including a tubular portion, a cylindrical male plug member including a plug shell received within said receptacle member tubular portion, and wherein one of said members bears at least one bayonet pin which projects radially from said one member and is received within a bayonet cam groove on the opposed periphery of the other member, and wherein said

plug shell bears a radial shoulder intermediate of its ends, said radial shoulder having an outer diameter in excess of the inner diameter of the receptacle member tubular portion so as to abut the nose of the tubular portion, said plug member including a coupling ring concentrically carried by said male plug member and having a portion concentrically surrounding said receptacle and forming the bayonet connection with said receptacle member, and said shoulder having an outer diameter less than the inner diameter of said coupling ring, the improvement comprising:

the end of said coupling ring remote from said receptacle member being fine threaded on its inner periphery, and a cylindrical fitting fine threaded on its outer periphery, and being threaded to the inner periphery of said ring, said fitting having a nose at one end and an inner diameter less than the diameter of said plug shell shoulder but greater than the outer diameter of said plug shell proper, such that the nose of said fitting bears on said shoulder, and said shell shoulder bears on the nose of the receptacle tubular portion for fine threaded metal-to-metal locking of said plug member to said receptacle member to effect constant electrical grounding of said plug shell to said female receptacle member.

4,230,391

ELECTRICAL CONTACT

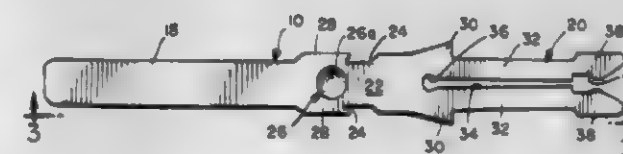
Josef Keglweitsch, Addison, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sep. 1, 1978, Ser. No. 938,995

Int. Cl.³ H01R 9/08

U.S. Cl. 339—97 R

26 Claims



24. In an electrical contact having an open-ended slotted terminal portion, said slotted terminal portion being formed by a pair of spaced conductor engaging arms having inside edges which define a generally uniformly tapered, inwardly diverging elongated slot means beginning at the open end of said slotted terminal element and extending inwardly therefrom for receiving a conductor, said conductor engaging arms having a generally uniform cross-section extending substantially the entire length of said slot portion whereby said slot means cooperates with said arms for providing substantially uniform normal forces on the conductor as the conductor is moved inwardly from said open end along the slot for termination purposes.

4,230,392

ELECTRICAL SOCKET CONNECTOR

Robert D. Leonard, Jr., Poland, and Charles R. Nestor, Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1979, Ser. No. 22,821

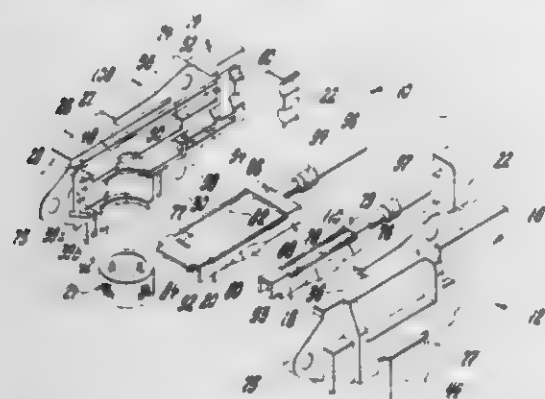
Int. Cl.² H01R 4/64

U.S. Cl. 339—117 R

5 Claims

1. A socket connector for post terminals, comprising: a connector body comprising a housing and a cover secured together forming a longitudinal series of chambers and a socket, said longitudinal series of chambers including an elongated chamber at one longitudinal end of the connector body which is closed at the one end and which has an opening in its bottom wall aligned with the socket, and a seal chamber at the opposite longitudinal end of the connector body having an exit opening, a terminal and attached wire conductor disposed in the

longitudinal chambers with the wire conductor extending through the seal chamber and leading out of the connector body through said exit opening, said terminal having a channel shaped contact portion which is disposed in the elongated chamber and which includes a pair of laterally spaced side rails, said terminal and attached wire conductor being laterally



insertable into cavity portions of the housing forming part of the longitudinal series of chambers for assembly into the housing prior to securement of the cover, elastomeric seal means disposed in the seal chamber sealing around a portion of the wire conductor extending there-through, and a vented socket seal disposed in the socket of the connector body.

4,230,393

TWO-AXIS OPTICAL SCANNER

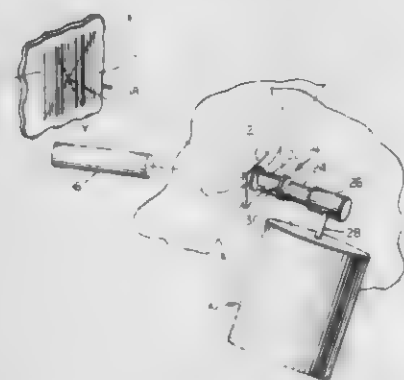
Edward F. Burke, Jr., Reading, Mass., assignor to MFE Corporation, Salem, N.H.

Filed Jul. 31, 1978, Ser. No. 929,520

Int. Cl.³ G02B 27/17

U.S. Cl. 350—6.5

6 Claims



1. An optical scanner comprising:

- A. a transducer providing a mechanical reciprocating output,
- B. an optical element,
- C. a link having a first end connected to said transducer and a second end connected to said optical element to impart motion to said optical element in response to the output of said transducer,
 - i. said link being compliant in a finite number, not less than two, of intersecting planes,
 - ii. said link and the masses associated therewith, including the mass of said optical element, having resonances associated with the compliances thereof,
 - iii. said link being oriented to receive at said first end vibrating components from said transducer in each of said planes, thereby to provide simultaneous flexure of said link in each of said planes and simultaneous movement of said optical element in said planes.

4,230,394
MIRROR FACET TRACKER USING SPHERICAL MIRRORS

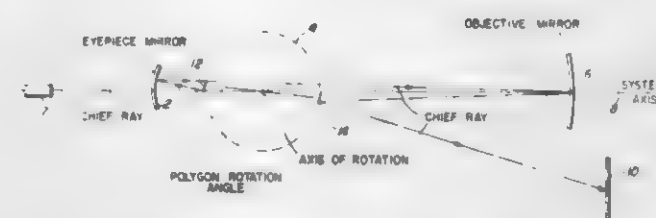
Harry P. Brueggemann, San Marino, and David A. Grafton, Santa Monica, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 2, 1979, Ser. No. 26,275

Int. Cl.³ G02B 27/17

U.S. Cl. 350—6.8

4 Claims



1. An all mirror system for tracking facets of a rotating, multi-faceted polygon, comprising a light source (7) for projecting a light beam along a system axis (8), a rotating polygon (4) having a plurality of facets (12, 14, 16) and having its axis of rotation intersecting the system axis (8), and a photosensitive surface (10) disposed off of the system axis (8) characterized in a first spherical mirror (2) disposed on one side of rotating polygon (4) and a second spherical mirror (6) disposed on a second side of rotating polygon (4), the centers of curvature of mirrors (2) and (6) being along a system axis (8), the distance between the second spherical mirror (6) and one of the facets (14) being chosen so that upon rotation of the one facet (14) from the system axis (8) the light beam moves from the system axis (8) by an amount equal to the amount of rotation of the one facet (14) from the system axis (8) such that the light beam follows the facet (14) and the light beam is swept across the photosensitive surface (10).

4,230,395

OPTICAL CABLES WITH LOOSELY HOUSED OPTICAL GUIDES

Noel S. Dean, Greater Manchester; Joseph E. G. Chapman, Prescott, and Eric L. Williams, Newton-le-Willows, all of England, assignors to BICC Limited, London, England

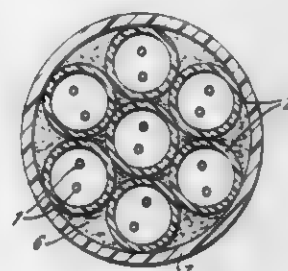
Filed Feb. 3, 1976, Ser. No. 654,868

Claims priority, application United Kingdom, Feb. 5, 1975, 4949/75

Int. Cl.³ G02B 5/16

U.S. Cl. 350—96.23

22 Claims



1. An optical cable comprising a plurality of separately formed flexible tubes in at least one of which at least one optical guide comprising at least one optical fibre, which guide as a unit has an overall diameter that is substantially less than the internal diameter of the tube, is so housed that the optical guide as a unit is loose with respect to the tube throughout the whole length of the cable and generally spaced from the tube so that limited relative movement between the optical guide as a unit and the tube can take place at any transverse cross-section of the cable when the cable is flexed and, surrounding the plurality of tubes, an outer protective sheath.

4,230,396
HIGH BANDWIDTH OPTICAL WAVEGUIDES AND METHOD OF FABRICATION

Robert Olshansky, Addison, and Arash Sarkar, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,416

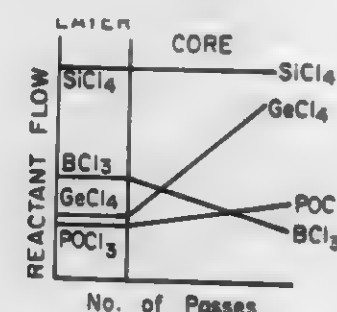
Int. Cl.³ G02B 5/14; C03B 37/075

U.S. Cl. 350—96.31

11 Claims

effective aperture, which is focusable over an extended range, having substantially the following specification:

SYSTEM EFL		HALF ANGLE OF FIELD	
at W/A =	7.61mm (.2997 in.)		25.35°
at T/P =	56.98mm (2.2433 in.)		3.31°
at MID =	25.67mm (1.0105 in.)		7.58°



8. A high bandwidth gradient index optical filament comprising

an outer cladding layer,

a barrier layer having an index of refraction equal to or less than said cladding layer disposed on the inside wall surface of said cladding layer, said barrier layer consisting essentially of a base glass, B₂O₃ and at least one additional dopant, the quantity of each of said base glass, B₂O₃, and dopant being substantially uniform throughout the thickness of said barrier layer, and

a core of high purity glass having a gradient index of refraction disposed within said barrier layer and adhered thereto to form an interface therebetween, said core having an index of refraction approximately equal to said barrier layer at said interface there being no step increase in the index of refraction of the core at said interface, said core consisting essentially of a base glass, B₂O₃, and each of said dopants, the quantity of B₂O₃ decreasing within said core from said interface towards the central axis of said optical filament while the quantity of said one or more dopants gradually vary from said interface towards said central axis in a predetermined manner so as to result in a desired substantially continuously varying gradient index of refraction across the cross section of said core.

4,230,397

LARGE APERTURE EXTENDED RANGE ZOOM LENS
Andor A. Fleischman, Northbrook, Ill., assignor to Bell & Howell Company, Chicago, Ill.

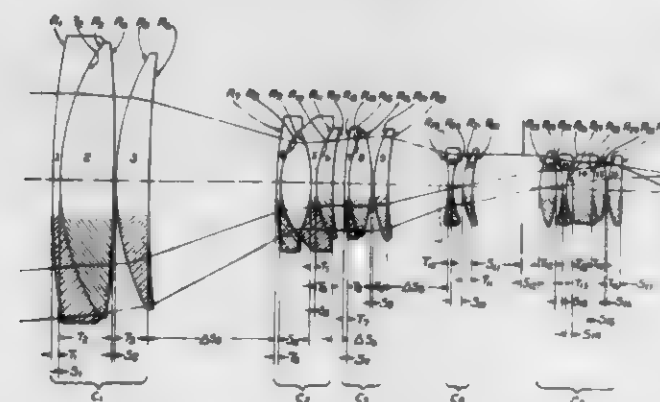
Filed Sep. 21, 1978, Ser. No. 944,341

The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.

Int. Cl.² G02B 15/18

U.S. Cl. 350—184

1 Claim



1. An optical system for a variable focal length lens of large

LENS RADII (mm.)		THICKNESS (mm.)
1	$R_1 = 240.7589$ $R_2 = -51.1988$	$T_1 = 1.6510$
2	$R_3 = 51.1988$ $R_4 = 153.6954$	$T_2 = 12.7000$
3	$R_5 = 43.6880$ $R_6 = -139.7000$	$T_3 = 7.7978$
4	$R_7 = 71.7550$ $R_8 = -16.5100$	$T_4 = .8128$
5	$R_9 = -24.0030$ $R_{10} = -19.1008$	$T_5 = .8382$
6	$R_{11} = 19.1008$ $R_{12} = -59.9948$	$T_6 = 3.5052$
7	$R_{13} = 58.9280$ $R_{14} = -21.7424$	$T_7 = .8890$
8	$R_{15} = 21.7424$ $R_{16} = 30.2260$	$T_8 = 5.6388$
9	$R_{17} = 22.7203$ $R_{18} = -93.1672$	$T_9 = 3.1496$
10	$R_{19} = -45.5168$ $R_{20} = -12.8016$	$T_{10} = .7112$
11	$R_{21} = 14.6431$ $R_{22} = -27.0256$	$T_{11} = 2.0574$
12	$R_{23} = 18.0848$ $R_{24} = 32.8168$	$T_{12} = 3.6576$
13	$R_{25} = -21.9202$ $R_{26} = -16.8656$	$T_{13} = .7112$
14	$R_{27} = 61.2140$ $R_{28} = -14.5288$	$T_{14} = 4.3180$
15	$R_{29} = 14.5288$ $R_{30} = 26.9494$	$T_{15} = 3.2512$
16	$R_{31} = 14.7320$ $R_{32} = -463.9259$	$T_{16} = 2.5654$

LENS	RADII (mm.)	SPACINGS (mm)	N_D	V
1	$R_1 = 240.7589$ $R_2 = -51.1988$	$S_1 = 0$	1.755	27.6
2	$R_3 = 51.1988$ $R_4 = 153.6954$		1.620	60.4
		$S_2 = .1016$		

4,230,398

ZOOM LENS SYSTEM

Sadahiko Tsuji, Yokohama, and Yasuhisa Sato, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 18, 1978, Ser. No. 925,860

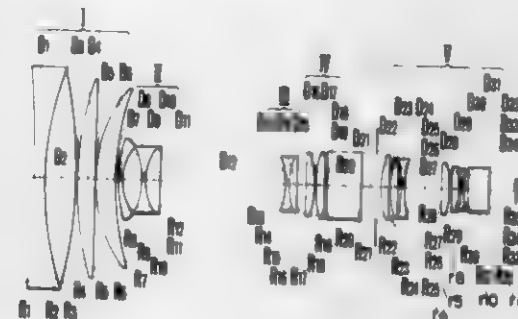
Claims priority, application Japan, Jul. 26, 1977, 52-89665
Int. Cl.³ G02B 15/18

U.S. Cl. 350-184

1 Claims

-continued

3	$R_5 = 43.6880$ $R_6 = -139.7000$ $S_3 = 4.2875$ at W/A 29.5554 at T/P 22.3952 at MID	1.651	55.9
4	$R_7 = 71.7550$ $R_8 = -16.5100$ $S_4 = 6.6294$	1.639	55.4
5	$R_9 = -24.0030$ $R_{10} = -19.1008$ $S_5 = 0$	1.620	60.4
6	$R_{11} = 19.1008$ $R_{12} = -59.9948$ $S_6 = 38.4048$ at W/A 2.5857 at T/P 14.2570 at MID	1.785	25.8
7	$R_{13} = 58.9280$ $R_{14} = -21.7424$ $S_7 = 0$	1.805	25.4
8	$R_{15} = 21.7424$ $R_{16} = 30.2260$ $S_8 = .1016$	1.641	60.1
9	$R_{17} = 22.7203$ $R_{18} = -93.1672$ $S_9 = 1.6002$ at W/A 12.1514 at T/P 7.6403 at MID	1.691	54.9
10	$R_{19} = -45.5168$ $R_{20} = -12.8016$ $S_{10} = 2.2352$	1.691	54.9
11	$R_{21} = 14.6431$ $R_{22} = -27.0256$ $S_{11} = 11.0490$ —STOP— $S_{12} = 3.5560$	1.805	25.4
12	$R_{23} = 18.0848$ $R_{24} = 32.8168$ $S_{13} = 1.6002$	1.744	44.8
13	$R_{25} = -21.9202$ $R_{26} = -16.8656$ $S_{14} = .7336$	1.805	25.4
14	$R_{27} = 61.2140$ $R_{28} = -14.5288$ $S_{15} = 0$	1.805	25.4
15	$R_{29} = 14.5288$ $R_{30} = 26.9494$ $S_{16} = .1270$	1.744	44.8
16	$R_{31} = 14.7320$ $R_{32} = -463.9259$ $S_{17} = 11.4529$	1.734	51.7



1. A zoom lens comprising:

- a focusing lens having a positive refractive power, movable for focusing purposes, and stationary during zooming;
- a variator having a negative refractive power, movable for variation, and arranged on the image side of said focusing lens;
- a compensator having a negative refractive power, movable simultaneously with said variator, and arranged on the image side of said variator;
- a converter for substantially collimating a beam of rays emanating from said compensator; and
- a basic lens for image forming purposes having a front sub-group and a rear sub-group each of which consists of two positive lenses and a negative lens in this order, satisfying the following relationships:

$$\begin{aligned} 3Fr < Ff < 7Fr \\ \frac{0.5}{Fr} < \frac{1}{r4} - \frac{1}{r5} < \frac{1.2}{Fr} \\ 0.65Fr < |r8| < 0.85Fr, \text{ said } r8 \text{ having a negative value;} \\ \frac{0.15}{Fr} < \frac{1}{r10} - \frac{1}{r11} < \frac{0.6}{Fr} \end{aligned}$$

where Fr is the focal length of the basic lens; Ff is the focal length of said front sub-group; $r4$ is the radius of curvature of the rear surface of the second positive lens in said front sub-group; $r5$ is the radius of curvature of the front surface of the negative lens in said front sub-group; $r8$ is the radius of curvature of the rear surface of the first positive lens in said rear sub-group; $r10$ is the radius of curvature of the rear surface of the second positive lens in said rear sub-group; and $r11$ is the radius of curvature of the front surface of the negative lens in said rear sub-group.

4,230,399

PHOTOCOMPOSING MACHINE AND METHOD

Louis M. Moyroud, 202 Grove Way, Delray Beach, Fla. 33444
Filed Apr. 21, 1978, Ser. No. 899,001

Claims priority, application United Kingdom, Apr. 26, 1977, 17431/77

Int. Cl.³ B41B 15/08, 15/16, 17/04, 17/18

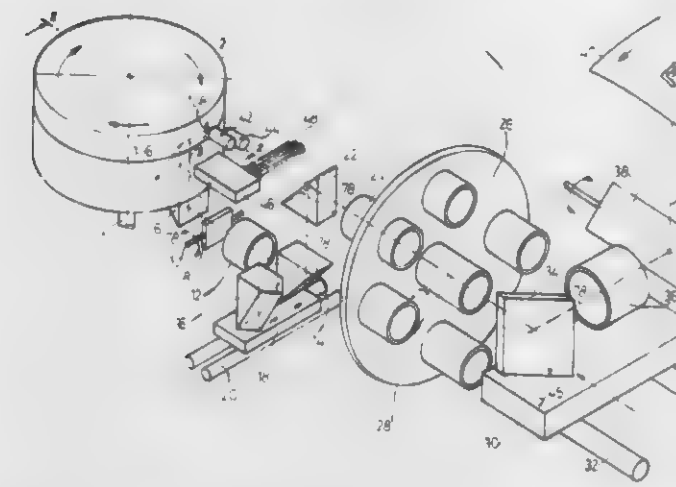
U.S. Cl. 354-10

34 Claims

1. In a photocomposing machine, character presentation means for presenting character images at a projection location, said character presentation means including a character matrix bearing characters, a plurality of base-line indicator marks on said matrix, each mark being located near and in fixed relationship to one of said characters, detector means for detecting the location of each of said marks relative to a fixed reference location and producing a corresponding error signal, and correction means for correcting the position of each of said char-

wherein the first column lists the lens elements numerically starting at the ray entrance side of the system; the second column lists the respective base radii R_1 to R_{32} ; the third column lists the thicknesses T_1 to T_{16} of the respective elements; the fourth column lists the axial spacings S_1 to S_{17} between the respective elements, and stop, and the image plane; and the fifth and sixth columns respectively list the index of refraction for the Sodium D line N_D and the dispersive index V of the optical materials of the respective elements.

acter images in accordance with its corresponding error signal to align each of said images on a common base-line.



16. A character matrix for photocomposition, said matrix comprising a support, a plurality of characters of a given type face on said support, and coded indicia on said support representing the weight of said type face.

4,230,400

PHOTOGRAPHIC CAMERA WITH

EXPOSURE-CONTROL AND FOCUSING MEANS

Richard Wick; Otto Stemme, both of Munich; Peter Lermann, Feldkirchen; Karl Wagner, Munich; Kurt Borowski, Aschheim; Istvan Cocroa, Munich, and Günter Fauth, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

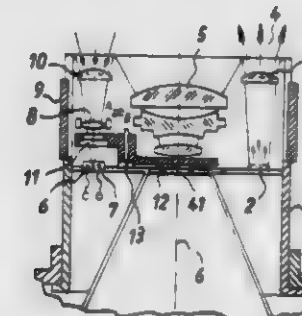
Filed Nov. 29, 1978, Ser. No. 964,736

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752929

Int. Cl.³ G03B 7/081, 7/099, 13/18

U.S. Cl. 354-25

17 Claims



1. In a photographic camera, in combination, electronic exposure-control means having a light-dependent-signal input and operative for controlling exposure in dependence upon a light-dependent signal applied thereto; state-of-focus evaluating means comprising a photosensitive detector arrangement producing light-dependent-signals, and including at least one pair of photosensitive elements, and including an emitter emitting towards the subject to be photographed a beam of radiation having a predetermined frequency range within the frequency spectrum to which the photosensitive detector arrangement can respond, means controlling the incidence of light on the photosensitive detector arrangement in dependence upon changes in the camera's state of focus, including means for controlling, in dependence upon changes in the camera's state of focus, the relative locations of the photosensitive detector arrangement, on the one hand, and of said beam of radiation as reflected back from the subject to be photographed, on the other hand, the means controlling the relative locations of the photosensitive detector and beam of radiation comprising means controlling the distribution of the reflected-back beam of radiation as between the two elements of the photosensitive-element pair, means receiving the light-dependent signals produced by the detector arrangement and deriving

therefrom a state-of-focus signal indicating the camera's state of focus, including subtracting means receiving and subtracting from each other the light-dependent signals produced by the two elements of the photosensitive-element pair, and suppressing means operative for suppressing the effect of radiation not originating from said emitter upon the light-dependent signals produced by the photosensitive elements, including an optical filter located in front of the photosensitive elements and operative for transmitting thereto substantially only radiation of frequency within said predetermined frequency range, and means moving the optical filter out of the light path of the photosensitive elements during exposures controlled by the exposure-control means; and connecting means connecting the photosensitive detector arrangement of the state-of-focus evaluating means to the light-dependent-signal input of the exposure-control means for transmitting light-dependent signals to the latter from the former, so that the photosensitive detector arrangement be shared by both the exposure-control means and the state-of-focus evaluating means.

4,230,401

CAMERA FOCUS DETECTING DEVICE

Seijiro Tokutomi, Tokyo; Masao Jyojiki, Tsurugashima, and Kazuo Nakamura, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 971,122

Claims priority, application Japan, Dec. 22, 1977, 52-154730
Int. Cl.³ G03B 7/08

U.S. Cl. 354-25

21 Claims



1. A camera focus detecting system comprising: optical means for obtaining two images from an object; an optical member for displacing at least one of said two images relative to each other; means including photoelectric conversion elements forming two groups for converting variations in light quantity of portions of said object into electrical output signals; a photographing lens for projecting the image of said object onto said photoelectric conversion element means; circuit means for calculating outputs

$$V_{out-1} = \sum_{m=1}^{n-1} |i_m - i_{m+1}| \text{ and } V_{out-2} = \sum_{m=1}^{n-1} |i'_m - i'_{m+1}|$$

from the outputs of the photoelectric conversion elements forming said photoelectric conversion element means; calculation circuit means having a first calculation function for calculating $V_{out-3} = V_{out-1} + V_{out-2}$ and a second calculation function for calculating $V_{out-4} = V_{out-1} - V_{out-2}$, so that when V_{out-3} becomes higher than a predetermined value, different outputs are produced under conditions that $V_{out-4} > \epsilon_1$, $\epsilon_1 \geq V_{out-4} \geq \epsilon_2$, and $\epsilon_2 > V_{out-4}$; and a display means for effectuating different displays according to said different outputs, wherein: n is the number of said photoelectric conversion elements forming each of said two photoelectric conversion element groups, m is a discrete number of a photoelectric conversion element, i is the output of a photoelectric conversion element in one of said two photoelectric conversion element groups, i' is the output of a photoelectric conversion element the second photoelectric conversion group and ϵ_1 and ϵ_2 are predetermined constants.

4,230,402

FLASH EXPOSURE CONTROL SYSTEM

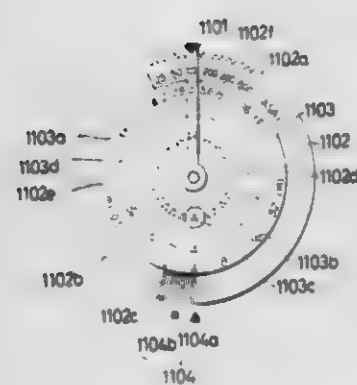
Takashi Uchiyama, Yokohama; Zenzo Nakamura, Urawa, and Shohhei Ohtaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 855,339, Nov. 28, 1977, abandoned. This application Mar. 3, 1978, Ser. No. 883,298
Claims priority, application Japan, Nov. 30, 1976, 51-143916; Mar. 3, 1977, 52-23131

Int. Cl.³ G03B 15/05; G06C 3/00

U.S. Cl. 354—33

6 Claims



1. A computer flash light device usable with a camera having an aperture control circuit which controls the aperture size on the basis of the value of the diaphragm aperture signal from the computer flash light device comprising:

(a) flash means for producing a flash light;

(b) exposure information setting means including:

(1) a non-movable plate provided with aperture value marks;

(2) a first movable member provided so as to be movable relative to the non-movable plate, said member being set at a desired aperture value mark on the non-movable plate; and

(3) a second movable member provided so as to be movable relative to the non-movable plate, said member being provided with film sensitivity marks so as to set the film sensitivity by setting the determined film sensitivity mark at the aperture value mark selected by the first movable member;

(c) a flash light amount control circuit for controlling the amount of the flash light emitted by the flash means;

(d) adjusting means coupled to said flash light amount control circuit, said adjusting means for adjusting said amount of the flash light controlled by the light amount control circuit as a function of the displacement position relative to the non-movable plate of the second movable member; and

(e) a diaphragm aperture value signal forming circuit having an aperture value adjusting means which is coupled with the first movable member so as to adjust the aperture value as a function of the displacement position relative to the non-movable plate of the first movable member; said diaphragm aperture value signal forming circuit producing a diaphragm aperture signal having a value corresponding to the aperture value adjusted with the adjusting means.

4,230,403

MOUNTING FOR INTERCHANGEABLE CAMERA LENS ASSEMBLY WITH DIAPHRAGM MEANS

Shigeru Hashimoto; Taizo Mitani, both of Kanagawa; Takashi Isobe, Tokyo; Masao Aoyagi, Kanagawa; Akiyasu Sumi, Kawasaki, and Katsumi Tanaka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

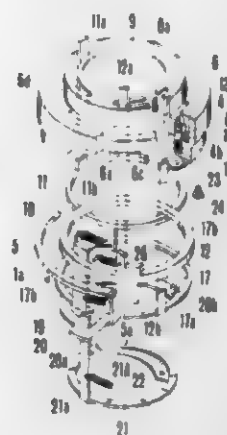
Filed Feb. 3, 1978, Ser. No. 875,096

Claims priority, application Japan, Feb. 8, 1977, 52/12827; Feb. 9, 1977, 52/13391; Feb. 9, 1977, 52/13392; Apr. 6, 1977, 52/39176; Apr. 18, 1977, 52/44247

Int. Cl.³ G03B 7/02, 9/02, 17/00

U.S. Cl. 354—286

37 Claims



1. An assembly wherein said compensating means comprises a compensation member pivotally mounted on the lens barrel body, a cam member fixedly mounted on said adapter member and having a camming surface for engagement with the elongated portion of the transmission means, whereby when the lens barrel is detached from the camera body, the compensation member is moved in engagement with the camming surface of the cam member and at the same time pushes the transmission means at the elongated portion thereof to return the transmission means to the initial position.

4,230,404

DEVICE FOR THE CONTINUOUS DEVELOPING OF BAND- AND SHEET-SHAPED PHOTOGRAPHIC LAYER CARRIERS

Heinrich Huss, Liebigstrasse 1, 6054 Rodgau 6, Fed. Rep. of Germany

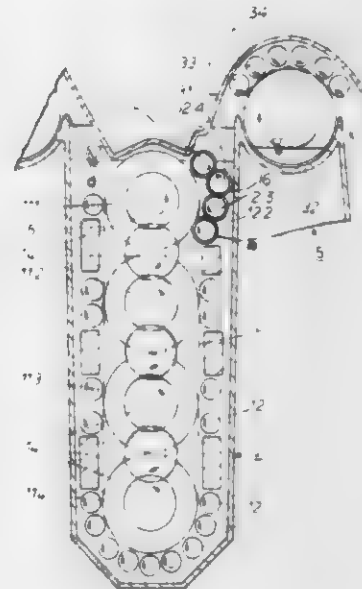
Filed Sep. 8, 1978, Ser. No. 940,858

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740650; May 24, 1978, 2822677

Int. Cl.³ G03D 3/13

U.S. Cl. 354—321

4 Claims



1. Arrangement for the pass-through development of band- or sheet-shaped photographic layer carriers, having devices

for transporting the layer carrier through several bath containers arranged successively in pass-through direction and between each two of which a receptacle of fluid is located, the layer carrier being advanced in the pass-through direction under loop formation between three rows of rollers whose diameter in the middle row is substantially greater than in the outer rows, with an infeed device ahead of the first bath container and with a plurality of transfer devices each located between each two bath containers and each transfer device including a driven transfer roller dipping into the receptacle of fluid and at least one non-driven deflecting roller resting loosely on the transfer roller under its own weight, wherein the improvement comprises that one of said rows of rollers includes a row of guide rollers arranged at the outlet side of a bath container adjacent the upper roller of the middle row, said guide rollers being driven by said upper roller of said middle row, and the last two guide rollers in the transport direction of said row of guide rollers forming an outlet gap for the layer carrier, the deflecting rollers of the respective transfer device being arranged in an arc and their diameters being substantially smaller than the diameter of the transfer roller; a frame having end walls in which said deflecting rollers are journaled for radial shifting towards the axis of the transfer roller; and means mounting said frame vertically shiftable on the arrangement.

4,230,406

CLEANING SYSTEM FOR AN ELECTROSTATIC COPIER

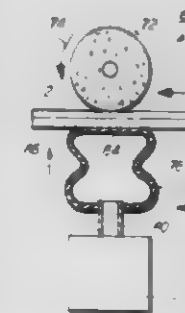
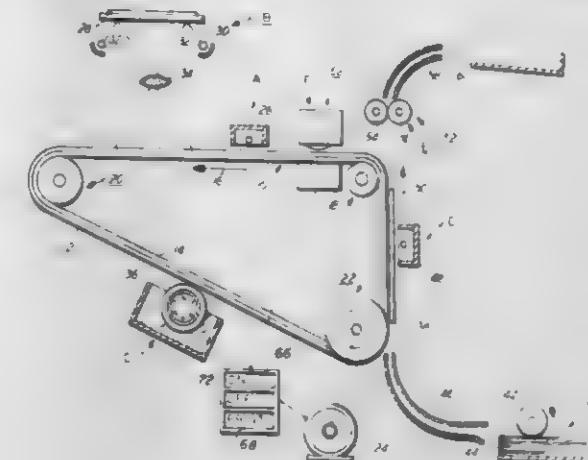
Stanley D. Klett, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 26, 1979, Ser. No. 23,936

Int. Cl.³ G03G 21/00

U.S. Cl. 355—15

14 Claims



ELECTRONIC IMAGING APPARATUS USING MULTICOLOR ELECTROPHOTOSENSITIVE PARTICLES

Clark N. Kurtz, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1979, Ser. No. 53,151

Int. Cl.³ G03G 15/01

U.S. Cl. 355—4

20 Claims



1. Apparatus for color imaging with a layer of developer which contains electrophotosensitive particles of different color types, respectively sensitive to light of different colors, said apparatus comprising:

(a) means for exposing successive strips of such a layer respectively to successive series of time-separated light pulses, the pulses in such series being respectively of said different light colors;

(b) addressable electrode means adjacent such layer for providing discrete electrical fields across individual pixels of exposed strips in response to an activating electromagnetic radiation; and

(c) means for selectively addressing pixels of said electrode means with activating electromagnetic radiation in a proper timed relation with said light pulses and in magnitude according to the color content of the image to be replicated so as to effect particle migration within said layer corresponding to said replicated image.

1. An apparatus for cleaning residual particles from a photoconductive member arranged to advance along a pre-determined path after a particle image formed on the photoconductive member has been transferred to a copy sheet, including: means, normally spaced from the photoconductive member, for removing the residual particles from the photoconductive member, said removing means being inoperative when spaced from the photoconductive member and being operative when in contact therewith; and pneumatic means, operatively associated with the photoconductive member, for deflecting the photoconductive member from a position spaced from said removing means to a position in contact therewith in response to the photoconductive member moving along the predetermined path, said pneumatic means returning the photoconductive member from the position in contact with said removing means to a position spaced from said removing means in response to the photoconductive member being stationary.

4,230,407

APPARATUS FOR MAKING POSITIVE PICTURES FROM SLIDES

Ursula Möller, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 24, 1979, Ser. No. 32,903

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818617

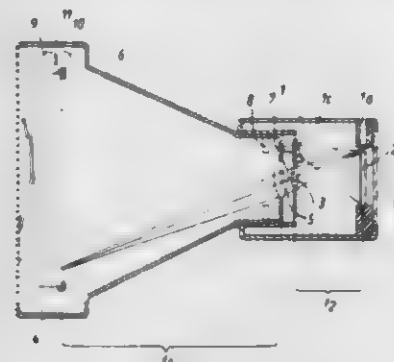
Int. Cl.³ G03B 27/32, 27/52

U.S. Cl. 355—27

1 Claim

1. An apparatus for making positive pictures from slides, in which a camera has a picture-taking lens at infinity setting and in which a slide-copying attachment is connectable to said camera and including means for holding a slide to be reproduced, and a reproducing lens spaced from the slide by a distance and located parallel and proximal to said picture-taking lens.

ing lens when said attachment is connected to said camera for reproducing a picture of said slide in said camera, wherein the improvement comprises: a self-developing camera having a self-developing film sheet and being connectable to said slide-copying attachment; a light sensing control next to said picture-taking lens which control receives light through a window arranged in said attachment and actuates a shutter for controlling the exposure of the slide; and a prism associated to the window for deflecting light passing through the slide into



an inlet of said light-sensing control, the slide and the picture area of the film sheet each being rectangular and having a shorter edge dimension and a longer edge dimension, the ratio of the focal length of said reproducing lens to the focal length of the said picture-taking lens being equal to the ratio to the longer edge dimension of the slide to the longer edge dimension of the instant-film picture area, the distance between said reproducing lens and said slide corresponding to the focal length of said reproducing lens.

4,230,408

SYSTEM FOR OVERALL COLOR CORRECTION OF COLOR PICTURE INFORMATION CONTAINED IN A PROJECTING MULTI-COLOR LIGHT BEAM

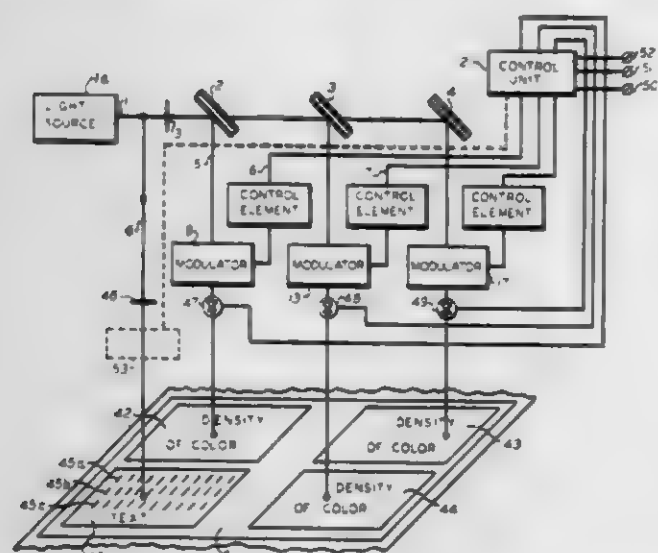
Jurg Nigg, Beckenhofstrasse 30, 8006 Zurich, Switzerland
Continuation-in-part of Ser. No. 704,728, Jul. 12, 1976, Pat. No. 4,087,176, which is a continuation-in-part of Ser. No. 424,040, Dec. 12, 1973, abandoned. This application Feb. 10, 1978, Ser. No. 876,783

Claims priority, application Switzerland, Dec. 4, 1972, 18254/72

Int. Cl.³ G03B 27/72, 27/76

U.S. Cl. 355—35

21 Claims



1. A photographic film for storage of an image and of additional information, comprising a film negative having at least two separated, non-overlapping areas, one of said areas containing said additional information and the other of said areas containing the information constituting said image; said one of said areas containing said additional information containing first and second spaced text patterns; said first and second text patterns containing related intelligence which is pertinent to said image; said first and second text patterns being capable of

separate display independently of one another to describe a related characteristic of said image.

16. The method of storing a two-dimensional color image and additional information, comprising the steps of: separating said image into a plurality of two-dimensional, single-color components; applying each of said components to a respective separate, non-overlapping two-dimensional mono-color photosensitive area of a photographic film to store the two-dimensional intensity values of each of said components as a respective mono-color image; producing text information constituting said additional information and comprising first and second text patterns containing related intelligence which is pertinent to said image; and applying said additional information to an additional separate, non-overlapping area of said film.

4,230,409

DEVICE FOR ADJUSTING THE POSITION OF A LENS IN TWO DIRECTIONS

Siegfried Zoeke, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

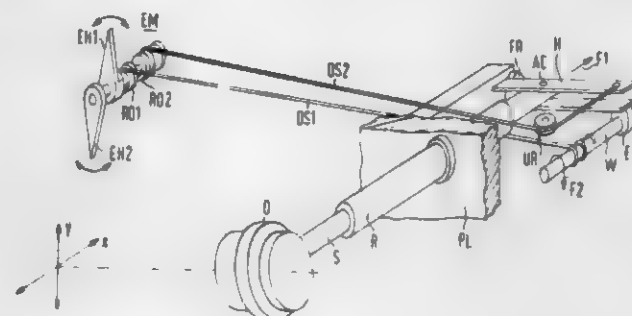
Filed Jul. 3, 1979, Ser. No. 54,581

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834334

Int. Cl.³ G03B 27/52, 23/00

U.S. Cl. 355—55

11 Claims



1. A device for adjusting the position of a lens in two directions, comprising: a lens fastened to one end of a rod; the rod being adjustably and rotatably seated in a pipe securely arranged to a plate of a housing; a lever pivotably connected at the other end of the rod; and means connecting to the lever for moving the lever such that the rod is moved in an axial direction and in a rotary direction.

4,230,410

MIXING DEVICE FOR FLUIDS OF DIFFERENT AND VARYING TEMPERATURES

Johann Kastl, Troisdorf, and Heinrich Schütz, Lohmar, both of Fed. Rep. of Germany, assignors to INTERATOM, International Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,705

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805576

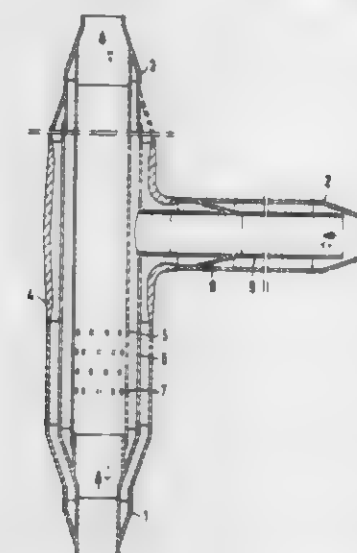
Int. Cl.² B01F 5/00

U.S. Cl. 366—177

6 Claims

1. Mixing device for fluids of high, different and/or varying temperatures comprising a housing and a cylindrical, straight mixing tube open at both ends thereof and formed intermediate the ends thereof with numerous radial openings, the mixing tube being secured at one end thereof tightly to the housing and being mounted at the other end thereof so as to be displaceable longitudinally with respect to the housing, a shock tube disposed between the mixing tube and the housing and being, at least at one end thereof, displaceable longitudinally with respect to the housing and the mixing tube, the mixing tube having an outflow end and being secured at least at said out-

flow end thereof tightly to the housing, said shock tube and the mixing tube defining an annular space therebetween, an inner pipe stub terminating in said annular space, said inner pipe stub being concentrically surrounded by a housing union tightly



connected to the housing, said shock tube being formed with a radial opening through which said inner pipe stub extends with a gap between said radial opening in said shock tube and said inner pipe stub.

4,230,411

MATRIX PRINTER

Helmut Grüttrup, Wertherstrasse 14, D-8000 Munich 40, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,705

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725352

Int. Cl.³ B41J 3/12

U.S. Cl. 400—121

18 Claims



1. In a matrix printer in which a plurality of printing punches in the form of sheet strips are arranged parallel to each other and are driveable in different combinations according to the characteristics to be printed, by means of drive systems arranged in series and being associated each with a printing punch, each drive system containing an armature mechanically coupled to the printing punch, as well as a magnetic circuit providing for an air gap and a control coil, and a reset spring being associated with each printing punch for pulling the armature away from the air gap range into an inoperative position, the improvement which comprises said reset spring being loop-shaped and formed as an integral part of an associated printing punch at the stationary end thereof, and lying in the same plane as that of the associated printing punch.

4,230,412

MATRIX PRINT HEAD ASSEMBLY

Donald G. Hebert, San Ramon, Calif., assignor to Helmut Falk, Palo Alto, Calif.

Filed Mar. 17, 1978, Ser. No. 687,927

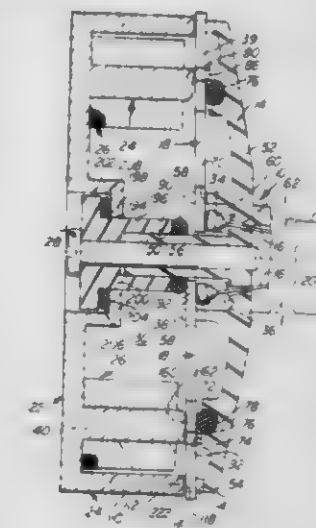
Int. Cl.³ B41J 3/12

U.S. Cl. 400—124

19 Claims

1. A matrix print head assembly comprising: a number of wire members spaced about a central longitudinal

axis and being longitudinally movable between a non-print position and a print position; guide means for movably supporting said wire members; a number of rigid armature members equal to the number of wire members movable between a non-print position and a print position and extending radially outwardly of and being circumferentially spaced about the central longitudinal axis with radially inner drive head portions engageable with said wire members during movement from the non-print position to the print position to drive the wire members from the non-print position to the print position; a number of electromagnet means, having radially innermost and radially outermost pole portions, equal to the number of armature members, mounted in juxtaposition to a radially outer portion of said armature members for pivotally supporting said armature members during movement from the non-print position to the print position and being selectively energizable for causing pivotal movement of



said armature members toward said electromagnet means and opposite pivotal movement of the radially inner portion of said armature members away from said electromagnet means during movement from the non-print position to the print position by magnetic force applied to the radially outer portion; said armature members being positioned between said electromagnet means and said wire members such that said drive head portions are movable away from said electromagnet means toward said wire members during movement from the non-print position to the print position; pivotal support means on the radially innermost pole portions for pivotally supporting an intermediate portion of said armature members during movement of said armature members from the non-print position to the print position; and resilient axially adjustable abutment means engageable with radially innermost portions of each armature member.

4,230,413

MECHANICAL PENCIL HAVING COLLET GUIDE

Jürgen Gärtner, Nürnberg, Fed. Rep. of Germany, assignor to J. S. Staedtler, Nürnberg, Fed. Rep. of Germany

Filed Oct. 18, 1977, Ser. No. 843,274

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649871

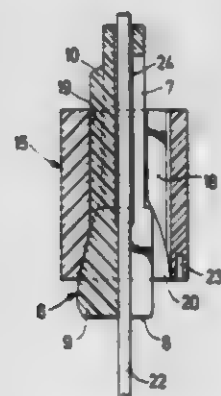
Int. Cl.³ B43K 21/16, 21/22

U.S. Cl. 401—65

4 Claims

1. A mechanical pencil comprising: (a) a tubular barrel having an axis, a front end and rear end spaced apart in the axial direction; (b) a front piece removably secured in the front end of said barrel and forming a stop surface therein extending transversely of the axial direction of said barrel; (c) collet means located in said barrel and extending in the axial direction thereof;

- (1) said collet means including an axially elongated tubular storage receptacle extending in the axial direction of said tubular barrel, a plurality of axially elongated collet members formed integrally with and extending in the axial direction of said receptacle from the end thereof closer to the front end of said tubular barrel toward the front end thereof, each said collet member having a first, axially extending terminal portion with said first portions fixedly fastened together and to said receptacle and a second axially extending terminal portion movable transversely of the axis of said barrel toward and away from a clamping position contiguously adjacent the second portion of each other said collet member,
- (2) said second portions each having an axially extending inwardly facing surface directed toward the axis of said barrel and an oppositely directed axially extending outwardly facing surface with the outwardly facing surfaces having a generally circular cross-section with an outwardly extending projection extending in the axial direction of said second portions and having a non-circular cross section and with said projections flaring outwardly in the axial direction toward the front end of said barrel when in said clamping position,
- (3) the inwardly facing surfaces of said collet members, when in said clamping position, being dimensioned for clamping an axially elongated lead therebetween;
- (d) actuating means accessible outside said barrel at the rear end thereof for axially moving said collet means in the axial direction thereof within said barrel;



- (e) a clamping ring being axially displaceably positioned within said barrel and having an axial bore laterally encircling the axis of said barrel and said second portions when said collet members are in the clamping position, said bore having a generally circular cross-section with a portion of said bore having a non-circular cross section,
- (1) said collet members extending through said bore in said clamping ring,
- (2) said portion of said bore being dimensioned for the axial passage of said second portions through said ring in a first angular position about said axis of said barrel of said collet means relative to said ring while preventing the axial passage of said second portions relative to said ring in a second angular position of said collet means and of said ring,
- (3) said bore having an orifice at the end of said clamping ring closer to the front end of said barrel with at least a portion of said bore forming the orifice flaring in said axial direction corresponding to the flaring of said projections on said second portions and conforming to the shape of said projections for abuttingly receiving said projections of said second portions and holding the received said projections in said clamping position when said collet means are in a predetermined axial position and in said second angular position; and
- (f) cooperating guide means on said collet members between said first and second axially terminal portions and in said bore of said ring for maintaining said collet members in said second angular position during movement of said collet members from said predetermined axial position in

said axial direction over a first distance with said first distance being limited by said stop surface in the front piece while with said front piece removed said collet members can be moved to a second distance from said predetermined axial position greater than the first distance whereby said guide means on said collet members and on said ring are axially displaced out of cooperating relation so that relative angular movement between said collet members and said ring from said second angular position to said first angular position can be effected.

4,230,414

RATCHET-ACTION HINGE DEVICE

Ernest L. Cheshire, Hartwell, England, assignor to UOP Inc., Des Plaines, Ill.

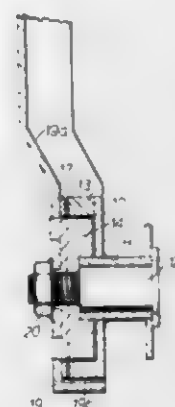
Filed Oct. 10, 1978, Ser. No. 950,184

Claims priority, application United Kingdom, Oct. 18, 1977, 43242/77

Int. Cl.² E05D 11/10

U.S. Cl. 403—95

3 Claims



1. A hinge device for pivotally interconnecting two parts and including a ratchet mechanism comprising a first ring member secured to one of said parts and carrying a row of ratchet teeth on its inner periphery, a rotor member secured to the other of said parts for movement relative to the ratchet teeth about the axis of the hinge device, said rotor member being located concentrically within said first ring member, a pawl carried by said rotor member and engageable with any selected one of said teeth to support said parts relative to each other in any selected one of a plurality of predetermined angularly-spaced positions corresponding to the angular spacing between the teeth of the ratchet mechanism,
- de-activating means operable after the pawl has ratcheted across the last tooth in said row, as a result of relative rotation of said parts in one direction, to maintain the pawl out of engagement with the ratchet teeth and thereby allow relative rotation of said parts in the opposite direction until the pawl has cleared the ratchet teeth in said opposite direction,
- said de-activating means comprising a second ring which is concentric with the first ring member and is engageable with the pawl in response to movement of said members into a first relative position, is disengageable from the pawl in response to movement of said members into a second relative position, and holds said pawl away from said ratchet tooth over the path of movement of said members between said first and second positions, said second ring being mounted for movement with said pawl along a path disposed adjacent said ratchet teeth, said second ring including a radially inwardly projecting detent behind which said pawl can engage in response to movement of the pawl as said members enter said first relative position, the said second ring being coupled to said rotor member for movement therewith between said first and second positions, the detent holding the pawl at a radial distance from the hinge axis at which it clears the

ratchet teeth, movement of the pawl into said second position causing release of the pawl from the detent, the second ring being disposed adjacent the first ring in the axial direction, the pawl being elongate axially to bridge across both said rings and engage either said ratchet teeth or said detent.

4,230,415

BALL-JOINT WITH LOCKING DEVICE

Wolfgang Scheerer, Meerbusch, Fed. Rep. of Germany, assignor to A. Ehrenreich GmbH & Co. KG, Düsseldorf, Fed. Rep. of Germany

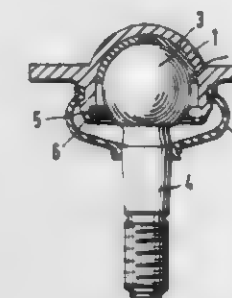
Filed Nov. 16, 1978, Ser. No. 961,467

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757198

Int. Cl.³ F16C 11/00; F16D 1/12

U.S. Cl. 403—122

5 Claims



1. In a ball-joint assembly, including a hollow housing having an opening on one side, comprising in combination: a generally hemispherical ball socket within said housing; a ball, including a part in contact with said socket; a pin shaft extending from said ball through said opening; supporting means in said housing near said opening; and a discontinuous elastically deformable, but operatively rigid and closed locking ring supported by said supporting means and at least partly surrounding a portion of said ball, having an inner width smaller than the largest diameter of the ball, and being positioned between said largest diameter of said ball and said supporting means, whereby the ball is restrained from being removed off said ball socket when said pin shaft is pulled in a direction away from said ball socket.

4,230,416

RESTRICTED SLOT NAIL OPENINGS FOR SHEET METAL FRAMING CONNECTORS

Tyrell T. Gibb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.

Filed Oct. 15, 1979, Ser. No. 84,722

Int. Cl.³ F16B 9/00; E04B 1/38

U.S. Cl. 403—232.1

9 Claims

1. A metal connector for joining first and second wood members which intersect at an angle of less than 90 degrees comprising:
- a first member having a planar section adapted for flush mounting against said first member formed with a first restricted slot opening therethrough;
 - a second member joined to said first member and intersecting said first member at an angle less than 90 degrees and having a planar section adapted for flush mounting against said second wood member;
 - a first nail fastener having a shank with a uniform diameter and a head having a diameter greater than the diameter of said shank, adapted for being driven into said first wood member;
 - said first nail fastener and said planar section of said first member form a first selected angle; and
 - said first restricted slot opening is formed with a width slightly larger than the diameter of said first nail fastener

and is formed with a length greater than the diameter of said first nail so that when said first nail is inserted through said first restricted slot opening at said first selected angle



the diagonally opposed outer edges of the sides of said first restricted slot opening tangentially register with opposed sides of said first fastener and relative movement between said nail fastener and said connector is prevented.

4,230,417

MODULE FOR MODULAR TROPHY BASE

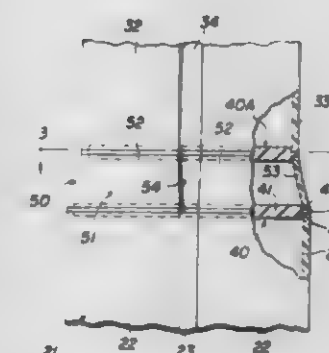
Allen Weiss, Chicago, Ill., assignor to Alamar Associates, Glenview, Ill.

Filed Feb. 16, 1979, Ser. No. 12,826

Int. Cl.³ B25G 3/00

U.S. Cl. 403—301

10 Claims



1. A transition module for use in constructing a modular trophy base which includes a column module having end plates at the upper and lower ends thereof, said transition module comprising a closed peripheral side wall having two opposite ends, the perimeter of one of said ends of said side wall defining a first predetermined closed figure and the perimeter of the other of said ends of said side wall defining a second predetermined closed figure substantially different from said first figure, at least one of said ends of said side wall being shaped and dimensioned for mating engagement with an end plate of the associated column module, the other of said ends of said side wall being shaped and dimensioned for mating engagement with an end plate of another associated member, whereby said transition module may form a transition between the associated column module and another member.

4,230,418

THERMAL PROTECTIVE DEVICE FOR TABULAR ICEBERGS

Georges L. Mougia, Paris, France, assignor to ITI Limited, Paris, France

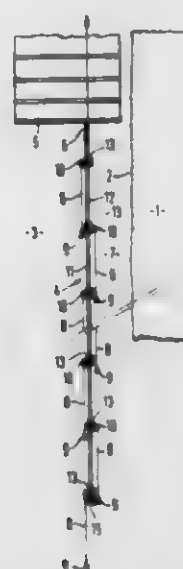
Filed Sep. 21, 1978, Ser. No. 944,286

Claims priority, application France, Oct. 3, 1977, 77 29630

Int. Cl.² E02B 1/00

U.S. Cl. 405—52

8 Claims



1. A protective device for thermally protecting the side of an iceberg floating in warm sea by producing a vertical layer of calm water between the protective device and the side wall of the protected iceberg, wherein a thermal protective device is suspended from a mechanical protective device floating in the warm seawater independently of the protected iceberg, and the thermal protective device comprises panels of material disposed at the side of the iceberg, each of said panels having a width greater than its height, being suspended from horizontal cables passing through a top hem of the panel and being stretched taut by a horizontal cable passing through a bottom hem of the panel, said horizontal cable being fastened to runners threaded onto a suspension cable and a lifting cable.

4,230,419

HINGED FLOAT ATTACHMENT SYSTEM

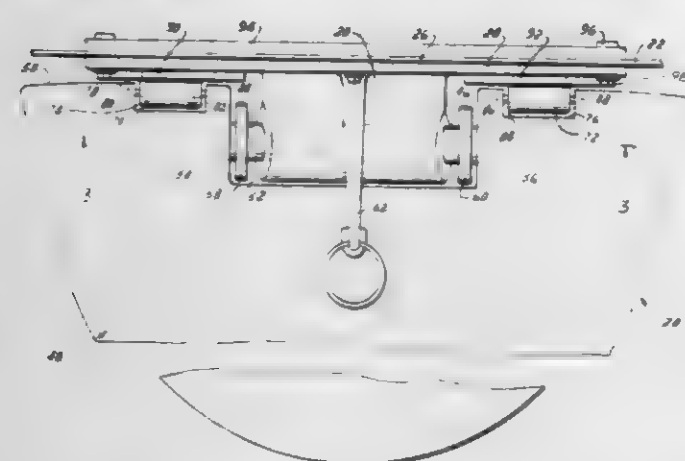
David F. McConaughy, East Aurora, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,091

Int. Cl.² E02B 15/04

U.S. Cl. 405—66

11 Claims



1. A float assembly adapted to be mounted on an elongated collapsible belt to form a floatable boom comprising; a support with attachment means for mounting the float assembly on the belt, a float member hinged to the support to be rotatable about an axis substantially parallel to the longitudinal axis of the belt between a first position adjacent to the belt for storage and a second position laterally extended from the belt for facilitating floatation of the boom, the float member being mounted for and restricted to limited angular displacement with respect to

the longitudinal axis of the belt when in the second position and releasable means to retain the float member in the second position during use and releasable to permit the float to fall by gravity and rotate about the axis substantially parallel to the longitudinal axis of the belt into the first position in close adjacent relationship to the belt.

4,230,420

SEMI-SUBMERSIBLE PIPELAYING VESSEL HAVING AN IMPROVED PIPELAYING PATH

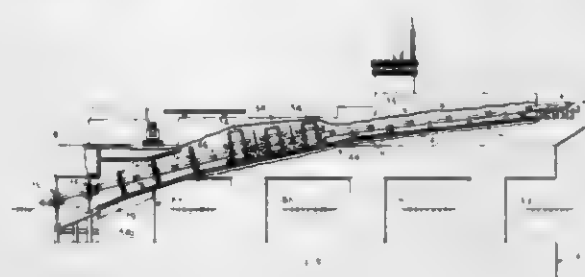
Fred I. Chow, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Oct. 12, 1978, Ser. No. 950,860

Int. Cl.² B63B 35/04; F16L 1/04

U.S. Cl. 405—166

8 Claims



1. A semi-submersible pipeline laying vessel comprising an upper deck member having a longitudinally directed pass-through opening, at least one lower submersible buoyancy member, a plurality of bow-to-stern spaced support members connected between said buoyancy member and said deck member for supporting said deck member in an upward, spaced-apart relationship with said buoyancy member, at least one of said support members at a stern portion of the vessel having a longitudinally directed vertical cut-away section extending through an interior section thereof to define port and starboard portions of said at least one support member, and said section being aligned with said deck opening, a pipelaying means partially supported by and above said deck member for fabricating a pipeline from a plurality of pipelengths, said pipelaying means comprising a plurality of operating stations arranged along a pipeline path, said path extending longitudinally of said vessel from an above deck position to a below deck position at the stern of said vessel, and in alignment with and passing through said deck pass-through opening and said one support vertical cut-away section, whereby said pipeline is at least partially shielded from port and starboard directed lateral wave action forces by said one support when said pipeline is below the level of said deck member.

4,230,421

SELF PROPELLED DYNAMICALLY POSITIONED REEL PIPE LAYING SHIP

Charles N. Springett, Santa Ana; Dan Abramovich, Mission Viejo; Stanley T. Uyeda, Orange, and E. John Radu, Fountain Valley, all of Calif., assignors to Santa Fe International Corporation, Orange, Calif.

Filed May 5, 1978, Ser. No. 903,180

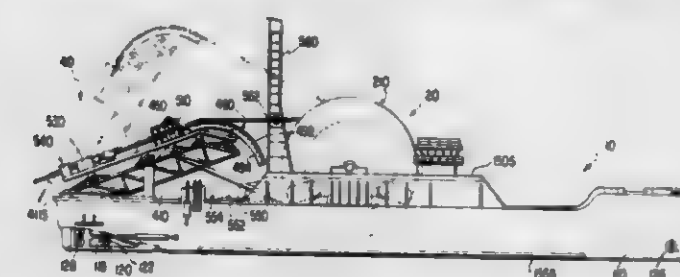
Int. Cl.² F16L 1/00; B63B 35/04

U.S. Cl. 405—168

39 Claims

1. A reel pipelaying ship having forward, midship and stern sections, comprising: port and starboard side outer longitudinally extending hull members; port and starboard side pairs of inner longitudinally extending bulkheads; a generally horizontal baseline at the ship's bottom;

a generally horizontal tank top spaced from and above the baseline;
a generally horizontal main deck spaced from and above the tank top;
a plurality of transverse bulkheads spaced fore and aft from each other, at least some of said transverse bulkheads extending substantially across the beam of the ship and others of said transverse bulkheads extending only partially across the beam of the ship, wherein said some and others of said bulkheads define at least in part a well adapted to receive a pipe-carrying reel;
port and starboard side upper and lower substantially horizontal midship structural members spaced one above the other and spaced from and above the main deck, said midship structural members extending longitudinally for



at least a part of the length of the ship, wherein said midship structural members, in combination with portions of said outer hull members and said inner longitudinal bulkheads extending above the main deck level, comprise a pair of port and starboard side boxbeam reel support structures;
a pipe-carrying reel; and
a pair of reel support bearing assemblies mounting said reel to said box-beam reel support structures such that the bearing assemblies rest on the upper end portions of a respective pair of said inner longitudinal bulkheads; wherein said reel support structure distributes the load of said reel and bearings downwardly and longitudinally outwardly through said inner longitudinal bulkheads and transversely through said tank top and baseline.

4,230,422

SUBMERGED OFFSHORE STORAGE FACILITY

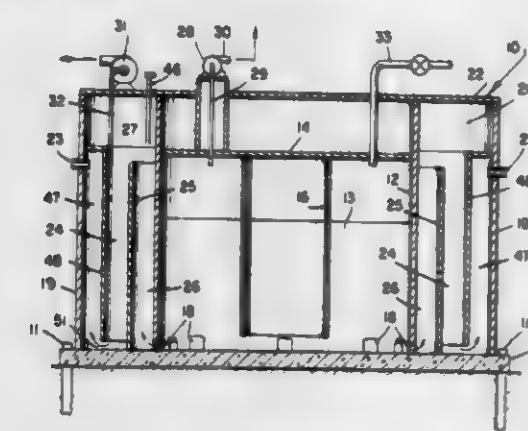
George R. Brown, Lagos, Nigeria; Joseph C. Carroll, Abqaiq, Saudi Arabia, and S. Elliott Dubuison, Kokkedal, Denmark, assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 925,133, Jul. 17, 1978. This application Mar. 19, 1979, Ser. No. 21,860

Int. Cl.² B65G 5/00; E02D 27/38, 29/00

U.S. Cl. 405—210

5 Claims



1. Method for subsea storage of a liquid having a lesser density than water, within a submerged storage tank having a storage compartment, and an overflow compartment communicated therewith, which method includes the steps of; maintaining said submerged storage compartment full of water and said liquid having a lesser density than water, communicating the lower section of said storage compart-

ment with the surrounding water to permit passage of the water to and from said tank storage compartment, periodically introducing an amount of the less dense liquid into the storage compartment whereby to depress the level of the less dense liquid therein so as to discharge a stream of said water from the storage compartment lower end, said stream having a minor amount of the less dense liquid carried therewith, passing said stream of displaced water and lighter liquid into said overflow compartment whereby to change the stream's directional flow, permitting the respective liquids to separate in said overflow compartment whereby the lighter liquid rises to the surface, and the water continues through said overflow compartment, and periodically removing the lesser density liquid from said overflow compartment, thereby avoiding inadvertent pollution by the less dense liquid, when water from the overflow compartment is passed to the seawater in which the storage tank is submerged.

4,230,423

ICE-BREAKING APPARATUS FOR STRUCTURE FOR USE IN ICY WATERS

Masanao Oshima; Mikihisa Komoto; Shoichi Yabuki, and Tsuneo Inokawa, all of Tokyo, Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

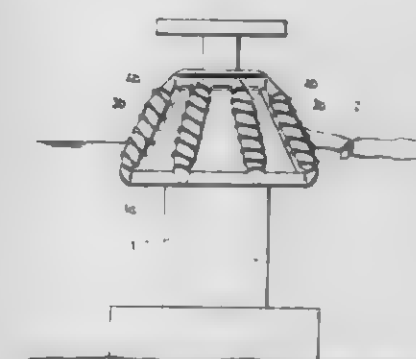
Filed Nov. 23, 1977, Ser. No. 854,104

Claims priority, application Japan, Nov. 24, 1976, 51-140222

Int. Cl.² E02B 17/00; B63B 35/12

U.S. Cl. 405—211

2 Claims



1. An ice-breaking apparatus for a structure used in water containing ice floes, said apparatus comprising: a central mounting means having a downwardly expanding frustoconical shape mounted on said structure at the level of the ice floes; a plurality of body means each said body means having a generally cylindrical shape with the axial centerlines of said plurality of body means forming a downwardly expanding frustoconical shape in outline, each said body means rotatably mounted on and spaced around the periphery of said central mounting means; and a spiral blade means mounted on a peripheral edge of each said body means; wherein as said body means are rotated and the ice floes contact at least one spiral blade means, said spiral blade means is driven into an edge portion of the ice floe and either raises or lowers the ice floe to subject the ice floe to a bending force for causing the ice floe to break into relatively large plate-like pieces which are pushed sideways of said body means by virtue of said body means rotary action to effectively prevent damage to said central mounting means by the ice floe.

4,230,424

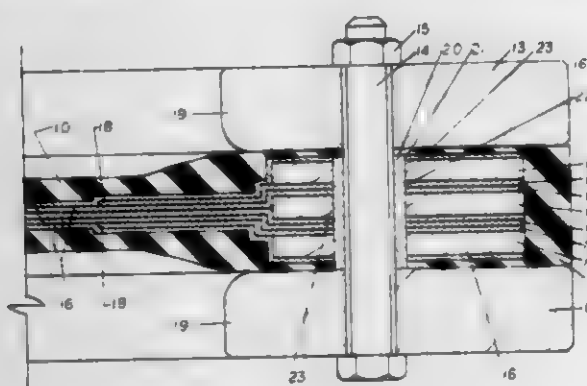
LEG CLOSURE

Bob L. Sullaway, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 31, 1979, Ser. No. 71,439
Int. Cl.³ E02D 5/52

U.S. Cl. 405-227

23 Claims



1. In combination, a diaphragm and annular diaphragm retaining means retaining said diaphragm therein, said diaphragm comprising:

flexible member means having a peripheral portion and an inner portion;

annular substantially rectangular cross-sectionally shaped reinforcing member means located in the peripheral portion of said flexible member means;

first reinforcing means having a peripheral portion bonded to said reinforcing member means and extending through the peripheral portion and through the inner portion of said flexible member means; and

second reinforcing means having a peripheral portion secured in the peripheral portion of said flexible member means and extending inwardly into the inner portion of said flexible member means and terminating inwardly of said reinforcing member means and the inner diameter of said annular diaphragm retaining means with said second reinforcing means overlaying a portion of the inner portion of said reinforcing means, whereby when said diaphragm is deformed into engagement with the inner diameter of said annular diaphragm retaining means, said second reinforcing means provides additional reinforcement to said diaphragm in the portion of said diaphragm deformed into engagement with said annular diaphragm retaining means.

4,230,425

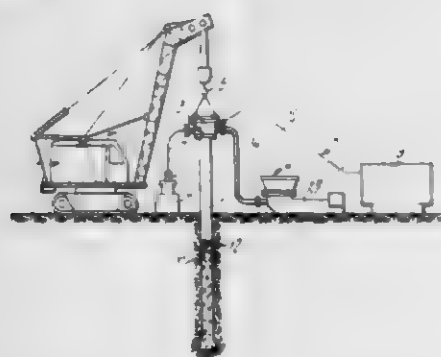
METHOD AND INSTALLATION FOR PRODUCING CAST-IN-SITU PILES

Vladimir A. Gusev, Yaroslavl val. 15a, kv. 5; Jury I. Oprisko, ulitsa Bogomoltsa, 7/14, kv. 18, both of Kiev, and Alexandr P. Sorochinsky, ulitsa Vokzalnaya, 19, kv. 49, poselok Glevskha, Kievskoi oblasti, all of U.S.S.R.

Filed Mar. 19, 1979, Ser. No. 21,490
Int. Cl.³ E02D 5/38, 7/18, 7/26, 7/28

U.S. Cl. 405-239

48 Claims



1. A method for producing cast-in-situ piles, comprising

setting a casing pipe on the ground, feeding a fluid into the casing pipe, passing electric pulses through the fluid to produce electric discharges having parameters such that permit hydraulic shock waves to be formed at the lower portion of said casing pipe, acting on the ground and on said casing pipe so as to drive the latter into the ground to a prescribed depth, whereafter the casing pipe is pulled from the ground as concrete mix is concurrently fed into said casing pipe and electric discharges are produced in the concrete mix to compact it.

29. An installation for producing cast-in-situ piles, comprising:

a casing pipe having an upper butt end and a lower butt end; a pile puller coupled to said casing pipe and intended to set said casing pipe on the ground, support it and pull it from the ground;

a pile driver coupled to said casing pipe and comprising: a fluid feed system communicating with said casing pipe; a pulse device comprising: electrodes installed in said casing pipe close to its lower butt end;

an electric pulse generator arranged in proximity to said casing pipe, electrically connected to said electrodes and intended to generate electric pulses to produce electric discharges between said electrodes, whereby hydraulic shock waves are formed in the fluid fed into said casing pipe, which act on the ground and on said casing pipe and drive said casing pipe into the ground;

a concrete feeder operably coupled to said casing pipe and intended to feed concrete mix into said casing pipe as it is pulled from the ground.

4,230,426

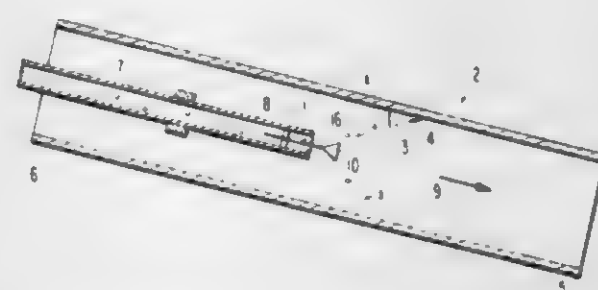
METHOD FOR TREATING CONDUIT TO IMPROVE FLOW CHARACTERISTIC AND RESULTING CONDUIT PRODUCT

Hugh E. Avery, Jr., Houston, and Jerome I. Paulsen, Spring, both of Tex., assignors to Allied Industries, Inc., Houston, Tex.

Filed Mar. 20, 1979, Ser. No. 22,095
Int. Cl.³ B65G 53/00

U.S. Cl. 406-191

6 Claims



1. In a method of reducing the formation of fines and streamers in the gas conveying of plastic particles wherein the interior of a plurality of particle conveying conduit sections are treated by

shot-peening the interior wall means of each of said sections, with shot being impacted against said wall means of each of said section at an acute, impacting angle, the apex of which points generally longitudinally of each said section toward one end thereof;

the improvement comprising:

assembling said plurality of shot-peened, particle conveying conduit sections to define conduit means wherein the apexes of said acute, impacting angles all point generally in an intended longitudinal flow direction of said plastic particles; flowing said plastic particles through said assembly of shot-peened particle conveying conduit sections in said intended flow direction with

the generally longitudinal flow direction of said particles through each said section forming, at the shot-peened interior wall means thereof, an acute, particle flow to shot impact directions related angle, with respect to the direc-

tions of impacting of said shot, with these angles being oriented in each of said sections with the angle apex thereof generally pointing toward said one end thereof; and

maintaining said orientation of said particle flow to shot impact related angles through said conduit means, thereby reducing the level of fines which would be generated by a reversal of said flow direction of said plastic particles.

4,230,427

BOTTOM FACE MILL

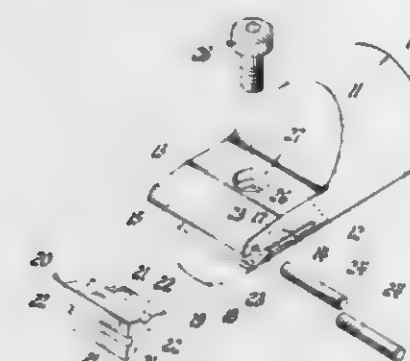
Stanley C. Beltari, 4451 Cedar, West Bloomfield, Mich. 48013, and Mark Jacobson, 3865 Benstein, Milford, Mich. 48042

Filed Dec. 6, 1978, Ser. No. 966,784

Int. Cl.³ B26D 1/12

U.S. Cl. 407-91

2 Claims



1. The combination of a tool and a holder, characterized in that:

(a) the holder comprises an elongated body which has a front end provided with a V-shaped transverse notch that has two inwardly converging wall surfaces;

(b) said holder body has a transverse, longitudinal slot, in the front end thereof, and the inner ends of the converging wall surfaces of said V-shaped notch terminate at the outer end of said longitudinal slot so as to communicate with said slot and divide the front end of the elongated holder body into a pair of spaced apart clamping jaws;

(c) a triangular cutting tool is seated in said V-shaped notch; (d) there is means for releasably securing said triangular cutting tool in said V-shaped notch in said holder body;

(e) said means for releasably securing said cutting tool in said V-shaped notch in said holder including retainer pin means operatively mounted between the holder body and the triangular cutting tool; and

(f) said retainer pin means includes at least one retainer pin which is operatively mounted in an elongated hole formed by a pair of opposing half-round grooves which are formed with one half-round groove in the holder body and with the other half-round groove in the triangular cutting tool.

4,230,428

MATERIAL SAVING CUTTER BLADE

Edward W. Haug, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Continuation of Ser. No. 790,779, Apr. 25, 1977, abandoned.

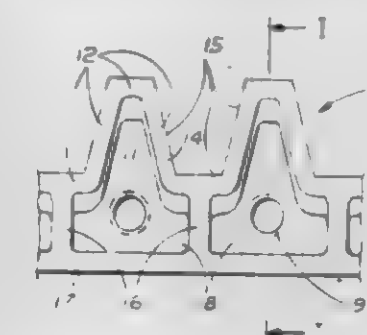
This application Jun. 18, 1979, Ser. No. 49,851

Int. Cl.³ B26D 1/00, 1/12

U.S. Cl. 407-116

6 Claims

1. A chip removing cutter blade for use in metal working comprising a monolithic body of molded metal cutting material with a plurality of deep material saving recesses molded therein, a substantially flat base, a wall extending from a side of said base, a plurality of spaced abutments interconnecting the wall and said base; said base, the wall and said plurality of abutments defining said plurality of deep material saving re-



to produce a cutting face, the intersection of said cutting face and the contoured outside of said wall creating a cutting edge.

4,230,429

BORING TOOL FOR MAKING BORINGS IN SOLID METAL MATERIAL OF WORKPIECES

Otto Eckle, Lichgau, Fed. Rep. of Germany, assignor to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,532

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 7721135

Int. Cl.³ B23B 51/00

U.S. Cl. 408-186

8 Claims



1. A boring tool comprising a shaft and at least two cutting bits, each said bit being hexagonal with its cutting edges equally long and arranged in pairs, said cutting bits being exchangeable and each arranged in a respective recess facing in the direction of rotation of said shaft, each said cutting bit having one said pair of its said cutting edges arranged for simultaneous effective engagement with a workpiece, said pair of effective cutting edges of every cutting bit forming an obtuse angle (α) therebetween straddling a line parallel to the shaft axis and each defining substantially the same angle ($\alpha/2$) with said line parallel to the shaft axis, wherein said cutting bits are circumferentially spaced at equal angular distances on said shaft, said cutting bits being located at different radial distances from the axis of said shaft and such that the operative region of the effective cutting edges of each cutting bit somewhat radially overlaps the operative region of the effective cutting edges of the radially adjacent cutting bit, and one effective cutting edge of the radially inner cutting bit borders directly on said shaft axis or slightly overlaps same, the radially outermost cutting bit having its radially outermost effective cutting edge of its pair of effective cutting edges extending radially outward beyond the shaft periphery and meeting the adjacent cutting edge of the adjacent cutting edge pair in a further angle less than said obtuse angle (α) such that said adjacent cutting edge angles away from and does not engage the peripheral wall of a hole bored by said tool and converges toward the axis of the shaft.

8. A boring tool comprising a shaft and at least two cutting bits, each said bit having several equally long cutting edges, said cutting bits being exchangeable and each arranged in a respective recess facing in the direction of rotation of said

shaft, each said cutting bit having two of its said cutting edges arranged for simultaneous effective engagement with a work-piece, said two effective cutting edges of every cutting bit each defining substantially the same angle with a line parallel to the shaft axis, wherein said cutting bits are circumferentially spaced at equal angular distances on said shaft, said cutting bits being located at different radial distances from the axis of said shaft and such that the operative region of the effective cutting edges of each cutting bit somewhat radially overlaps the operative region of the effective cutting edges of the radially adjacent cutting bit, and one cutting edge of the radially inner cutting bit borders directly on said shaft axis or slightly overlaps same, in which said cutting bits radially stepped out from said shaft axis are progressively narrower in the radial extent of their cutting edge pairs.

4,230,430

COLLAPSIBLE FIFTH WHEEL TRAILER HITCH LOCKED POSITION INDICATOR

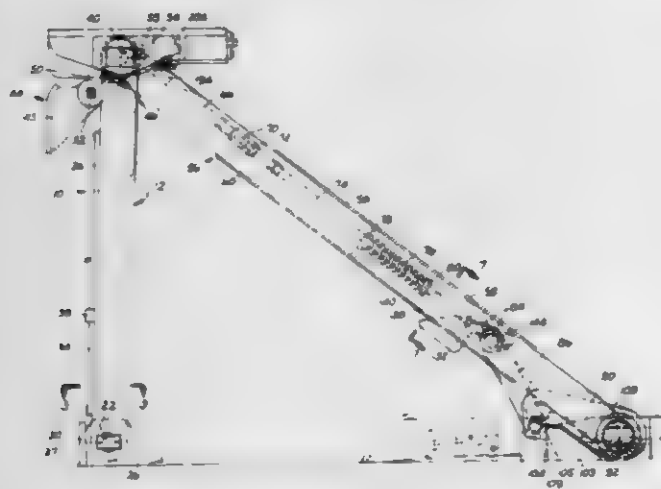
Patricia S. Stoller, 1450 Ann Arbor Rd. #34 Plymouth Sq., Plymouth, Mich. 48170; James C. Hammonds, 10C Fairway Cir., St. Charles, Mo. 63301, and Ronald D. Van Dyke, 26 Hammes, Florissant, Mo. 63031

Filed Jan. 31, 1979, Ser. No. 8,224

Int. Cl.³ B60P 3/06; B61D 45/00; B65J 1/22

U.S. Cl. 410—59

4 Claims



1. In a piggyback railway trailer hitch, including a vertical shaft and a partially hollow diagonal strut, at least one movable, hook-shaped locking lug pivotally mounted about a pin in the diagonal strut; said movable locking lug adapted to engage a fixed locking lug located on the side of the hitch when said hitch assumes the upright position; a link extending from the distal end of the movable locking lug to a shaft located in the diagonal strut; said shaft extending transversely of the hitch; an indicating arm pivotally mounted upon said diagonal strut and located above the deck of the car; said indicating arm including a lower surface which engages the shaft; said lower surface including a slot which the shaft engages when said movable locking lug is locked in the upright position; said indicating arm having a distal end which extends into view below the diagonal strut when said shaft engages said slot to indicate to the operator that the hitch is locked in the upright position; the lower surface of said indicating arm including a surface portion laterally spaced from said slot which said shaft engages when said movable locking lug is in the disengaged position with said fixed locking lug, whereby when said shaft engages said surface portion, said indicating arm is pivoted to a position located within said diagonal strut to indicate to the operator that the hitch is in the unlocked, upright position.

4,230,431 TRACTOR OPERATED FIFTH WHEEL HITCH STAND DIAGONAL STRUT LINKAGE

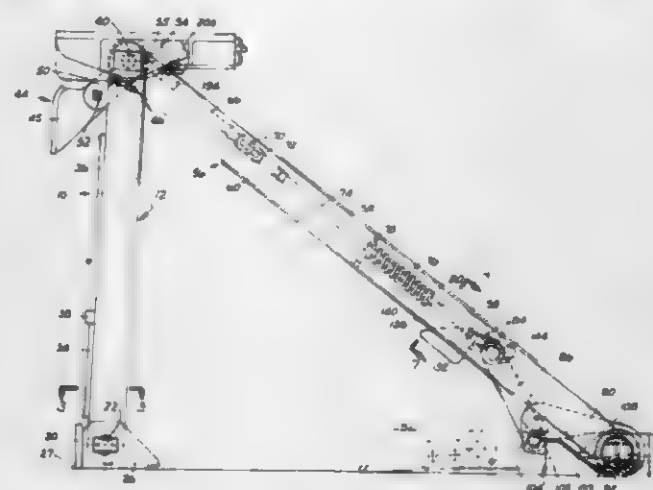
Patricia S. Stoller, 1450 Ann Arbor Rd. #34 Plymouth Sq., Plymouth, Mich. 48170; James C. Hammonds, 10C Fairway Cir., St. Charles, Mo. 63301, and Ronald D. Van Dyke, 26 Hammes, Florissant, Mo. 63031

Filed Jan. 31, 1979, Ser. No. 7,863

Int. Cl.³ B60P 3/06; B61D 45/00; B65J 1/22

U.S. Cl. 410—59

7 Claims



1. A trailer hitch comprising: a diagonal strut linkage rigidly attached to a bumper block assembly which is pivotally mounted about a pin supported for rotation upon a vertical strut; said linkage extending within a hitch diagonal strut; a transversely extending shaft attached to the lower portion of said linkage; at least one movable locking link attached to an outer end of said shaft; said movable locking link engaging the distal end of a locking member pivotally mounted upon a bar located at the lower end of the diagonal strut; said locking member engaging at least one fixed locking lug when said diagonal strut linkage is in the extended position within said diagonal strut; resilient means biasing said linkage into a downward position within said strut; and guide means located within said diagonal strut allowing vertical movement of said linkage within said strut as said linkage rotates about said pin as said linkage is moved longitudinally within said strut against the bias of said resilient means; said guide means comprising a guide plate located in said diagonal strut rigidly connected to said diagonal strut having a vertical slot therein for effecting said vertical movement; and said resilient means comprising a spring attached to said guide plate and to a spring plate attached to said linkage.

4,230,432

TRACK FASTENER

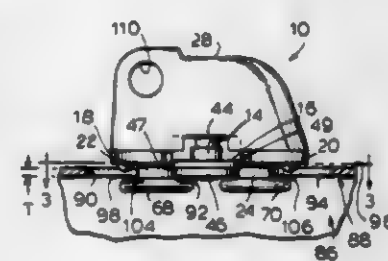
Russell B. Howell, Winston-Salem, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.

Filed Feb. 27, 1979, Ser. No. 16,123

Int. Cl.³ B60N 1/08; B60P 7/08; B61D 45/00

U.S. Cl. 410—102

8 Claims



1. Track fastener apparatus having an unlocked and locked configuration for use with a locking track with an upper surface portion having an upper and lower surface with a slot with spaced cut-out portions extending through the upper

surface portion from the upper to the lower surface thereof comprising: a track fastener housing having an upper portion and a lower portion and a threaded aperture extending from the upper portion to the lower portion thereof; means connected to said housing for exerting pressure against the lower surface of the upper surface portion of said locking track at two separate locations along said locking track between said spaced cut-out portions when said track fastener apparatus is in the locked configuration; said means for exerting pressure against the lower surface at two separate locations along said locking track comprising two separated track studs each having an upper portion connected to the lower portion of said track fastener housing on opposite sides of the threaded aperture in said track fastener housing and each having an enlarged lower end portion adapted to fit into the cut-out portions of the upper surface portion of said locking track; plastic sliding means located on the lower portion of said track fastener housing in position to bear upon the upper surface of the upper surface portion of said locking track when said track fastener apparatus is in the unlocked configuration for reducing friction and permitting said track fastener apparatus to be slid along the upper surface of the upper surface portion of said locking track; and means for exerting a force against the upper surface of the upper surface portion of said locking track in the vicinity of one of said spaced cut-out portions when said track fastener apparatus is in the locked configuration; said means for exerting a force against the upper surface in the vicinity of one of said spaced cut-out portions including a track wedge member with an upper surface having a centrally located aperture extending to the upper surface and a locking screw having an unthreaded portion with an end portion sized to slip into the aperture in said track wedge member, said locking screw having an enlarged section located adjacent to the end portion creating a shoulder adapted to contact and exert force upon the upper surface of said track wedge member and a cylindrical threaded portion insertable into the threaded aperture extending from the upper portion to the lower portion of said track fastener housing; said track wedge member having a lower portion sized to be received in the cut-out portions of the upper surface portion of said locking track and an enlarged upper portion adapted to contact the upper surface of the upper surface portion of said locking track in the vicinity of the cut-out which receives the lower portion of said wedge member when said track fastener apparatus is in its locked configuration.

4,230,433

BALE COLLECTOR

Michael V. Jackson, Hethersett, England, assignor to Farmhand (U.K.) Limited, Wymondham, England

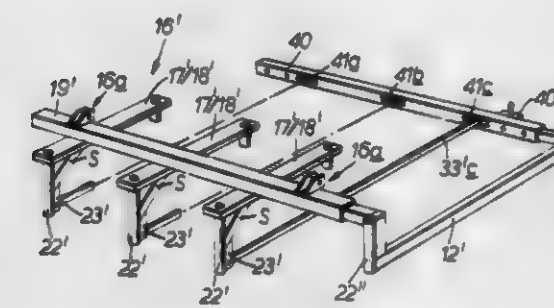
Continuation of Ser. No. 722,630, Sep. 13, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,394

Claims priority, application United Kingdom, Sep. 15, 1975, 37786/75

Int. Cl.² A01D 87/12

U.S. Cl. 414—111

1 Claim



1. A releasable attachment for the conversion into a combined collector/loader of a bale loading mechanism having a main frame which supports bale-gripping means and is adapted to be mounted on an agricultural tractor for transport of bales gripped by the bale-gripping means, wherein said attachment

comprises a sub-frame which carries a set of bale-guiding components constructed and adapted to cause bales to be guided into their respective relative positions in an array which can be gripped in its entirety by said gripping means, and further comprises connecting means releasably engagable with cooperating means on said main frame for securing said sub-frame in correct working relation to said main frame and securing means for releasably securing said sub-frame to said main frame in said correct working relation, and wherein said connecting means on said sub-frame are spaced apart on a front member thereof for engagement with correspondingly spaced cooperating means on a front member of said main frame in such manner that when engaged, rearward and vertical movement of said sub-frame relative to said main frame are precluded, and wherein said securing means are located on a rear member of said sub-frame, said arrangement permitting connection of said bale loading mechanism to said attachment by lowering the mechanism onto the attachment, engaging said connecting means with said cooperating means by forward movement of said bale-loading mechanism relative to the attachment, and securing said sub-frame to said main frame by said securing means.

4,230,434

LIFT TRUCK LOAD-HANDLING ATTACHMENT HAVING INTEGRAL QUICK-DISCONNECT HOOK

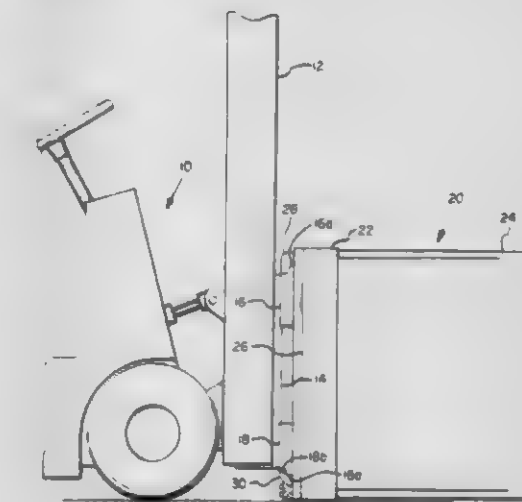
Richard D. Seaberg, Vancouver, Wash., assignor to Cascade Corporation, Portland, Oreg.

Filed Aug. 24, 1979, Ser. No. 69,599

Int. Cl.³ B66F 9/075

U.S. Cl. 414—607

10 Claims



1. A load-handling attachment, adapted for mounting upon the front of a vertically-movable lift truck load carriage having an attachment mounting member thereof of the type which includes a lip having a rearwardly-facing surface, comprising: a frame with a rearwardly-facing surface adapted to abut against the front of said load carriage; hook means mounted upon the rearwardly-facing surface of said frame for selectively matingly engaging or disengaging said lip, said hook means comprising a lug pivotally attached to the rearwardly-facing surface of said frame so as to rotate about an axis extending generally from the front to the rear of said frame, said lug having engagement means for matingly engaging the rearwardly-facing surface of said lip when said lug is in a predetermined rotatable position relative to said frame; locking means attached to said hook means and said frame for selectively locking said lug, to prevent rotation thereof from said predetermined rotatable position, or unlocking said lug so as to permit rotation thereof; and means interconnecting said locking means with said frame for preventing detachment of said locking means from said frame during selective locking and unlocking of said lug by said locking means.

4,230,435

BACKHOE FINISHING TOOL

Albert J. Azevedo, 1171 Limerick Ln., Healdsburg, Calif. 95448

Filed Jul. 21, 1978, Ser. No. 927,171

Int. Cl.³ E02F 3/81

U.S. Cl. 414-722

3 Claims

**1. In combination with a backhoe including:**

- a boom;
- a bucket pivotally mounted on the end of said boom;
- a row of teeth along the lip of said bucket;
- a pair of generally parallel brackets along the back of said bucket;
- a pair of links connecting said bracket and said boom; and
- hydraulic means connecting said boom and said links for tilting said bucket between a raking position with the ends of said teeth disposed downwardly, digging position with said teeth disposed downwardly and in the direction of said boom, and a carrying position with said teeth disposed upwardly;
- a surface finisher means for scraping and leveling a trench comprising:
 - an arm pivoted on said brackets to depend therefrom;
 - a scraper of approximately the width of said bucket and having a blunt, flat bottom edge fixed on the end of said arm; and
 - stop means on said arm to limit pivotal movement thereof away from said bucket when in said carrying position.

4,230,436

ROTOR/SIROUD CLEARANCE CONTROL SYSTEM

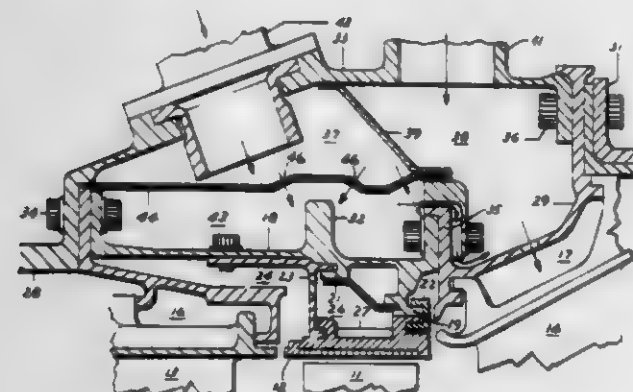
Samuel H. Davison, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 17, 1978, Ser. No. 925,352

Int. Cl.³ F01D 11/08

U.S. Cl. 415-1

37 Claims



- 1. In combination with apparatus of the type having a variable speed rotor, a shroud, and a shroud support with the shroud surrounding the rotor, an improved air delivery system for modulating thermal growth of the shroud support comprising:**

- (a) means for sensing the operating speed of the rotor;
- (b) means for timing the operation of the rotor after an acceleration; and
- (c) means responsive to said timing means and to the speed of the rotor for varying the temperature of the air.

4,230,437

COMPRESSOR SURGE CONTROL SYSTEM

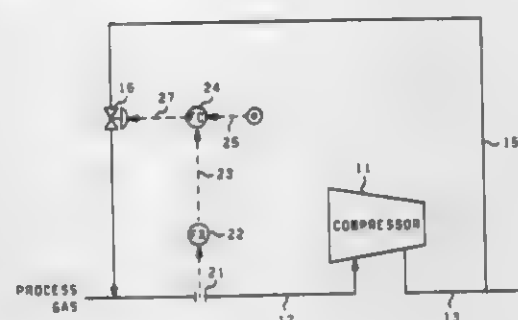
Robert M. Bellinger, and Hadwen A. Clayton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 15, 1979, Ser. No. 48,969

Int. Cl.³ F04D 27/02

U.S. Cl. 415-1

8 Claims

**1. Apparatus comprising:**

- a compressor means having a discharge outlet and a suction inlet;
- first conduit means for supplying a gas to the suction inlet of said compressor means;
- second conduit means for removing the compressed gas from the discharge outlet of said compressor means;
- third conduit means for recirculating gas from said second conduit means to said first conduit means;
- a control valve means operably located in said third conduit means;
- means for establishing a first signal representative of the flow rate of gas through said first conduit means;
- means for establishing a set point signal which varies in response to the position of said control valve means;
- means for comparing said first signal and said set point signal and for establishing a second signal responsive to the difference between said first signal and said set point signal; and
- means for manipulating said control valve means in response to said second signal to thereby control the flow of gas through said third conduit means so as to both prevent surging of said compressor means and substantially minimize the recirculation of gas from said second conduit means to said first conduit means.

4,230,438

ROTARY PUMP ASSEMBLY

Wilfried Lehmann, Heiligenstedten; Hermann Muller, Oldendorf, and Bodo Baranek, Wilster, all of Fed. Rep. of Germany, assignors to Sihi GmbH & Co. KG, Itzehoe, Fed. Rep. of Germany

Continuation of Ser. No. 901,842, May 1, 1978, abandoned, which is a continuation of Ser. No. 701,754, Jun. 30, 1976, abandoned. This application May 2, 1979, Ser. No. 35,224

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1975, 2529458

Int. Cl.³ F04D 29/04

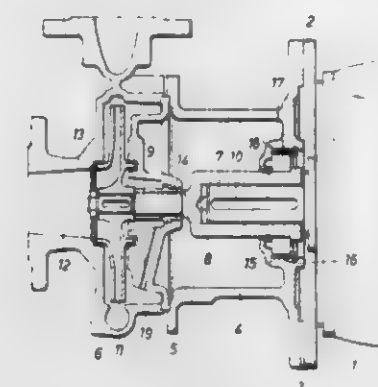
U.S. Cl. 415-122 R

4 Claims

- 1. A rotary pump assembly comprising:**
- a pump having a pump housing;
 - a pump shaft disposed within said pump housing;
 - a runner mounted concentrically on said pump shaft;
 - a motor having a motor housing a shaft coaxially aligned with said pump shaft;
 - an intermediate housing interconnected between said pump

and motor housings, said pump shaft having an end facing said motor, the pump shaft end being formed as a hollow shaft fittingly mounted coaxially on said motor shaft and secured for rotation therewith to form a cantilever arrangement thereon; and

bearing support means disposed in said intermediate housing and engaging said hollow shaft for supporting said pump shaft end for resisting only axial forces applied to said



pump shaft, said bearing support means consisting solely of an axial bearing engaging and securing said pump shaft end axially in said intermediate housing, radial forces applied to said pump shaft being resisted by the motor shaft, said intermediate housing having a bore, said axial bearing being axially secured to said intermediate housing in said bore and axially fixed with respect to said hollow shaft at locations where said hollow shaft receives said motor shaft.

4,230,439

AIR DELIVERY SYSTEM FOR REGULATING THERMAL GROWTH

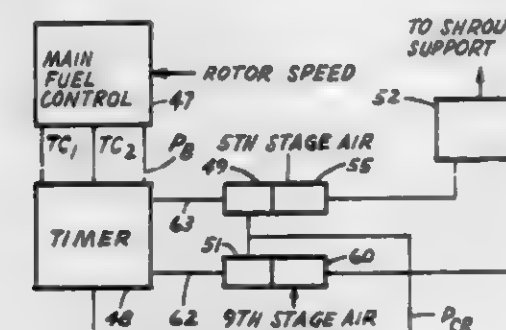
Joseph P. Smith, Jr., Cincinnati; Robert L. Mentzer, Wyoming, and Dana D. Freberg, Middletown, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 17, 1978, Ser. No. 925,353

Int. Cl.³ F01D 11/08

U.S. Cl. 415-138

23 Claims



- 1. In combination with apparatus of the type having a compressor, a rotor, a shroud, a shroud support surrounding the rotor, an air delivery system for providing air at varying temperatures to the shroud support comprising:**

- (a) first and second air sources, the temperature of said second air source being higher than that of said first air source;
- (b) first and second air valves for controlling the flow of air from said first and second air sources, respectively, to a manifold;
- (c) means for delivering air from the manifold to the support; and
- (d) valve means responsive to the speed of said rotor and to the time after reaching predetermined rotor speeds for operating said first and second air valves, said valve means including a timer valve which is activated when the speed of the rotor reaches a predetermined level with said timer valve including a piston which advances at a first substantially constant rate of speed upon receiving a first pre-

terminated rotor speed signal and which retracts at a second substantially constant rate of speed upon receiving a second predetermined rotor speed signal, wherein said valve means operates said first and second air valves in response to translation of said piston.

4,230,440

THROUGH FLOW SUMP PUMP

Karl O. Niedermeyer, 17WO68 North St., Bensenville, Ill. 60106

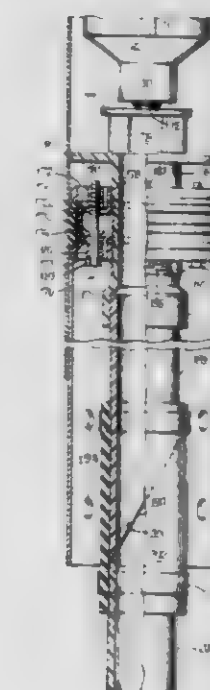
Division of Ser. No. 793,402, May 3, 1977, Pat. No. 4,177,021.

This application Apr. 4, 1979, Ser. No. 26,921

Int. Cl.³ F04B 35/04

U.S. Cl. 417-424

3 Claims



- 1. A pump for use as a sump pump or the like and comprising:**

- an electric motor including a waterproof housing of a given diameter, and a motor shaft defining an axis and with a portion of the shaft externally of said housing;
- a pump impeller affixed to said portion of said shaft;
- a pump shell having an internal diameter substantially greater than said given diameter and with ends beyond the impeller in one direction and beyond the motor in the other direction; and
- a reducer having a large end secured to said shell adjacent the first mentioned end, a tube mounted in said large end of the reducer for movement longitudinally along said axis and having portions at the impeller side of said large end and also at the opposite side thereof, said portion of the impeller side including a plate normal to the axis and having a periphery in juxtaposition to the inside of said pipe, said tube forming the intake for said pump.

4,230,441

OUTSIDE CORNER FINISHING TOOL

Joseph D. Heronema, 16309 Bellbrook, Covina, Calif. 91723

Filed Nov. 17, 1978, Ser. No. 961,620

Int. Cl.³ E04F 21/08

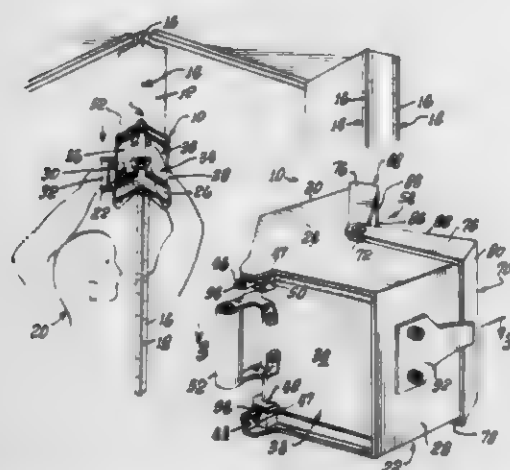
U.S. Cl. 425-87

11 Claims

- 1. A tool for simultaneously finishing first and second walls adjacent the edge of an outside corner with plastering material, the tool including:**

- a housing having peripheral walls constituting first and second side portions corresponding to the first and second walls, a back piston and a front which is at least partially open to form a container for the plastering material;
- means for applying force to said back piston to move said back piston toward said front so that the plastering mate-

rial can be forced toward said front and simultaneously applied to the first and second walls about the corner; at least two guide means adapted to track along the edge of the corner connected to said housing in position to engage the edge of the corner when plastering material is being applied thereto; a first wiper member connected to said housing about said first side portion adjacent said front thereof in position to



smooth and finish the plastering material as the material is applied to the first wall adjacent the corner and as said tool is moved therealong; and a second wiper member connected to said housing about said second side portion adjacent said front thereof in position to smooth and finish the plastering material as the material is applied to the second wall adjacent the corner and as said tool is moved therealong.

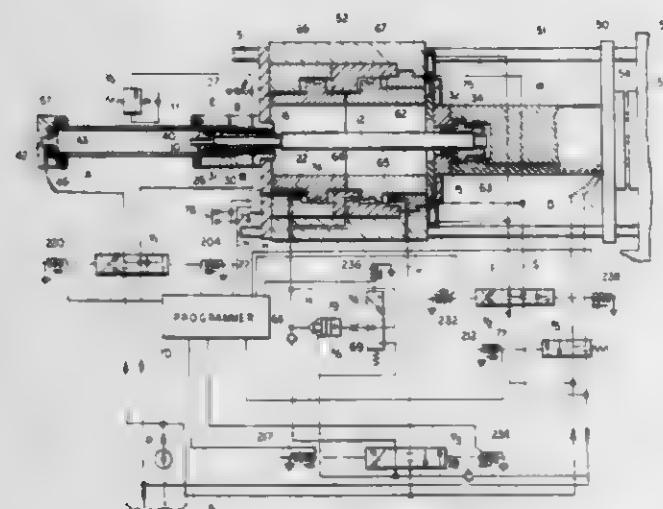
4,230,443 MOLD-CLAMPING MECHANISM FOR INJECTION-MOLDING MACHINE

Herbert Rees, Willowdale, and Allan H. Robinson, Mississauga, both of Canada, assignors to Husky Injection Molding Systems Limited, Bolton, Canada

Filed Aug. 21, 1979, Ser. No. 68,497
Int. Cl.³ B29C 1/16; B29F 1/00

U.S. Cl. 425—451.2

5 Claims



1. In an injection-molding machine provided with a fixed platen, a movable platen and actuating means for reciprocating said movable platen along an axis with reference to said fixed platen between a mold-open and a mold-closed position, the improvement wherein said actuating means comprises: a stationary cylinder provided with a driving piston reciprocable under pressure of a hydraulic liquid admitted into said cylinder; a thrust member rigid with said movable platen and connected with said driving piston by a lost-motion coupling; clamping means operable in an advanced position of said

driving piston, with said movable platen approaching said mold-closed position, to impart an extra forward motion to said thrust member independently of said driving piston within the limits of relative displaceability provided by said lost-motion coupling to complete the establishment of said mold-closed position; and unclamping means hydraulically operable in said mold-closed position for subjecting said thrust member to a rearward displacement relative to said driving piston while forcing the latter against a fixed stop, thereby separating said mold portions from each other preparatorily to a retraction of said driving piston together with said thrust member by said hydraulic liquid.

4,230,443 VAPORIZING BURNER

Hermann O. Berg, Florstadt; Peter Gulden, Erlangen; Hans Kostka, Nuremberg, and Alfred Michel, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

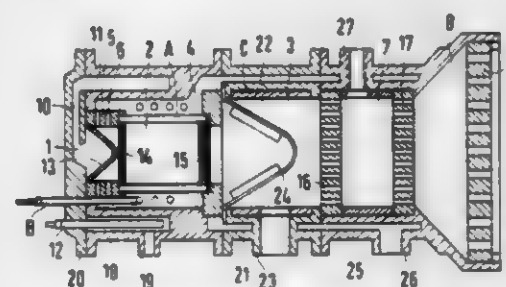
Filed Feb. 27, 1979, Ser. No. 16,329

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811273

Int. Cl.³ F23D 13/14, 13/40

U.S. Cl. 431—328

12 Claims



1. In a vaporizing burner, including an inlet chamber for admitting an at least partially vaporized liquid fuel with primary air; catalyzer means communicating with said inlet chamber for converting said vapor-air mixture into a fuel gas; a mixing chamber adjoining said catalyzer means for admixing said fuel gas with secondary air; and annular chamber concentrically encompassing said inlet chamber, said catalyzer means and said mixing chamber, including an annular wall separating said inlet chamber from said annular chamber; a conically widening chamber for receiving the fuel gas-air mixture from said mixing chamber; and an apertured burner plate of a porous material closing off said widening chamber, the improvement comprising: an antechamber arranged ahead of said inlet chamber, an annular passageway completely surrounding said inlet chamber and encompassing said annular chamber and said catalyzer means for at least a portion of their lengths, said antechamber including a transition into said annular passageway; a first heat source in said annular passageway for the vaporization of said fuel; a second heat source in said annular chamber for preheating of the primary air during burner start-up and for support during load changes, radial passageways in said annular wall for communicating said annular chamber with said inlet chamber; first and second homogenizing means being arranged in, respectively, said inlet chamber and in said mixing chamber; and an ignition chamber being positioned intermediate said conically widening chamber and said mixing chamber, said ignition chamber being separated from said mixing chamber so as to prevent backfiring of the ignited fuel gas.

4,230,444 METHOD AND APPARATUS FOR FUEL IGNITION SYSTEM INCLUDING COMPLETE CYCLING OF FLAME RELAY PRIOR TO TRIAL FOR IGNITION

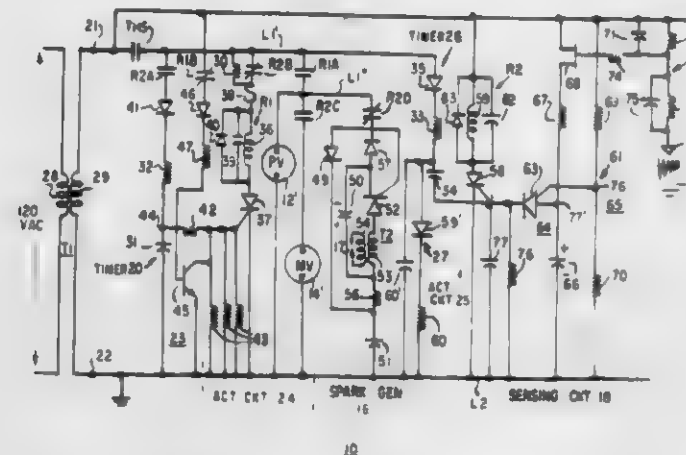
Russell B. Matthews, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Apr. 17, 1978, Ser. No. 897,761

Int. Cl.³ F23Q 9/08

U.S. Cl. 431—6

23 Claims



1. In a fuel ignition system including a pilot valve operable when energized to supply fuel to a burner for ignition by sparks provided by a spark generating means to provide a pilot flame, and a main valve operable when energized to supply fuel to said burner for ignition by the pilot flame, a control arrangement comprising: activate means for generating a start signal to initiate an ignition cycle; timing circuit means including a capacitor which is charged to a given value at the start of the ignition cycle and then discharged, permitting said timing circuit means to generate an enabling signal during a trial for ignition interval defined by the discharge time of said capacitor; first switching means for controlling the operation of said pilot valve; actuating means responsive to said enabling signal to enable said first switching means to energize said pilot valve during said trial for ignition interval; said timing circuit means normally terminating said enabling signal at the end of said trial for ignition interval to disable said actuating means whereby said first switching means is disabled, and flame sensing means operable when a flame is provided at said burner during said time interval to generate a control signal for application to said timing circuit means to cause said timing circuit means to continue to provide its enabling signal after the end of said trial for ignition interval to maintain said actuating means and thus said first switching means operated after said trial for ignition interval, said flame sensing means including control means and second switching means controlled by said control means to be enabled when a flame is sensed during said trial for ignition interval to energize said main valve.

4,230,445 BURNER FOR A FLUID FUEL

Hermann J. Janssen, Langnau, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Jun. 15, 1978, Ser. No. 915,724

Claims priority, application Switzerland, Jun. 17, 1977, 7451/77

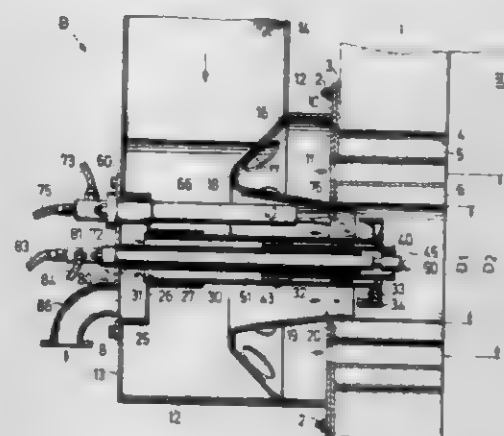
Int. Cl.³ F23L 7/00

U.S. Cl. 431—116

24 Claims

1. A burner for a fluid fuel, said burner comprising a fuel supply; means defining a first inner annular space for connection to a source of fresh air and having a plurality of swirl-inducing elements therein; means defining a second annular space for connection to a source of flue gas/air mixture about said first annular space and having a plurality of swirl-inducing elements therein; means defining a third annular space about said second

annular space for connection to a source of flue gas/air mixture; and



means defining a plurality of circumferentially distributed straight passages disposed around said third annular space and connected to a source of flue gas/air mixture.

4,230,446 CAMP LANTERN

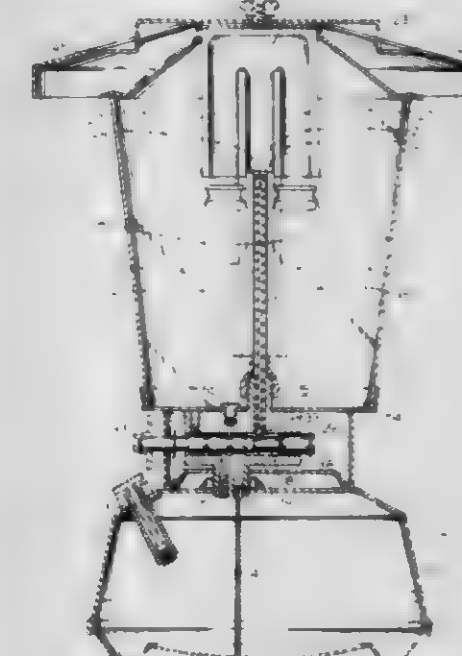
Robert E. Fisher, Glendora, Calif., assignor to Acroform Corporation, Los Angeles, Calif.

Filed Jun. 5, 1978, Ser. No. 912,507

Int. Cl.³ F23D 11/38

U.S. Cl. 431—123

8 Claims



1. A camp lantern spool valve assembly comprising: a hollow cylindrical valve chamber comprising in positional order (a) a sealed first end; (b) an outlet port; (c) a fuel inlet; (d) an air inlet; and (e) an open second end; a valve shaft axially slidably mounted within said chamber; means for limiting the axial movement of said shaft in said chamber, and first and second sealing means on said shaft for sealing the space between said shaft and said chamber; said first sealing means positioned intermediate said second end and said air inlet; and said second sealing means positioned either (a) intermediate said air inlet and said second end; (b) intermediate said air and fuel inlets, or (c) intermediate said fuel inlet and said outlet port, depending on the axial position of said shaft in said chamber;

wherein said sealing means comprises fuel resistant "O" rings mounted on said shaft;
 wherein said first end is sealed by a third "O" ring mounted on said shaft intermediate said first end and said outlet port;
 further comprising threaded means coupling said shaft to said chamber so that a rotation of said shaft results in an axial shaft motion relative to said chamber;
 wherein said shaft extends beyond both ends of said chamber, and wherein said means for limiting the axial movement of said shaft comprises a snap ring on each shaft end of greater diameter than that of said chamber;
 wherein said valve shaft member further comprises a ramp portion proximate to the outlet port location;
 a cam follower adapted to contact said ramp;
 a generator connected to said outlet port at a first end and having an orifice at its second end;
 a rod internal to said generator and attached to said cam follower at said rod's first end; and
 a needle to completely fill said orifice attached to the second end of said rod, said rod being of a length so that as the shaft is axially moved the cam follower and rod, in following said ramp, will move said needle out of and into said generator-orifice.

4,230,447

FLARED COMBUSTION CHAMBER

Ralph A. Boyne, Haywards Heath, and Richard L. Cottingham, Pitdown, Nr. Uckfield, both of England, assignors to Thor-mack Engineering Ltd., Uckfield, England

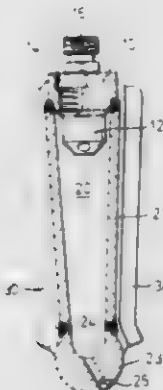
Filed Apr. 28, 1978, Ser. No. 901,231

Claims priority, application United Kingdom, Apr. 27, 1977, 17683/77

Int. Cl.³ F23R 1/04

U.S. Cl. 431-158

9 Claims



1. Apparatus for producing a high velocity stream of gas, said apparatus comprising:

- a narrow, enclosed combustion chamber which is horizontally elongate and vertically elongate and has an upper portion and a lower surface;
- means defining a multiplicity of discharge orifices through said lower surface arranged in a substantially straight line;
- a plurality of horizontally spaced inlets for feeding a combustible gas mixture into the upper portion of the combustion chamber;
- means enabling the combustion mixture to be ignited within said chamber whereby, in use, combustion of the mixture takes place wholly within the chamber; and
- means to deflect the incoming gas mixture, so that it is distributed within the combustion chamber, and whereby the products of combustion leave the combustion chamber through the discharge orifices.

4,230,448

BURNER COMBUSTION IMPROVEMENTS

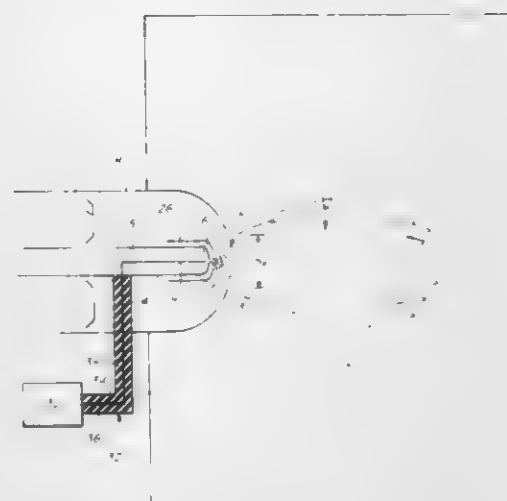
Michael A. V. Ward, and Fred R. Kern, both of Lexington, Mass., assignors to Combustion Electromagnetics, Inc., Lexington, Mass.

Filed May 14, 1979, Ser. No. 38,434

Int. Cl.³ F23D 11/45; F23Q 3/00

U.S. Cl. 431-208

8 Claims



1. A system for preheating fuel for use with a hydrocarbon fuel burner having a combustion chamber, electrically conductive tubular fuel carrying means for carrying fuel to said combustion chamber, said tubular fuel carrying means terminating in a nozzle, air supply means terminating at said nozzle, to create at said nozzle a fuel vapor and air mixing region, and combustion ignition means in said fuel and air mixing region for igniting said fuel vapor for combustion in said chamber, said system comprising
 means for generating electromagnetic energy at microwave frequency, and
 means for electrically coupling said generating means to said electrically conductive tubular fuel carrying means to create a microwave electric field within said tubular fuel carrying means to heat said fuel.

4,230,449

SELF CONTAINED COMPACT BURNER

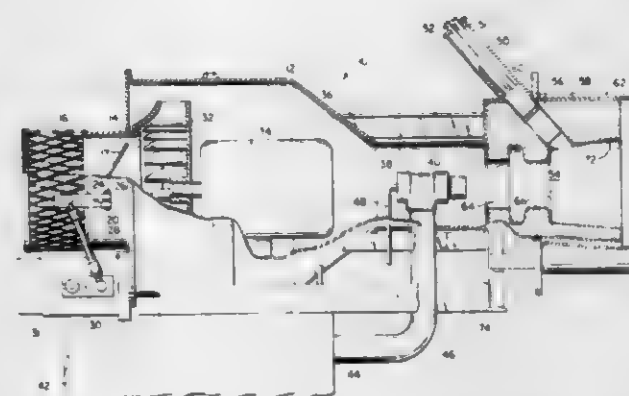
Chester S. Binasik, Palo Alto; Ralph R. Vosper, San Jose, and Norman E. Harthun, San Carlos, all of Calif., assignors to Coen Company, Burlingame, Calif.

Filed Mar. 19, 1979, Ser. No. 21,740

Int. Cl.³ F23D 15/02

U.S. Cl. 431-353

7 Claims



1. A low pressure burner capable of generating a relatively long, narrow flame comprising:
 a generally rotationally symmetric chamber having an opening at its upstream and an opening at its downstream end;
 means for forcing air through the chamber from its upstream end to its downstream end at a pressure no greater than about 0.3 pounds per square inch above ambient pressure;

an atomizer located in said chamber downstream of the air forcing means and adapted to expel a mixture out through the downstream end of the chamber along the chamber axis so that the distribution of the mixture is not rotationally symmetric about the chamber axis;
 means for supplying atomizing air to the atomizer at a pressure no greater than about 4.5 pounds per square inch above ambient pressure; and
 a flame throat projecting from the downstream end of the chamber, said throat including at least two axially spaced steps to induce and control the location of eddy formation in the mixture.

4,230,450

INTRUSION ALARM SAFETY

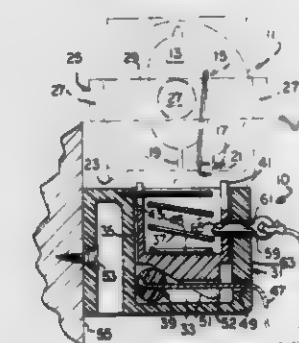
Randall H. LeFever, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 4, 1979, Ser. No. 36,126

Int. Cl.³ G08B 3/14, 7/08, 13/08

U.S. Cl. 431-361

9 Claims



1. Activation means for activating at least one flashlamp unit located within a flashlamp article, said activation means comprising:

a casing adapted for having said flashlamp article positioned therein, said casing defining a chamber therein and including at least one upstanding side wall having an opening therein;

an activator movably oriented within said chamber of said casing for occupying a first, non-firing position therein, and including an aperture therein and at least one upstanding engagement member thereon, said activator effecting firing of said flashlamp unit within said flashlamp article when said article is positioned on said casing and said activator occupies said second position;

biasing means located within said casing and engaged to said activator for continuously biasing said activator toward said first, non-firing position to return said activator thereto subsequent said firing of said flashlamp unit;

engagement means movably positioned within said chamber of said casing for engaging said activator to effect movement thereof from said first, non-firing position to said second, firing position, said engagement means effecting said movement in response to external actuation thereof; and

safety means secured to said engagement means and including a retention member removably positioned within said opening within said side wall of said casing and said aperture within said activator, said retention member positively engaging said activator to retain said activator in said first, non-firing position when said retention member is positioned within said opening and said aperture, said retention member disengaging said activator upon removal of said member from said opening and said aperture to permit said activator to move to said second position in response to said external actuation thereof.

4,230,451

APPARATUS FOR THE THERMAL TREATMENT OF ORGANIC MATERIALS

Maurice Chambe, Saint Irene, Bessenay, Rhone, France

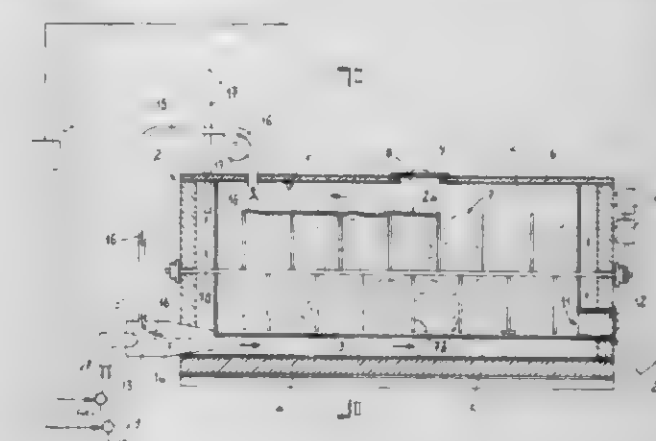
Filed Feb. 15, 1979, Ser. No. 12,492

Claims priority, application France, Feb. 17, 1978, 78 05465

Int. Cl.³ F23J 5/00

U.S. Cl. 432-72

5 Claims



1. An apparatus for the thermal treatment of organic material comprising:

a horizontally elongated tank having a generally cylindrical bottom and formed with an inner wall of thermally conductive material spaced from an outer wall of thermally insulating material whereby the space between said walls forms a gas-flow passage;

a roof hermetically sealed to said tank and defining with said inner wall a chamber for receiving a mass of organic material, said roof being provided with a sealable opening through which said mass can be introduced into said chamber, said tank being formed along the bottom thereof with a sealable outlet for discharging the thermally treated mass;

a burner opening into said passage and sustaining flame adapted to generate hot air which traverses said passage along said inner wall to heat said mass;

a duct for feeding vapor evolved in said chamber to said burner and to supply said flame with said vapor;

a mixer in said chamber for displacing said mass along said inner wall, said mixer being rotatable about a horizontal axis; and

temperature-sensing means responsive to the temperature in said chamber for controlling same.

4,230,452

MULTIPLE DENTAL HANDPIECE CONTROL SYSTEM

George K. Austin, Jr., P. O. Box 209, Rte. 2, Box 254, Newberg, Ore. 97132

Division of Ser. No. 878,026, Feb. 15, 1978. This application

May 4, 1979, Ser. No. 36,053

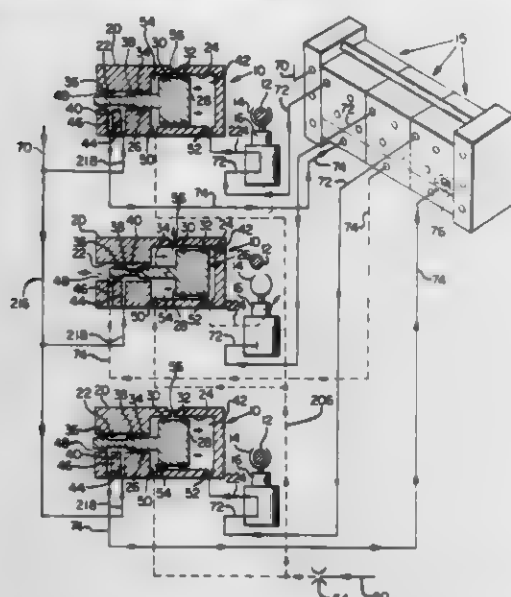
Int. Cl.³ A61C 1/02

U.S. Cl. 433-28

5 Claims

1. In a multiple dental handpiece control system,
 a plurality of handpieces,
 a plurality of hanger mechanisms for holding the handpieces and each including valve means actuated when the handpiece associated therewith is removed from the associated hanger mechanism,
 a plurality of fluid supply control units for supplying fluids to the handpieces and each including disabling means, fluid supply means supplying fluid under pressure to the valve means,
 a plurality of cylinder mechanisms operable by the valve means and each including a piston and a cylinder, each valve means when actuated serving to actuate one of the cylinder mechanisms,

a plurality of means operable by the cylinder mechanisms for actuating the disabling means,



and preventing means operable by each cylinder mechanism when it is actuated for preventing actuation of the other cylinder mechanisms.

4,230,453

LIGHT ASSEMBLY FOR USE WITH A DENTAL HANDPIECE

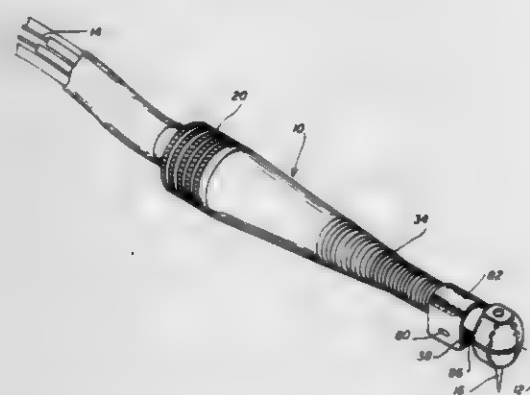
Robert Reimers, Gardner, Kans., assignor to Litton Industrial Products Inc., Beverly Hills, Calif.

Filed Apr. 11, 1979, Ser. No. 29,236

Int. Cl.³ A61C 1/00

U.S. Cl. 433—29

5 Claims



1. For use with an elongated dental handpiece having first connecting means at its proximal end for coupling the handpiece to a source of electrical power and having second connecting means generally axially spaced therefrom at its distal end for coupling the handpiece to a dental work tool and including an electrical conductor for electrically coupling the first connecting means to an exterior contact region adjacent the distal portion of the handpiece,

an improved light source assembly comprising:

an electrically insulative support member adapted to overlie the contact region of the handpiece,

a pair of electrically conductive contact members protruding from the radially inward surface of the support member which is proximate to the handpiece so as to contact the contact region thereof,

at least one bulb mounted on the radially outward surface of the support member and including first and second electrical leads,

first and second receptacle members formed within the support member to respectively freely accept the first and second leads from the bulb

a flexible printed circuit for securely coupling the contact members to respective receptacle member without interfering with the acceptance of the leads.

4,230,454

TOOTH EXTRACTOR

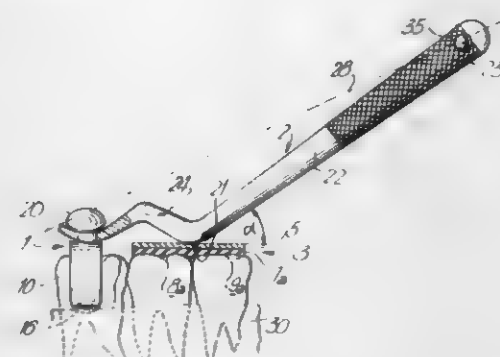
Michael P. Lococo, 4927 Victoria Avenue, Niagara Falls, Ontario, Canada (L2E 1X1)

Filed Nov. 3, 1978, Ser. No. 957,142

Int. Cl.³ A61C 3/00

U.S. Cl. 433—153

7 Claims



1. A tooth extracting tool kit of the type comprising a tooth engaging grip means including a joint member for operatively associating the grip means with one end of a two arm lever means, said lever means having fulcrum means adapted to be rested on base means, said base means, in turn, being adapted to be rested on the teeth or tissue adjacent to the tooth to be extracted, wherein:

(a) said base means is a plate having a generally planar, rigid top surface;

(b) said grip means is a generally U-shaped, rigid yoke member including two sides and a base interconnecting same, two generally coaxial grip elements and adjustment means for selectively adjusting the distance between the grip elements such as to enable the securing of the yoke member to a tooth or root to be extracted said grip elements being disposed one near each free end of the respective side and having generally hemispherical, inwardly turned tips adapted to engage indentations prepared in the buccal and lingual side of the tooth or root to be extracted, respectively;

(c) said yoke member further comprises a first joint element;

(d) said two arm lever means is an uneven-arm lever whose longer arm is provided with a handle and with a cross piece protruding transversely of the free end of said handle, the shorter arm comprising a second joint element complementary with said first joint element to form with same releasable swivel joint means, the two-arm lever further comprising a fulcrum surface adapted to be rested against said rigid top surface, said fulcrum surface being offset relative to a straight line coincident with free ends of the respective arms of said lever means, whereby said lever generally resembles the shape of a check mark;

(e) said first joint element being a stem with a convexly shaped head protruding from the base of the yoke member in a direction generally opposite to that of said sides; said second joint element being a forked end of said lever, including two generally parallel prongs, the spacing between the two being slightly in excess of the diameter of said stem but considerably less than that of the convexly shaped head.

4,230,455

PROSTHETIC TEETH AND BONES

Tsunao Hidaka, Masahide Inoue, and Masatomi Ebihara, all of Tsurugashima, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 804,476, Jun. 7, 1977,

abandoned. This application Dec. 4, 1978, Ser. No. 966,233

Claims priority, application Japan, Jun. 7, 1976, 51-66217

Int. Cl.³ A61C 13/08

U.S. Cl. 433—202

8 Claims

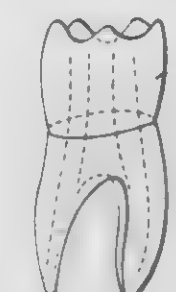
1. Prosthetic teeth and bones having superior affinity for the

living body and having a compression strength of about 4×10^3 kg/cm² or higher and a flexural strength of about 2.7×10^3 kg/cm² or higher, which comprise a composite material comprising

(a) a sufficiently fine powder having an average particle size of about 2 μ m or less comprising at least 50% by weight of $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$ and not more than about 50% by weight of at least one additive selected from the group consisting of $\text{Ca}_3(\text{PO}_4)_2$, AlPO_4 , Al_2O_3 , AlF_3 , SiO_2 , $\text{Mg}(\text{PO}_4)_2$, and the fluorides, chlorides and oxides of Li, Na, K, Mg and Ca, and

(b) at least one fibrous material having the coefficient of thermal expansion nearly equal to or slightly lower than that of the hydroxy-apatite selected from the group consisting of fibers, fine filaments and metal whiskers, ceramics or glass, said fibrous material being present at least 50 μ m inside the surface of the prosthetic teeth and bones,

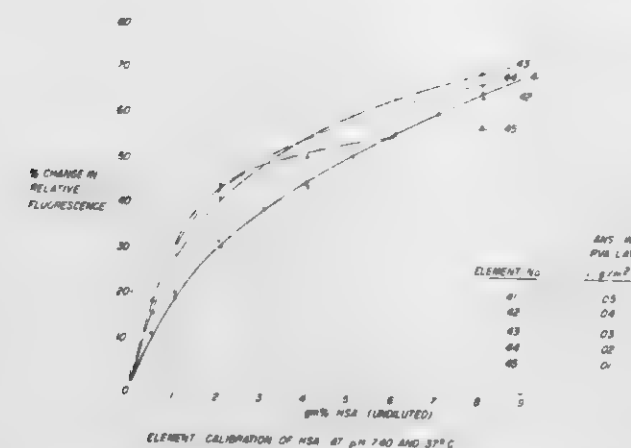
and said composite material being a laminate of said fibrous material interposed between two layers of said fine



powder and having been cold compression-molded and then sintered.

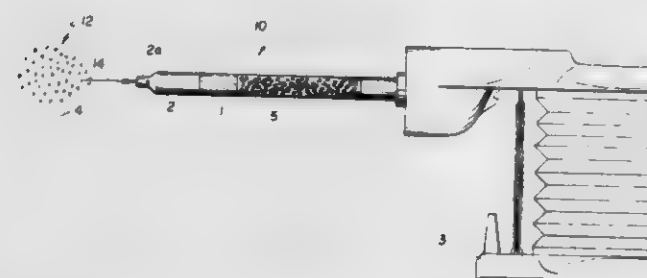
CHEMICAL

4,230,456
ELEMENT AND ASSAY FOR ALBUMIN
 Tai-Wing Wu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
 Filed Aug. 30, 1978, Ser. No. 938,122
 Int. Cl.³ G01N 33/68, 21/64
 U.S. Cl. 23—230 B



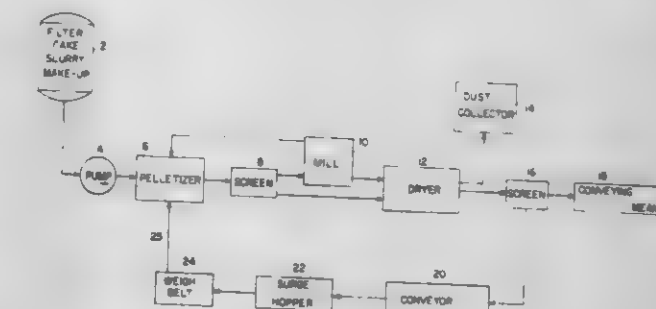
1. An analytical element for the detection of albumin in a liquid sample, said element comprising a reagent zone which contains an albumin-active complex comprising a detectable species bound to a carrier; said detectable species having a sufficiently high affinity for albumin that, when contacted with a liquid solution containing albumin, said detectable species separates from said albumin-active complex and becomes bound to albumin to form a complex comprising albumin and detectable species; whereby albumin can be detected by (a) the presence of detectable species bound to albumin, or (b) a reduction in the amount of detectable species in said albumin-active complex.

4,230,457
APPARATUS AND METHOD FOR MEASURING AEROSOLS AND GASES WITH DETECTOR TUBES
 Kurt Lechnitz, Gross Grönu, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany
 Filed Dec. 8, 1978, Ser. No. 967,854
 Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754638
 Int. Cl.² G01N 31/22
 U.S. Cl. 23—232 R



2. A method of measuring H₂SO₄ aerosols comprising, passing H₂SO₄ aerosols through a forelayer formed of a substrate impregnated with a zinc dust, arsenic trioxide and water, reacting the H₂SO₄ aerosols with the impregnated compounds to form a new gas substance, and passing the new gas substance through an indicating layer comprising a gold chloride to obtain a known indication of the presence of the new gas substance.

4,230,458
PROCESS FOR PELLETIZING WET SILICEOUS PARTICULATES
 Robert B. Takewell, Berger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.
 Continuation of Ser. No. 556,367, Mar. 7, 1975, Pat. No. 4,087,254, which is a continuation-in-part of Ser. No. 430,457, Jan. 3, 1974, abandoned, which is a continuation of Ser. No. 185,984, Oct. 4, 1971, abandoned. This application Apr. 26, 1978, Ser. No. 900,351
 The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.
 Int. Cl.³ C22B 1/24
 U.S. Cl. 23—313 AS



1. In a process for agglomerating finely divided siliceous particulates selected from the group consisting of clay, silica, and silicates wherein said finely divided particulates of said clay, silica, and silicates are produced in an aqueous medium and are filtered and introduced into a pelletizer to form agglomerates thereof, the improvement comprising:
 - (a) producing finely divided particulates of clay, silica, and silicates in an aqueous medium;
 - (b) filtering said aqueous medium to form a filter cake of said siliceous particulates;
 - (c) preparing a slurry of said filter cake of said siliceous particulates, said slurry having a solids content in the range of from about 20 to 65% by weight solids;
 - (d) introducing said filter cake slurry of said siliceous particulates into a pelletizer and adding dried siliceous particulates in an amount so that the solids content by weight percentage of the slurry of siliceous particulate material to be pelletized is increased to a value in the range of about 50 to 90%;
 - (e) pelletizing said slurry of said siliceous particulates;
 - (f) drying the siliceous pellets produced by pelletizing said slurry;
 - (g) recycling at least a portion of the dried siliceous pellets produced by pelletizing said slurry to said pelletizer to form at least a portion of the particulate siliceous materials to be added to said filter cake slurry in said pelletizer; and
 - (h) recovering the remainder of the siliceous pellets.

4,230,459
PROCESS FOR AGGLOMERATING PARTICULATE WOOD MATERIAL AND PRODUCTS OBTAINED THEREBY
 Jean R. Moreau, 2988, La Promenade, Ste-Foy, Quebec, Canada (G1W 2J7); Martin P. Pelletier, 16, rue Pelletier, Cabano, Quebec, and Gérard B. Tremblay, 271, rue Cormier, Arvida, Quebec, both of Canada
 Filed Feb. 7, 1979, Ser. No. 10,324
 Claims priority, application Canada, Sep. 20, 1978, 311711
 Int. Cl.³ C10L 5/40, 5/20
 U.S. Cl. 44—10 B

1. Process for agglomerating particulate wood material which comprises:

- (a) providing essentially particulate noncarbonized wood material having a substantially homogeneously distributed moisture content throughout and substantially heterogeneous size and shape distribution, said moisture content varying between about 10 and about 40 percent by weight calculated on a dry basis;
- (b) dry mixing said particulate wood material with dry powdered lignosulfonate and forming a substantially homogeneous free-flowing mixture essentially consisting of said dry powdered lignosulfonate and said particulate wood material;
- (c) compressing said mixture under a pressure of as low as about 400 lbs./inch² until said particulate wood material is agglomerated.

4,230,460

METHOD FOR ENHANCING THE UTILIZATION OF POWDERED COAL

Edwin E. Maust, Jr., 1209 Marton St., Laurel, Md. 20810

Filed Oct. 31, 1978, Ser. No. 956,287

Int. Cl.² C10L 5/12, 5/40, 5/00

U.S. Cl. 44-16 C

1 Claim

1. A method for the preparation of a coal composition consisting essentially of the steps of:

- (a) mixing (1) powdered coal with (2) a lime component selected from the group consisting of lime, limestone, dolomite and mixtures thereof, and (3) flyash as a pozzolonic component, to obtain substantially uniform dispersal of the lime and flyash components throughout the coal, water being added if required to obtain a mix or workable consistency;
- (b) working the mix to obtain a homogeneous and uniform dispersion of the lime and flyash components with the coal particles; and
- (c) forming and drying the resulting mixture into solid product shapes suitable for burning; the resulting coal composition being suitable for handling, transporting, and burning.

4,230,461

ABRASIVE WHEELS

Michael A. Sandman, Brookline, and Bernard T. Loughlin, Leicester, both of Mass., assignors to Eli Sandman Company, Worcester, Mass.

Filed Sep. 29, 1977, Ser. No. 837,823

Int. Cl.³ B24D 3/28, 11/02

U.S. Cl. 51-295

19 Claims

17. A resin-bonded abrasive wheel comprising a reinforcing layer of a fabric coated or impregnated with a non-abrasive composition of a novolak phenolic resin essentially free of crosslinking agent and an abrasive layer comprised of abrasive material and a resinous binder.

4,230,462

METHOD OF IMPROVING TOOL LIFE OF TIC BASE TOOLS

David Moskowitz, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 8, 1978, Ser. No. 967,925

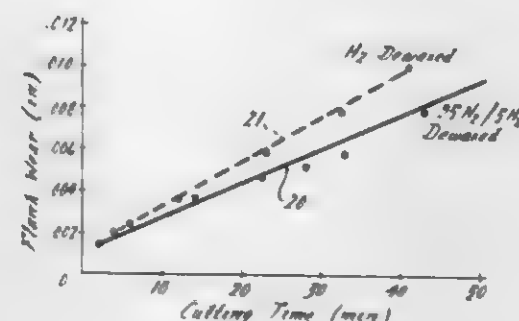
Int. Cl.³ C04B 35/56, 35/58

U.S. Cl. 51-307

9 Claims

1. A method of making cemented titanium carbide based cutting tools, wherein substantially unoxidized titanium car-

bide, other refractory carbides of groups 4, 5 and 6 transition metals of the periodic table, and binder metal powders are mixed and ground to sub-micron particle size in the presence of an oxidation inhibiting liquid ingredient covering the particles of said powders, the titanium carbide constituting a major proportion of the mixture, displacing said liquid ingredient with a low-boiling pressing aid, compacting the ground pow-



der particles under ambient conditions to form a shape having some degree of porosity to permit penetration of gases into the compact, then firstly heating the shape to volatilize the pressing agent, and then secondly heating the shape in a vacuum to a higher temperature level for effecting sintering of said shape, said first heating being carried out under a flowing nitrogen based atmosphere containing 0-10% H₂.

4,230,463

MULTICOMPONENT MEMBRANES FOR GAS SEPARATIONS

Jay M. S. Henis, and Mary K. Tripodi, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

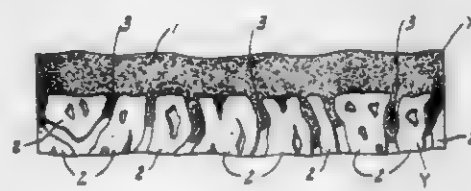
Continuation-in-part of Ser. No. 742,159, Nov. 13, 1976,

abandoned. This application Sep. 13, 1977, Ser. No. 832,481

Int. Cl.² B01D 59/14

U.S. Cl. 55-16

78 Claims



1. A multicomponent membrane for gas separation comprising a coating in occluding contact with a porous separation membrane of material, which material exhibits selective permeation of at least one gas of a gaseous mixture over that of one or more remaining gases of the gaseous mixture, said porous separation membrane having a substantial void volume, wherein, with respect to at least one pair of gases, the material of the porous separation membrane exhibits a determined intrinsic separation factor greater than the determined intrinsic separation factor of the material of said coating, and the multicomponent membrane exhibits a separation factor significantly greater than the determined intrinsic separation factor of the material of said coating and greater than the separation factor exhibited by the porous separation membrane.

47. In an apparatus for selectively separating at least one gas in a gaseous mixture from at least one remaining gas comprising an enclosure and a membrane within said enclosure for selectively separating said at least one gas in the gaseous mixture and providing a permeated product, said membrane having a feed surface and an opposing exit surface, and said enclosure having means to enable said gaseous mixture to be supplied said feed surface, means to enable removal of gases from the vicinity of the feed surface, and means to enable said permeated product to be removed from the vicinity of the exit surface, the improvement wherein the membrane comprises a multicomponent membrane of claim 1.

50. A process for separating at least one gas in a gaseous mixture from at least one other gas in said gaseous mixture by selective permeation and providing a permeated product containing at least one permeating gas, comprising: contacting the gaseous mixture with one surface of a multicomponent membrane, which, with respect to at least one pair of gases of said gaseous mixture multicomponent membrane exhibits selective permeation of one gas of said pair of gases over that of the remaining gas of said pair of gases, and which multicomponent membrane comprises a coating and a porous separation membrane being anisotropic having a substantial void volume and at least one relatively dense region within its thickness in barrier flow relationship to gas flow across the porous separation membrane, wherein the coating is in occluding contact with at least one relatively dense region, wherein, with respect to said pair of gases, the material of the porous separation membrane exhibits a determined intrinsic separation factor greater than the determined intrinsic separation factor of the material of said coating, and the multicomponent membrane exhibits a separation factor significantly greater than the determined intrinsic separation factor of the material of the coating and greater than the separation factor exhibited by the porous separation membrane; maintaining the opposite surface of the multicomponent membrane at a lower chemical potential for said at least one permeating gas than the chemical potential at the said surface; permeating said at least one permeating gas into and through the multicomponent membrane; and removing from the vicinity of said opposite surface a permeated product having a different proportion of said at least one gas of said gaseous mixture to said at least one other gas of said gaseous mixture than the proportion in the gaseous mixture of said at least one gas to said at least one other gas.

4,230,464

METHOD FOR RECYCLING A CARRIER GAS FROM THE TRAPPING SYSTEM TO THE INLET OF A GAS CHROMATOGRAPHIC SEPARATION UNIT

Reynald Bonmati, New York, N.Y.; Bernard Roz, Brie sous Forges, and Henri Tillet de Santerre, Lyons, both of France, assignors to Societe Nationale Elf Aquitaine, Paris and Societe de Recherches Techniques et Industrielles, Buc, both of France

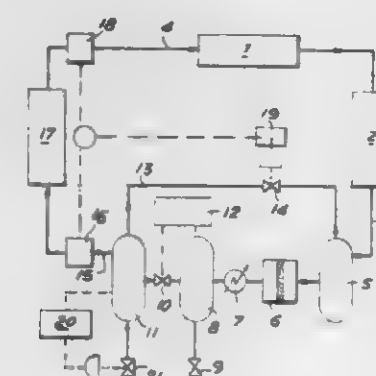
Filed Dec. 13, 1978, Ser. No. 969,278

Claims priority, application France, Dec. 20, 1977, 77 38393

Int. Cl.² B01D 15/08

U.S. Cl. 55-23

14 Claims



1. A method for recycling a carrier gas flowing from a gas

chromatographic separation unit having an inlet and comprising a trapping system having an outlet which comprises: withdrawing the carrier gas from said trapping system, subjecting said carrier gas to a pre-purification step, then to a purification step, recycling gas purified in said purification step at the inlet of said chromatographic separation unit, and maintaining the flow rate and pressure of said carrier gas at strictly constant values at the inlet of said chromatographic unit.

4,230,465

POLLUTION CONTROL APPARATUS AND METHOD

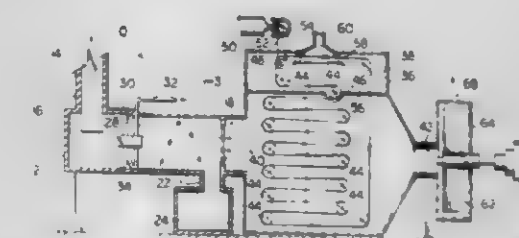
Mrs. Edward Hope, 117 Northview Ave., Whitby, Ontario, Canada

Filed Apr. 11, 1977, Ser. No. 786,631

Int. Cl.² B01D 50/00

U.S. Cl. 55-83

6 Claims



1. A method for removing particulate matter from a gas having a temperature of up to about 3000° F. comprising passing said gas through centrifugal separation means for centrifugally removing particulate matter therefrom, cooling said gas when said particulate matter is being removed therefrom to a temperature less than about 400° F. by mixing with a stream of a refrigerated fluid having a temperature from about -50° F. to about -400° F. and simultaneously forcing particulate matter from said gas to the inner peripheral walls of said centrifugal separation means to remove particulate matter from said gas.

4,230,466

DISCHARGE ELECTRODE STRUCTURE FOR ELECTROSTATIC PRECIPITATOR

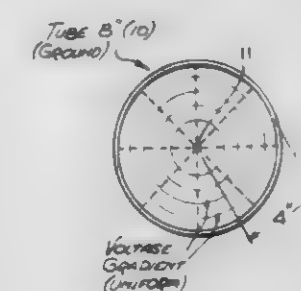
Thomas J. Michel, Hialeah, Fla., assignor to Santek, Inc., Hollywood, Fla.

Filed May 10, 1979, Ser. No. 37,533

Int. Cl.² B03C 3/41

U.S. Cl. 55-147

8 Claims



1. An electrostatic precipitator for extracting particles and other contaminants from a gaseous stream, said precipitator comprising:

A a collector electrode tube;

B a discharge electrode structure disposed in said tube, said structure including a column whose center axis is coincident with the axis of the tube, said column being formed of dielectric material and having a cross-sectional geometry that defines a circular series of longitudinally-extending niches, and a circular array of fine gauge wires supported between the ends of the column, each wire being sus-

pendent within a respective niche, whereby the wires are electrostatically isolated from each other; and
C means to impress a high voltage between the array of wires and the facing surface of the collector tube to create an electrostatic field in the annular region between the discharge electrode and the tube to ionize the contaminants in the gaseous stream passing therethrough, the surfaces of the niches acquiring bound electrostatic charges whereby the voltage gradient established between the discharge electrode structure and the tube is substantially uniform.

4,230,467

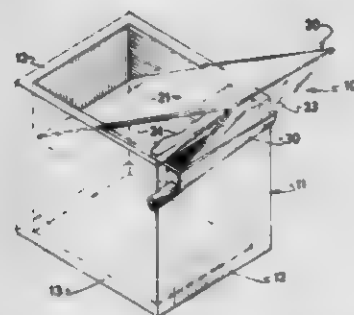
APPARATUS FOR REMOVING FOAM

Hubert W. Beckwald, Birmingham, Ala., and Peter C. Houle, Richmond, Va., assignors to TII Corporation, Lindenhurst, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,304
Int. Cl.² B01D 19/02

U.S. Cl. 55—178

16 Claims



1. A foam removal apparatus for a vessel containing liquid and foam bubbles, comprising:
a cover for the vessel, said cover inclined with respect to the horizontal and partially extending downwardly into said vessel;
said cover having an end wall;
said cover having side support walls, said side support walls residing upon said vessel; a screen having apertures; and
a trough, said trough located beneath at least a portion of said screen for removing foam passing through said screen.

4,230,468

DUST SEPARATOR WITH DELOGGING DEVICE

Albert Rebours, Chatou, and Jean-Pierre Guilbet, Vernon, both of France, assignors to Air Industrie, Courbevoie, France
Filed May 24, 1978, Ser. No. 908,928

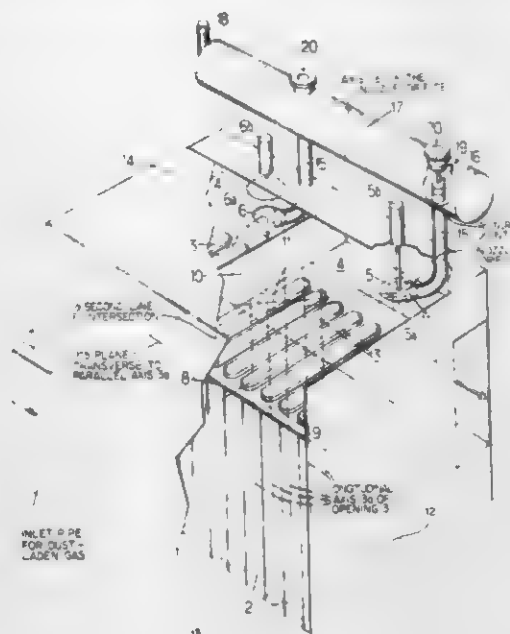
Claims priority, application France, May 26, 1977, 77 16149
Int. Cl.² B01D 46/04

U.S. Cl. 55—294

6 Claims

1. In a dust separator apparatus operable with a source of compressed declogging gas, and including an inlet enclosure with means for introducing dust-laden gas into said inlet enclosure, an outlet enclosure including side walls thereof with means for discharging dust-free gas therefrom, a separating wall for separating said inlet and outlet enclosures from each other, and a plurality of elongated filter elements disposed in the inlet enclosure, these elements having central longitudinal axes respectively in parallel relationship, each filter element having one end thereof traversing said separating wall with an opening in said end of each filter element communicating into said outlet enclosure, the apparatus further comprising duct means for selectively introducing compressed gas from said source thereof into said outlet enclosure to flow into said filter elements in counter-flow relative to the flow of dust-free gas therethrough, said duct means comprising at least one nozzle having a discharge end terminating as an orifice with a discharge axis thereof directed essentially transversely to said

parallel axes of said filter elements and across said open ends thereof and directed obliquely to at least one of said side walls



of said outlet enclosure in the vicinity of said open ends of said filter elements.

4,230,469

DISTILLATION OF METHANE FROM A METHANE-CONTAINING CRUDE GAS

Peter Grimm, Pullach, and Peter Burr, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

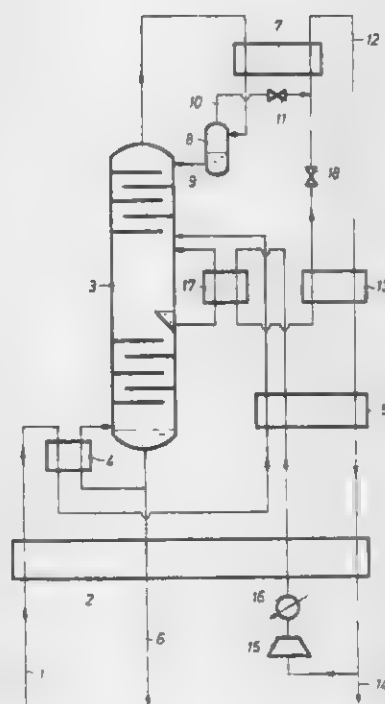
Filed Jun. 21, 1978, Ser. No. 917,752

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734080

Int. Cl.² F25J 3/02

U.S. Cl. 62—28

6 Claims



1. In a separation in a rectification column of methane and optionally lower-boiling components from a methane-containing crude gas, which gas contains additionally higher-boiling hydrocarbons, hydrogen sulfide, carbon dioxide, or mixtures thereof, wherein an auxiliary cycle containing a fluid medium is employed for the production of cooling to produce reflux liquid at the head of the rectifying column, the improvement wherein liquid in the rectifying column located in the region of plates numbers $0.4x-0.6x$, wherein x is the number of theoreti-

cal plates in the column, is vaporized in indirect heat exchange with condensing auxiliary cycle medium, without said condensing auxiliary cycle medium reboiling the bottoms, and reboiling the bottoms with feed to the rectification column without indirect heat exchange in said region of plates.

4,230,470

AIR CONDITIONING SYSTEM

Toshiharu Matsuda, Kudamatsu; Seigo Miyamoto, Takahagi, and Yasuo Minoshima, Yamaguchi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

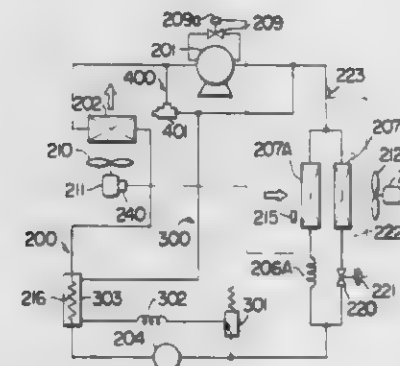
Filed Jan. 19, 1978, Ser. No. 870,821

Claims priority, application Japan, Jan. 21, 1977, 52/4970; Apr. 15, 1977, 52/46522; Jul. 25, 1977, 52/88378

Int. Cl.² F25B 41/00

U.S. Cl. 62—197

12 Claims



1. An air conditioning system comprising:
a compressor;
means for condensing a refrigerant through heat exchange with outdoor air;
first pressure reducing means;
means for evaporating the refrigerant through heat exchange with air to be conditioned;
piping means fluid connecting said compressor, said means for condensing, said first pressure reducing means and said means for evaporating serially together to form a closed main circuit for the refrigerant; and
a bypass circuit means connecting a high pressure section of said main circuit extending from said means for condensing to said first pressure reducing means to a low pressure section of said main circuit extending from said means for evaporating to said compressor;
said bypass circuit means comprising
means for controlling the flow of the refrigerant,
second pressure reducing means,
heat exchanger means for causing heat exchange to take place between a portion of the refrigerant flowing through the high pressure section of said main circuit extending from the compressor to the first pressure reducing means and a portion of the refrigerant flowing through the bypass circuit means having had its pressure reduced at said second pressure reducing means, and said heat exchanger means including a solid heat exchange wall having opposed surfaces, one of said surfaces contacting directly with the refrigerant in said main circuit, and the other of said surfaces contacting directly with the refrigerant flowing through said bypass circuit means;
said heat exchanger means comprising a tube in tube type heat exchanger including an outer tube, and an inner tube defining a first passage therein and arranged in said outer tube to define a second passage therebetween, and one of said first and second passages being disposed in said main circuit downstream of said means for condensing and the other of said first and second passages being disposed in said bypass circuit means downstream of said second pressure reducing means so that heat exchange between refrigerants passing through the first

and second passages is effected through the inner tube constituting said heat exchanger wall;
said compressor including means for effecting compression capacity control;
said means for condensing including a condenser, and a fan and a variable speed motor associated with said condenser;
said means for evaporating including a pair of evaporators arranged in parallel with each other;
said first pressure reducing means including pressure reducing means mounted upstream of one of said pair of evaporators, and an expansion valve of the maximum operating pressure type, said expansion valve being responsive to the evaporative pressure of the evaporator connected thereto;
a thermal bulb for detecting the temperature of refrigerant at a point downstream of the junction of two streams of refrigerant released from the two evaporators and producing a correlated internal pressure;
said expansion valve further being responsive to the internal pressure of said thermal bulb;
and the air conditioning system further comprises means for controlling said compression capacity in response to the temperature in a room, and control means for controlling the speed of said motor.

4,230,471

SUPPRESSION OF POLLUTION IN MINERAL FIBER MANUFACTURE

Marcel Levecque, Birchrunville, Pa., and Jean A. Battigelli, Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

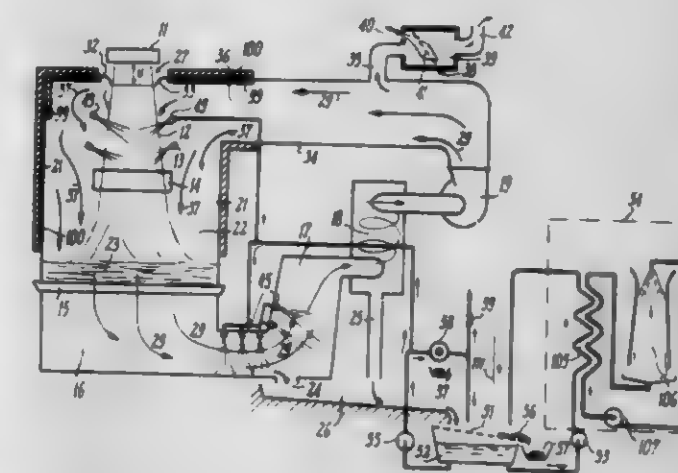
Continuation of Ser. No. 747,433, Dec. 3, 1976, Pat. No. 4,105,424, which is a continuation-in-part of Ser. No. 456,878, Apr. 1, 1974, abandoned, and No. 557,281, Mar. 11, 1975, Pat. No. 4,052,183, which is a continuation-in-part of Ser. No. 353,983, Apr. 24, 1973, Pat. No. 3,874,886. This application Jul. 10, 1978, Ser. No. 923,151

Claims priority, application France, Mar. 30, 1973, 73 11525; Oct. 10, 1973, 73.36169; Feb. 10, 1975, 75 04039; Oct. 22, 1976, 76 31860

Int. Cl.² C03B 37/02

U.S. Cl. 65—2

3 Claims



3. Apparatus for forming fibrous mats from thermoplastic mineral material comprising a chamber having a perforated fiber collecting conveyor at the bottom, gas blast fiber attenuation means in the region of the top of the chamber arranged to direct a fiber-laden gaseous current in a path in the chamber extended downwardly toward the fiber collecting conveyor, suction means below the conveyor for drawing gases through the conveyor and thereby building up a mat of fibers on the conveyor, gas circulating ducting receiving the gases from the suction means, the ducting being arranged to deliver the circulating gases laterally into the chamber in a region in said path

directed transversely toward the downwardly directed fiber-laden gaseous current, and a tubular shield surrounding the downwardly directed current in said region of the transversely directed path of the recirculating gases.

4,230,472

METHOD OF FORMING A SUBSTANTIALLY CONTINUOUS OPTICAL WAVEGUIDE

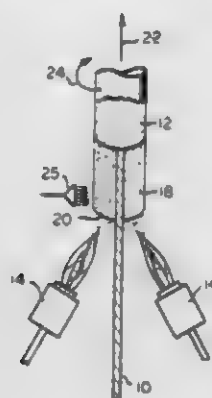
Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 22, 1979, Ser. No. 13,922

Int. Cl.³ C03B 37/00; C03C 25/02

U.S. Cl. 65—3 A

25 Claims



1. A substantially continuous method of forming an optical waveguide blank comprising the steps of providing a substantially longitudinally continuous core member, providing a longitudinal starting member having at least one end surface suitable for affixing said core member thereto, affixing one end of said core member to said one end of said starting member, applying particulate material to the exterior surface of the core member to form an adherent coating having an index of refraction less than that of said core member, and longitudinally translating said starting member and said core member while simultaneously applying said adherent coating of said particulate material to said core member to form a continuous and substantially homogeneous adherent coating of substantially uniform thickness.

4,230,473

METHOD OF FABRICATING OPTICAL FIBERS

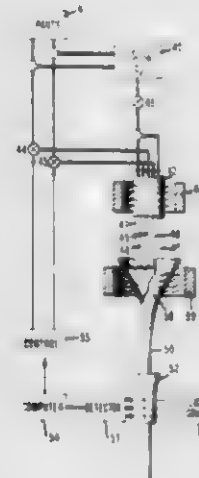
Stewart E. Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1979, Ser. No. 20,995

Int. Cl.³ C03C 25/02

U.S. Cl. 65—3 A

6 Claims



1. A method of fabricating an optical fiber comprising the steps of:

forming (11) particulate precursor material capable of being consolidated into a glass (16); directing a stream (14) of said particulate material onto a supporting member (10) where it is consolidated by heating (13) to form a stub preform;

CHARACTERIZED IN THAT:

said fiber (17) is continuously drawn from one end of said stub (18) as long as said particulate material continues to be deposited upon the opposite end of said stub.

4,230,474

APPARATUS AND PROCESS FOR SIMULTANEOUS THERMIC GLASS SHEET HARDENING

Mario Roth, Aachen; Johann Winandy, Herzogenrath, and Hans-Pieter Siemonsen, Aachen, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

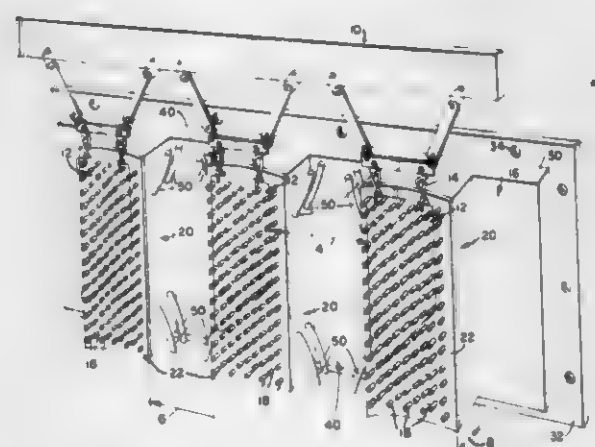
Filed Nov. 17, 1978, Ser. No. 963,436

Claims priority, application France, Nov. 22, 1977, 77 34987

Int. Cl.³ C03B 27/04

U.S. Cl. 65—114

9 Claims



1. An improved apparatus for simultaneous thermic hardening via rapid air cooling of a plurality of closely, vertically suspended glass sheets in a neutral position on a conveyor spaced generally along the direction of transport is characterized by an improvement comprising:

- a pair of compressed air caissons:
 - positioned diametrically opposite each other,
 - having a plurality of compressed air pipes, and
 - dimensioned and configured whereby the caissons are divided into a plurality of elementary caissons; and
- the elementary caissons being:
 - equivalent in number to the glass sheets to be simultaneously hardened and being spaced along the direction of transport,
 - dimensioned and configured such that the elementary compressed air caisson surface area does not appreciably extend beyond that area necessary for the hardening of the glass sheet,
 - joined to a common wind box, and
 - separated by evacuation channels of a sufficient dimension and configuration wherein the compressed air flow emitted via the front wall of each elementary caisson is unobstructed by the evacuation channels so as to avoid compressed air accumulation zones.

8. A process for the simultaneous hardening by a compressed air flow of a plurality of adjacently suspended glass sheets on a common conveyor is characterized by:

- suspending the glass sheets at spaced intervals generally along the direction of transport;
- subjecting the glass sheets to a compressed air flow being of a surface area which does not appreciably extend beyond that area necessary for the hardening of each glass sheet;
- discharging the compressed air flow into evacuation channels disposed generally between the spaced intervals at a

flow sufficient to substantially prevent compressed air accumulation zones, the compressed air flow between unobstructed by the evacuation channels; and d. moving the conveyor a multiple of the interval spacing.

4,230,475

CERAMIC ROLL DRIVE AND SUPPORT MECHANISM AND A METHOD OF USING SAME

Ronald G. Dunk, Hepworth, Canada, assignor to PPG Industries, Inc., Pittsburgh, Pa.

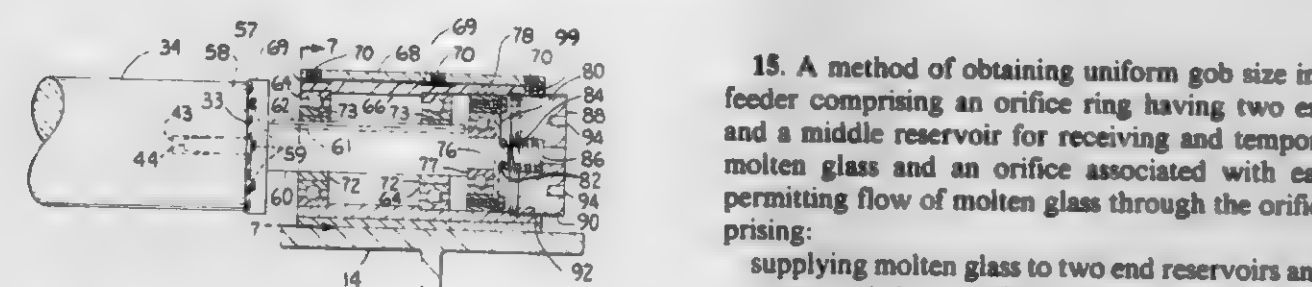
Filed Mar. 5, 1979, Ser. No. 17,213

Claims priority, application Canada, Feb. 20, 1979, 321883

Int. Cl.² C03B 25/04

U.S. Cl. 65—118

10 Claims



1. Apparatus for transporting a glass sheet along a path of travel through an enclosed, heated, tunnel-like furnace comprising a rotatable conveyor roll extending transversely of said path of travel for rotation about an axis extending transversely of said path, said conveyor roll comprising a ceramic roll of cylindrical configuration, an elongated recess extending longitudinally inward from each end of said ceramic roll in axial alignment therewith, a rotatable metal spindle axially aligned with each end of said ceramic roll, an alignment pin extending axially inward from each said spindle into one or the other of said recesses and axially aligned with said associated spindle and recess, one of said spindles having an outer axial end, drive means drivingly connected to said outer axial end of said one spindle to rotate the latter, means abutting the axial outer end of the other spindle to apply a yieldable compressive force in the axial direction of said ceramic roll, said ceramic roll having a pair of end surfaces extending transverse to said axial direction, a coating of friction material applied to each of said end surfaces, a head approximately coextensive in cross section with said end surfaces at the axially inner end of each said spindle, a recessed surface facing axially inwardly of each said head, and a coating of friction material applied to each of said recessed surfaces to interface said end surfaces of said ceramic roll and said recessed surfaces of said heads with friction material, whereby said ceramic roll rotates in unison with said spindles in axial compression therebetween when said drive means rotates said one spindle.

8. A method of conveying a series of glass sheets along a path of travel through a tunnel-like furnace comprising: supporting each glass sheet on the common upper tangential plane of a series of parallel, horizontally spaced, cylindrical, ceramic rolls; propelling the glass sheet along the ceramic rolls by imparting rotation to each ceramic roll about its cylindrical axis by way of a first metallic spindle engaging an end of the ceramic roll; maintaining each ceramic roll in axial compression by applying a yieldable compressive force to the ceramic roll by way of a second spindle engaging the opposite end of the ceramic roll; and maintaining the spindles in frictional engagement with the ceramic rolls by interposing friction material between an end surface at each end of each ceramic roll transverse to the axis of the roll and a parallel, adjacent surface on the respective spindle.

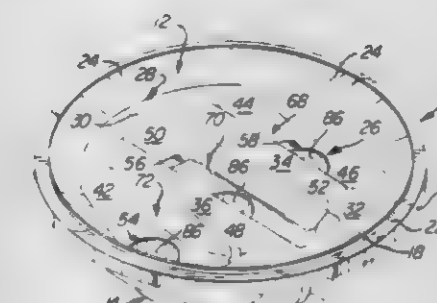
4,230,476
APPARATUS AND METHOD FOR OBTAINING UNIFORM GOBS IN A TRIPLE GOB FEEDER
Peter Vischer, Golden, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Apr. 2, 1979, Ser. No. 26,099

Int. Cl.³ C03B 7/08

U.S. Cl. 65—128

17 Claims



15. A method of obtaining uniform gob size in a triple gob feeder comprising an orifice ring having two end reservoirs and a middle reservoir for receiving and temporarily storing molten glass and an orifice associated with each reservoir permitting flow of molten glass through the orifice ring, comprising:

- supplying molten glass to two end reservoirs and to a middle reservoir in an orifice ring;
- maintaining the average residence time of molten glass in the two end reservoirs at a relatively constant level;
- maintaining the average residence time of molten glass in the middle reservoir at a relatively constant level which is longer than the average residence time of molten glass in the two end reservoirs by forming the middle reservoir at a volumetric size relatively larger than that of each of the end reservoirs, and then
- urging a regulated portion of the molten glass in each reservoir through an orifice associated with each reservoir at a regulated rate.

4,230,477

APPARATUS FOR GRANULATING MOLTEN SLAG

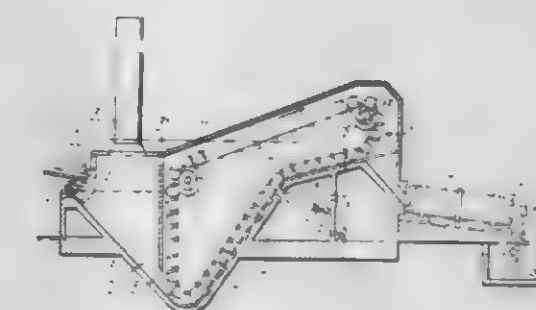
Mikhail A. Sharomov, ulitsa Tekhnologicheskaya, 3, kv. 19; Lili A. Zainullin, ulitsa Lenina, 101, kv. 54, both of Sverdlovsk; Felix Y. Olginsky, ulitsa Bazhova, 1, kv. 87; Ivan I. Scherbakov, ulitsa Malakhitovaya, 9, kv. 30 both of, Moscow; Serafim V. Kolpakov, ulitsa Ryazanskaya, 3, Lipetsk, and Leonid I. Teder, ulitsa admiraln Makarova, 17, Lipetsk, all of U.S.S.R.

Filed Jan. 2, 1979, Ser. No. 333

Int. Cl.² C03B 5/22

U.S. Cl. 65—141

4 Claims



1. An apparatus for granulating molten slag comprising a device for breaking up said molten slag by water, a divided settling bin including inclined walls for holding granulated slag and water connected to said device, a sloped elevator with perforated buckets mounted in said settling bin, at least along one of said inclined walls, for discharging therefrom said granulated slag, pulleys and pulley shafts for said sloped elevator disposed above the level of water in said settling bin, one of

said pulleys, being placed above the other one, in the direction of the elevator movement, and a device for drying said granulated slag disposed at the place of discharge of said granulated slag from said settling bin; whereby the reliability of operation is enhanced due to the location of said pulleys and pulley shafts above the level of water in said settling bin.

4,230,478

DEODORANT COMPOSITION FOR ANIMAL AND VEGETAL WASTES

Jean-Pierre Zumbann, Eaubonne, France, assignor to L'Air Liquide S.A. pour l'Etude et l'Exploitation des Procédés George Claude, Paris, France

Filed Jan. 23, 1979, Ser. No. 5,836

Claims priority, application France, Feb. 3, 1978, 78 03000 Int. Cl.³ C05F 3/00

U.S. Cl. 71-3

7 Claims

1. A deodorizing composition consisting essentially of an aqueous mixture of an oxygen generating compound, an odor masking agent, and an emulsifying effective amount of a biodegradable emulsifying surfactant, wherein the oxygen generating compound is hydrogen peroxide at a concentration expressed at 100% H₂O₂ of 50 to 500 g/liter of said aqueous mixture, the odor masking agent is a pine oil or the sesquiterpenes of turpentine, present in a concentration of 50 to 400 ml/l of said aqueous mixture, and the emulsifying surfactant concentration is 5 to 50 g/l of said aqueous mixture.

4,230,479

PROCESS FOR IMPROVING THE QUALITY OF UREA-AMMONIUM NITRATE SOLUTION

Robert C. Richardson, Beatrice, Nebr., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 30, 1979, Ser. No. 25,509

Int. Cl.² C05C 9/00, 1/00

U.S. Cl. 71-30

9 Claims

1. A process for producing high nitrogen urea/ammonium nitrate solutions exhibiting low salting out temperatures which comprises

admixing a hot urea-containing solution and a hot ammonium nitrate containing solution, at least one of which containing free residual ammonia, said admixing resulting in a hot residual free ammonia containing urea/ammonium nitrate solution containing free residual ammonia in amounts undesirable in fertilizer applications,

cooling said hot residual free ammonia-containing urea/ammonium nitrate solution below about 190° F. and above about 140° F., and

contacting said cooled free ammonia-containing urea/ammonium nitrate solution with an amount of aqueous nitric acid effective to substantially neutralize said residual free ammonia, thereby producing a substantially ammonia free urea/ammonium nitrate product solution exhibiting a low salting out temperature in the range of about 17° F. to 19° F.

4,230,480

3-[5-(1-NITROPHENOXY)ALKYL, ALKYNYL, ALKENYL, HALOALKYL]-1,3,4-THIAZOLIDIN-2-YL-4-HYDROXY-1-METHYL-2-IMIDAZOLIDINONES

Jerome M. Lavanish, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

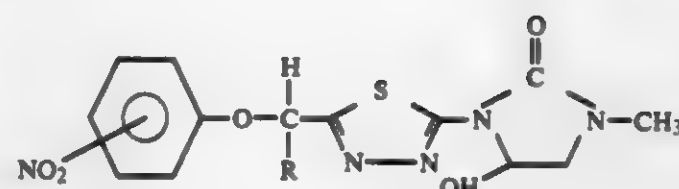
Filed Jan. 18, 1979, Ser. No. 49,018

Int. Cl.² A01N 9/22; C07D 417/04

U.S. Cl. 71-90

36 Claims

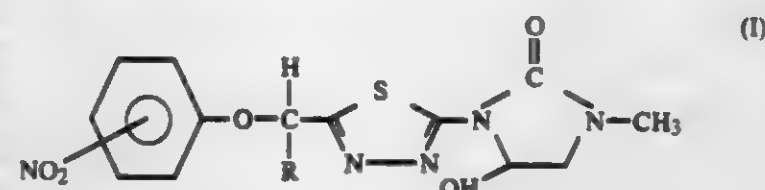
1. A compound graphically represented by Formula I:



wherein:

R is an alkyl of up to four carbon atoms, an alkenyl of up to three carbon atoms, an alkynyl of up to three carbon atoms, or a haloalkyl selected from the group consisting of chloromethyl, bromomethyl, 2-chloroethyl and 2-bromoethyl.

17. A method of controlling weeds, which comprises contacting the weeds with a herbicidally effective amount of a compound graphically represented by Formula I:



wherein:

R is an alkyl of up to four carbon atoms, an alkenyl of up to three carbon atoms, an alkynyl of up to three carbon atoms, or a haloalkyl selected from the group consisting of chloromethyl, bromomethyl, 2-chloroethyl and 2-bromoethyl.

4,230,481

PYRAZOLE DERIVATIVES USEFUL AS A HERBICIDAL COMPONENT

Ryuzo Nishiyama, Takatsuki; Fumio Kimura, Kusatsu; Takahiro Haga, Kusatsu; Nobuyuki Sakashita, Kusatsu, and Tetsuji Nishikawa, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Limited, Osaka, Japan

Filed Jul. 31, 1978, Ser. No. 929,564

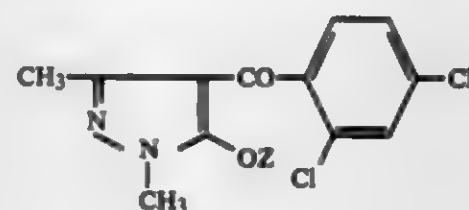
Claims priority, application Japan, Aug. 12, 1977, 52-96110; Nov. 10, 1977, 52-134072

Int. Cl.³ A01N 43/56; C07D 231/10

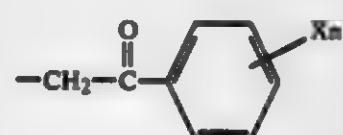
U.S. Cl. 71-92

12 Claims

1. A pyrazole derivative having the formula:



wherein Z is



group (wherein X is a (C₁-C₄) alkyl group or a (C₁-C₄) alkylthio group, and n is 0, 1 or 2).

7. A herbicidal composition comprising a herbicidally effective amount of at least one compound having the formula:

4,230,483

SUBSTITUTED CYCLOPROPYLMETHOXY PHENYL CARBAMATES AND THIOCARBAMATES AND THEIR USE AS HERBICIDES

Raymond A. Felix, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

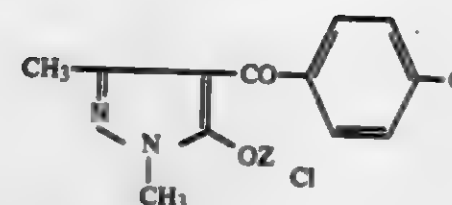
Division of Ser. No. 807,940, Jun. 21, 1977, Pat. No. 4,149,874. This application Feb. 21, 1979, Ser. No. 13,359

Int. Cl.³ A01N 37/26, 37/44; C07C 155/03, 125/06

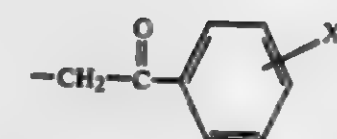
U.S. Cl. 71-100

30 Claims

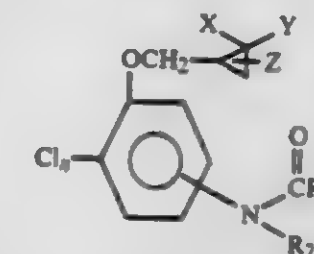
1. A compound having the formula



wherein Z is



group (wherein X is a (C₁-C₄) alkyl group or a (C₁-C₄) alkylthio group, and n is 0, 1 or 2) as an active ingredient, and an agriculturally acceptable adjuvant.



in which R₁ is lower alkoxy or thio-lower alkyl R₂ is hydrogen, lower alkoxy-alkyl or lower alkanoyl; X and Y are independently chloro, fluoro or bromo; Z is hydrogen, methyl, dimethyl or one methyl and one chloro and substituent; and n is 0 or 1.

4,230,482

HERBICIDE ANTIDOTES

Larry W. Peterson, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

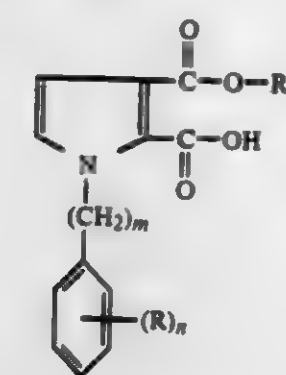
Continuation-in-part of Ser. No. 937,615, Aug. 28, 1978, abandoned. This application May 21, 1979, Ser. No. 41,288

Int. Cl.³ A01N 25/32, 43/70, 43/36

U.S. Cl. 71-93

5 Claims

1. A method for increasing the safety of the herbicide, cyanazine, with respect to a grain sorghum plant, which comprises providing the growing sorghum plant, at the time it is contacted with the herbicide, with an effective amount of an antidote compound of the formula:



wherein m, n, R and R¹ are as follows:

Compound No.	m	n	R	R ¹
1	0	0	—	H
2	1	0	—	H
3	0	1	3-(—CF ₃)	H
4	0	1	2-(—F)	H
5	0	1	3-(—Cl)	H
6	0	0	—	—CH ₃
7	0	1	2-(—Cl)	H
8	1	1	3-(—Cl)	H
9	0	2	2-(Cl), 3-(—Cl)	H

4,230,485

METHOD OF INCREASING GRAIN YIELD IN FIELD CORN BY APPLICATION OF TRIACONTANOL

Alvin J. Ohlrogge, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Nov. 14, 1978, Ser. No. 960,762

Int. Cl.³ A01N 31/02

U.S. Cl. 71-122

7 Claims

1. The method of enhancing the grain yield of a field corn crop by applying triacontanol to the foliage of a corn plant at a rate of less than 112 mg per acre and at a growth stage of the corn plant after tassel initiation inside the corn plant.

4,230,485

PROCESS FOR REMOVAL AND RECOVERY OF MERCURY FROM LIQUIDS

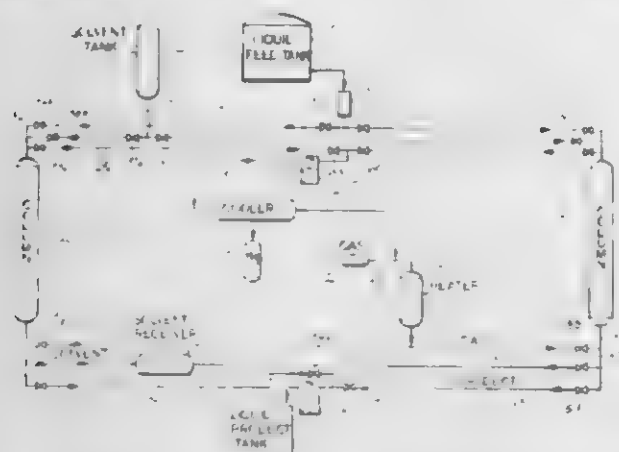
Italo A. Capuano, and Patricia A. Turley, both of Orange, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 28, 1978, Ser. No. 901,175

Int. Cl.² C22B 43/00

U.S. Cl. 75—81

27 Claims



1. A process for the recovery of metallic mercury from a mercury-containing liquid having a pH of about 5 or higher to produce a purified liquid having a mercury content of less than 50 parts per billion which comprises:

- contacting particles of metallic silver with said liquid to dissolve said mercury in said metallic silver to form a silver amalgam and a purified liquid,
- separating said purified liquid from said silver amalgam,
- heating said silver amalgam with a heated gas to vaporize mercury from said silver amalgam to produce mercury vapors and particles of metallic silver, said heated gas containing said mercury vapors,
- cooling said heated gas to condense said mercury vapors to metallic mercury, and
- recovering said metallic mercury.

18. A process for the recovery of metallic mercury from a solution of an alkali metal alkoxide to produce a purified solution having a mercury content of less than 50 parts per billion which comprises:

- contacting particles of metallic silver contained in a separation unit with said liquid to dissolve said mercury in said silver to form a silver amalgam and a purified solution of an alkali metal alkoxide,
- separating said purified solution from said silver amalgam,
- heating said silver amalgam with a heated gas to vaporize mercury from said silver amalgam to produce mercury vapors and particles of metallic silver, said heated gas containing said mercury vapors,
- cooling said heated gas to condense said mercury vapors to metallic mercury, and
- recovering said metallic mercury.

4,230,487

METHOD OF SELECTIVELY BRINGING INTO SOLUTION THE NON-FERROUS METALS CONTAINED IN SULPHURIZED ORES AND CONCENTRATES

Jean-Michel Demarthe, Viroflay; Louis Gandon, and Andre Georgeaux, both of Rambouillet, all of France, assignors to Societe Miniere et Metallurgique de Penarroya, Paris, France

Continuation of Ser. No. 794,107, May 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 577,772, May 15, 1975, abandoned. This application Sep. 7, 1979, Ser. No. 73,438

Claims priority, application France, May 15, 1974, 74 16773

Int. Cl.² C22B 13/04, 15/08, 19/22, 23/04

U.S. Cl. 75—101 R

19 Claims

1. A method for selectively solubilizing at least one non-ferrous metal selected from the group consisting of lead, zinc, copper, silver, cadmium, nickel, and cobalt, and contained, in the form of its sulphide, in an initial product selected from the group consisting of sulphurized ores and concentrates, com-

prising subjecting said initial product to lixiviation at a temperature above 50° C. with an aqueous solution containing cupric chloride and an agent for solubilizing cuprous chloride, the aqueous solution having an oxido-reduction potential of between 400 and 800 millivolts in relation to a hydrogen electrode potential throughout the operation, whereby the metal sulphides are converted to the respective soluble metal chlorides, the cupric chloride is reduced to cuprous chloride which remains in solution due to said solubilizing agent, and elemental sulfur is produced, and regenerating the resulting reaction mixture in situ at atmospheric pressure and at a temperature above 50° C. with air and hydrochloric acid while maintaining the pH of the solution at a value of at most 1 when the solution contains ferrous chloride and at a value of at most 3 when ferrous chloride is absent, whereby the cuprous chloride is oxidized to cupric chloride, and isolating an aqueous solution containing said at least one non-ferrous metal chloride.

4,230,488

ABRASION RESISTANT RAILS AND/OR RAIL WHEELS, AND PROCESS FOR PRODUCING THE SAME

Wilhelm Heller, Duisburg; Walter Knorr, Bochum, and Reinhard Schweitzer, Düsseldorf, all of Fed. Rep. of Germany, assignors to Fried. Krupp Hüttenwerke AG, Bochum, Fed. Rep. of Germany

Filed Jun. 30, 1978, Ser. No. 920,818

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2730045

Int. Cl.² C22G 38/60

U.S. Cl. 75—123 F

12 Claims

1. In a unit composed of a railway rail and a railway wheel adapted to travel thereover, said rail and said wheel being formed from a steel for railways comprising in percent by weight no more than 0.80% carbon, no more than 1.50% silicon, no more than 3.50% manganese, no more than 4.00% chromium; with the total contents of manganese and chromium together not exceeding 4.50% and the remainder iron and other alloying elements used in steels for railway rails and railway wheels, the improvement comprising:

adding an alloying material selected from the group consisting of lead and bismuth in an amount in the range of 0.02 percent to 0.35 percent by weight to the steel used for the railway rail or the railway wheel.

4,230,489

ALLOYS OF Fe, Cr, Si, Y AND Al

John E. Antill, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 13, 1979, Ser. No. 29,841

Claims priority, application United Kingdom, Apr. 28, 1978, 17053/78

Int. Cl.² C22C 39/02

U.S. Cl. 75—124

1 Claim

1. An alloy of iron, chromium, aluminium, yttrium and silicon consisting of from 15 to 25 weight percent of chromium, from 4 to 5.5 weight percent of aluminium, from 0.01 to 3 weight percent of yttrium, from 1 to 2 weight percent of silicon, and the balance iron.

4,230,490

PROCESS FOR PRODUCING CAST IRON

Werner Kessel, Nr. 10a, 8481 Bärnwinkel, Fed. Rep. of Germany

Filed May 16, 1978, Ser. No. 906,763

Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723870

Int. Cl.² C21C 33/08

U.S. Cl. 75—130 B

9 Claims

1. A process for producing cast iron containing globular graphite comprising covering magnesium or a magnesium master-alloy with a material to prevent oxidation of the magnesium or magnesium master-alloy, said material being particu-

4,230,491

ARTICLE HIGHLY RESISTANT TO CORROSION BY GALLIUM PHOSPHIDE AND GALLIUM ARSENIDE

Kiyoshi Nakamura; Michiyasu Komatsu, and Masae Nakanishi, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

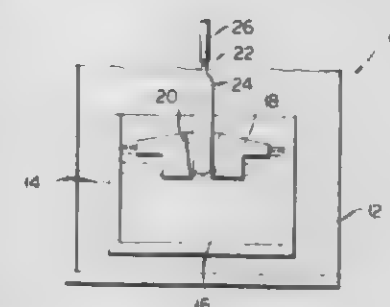
Filed Jul. 13, 1978, Ser. No. 924,358

Claims priority, application Japan, Jul. 14, 1977, 52/83857

Int. Cl.² C04B 35/10, 35/58; C09K 3/00

U.S. Cl. 106—14.05

4 Claims



1. An article having at least a portion which directly contacts molten gallium phosphide or gallium arsenide, said contacting portion comprising: a sintered body of silicon nitride and a total of from 0.5% to 20% by weight, based on said silicon nitride, of an additive selected from the group consisting of 0.01% to 10% by weight based on said silicon nitride, of aluminum oxide, 0.5% to 20% by weight, based on said silicon nitride, of cerium oxide and mixtures thereof, said additive being in the form of a compound selected from the group consisting of Si-Ce-O-N, Si-Ce-Al-O-N and mixtures thereof depending upon the additive selected, and at least a portion of said additive being present in said sintered body as a crystallized phase.

4,230,495

PROCESS FOR PRODUCING A PRESSURE-SENSITIVE CARBONLESS COPY SHEET USING MICROCAPSULES FORMED IN SITU IN A RADIATION CURABLE BINDER

Yu-Sun Lee, Parma, Ohio, and Dale R. Shackel, Scottsboro, Ala., assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 773,901, Mar. 3, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,370

Int. Cl.² C09K 3/00

U.S. Cl. 106—14.5

12 Claims

1. A process for producing a non-aqueous, solvent-free coating composition without drying, said coating composition having utility in the manufacture of pressure-sensitive carbonless transfer papers, said non-aqueous, solvent-free coating composition being characterized by being radiation curable by polymerization to a tack free film and containing microcapsules having a hydrophilic core material said microcapsules being formed in situ, comprising the steps of:

- preparing a liquid radiation curable hydrophobic emulsion component by dispersing an emulsifier in a radiation curable hydrophobic liquid;
- preparing a liquid hydrophilic emulsion component by dispersing a first wall-forming material in a hydrophilic liquid containing at least one chromogenic material, said chromogenic material being soluble in said hydrophilic liquid, said first wall-forming material being reactive with a second wall-forming material to form a polymeric capsule wall, said polymeric capsule wall being substantially insoluble in said liquid hydrophilic and said liquid radiation curable hydrophobic emulsion components;
- mixing said liquid radiation curable hydrophobic emulsion component with said liquid hydrophilic emulsion component to form an emulsion containing droplets of said liquid hydrophilic emulsion component dispersed in said liquid radiation curable hydrophobic emulsion component; and

4,230,492

ARYL SULFONIC ACID BASED STABILIZERS FOR PRESENSITIZED PLANOGRAPHIC PLATES

Daniel C. Thomas, Wheaton, Ill., assignor to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 676,296, Apr. 12, 1976, abandoned.

This application Jan. 17, 1978, Ser. No. 870,196

Int. Cl.² G03C 1/60, 1/94; G03F 7/08

U.S. Cl. 430—159

4 Claims

1. A presensitized lithographic plate consisting essentially of an anodized aluminum plate base, a hydrophilic and oleophobic silicate sub-base coating on said plate base, a sensitizer coating overlying said sub-base coating comprising a water soluble photosensitive diazo resin, and a water soluble aryl sulfonic acid based stabilizer selected from the group consisting of p-chlorobenzene sulfonic acid, and alkali metal salts thereof, said stabilizer being interposed as a separate layer between said sub-base coating and said sensitizer coating.

4,230,493

GOLD CONDUCTOR COMPOSITIONS

John J. Felten, Lewiston, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 22, 1978, Ser. No. 944,895

Int. Cl.² C09D 5/24

U.S. Cl. 106—1.13

9 Claims

1. A gold conductor composition suitable for application in thick film microcircuitry consisting essentially of 75–90% by weight of the composition of gold powder, binder selected from the group consisting of copper oxide, cadmium oxide, bismuth oxide and mixtures of two or more of copper oxide, cadmium oxide and bismuth oxide, organic vehicle and 0.1–4% by weight of silver.

4,230,504

METHOD OF MAKING IMPLANT PROGRAMMABLE N-CHANNEL ROM

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 27, 1978, Ser. No. 900,549

Int. Cl.² G11C 11/40, 17/00

U.S. Cl. 148—1.5

8 Claims



1. A method of making a read-only-memory array, while at the same time forming N-channel silicon gate transistors peripheral to the array, comprising the steps of: forming a plurality of N-channel silicon gate memory transistors in a face of a semiconductor body, and at the same time forming a plurality of said peripheral transistors spaced from the array, each of the transistors having a source, a drain and a silicon gate, the memory transistors being in a regular pattern to provide an array of memory cells; programming the array of memory cells by masked ion implant penetrating through the silicon gates of selected ones of the field effect transistors while shielding the peripheral transistors; and thereafter applying patterned metal contacts and interconnections on said face.

4,230,505

METHOD OF MAKING AN IMPATT DIODE UTILIZING A COMBINATION OF EPITAXIAL DEPOSITION, ION IMPLANTATION AND SUBSTRATE REMOVAL

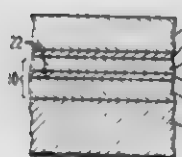
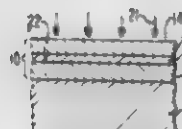
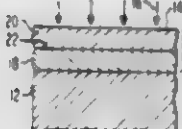
Chung P. Wu, Trenton, and Arye Rosen, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,733

Int. Cl.³ H01L 21/265, 21/20, 21/306, 21/324

U.S. Cl. 148—1.5

13 Claims



1. A method of making an Impatt diode capable of operating at millimeter-wave frequencies comprising the steps of:

- epitaxially depositing a layer of semiconductor material of one conductivity type on a substrate
- implanting into the first exposed surface of said layer conductivity modifiers to form a first active region across the layer,
- removing the substrate to expose the other surface of said layer, and
- implanting into said other surface of said layer conductivity modifiers to form a second active region with a PN junction being between the active regions.

4,230,506

CAM SHAFT MANUFACTURING PROCESS

Robert L. Clark, North Muskegon, Mich., assignor to Textron, Inc., Providence, R.I.

Filed Jun. 5, 1979, Ser. No. 45,752

Int. Cl.³ C22C 37/00; C21D 9/30

U.S. Cl. 148—3

14 Claims

1. In a process for manufacturing a cam shaft having a series of cam lobes wherein the cam shaft is cast from a heat-treatable gray cast iron having alloyed therewith elements selected from the group consisting of silicon, manganese, chromium, nickel, copper, molybdenum and vanadium, wherein the cast cam shaft is heat treated to improve the machinability while maintaining carbide structure, and is thereafter milled, surface hardened at least at the cam lobes and thereafter machined, the improvement in the heat-treating step comprising:

heating said cam shaft to a temperature in the range of about 1550° to 1700° F. (843°-927° C.) in a time less than two hours, holding said cam shaft at said temperature for a period of one to four hours to anneal the cam shaft while retaining carbides and without substantial formation of austenite, and cooling said cam shaft to at least 400° F. (204° C.) within one to four hours.

4,230,507

METHOD FOR SULFURIZING CAST IRON

Mikio Obayashi, Nagoya, and Naoyoshi Watanabe, Aichi, both of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed May 22, 1979, Ser. No. 41,309

Claims priority, application Japan, May 22, 1978, 53-60789

Int. Cl.² C23F 7/24

U.S. Cl. 148—6.11

7 Claims

1. A method for sulfurizing cast iron, which comprises the steps of pre-treating cast iron material by immersing the material in an aqueous nitric acid solution consisting essentially of nitric acid and water for a period of from 20 minutes to 3 hours, the concentration of nitric acid in said solution being from 1 to 10 percent by volume, and thereafter sulfiding the material in molten sulfur, thereby forming a sulfurized layer on the surface of the material.

4,230,508

METHOD OF MAKING SEMICRYSTALLINE SILICON ARTICLE

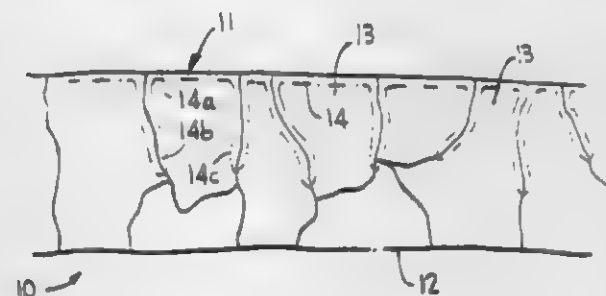
Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Division of Ser. No. 916,545, Jun. 19, 1978, which is a continuation-in-part of Ser. No. 751,342, Dec. 16, 1976, abandoned, and a continuation-in-part of Ser. No. 751,343, Dec. 16, 1976. This application Jul. 19, 1979, Ser. No. 58,767

Int. Cl.² H01L 21/223

U.S. Cl. 148—186

3 Claims



1. A method of making a photovoltaic cell from a wafer of semicrystalline silicon having a surface adapted for the impingement of light thereon, said surface being formed from individual grains of silicon having a mean diameter of at least about 100 microns and grain boundaries that at said surface are

in contact with or separated only slightly from the boundaries of adjoining grains, and a surface opposed to said impingement surface, comprising in a primary diffusion step, diffusing an impurity into said impingement surface of said wafer and then, in a secondary diffusion step, maintaining said wafer in an atmosphere substantially free from said impurity at a temperature and for a period of time sufficient to cause said impurity to penetrate between said grain boundaries and into said individual grains to form a photovoltaic junction at said impingement surface and extending across and below said surface and also into the interior of said wafer along and inwardly of said grain boundaries, said junction penetrating said wafer to a substantial depth whereby the total junction area exceeds the product of the linear dimensions of said wafer surface but not to an extent whereby said junction extends completely around the boundaries of said silicon grains or from said impingement surface to said opposed surface of said wafer.

4,230,509

PYROPHORIC FLAME COMPOSITION

Milton A. Tufts; Charles M. Lawson, both of Joppe, and Lawrence D. Whiting, III, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 13, 1979, Ser. No. 29,809

Int. Cl.³ C06B 43/00

U.S. Cl. 149—109.4

6 Claims

1. A low-viscosity liquid pyrophoric composition, which provides increased safety under normal handling conditions but when disseminated into the atmosphere produces a fireball of controlled ignition delay and rapid, essentially total combustion and evolution of the thermal energy thereof, consisting essentially of about from 30% to 85% by weight of a homogeneous solution of polyisobutylene in triethylaluminum and about from 15% to 50% by weight of at least one saturated aliphatic hydrocarbon containing 5 to 12 carbon atoms, said composition having a viscosity ranging about from 30 to 150 centistokes at 40° C.

4,230,510

DISTRIBUTED PHOSPHOR SCINTILLATOR STRUCTURES

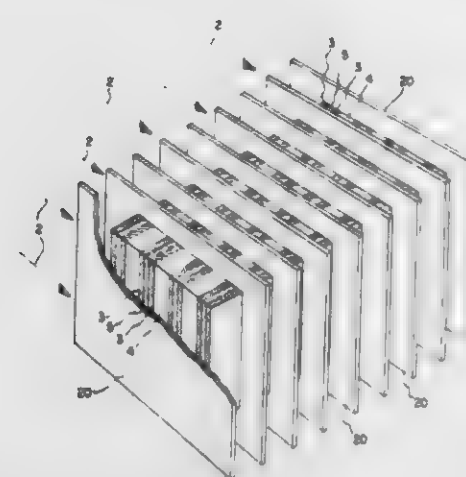
Dominic A. Cusano, and Jerome S. Prener, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,086

Int. Cl.² G01T 1/164; C09K 11/08; B32B 31/12

U.S. Cl. 156—67

14 Claims



1. A method of manufacturing multilayered scintillator bodies to increase detectable output at optical wavelengths when excited by high energy photons at supra-optical frequencies, said method comprising the steps of:

(A) applying a uniform layer of phosphor material to at least one side of each of at least two rigid substrates, said sub-

strates being inert, transparent to radiation at supra-optical frequencies, and having substantially flat sides; and then (B) forming a further layered structure by disposing an optically transparent material between layers of the phosphor substrates from step A, said laminate material being transparent to radiation at supra-optical frequencies, whereby optical wavelength output produced within the scintillator body is channeled to the exterior of the body for detection.

4,230,511

CURING A REPLACEABLE TREAD FOR A BIG TIRE

Richard J. Olsen, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

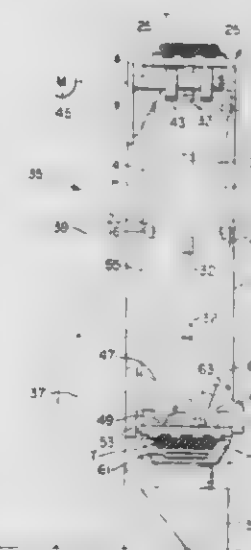
Division of Ser. No. 841,227, Oct. 11, 1977, Pat. No. 4,152,191.

This application Jan. 24, 1979, Ser. No. 5,932

Int. Cl.³ B29H 17/00

U.S. Cl. 156—123 R

3 Claims



1. A method of making a tire tread comprising providing a building and molding ring having a predetermined pattern of grooves and ridges on its outer cylindrical surface; fabricating an endless tread assembly on said ring, the tread having a core of parallel closely spaced cord or wire reinforcement elements and an uncured elastomeric cover of tread compound, disposing said ring and said uncured tread assembly in press means having a single heated mold shoe movable radially of said ring for applying heat and molding pressure to an arcuate portion of said belt and a pressure arm disposed within said ring for applying pressure radially outward of the ring in opposition to said shoe, and indexing said ring and said tread together to place remaining arcuate portions of said tread successively in said press means to complete the molding and curing of said tread assembly, and removing said tread in its cured state axially from said ring for use on a tire.

4,230,512

CENTER BLOCK SIDE RIB TREAD PATTERN FOR HEAVY VEHICLE RADIAL TIRES

Shigeo Makino, Tokorozawa; Noriharu Sugimura, and Shigeta Aoki, both of Higashimurayama, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,352

Claims priority, application Japan, Apr. 8, 1978, 53/40802

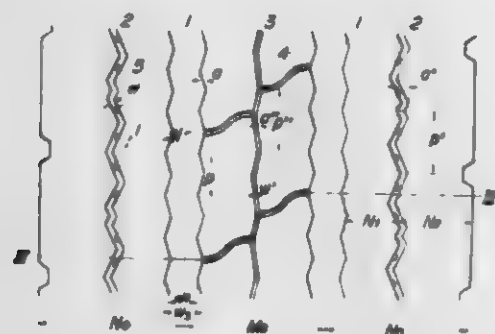
Int. Cl.² B60C 11/06

U.S. Cl. 152—209 R

8 Claims

1. In a pneumatic radial tire for heavy vehicles having a center block-side rib type tread pattern, comprising a reinforcement structure for rigidly reinforcing that portion of the tire which is located directly beneath a tread by means of a carcass including cords arranged substantially in a radial plane and a belt layer including metal wire cords and superimposed about the carcass, two relatively wide main grooves extending in circumferential direction of the tire and spaced apart from

each other in the widthwise direction of the tire by a distance which is within a range between at least 20% of the tread width and at most 60% of the effective width of the belt layer, these two main grooves dividing the tread into a center region and two side regions, a relatively narrow zigzag or substantially zigzag auxiliary groove extending in circumferential direction of the tire and dividing each of the three regions into two portions and a branch groove located in the center region of the tread and connecting the zigzag auxiliary groove to the right and left main grooves alternately, the branch groove dividing the center region tread also in the circumferential direction, of the improvement wherein each of said main



grooves has a width which is 5 to 9% of the width of the tread and is substantially U-shaped in cross-section and in which at least those edges of said main grooves which define said center region consist of a bent or wavy line having an allocated pitch of 0.3 to 1.3 times the width of said main grooves and a swing width within a range from 0.1 to 1.0 times the width of said main groove, said main grooves forming substantially a direct through drainage path, and in which said branch groove has a depth which is far shallower than and corresponds to 14 to 36% of the depth of said main groove, said branch grooves together with said main and auxiliary grooves defining the blocks in the center region of the tread.

4,230,513

METHOD AND APPARATUS FOR MAKING RAISED AND FLAT LETTER SIGNS

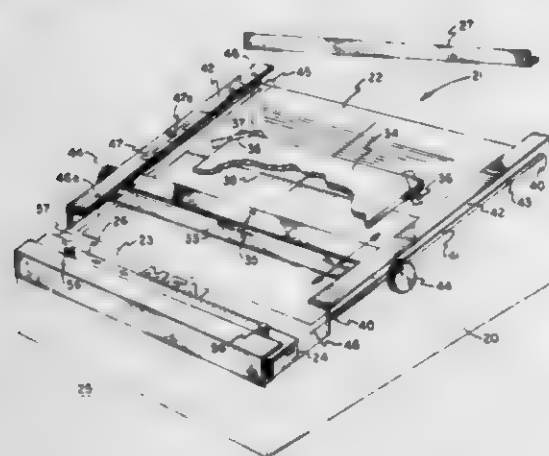
Larry Cugini, Sr., and John J. Cugini, both of 23 Holley St. Extension, Danbury, Conn. 06810

Filed Mar. 26, 1979, Ser. No. 23,599

Int. Cl.² B65H 29/00; B32B 31/00

U.S. Cl. 156-299

15 Claims



1. A signmaking jig assembly for mounting both molded and flat sheet letters on a signblank incorporating

(A) a signblank-supporting worktable, positionable before a work station,

(B) a transversely extending setting bar movably mounted above the worktable for reciprocating movement parallel to itself above the surface of a signblank secured on the worktable,

(C) means forming a transverse front staging zone extending across the worktable near the work station and defined by

a raised front transverse staging bar with which individual letters are aligned and juxtapositioned,

(D) and a movable transfer bar provided with a letter-retaining undersurface dimensioned to be lowered into the staging zone to seize the line of letters aligned therein, and to be raised and moved into a position above the signblank, from which it is lowered in juxtaposition with the setting bar to deliver the entire line of letters onto the signblank.

14. A method for making signs by mounting individual letters on a signblank temporarily secured to a worktable which incorporates a raised front transverse staging bar and a transversely-extending setting bar movably mounted for reciprocating movement parallel to itself above the signblank, in cooperation with a removable transfer bar having an adhesive under surface, comprising the successive steps of

positioning the individual letters in an aligned array in a transverse staging zone adjacent to the staging bar,

positioning the setting bar above the signblank adjacent to the level selected for the arrayed line of letters to be mounted thereon,

lowering the transfer bar into adhesive engagement with the aligned array of letters in the staging zone,

lifting the transfer bar and adhering array of letters from the staging zone,

transporting the transfer bar and adhering array of letters to the vicinity of the setting bar,

lowering the transfer bar and adhering array of letters in juxtaposition with the setting bar until the letters rest on the signblank,

bonding the letters to the signblank, and removing the transfer bar from the bonded array of letters.

4,230,514

PROCESS FOR MAKING FORM SETS FROM CARBONLESS COPY PAPER SHEETS

William J. Becker; Kenneth D. Glanz; Peter L. Foris; Robert W. Brown, and Jerrold L. Anderson, all of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Jul. 26, 1978, Ser. No. 928,109

Int. Cl.² C09J 5/00

U.S. Cl. 156-305

9 Claims

1. A process for making form sets from carbonless copy paper, comprising the steps of:

(a) applying to an edge of a stack of sheets of said copy paper a non-aqueous composition selected from the group consisting of silicone resin solution sprays, substantially volatile aliphatic hydrocarbons, silicone resin solutions and solutions of resins in an aliphatic hydrocarbon solvent,

(b) drying said non-aqueous composition,

(c) applying an adhesive to said edge,

(d) drying said adhesive, and

(e) fanning said stack to separate the adhesively united unit form sets therefrom.

4,230,515

PLASMA ETCHING APPARATUS

John Zajac, San Jose, Calif., assignor to Davis & Wilder, Inc., Santa Clara, Calif.

Filed Jul. 27, 1978, Ser. No. 928,594

Int. Cl.³ C23F 1/02; H01L 21/306

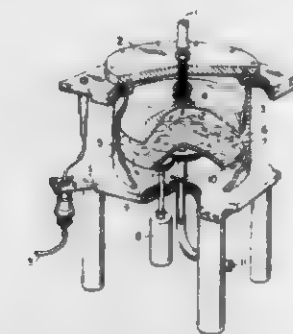
U.S. Cl. 156-345

9 Claims

1. In a radial flow plasma etcher having upper and lower spaced apart electrodes having substantially circular focus, the

improvement comprising radially decreasing the spacing between the electrodes wherein the gap between the electrodes is

mounted on a shaft, a carrier movable axially of said shaft and including a ring in a plane normal to the axis of said shaft and concentric therewith, an arm secured to said ring, and means to



4,230,516

LABELLING MACHINE

Kyoichi Yamashita, Yokohama, Japan, assignor to Koyo Jidoki Co., Ltd., Kanagawa, Japan

Filed Mar. 21, 1979, Ser. No. 22,489

Claims priority, application Japan, Oct. 24, 1978, 53/129976

Int. Cl.² B32B 31/00; B65C 9/00, 7/00

U.S. Cl. 156-364

4 Claims



1. A labelling machine comprising:

(a) a plurality of label suction drums rotatably mounted on a bedplate, each said label suction drum being provided with a plurality of arcuately spaced projections and vacuum suction outlets between said projections;

(b) a plurality of label holders for supplying labels one-by-one to a corresponding label suction drum, the labels being retained on a peripheral surface of said label suction drum between said projections by vacuum applied through said vacuum suction outlets;

(c) a label applicator drum positioned adjacent said label suction drums, the labels being held by said label suction drums being fed one-by-one to said label applicator drum to be thereafter applied to an object;

(d) an upper stop means positioned adjacent the periphery of each label suction drum and said label applicator drum, said upper stop means being spaced from said bedplate by a distance corresponding to the height of the labels, said upper stop means correcting any horizontal misalignment of the labels relative to said label suction drum; and

(e) push means for urging the labels carried by said label suction drums towards said label applicator drum.

4,230,517

MODULAR TIRE BUILDING MACHINE

George E. Enders, Salem, Ohio, assignor to NRM Corporation, Akron, Ohio

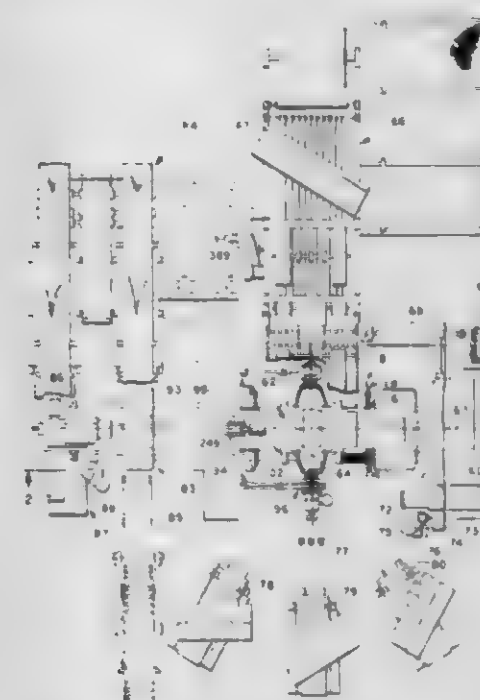
Filed Mar. 15, 1978, Ser. No. 886,743

Int. Cl.² B29H 17/20, 17/22, 17/26

U.S. Cl. 156-396

68 Claims

1. A tire building machine comprising a tire building drum



4,230,518

DEVICE FOR FIXING FOILS ON BOTTLES STANDING UPRIGHT

Adolf Fahrlich, Neutraubling, Fed. Rep. of Germany, assignor to Hermann Kronseder, Worth, Fed. Rep. of Germany

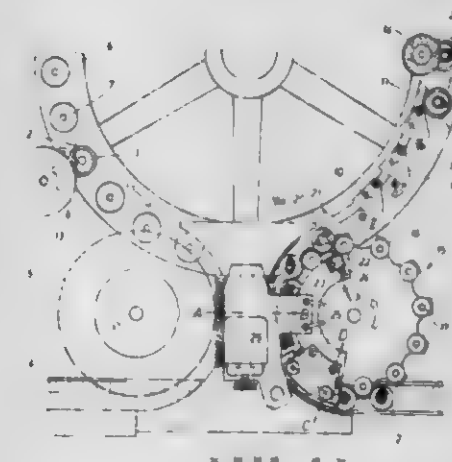
Filed Aug. 17, 1979, Ser. No. 67,579

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840404

Int. Cl.² B65C 9/04

U.S. Cl. 156-456

7 Claims



1. A machine for applying foils to bottles including: a generally circular table for rotating about a vertical axis in a horizontal plane,

a plurality of bottle supporting turntables arranged in circumferential spaced relationship around said table and rotating about vertical axes,

means along the rotational path of said table for loading bottles having closures onto successive turntables,

plunger means advanceable to engage the closure of bottles for stabilizing them on said turntable and retractable to release said bottles at a transfer area which is angularly displaced from where said bottles are loaded,

foil depositing means displaced in the rotational direction of said table from said loading means for depositing a foil

piece on the neck portion of a bottle on a passing turntable, said foil piece having corner points, said depositing means being operative to deposit respective foils with one corner point projecting above the bottle closure, an opposite corner point projecting down along the neck of the bottle and other corner points projecting in laterally opposite directions,

pressing means displaced along the circumferential path of said table for pressing said laterally extending corner points against the bottle before the bottle reaches said transfer area,

star wheel means rotating about a vertical axis adjacent said transfer area, said star wheel means having circumferentially spaced pocket means for engaging successive bottles and transferring them from said rotating table,

rotation of said turntables causing the fronts of said bottles and the upwardly projecting corner point of said foil piece to be presented in the direction of bottle motion when the bottle is in said transfer area, and

deflector means in said transfer area in the path of bottle motion operative when said plunger means has retracted to fold said upwardly projecting corner point of said foil piece over said closure.

4,230,519

TAPE APPLYING APPARATUS

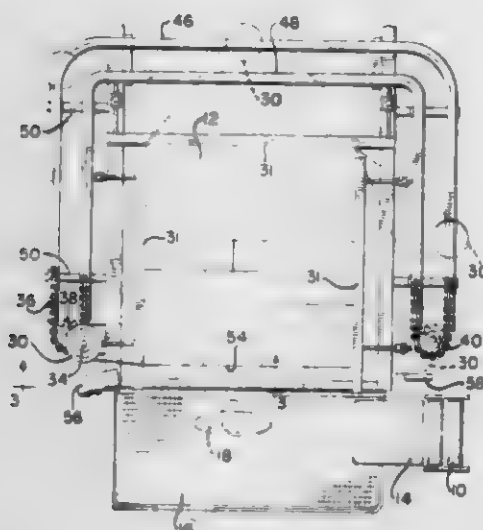
Warren DuBroff, Highland Park, Ill., assignor to Lathrop Paulson Company, Chicago, Ill.

Filed Sep. 8, 1978, Ser. No. 940,494

Int. Cl.² B09C 17/00

U.S. Cl. 156-468

7 Claims



1. In an apparatus for applying strips of tape around objects positioned adjacent the apparatus, the improvement comprising a pair of tape holding reels, support means for said reels, a path extending around the position occupied by said objects, and means for driving said support means along said path, a tape end from one of said reels being applied to each object at a first location on the surface of the object, a portion of said tape being unreeled from said one reel as the support means moves around the object whereby the tape is applied over the object surface, and means for severing the tape, the severed end of the unreled tape portion being adapted to be applied to the object surface at a second location, said tape comprising pressure sensitive tape, said support means holding the tape on one reel in an inverted position relative to the tape on the second reel whereby the pressure sensitive surface of tape unreled from said one reel faces in a direction opposite the pressure sensitive surface of tape unreled from said second reel, the tape on said one reel being unreled when driving the tape support means in one direction along said path, and the tape on the second reel being unreled when driving the tape support means in the opposite direction along said path.

4,230,520

AUTOMATIC TAPE WINDING MACHINE

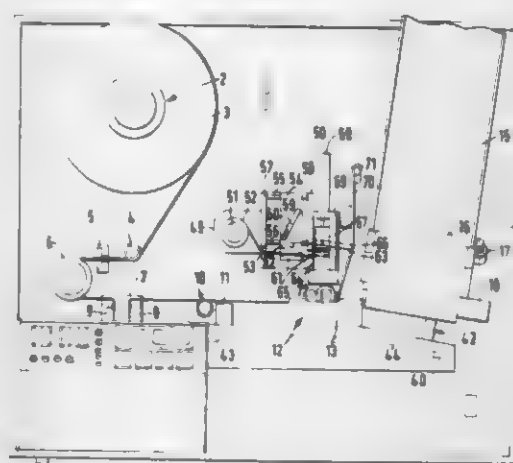
Scott J. C. Morgan, Bridgnorth, England, assignor to Decca Limited, London, England

Filed Aug. 14, 1978, Ser. No. 933,556

Int. Cl.³ B31F 5/06; G03D 15/04

U.S. Cl. 156-505

5 Claims



1. In an automatic tape-winding machine in which a loop of leader tape is extracted from a cassette to a splicing block for joiner to a magnetic tape which is wound into the cassette, the combination with said splicing block of an applicator of splicing tape, which applicator comprises:

- means for providing a stock of splicing tape;
- a reciprocable holder mounted for movement back and forth lengthwise of said splicing tape, said holder including means for holding said splicing tape by vacuum suction while said holder moves to draw splicing tape from said stock;
- a punch for holding said splicing tape by vacuum suction and applying said splicing tape to said magnetic tape; and
- a cutter disposed to sever splicing tape between the holder and the punch.

4,230,521

FOAM IMPREGNATING APPARATUS

A. Lawrence Cobb, Rochester, and Leland D. DuBrock, Troy, both of Mich., assignors to Composite Technology Corporation, Troy, Mich.

Filed Apr. 26, 1979, Ser. No. 33,591

Int. Cl.² B32B 31/04

U.S. Cl. 156-549

9 Claims



1. An apparatus for forming continuous lengths of uncured, resin-impregnated, laminar sheet structure, said apparatus comprising a source of open-cell, resilient, foam sheet; means for feeding said foam sheet from said source; a first means for supporting said foam sheet as it is fed from said source; a first liquid resin metering device adapted to discharge a first film of uncured, thermosetting resin upon one side of said foam sheet as it passes over said first supporting means, said foam sheet feeding means including first roller means for engaging and compressing said foam sheet against the first supporting means and causing said uncured resin to impregnate the open cells of a first portion of said sheet; second means for supporting the partially resin-impregnated foam sheet; a second liquid resin metering device adapted to discharge a second film of uncured

resin upon the other side of said partially resin-impregnated foam sheet, said foam sheet feeding means including second roller means for engaging and compressing said foam sheet against said second foam sheet supporting means and causing the second resin film to impregnate the remaining open cells of said foam sheet; and means for applying a continuous sheet of reinforcing material to each side of said foam sheet, said reinforcing sheets being adhered to said foam sheet by said uncured resin.

4,230,522

PNAF ETCHANT FOR ALUMINUM AND SILICON

John E. Martin, Capistrano Beach, and Wing P. Ng, Irvine, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 26, 1978, Ser. No. 973,335

Int. Cl.³ C09K 13/06, 13/08; H01L 21/308

U.S. Cl. 156-638

13 Claims

1. A method of forming a pattern of interconnections on an integrated circuit substrate, comprising: forming a thin film layer of metallization on said substrate; forming a layer of maskant on said layer of metallization; patterning said layer of maskant according to said interconnections; and

etching said layer of metallization with an etchant including: between about 20 and about 28 parts by volume of 85% concentrated orthophosphoric acid (H₃PO₄); between about 0.8 and about 1.2 parts by volume of 70% concentrated nitric acid (HNO₃); between about 4 and about 6 parts by volume of glacial acetic acid (HOAc); and between about 0.8 and about 1.2 parts by volume of a 48% concentrated tetrafluoroborate anion containing (BF₄⁻) material.

2. The method recited in claim 1 further comprising maintaining the temperature of said etchant substantially constant at a temperature in the range from about 30° C. to about 50° C.

3. The method recited in claim 2 further comprising agitating said substrate while said substrate is immersed in said etchant.

4. The method recited in claim 2 further comprising holding said etchant at a pressure below atmospheric pressure to reduce bubble formation.

4,230,523

ETCHANT FOR SILICON DIOXIDE FILMS DISPOSED ATOP SILICON OR METALLIC SILICIDES

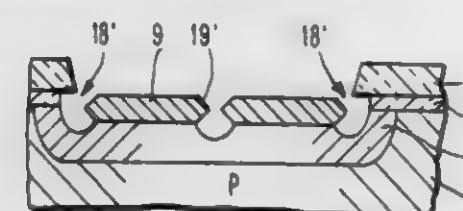
Joseph J. Gajda, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,573

Int. Cl.² H01L 21/306

U.S. Cl. 156-657

7 Claims



1. In a process for selectively etching a silicon oxide layer which is disposed atop a metallic silicide layer and wherein exposed silicon may be present below or adjacent to said silicide, the step of contacting said oxide layer with an etchant comprising:

hydrogen fluoride in polyhydric alcohol, the solution being substantially free of unbound water and ammonium fluoride; said etchant not substantially attacking either said silicide layer or said silicon.

4,230,524

METHOD FOR THE PRODUCTION OF UNBLEACHED SULPHITE CELLULOSE OR BLEACHED CELLULOSE FROM A DEFIBRATED KNOT PULP

Ketil Hasvold, Sarpsborg, Norway, assignor to Borregaard A/S, Sarpsborg, Norway

Continuation of Ser. No. 916,346, Jun. 16, 1978, abandoned.

This application Jun. 28, 1979, Ser. No. 52,862

Claims priority, application Norway, Jul. 8, 1977, 772420

Int. Cl.³ D21C 3/02, 3/06

U.S. Cl. 162-25

5 Claims

1. A method for the production of sulphite cellulose from knots produced in a sulphite cellulose cooking process, comprising:

separating said knots from said sulphite cellulose after said cooking process;

defibrating said knots separated from said sulphite cellulose;

and subjecting the separated defibrated sulphite knots, while still separated, to a single-step treatment with oxygen under pressure in an alkaline milieu at an elevated temperature, to thereby produce unbleached sulphite cellulose from said separated defibrated knots.

4,230,525

PROCESS FOR IMPROVING QUALITIES OF PAPER

Hideo Yamaguchi, Naruto; Masahiro Kobayashi, Tokushima; Atsunobu Mizote, Nara, and Yoshiyuki Iwamura, Kyoto, all of Japan, assignors to Otsuka Chemical Co., Ltd. and Sansho Co., Ltd., both of Osaka, Japan

Filed Jun. 21, 1979, Ser. No. 50,630

Claims priority, application Japan, Jun. 26, 1978, 53-77830

Int. Cl.² D21H 3/38

U.S. Cl. 162-164 R

8 Claims

1. A process for improving strength and retention of paper which comprises adding to a paper pulp slurry (a) a water-soluble polymer containing hydrazide group of the following general formula:



wherein X is hydrogen atom or carboxyl group, Y is hydrogen atom or methyl group, A is acrylamide unit, methacrylamide unit, an acrylate unit, a methacrylate unit or maleic anhydride unit, B is a unit derived from a monomer copolymerizable with acrylamide, methacrylamide, an acrylate, a methacrylate or maleic anhydride, and there is the following relationship among p, q and r:

$$30\% \text{ by mole} \leq p \leq 100\% \text{ by mole}$$

$$0\% \text{ by mole} \leq q+r \leq 70\% \text{ by mole}$$

$$p+q+r=100\% \text{ by mole}$$

or its adduct with a water-soluble inorganic salt of an alkaline earth metal in an amount of at least 0.01% by weight based upon the weight of the pulp in the presence of (b) a heavy metal ion which is at least one ion of a heavy metal selected from the group consisting of copper, cobalt, lead, zinc, iron, tin, mercury, nickel, cadmium and manganese at a concentration of at least 0.1 ppm in the pulp slurry to chelate said polymer or its adduct.

4,230,526

LIQUID SODIUM DIP SEAL MAINTENANCE SYSTEM

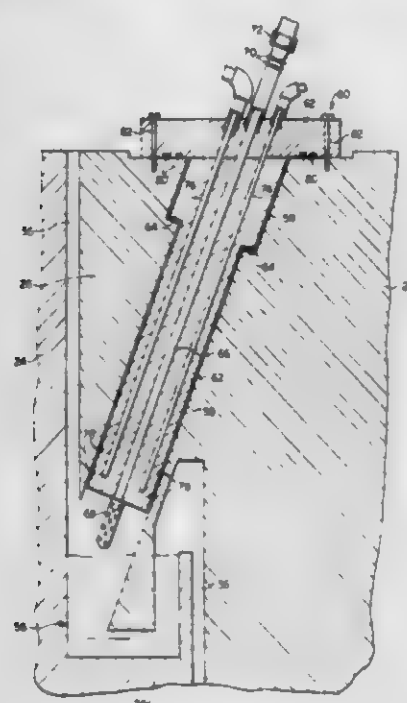
Richard L. Briggs, and Sterling A. Meacham, both of Hempfield Township, Westmoreland County, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 31, 1976, Ser. No. 719,320

Int. Cl.² G21C 9/00

U.S. Cl. 176—38

10 Claims



1. A system for removing impurities from dip seals including a vessel designed to contain radioactive material and a closure head disposed on said vessel having at least one rotatable plug for positioning refueling equipment, said rotatable plug and vessel defining an annulus to enable the rotation of said rotatable plug, said annulus having a liquid dip seal disposed thereacross for preventing the release of said radioactive material, and liquid sodium means associated with said dip seal for introducing liquid sodium to said dip seal at a temperature of at least 600° F. and for overflowing said liquid sodium from said dip seal and down said annulus thus removing said impurities therefrom.

4,230,527

STEAM GENERATOR FOR USE IN NUCLEAR POWER PLANTS

Alexander Cella, Robinwood Dr., Great Notch, N.J. 07424

Continuation-in-part of Ser. No. 792,195, Apr. 29, 1977, Pat. No.

4,162,191. This application Nov. 11, 1977, Ser. No. 850,647

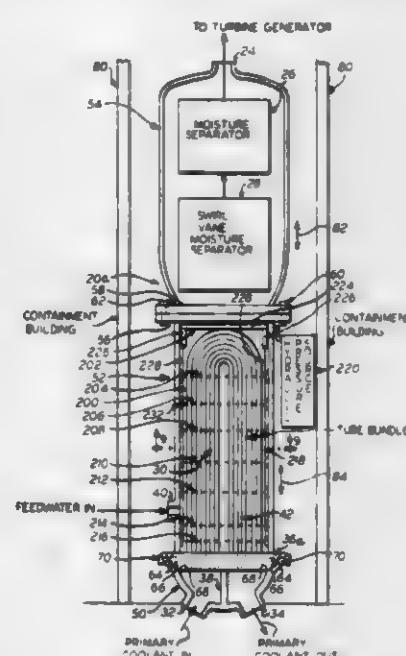
Int. Cl.² G21C 15/16

U.S. Cl. 176—87

9 Claims

1. In a steam generator for use in a pressurized water nuclear power plant in which a turbine generator is driven by the steam output of said steam generator to provide electrical power therefrom and said steam generator is powered by a nuclear energy heat source, wherein said steam generator comprises a vertically extending hollow outer housing having an upper housing portion and a lower housing portion, with said upper housing portion having a steam outlet therein communicable with the turbine generator for providing steam generated within said steam generator to said turbine generator and a moisture separator means within the interior thereof in communication with said steam outlet for drying the generated steam provided to said steam outlet, and with said lower housing portion having heat exchange fluid and feedwater inlets and a vertically extending tube bundle within the interior thereof in flow through communication with said heat exchange fluid for enabling heat exchange fluid provided through said inlet therefor to flow through said tube bundle for providing said generated steam from feedwater provided through said inlet therefor, said tube bundle having a tube sheet at one end thereof for supporting said tube bundle with

the tubes comprising said tube bundle extending through said tube sheet in said flow through communication with said heat exchange fluid inlet; the improvement comprising vertically movable grid structure means vertically extending within the interior of said lower housing portion, said grid structure means comprising a plurality of vertically spaced apart grid, said tubes vertically extending through said grid structure means with said grid structure means defining grid apertures therein through which said individual tubes comprising said tube bundle extend, each of said grids comprising an intersecting arrangement of narrow and wide members whose intersec-



tion defines said grid apertures, each of said grid apertures being in surrounding relationship with a portion of an associated one of said tubes, and means for vertically moving said grid structure a predetermined limited vertical extent within the interior of said lower housing along said tubes for vertically displacing said intersecting arrangement defining said grid apertures from a normal used position by a sufficient amount for removing the portion of each of said tubes previously surrounded by said intersecting arrangement in said normal use position from said previous surrounding relationship for enabling an enhanced reading of the condition of said tubes at said previously surrounded portion to be taken.

4,230,528

METHOD FOR STARTING UP PLANT FOR PRODUCING FINE COKE

H. J. Jagow, Dortmund, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,835

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2739005

Int. Cl.² C10B 49/18, 49/20, 53/04

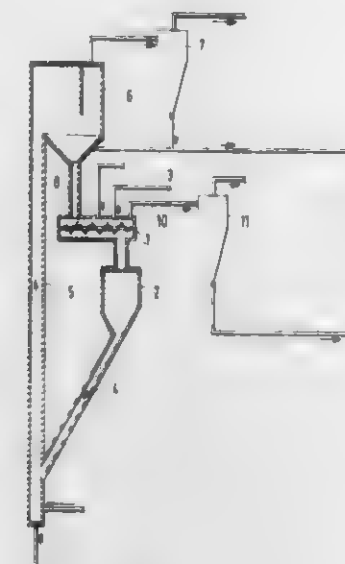
U.S. Cl. 201—12

2 Claims

1. In a process for producing fine coke in a plant system including a mixing unit, by mixing high bituminous lignite coal with hot fine coke in said mixing unit and degassing the high bituminous coal, said hot fine coke serving as a heat carrier and being circulated through said system, the improvement comprising introducing inert gas into the mixing unit along with the hot fine coke prior to the introduction of the high bitumi-

nous lignite coal, and circulating said inert gas and said hot fine coke through said system, whereby a cold parts of said system

an overflow tube connected to and extending upwardly from said opening at the bottom of said boiler, and a siphon connected to said overflow tube substantially above



are heated up so as to minimize condensation of tar generated in the production of said fine coke in said system.

4,230,529

DISTILLATION APPARATUS

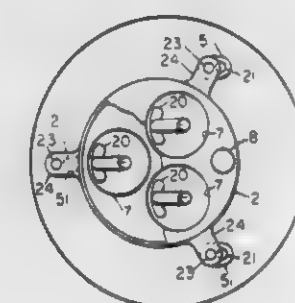
Yao T. Li, Huckleberry Hill, Lincoln, Mass. 01773

Filed Nov. 16, 1978, Ser. No. 961,452

Int. Cl.² B01D 3/04

U.S. Cl. 202—175

9 Claims



1. Distillation apparatus comprising one or more heat transfer tube, each of the said one or more tubes aligned about a vertical axis, means to drive said heat transfer tubes about a wobbling center on said vertical axis without rotating the transfer tubes, means to direct a stream of fluid toward the inner surface of each of said tubes, the wobble motion imparted to each of said tubes serving to cause said fluid stream to cling to the inner surface of the tube away from the wobbling center whereby the resultant revolving flow stream serves to wipe the inside surface of the tube to form a thin film with low heat resistance and thus to facilitate evaporation and carry the residue and reflux downward with low resistance.

4,230,530

SELF-CLEANING WATER DISTILLER WITH INTERMITTENT OVERFLOW

Kenneth D. Lemoine, Box 476, Gravette, Ark. 72736, and Robert R. Keegan, Fayetteville, Ark., assignors to Kenneth D. Lemoine, Gravette, Ark.

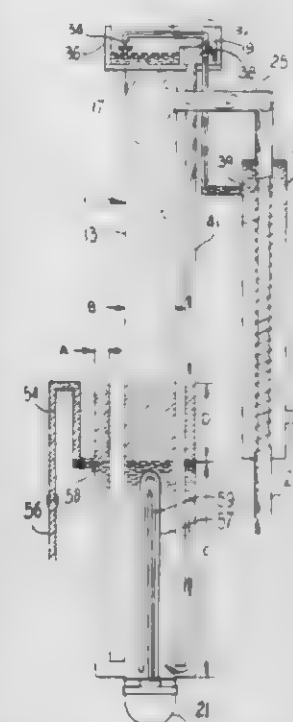
Filed Dec. 22, 1978, Ser. No. 972,352

Int. Cl.² B01D 3/02

U.S. Cl. 202—180

12 Claims

1. Distillation apparatus comprising, a boiler having at least one opening at the bottom thereof, a heater for heating the liquid content of said boiler, a vapor chamber, a condenser,



the level of said opening at the bottom of said boiler and having a U-shaped portion extending about its point of connection to said overflow tube but not above the top of said overflow tube.

4,230,531

WIND POWERED SOLAR STILL

Placidus D. Fernandopulle, 17 Rue de Gerardmer, 68000 Colmar, France

Filed Feb. 22, 1978, Ser. No. 880,125

Claims priority, application United Kingdom, Mar. 3, 1977, 9028/77

Int. Cl.² B01D 3/00; C02B 1/06; F24J 3/02

U.S. Cl. 202—180

13 Claims



1. Apparatus for producing distilled or potable water from salt water, the apparatus comprising: inlet means for cold salt water; condenser means having walls defining a chamber which contains first heat exchanger means, said first heat exchanger means being connected to said inlet means and having an outlet from said chamber; solar still means, said still means having wall means defining a trough and also being capable of transmitting solar energy thereto, said trough receiving salt water from the outlet of said chamber which is evaporated in said still means and collected as a water condensate on said wall means, said still means also being provided with water condensate collecting means for collecting the condensate on said wall means; means for conducting water vapour from said still means to said chamber of said condenser means; brine storage means for receiving brine from said trough

4,230,525

LIQUID SODIUM DIP SEAL MAINTENANCE SYSTEM

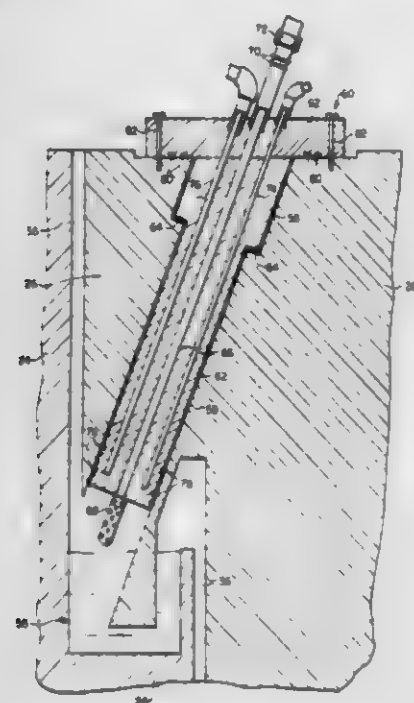
Richard L. Briggs, and Sterling A. Meacham, both of Hempfield Township, Westmoreland County, Pa., assigns to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 31, 1976, Ser. No. 719,320

Int. Cl.² G21C 9/00

U.S. Cl. 176—38

10 Claims



1. A system for removing impurities from dip seals including a vessel designed to contain radioactive material and a closure head disposed on said vessel having at least one rotatable plug for positioning refueling equipment, said rotatable plug and vessel defining an annulus to enable the rotation of said rotatable plug, said annulus having a liquid dip seal disposed thereacross for preventing the release of said radioactive material, and liquid sodium means associated with said dip seal for introducing liquid sodium to said dip seal at a temperature of at least 600° F. and for overflowing said liquid sodium from said dip seal and down said annulus thus removing said impurities therefrom.

4,230,527

STEAM GENERATOR FOR USE IN NUCLEAR POWER PLANTS

Alexander Cella, Robinwood Dr., Great Notch, N.J. 07424

Continuation-in-part of Ser. No. 792,195, Apr. 29, 1977, Pat. No. 4,162,191. This application Nov. 11, 1977, Ser. No. 850,647

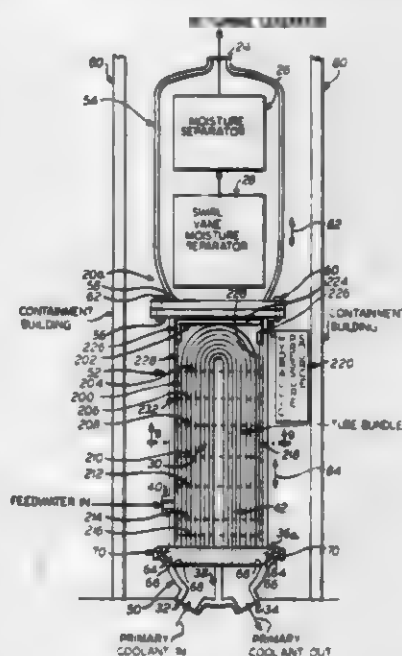
Int. Cl.² G21C 15/16

U.S. Cl. 176—87

9 Claims

1. In a steam generator for use in a pressurized water nuclear power plant in which a turbine generator is driven by the steam output of said steam generator to provide electrical power therefrom and said steam generator is powered by a nuclear energy heat source, wherein said steam generator comprises a vertically extending hollow outer housing having an upper housing portion and a lower housing portion, with said upper housing portion having a steam outlet therein communicable with the turbine generator for providing steam generated within said steam generator to said turbine generator and a moisture separator means within the interior thereof in communication with said steam outlet for drying the generated steam provided to said steam outlet, and with said lower housing portion having heat exchange fluid and feedwater inlets and a vertically extending tube bundle within the interior thereof in flow through communication with said heat exchange fluid for enabling heat exchange fluid provided through said inlet therefor to flow through said tube bundle for providing said generated steam from feedwater provided through said inlet therefor, said tube bundle having a tube sheet at one end thereof for supporting said tube bundle with

the tubes comprising said tube bundle extending through said tube sheet in said flow through communication with said heat exchange fluid inlet; the improvement comprising vertically movable grid structure means vertically extending within the interior of said lower housing portion, said grid structure means comprising a plurality of vertically spaced apart grid, said tubes vertically extending through said grid structure means with said grid structure means defining grid apertures therein through which said individual tubes comprising said tube bundle extend, each of said grids comprising an intersecting arrangement of narrow and wide members whose intersec-



tion defines said grid apertures, each of said grid apertures being in surrounding relationship with a portion of an associated one of said tubes, and means for vertically moving said grid structure a predetermined limited vertical extent within the interior of said lower housing along said tubes for vertically displacing said intersecting arrangement defining said grid apertures from a normal used position by a sufficient amount for removing the portion of each of said tubes previously surrounded by said intersecting arrangement in said normal use position from said previous surrounding relationship for enabling an enhanced reading of the condition of said tubes at said previously surrounded portion to be taken.

4,230,528

METHOD FOR STARTING UP PLANT FOR PRODUCING FINE COKE

H. J. Jagnow, Dortmund, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,835

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2739005

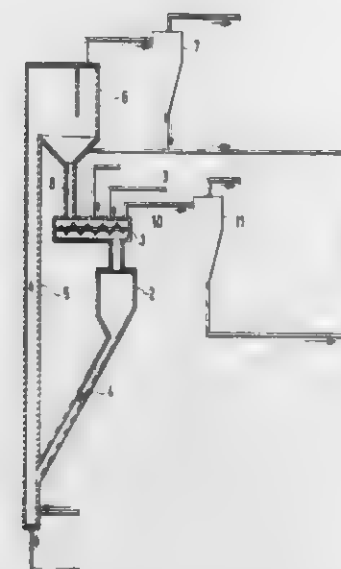
Int. Cl.² C10B 49/18, 49/20, 53/04

U.S. Cl. 201—12

2 Claims

1. In a process for producing fine coke in a plant system including a mixing unit, by mixing high bituminous lignite coal with hot fine coke in said mixing unit and degassing the high bituminous coal, said hot fine coke serving as a heat carrier and being circulated through said system, the improvement comprising introducing inert gas into the mixing unit along with the hot fine coke prior to the introduction of the high bitumi-

nous lignite coal, and circulating said inert gas and said hot fine coke through said system, whereby a cold parts of said system



are heated up so as to minimize condensation of tar generated in the production of said fine coke in said system.

4,230,529

DISTILLATION APPARATUS

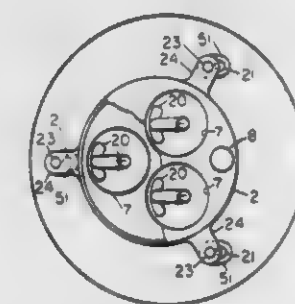
Yao T. Li, Huckleberry Hill, Lincoln, Mass. 01773

Filed Nov. 16, 1978, Ser. No. 961,452

Int. Cl.² B01D 3/04

U.S. Cl. 202—175

9 Claims



1. Distillation apparatus comprising one or more heat transfer tube, each of the said one or more tubes aligned about a vertical axis, means to drive said heat transfer tubes about a wobbling center on said vertical axis without rotating the transfer tubes, means to direct a stream of fluid toward the inner surface of each of said tubes, the wobble motion imparted to each of said tubes serving to cause said fluid stream to cling to the inner surface of the tube away from the wobbling center whereby the resultant revolving flow stream serves to wipe the inside surface of the tube to form a thin film with low heat resistance and thus to facilitate evaporation and carry the residue and reflux downward with low resistance.

4,230,530

SELF-CLEANING WATER DISTILLER WITH INTERMITTENT OVERFLOW

Kenneth D. Lemoine, Box 476, Gravette, Ark. 72736, and Robert R. Keegan, Fayetteville, Ark., assigns to Kenneth D. Lemoine, Gravette, Ark.

Filed Dec. 22, 1978, Ser. No. 972,352

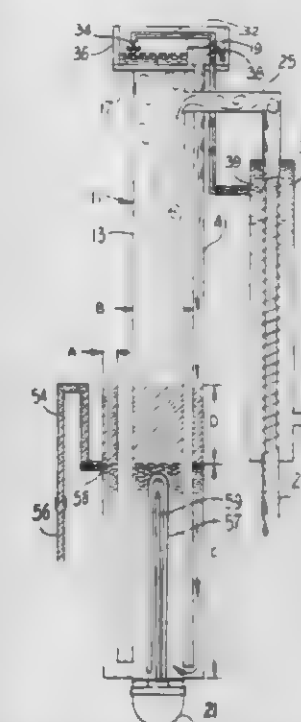
Int. Cl.² B01D 3/02

U.S. Cl. 202—180

12 Claims

1. Distillation apparatus comprising, a boiler having at least one opening at the bottom thereof, a heater for heating the liquid content of said boiler, a vapor chamber, a condenser,

an overflow tube connected to and extending upwardly from said opening at the bottom of said boiler, and a siphon connected to said overflow tube substantially above



the level of said opening at the bottom of said boiler and having a U-shaped portion extending about its point of connection to said overflow tube but not above the top of said overflow tube.

4,230,531

WIND POWERED SOLAR STILL

Placidus D. Fernandopulle, 17 Rue de Gerardmer, 68000 Colmar, France

Filed Feb. 22, 1978, Ser. No. 880,125

Claims priority, application United Kingdom, Mar. 3, 1977, 902N/77

Int. Cl.² B01D 3/00; C02B 1/06; F24J 3/02

U.S. Cl. 202—180

13 Claims



1. Apparatus for producing distilled or potable water from salt water, the apparatus comprising:

inlet means for cold salt water; condenser means having walls defining a chamber which contains first heat exchanger means, said first heat exchanger means being connected to said inlet means and having an outlet from said chamber; solar still means, said still means having wall means defining a trough and also being capable of transmitting solar energy thereto, said trough receiving salt water from the outlet of said chamber which is evaporated in said still means and collected as a water condensate on said wall means, said still means also being provided with water condensate collecting means for collecting the condensate on said wall means; means for conducting water vapour from said still means to said chamber of said condenser means; brine storage means for receiving brine from said trough

consequent to said evaporation, said brine storage means having electrical heating means for heating brine therein; second heat exchanger means for heating the salt water in said trough; means for withdrawing heated brine from said brine storage means and for passing same through said second heat exchanger means; wind-powered electricity generating means; electricity storage means for storing the output of said wind-powered electricity generating means, said electrical heating means being connected to said electricity storage means; and means for collecting water condensate from said condenser means and the water condensate from said collecting means in said still.

4,230,532

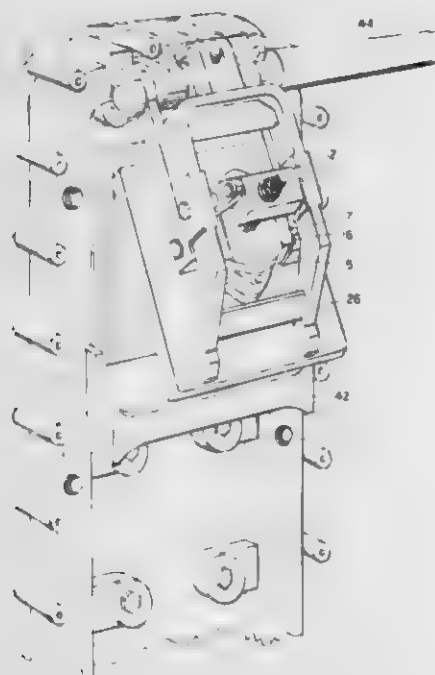
OVEN DOOR

Edward Harris, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 16, 1979, Ser. No. 57,891

Int. Cl.³ C10B 25/12

U.S. Cl. 202-248



1. In a pressure chamber such as a coke oven or the like having a hinged door, actuator means for opening and closing the door, a centrally located spring contained within a spring box for exerting a force against said door, a latch bar on the door and a latching bracket on the pressure chamber, the improvement which comprises in combination:

- a pair of hinge links one on each side of the spring box pivotably connected to the door hinge shaft and to the spring box,
- a latch bar of a yoke type U configuration pivotably connected to said hinge links by means of a shaft or pivotably connected to said hinge shaft,
- a primary toggle link on either side of said spring box pivotably connected on one end to said spring box and door hinge links, and pivotably connected on the other end to latch bar legs, and
- means to limit rotation of primary toggle links and spring box around pivot connections.

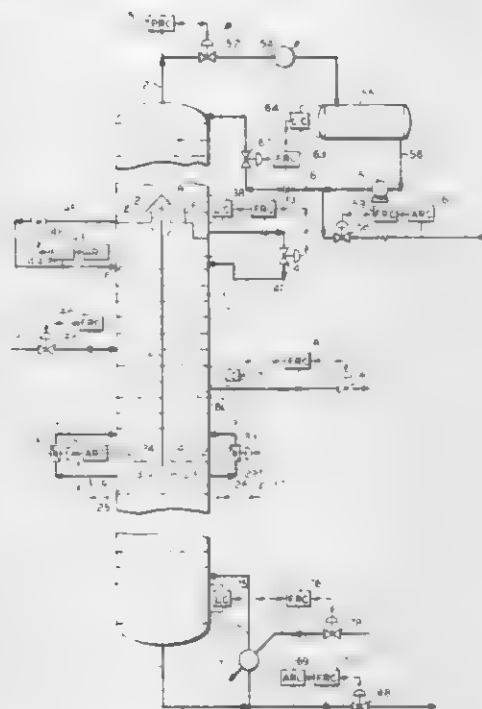
4,230,533
FRACTIONATION METHOD AND APPARATUS
Victor A. Giroux, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 19, 1978, Ser. No. 917,046

Int. Cl.² B01D 3/42

U.S. Cl. 203-1

16 Claims



12. A method of separating a fluid mixture including first, second and third constituents having different boiling points, the boiling point of the first being the lowest and the boiling point of the third being the highest, which method comprises: introducing said mixture into an intermediate region of a fractionation column which contains vapor-liquid contacting trays extending through a substantial height of the column, said column being provided with a generally vertical partition which divides the central region of the column into first and second zones, there being contacting trays in said column above and below said zones, said mixture being introduced into said first zone; operating said column to withdraw from the top of the column a stream rich in the first constituent, to withdraw from the bottom of the column a stream rich in the third constituent and to withdraw from an intermediate region of the second zone a stream rich in the second constituent; measuring the concentration of the first constituent in the lower region of the first zone; flowing vapor and liquid between the lower regions of the first and second zones and a region of said column below said partition; and controlling the relative vapor and liquid flows between the lower regions of said first and second zones and the region of said column below said partition in response to the measured concentration of the first constituent.

4,230,534

CONTROL OF A FRACTIONAL DISTILLATION COLUMN

William S. Stewart, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 23, 1979, Ser. No. 23,353

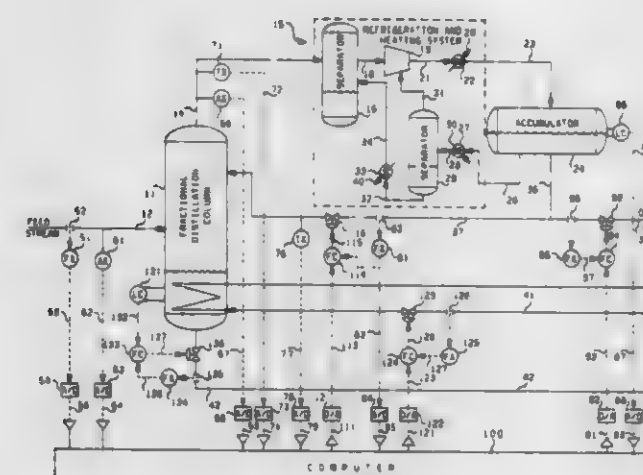
Int. Cl.² B01D 3/42

U.S. Cl. 203-1

32 Claims

17. A method for controlling a fractional distillation column comprising the steps of: passing a feed mixture to be separated into said fractional distillation column; passing a heating fluid into said fractional distillation column to thereby supply at least a portion of the heat required to effect the separation of said feed mixture;

withdrawing said heating fluid from said fractional distillation column; withdrawing an overhead vapor stream from an upper portion of said fractional distillation column; condensing at least a portion of said overhead vapor stream; passing the resulting at least partially condensed overhead stream into an accumulator; withdrawing condensate from said accumulator and passing a first portion of the thus withdrawn condensate into an upper portion of said fractional distillation column as an external reflux stream therefor and passing a second portion of the thus withdrawn condensate as an overhead product stream; establishing a first signal representative of the predicted flow rate of said overhead vapor stream at a time T_1 ;



establishing a second signal representative of the percentage of said overhead vapor stream which can be removed from said accumulator as said overhead product stream while still maintaining a desired liquid level in said accumulator; combining said first signal and said second signal to produce a third signal representative of the desired flow rate of said overhead product stream; establishing a fourth signal representative of the highest allowable flow rate of said overhead product stream; providing the one of said third and fourth signals representative of the lowest flow rate of said overhead product stream as a fifth signal to a means for manipulating the flow rate of said overhead product stream to thereby control the flow rate of said overhead product stream in response to said fifth signal.

4,230,535

HEAT-PUMPED FRACTIONATION PROCESS

Leroy J. Howard, Libertyville, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 15, 1979, Ser. No. 48,859

Int. Cl.² B01D 1/28, 3/14

U.S. Cl. 203-26

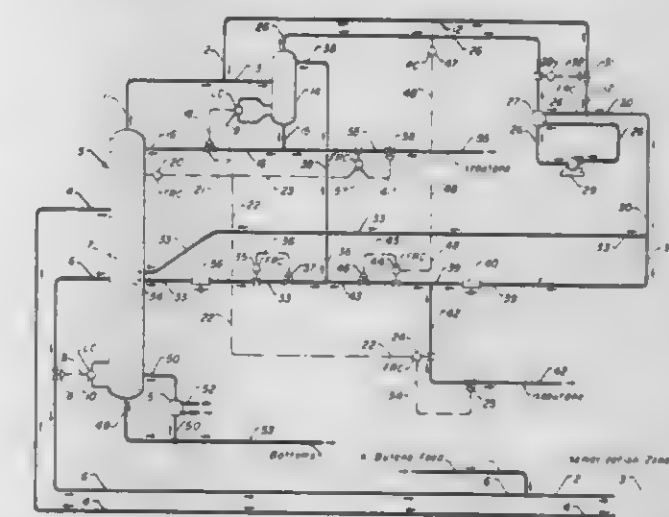
14 Claims

1. A process for separating two chemical compounds by fractionation which comprises the steps of:

- passing a feed stream comprising a first and a second chemical compound into a fractionation zone operated at fractionation conditions;
- removing a net bottoms stream which is rich in the first chemical compound from the fractionation zone as a first product stream;
- removing an overhead vapor stream which is rich in the second chemical compound from the fractionation zone, partially condensing the overhead vapor stream by direct heat exchange within an overhead receiver to produce an overhead liquid and a receiver vapor stream, supplying a first portion of the overhead liquid to the fractionation zone as reflux and removing a second portion of the overhead liquid from the process as a second product stream;
- heating the receiver vapor stream by indirect heat ex-

change against a hereinafter specified high pressure working stream;

- heating the receiver vapor stream by compression and thereby forming the previously specified high pressure working stream;
- cooling the high pressure working stream by indirect heat exchange against the receiver vapor stream;



- passing a first portion of the high pressure working stream through a first reboiler which is used to supply heat to the fractionation zone and then into the overhead receiver; and,
- condensing a second portion of the high pressure working stream to thereby form a condensate stream and then passing the resultant condensate stream into the overhead receiver.

4,230,536

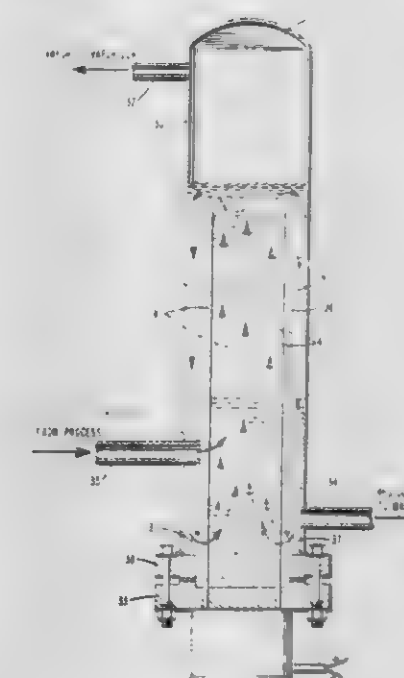
METHOD FOR THE DISTILLATION PURIFICATION OF ORGANIC HEAT TRANSFER FLUIDS

Charles E. Sech, 45 Greewood, Glendale, Ohio 45246
Continuation-in-part of Ser. No. 771,984, Feb. 25, 1977, Pat. No. 4,139,418, which is a continuation-in-part of Ser. No. 570,082, Apr. 21, 1975, abandoned. This application Feb. 5, 1979, Ser. No. 9,293

Int. Cl.² B01D 3/00

U.S. Cl. 203-89

6 Claims



1. A method for the purification of a heat transfer fluid which is subject to thermal degradation and is used in a closed-end process system comprising a vaporizer containing an inventory of said heat transfer fluid and a heat sink, said method comprising:

- (a) withdrawing at least a portion of said heat transfer fluid inventory from said vaporizer in the liquid phase;
- (b) passing said withdrawn portion to a purification zone possessing electric resistance heating means;
- (c) heating said liquid portion within said purification zone by means of said heating means to form a vapor phase relatively lean in thermal degradation precursors and a liquid phase relatively rich in thermal degradation precursors possessing a temperature greater than about 600° F. at a pressure of 30 to 160 psig;
- (d) passing said relatively rich-liquid phase in a continuous flow pattern traversing a narrower flow path of 0.1 to 0.5 inches to effect a wall temperature of said purification zone of less than about 650° F. and to effect deposit of said thermal degradation precursors via gravity to the bottom portion of said purification zone;
- (e) withdrawing said vapor phase from said purification zone;
- (f) condensing said withdrawn vapor phase in a condenser zone to form a purified liquid heat transfer fluid;
- (g) passing said purified liquid heat transfer fluid to said vaporizer inventory; and
- (h) withdrawing at least intermittently said bottom portion of said purification zone to remove said thermal degradation precursors.

4,230,537

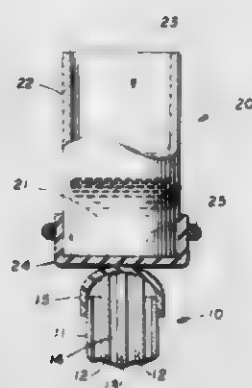
DISCRETE BIOCHEMICAL ELECTRODE SYSTEM
Jacques J. Delente, University City, and Lloyd E. Weeks, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 18, 1975, Ser. No. 642,205

Int. Cl.² G01N 27/46, 31/14

U.S. Cl. 204—1 T

5 Claims



1. A method for discrete biochemical analysis employing the determination of the concentration of a dissolved gas in solution with a gas-sensing electrode, said electrode comprising an anode, cathode, electrolyte solution and a selectively permeable membrane enclosure at one end, said method comprising causing the diffusion of said gas across a selectively permeable membrane portion of a sample receptacle containing a liquid biochemical component of a body fluid to be determined as a recognized adjunct of clinical diagnosis, said sample receptacle membrane having a dry interface with said electrode membrane at the locus of said gas diffusion whereby the liquid in said sample receptacle does not come into contact with any part of said electrode and said electrolyte solution does not come into contact with any part of said sample receptacle during said gas diffusion.

4,230,538

STRIP LINE PLATING CELL

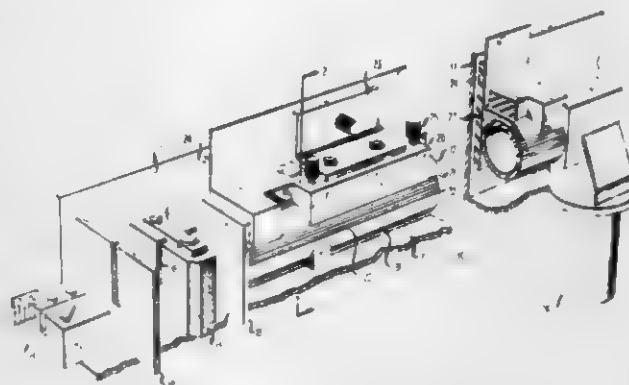
Dennis R. Turner, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1979, Ser. No. 92,380

Int. Cl.³ C25D 5/02, 17/12, 17/28

U.S. Cl. 204—15

17 Claims



1. An apparatus for continuous gold electroplating a strip including a gold plating cell, said gold plating cell comprising a container containing plating elements **CHARACTERIZED IN THAT** the plating elements comprise

- (a) means of conveying electrolyte from a reservoir to an electrolyte conduit, said electrolyte conduit having a passageway opening in the upper rear of the passageway;
- (b) a mounting wall joined to the rear of the conduit;
- (c) an anode electrode with a first portion contoured to conform to shape of conduit spaced from and extended over the conduit, the contoured portion serving simultaneously to direct the flow of the electrolyte exiting from the passageway of the conduit and to perform the electrochemical function of the anode; and
- (d) an electrode positioning mounting member mounted above the contoured portion of the anode electrode, the electrode positioning mounting member including means for deflecting the contoured portion of the anode electrode to control the direction of flow of the electrolyte.

4,230,539

METHOD FOR SURFACE TREATMENT OF ANODIC OXIDE FILM

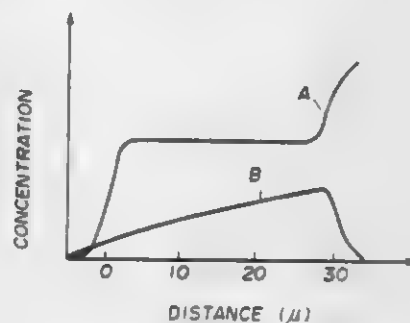
Kohichi Saruwatari; Kazuo Isawa; Masatsugu Maejima, and Takao Suzuki, all of Tokyo, Japan, assignors to Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,760

Int. Cl.² C23B 9/02

U.S. Cl. 204—35 N

8 Claims



1. A method for the surface treatment of anodic oxide film which comprises the steps of electrolyzing the porous surface of anodic oxide film of aluminium or aluminium alloy in an aqueous solution of ammonium thiomolybdate and then subjecting it to a heat treatment so as to impregnate the micropores of said film with molybdenum sulfide and fix the latter therein.

4,230,540

TECHNIQUE FOR AUTOMATIC QUENCHING OF ANODE EFFECTS IN ALUMINIUM REDUCTION CELLS

Anthony M. Archer; Edward L. Cambridge, and Douglas F. Hewgill, all of Kitimat, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

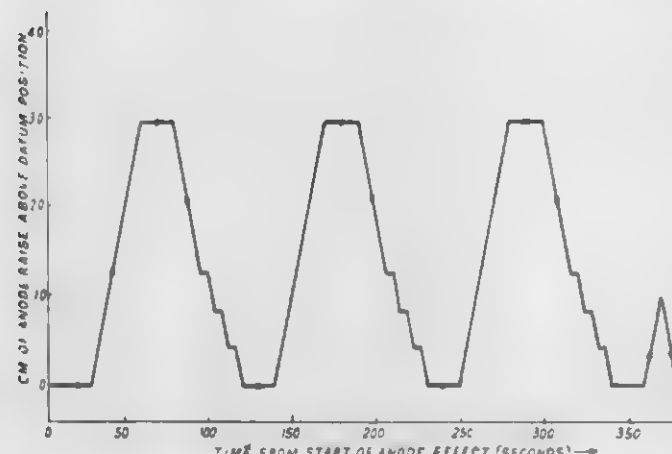
Filed Apr. 25, 1979, Ser. No. 33,213

Claims priority, application United Kingdom, Apr. 27, 1978, 16809/78

Int. Cl.³ C25C 3/06, 7/06

U.S. Cl. 204—67

10 Claims



1. A method of clearing anode effects in the operation of an electrolytic reduction cell for the production of aluminium by the electrolysis of alumina in a molten fluoride bath which comprises raising the anode or anodes from a datum position by a predetermined distance or until a predetermined high cell voltage is established and lowering the said anode or anodes, such raising and lowering being performed in such manner that short circuiting between said anode or anodes and the pool of molten aluminium in the bottom of the cell takes place during such anode movement as the result of local upward movement of said molten metal due to electromagnetic effects, fresh alumina being added to said molten fluoride bath in conjunction with movement of said anode or anodes of said cell.

4,230,541

PRETREATMENT OF CATHODES IN ELECTROHYDRODIMERIZATION OF ACRYLONITRILE

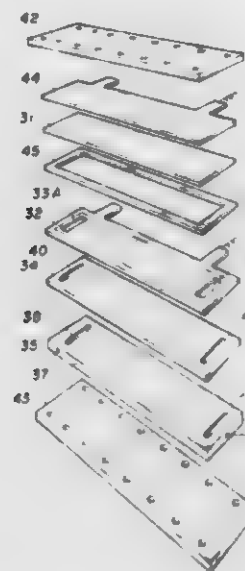
Christopher J. H. King, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 21, 1979, Ser. No. 77,869

Int. Cl.³ C25B 3/10

U.S. Cl. 204—73 A

7 Claims



1. In an electrochemical process for hydrodimerization of acrylonitrile which comprises electrolyzing in a reaction cell an aqueous electrolyte solution, the aqueous electrolyte solu-

tion being in contact with a cadmium cathode surface, the improvement comprising contacting the cathode surface with an oxidizing agent comprising acidic hydrogen peroxide before electrolyzing the aqueous electrolyte solution.

4,230,542

ELECTROLYTIC PROCESS FOR TREATING ILMENITE LEACH SOLUTION

Carlo Traini; Giuseppe Bianchi, and Alberto Pellegrini, all of Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Jul. 5, 1979, Ser. No. 55,018

Claims priority, application Italy, Oct. 13, 1978, 28736 A/78; Jan. 11, 1979, 19206 A/79

Int. Cl.³ C25B 1/00, 1/06

U.S. Cl. 204—93

10 Claims

1. A method of reducing ferric ions in a sulfuric acid ilmenite leach solution to ferrous ions comprising circulating a sulfuric acid ilmenite leach catholyte solution containing Ti_{4+} ions through the cathodic compartment of an electrolysis cell separated by a fluid impervious anion exchange membrane from the anodic compartment, circulating a ferrous sulfate anolyte solution through the anodic compartment of the electrolysis cell and impressing an electrolysis current across the cell reducing the ferric ions in the catholyte to ferrous ions and oxidizing a portion of the ferrous ions to ferric ions in the anolyte.

4,230,543

CATHODE FOR ELECTROLYSIS OF AQUEOUS SOLUTION OF ALKALI METAL HALIDE

Keiji Kawasaki, Tokyo, and Itsuaki Matsuda, Yokohama, both of Japan, assignors to Showa Denko K.K., Japan

Filed Apr. 3, 1979, Ser. No. 27,010

Claims priority, application Japan, Apr. 7, 1978, 53-40237; Sep. 11, 1978, 53-110672

Int. Cl.³ C25B 1/36, 11/04; C25D 3/56

U.S. Cl. 204—98

12 Claims

7. In the process for electrolysis of an aqueous solution of an alkali metal halide, the improvement which comprises using a cathode for the electrolysis of an aqueous solution of an alkali metal halide, said cathode being composed of a metallic substrate and a coating of iron metal or iron metal and cobalt metal deposited on its surface at a current density of 1 to 10 A/dm² and at a temperature of 20° to 90° C. from an aqueous electroplating bath consisting essentially of an aqueous solution having a pH value of from 2.5 to 6.0 containing therein

- (i) a metallic ion of Fe^{++} or Fe^{+++} together with Co^{++} in an amount of 0.5 to 0.9 mole/liter, and
- (ii) an additive selected from the group consisting of dextrin, water-soluble starch, poly(2-diethylaminoethyl methacrylate) and poly-aluminum chloride, said additive being employed at a concentration of 0.5 to 10 g/liter and said bath being free from an ammonium ion.

4,230,544

METHOD AND APPARATUS FOR CONTROLLING ANODE PH IN MEMBRANE CHLOR-ALKALI CELLS

Wayne A. McRae, Zurich, Switzerland, assignor to Ionics Inc., Watertown, Mass.

Filed Aug. 31, 1979, Ser. No. 71,637

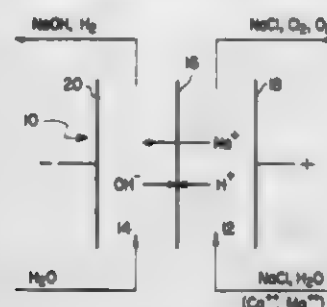
Int. Cl.³ C25B 1/34, 9/00, 15/08, 13/08

U.S. Cl. 204—98

16 Claims

1. In a process wherein an aqueous alkali metal chloride solution is electrolyzed in a chlor-alkali apparatus including a cell having an anode compartment containing an anode capable of generating chlorine and lesser amounts of oxygen from aqueous chloride solution, a cathode compartment containing a cathode and a substantially fluid impervious, cation permeable membrane separating said anode compartment from said cathode compartment, the improvement comprising controlling the pH of the anolyte by operating said anode to have an oxygen evolution efficiency substantially chemically equivalent

lent to the hydroxide ion transfer efficiency of the said membrane whereby the formation of excessive chlorates and hypo-



chlorites in said anolyte and insoluble metallic hydroxide in said membrane is substantially reduced.

4,230,545

PROCESS FOR REDUCING LEAD PEROXIDE FORMATION DURING LEAD ELECTROWINNING
Raymond D. Prengaman, Arlington, and Herschel B. McDonald, Red Oak, both of Tex., assignors to RSR Corporation, Dallas, Tex.

Filed Nov. 13, 1979, Ser. No. 93,514
Int. Cl.³ C25C 1/18

U.S. Cl. 204-114

14 Claims

1. A process for reducing lead peroxide formation when electrowinning lead from an inorganic acid electrolyte, which comprises dissolving at least 250 ppm of arsenic ion in the electrolyte and thereafter electrowinning the lead while maintaining an arsenic ion concentration of at least 250 ppm.

4,230,546

METHOD OF MOLECULAR SPECIE ALTERATION BY NONRESONANT LASER INDUCED DIELECTRIC BREAKDOWN

Avigdor M. Ronn, Great Neck, N.Y., assignor to Research Foundation of the City University of New York, New York, N.Y.

Filed Aug. 19, 1977, Ser. No. 825,987
Int. Cl.³ B01J 1/10

U.S. Cl. 204-157.1 R

13 Claims



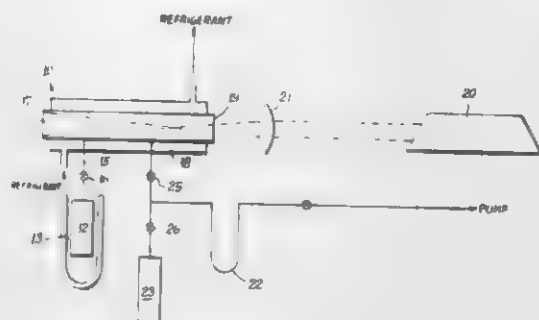
1. A method for obtaining a stable end product comprising in combination the steps of confining a quantity of a dissociative molecular specie in a gaseous state at a pressure sufficient to maintain said specie in a collision dominated regime, irradiating said specie with the output from a laser in discrete pulses having a predetermined power level per pulse and having a frequency displaced from any absorption frequencies of said specie and any other specie that may be present, said power level being selected in relation to said pressure to cause with each output pulse of said laser nonresonant dielectric breakdown in said specie accompanied by severance of the weakest bond and at least temporary formation of at least two fragments from said specie, extracting from the products of said dielectric breakdown a stable end product containing one of said fragments, and continuing said irradiation of said specie until a desired quantity of said stable end product has been formed.

4,230,547
METHOD FOR SEPARATING KRYPTON ISOTOPES
John T. Porter, II, Del Mar, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Nov. 3, 1977, Ser. No. 848,248
Int. Cl.³ B01J 1/10

U.S. Cl. 204-157.1 R

10 Claims



1. A method for separating krypton 85 from a mixture of a plurality of krypton isotopes including ⁸³Kr, ⁸⁴Kr, ⁸⁵Kr, and ⁸⁶Kr, comprising

reacting the mixture of krypton isotopes with fluorine to provide a thermodynamically unstable mixed isotope krypton difluoride source material which spontaneously decomposes on an isotopically non-selective basis, maintaining said mixed isotope krypton difluoride source material at a low temperature of less than about 0° C. while selectively irradiating said mixed isotope krypton difluoride source material with infrared radiation at a wavelength at a frequency selected from the asymmetric stretching frequency of the ⁸⁵KrF₂ molecule at 586.7 cm⁻¹, the v₂ vibrational frequency of the ⁸⁵KrF₂ molecule at 233 cm⁻¹, the v₃ vibrational frequency of the ⁸⁵KrF₂ molecule at 558 cm⁻¹ or the v₁+v₃ combination vibrational frequency of the ⁸⁵KrF₂ molecule at 1032 cm⁻¹ which frequency is selectively absorbed by ⁸⁵krypton difluoride and decomposing the selectively excited ⁸⁵krypton difluoride compound to ⁸⁵krypton and fluorine, and separating the decomposition product ⁸⁵krypton from the fluorine and remaining undecomposed krypton difluoride source material.

4,230,548

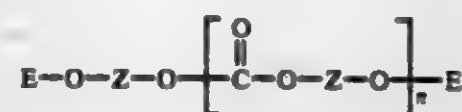
POLYCARBONATES WITH END GROUPS CONTAINING BONDS WHICH CAN BE CROSSLINKED BY UV LIGHT
Siegfried Adelman; Dieter Margotte, and Hugo Vornaleken, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 945,152, Sep. 22, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,839
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746139; Jul. 4, 1978, 2829258
Int. Cl.³ C08G 63/62; C08J 3/28

U.S. Cl. 204-159.14

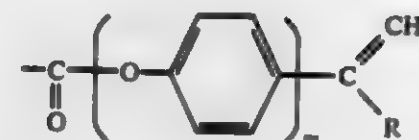
18 Claims

1. High-molecular weight aromatic polycarbonates having molecular weights \bar{M}_w (weight-average) between about 10,000 and 200,000 which are based on diphenols and monofunctional chain stoppers, characterized in that they correspond to the formula (I)



in which

Z denotes the radical of a diphenol,
n denotes an integer from about 20 to 400,
E denotes



wherein

m denotes 0 or 1 and
R denotes H or C₁-C₃-alkyl.

3. A process for the modification of the polycarbonates of claim 1, wherein the polycarbonate is irradiated with UV light, after adding between about 0.05 and 5%, by weight, relative to the weight of polycarbonate, of a photoinitiator.

4,230,549

SEPARATOR MEMBRANES FOR ELECTROCHEMICAL CELLS

Vincent F. D'Agostino, Huntington Station; Joseph Y. Lee, Lake Grove, and Joseph C. Sentis, Ozone Park, all of N.Y., assignors to RAI Research Corporation, Hauppauge, N.Y.

Filed May 31, 1977, Ser. No. 802,035
Int. Cl.³ C08F 259/08, 255/02, 2/46

U.S. Cl. 204-159.17

25 Claims

1. An improved process for the preparation of a membrane suitable for use in electrochemical cells comprising:

- forming a grafting solution comprising a hydrophilic monomer, and a chlorinated organic solvent;
- placing said solution in contact with an inert polymeric film;
- irradiating said contacted film to graft polymerize said hydrophilic monomer onto the film, while inhibiting homopolymerization of said graft monomer; and
- contacting said irradiation grafted film with an emulsifier to reduce the electrolytic resistance of said membrane.

4,230,550

RADIATION CURABLE BARRIER COATING HAVING FLEXIBILITY AND SELECTIVE GLOSS

Kent D. Vincent, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 6, 1979, Ser. No. 64,290
Int. Cl.³ C08F 2/30, 120/10

U.S. Cl. 204-159.23

13 Claims

1. A composition of matter for application as a barrier coating, said composition consisting essentially of: trimethoxymethyl tri-2-ethoxy acrylate methyl melamine; silica; and a photoinitiator.

4,230,551

ELECTROSYNTHESIS PROCESS FOR MAKING AMINE/ALDEHYDE POROUS STRUCTURES AND POWDERS

Ival O. Salyer, Dayton, and Arthur M. Usmani, Centerville, both of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

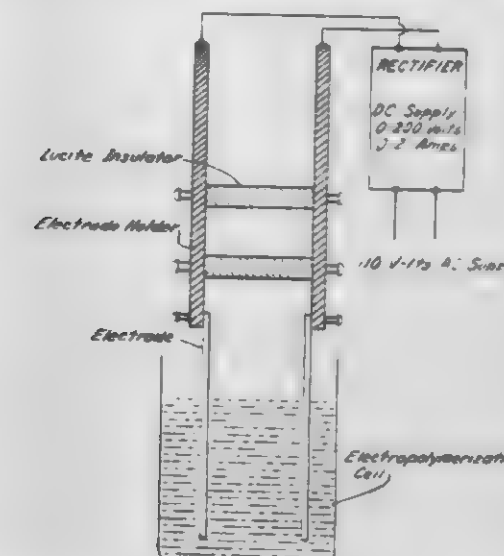
Filed Oct. 2, 1975, Ser. No. 618,995
Int. Cl.³ C25D 15/00; C25B 3/10

U.S. Cl. 204-181 R

1 Claim

1. A process for making porous urea/formaldehyde structures comprising solid approximately-spherical crosslinked particles of less than 10 microns, said process comprising electrolyzing an aqueous solution of urea-formaldehyde prepolymer, the molar ratio of urea and formaldehyde in the prepolymer being about 0.74, the pH of the solution being electrolyzed being about 4.5, the percent urea and formaldehyde

pre-polymer in solution being about 18.5 percent prior to electrolysis, and the current density being about 90 milliamperes



per square inch of anode surface available for structure formation.

4,230,552

NOVEL PIGMENT GRINDING VEHICLE
Karl F. Schimmel, Verona, Pa.; Lance C. Starni, Delaware, Ohio, and Martin J. Robles, Hyattsville, Md., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 869,197, Jan. 13, 1978, Pat. No. 4,186,124, which is a continuation-in-part of Ser. No. 601,109, Aug. 1, 1975, abandoned. This application Jul. 20, 1979, Ser. No. 59,409
Int. Cl.³ C25D 13/00

U.S. Cl. 204-181 C

5 Claims

1. A method of electrocoating an electrically conductive surface serving as a cathode in an electrical circuit comprising said cathode and an anode in an aqueous electrodepositable composition by passing an electric current between said anode and said cathode, wherein the electrodepositable composition comprises an aqueous dispersion of a polymeric product comprising the acidified reaction product of:

- a polymeric polyepoxide having a 1,2-epoxy equivalency greater than one,
- an organic tertiary amine containing an alkylaryl-polyether moiety having the following structural formula:



where Ar is an aryl radical, R is an alkyl radical containing from 1 to 30 carbon atoms, R' is hydrogen or lower alkyl containing from 1 to 5 carbon atoms and x is equal to 3 to 20.

4,230,553

TREATING MULTILAYER PRINTED WIRING BOARDS
Charles J. Bartlett, Madison; Ronald J. Rhodes, South Plainfield, and Ray D. Rust, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

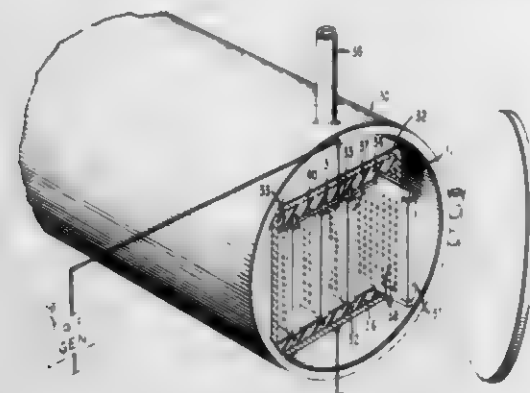
Filed Apr. 23, 1979, Ser. No. 32,339
Int. Cl.³ C23C 15/00

U.S. Cl. 204-192 E

9 Claims

1. A process for treating a laminated structure having metal layers separated by an insulating layer, and holes therethrough,

comprising the steps of placing the structure in an evacuated chamber containing oxygen, making electrical contact to the



metal layers, and applying an electric field to the contacts so as to create a gas plasma that extends into the holes.

4,230,554

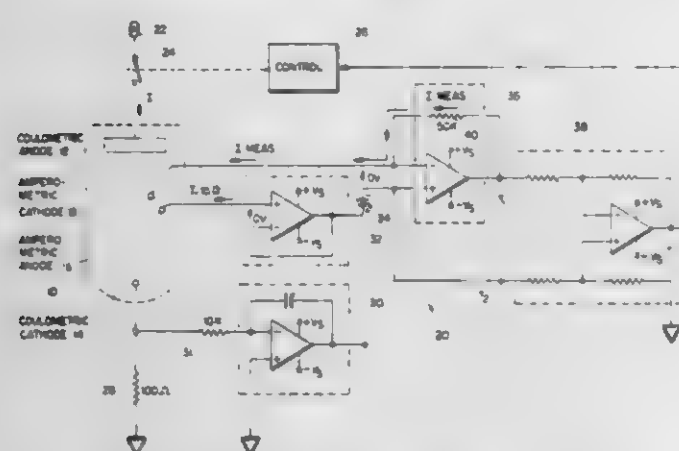
APPARATUS FOR MEASURING IONS IN SOLUTION
Gordon C. Blanke, Brea, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 3, 1978, Ser. No. 921,401

Int. Cl.³ G01N 27/44

U.S. Cl. 204—195 T

5 Claims



1. Electrochemical titration apparatus for measuring a constituent of a sample in solution and including coulometric generating means for generating ions combinable with the sample constituent and amperometric detecting means for detecting the presence of uncombined ions in said solution, each of said coulometric generating means and said amperometric detecting means including a respective pair of electrodes for contacting said sample in solution, the improvement comprising:

- means for enabling said coulometric generating means;
- means for applying a predetermined potential difference between the amperometric detecting electrodes while simultaneously establishing an operating condition of substantially zero current flow at one of said amperometric detecting electrodes; and
- means for monitoring flow of current between the other of said amperometric detecting electrodes and one of said coulometric generating electrodes.

4,230,555

OXYGEN GAS ANALYZER USING A SOLID ELECTROLYTE

Seisuke Sano, Masato Maeda, and Morimichi Iguchi, all of Musashio, Japan, assignors to Yokogawa Electric Works, Ltd. and Mitaka Instrument Co., Ltd., both of Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 73,915

Int. Cl.³ G01N 27/58

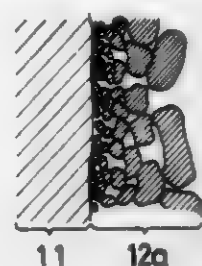
U.S. Cl. 204—195 S

2 Claims

1. An oxygen gas analyzer having a solid-electrolyte partition wall with electrode films attached to the sides thereof and

serving to generate a detection signal proportional to the difference between the oxygen concentrations on the two sides of said partition wall;

each of said electrode films comprising a metal powder



having a particle size which gradually decreases toward the deepest region of the film adjacent said partition wall; platinum screens bonded to said electrode films; and leadwires secured to said platinum screens for providing a detection signal therethrough.

4,230,556

INTEGRATED COAL LIQUEFACTION-GASIFICATION PROCESS

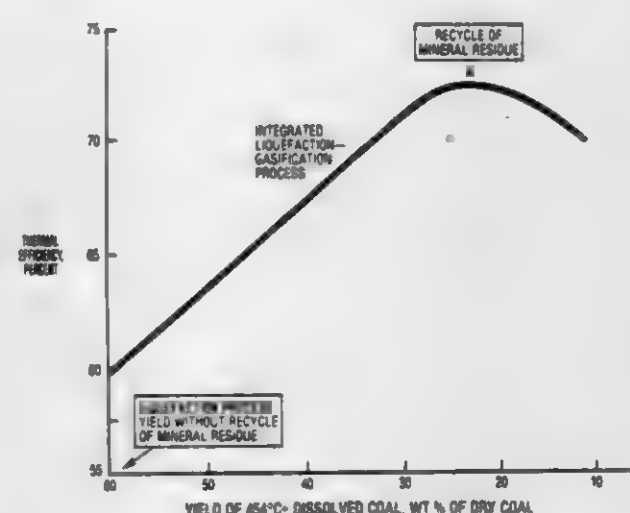
Norman L. Carr, Allison Park, Pa., and Bruce K. Schmid, Denver, Colo., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1978, Ser. No. 970,005

Int. Cl.² C10G 1/00, 1/08; C10J 3/00

U.S. Cl. 208—8 LE

9 Claims



1. An integrated coal liquefaction-gasification process wherein the net production of normally solid dissolved coal containing mineral residue from the liquefaction zone comprises the hydrocarbonaceous feed for the gasification zone; said process comprising passing mineral-containing feed coal, hydrogen, recycle dissolved liquid solvent, recycle normally solid dissolved coal and recycle mineral residue to a coal liquefaction zone which does not contain a fixed bed of added catalyst to dissolve hydrocarbonaceous material and to produce a mixture comprising hydrocarbon gases, dissolved liquid, normally solid dissolved coal and suspended mineral residue; passing a liquefaction zone effluent stream through a vapor-liquid separator means to remove overhead hydrogen, hydrocarbon gases and naphtha from a residue slurry comprising liquid coal and normally solid dissolved coal with suspended mineral residue; recycling to said liquefaction zone a first portion of said residue slurry; passing a second portion of said residue slurry to product separation means including vacuum distillation means; passing a third portion of said residue slurry through hydroclone means; recovering from said hydroclone means an overhead slurry comprising liquid coal and normally solid dissolved coal containing particles of suspended mineral residue having a smaller median diameter as compared to the median diameter of the particles in said first portion of residue slurry; recycling said overflow slurry to said liquefac-

4,230,558

SINGLE DROP SEPARATOR

Mack J. Fulwyler, Los Alamos, N. Mex., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 843,696, Oct. 19, 1977, Pat. No. 4,148,718, which is a continuation of Ser. No. 694,532, Jun. 10, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,853

Int. Cl.³ B07C 5/34

U.S. Cl. 209—3.1

6 Claims



REMOVAL OF ENTRAINED SOLIDS FROM RETORTED HYDROCARBONACEOUS VAPORS

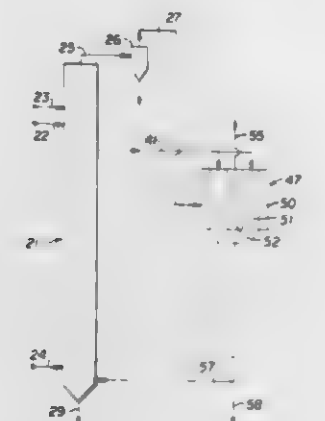
Corey A. Bertelsen, Oakland, and Byron G. Spars, Mill Valley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Feb. 22, 1979, Ser. No. 13,991

Int. Cl.³ C10B 53/06; C10G 1/02

U.S. Cl. 208—8 R

10 Claims



1. In a retorting process wherein raw hydrocarbon-containing particles are introduced into a retorting zone and retorted therein to form retorted solids and hydrocarbonaceous vapors by heating said particles to retorting temperatures by heat transfer from solid heat carrier particles passed through the retorting zone; and a stream comprising said hydrocarbonaceous vapors contaminated with entrained finely divided solids is withdrawn from the retorting zone; the improved method of removing at least a portion of said entrained finely divided solids from said hydrocarbonaceous vapors which comprises:

- (a) introducing solid contact material predominantly of a size in the range from 75 microns to 8 millimeters and at a temperature within the range from 25° C. (45° F.) below the retorting temperature to 55° C. (100° F.) above the retorting temperature to an upper portion of a granular filtration zone, said solid contact material being selected from the group consisting of retorted solids, heat carrier particles and mixtures of retorted solids and heat carrier particles;
- (b) passing said solid contact material downwardly through said filtration zone as a bed of contiguous particles at a velocity in the range of 7.6 to 1220 cm per hour;
- (c) passing said stream at substantially said retorting temperature transversely through said bed whereby at least a portion of said finely divided solids is deposited in said bed; and
- (d) withdrawing a mixture said of contact material and said finely divided solids from a lower portion of said filtration zone.

4,230,559

APPARATUS FOR PNEUMATICALLY SEPARATING FRACTIONS OF A PARTICULATE MATERIAL

William C. Smith, West Vancouver, Canada, assignor to Rader Companies, Inc., Portland, Ore.

Continuation of Ser. No. 876,131, Feb. 8, 1978, Pat. No. 4,166,027, which is a continuation of Ser. No. 738,635, Nov. 3, 1976, abandoned. This application Nov. 22, 1978, Ser. No. 962,951

The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.

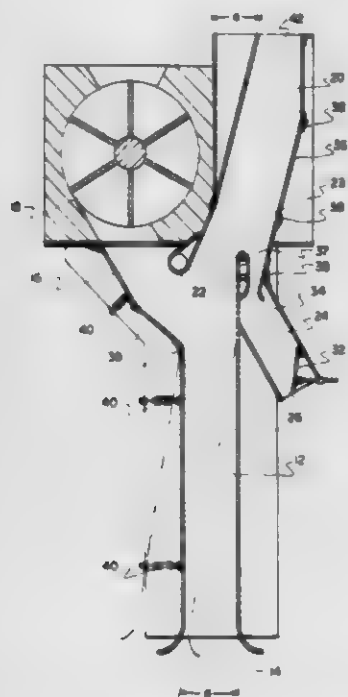
Int. Cl.³ B07B 4/02

U.S. Cl. 209—139 R

4 Claims

1. Apparatus for pneumatically separating fractions of a heterogeneous mixture of particulate material according to relative densities and/or aerodynamic properties comprising: an unobstructed, substantially straight primary duct which is not inclined from vertical by more than about 10° and which narrows near the top to define a region of accelerating airflow; airlock feed means for feeding all material to be separated into said primary duct at a location upstream of said region of accelerating airflow and without admitting a substantial amount of air into said primary duct; a discharge duct communicating with the top of said primary duct and extending upwardly therefrom; means for producing an upwardly moving column of air in said primary and discharge ducts having a velocity opera-

ble to raise a light fraction of said material while a heavy fraction falls to the bottom of said primary duct;
a secondary duct which is displaced horizontally from said primary duct and which communicates only with said discharge duct and the surrounding atmosphere so that said secondary duct provides an inlet for admitting a column of air directly, entirely from the surrounding



atmosphere into the interior of said discharge duct at a location shortly downstream of said region of accelerating airflow, to increase the volume of air in said upwardly moving column of air in said discharge duct, and adjustable damper means operable to adjustably constrict said secondary duct for regulating the velocity of air moving through said discharge duct.

4,230,560

NONMAGNETIC CONDUCTIVE MATERIAL SEPARATING APPARATUS

Takato Nakajima, Sakakimachi, Japan, assignor to Kanetsu Kogyo Kabushiki Kaisha, Ueda, Japan

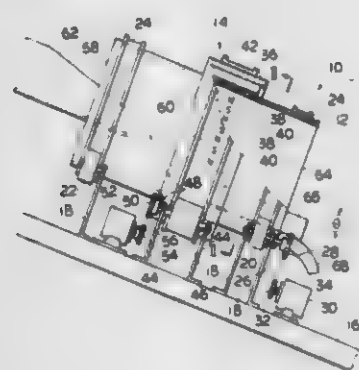
Filed Jul. 23, 1979, Ser. No. 59,648

Claims priority, application Japan, Aug. 15, 1978, 53/98711

Int. Cl.³ B03C 1/12

U.S. Cl. 209—212

5 Claims



1. A nonmagnetic conductive material separating apparatus comprising: a drum composed of nonmagnetic substance and rotated in one direction around a longitudinal center axis thereof, wherein composite input material posterior to previous removal of magnetic substance therefrom is introduced into said drum; and means for generating a magnetic field which rotates in the direction reverse to rotation of said drum substantially coaxially therewith so as to exert an electromagnetic force in the direction reverse to rotation of said drum.

4,230,561

METHOD AND APPARATUS FOR SEPARATING CLAY FROM COAL FINES

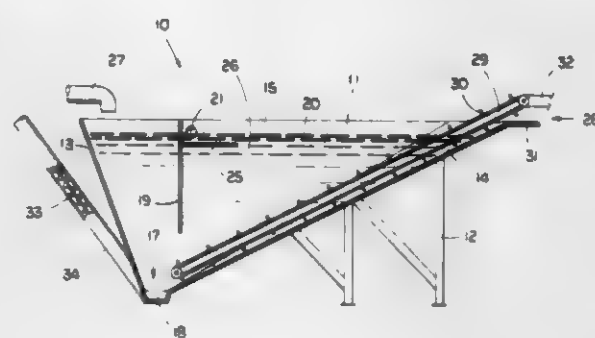
Russell L. McMurray, R.R. #2, Box 213, Du Quoin, Ill. 62832

Filed Apr. 2, 1979, Ser. No. 26,428

Int. Cl.³ B03B 5/54

U.S. Cl. 209—464

10 Claims



1. An apparatus for use in the separation of clay from coal fines which comprises:

a hopper including a bottom, a front wall, side walls and a rear wall, the side walls diverging upwardly, the rear wall having the top and extending upwardly from the bottom at an angle to horizontal of less than about 45 degrees, the rear wall including a central, rectangular wall portion and a pair of upwardly-widening triangular wall portions on either side of the rectangular wall portion, thereby defining a channel having the rectangular wall portion at the bottom;

a first baffle mounted to said hopper and extending vertically downward toward the bottom of said hopper, said first baffle being positioned in a plane spaced horizontally from the front wall;

a second, horizontal baffle mounted to said hopper;

a conveyor positioned adjacent and extending along the rear wall of said hopper from approximately the bottom of said hopper to above the top of the rear wall of said hopper, said conveyor comprising a flight conveyor having numerous, transverse blade members, the blade members being complementary in shape with the central, rectangular wall portions of the rear wall and being received in the channel defined by the rear wall;

drive means for driving said conveyor;

feed means for feeding a water suspension of coal fines containing clay particles into said hopper between the front wall of said hopper and said baffle;

an apron extending outwardly of said hopper from the rear wall of said hopper; and

overflow means for receiving water suspension of clay and directing the suspension from said hopper, said overflow means including at least one overflow port located in one of the side walls of said hopper between said first baffle and the rear wall of said hopper, said second baffle extending directly below the overflow port, at least a portion of the overflow port being located below the top of the rear wall of said hopper, said first baffle extending upwardly at least as high as the bottom of the overflow port.

4,230,562

METHOD FOR DEPOLLUTING FRESH WATER AND SALT WATER BODIES FROM CRUDE OIL, PETROLEUM PRODUCTS AND THEIR DERIVATIVES

Roberto Olivieri, Mentana; Andrea Robertello, and Ludwig Degen, both of Rome, Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Aug. 8, 1977, Ser. No. 823,043

Claims priority, application Italy, Sep. 1, 1976, 26751 A/76; Jun. 8, 1977, 24495 A/77

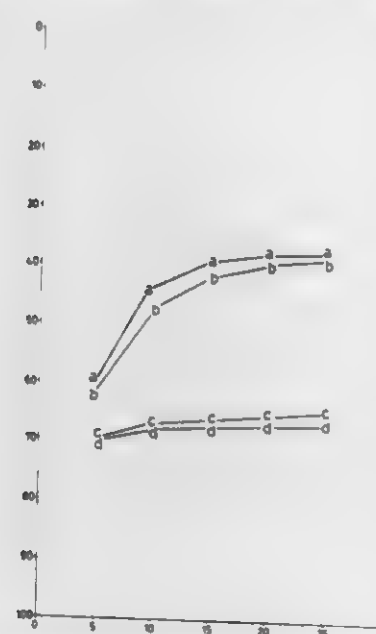
Int. Cl.² C02B 9/02

U.S. Cl. 210—610

2 Claims

1. In a method for depolluting fresh and sea water bodies

from crude oil petroleum and products and their derivatives by spreading onto the water bodies compounds which contain phosphorus and slow-release nitrogen in a form which can be assimilated by aquatic microorganisms capable of metabolizing hydrocarbons, the improvement which comprises: using as said phosphorus source lecithin; and using as said slow-release nitrogen source oxamide, at least



about 6.5 milligrams of said oxamide being present per 100 milligrams of pollutants, wherein at least about 5 milligrams of soybean lecithin are present per 100 milligrams of pollutants, said phosphorus and said nitrogen in said compound being present in an amount sufficient to increase the natural biodegradation of said pollutants caused by the metabolism of hydrocarbons by said aquatic microorganisms.

4,230,563

TREATMENT OF BIOLOGICALLY-DEGRADABLE WASTE

Frank C. Roesler, deceased, late of Stockton-on-Tees, England (by Johanna Roesler, executrix), assignor to Imperial Chemical Industries Limited, London, United Kingdom

Continuation of Ser. No. 794,403, May 6, 1977, abandoned. This application Oct. 31, 1978, Ser. No. 956,923

Claims priority, application United Kingdom, May 14, 1976, 19980/76

Int. Cl.² C02C 1/02

U.S. Cl. 210—629

1 Claim



1. A method for the biological degradation of a solids-liquid sewage mixture which comprises a step wherein the solids-liquid sewage mixture is circulated through a system comprising a downcomer and a riser communicating with each other at their upper and lower ends, the downcomer having an upper portion of enlarged cross-sectional area and a lower portion of

reduced cross-sectional area and a connecting portion connecting the upper and lower downcomer portions, said connecting portion being of lesser length than the upper portion and the lower portion, said upper and lower portions having substantially constant cross-sections along their lengths, the riser having a lower portion of enlarged cross-sectional area and an upper portion of reduced cross-sectional area and a connecting portion connecting the upper and lower riser portions, said connecting portion being of lesser length than the upper riser portion and the lower riser portion, said upper and lower riser portions having substantially constant cross-sections along their lengths, the combined cross-sectional area of the upper portions of the downcomer and riser being substantially equal to the combined cross-sectional area of the lower portions of the downcomer and riser, air being injected into the riser to start the solids-liquid sewage mixture circulating around the system and an oxygen-containing gas being injected into the sewage as it passes through the lower portion of reduced cross-section of the downcomer, the liquid velocity in the upper portion of the riser being not less than 1 meter/second and the liquid velocity in the lower portion of the downcomer being not less than 1.2 meters/second.

4,230,564

ROTARY REVERSE OSMOSIS APPARATUS AND METHOD

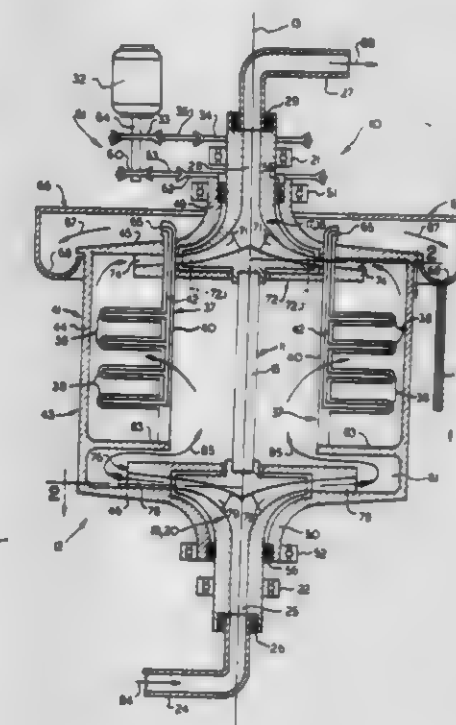
Bowie G. Keefer, 4324 W. 11th Ave., Vancouver, British Columbia, Canada (V6R 2M1)

Continuation-in-part of Ser. No. 806,704, Jun. 15, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,550

Int. Cl.² B01D 31/00, 13/00

U.S. Cl. 210—652

27 Claims



1. Apparatus for separation of feed fluid into concentrate and permeate fluid fractions by pressure applied to selective membrane means, the apparatus including first and second rotors, means to power the first rotor for rotation about a central axis at a first angular velocity, and means to recover energy from at least one of the fluid fractions when removed from the second rotor, the first rotor having impeller means to impart pressure energy and kinetic energy to the feed fluid, the second rotor having membrane pressure vessel means to contain and support the membrane means, the apparatus being further characterized by:

(a) the second rotor having a diffuser means for the impeller means, the second rotor and the diffuser means being mounted for concurrent rotation about the central axis at a second angular velocity which is less than the first angular velocity.

so that the diffuser means converts some of the kinetic energy of the feed fluid from the impeller means into a further increment of pressure energy.

4,230,565

METHOD FOR PURIFYING PHOSPHATE CONTAINING WASTE WATERS

Dietfried Donnert, Karlsruhe, and Siegfried Eberle, Eggenstein-Leopoldshafen, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe, GmbH, Karlsruhe, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,991

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721298

Int. Cl.² C02B 1/14

U.S. Cl. 210—683

6 Claims

1. Process for purifying a phosphate containing waste water in which aluminum oxide is used as a sorption material, comprising: bringing the waste water into contact in a stirrer reactor, with stirring, with fine-grained aluminum oxide having a grain size range from 0.05 to 0.2 mm, and simultaneously blowing in a gas which is inert with respect to Al_2O_3 and phosphate ions.

4,230,566

FOAMACEOUS HYDROCARBON ADSORPTION MEDIUM AND METHOD AND SYSTEM FOR MAKING SAME

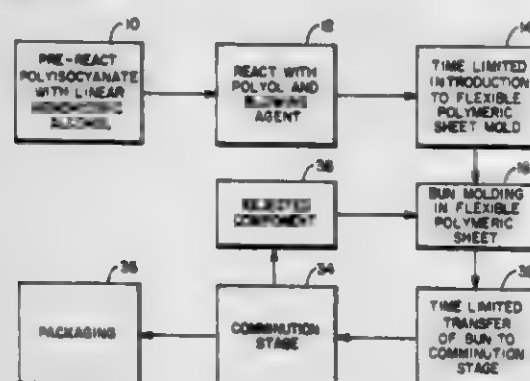
Thomas L. Faudree, III, Mentor, Ohio, assignor to Petrozorbent Corporation, Zanesville, Ohio

Filed Jun. 28, 1978, Ser. No. 919,957

Int. Cl.² B01D 15/00; C08G 18/14; B29G 7/02; B02C 18/44

U.S. Cl. 210—693

16 Claims



15. A low density cellular polymer exhibiting a surface characteristic for adsorbing water-borne insoluble hydrocarbons, which polymer comprises the reaction product obtained by reacting in the presence of a blowing agent:

(a) a prepolymer which is the reaction product of:

(1) a polyisocyanate, and

(2) an alcohol selected from the group consisting of long chain monohydric alcohols of from about 8 to 12 carbon atoms per molecule and mixtures thereof, said alcohol being employed in an amount of about 10% to 25% of the stoichiometric amount required to react completely with the polyisocyanate; and

(b) a polyol present in a proportion developing a slight excess unreacted polyol to insure a complete reaction thereof with said polyisocyanate.

16. A method of removing oil from an oil-water mixture comprising contacting said oil-water mixture with the comminuted cellular product of claim 15 thereby selectively adsorbing said oil on said product.

4,230,567

PROCESS FOR WORKING UP EFFLUENTS CONTAINING NITRO-HYDROXY-AROMATIC COMPOUNDS

Wolfgang Larbig, Krefeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 6, 1979, Ser. No. 28,029

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818680

Int. Cl.² C02C 5/00

U.S. Cl. 210—600

4 Claims

1. Process for treating an effluent containing a nitro- and hydroxy-group containing aromatic compounds which comprises heating said effluent containing said nitro- and hydroxy-group-containing aromatic compounds to a temperature in the range from 150° C. to 500° C. with exclusion of air and oxygen and under elevated temperature from 50 to 150 bars for 5 to 120 minutes.

4,230,568

TREATMENT OF HAZARDOUS WASTE

Christopher L. Chappell, Lichfield, England, assignor to Stablex A.G., Switzerland

Filed Oct. 19, 1978, Ser. No. 952,786

Claims priority, application United Kingdom, Oct. 19, 1977, 43507/77

Int. Cl.² C02C 5/02

U.S. Cl. 210—751

9 Claims

1. A method of treating a liquid hazardous waste which may contain a significant proportion of an organic contaminant such method comprising the steps of adding to the liquid waste calcium-containing cement and an aluminium silicate or an aluminosilicate thereby forming a flowable slurry and thereafter allowing the slurry to set into a rigid rock-like mass and adding to the slurry an amount of active carbon sufficient to reduce to an acceptable level the leaching of the waste from the rock-like mass.

4,230,569

METHOD AND APPARATUS FOR SUPPLYING DISSOLVED CHEMICALS INTO WATER

Karl Lohrberg; Rainer Pfohl, both of Heusenstamm; Jürgen Schubert, Obererlenbach, and Martin Gritschke, Karben, 1 Jachen Freytag, Usingen, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

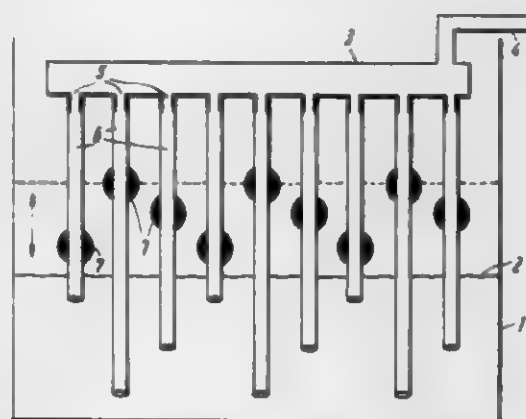
Filed Apr. 6, 1979, Ser. No. 28,026

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816522

Int. Cl.² C02B 3/08

U.S. Cl. 210—754

5 Claims



5. A process for supplying a liquid containing available chlorine to a cooling water stream which comprises passing said stream along a generally horizontal path in a generally horizontally disposed conduit feeding said liquid containing available chlorine into a stationary, substantially horizontal manifold disposed above said stream which manifold is in fluid

communication with a plurality of vertically disposed discharge hoses of differing lengths each of which has an outlet opening disposed below the level of the cooling water stream said outlet openings being substantially evenly distributed throughout the cross-section of said water stream.

4,230,570

AERATOR

Stephen J. Irving, St. Albans, England, assignor to National Research Development Corporation, London, England

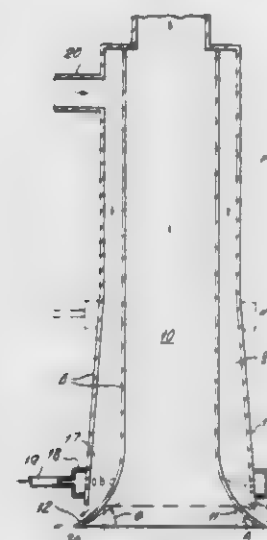
Filed Dec. 1, 1978, Ser. No. 965,438

Claims priority, application United Kingdom, Dec. 2, 1977, 50312/77

Int. Cl.² C02B 3/08; B01F 3/04

U.S. Cl. 210—758

11 Claims



1. An aerator apparatus including an aerator body having a pressure chamber, said pressure chamber having at one end thereof a first inlet for receiving a forced liquid along a selected direction, a wall opposite said first inlet, said wall being directed obliquely to said first inlet direction, a second inlet for a gas disposed between said first inlet and said opposite wall, a restricted chamber throat outlet fixedly directed away from the direction of said first inlet in the line of said oblique wall, the path between said first inlet and said throat outlet being unobstructed, the arrangement being such that liquid and gas supplied to the aerator produce a chamber outlet stream deflected from the first inlet direction of liquid and gas introduced therein to form bubbles in the outlet stream.

11. A method of aerating a volume of liquid, including drawing from the volume a supply of liquid, causing the supply of liquid to flow down a conduit into the volume of liquid along a full bore, unobstructed liquid path, causing the liquid flow to be diverted by a surface spaced obliquely across the conduit and restricting the conduit to an outlet throat fixedly directed away from the conduit direction, introducing gas into the liquid flow in the conduit in the region of the outlet throat but upstream of the outlet throat to emerge as a stream of liquid and bubbles of introduced gas with momentum provided by the liquid supply flow and directed by the oblique surface to carry the bubbles downwardly and outwardly in a liquid aerating sense.

4,230,571

OZONE/ULTRAVIOLET WATER PURIFICATION

Robert C. Dadd, 1320 Sumac Cir., Concord, Calif. 94521

Filed Jan. 22, 1979, Ser. No. 5,429

Int. Cl.² C02B 3/08

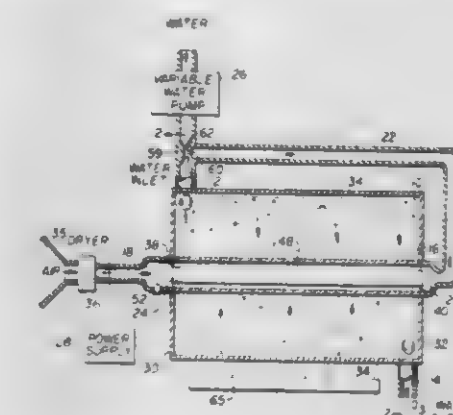
U.S. Cl. 210—760

1 Claim

1. A method of purifying water which comprises the steps of:

generating relatively broad spectrum ultraviolet radiation; directing air in a generally confined path through the radiation so as to produce ozone in the air;

introducing the ozone-containing air into the water to be purified; and directing the mixture of water and ozone-containing air through the radiation in a generally helical path around



4,230,572

FILTER METHOD AND APPARATUS

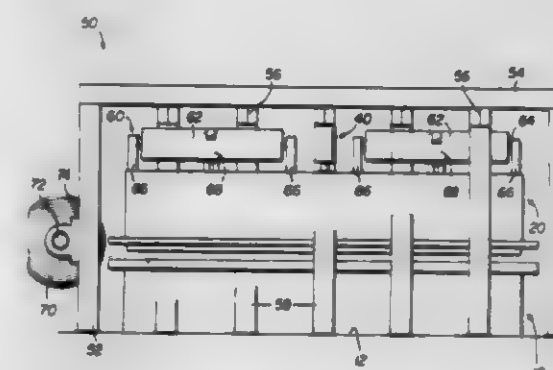
Gene Hira, 6865 Meadow Lake Dr., Birmingham, Mich. 48010

Filed Nov. 8, 1976, Ser. No. 739,755

Int. Cl.² B01D 37/00

U.S. Cl. 210—767

22 Claims



1. In a pressure filter assembly having a filter medium between relatively movable, aligned filter shells which respectively define receiver and discharge chambers in the assembly; the shells having opposed, aligned peripheral surfaces; with at least one of said shells carrying a compressible gasket on its peripheral surface for sealing the filter assembly during filtration; an influent passageway for supplying contaminant-carrying liquid under pressure to the receiver chamber; and an effluent passageway interconnected with the discharge chamber for receiving clarified liquid after its passage through the filter medium, upon which contaminants are accreted; the improvement of: displacement means for relatively displacing the filter shells (a) to place the shells in adjacent proximity for a filtration cycle, with the gasket compressed to seal the filter assembly (b) to compress the gasket prior to the initiation of a filtration cycle to an extent greater than that necessary to seal the filter assembly, and (c) to displace the shells from each other subsequent to a filtration cycle to accommodate the removal of the filtered solids; a fixed abutment surface spaced from one of said filter shells; and blocking means freely insertable between said one shell and the abutment surface when the displacement means has compressed the gasket to said greater extent, the dimension of said blocking means being slightly less than the corresponding dimension between said shell and the abutting surface when the gasket is compressed; said one shell being at least slightly displaced away from the discharge shell upon the introduction of liquid under pressure into the filter

assembly for a filtration cycle, thereby (a) slightly reducing the compression on the gasket, (b) placing the blocking means in compression to resist the forces generated within the filter shells during filtration, which forces tend to separate the filter shells, and (c) maintaining the gasket in compression to maintain an essentially liquid-tight seal.

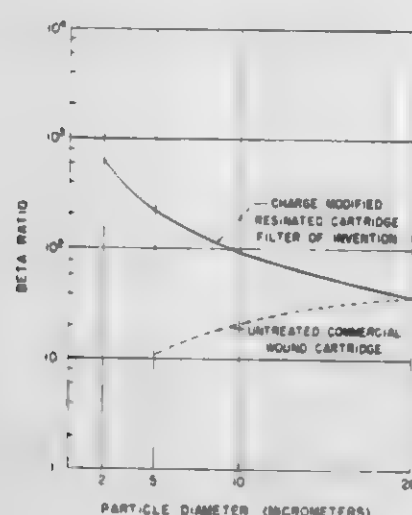
4,230,573

CARTRIDGE FILTER AND METHOD OF MAKING SAME
Michael Kilty, Windsor Locks, and Allan Pernigotti, Enfield, both of CT, assignors to AMF Incorporated, White Plains, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,743
Int. Cl.³ B01D 39/16

U.S. Cl. 210-767

18 Claims



1. A cartridge filter comprising an integral at least semi-rigid self-supporting porous thick-walled tubular element consisting essentially of fibrous material bonded with a melamine-formaldehyde resin, the surfaces of the bonded fibrous material being modified with a polyamido/polyamine-epichlorhydrin cationic resin.

4,230,574

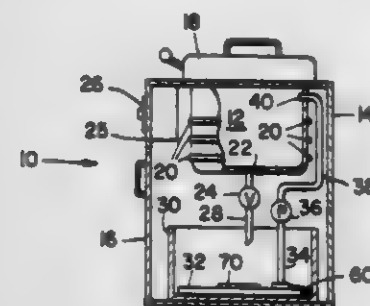
METHOD FOR FILTERING FRYING OIL

Bennie M. Whaley, and Janice C. Whaley, both of 3872 Concord Blvd., Concord, Calif. 95419

Filed Jan. 5, 1979, Ser. No. 1,293
Int. Cl.³ B01D 37/02

U.S. Cl. 210-778

3 Claims



1. In a deep fat fryer including only one cooking vessel for receiving cooking oil and food to be cooked; a drain opening at the bottom of said vessel; valve means for opening and closing said drain opening; a removable cover for closing off the top of said vessel; and heater means about said vessel for heating the cooking oil received therein, an improved method for batch filtering said cooking oil comprising the steps of:

- (a) adding diatomaceous earth only to the heated oil in said cooking vessel;
- (b) opening said valve means and draining said oil into a drain pan, said drain pan including a filter means positioned therein having a surface comprising a filter paper

envelope of a porosity designed to trap said earth on said surface;

- (c) drawing said oil through said filter means thereby causing said earth to be deposited on the surface thereof;
- (d) returning said oil automatically to said vessel;
- (e) opening said valve means and draining the heated oil into the drain pan such that said oil is deflected from splashing directly onto the surface of said filter means;
- (f) drawing said oil through said filter means thereby filtering said oil;
- (g) periodically returning said filtered oil automatically to said vessel; and
- (h) repeating steps (c)-(g).

4,230,575

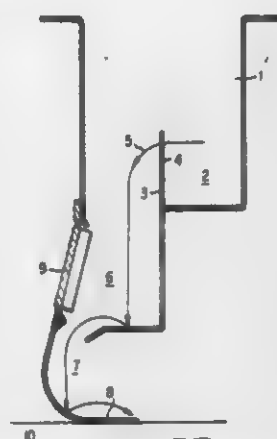
UNIFORM DISTRIBUTION OF A LIQUID OVER A FILTER SURFACE

Dominique Lizee, Rouen, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Feb. 22, 1979, Ser. No. 14,151
Claims priority, application France, Feb. 22, 1978, 78 05011
Int. Cl.³ B01D 23/20, 2/38

U.S. Cl. 210-780

26 Claims



1. A method for the uniform distribution of a liquid/solids feed to be filtered over a filter surface, comprising (i) initially, continuously introducing liquid/solids feed into the feeder compartment of a compartmentalized, partitioned feed-distribution box, said feeder compartment being dimensioned such that the volume for each unit length of the compartment progressively decreases away from the location of the introduction of the liquid/solids feed into the feeder compartment, (ii) continuing such feed as to effect an overflow of feed from said feeder compartment into a second, distribution compartment, over a common, partition wall member therebetween, via a plurality of outlet openings shaped into the top of said partition along the length thereof and being of a number such that a high rate of flow therethrough is assured, and (iii) thence uniformly cascading the overflow of liquid/solids stream onto suitable filter surface.

13. Apparatus for the uniform distribution of a liquid/solids feed over a filter surface, which includes a compartmentalized, partitioned feed-distribution box, comprising:

- a feeder compartment having a bottom wall member, a pair of sidewall members, a back wall member, a front wall member defining an overflow weir and liquid/solids feed inlet means, the wall members of said feeder compartment being dimensioned such that the volume for each unit length of the compartment progressively decreases in a direction away from said liquid/solids feed inlet means; and
- a distribution compartment having a back wall defined by said front wall member of said feeder compartment, a front wall member, a bottom wall member, a pair of sidewall members and an outlet opening for cascading feed flowing over said weir onto a filter surface.

4,230,576

METHOD OF CLEANING FILTER ELEMENTS THEREOF

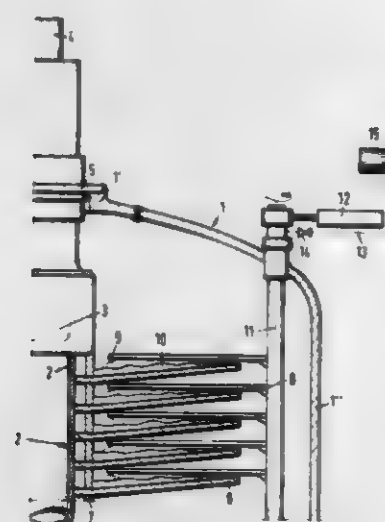
Hans Müller, Erlenbach, and Bruno Guazzone, Rapperswil, both of Switzerland, assignors to Chemap AG, Maennedorf, Switzerland

Continuation of Ser. No. 899,176, Apr. 24, 1978, abandoned.
This application Feb. 13, 1979, Ser. No. 11,950
Claims priority, application Switzerland, May 9, 1977, 5738/77

Int. Cl.³ B01D 29/38

U.S. Cl. 210-797

7 Claims



1. A method of cleaning a circular filter element provided with a filtering material upon a surface of which a cake is deposited during a filtering process, comprising the steps of providing a nozzle means positioned over said cake; ejecting a cleaning fluid through said nozzle means; contemporaneously cyclically sweeping said nozzle means in a substantially circular arc defined by a first fixed point coincident with the periphery of said circular filter element, a second fixed point coincident with that portion of said cake nearest the central axis of said circular filter element and a third fixed point also coincident to the periphery of said circular filter element, and contemporaneously rotating said circular filter element about said central axis, said steps of ejecting, sweeping and rotating being sufficient to convert said cake into a slurry so as to provide substantially complete removal thereof from said circular filter element.

4,230,577

TANK FOR CLEANING AND CHEMICAL TREATMENT OF BOILER FEEDWATER

Earl J. Bennecke, and Mark R. Bennecke, both of 8249 S. Lockwood, Burbank, Ill. 60459

Filed May 4, 1979, Ser. No. 36,077
Int. Cl.³ B01D 35/00

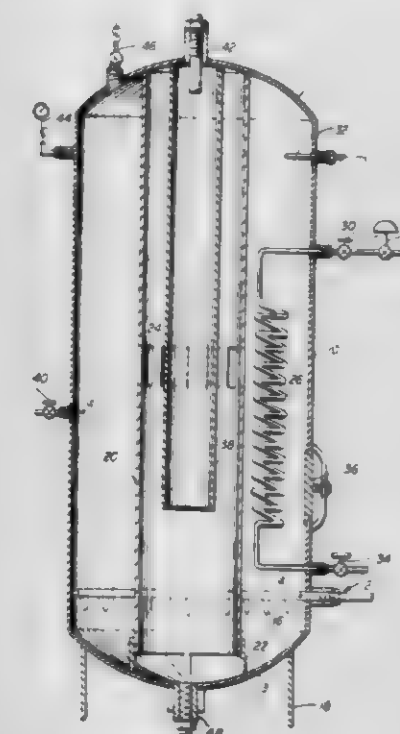
U.S. Cl. 210-85

3 Claims

1. An apparatus for heating, chemical-mixing and cleaning boiler feedwater comprising:

- (a) an upstanding tank having closed top and bottom with an outlet centrally located in the top thereof;
- (b) an outer standpipe having an open bottom within said tank depending from the top thereof, said outer pipe depending a greater length from the top of the tank and having weir slots in its wall midway up the length of the tank;
- (c) an inner open-bottom standpipe substantially concentric within said outer standpipe depending a lesser length from the top of the tank and opening at its bottom below the weir slots in the outer standpipe;
- (d) a distributive inlet means within the tank adjacent to the bottom of the same above the bottom of said outer standpipe below the weir slots therein wherein the distributive inlet means comprises a circumferential tube adjacent to the inside of the wall of the tank having a plurality of

spaced nozzles mounted therearound in fluid communication therewith and directed toward the bottom of the tank; and



(e) chemical input and heating means between the outer standpipe and the wall of the tank below the level of the weir slots with drain means centrally located in the bottom of the same.

4,230,578

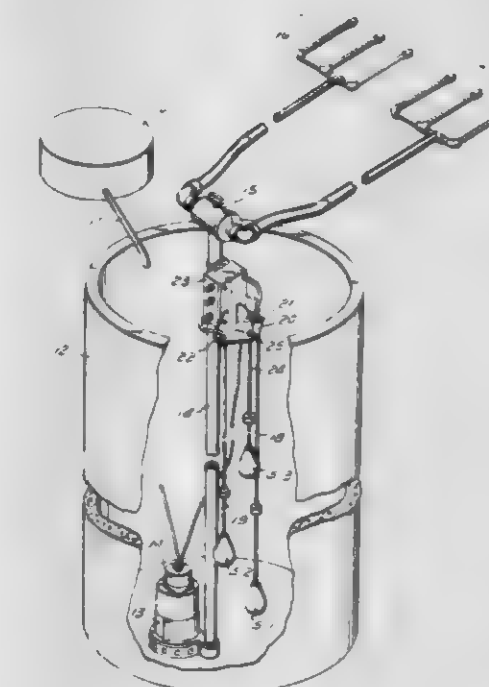
SEWAGE EFFLUENT VOLUME CONTROL AND ALARM ARRANGEMENT FOR PRESSURIZED SEWAGE DISPOSAL SYSTEM

Richard E. Culp, Eastlake, and Robert G. Baker, Mentor, both of Ohio, assignors to Jet, Inc., Cleveland, Ohio

Filed Apr. 9, 1979, Ser. No. 28,223
Int. Cl.³ C02C 1/00

U.S. Cl. 210-86

19 Claims



1. In a sewage disposal system for passing effluent from a septic tank to a disposal field, said system having: a holding tank operatively connected to the septic tank to receive effluent therefrom; a pump for discharging effluent from the holding tank to a disposal field; an electric motor driving said pump; a first switch operatively arranged to be closed while the

effluent in the holding tank is above a predetermined minimum level and to open when the effluent drops below said minimum level;

and a second switch operatively arranged to be open while the effluent in the holding tank is below a predetermined maximum level and to close when the effluent in the holding tank rises to a said maximum level;

the improvement which comprises a level control circuit for turning off the pump in response to the opening of said first switch and for turning on the pump in response to the closing of said second switch, said level control circuit including:

an A.C. power supply for the pump motor;

a bidirectional semiconductor switching device connected in series with the pump motor across said A.C. power supply;

a control device having means for gating on said bidirectional switching device and having an electrically energizable element for activating said gating means;

a step-down transformer having a primary winding connected across said A.C. power supply and having a lower voltage secondary winding inductively coupled to said primary winding;

an SCR having an anode-cathode path connected in series with said first switch and said electrically energizable element of said control device across said secondary winding, said SCR having a gate electrode;

and means operatively connecting said second switch between said secondary winding and said gate electrode of said SCR to turn on the SCR and thereby energize said electrically energizable element of said control device in response to the closing of said second switch;

said SCR, after being turned on, being operative to stay on independent of said second switch as long as said first switch remains closed.

4,230,579

BRINE FLOW CONTROL FOR MEMBRANE SEPARATION SYSTEM

Donald T. Bray, Escondido, and Raymond A. Tondreau, San Marcos, both of Calif., assignors to Desalination Systems, Inc., Escondido, Calif.

Filed Jan. 10, 1979, Ser. No. 2,353
Int. Cl.³ B01D 13/00

U.S. Cl. 210-101

5 Claims



1. A reverse osmosis purification system comprising in combination a pressure resistant vessel containing a membrane cartridge, means for introducing pressurized feed liquid into said pressure resistant vessel, means for conducting permeate passed through said membrane out of said pressure resistant vessel and into a container, and a proportioning flow control for controlling the brine release from said pressure resistant vessel containing said membrane cartridge and for controlling pressure of permeate passed through said membrane and stored in said container under elevated pressure, comprising, an elongated small diameter duct formed of two portions, one open end of each of said small diameter duct portions communicat-

ing with a space within a common compartment, and means including a relief valve, for connecting said space within said common compartment to said container for storing said permeate, said relief valve normally closed to flow from said container for storing said permeate; in which the improvements comprise:

- a said common compartment comprising a pressure resistant hollow body separate from said pressure resistant vessel containing said membrane cartridge;
- each of said small diameter duct portion passing through a wall of said hollow body and having an open interior end communicating with said space within said hollow body; and,
- means inside said hollow body and in part contained by the bottom wall of said hollow body for sealing each of said small diameter duct portions to said wall of said hollow body where each of said small diameter duct portions passes therethrough.

4,230,580

SLURRY DIGESTER AND CAPPING ARRANGEMENT FOR USE THEREIN

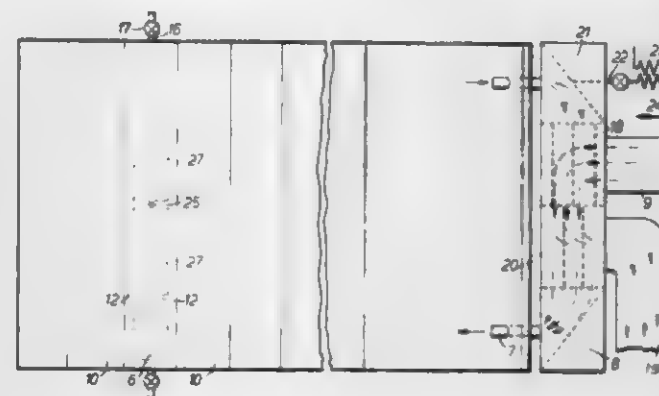
Christopher Dodson, Reading, England, assignor to Common-work Enterprises Limited, Edenbridge, England
Filed Jun. 29, 1978, Ser. No. 920,202

Claims priority, application United Kingdom, Jun. 29, 1977, 27295/77; May 31, 1978, 27295/78

Int. Cl.³ C02C 1/14; F24J 3/02

U.S. Cl. 210-170

37 Claims



1. A capping arrangement for an anaerobic slurry digester of substantially rectangular horizontal cross-section, the capping arrangement comprising:

- a plurality of elongate capping members of inverted channel form of substantially semi-circular cross-section comprising wall members, including flange sections at their lateral margins, which, when said capping members are placed in side-by-side arrangement, define therebetween channels which are upwardly open, said capping members being formed with gas release outlets in upper regions thereof; and

ballast means comprising elongate tanks resting on said flange sections in said upwardly open channels, said ballast means being provided with means for supply of water thereto and removal of water therefrom.

wherein said capping members are connected to each other at their lateral margins in association with said ballast means, said capping members being so formed that the capping arrangement is capable of floating on a body of slurry while being held therein by said ballast means and being lifted therefrom by gas under pressure thereunder.

10. An anaerobic slurry digester, comprising:

- a basin of substantially rectangular horizontal cross-section and having a substantially horizontal upper periphery and having a shoulder therearound below the upper periphery thereof;

inlet means for supply of slurry to said basin below said periphery;

sludge removal means for removal of sludge from said basin; and

a capping arrangement sized to lie within said basin with its outer margin adjacent the periphery thereof, disposed in an upper region of said basin, which capping arrangement comprises—

- a plurality of elongate capping members of inverted channel form of substantially semi-circular cross-section comprising wall members, including flange sections at their lateral margins, which, when said capping members are placed in side-by-side arrangement, define therebetween channels which are upwardly open, said capping members being formed with gas release outlets in upper regions thereof; and

ballast means comprising elongate tanks resting on said flange sections in said upwardly open channels, said ballast means being provided with means for supply of water thereto and removal of water therefrom,

wherein said capping members are connected to each other at their lateral margins in association with said ballast means, said capping members being so formed that the capping arrangement is capable of floating on a body of slurry while being held thereon by said ballast means and being lifted therefrom by gas under pressure thereunder, and wherein the endmost of said elongate tanks and the ends of each of said elongate tanks can rest on the shoulders of said basin.

4,230,581

CENTRIFUGAL SEPARATORS

Rodney T. Beazley, Maidstone, England, assignor to The Glacier Metal Company, Limited, Middlesex, England

Continuation of Ser. No. 779,761, Mar. 21, 1977, abandoned.

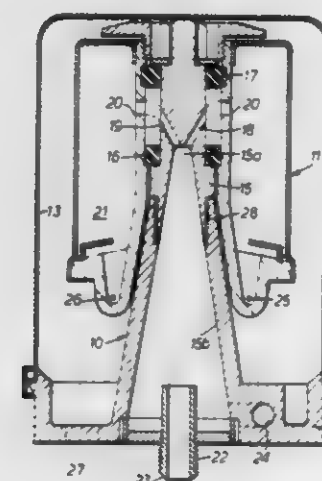
This application Nov. 16, 1978, Ser. No. 961,461

Claims priority, application United Kingdom, Mar. 24, 1976, 11779/76

Int. Cl.² B01D 17/00

U.S. Cl. 210-261

2 Claims



1. A centrifugal separator assembly comprising:

- a cyclone having a generally conical hollow internal chamber and a vortex finder,

a stem having a lower end terminating at the conical end of said cyclone,

upper and lower bearings mounted on said stem, said lower bearing being substantially at the same height as a part of said cyclone chamber;

a centrifuge chamber mounted on said bearings and capable of rotation about said stem, said centrifuge chamber being axially oriented with respect to said cyclone and including a partition dividing the centrifuge chamber into upper and lower parts, the lower part being bounded by an inner wall which closely surrounds the outer side of the upper part of the cyclone wall, a substantial portion of the axial length of said cyclone being coextensive with at least one half of the axial length of said centrifuge chamber;

a first passage for leading fluid into said cyclone including a tangential inlet;

a second passage leading through the stem with an upward radial component from the apex of said generally conical cyclone chamber to an orifice formed in the rotary inner wall of said upper part of said centrifuge chamber;

a third passage leading from the upper to the lower part of the centrifuge chamber at the radial extremity of the partition;

means for creating a driving couple which comprises at least one orifice disposed in the lower part of the centrifuge chamber; and,

a fourth passage leading from said vortex finder to an outlet.

4,230,582

DRAIN TRAPS WITH STRAINER MEANS

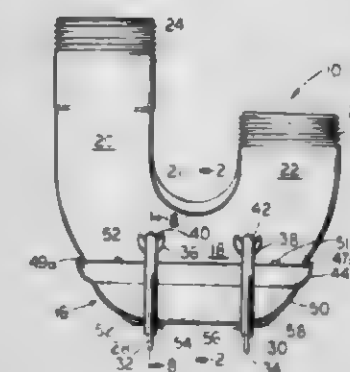
Anthony Z. Tuleja, P.O. Box 1564, Sarasota, Fla. 33578

Filed Feb. 1, 1978, Ser. No. 874,221

Int. Cl.² B01D 21/00

U.S. Cl. 210-311

1 Claim



1. A U-shaped pipe trap member comprising:

- a U-shaped conduit comprising spaced vertical conduit sections and a horizontal section connecting the vertical conduit sections, the horizontal section having plural clamp receiving holes, and the horizontal section having an open bottom, the open bottom having a continuous lower rim portion with an annular groove,

U-shaped clamping members disposed transversely on the horizontal section, the clamping members having horizontal ends disposed in the holes of the horizontal section, and having bottom portions, the clamping members being pivotally held by the ends on said horizontal section,

a closure member comprising an upward opening bowl having an upper rim with an annular groove, the bowl having an inward extending annular ledge positioned inward of the upper rim, and the bowl having clamping member retaining members on an outside bottom of the bowl, each retaining member comprising an outward tapered rib, a stop spaced inward from the rib and a ridge between the rib and stop for receiving a bottom portion of a U-shaped clamping member,

sealing means having an ovate cross section disposed in the annular groove in the upper rim of the bowl for fitting into the annular groove in the lower rim portion of the horizontal section,

a strainer comprising a round vertical member having a first series of strainer openings and a generally rectangular horizontal strainer member having a rim and a second series of openings, the first series of openings in a said vertical member being smaller than the second series of openings in a said horizontal member, whereby particles not passing through the first openings pass through the second openings into the bowl, said strainer means being disposed in said bowl with the rim of the horizontal strainer member being disposed on the ledge of the bowl and the vertical strainer member extending downward into the bowl and upward into the horizontal section of the U-shaped conduit.

4,230,583

SUPPORTED ANISOTROPIC REVERSE OSMOSIS MEMBRANES BASED ON SYNTHETIC POLYAMIDES AND PROCESSES FOR THEIR PREPARATION

Antonio Chiolle, 44, Via V. Leati, Ferrara; Giuseppe Gianotti, 20, Via Rosmini, Novara, and Gianfranco Parrini, 46/9, Via della Moscova, Milan, all of Italy

Continuation of Ser. No. 708,969, Jul. 26, 1976, abandoned. This application Oct. 16, 1978, Ser. No. 951,365

Claims priority, application Italy, Jul. 30, 1975, 25908 A/75 Int. Cl.² C08J 3/16, 5/18

U.S. Cl. 210—490

16 Claims

1. A process for preparing a supported anisotropic reverse osmosis membrane based on synthetic polyamides, said process comprising the following steps in the order given:

- preparing a support by treating a material suited for serving as a support for a polyamide membrane, with a water soluble polymeric material selected from the group consisting of polyacrylic acid having a molecular weight of about 50,000, methyl cellulose having a viscosity of 4000 cp at 25° C., a copolymer of acrylamide and acrylic acid, polyvinylpyrrolidone, polyvinyl alcohol having a molecular weight of 14,000 and a copolymer of vinylpyrrolidone and vinyl acetate, said water soluble polymeric material being resistant to high temperatures and insoluble in the polar solvents to be used for preparing the polyamide solution described below in step (b);
- preparing a solution of the polyamide in an organic polar solvent, in the presence of a water soluble salt which is also soluble in the organic polar solvent, wherein the polyamide concentration is between 5% and 60% by weight and the weight ratio of polyamide/salt is between 1 and 10;
- spreading the thus prepared polyamide solution onto the support prepared according to step (a);
- partially evaporating the solvent by heating same at a temperature between 40° C. and 180° C. and for a time between 1 minute and 3 hours;
- coagulating the membrane in an aqueous medium to dissolve the water soluble polymeric material and remove it from said support; and
- thermally treating the thus obtained membrane.

4,230,584

LIQUID SEPARATING COMPOSITION AND APPARATUS FOR APPLYING SAID COMPOSITION

Tohizi Ichikawa, and Teruko Watanabe, both of Tokyo, Japan, assignors to Terumo Corporation, Himonya, Japan

Division of Ser. No. 843,950, Oct. 20, 1977, Pat. No. 4,172,803.

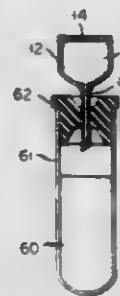
This application Feb. 8, 1979, Ser. No. 10,484

Claims priority, application Japan, Oct. 21, 1976, 51-126688; Oct. 21, 1976, 51-126689; Jan. 8, 1977, 52-1094

Int. Cl.² B01D 21/26

U.S. Cl. 210—516

4 Claims



1. An apparatus for applying a liquid-separating composition to a multiphase liquid substance which is to be separated into two phases by means of a centrifugal force of a predetermined magnitude and is contained in a container closed by an elastic stopper which apparatus comprises

a vessel having one end closed and being filled with a thixotropic liquid-separating composition having a specific gravity of from about 1.030 to about 1.065 which has been

adjusted to be intermediate between those of the phases of the multiphase liquid to be separated, having a viscosity of from about 30,000 to about 2,500,000 CP at 20° C., and comprising a liquid polymer base material having a viscosity of from about 100 to about 20,000 CP at 20° C. selected from the group of liquid polybutadiene, liquid epoxidized polybutadiene and liquid maleinized polybutadiene, and a suitable amount of an additive for adjusting the specific gravity and the viscosity of the composition to the above ranges, and a thixotropic property-imparting amount of a network former;

and a cannula extending outward from the other end of the vessel, communicating with the interior of the vessel and having a sharpened tip portion which is to be inserted through the elastic stopper of the container as to mount the apparatus onto the container and provide a communication between the interior of the container and the vessel through which the liquid-separating composition is gradually transferable into the container upon application of the centrifugal force whereby the viscosity of the liquid-separating composition and the diameter of the cannula are adjusted such that the liquid-separating composition enters the container after sufficient separation of the phases of the multiphase liquid substance in the container has taken place.

4,230,585

FIRE-RETARDANT CELLULOSE INSULATION AND PROCESS FOR MAKING SAME

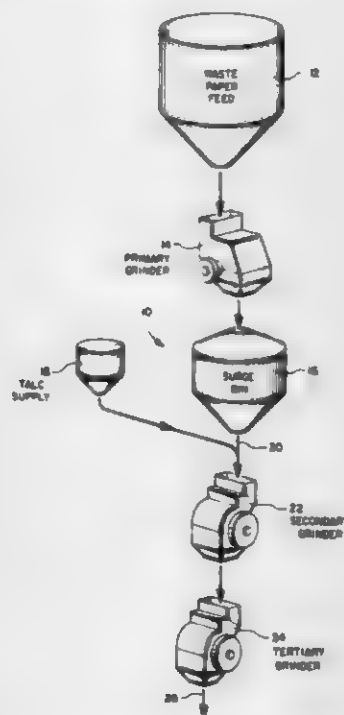
Thomas O. Bird, Idaho Falls; Jack White, Rigby, and Carl H. Bird, Idaho Falls, all of Id., assignors to White-Bird Enterprises, Inc., Rigby, Id.

Filed Nov. 15, 1978, Ser. No. 961,088

Int. Cl.² C09K 3/28

U.S. Cl. 252—8.1

13 Claims



1. A fire-resistant, cellulose insulation consisting of a finely divided cellulose intimately mixed with talc, the talc being present in an amount within the range on the order of about 5% to 25% by weight.

4,230,586

AQUEOUS WELL-DRILLING FLUIDS

John Bretz, Parma, and Leonard S. Cech, Wickliffe, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Aug. 7, 1978, Ser. No. 931,799

Int. Cl.² C09K 7/02

U.S. Cl. 252—8.5 P

19 Claims

1. An aqueous well-drilling fluid comprising (A) at least one non-Newtonian colloidal disperse system comprising:

- solid metal-containing colloidal particles having a unit particle size of from about 20 Å to about 5,000 Å consisting essentially of alkaline earth metal salts, said salts being characterized by having been formed in situ, at least a portion of which are predispersed in
 - at least one organic liquid dispersing medium; and
 - as an essential component, at least one organic compound which is soluble in said dispersing medium, the molecules of said organic compound being characterized by a hydrophobic portion and at least one polar substituent
- and (B) a clay/water slurry and (C) at least one emulsifier effective for emulsifying said disperse system in said clay/water slurry.

4,230,587

ADDITIVE COMPOSITION FOR RELEASE OF STUCK DRILL PIPE

Clarence O. Walker, Richmond, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 26, 1978, Ser. No. 974,185

Int. Cl.² E21B 23/00

U.S. Cl. 252—8.55 R

10 Claims

1. An improved method of releasing a stuck drill string in the borehole of an underground formation during drilling operations employing an aqueous drilling fluid which comprises contacting said stuck drill string with an additive composition effective to reduce the annular pressure exerted by the drilling fluid against the stuck drill string and to release said stuck drill string, said additive composition being a member selected from the group consisting of 100% by weight polyethylene glycol having a molecular weight of from about 106 to 600; an admixture of from 25 to 50% by weight of a polyethylene glycol having a molecular weight of from 150 to 600 with from 75 to 50% by weight of saturated salt water; an admixture of 50% by weight of a polyethylene glycol having a molecular weight of from 300 to 600 with 50% by weight of sea water; and an admixture of 25% to 50% by weight of a polyethylene glycol having a molecular weight of 300 with from 75 to 50% by weight of sea water.

4,230,588

FUEL AND LUBRICANT ADDITIVES FROM AMINOALKYLALKANOLAMINES

Benedict R. Bonazza, and Sidney Schiff, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1978, Ser. No. 938,575

Int. Cl.² C10M 1/32, 1/38

U.S. Cl. 252—51.5 A

12 Claims

1. A method for producing detergent additives for lubricants and fuels comprising reacting fatty acid represented by the formula RCOOH in which R is a hydrocarbyl radical of about 7 to about 99 carbon atoms with aminoalkanolamine represented by the formula H_{3-a}N(CH₂CH₂NR'^aCH₂CH₂OH)_a where R' is H or CH₂CH₂NH₂ and a is 1, 2, or 3.

4,230,589

METHOD FOR PRODUCING PIEZOELECTRIC CERAMICS

Toshio Ogawa, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Aug. 17, 1979, Ser. No. 67,419

Claims priority, application Japan, Aug. 17, 1978, 53-101213

Int. Cl.² C04B 35/46

U.S. Cl. 252—62.9

11 Claims

1. A method for producing piezoelectric ceramics of a Pb(Sn_aSb_{1-a})O₃-PbTiO₃ system having a composition expressed by the general formula, xPb(Sn_aSb_{1-a})O₃-yPbTiO₃, wherein subscripts a, x and y are mole fractions of the respective components and have the following values, x+y=1.00, 1/3 ≤ a ≤ 1, 0.01 ≤ x ≤ 0.40, and 0.60 ≤ y ≤ 0.99, which comprises, forming a powdered mixture of lead, tin, antimony and titanium compounds that correspond to said formula and which forms said composition at the firing temperature employed, calcining said mixture, forming said calcined mixture into a forming body and firing said body in an oxygen atmosphere containing not less than 80 volume percent of oxygen at a temperature of from 1000 to 1350 degrees C.

4,230,590

DETERGENT SOFTENER COMPOSITIONS CONTAINING A SOAP-CELLULOSE ETHER MIXTURE

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,532

Int. Cl.² C11D 1/65, 3/37, 3/22

U.S. Cl. 252—97

30 Claims

1. A detergent softener composition capable of imparting improved softness, detergency, antistatic and soil antiredeposition properties to fabrics treated therewith in a laundering process comprising by weight from about 9 to 40% of water soluble non-soap, organic surfactant, at least about 90% thereof being of the anionic type, from about 10 to 60% of water soluble, neutral to alkaline builder salt, from about 2 to 20% water soluble or dispersible fatty acid soap-cellulose ether mixture, from about 2 to 20% of cationic amine softener selected from the group consisting of (a) aliphatic di-(lower) C₁-C₄ alkyl, di-(higher) C₁₄-C₂₄ alkyl quaternary ammonium salts (b) heterocyclic compounds, and mixtures of (a) and (b), the weight ratio of soap to softener being from about 8:1 to 1:3 the percent concentration of anionic surfactant being at least about 1.5x+5, x representing the percent concentration of softener, wherein the soap-cellulose ether mixture is substantially homogeneously dispersed in said composition as discrete particles.

4,230,591

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Joseph H. Finley, Metuchen; Gaylen R. Brubaker, Lawrenceville, and Burton M. Baum, Princeton, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 949,836, Oct. 10, 1978, This application Jul. 30, 1979, Ser. No. 61,574

Int. Cl.² C11D 3/395

U.S. Cl. 252—102

7 Claims

1. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator therefor a N-sulfonylazole of the formula



where Z represents the number of carbon and nitrogen atoms necessary to complete a heterocyclic ring selected from the class consisting of pyrazole, pyrrole, triazole, and benzotriazole wherein said ring can be substituted with phenyl, alkyl of 1 to 10 carbon atoms, halogen, amino, cyano, nitro, alkoxy of 1 to 10 carbon atoms and R is an alkyl radical of 1 to 10 carbon atoms.

4,230,592

CONTROLLED FOAM DETERGENT ADDITIVE

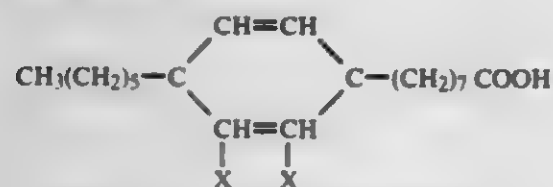
Jack Miller, and Thomas C. Tesdahl, both of Cincinnati, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio
Filed May 31, 1979, Ser. No. 44,396
Int. Cl.³ C11D 7/06

U.S. Cl. 252-156

3 Claims

1. Composition consisting essentially of:

Components	Wt. %
Water	6.0-86.95
Potassium hydroxide, dry basis	1.4-6.9
Amino tri methyl phosphonic acid, 40% active	2.0-10.0
100% active	0.8-4.0
Cycloaliphatic C ₂₁ dicarboxylic acid of the formula	0.5-8.0



in which one X is hydrogen and the other is a carboxylic acid group.

Sodium glucoheptonate or gluconate	5.0-35.0
Sodium nitrite	0.5-5.0
Linear alcohol alkoxyolate, being an alpha alkyl hydroxypolyoxyethylene/oxypropylene cyclic polymer in which alkyl is C ₁₂ -15, oxyethylene content is 8-13 moles, oxypropylene content is 7-30 moles, average moles of ethylene oxide is 9, and average moles of propylene oxide is 15	0.05-5.0
Alkyl glucosides in which alkyl has 6-18 carbon atoms, 70% active	2.0-16.0
100% active	1.4-11.2

4,230,593

INORGANIC WATER-SOFTENING BEAD

Joseph E. Wagner, III, Newark, Del., and Lloyd E. Williams, Bel Air, Md., assignors to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 883,007, Mar. 3, 1978, abandoned. This application Apr. 2, 1979, Ser. No. 26,390
Int. Cl.³ B01J 39/14; C01B 33/28; C02F 1/42; C11D 3/12
U.S. Cl. 252-179

3 Claims

1. A method of producing non-water dispersible water-softening beads comprising the steps of:

- adding from 80 to 90 parts of a sodium aluminosilicate having a silica to aluminum oxide molar ratio of between 2:1 and 4:1 and a sodium oxide to aluminum oxide molar ratio of between 0.8:1 and 1.2:1 and from 10 to 20 parts of low density polyethylene to a disk pelletizer;
- heating the silicate and polyethylene to the softening point of the polyethylene while forming beads in the pelletizer;
- cooling the beads to below the softening point of the polyethylene;
- removing the cooled beads from the pelletizer; and
- screening the beads to obtain beads having a diameter of between 200 to 1000 microns and a calcium capacity of at least 200 mg calcium carbonate/g.

4,230,594

METHOD OF TREATING SPENT REDUCING GAS

Heinrich Weber, and Kurt Tippmer, both of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still, Fed. Rep. of Germany

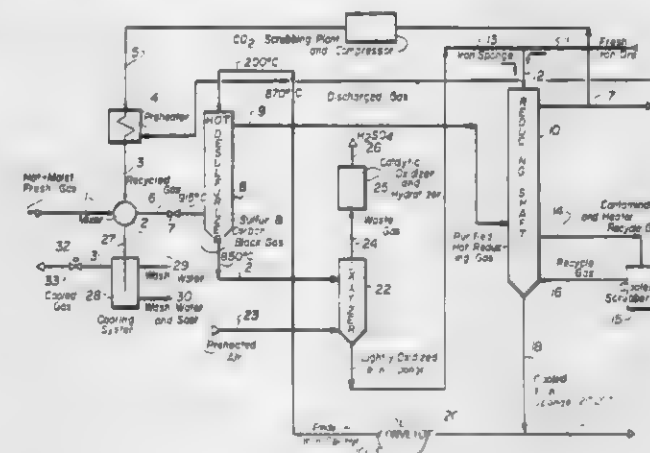
Filed Jul. 6, 1978, Ser. No. 922,311

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2727107

Int. Cl.² C10K 3/06; C22B 5/00

U.S. Cl. 252-188

9 Claims



1. A method of treating spent reducing gas which was spent in reducing iron ore comprising the steps of mixing the spent reducing gas with a fresh gas to replenish carbon monoxide and hydrogen and form a mixed gas of the type having substantially carbon monoxide, hydrogen sulfide and carbonyl sulfide, and directing an iron sponge in a counterflow heat transfer contact with said mixed gas at temperatures ranging from 700° C. to 1200° C. to partly desulfurize said mixed gas and to remove unreacted carbon from said mixed gas.

4,230,595

OXYGEN SCAVENGING AND HEAT-GENERATING COMPOSITIONS, AND DEOXYGENATING AND HEAT-GENERATING STRUCTURES

Teizo Yamaji, Yamaguchi, and Hiroyuki Okitsu, Iwakuni, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 6, 1979, Ser. No. 18,014

Claims priority, application Japan, Mar. 13, 1978, 53/27601; Mar. 16, 1978, 53/29217; Jun. 7, 1978, 53/67747; Aug. 3, 1978, 53/94092; Aug. 7, 1978, 53/95363

Int. Cl.² C09K 5/00, 15/02; A23D 3/34, 5/04

U.S. Cl. 252-188

16 Claims

1. An oxygen scavenger composition consisting essentially of

- metallic iron, and
- at least one oxidation promoter selected from the group consisting of sodium silicate hydrates, silicic acid, sodium alum and sodium borate hydrates, and optionally
- at least one oxidation promoter aid which is a metal halide compound, and/or
- a water-insoluble or sparingly water-soluble inert filler.

4,230,596

FAMILY OF LIQUID CRYSTALS OF THE DISUBSTITUTE DIESTER TYPE

Alain Beguin, Jean-Claude Dubois, and Annie Zann, all of Paris, France, assignors to Thomson-CSF, Paris, France

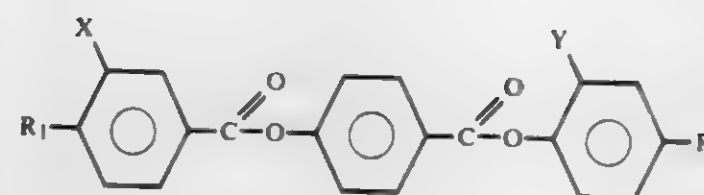
Filed Aug. 14, 1978, Ser. No. 933,564

Claims priority, application France, Aug. 17, 1977, 77 25180
Int. Cl.³ C07C 69/90, 121/60; C09K 3/34

U.S. Cl. 252-299

10 Claims

1. A liquid crystal compound of the formula



in which

- R₁ designates an alkyl group or alkoxy group having n carbon atoms, n being an integer of 1 to 10;
R₂ designates an alkyl group having m carbon atoms, m being an integer of 1 to 10;
X designates bromine or the cyano group;
Y designates the methyl group.
8. A mixture comprising a liquid crystal compound of claim 1, with p-pentylphenol-p-methoxybenzoate.

4,230,598

PHOSPHOR AND PROCESS FOR PREPARING SAME

Alain Vedrine, Clermont-Ferrand; Jean-Claude Gacon, Fontaines sur Saone; Georges Boulon, Lyon, and Danielle Trotier, Chamalieres, all of France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly sur Seine, France

Filed Aug. 25, 1978, Ser. No. 936,867

U.S. Cl. 252-301.4 H

6 Claims

1. A divalent europium activated potassium yttrium fluoride phosphor which corresponds to the formula:



wherein x is positive and up to 0.06, the said phosphor emitting an intense monochromatic emission centered about 3585 Angstroms when excited by ultraviolet radiation at temperatures below 400° K.

4,230,599

PROCESS FOR INHIBITING FOAMING UTILIZING MALEIC ESTER COPOLYMER BASED DEFOAMERS, AND DEFOAMED COMPOSITIONS

Gunther H. Elfers, Grosse Ile, Mich., assignor to The Diversy Corporation, Northbrook, Ill.

Filed Dec. 18, 1978, Ser. No. 970,263

Int. Cl.² B01D 19/04; C09K 3/00

U.S. Cl. 252-321

20 Claims

1. A process for inhibiting foaming in a liquid system containing water comprising adding thereto an effective foam inhibiting amount of a defoamer composition consisting of a mineral oil and about 5 to about 50 percent by weight based upon the total weight of said composition of a mineral oil-soluble polymer of the formula:

4,230,597

CONVERSION OF RADIOACTIVE WASTE MATERIALS INTO SOLID FORM

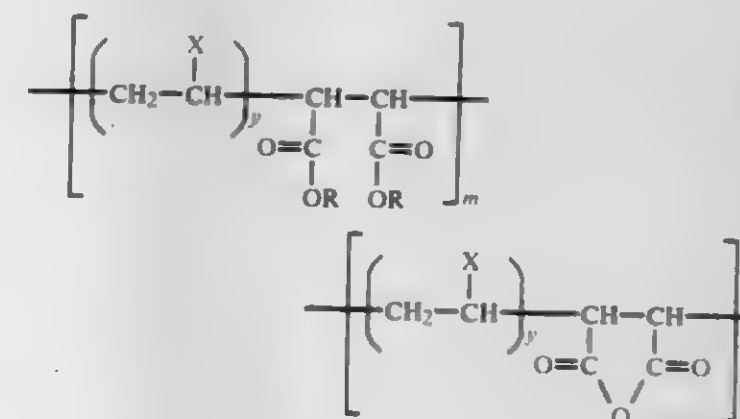
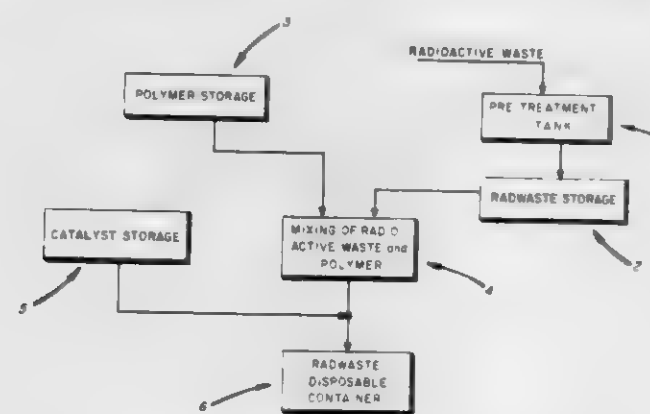
Thomas S. Bustard, and Corriene S. Pohl, both of Ellicott City, Md., assignors to Hittman Corporation, Columbia, Md.

Filed Aug. 3, 1978, Ser. No. 930,524

Int. Cl.² G21F 9/16

U.S. Cl. 252-301.1 W

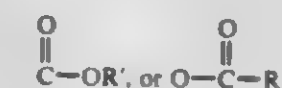
13 Claims



1. A composition for forming homogeneous mixtures with radioactive waste materials which, when solidified, forms a solid rigid matrix which entraps said radioactive waste, said composition comprising from between about 30 to 48%, by weight, urea-formaldehyde, from between about 25 to 45%, by weight, methylated urea-formaldehyde; from between about 15 to 30%, by weight, urea and from between about 0.1 to 2.5%, by weight, plasticizer.

8. A process for converting radioactive waste materials into a free-standing solid form, said process comprising the steps of forming a homogeneous mixture of a liquid radioactive waste material with a polymeric composition comprising from about 30 to 48%, by weight, urea-formaldehyde; from between about 25 to 45%, by weight, methylated urea-formaldehyde; from between about 15 to 30%, by weight, urea and from between about 0.1 to 2.5%, by weight, plasticizer; contacting said mixture of said waste and polymeric composition with an acidic catalyzing agent to thereby solidify said mixture and to form a free-standing solid matrix of said polymeric composition which totally entraps said radioactive waste.

wherein X equals hydrogen, alkyl of 1 to about 30 carbon atoms, phenyl, OR',



wherein R' is hydrogen or alkyl of 1 to about 30 carbon atoms, R'' is alkyl of 1 to about 30 carbon atoms; R is hydrogen or substituted or unsubstituted alkyl or alkyl ethers of about 8 to about 30 carbon atoms wherein at least one R is said alkyl, y is an integer of 1-5, and the sum of m and n are such that the polymer has a molecular weight of about 1000 to 100,000; the molar ratio of m:n being respectively about 50:50 to about 100:0.

11. A defoamed composition comprising a liquid system containing water and the defoamer composition of claim 1 dispersed therein as discrete particles present in an effective foam-inhibiting amount.

4,230,600

COMPOSITION FOR CONDITIONING SOFTWOOD LOGS PRIOR TO PEELING OPERATION

L. F. Bornstein, Atlanta, Ga., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Division of Ser. No. 758,908, Jan. 3, 1977, Pat. No. 4,108,226. This application Apr. 7, 1978, Ser. No. 894,438

Int. Cl.² B01F 1/00; C09K 3/00

U.S. Cl. 252—364

3 Claims

1. A composition of matter for addition to softwood log soaking vats to improve the yield and grade of peeled veneer, said composition consisting essentially of from about 10 to about 50% by weight urea, a base selected from the group consisting of sodium hydroxide, potassium hydroxide, sodium carbonate and ammonium hydroxide, said base being present in said composition in an amount sufficient to keep the pH of the water in said log soaking vats in the range of from about 6 to about 8 throughout the soaking period, and water.

4,230,601

CALIBRATOR COMPOSITION BASED UPON DIALYZED BLOOD SERUM

Doyle E. Hill, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1978, Ser. No. 902,605

Int. Cl.³ C09K 3/00; G01N 33/16, 31/14, 31/22

U.S. Cl. 252—408

9 Claims

1. In a calibrator composition for use in calibrating an analytical system in which an aqueous albumin-containing liquid is assayed for one or more non-proteinaceous analytes contained therein by an indicator that binds to albumin having free sites, said composition comprising, in admixture a pre-selected amount of such analytes and a blood serum matrix comprising albumin having free-binding sites; the improvement wherein said composition contains a compatible, organic, albumin site-binding material in an amount sufficient to reduce the bias arising from the presence of said free-binding sites.

4,230,602

PROCESS FOR PRODUCING HIGHLY ACTIVATED CARBONACEOUS PRODUCTS

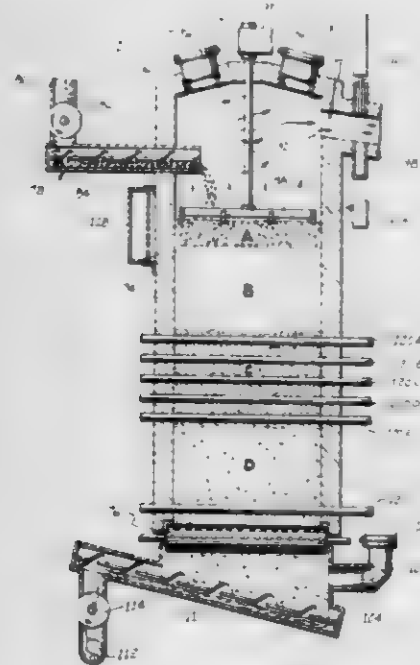
Mack D. Bowen, Smyrna, and Kenneth R. Purdy, Decatur, both of Ga., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 12, 1979, Ser. No. 84,294

Int. Cl.³ C01B 31/10; C10B 49/04, 53/02

U.S. Cl. 252—421

25 Claims



1. In a single-pass, self-sustaining, continuous process for the

production of an activated carbonaceous product having a surface area of at least 400 square meters per gram, the steps comprising:

- introducing to the top of a vertical reactor a substantially dry feed material capable of thermal decomposition to a gaseous component and a solid activated carbonaceous product;
- substantially continuously moving said material, as a packed bed and at a predetermined rate, downwardly through and outwardly from the bottom of said reactor, while withdrawing gases upwardly therethrough and off-gases outwardly therefrom;
- injecting air into said bed at a multiplicity of levels which are vertically spaced from one another and from said top and bottom of said reactor, to establish a primary activation zone of substantial depth, said air being injected at said levels at significantly different rates independently controlled so as to distribute it, and to thereby render said primary zone substantially isothermal, with said material therein having a substantially uniform temperature of 1400° to about 2100° Fahrenheit;
- injecting low temperature steam, in the substantial absence of oxygen, into said bed at a location spaced downwardly from said primary zone, to establish a secondary activation zone of substantial depth below said primary zone, said steam being injected at a rate just adequate to transport sufficient thermal energy from said secondary activation zone to the top of said bed for drying and thermal decomposition of said material, to produce a temperature of about 250° to 600° Fahrenheit in said off-gases and to cool said material exiting from said secondary zone to a temperature of about 200° to 1500° Fahrenheit; said exiting material comprising a substantially dry activated carbonaceous product having a surface area of at least 400 square meters per gram.

4,230,603

DESULFURIZING PELLET OF MANGANESE OXIDE AND ALUMINUM OXIDE AND PROCESS FOR PRODUCING SAID PELLET

Robert G. Olsson, Edgewood Borough, and Ethem T. Turkdogan, Pittsburgh, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 728,329, Sep. 30, 1972, Pat. No. 4,164,544, which is a continuation-in-part of Ser. No. 718,257, Aug. 27, 1976, Pat. No. 4,180,549. This application Apr. 2, 1979, Ser. No. 25,968

Int. Cl.³ B01J 21/04, 23/34

U.S. Cl. 252—463

15 Claims

1. A process for producing a pelletized desulfurizing agent for desulfurizing hot reducing gas comprising (1) intimately mixing finely divided manganese oxide and finely divided non-reactive aluminum oxide, (2) forming the thus prepared mixture into a pellet, and (3) heating the pellet to form a sintered, porous pellet consisting essentially of manganese oxide and aluminum oxide.

4,230,604

POLYMERIC ELECTRICAL CONDUCTANCE DEPENDENT UPON ELECTRICAL POTENTIAL

James A. Wingrave, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Oct. 30, 1978, Ser. No. 955,833

Int. Cl.³ H01B 1/06

U.S. Cl. 252—518

6 Claims

1. A method for imparting increased electrical conductance to organic resins and polymers comprising incorporating into said resins and polymers at least 0.007% by weight of an inorganic highly ionic monovalent metallic salt, 0.035% by weight of an inorganic highly ionic bivalent metallic salt or .07% by weight of an inorganic highly ionic trivalent metallic salt, said

salt imparting a geometrically increased rate of conductance as the applied electrical potential proportionately increases.

4,230,605

CLEANING COMPOSITION FOR NO-WAX VINYL COMPOSITION FLOOR COVERING

Arlene D. Connolly, Elizabethtown; James M. Eshleman, Mannheim, and Edgar W. Knaub, Willow Street, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 13, 1978, Ser. No. 969,252

Int. Cl.² C11D 3/43, 3/37

U.S. Cl. 252—345

3 Claims

1. A method of maintaining the high gloss of a vinyl composition floor covering having a no-wax coating comprising using as a cleaner a water diluted solution prepared from an aqueous cleaner consisting essentially of:

- an aqueous emulsion acrylic terpolymer containing about 51% by weight methyl methacrylate polymerized units, 31% by weight butyl acrylate polymerized units, and 18% by weight acrylic acid polymerized units;
 - a mixture of 50% by weight of the reaction product of 1 mol coconut oil and 2 mols diethanolamine and 50% by weight of the reaction product of 1 mol dodecylbenzene sulfonic acid and 1 mol diethanolamine; the ratio of solids being 85 to 75 parts (a) to 15 to 25 parts (b); ethylene glycol monobutylether;
- sufficient aqueous ammonia to provide a pH of greater than about 8.3; and water; said cleaner being diluted before use to give a solution having between about 0.1 to 0.5% by weight solids and 0.1 to 1.0 part by weight ethylene monobutyl ether per 100 parts water.

4,230,606

POLYOXYMETHYLENE MOLDING COMPOSITION CONTAINING MELAMINE FORMALDEHYDE POLYCONDENSATE

Herbert Amann, and Gerhard Morlock, both of Hanau, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 715,802, Aug. 19, 1976, Pat. No. 4,139,575. This application Nov. 27, 1978, Ser. No. 963,729 Claims priority, application Fed. Rep. of Germany, Sep. 10, 1975, 2540207

Int. Cl.³ C08L 61/28

U.S. Cl. 260—6

26 Claims

1. In a molding composition comprising a polyoxymethylene, a melamine formaldehyde polycondensate as thermal stabilizer and an antioxidant agent, the improvement wherein said melamine formaldehyde polycondensate is a finely divided, cross-linked substantially water insoluble polycondensate comprising the precipitation product obtained by reacting formaldehyde, melamine and at least one other substance that can react to form a part of said polycondensate wherein the molar ratio of formaldehyde to melamine plus said other substance is between 1.2:1 and 10.0:1; up to 20 mole percent of said melamine being replaced with said at least one other substance that can react to form a part of said polycondensate; and said polycondensate is in an amount of about 0.001 to about 30 percent by weight, related to the total weight of said composition, said polyoxymethylene has a crystallite melting point of about 140° C. to about 180° C., a density of about 1.38 to about 1.45 g/ml (DIN 53 479), and a viscosity of at least about 30 ml/g when measured at 135° C. with a solution of 0.5 g polyoxymethylene in 100 ml dimethylformamide containing 2% by weight diphenylamine; said polycondensate has a primary particle size less than about 1 μm, and a specific surface up to about 250 m²/g.

4,230,607

FASTER PROCESSING VINYL COMPOSITIONS

William A. Watts, Uniontown, and Mark D. Creekmore, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 16, 1978, Ser. No. 869,878

Int. Cl.³ C08K 5/06, 5/10

U.S. Cl. 260—23 XA

1 Claim

1. A vinyl resin composition containing 100 parts of vinyl resin, 10 to 80 parts of plasticizer and in combination 0.5 to 50 parts of a partial ester of glycerine and an aliphatic, saturated or unsaturated, monocarboxylic acid containing 8 to 18 carbon atoms, 0.5 to 50 parts of a partial ester of sorbitan and an aliphatic, saturated or unsaturated, monocarboxylic acid containing 8 to 18 carbon atoms and 0.5 to 50 parts of a polyethoxylated alkyl phenol, where the alkyl group contains 8-12 carbons, with an average of 4-20 moles of ethylene oxide.

4,230,608

STABLE WATER-IN-OIL EMULSIONS OF CATIONICALLY MODIFIED QUATERNIZED POLYACRYLAMIDE AND THEIR METHOD OF PREPARATION

Lawrence A. Mura, Homewood, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed May 22, 1978, Ser. No. 908,181

Int. Cl.³ C08K 5/51

U.S. Cl. 260—29.4 UA

9 Claims

1. An improved process for the stabilization of water-in-oil emulsions of cationically modified acrylamide polymers of the type prepared by reacting an acrylamide polymer with formaldehyde and a secondary amine containing 2-8 carbon atoms followed by quaternization with an alkylating agent, said water-in-oil emulsion comprising:

- 5-60% by weight finely divided cationically modified acrylamide polymer;
 - 5-75% hydrophobic oil;
 - 20-90% by weight water; and
 - 0.1-21% by weight oil-in-water emulsifying agent; the improved process comprising:
- Preparing an aqueous solution of a water soluble phosphorous containing compound having a P-H bond, said solution having a pH of from 1.5-4.5;
 - Adding the aqueous solution of step A to the water-in-oil emulsion with agitation in a quantity to simultaneously:
- provide to the water-in-oil emulsion from 1.6-25% of the phosphorous containing compound based on the weight of the cationically modified acrylamide polymer present in the water-in-oil emulsion; and
 - adjust the pH of said water-in-oil emulsion to from 3.5-5.0; and then, in the absence of heating.
- Recovering a stabilized water-in-oil emulsion of the cationically modified acrylamide polymer, said water-in-oil emulsion being readily invertible when added to water in the presence of a hydrophilic surfactant, the polymer contained in the water-in-oil emulsion being stabilized against cross linking.

4,230,609

WATER REDUCIBLE COATING COMPOSITIONS

Gary L. Burroway, Doylestown, and Michael J. Maximovich, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 30, 1978, Ser. No. 910,806

Int. Cl.³ C01D 5/00; C09D 3/74, 3/80

U.S. Cl. 260—29.6 TA

11 Claims

1. A water reducible composition which comprises on a 100 parts resin basis an aqueous or solution dispersion of a defoamer, volatile components and a resin, said resin consisting essentially on a 100 weight percent basis of polymerized monomeric units, said units being obtained from polymerized monomers in the following percentages: 64.5 to 84.5 percent of a

hard hydrophobic enhancing units from monomers selected from the class consisting of styrene, α -methylstyrene, acrylonitrile, vinyl toluene, methyl methacrylate, vinyl chloride and vinylidene chloride; 15 to 35 percent of soft hydrophobic enhancing units from monomers selected from at least one acrylate selected from the class consisting of methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate, lauryl acrylate, isodecyl methacrylate, butyl methacrylate, isobutyl methacrylate, at least one vinyl ether selected from the class consisting of ethyl, butyl, octyl, decyl, and cetyl vinyl ether and/or at least one diene selected from 1,3-butadiene, isoprene and 2,3-dimethyl butadiene, provided that said diene monomers are not mixed together and copolymerized with vinyl chloride or vinylidene chloride; and 0.5 to 10 percent of a hydrophilic enhancing organic acid unit selected from the class consisting of acrylic, methacrylic, fumaric, itaconic and maleic acid, said volatile components comprising a volatile amine in sufficient amount to result in a pH of from 8 to 14 for the composition; a water insoluble organic solvent; and a water soluble solvent selected from the class consisting of ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monobutyl ether, diethylene glycol monobutyl ether, diethylene glycol monoethyl ether acetate, diethylene glycol diethyl ether, ethylene glycol monomethyl ether acetate, dipropylene glycol methyl ether, methyl ethyl ketone, propylene glycol ethyl ether, propylene glycol isopropyl ether, propylene glycol butyl ether, acetone, methyl propyl ketone and diacetone alcohol; the water insoluble organic solvent having a weight ratio of from 70:30 to 20:80 relative to the water soluble organic solvent, and 0 to 30 parts of a plasticizer having a melting point of about -40°C . to about 25°C ., a boiling point of at least 95°C ., and a solubility parameter of about 8 to about 16, with the proviso that when water is present it is present in a volume ratio relative to the volatile components of at least 80:20.

4,230,610

POLYACRYLATE PIGMENT DISPERSANTS FOR MAGNESIUM OXIDE

Ronald J. Falcione, Canonsburg; Ronald R. McManis, Washington, and Joseph A. Aufman, Pittsburgh, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 63,023

Int. Cl.³ C08L 33/02

U.S. Cl. 260—29.6 M

1 Claim

1. A method for reducing the slurry viscosity of magnesium oxide aqueous slurries which comprises maintaining in the slurry from 0.1 to 5.0 percent of a polyacrylic acid which has been neutralized to a pH of from about 8.0 to about 12.0.

4,230,611

SILANE PLASTICIZED POLYCARBONATE COMPOSITION

Victor Mark, Evansville, and Phillip S. Wilson, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

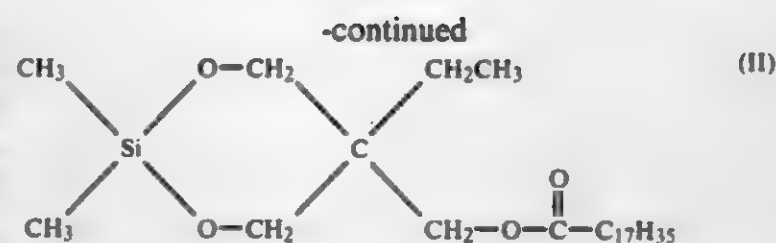
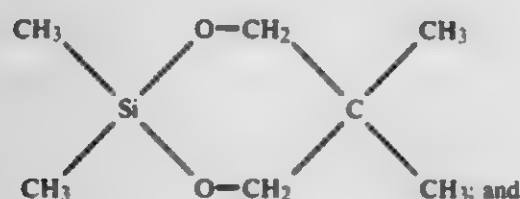
Filed Dec. 28, 1977, Ser. No. 865,296

Int. Cl.³ C08K 5/54; C09L 68/00

U.S. Cl. 260—29.15 B

4 Claims

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of a silane plasticizer of the following formulae:



4,230,612

POLYETHER LUBRICANTS FOR USE IN THE PROCESSING OF PLASTICS

Heinz Praetorius; Karl Seibert, both of Duren, and Werner Holtvoigt, Lonne-Riesel, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 860,508, Dec. 14, 1977, Pat. No. 4,159,975.

This application Jan. 11, 1979, Ser. No. 2,520

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2656927

Int. Cl.³ C08G 65/08; C08L 27/06

U.S. Cl. 260—33.2 R

6 Claims

1. A lubricant for use in processing thermoplastic polymers comprising a block copolymer comprised of blocks of polyalkylene oxide made from a monomer selected from the group consisting of aliphatic, non-substituted, 1,2-alkylene oxides containing from about 6 to about 40 carbon atoms, and mixtures thereof, and blocks of polyethylene oxide or polypropylene oxide, or mixtures thereof, the polyalkylene oxide being present in an amount of from about 10% to about 95%, by weight, based on the total weight of the block copolymer, and the block copolymer having an average molecular weight of from about 1,500 to about 10,000.

4,230,613

PEROXY-FREE METHACRYLATE LACQUER AND ADHESIVE METHOD EMPLOYING SAME

Leon E. Wolinski, Cheektowaga, and Peter D. Berezuk, Kenmore, both of N.Y., assignors to Pratt & Lambert, Inc., Buffalo, N.Y.

Filed Mar. 7, 1979, Ser. No. 18,161

Int. Cl.³ C08K 5/05, 5/13; C09J 5/00

U.S. Cl. 156—315

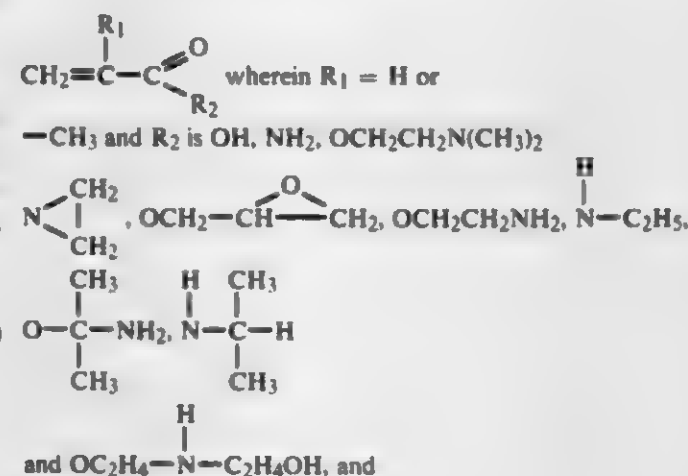
21 Claims

1. A peroxy-free lacquer composition for coating a substrate and serving as a vehicle for a peroxy catalyst activator, the activator-containing coating on the substrate being adapted to be brought into contact with an adhesive containing a peroxy catalyst,

the said lacquer composition comprising, in weight percent, copolymerizable monomers consisting of

(A) 65 to 98% of a monomer selected from the group consisting of methyl methacrylate, ethyl methacrylate and styrene,

(B) 2 to 35% of an adhesion promoter selected from the group consisting of



(C) 0 to 33% of a softening monomer selected from the group consisting of butyl acrylate and 2-ethyl hexyl acrylate, at least one member of (A) and (B) respectively being present, the said lacquer composition consisting of copolymers and any unreacted monomers, (D) the said lacquer composition being dissolved in a volatile solvent to form a solution containing 20 to 40% lacquer composition, and (E) an tertiary amine activator for a peroxy free radical polymerization catalyst dissolved in said solution in a ratio of activator: lacquer composition of 5:95 to 95:5.

4,230,614

STOP-OFF COMPOUND AND METHOD OF MAKING

Charles R. Arnold, and Donald A. Pennington, both of Seattle, Wash., assignors to Boeing Commercial Airplane Company, Seattle, Wash.

Filed Nov. 23, 1977, Ser. No. 854,452

Int. Cl.³ C08K 3/38

U.S. Cl. 260—33.6 PQ

4 Claims

1. A stop-off composition as a parting agent during diffusion bonding of metals comprising: about 48 weight percent of a release agent of boron nitride dispersed in about 52 weight percent of a binder consisting of polyisobutylene dissolved in a solvent consisting essentially of an aliphatic or aromatic hydrocarbon to form a stop-off coating composition having a consistency to permit silkscreen application of the composition to a metal part to provide a coating having uniform thickness and sharply defined lines in intricate patterns.

4,230,615

PROCESS FOR CONTROLLED MIXING IN A HIGH INTENSITY MIXER

Zenas Crocker, Westmount, and Ved P. Gupta, Lasalle, both of Canada, assignors to Carlew Chemicals Limited, Montreal, Canada

Filed Nov. 21, 1978, Ser. No. 962,778

Int. Cl.³ C08J 3/00

U.S. Cl. 260—34.2

16 Claims

1. A process for controlled mixing of a mixable material in a high intensity batch mixer, comprising the steps of, feeding a batch of the material into the mixer, agitating the batch of the material in the mixer, monitoring the infrared radiation produced by the batch of material so as to determine the temperature of the batch of material separately from the temperature of the mixer, and discharging the batch from the mixer when the batch temperature reaches a final predetermined level.

4,230,616

FIRE-PROTECTING POLYESTER RESINS

Leo M. Godfried, Badhoevedorp, Netherlands, assignor to Fokker-VFW BV, Schiphol-Oost, Netherlands

Continuation of Ser. No. 303,781, Nov. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 9,987, Feb. 10, 1970, abandoned. This application May 11, 1978, Ser. No. 905,027 Claims priority, application Netherlands, Feb. 13, 1969, 6902243

Int. Cl.³ C08K 5/03, 5/05, 5/17, 3/32

U.S. Cl. 260—40 R

17 Claims

1. In a fire-protecting moulding composition, the combination of: 35 to 50% by weight of an unsaturated polyester and 5 to 10% by weight of an unsaturated monomer copolymerizable therewith, together with a mixture of fire-protecting additives to render the moulding composition, when set, intumescent, said mixture consisting of: 5 to 20% by weight of a source of carbon having a high temperature of decomposition and containing many radi-

cals capable of entering into an esterifying reaction with phosphoric acid,

20 to 40% by weight of a source of phosphoric acid having a decomposition temperature lower than that of said source of carbon whereby said esterifying reaction may take place at said decomposition temperature, and 5 to 20% by weight of a source of non-inflammable gases, said source providing said gases at temperatures above the decomposition temperature of said phosphoric acid source, all percentages being calculated on the combined weight of polyester and monomer fire-protecting additives.

4,230,617

SOMATOSTATIN ANALOGUES

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

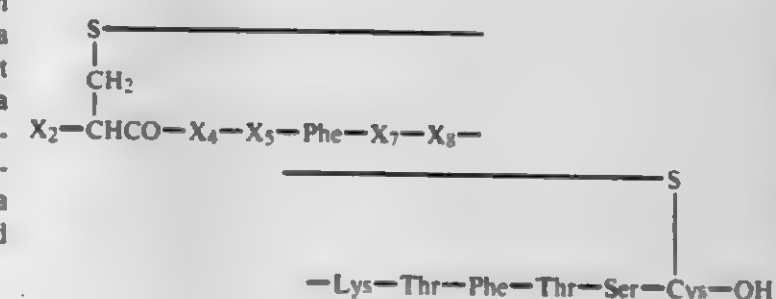
Filed Jul. 5, 1979, Ser. No. 54,545

Int. Cl.³ C07C 103/52; C08L 37/00; A61K 37/00

U.S. Cl. 260—112.5 S

4 Claims

1. A compound of the formula:



its linear precursor intermediates or non-toxic acid addition salts thereof in which

X_2 is NH_2 , Ala-Gly-, Ala-D-Ala, Gly-Gly-Gly-, lower alkanoyl or benzoyl;

X_4 is Arg, His, D-Arg, or D-His;

X_5 is His, Tyr, Glu, D-His, D-Tyr, or D-Glu;

X_7 is Trp, Tyr, Met, or His;

and

X_8 is Trp or D-Trp.

4,230,618

AZO DYESTUFFS CONTAINING AN AMINO OR ACYLATED AMINO NAPHTHOL DI-SULFONIC ACID RADICAL AND AT LEAST ONE REACTIVE PHOSPHORIC OR PHOSPHONIC ACID GROUP

Donald R. Gauthier, Somerset, Mass., assignor to ICI United States, Inc., Wilmington, Del.

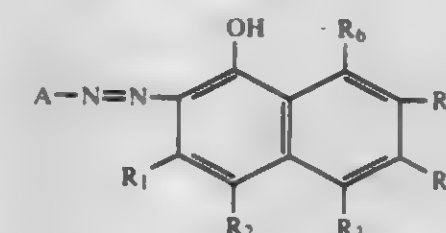
Filed Sep. 27, 1977, Ser. No. 837,625

Int. Cl.³ C09B 62/82; D06P 1/384, 3/66

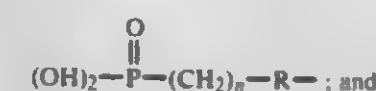
U.S. Cl. 260—187

13 Claims

1. An azo dyestuff of the formula:



wherein A is a phenylene or naphthalene radical containing at least one phosphonic or phosphoric acid group having the formula:



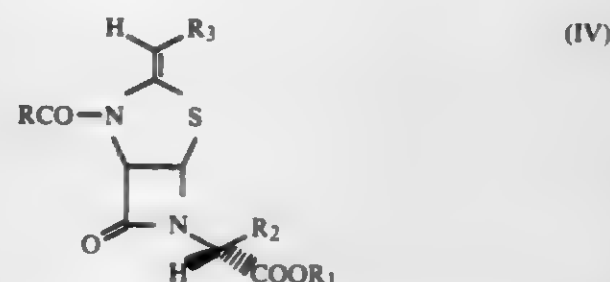
R is a phenyl or naphthyl radical, unsubstituted or substituted;

n is 0 or an integer of 1 to 4;

R₁ and R₂ are hydrogen or —SO₃H; and R₃–R₆ are hydrogen, —SO₃H, or NR₇Q wherein R₇ is hydrogen or lower alkyl and Q is hydrogen or an acyl group of 2 to 8 carbon atoms, at least two of R₁–R₆ being —SO₃H and at least one being —NHQ, provided that when the dyestuff is monazo, then Q is a carbonyl group of 3 to 8 carbons and when the dyestuff is disazo, Q is hydrogen or a carbonyl group of 2 to 8 carbon atoms.



(b) N-acylating the compound of formula (III), with concomitant shifting of the double bond to the extra-nuclear position, by reaction with an acyl halide RCOX, where X is halogen and R has the meaning stated above, in the presence of an organic base or a saturated aqueous solution of NaHCO₃ in a two-phase system, thereby giving a compound of formula (IV):



(c) hydrolytically cleaving the compound of formula (IV) by treatment with an aqueous solution of HCl in acetone, or by passing same through a silica gel column, thereby obtaining the 4-thioacyl derivative of formula (V):



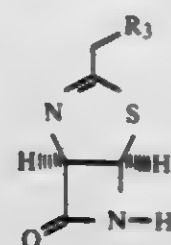
(d) and reductively desulfurizing the compound of formula (V) with Raney-Ni to yield the azetidinone (I).



wherein R is a saturated or unsaturated alkyl having from 1 to 6 carbon atoms, α -aminobenzyl, benzyl, a free or substituted phenyl, the phenyl substituent being selected from hydroxy, methyl, methoxy, and amino;

R₁ is hydrogen, alkyl having from 1 to 4 carbon atoms, trimethylsilyl, trichloroethyl, benzhydryl, or benzyl; and R₂ is a free or substituted phenyl, the phenyl substituent being selected from hydroxy, methyl, methoxy, and amino; comprising the steps of

(a) reacting a compound of the formula (II):



wherein R₃ is phenyl or phenoxy, with a compound of formula YCHR₂COOR₁, in which Y is a leaving group selected from the group consisting of iodine, bromine, chlorine, acyloxy, and sulphonyloxy, and in which R₁ and R₂ have the meanings set forth above; in the presence of a metal hydride in a solvent selected from the group consisting of anhydrous tetrahydrofuran, dimethylformamide, hexamethylphosphoramide, and their mixtures, at a temperature ranging from —30° to 20° C., to give a compound of the formula (III):

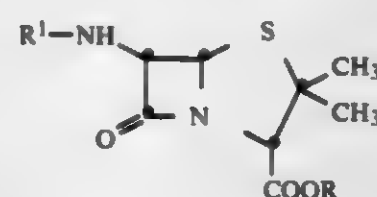
4,230,620
PROCESS FOR PREPARING PENICILLIN SULFOXIDES
Ta S. Chou, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 26, 1979, Ser. No. 23,875

Int. Cl.³ C07D 499/04

U.S. Cl. 260—239.1 12 Claims

1. A process for oxidizing a penicillin to a penicillin sulfoxide, said penicillin having the formula



in which R¹ is selected from the group consisting of phenoxyacetyl, benzoyl, thienyl-2-acetyl, phenylglycyl, and hydrogen; and R is selected from the group consisting of hydrogen, an alkali metal cation, and a carboxylic acid protecting group; which comprises contacting said penicillin in an aqueous medium at a temperature of from about 0° C. to about 50° C. with a peroxymonosulfate under conditions such that the pH of the resulting mixture is maintained within the range from about 2 to about 6.

4,230,621
STEROID DERIVATIVES AND THEIR USE IN RADIOIMMUNOASSAYS

Jack Bernstein, New Brunswick; Ravi K. Varma, Belle Mead, both of N.J.; B. Richard Vogt, Yardley, Pa., and Frank L. Weisenborn, Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

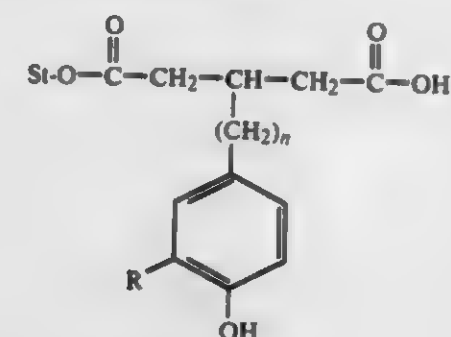
Continuation-in-part of Ser. No. 824,016, Aug. 12, 1977, abandoned. This application May 1, 1978, Ser. No. 901,952

Int. Cl.³ C07J 9/00

U.S. Cl. 260—239.57

1. A steroid having the formula

20 Claims



wherein R is hydrogen or an alkyl group of 1 to 3 carbon atoms; n is 0, 1, 2, 3 or 4; and St is a des-hydroxy steroid moiety of (i) a hydroxy steroid intended for radioimmunoassay or (ii) a hydroxy containing derivative of a steroid intended for radioimmunoassay, said derivative having a strong affinity for the antibodies of the steroid intended for radioimmunoassay.

9. A steroid in accordance with claim 1 wherein St is a des-hydroxy derivative of a steroid selected from the group consisting of cholesterol, cortisol, cortisone, corticosterone, prednisolone, methylprednisolone, triamcinolone, betamethasone, dexamethasone, triamcinolone acetonide, betamethasone valerate, halcinonide, aldosterone, estrone, estradiol, estril, testosterone, 19-nortestosterone, methyltestosterone, pregnenolone, digoxigenin, digitoxigenin and 11 α -hydroxyprogesterone.

4,230,622
HALOGEN DERIVATIVES OF CLAVULANIC ACID
Peter C. Cherry, Aylesbury; Gordon I. Gregory, Chalfont St. Peter, and Peter Ward, Northolt, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Filed Dec. 10, 1976, Ser. No. 749,368

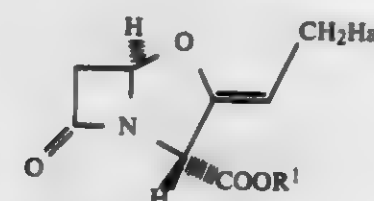
Claims priority, application United Kingdom, Dec. 17, 1975, 51689/75; Jun. 25, 1976, 26594/76

Int. Cl.³ E07D 498/04

U.S. Cl. 260—245.3

1. A compound of the formula (II)

6 Claims



wherein Hal represents a chlorine, bromine or iodine atom and R¹ is selected from the group consisting of alkyl and alkenyl of up to 8 carbon atoms; alkyl and alkenyl of up to 8 carbon atoms having a substituent selected from the group consisting of methoxy, fluoro, chloro, bromo, iodo, cyano, acetoxy, pivaloyloxy, p-bromobenzoyl and carboethoxy; phenyl; benzyl; phenyl or benzyl having a substituent selected from the group consisting of chloro, o-nitro, p-nitro, cyano, p-methyl and p-methoxy; diphenylmethyl; triphenylmethyl; fur-2-ylmethyl; thien-2-ylmethyl; pyrid-4-ylmethyl; fur-2-ylmethyl, thien-2-ylmethyl or pyrid-4-ylmethyl substituted by lower alkyl on the heterocyclic group; a cycloalkyl group containing up to 12 carbon atoms; tetrahydropyranyl; phthalidyl; and a stannyl

group, the tin atom having three substituents selected from the group consisting of C₁–4 alkyl, phenyl, benzyl, phenyloxy and benzyloxy; or the E-isomer thereof.

4,230,623
PYRROLIDINE DERIVATIVES

Karl Bernauer, Oberwill; Karlheinz Pfoertner; Fernand Schneider, both of Basel, all of Switzerland; Hans Schmid, deceased, late of Schwerzenbach, Switzerland (by Käthe Anna Schmid-Appenzeler, heir); by Mary Margrith Baumann-Schmid, heir, Niedergösgen; by Maria Albertine Schmid-Suter, heir, Gränichen, both of Switzerland; by Jeannette Martha Wawra-Schmid, heir, Nüziders, Austria, and by Ernst Georges Schmid-Gautschi, heir, Niedergösgen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 816,974, Jul. 19, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,352

Int. Cl.³ C07D 207/44

U.S. Cl. 260—326.5 SM

2 Claims

1. 5-(p-methoxyphenyl)-2,2-dimethyl-3-(2-thienyl)-pyrrolidine.
2. Cis-5-(p-methoxyphenyl)-2,2-dimethyl-3-(2-thienyl)-pyrrolidine.

4,230,624
PROCESS FOR THE SYNTHESIS OF DERIVATIVES OF THE BENZOFURAN, CHROMENE AND ISOCHROMENE TYPE

Maurice Le Corre, Rennes; Alain Hercouet, Betton, and Beatrice Begasse, Rennes, all of France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly S. Sein, France

Filed Aug. 31, 1978, Ser. No. 938,653

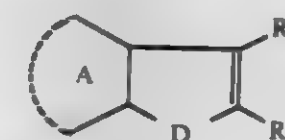
Claims priority, application France, Sep. 2, 1977, 77 26686; Aug. 16, 1978, 78 23894

Int. Cl.³ C07D 311/02, 307/79

U.S. Cl. 260—345.2

21 Claims

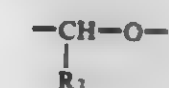
1. Process for the preparation of oxygenated heterocyclic compounds of Formula I:



in which



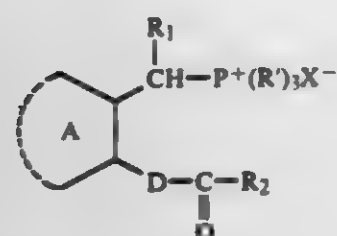
represents a cycle of aromatic character, when D represents the radical —O—, R₁ and R₂ represent a hydrogen atom or a lower alkyl, aryl, aralkyl or cycloalkyl radical and, when D represents



R₁ and R₂ represent a hydrogen atom, or a lower alkyl, aryl, aralkyl, alkenyl, alkynyl, aralkenyl, aralkynyl, cycloaliphatic radical, R₁₀—O—,



wherein R_{10} is alkyl, alkenyl, alkynyl, aryl, aralkyl, aralkenyl, aralkynyl or cycloaliphatic radical and R_2 represents H or an organic radical, characterized in that a compound of Formula II:



in which R' represents an alkyl, aryl or aralkyl radical and X^- is an anion, is cyclized in the presence of a base in liquid phase.

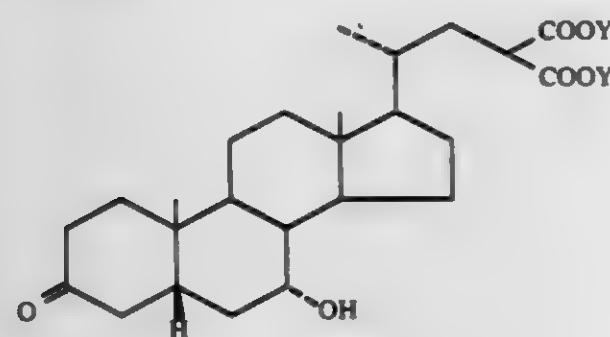
4,230,625

PROCESS FOR CHENODEOXYCHOLIC ACID AND INTERMEDIATES THEREOF

Carl Despreaux, Cedar Grove; Thomas A. Narwid, Pompton Plains; Norberto J. Palleroni, North Caldwell, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 12, 1979, Ser. No. 29,420
Int. Cl.³ C07J 9/00, 5/00

U.S. Cl. 260—397.1 15 Claims
1. (5 β)-24-Norcholane-3 α ,7 α -diol-23,23-dicarboxylic acid.
4. A compound of the formula



where Y is C₁₋₃-alkyl.

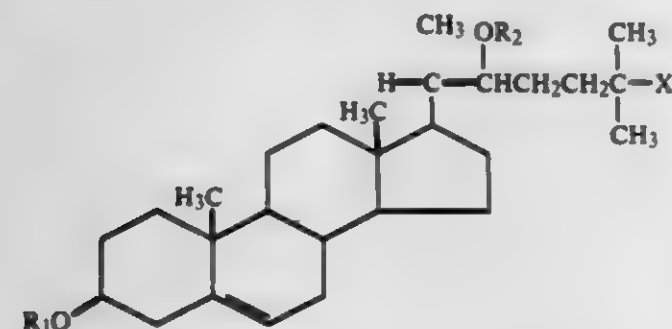
4,230,626

25-HALOCHOLEST-5-ENE-3 β ,22-DIOLS AND ESTERS THEREOF

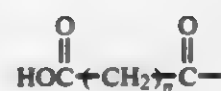
Robert J. Chorvat, Arlington Heights, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Jul. 30, 1979, Ser. No. 61,731
Int. Cl.² C07J 9/00

U.S. Cl. 260—397.2 5 Claims
1. A compound of the formula



wherein X represents a halogen having an atomic number less than 53 and R_1 and R_2 may be the same or different and each represents hydrogen or a radical of the formula



in which n represents an integer from 1 to 3.

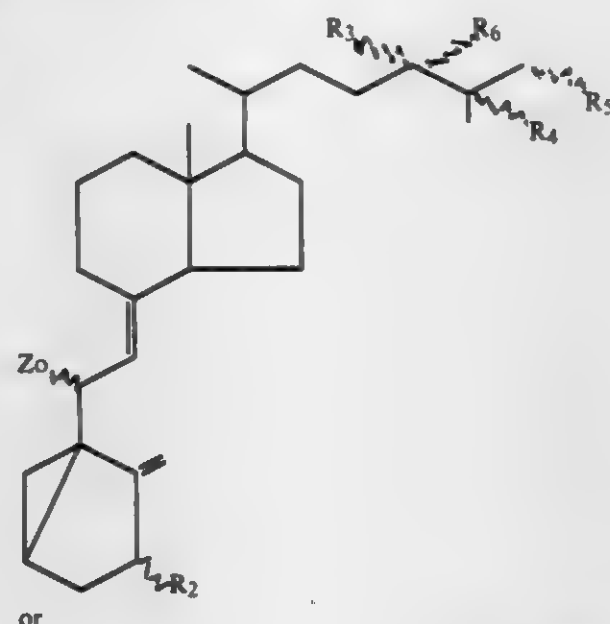
4,230,627

FLUOROVITAMIN D COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

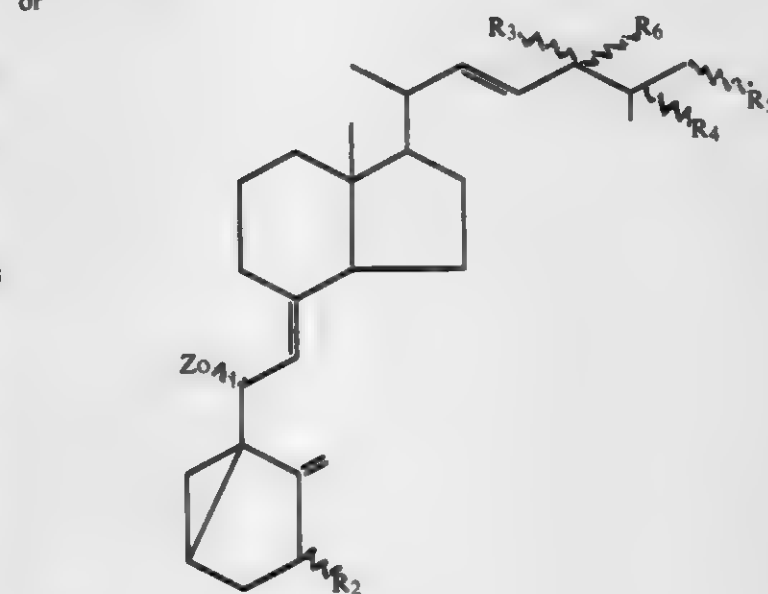
Hector F. DeLuca; Heinrich K. Schnoes; Joseph L. Napoli, Jr., and Bruce L. Onisko, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Division of Ser. No. 928,279, Jul. 26, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 64,213

Int. Cl.² C07J 9/00

U.S. Cl. 260—397.2 5 Claims
1. Compounds having the formula



or



where
Z is lower alkyl,
 R_2 is fluoro,
 R_3 , R_4 , and R_5 are each selected from the group consisting of hydrogen, hydroxy, O-lower-alkyl, O-acyl, and fluoro, and
 R_6 is hydrogen or lower alkyl.

4,230,628

4-[(CARBOXYL- AND SULFAMYL-SUBSTITUTED ALKYL)-AMINO] BENZOIC ACIDS AND ANALOGS

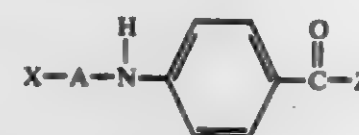
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 12, 1978, Ser. No. 895,574

Int. Cl.³ C07C 101/44; C61K 31/245

U.S. Cl. 260—404

1. A compound of the formula:



wherein X is selected from the group consisting of carboxy, lower alkoxy, carbonyl and aryloxy, A is an unbranched or branched alkylene group optionally saturated or mono- or poly-unsaturated, and containing or not containing a cycloalkyl group, represented by the formula $C_nH_{2(n-p)}$ with n being an integer from 8 to 18, inclusive, and p being an integer from 0 to 5, inclusive; and Z is selected from the group consisting of hydroxy, lower alkoxy, lower alkoxyalkoxy, di(lower alkyl)aminoalkoxy, (mono- or poly-hydroxy)lower alkoxy, allyloxy and substituted or unsubstituted benzyloxy; and the pharmaceutically acceptable non-toxic acid-addition and cationic salts thereof.

4,230,629

16-PHENOXY-9-DEOXY-9-METHYLENE-PGF COMPOUNDS

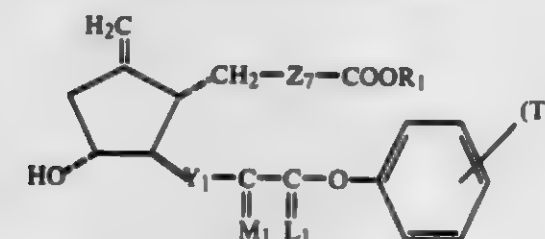
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 832,242, Sep. 12, 1977, Pat. No. 4,119,649, which is a division of Ser. No. 682,848, May 4, 1976, Pat. No. 4,060,534, which is a continuation-in-part of Ser. No. 651,622, Jan. 23, 1976, Pat. No. 4,021,467, which is a division of Ser. No. 556,768, Mar. 10, 1975, Pat. No. 3,950,363. This application Sep. 8, 1978, Ser. No. 941,095

The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

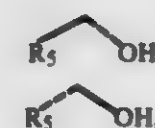
Int. Cl.³ C09F 5/00, 7/00; C11C 3/00

U.S. Cl. 260—404 187 Claims
1. A prostaglandin analog of the formula



wherein Y_1 is trans-CH=CH—, —C=C—, or —CH₂C—H₂—;

wherein s is zero, one, two or three, and T is chloro, fluoro, trifluoromethyl, alkyl of one to three carbon atoms, inclusive, or alkoxy of one to three carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl, the various T's being the same or different; wherein M_1 is



wherein R_5 is hydrogen or methyl; wherein L_1 is



5 Claims or a mixture of

wherein R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein Z_7 is

- (1) cis-CH=CH-CH₂-(CH₂)_g-CH₂—,
- (2) cis-CH=CH-CH₂-(CH₂)_g-CF₂—,
- (3) cis-CH₂-CH=CH-(CH₂)_g-CH₂—,
- (4) —(CH₂)₃-(CH₂)_g-CH₂—,
- (5) —(CH₂)₃-(CH₂)_g-CF₂—,
- (6) —CH₂-O-CH₂-(CH₂)_g-CH₂—,
- (7) —C=C-CH₂-(CH₂)_g-CH₂—, and
- (8) —CH₂-C=C-(CH₂)_g-CH₂—,

wherein g is one, two, or three; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,230,630

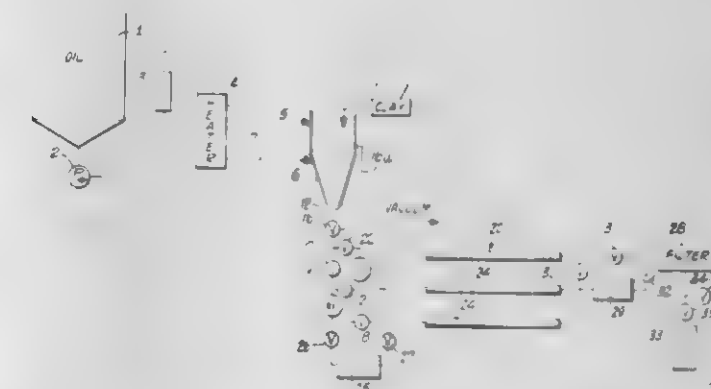
CONTINUOUS PROCESS AND APPARATUS FOR ADSORBENT BLEACHING OF TRIGLYCERIDE OILS

Theodore K. Mag, King City, and Margaret P. Reid, Don Mills, both of Canada, assignors to Canada Packers Limited, Canada

Filed Jul. 19, 1978, Ser. No. 926,071

Int. Cl.² C09F 5/10; C11B 3/00

U.S. Cl. 260—428 32 Claims



1. In a continuous process of bleaching oil with bleaching adsorbent, the improvement comprising:

preheating the oil to bleaching temperature in the range of approximately 70° C. to 180° C., continuously introducing the preheated oil to be bleached into a mixing vessel having an outlet in a lower region thereof in such manner as to cause the oil to swirl downwardly through said container, adding bleaching adsorbent containing moisture to said swirling oil whereby the oil and adsorbent are mixed in said vessel by the swirling movement of the oil and water is vaporized from the adsorbent and forms a protective atmosphere over the surface of the oil in the vessel to protect the heated oil from atmospheric oxidation, and withdrawing the mixture of oil and adsorbent from said vessel through said outlet.

- (b) phase separating said two-phase admixture into said polar phase and said hydrocarbon phase,
 (c) fractionally distilling said polar phase to produce a recycle polar solvent stream, and a first recovery stream of phenol and cyclohexanone,
 (d) fractionally distilling said hydrocarbon phase to produce a recycle hydrocarbon solvent stream, and a second recovery stream rich in cyclohexylbenzene, and lean in phenol and cyclohexanone,
 (e) fractionally distilling said second recovery stream to produce a stream of cyclohexylbenzene product, and a recycle stream of residual cyclohexylbenzene, phenol, and cyclohexanone for recycle to said liquid-liquid extraction step,
 (f) recycling said recycle polar solvent stream to said contacting step (a),
 (g) recycling said recycle hydrocarbon solvent stream to said contacting step (a), and
 (h) recycling said residual stream of cyclohexylbenzene, phenol, and cyclohexanone to said contacting step (a).

4,230,639

PROCESS FOR THE PREPARATION OF METHACROLEIN

Sargis Khoobiar, Kinnelon, N.J., assignor to Halcon International, Inc., New York, N.Y.
 Division of Ser. No. 547,633, Nov. 1, 1977, Pat. No. 4,087,382, which is a division of Ser. No. 744,657, Nov. 24, 1971. This application Jan. 19, 1979, Ser. No. 4,779

Int. Cl.³ C07C 45/29

U.S. Cl. 568—471

1 Claim

1. A process for the preparation of methacrolein which comprises contacting tertiary butyl alcohol in the vapor-phase with molecular oxygen in the range of about 330° to about 500° C. in the presence of a catalyst composition comprising oxides of molybdenum, cobalt, iron, bismuth, thallium, antimony and silicon, the atomic ratio of said silicon to said molybdenum being at most 20 atoms of silicon per 12 atoms of molybdenum, and said oxides of molybdenum, cobalt, iron, bismuth, thallium, antimony and silicon being integrally incorporated in said catalyst composition by intimately mixing said molybdenum, cobalt, iron, bismuth, thallium, antimony and silicon in the preparation of said catalyst composition.

4,230,640

PROCESS FOR THE PREPARATION OF ACROLEIN AND METHACROLEIN

Sargis Khoobiar, Kinnelon, N.J., assignor to Halcon International, Inc., New York, N.Y.
 Division of Ser. No. 744,657, Nov. 24, 1976, Pat. No. 4,087,382. This application Nov. 1, 1977, Ser. No. 847,633

Int. Cl.² C07C 45/16

U.S. Cl. 568—477

3 Claims

1. A process for the preparation of acrolein or methacrolein which comprises oxidizing an olefin consisting essentially of the corresponding propylene or isobutylene in the vapor-phase with molecular oxygen at a temperature in the range of from about 330° to 500° C. in the presence of a catalyst composition comprising oxides of molybdenum, cobalt, iron, bismuth, thallium, antimony and silicon, the atomic ratio of said silicon to said molybdenum being at most 20 atoms of silicon per 12 atoms of molybdenum, and said oxides of molybdenum, cobalt, iron, bismuth, thallium, antimony and silicon being integrally incorporated in said catalyst composition by intimately mixing said molybdenum, cobalt, iron, bismuth, thallium, antimony and silicon in the preparation of said catalyst composition.

4,230,641

HYDROFORMYLATION OF OLEFINS

Charles M. Bartish, Bethlehem, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 21, 1977, Ser. No. 853,343

Int. Cl.³ C07C 49/50

U.S. Cl. 568—454

9 Claims

1. In a hydroformylation process, wherein a C₂₋₂₀ monounsaturated alpha-olefin, carbon monoxide, and hydrogen are reacted in the presence of a catalyst comprising a complex of a phosphine ligand and rhodium to produce normal straight chain and iso saturated aldehyde isomers, at a pressure from 100–1,000 psi, the improvement for producing a high normal-iso isomer ratio and without forming sparingly soluble catalyst complexes, which comprises effecting said reaction in the presence of a catalyst comprising a complex of a rhodium compound and chelating phosphine ligand, the chelating phosphine ligand being represented by the formula: R₁R₂PAPR₃R₄ wherein:

R₁ and R₃ are alkenyl groups having from 2 to 6 carbon atoms, alkyl groups having from 1 to 6 carbon atoms, hydrogen atoms, phenyl groups, and substituted derivatives thereof;

R₂ and R₄ are phenyl groups and substituted phenyl groups; A is an alkenyl group having from 2 to 4 carbon atoms; and (CH₂)_n wherein n is from 2 to 10 and substituted derivatives thereof; and

the molar ratio of said ligand to rhodium is from about 0.6–1.2:1 provided that where A is (CH₂)_n and n is from 5–10, then the molar ratio is from 1–5:1.

4,230,642

PROCESS FOR PRODUCING 3,5-DICHLORO-α-METHYLSTYRENE

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Kusatsu; Yasuhiro Tsujii, Kusatsu, and Itaru Shigehara, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Limited, Osaka, Japan

Filed Feb. 2, 1979, Ser. No. 9,178

Claims priority, application Japan, Feb. 27, 1978, 53-21812

Int. Cl.² C07G 25/00

U.S. Cl. 570—193

3 Claims

1. A process for producing 3,5-dichloro-α-methylstyrene which comprises a step (a) of reacting magnesium with 1-bromo-3,5-dichlorobenzene in the presence of an ether solvent at a reaction temperature in a range of 10° to 70° C., wherein the amount of magnesium is in a range of 1 to 1.5 mole per mole of 1-bromo-3,5-dichlorobenzene; a step (b) of adding acetone to the reaction mixture at a temperature in the range of 0° to 70° C.; and a step (c) of adding a mineral acid to the reaction mixture to hydrolyze the resulting α-(3,5-dichlorophenyl) isopropoxymagnesium bromide at a temperature in a range of 0° to 100° C.; and then dehydrating the product at a temperature in a range of 80° to 120° C.

4,230,643

PROCESS FOR THE MANUFACTURE OF A VINYL ESTER COPOLYMER

Wilfried Eichhorn, Königstein, and Peter Seibel, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,333

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748901

Int. Cl.³ C08F 263/04, 6/10

U.S. Cl. 525—253

6 Claims

1. A process for the manufacture of a copolymer of at least one vinyl ester and crotonic acid which comprises copolymerizing 70% to 98% by weight of the total amount of vinyl ester with the total amount of crotonic acid in the presence of a radical-forming initiator and a polymerization regulator, adding the remainder of the vinyl ester to the polymerization

reaction mixture and completing the polymerization, mixing the polymer with an entrainer which is an alkanol of 1 to 4 carbon atoms that may contain up to 20% by weight of water and heating the resulting mixture to vaporize at least a part of said alkanol and thereby distill from said copolymer residual monomer and other volatile impurities.

4,230,644

HALOGENATING REAGENTS

Lowell D. Hatfield, Bargersville; Larry C. Blaszcak, and Jack W. Fisher, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

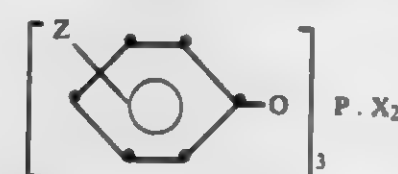
Filed Feb. 1, 1979, Ser. No. 8,469

Int. Cl.³ C07F 9/14

U.S. Cl. 260—960

15 Claims

1. A halogenating compound of the general formula



which is the kinetically controlled product of the reaction of equivalent amounts of a triaryl phosphite of the formula



and chlorine or bromine in a substantially anhydrous inert organic solvent wherein in the above formulas Z is hydrogen, halo, C₁–C₄ alkyl or C₁–C₄ alkoxy, and X is Cl or Br.

4,230,645

INDUCTION PASSAGE STRUCTURE

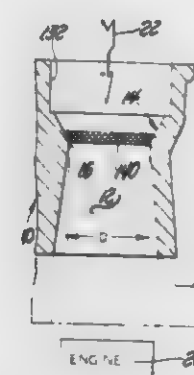
Robert W. Dodson, Royal Oak, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Jul. 10, 1978, Ser. No. 923,214

Int. Cl.² F02M 35/10

U.S. Cl. 261—19

5 Claims



1. An induction passage structure, comprising body means, induction passage means formed through said body means, said induction passage means comprising venturi means, said venturi means comprising a venturi throat for the flow of fluid therethrough, said induction passage means having inlet and outlet means, said inlet means being disposed upstream of said venturi throat, said outlet means being disposed downstream of said venturi throat, and said venturi comprising generally converging venturi surface means situated adjacent and upstream of said venturi throat, said venturi surface means comprising a coined surface, and said coined surface defining an

area less than the total area of said converging venturi surface means.

4,230,646

CARBURETOR DEVICE

Angiolino Ghizzoni, Bagnolo in Piano, Italy, assignor to Aquascooter, Inc., Springfield, N.J.

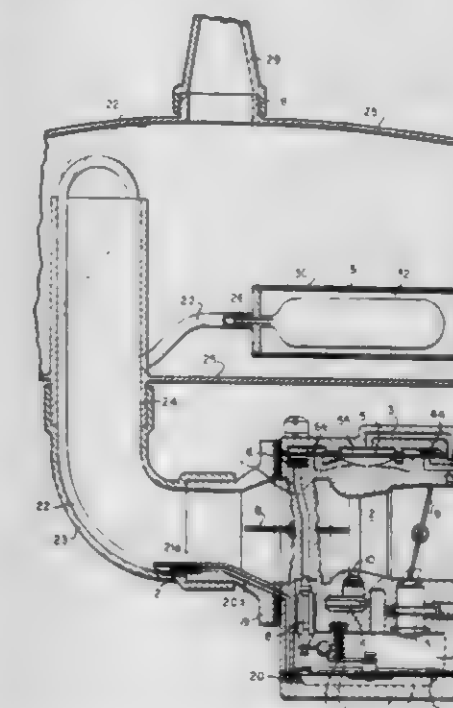
Filed Jan. 5, 1979, Ser. No. 2,041

Claims priority, application Italy, Jan. 30, 1978, 46809 A/78

Int. Cl.² F02M 17/04

U.S. Cl. 261—35

5 Claims



1. In a compensating membrane carburetor having a fuel accumulating chamber connected through conventional idling and high-speed jets to a Venturi upstream from which there is provided an air intake manifold, the improvement which comprises compensating chamber means maintained naturally or artificially at atmospheric pressure, second chamber means for sealing the external face of the compensating membrane from the environment of the carburetor and means partially disposed in the air intake manifold providing fluid communication between the compensating chamber means and the second chamber means to maintain the second chamber means at atmospheric pressure comprising flexible tube means in the air intake manifold having a free end that opens to the compensating chamber means.

4,230,647

CARBURETION

Ben Ingro, 2437 N. 73rd Ave., Elmwood Park, Ill. 60635

Continuation-in-part of Ser. No. 815,594, Jul. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 619,685, Nov. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 460,543, Apr. 12, 1974, abandoned. This application Feb. 26, 1979, Ser. No. 14,924

Int. Cl.² F02M 29/00

U.S. Cl. 261—78 R

5 Claims

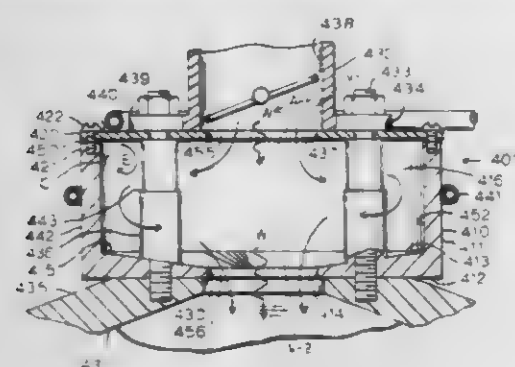
1. In combination with an air-fuel intake system for internal combustion engines comprising a downdraft carburetor which forms the only restricting device in the flow of the air-fuel mixture to the engine, said carburetor having an air-fuel outlet passage in its lower portion, a throttle valve disposed in said outlet passage for controlling the amount of finalized air-fuel mixture flowing to said engine, an intake manifold having an air-fuel passage therein which communicates with said carburetor outlet passage adapted to deliver said air-fuel mixture to said engine, and an intake valve and cooperating intake port disposed between said intake manifold passage and the combustion chamber of said engine, said intake manifold

said upper inlet opening and said lower outlet passage in said air-fuel mixing chamber being substantially on the same vertical axis,

said air-fuel mixing chamber being adapted in one mode to cause an upper horizontally and radially extending divergence of flow of said air-fuel mixture in said mixing chamber as said mixture enters said mixing chamber through said upper inlet opening with said mixture being caused to turn downwardly at the perimeter of said mixing chamber, and further causing said air-fuel mixture to converge below the upper diverging flow to exit through the lower outlet passage in said mixing chamber and into said intake manifold passage,

said divergence and convergence flow pattern also being effective to cause any heavier liquid fuel particles to impinge on the upper floor surface of said lower horizontal wall member where said particles are evaporated from said surface,

said divergence and convergence flow pattern being minimized in another mode during periods of acceleration when the throttle valve is suddenly moved to a more open position and the vacuum in said mixing chamber is caused to drop appreciably during said periods of acceleration, the flow path in said mixing chamber being substantially and unrestrictedly "straight through" between the inlet opening and the outlet passage of said mixing chamber, said air-fuel mixing chamber being substantially devoid of any members therein which would cause divergence and convergence passage and said intake valve port comprising a substantially unrestricted air-fuel passage from said



carburetor outlet passage to said combustion chamber; wherein an air-fuel mixing chamber is provided in said intake manifold passage downstream of said throttle valve, said air-fuel mixing chamber including a substantially horizontally disposed upper wall member, said upper wall member having an air-fuel inlet opening which communicates with said carburetor air-fuel outlet passage, a substantially horizontally disposed lower wall member, said lower wall member having an air-fuel outlet passage communicating with said intake manifold air-fuel passage, said lower wall member having an upper floor surface which angles downwardly toward said air-fuel outlet passage for draining any residual liquid fuel into said intake manifold passage,

means for joining said upper and lower wall members at their perimeters to form a leakproof housing which encompasses said air-fuel mixing chamber,

said upper air-fuel inlet opening being substantially the same diameter as said outlet passage of said carburetor, said lower air-fuel outlet passage of said mixing chamber being substantially the same diameter as said carburetor outlet passage,

the height of said mixing chamber between said upper inlet opening and said lower outlet passage of said mixing chamber being at least greater than the diameter of said upper inlet opening,

the width of said air-fuel mixing chamber being at least greater than the diameter of said upper inlet opening of said air-fuel mixing chamber, flow pattern, and having unrestricted air-fuel passages therein, and being devoid of

functional elements therein other than structural members which would tend to obstruct the natural divergence and convergence flow pattern in said air-fuel mixing chamber, the diameter of said upper inlet opening of said air-fuel mixing chamber being substantially the same size as the diameter of the carburetor air-fuel outlet passage downstream of said throttle valve, said upper inlet opening serving as a functional reference diameter, the horizontal cross-sectional area of said air-fuel mixing chamber at all horizontal levels being at least greater than the area of said reference diameter, and the height of said air-fuel mixing chamber between said inlet opening and said outlet passage being at least greater than said reference diameter.

4,230,648

ROTOR ADAPTED TO ROTATE ABOUT A ROTARY SHAFT

Frederik H. Leeuwrik, Lochem, Netherlands, assignor to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer (Nijverheidsorganisatie T.N.O.), The Hague, Netherlands

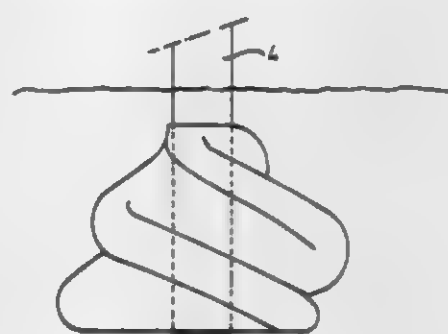
Continuation of Ser. No. 499,298, Aug. 21, 1974, abandoned. This application Oct. 26, 1976, Ser. No. 735,453

Claims priority, application Netherlands, Aug. 22, 1973, 7311537

Int. Cl.² B01F 3/04

U.S. Cl. 261-87

6 Claims



1. A rotor having a core part adapted to be rotated about an axis of rotation for displacing fluids, said core part carrying at least three continuous uniformly curved symmetrically-shaped helical ridges defining a continuous three-lobe cross section in radial planes along the length of the core part, said ridges defining three intermediate pits, said ridges blending into the core part to have the innermost portion of the pits coincident with the core part, the depths of each of the pits measured between the core part and a tangential line to two of said lobes, one on each side of the pit concerned, being at least equal to one-third of the distance between the core part and the maximum radius of said ridges, each of the three lobes in each radial section of the rotor being uniformly curved and symmetrical about a radius from the axis of the rotor to the distal point of the lobe and each of the three pits intermediate the lobes being uniformly curved and symmetrical about a radius from the axis of the rotor to the radially innermost part of the pit.

4,230,649

APPARATUS AND METHOD FOR CONTINUOUS TREAD PRODUCTION

George G. A. Bohm, Akron, Ohio, and Stanley S. Gross, Evans City, Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jun. 12, 1978, Ser. No. 908,345

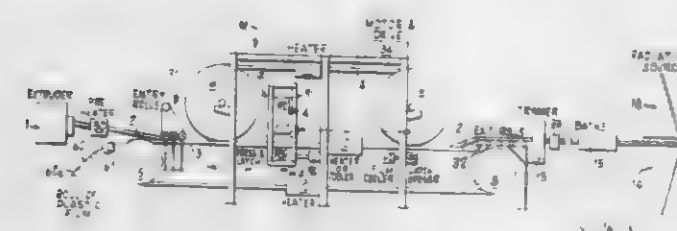
Int. Cl.² B29H 17/36

U.S. Cl. 264-22

24 Claims

1. A method for producing a continuous rubber strip with a surface design comprising the steps of: extruding uncured rubber into a continuous strip at a temperature below its curing temperature; impressing a design on said continuous strip by passing said

strip between moving cooperating mold segments while impressing a high pressure of about 1000 psi to force the rubber into the design pattern of the mold at a temperature below the curing temperature of the rubber; maintaining a lower pressure on said strip after the imposi-



tion of said high pressure while said strip remains between said cooperating mold segments; removing the molded strip in the uncured state from between the moving mold segments; and curing the rubber of the molded strip after removal from the mold segments.

4,230,650

PROCESS FOR THE MANUFACTURE OF A PLURALITY OF FILAMENTS

Claude Guignard, St-Genis, France, assignor to Battelle Memorial Institute, Geneva, Switzerland

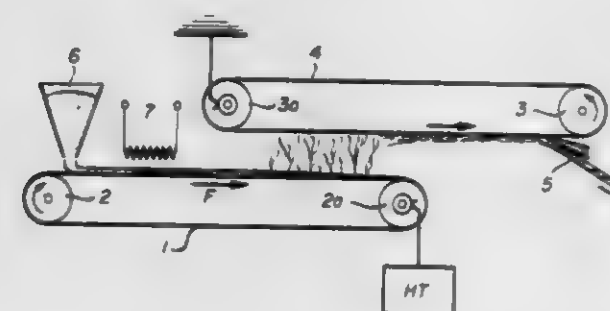
Continuation of Ser. No. 495,544, Aug. 7, 1974, abandoned. This application Feb. 14, 1977, Ser. No. 768,422

Claims priority, application Switzerland, Aug. 16, 1973, 11793/73; Nov. 6, 1973, 15592/73; Dec. 12, 1973, 17380/73; Japan, Jan. 28, 1974, 49/1082

Int. Cl.³ B06B 1/02; B05C 5/02

U.S. Cl. 264-24

12 Claims



1. A process for the manufacture of a plurality of polymer fibers comprising,

forming a continuous layer of dielectric molten polymer is a mass having a broad exposed surface from which polymer fibers are to be electrostatically developed and electrostatically directly torn therefrom,

developing an electrostatic field between a first electrode and a second electrode spaced from the first electrode, the field consisting of lines of flux passing through a space between the two electrodes, and the first electrode being at a higher potential than the second electrode,

while in a plastic consistency of a viscosity such that it can be directly electrostatically drawn from said layer into fibers subjecting said molten polymer to said electrostatic field without flow of said layer so that the lines of flux pass through said layer and are substantially perpendicular to said broad surface of the molten polymer,

and maintaining said electrostatic field at an intensity effective to concentrate molten polymer molecules at discrete zones on said surface and agglutinate in said zones and are torn away due to the effect of said electrostatic field at said discrete zones from said exposed surface toward said second electrode along the lines of flux as molten polymer fibers that start to solidify and set during movement toward said second electrode.

4,230,651

METHOD OF FABRICATING A HEAT EXCHANGER FOR STIRLING ENGINE

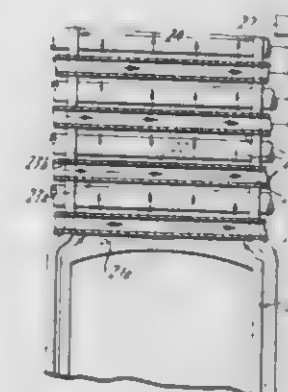
Vemulapalli D. N. Rao, Bloomfield Township, Oakland County, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 816,635, Jul. 18, 1977, Pat. No. 4,183,213. This application Dec. 26, 1978, Ser. No. 973,785

Int. Cl.³ B29C 25/00

U.S. Cl. 264-29.7

4 Claims



1. A method for fabricating a ceramic heater head for use in a Stirling engine, comprising:

(a) forming a ceramic slurry comprised of a binder and silicon filler powder, said binder consisting essentially of a mixture of a selected paraffinic oil and a tri-block polymer with polystyrene end blocks, said oil being selected to prevent destruction of the cross links formed by the thermal plastic domains of said polymer and a boiling point range of 200°-400° F.,

(b) mixing said slurry at a temperature of 200°-300° F. to obtain a uniform mixture,

(c) forming said slurry into tubes having an internal diameter which is 5-6 times the tube wall thickness and into a dominant cylindrical chamber effective to operate as a hot chamber for said Stirling engine,

(d) heating said formed sheets in a carburizing atmosphere in steps: 200°-240° F. for four hours, 250°-275° F. for four hours, 350°-450° F. for four hours, 800° F. for four hours,

(e) perforating openings in the wall of said cylindrical chamber having a size effected to mate with outside diameter of said tubes,

(f) assembling said formed tubes to extend in parallel arrangement across the interior of said chamber having the ends of said tubes supported in said perforate openings of said walls,

(g) heating said assembly rapidly in a carburizing atmosphere, to 2000°, at a rate of 600°-800° F. per hour, and then to 2200° F.-2500° F. at a rate of 100° F. per hour.

4,230,652

METHOD OF REPAIRING A REFRACTORY STRUCTURE

Jim E. Allen, and Robert E. Farris, both of Pleasanton, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 20, 1978, Ser. No. 953,722

Int. Cl.³ F27D 1/16

U.S. Cl. 264-30

4 Claims

1. The method of repairing a refractory structure comprising:

(a) admixing (i) from 50 to 80% aluminosilicate aggregate, (ii) from 2 to 30% plastic clay, (iii) and from 10 to 20% graphite, the percentages being based on the total weight of the admixture;

(b) predampening said admixture with from 5 to 10% by weight of liquid sodium silicate containing from 45% to 65% of water;

(c) placing the predampened admixture in a gunning appara-

tus having an ejection nozzle adapted to admix water with a granular material passing through the nozzle;
(d) projecting the predampened admixture through the nozzle, while adding water thereto, onto the refractory structure; characterized in that the predampened admixture is substantially dust-free during subsequent handling and exhibits a potential shelf-life of up to six months when stored in a moisture sealed container.

4,230,653

METHOD FOR PRODUCING SPHERICAL ARTICLES

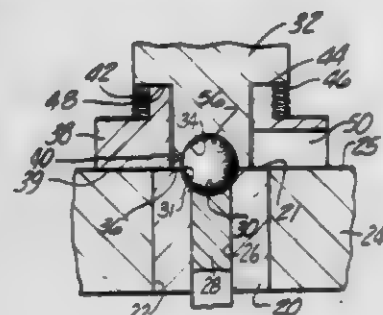
Raymond P. DeSantis, Royal Oak, Mich., assignor to PTX-Pen-tronix, Inc., Lincoln Park, Mich.

Continuation of Ser. No. 787,109, Apr. 13, 1977, abandoned, which is a division of Ser. No. 619,855, Oct. 6, 1975, Pat. No. 4,047,864. This application Aug. 28, 1978, Ser. No. 937,179

Int. Cl.² B28B 7/04

U.S. Cl. 264—39

8 Claims



1. The method of compacting pressure moldable powder material in a mold into generally spherical articles which comprises filling by gravity with said powder material a first cavity in a first partial mold, said cavity having an open upper end, displacing a movable wall portion of said first cavity in said first partial mold during filling in a direction and to a predetermined position increasing the volume of said first cavity, leveling said powder material in said first cavity in said first partial mold to a level corresponding to the level of said open end of said first cavity, placing over the open end of said first cavity a second partial mold having a second cavity therein, said first and second partial molds having correspondingly engageable interfering faces preventing one of said partial molds from penetrating into the other, and said second cavity being disposed and aligned relative to said first cavity to form therewith a complete molding cavity of generally spherical shape, displacing said movable wall portion in a direction opposite to said first direction for decreasing the volume of said first cavity for transferring part of said powder material from said first cavity through said open end into said second cavity in said second partial mold for filling said complete molding cavity and applying pressure for compacting said powder material in said molding cavity defined by said first and second cavities for molding one of said articles, removing said second partial mold from over the open end of said first cavity, and further displacing said movable wall portion in said opposite direction for ejecting said molded article from said first partial mold through said open end of said first cavity.

4,230,654

METHOD OF CONCURRENTLY-BIAXIALLY DRAWING POLYVINYL ALCOHOL FILM

Matsuo Kuga, Kyoto; Kiyoshi Kitagawa, Hirakata; Motoo Kawasaki, and Junkichi Watanabe, both of Kyoto, all of Japan, assignors to Unitika Limited, Amagasaki, Japan

Filed Jan. 31, 1979, Ser. No. 8,106

Claims priority, application Japan, Feb. 21, 1978, 53/19306

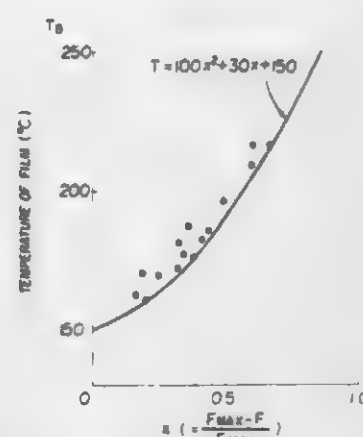
Int. Cl.² B29C 17/02; B29D 7/02

U.S. Cl. 264—134

17 Claims

1. A process for preparing a concurrently-biaxially drawn polyvinyl alcohol film, comprising the steps of:

- (a) fabricating a molten, hydrated polyvinyl alcohol into a film;
- (b) drying said film while preventing orientation of the film thereby obtaining a substrate film which is in a substantially non-oriented state and which has a water content of 3 to 20 wt. %;
- (c) coating said dried film on at least one surface with an aqueous dispersion of a macromolecular compound thereby forming a coated film wherein the film substrate has an average water content of 5 to 30 wt. % as a result of water permeation into the substrate film from said



coating, the average water content of said substrate film increasing by 2 to 10 wt. % as a result of said water permeation;

- (d) concurrently-biaxially drawing said coated film to achieve an area elongation of 600 to 1300%;
- (e) heat treating said drawn film to relieve stress in said film and to dry said film to a water content of less than 3 wt. %; and
- (f) continuing the heat treating of said dried film at a temperature greater than 160° C. but less than the decomposition temperature to achieve the film product.

4,230,655
PENCILS

Peter Krückel, Nürnberg Gebetsdorf, and Wolfgang Winkler, Lauf, both of Fed. Rep. of Germany, assignors to Messrs. Schwan-Stabilo Schwanhauser GmbH & Co., Nuremberg, Fed. Rep. of Germany

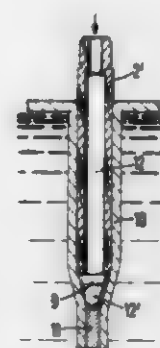
Filed Dec. 22, 1977, Ser. No. 863,322

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2718957

Int. Cl.² B29D 3/00

U.S. Cl. 264—135

7 Claims



1. A method of making a pencil for cosmetic purposes that can be sharpened, comprising the steps of: preparing a tubular wooden shaft with an axial through-bore, coating the bore with a material, placing said shaft into a mold extending beyond one end of said axial through-bore, and casting a cosmetic stick composition into said bore from the other end of said through-bore so as to fill the space beyond said one end to form a point, said coating being made from a material adapted

to counter penetration of said wooden shaft by said cosmetic composition.

4,230,656

TRANSPARENT SHEETS AND CONTAINERS FORMED FROM POLYCARBONATE-POLYESTER BLENDS AND FORMATION THEREOF

Surendra A. Amin, Pottsville; Phillip S. Bollen, Auburn, both of Pa., and William Sacks, Gillette, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 739,214, Nov. 5, 1976, Pat. No. 4,123,473, which is a continuation-in-part of Ser. No. 625,299, Oct. 23, 1975, abandoned. This application May 15, 1978, Ser. No. 905,664

Int. Cl.² B29F 3/08

U.S. Cl. 264—171

10 Claims

1. A process of forming a sheet which comprises:
 - a. uniformly blending a composition comprising about 80 to 97% by weight polyethylene terephthalate having an intrinsic viscosity of above about 0.9 as measured in a mixed solvent of 60 parts by weight phenol and 40 parts by weight tetrachloroethane at 25° C., and a melt viscosity at 525° F. of about 10,000 poises with correspondingly about 20 to 3% by weight of a polycarbonate resin having an intrinsic viscosity of 0.4 to 0.6 as measured in dioxane at 30° C. and a melt viscosity at 500° F. of less than about 50,000 poises, said blending being conducted below the respective melting points of both the polyethylene terephthalate and polycarbonate materials;
 - b. extruding said composition at a temperature between about 490° to 530° F. whereby a sheet is obtained; and
 - c. rapidly cooling the resultant sheet by contact with at least one cooling surface maintained at a surface temperature in the range of about 50° to 160° F. for a period of time not exceeding 15 seconds, whereby a sheet is obtained, being non-oriented having a haze value as determined by ASTM D-1003 of less than about 2% wherein the polyethylene terephthalate portion of the sheet has a degree of crystallinity of less than 5%.

4,230,657

METHOD AND APPARATUS FOR PRODUCING ARTIFICIAL GREENERY

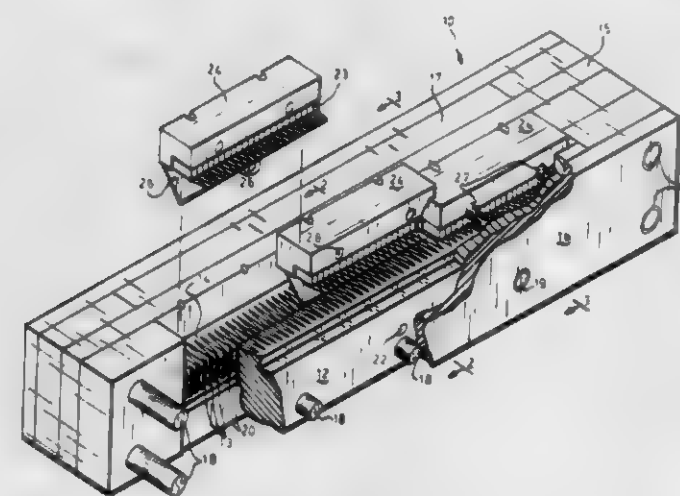
William M. Haack, St. Louis, and Dennis K. Peth, Florissant, both of Mo., assignors to Keene Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,602

Int. Cl.² B29C 25/00, 17/00; B29F 1/00

U.S. Cl. 264—234

5 Claims



1. The method of producing plastic greenery for decorative purposes, such as artificial parsley, comprising molding in plastic an elongated member from which project a plurality of sprigs of stems and buds spaced along the

member with the stems and buds generally parallel to each other; passing the elongated member and interconnected stems and buds through a hot water spray to soften and reorient the stems and buds; and comprising the said stems and buds between two moving platens until the plastic cools to allow the stems and buds to be repositioned into conically-shaped interfering shapes; whereby the plastic greenery resembles real greenery.

4,230,658

PROCESS FOR PREPARING BIAXIALLY DRAWN THERMOPLASTIC POLYESTER FILM

Kazuo Matsukura, Nara; Kunio Marakami, Jyoyo; Tsugio Nagasawa, Uji; Tadashi Hayashi, Uji, and Akiyoshi Kozuma, Uji, all of Japan, assignors to Unitika Limited, Hyogo, Japan

Filed Mar. 26, 1979, Ser. No. 24,053

Claims priority, application Japan, Apr. 17, 1978, 53/45763

Int. Cl.² B29C 17/02

U.S. Cl. 264—235.8

10 Claims

1. In a process for preparing a biaxially drawn thermoplastic polyester film by concurrently-biaxially drawing a thermoplastic polyester film by a tenter technique, the improvement comprising the sequential steps of:

- (a) preheating a thermoplastic polyester film in a preheating zone to a temperature higher than the temperature at which the film is to be drawn;
- (b) concurrently biaxially drawing said preheated film at a temperature greater than the glass transition temperature of the polyester;
- (c) heat treating said drawn polyester film in a heat treating zone at a temperature less than the preheating temperature; and
- (d) progressively heating said heat treated film at increasingly higher temperature levels in a plurality of steps in a reheating zone, wherein the increments of temperature increase between progressively higher temperature levels are about the same.

4,230,659

METHOD FOR FORMING A RUPTURABLE AREA IN A CONTAINER

Brian L. C. Sutch, Thames Ditton, England, assignor to Airfix Industries Limited, London, England

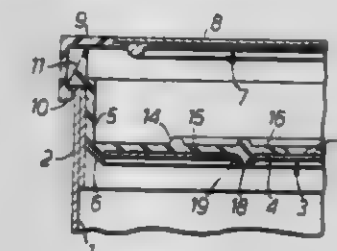
Filed May 30, 1979, Ser. No. 43,903

Claims priority, application United Kingdom, May 31, 1978, 24748/78

Int. Cl.² B29C 5/00; B29F 1/00

U.S. Cl. 264—266

9 Claims



1. A method of making a container wall a part of which is to be openable, the method comprising forming in the wall a path where the wall is to be ruptured, the path being a weakening in the material of the wall connecting the openable and an anchored part which is to remain in place after opening, locating the wall between mould tools, the tool on a first face of the wall including a rupture recess with which the path of weakening registers, and the tool on the other face of the wall defining a bead channel which extends along the length of the path and spans the path and a region of the wall on each side of the path

and injecting mouldable material into said bead channel to form a bead adherent to said other face of the wall, to displace those wall regions of the openable and anchored wall parts immediately adjacent the path into the rupture recess in the mould tool to further reduce the strength of the connection between openable and anchored wall parts and to form a seal at the displaced wall regions by adhering to the wall adjacent each displaced region and removing the wall from the mould, the resultant wall being openable by pull on the bead to disconnect the openable and anchored parts of the wall.

4,230,660

EPOXY-BORAX-COAL TAR COMPOSITION FOR A RADIATION PROTECTIVE, BURN RESISTANT DRUM LINER AND CENTRIFUGAL CASTING METHOD

Robert S. Taylor, and Norman W. Boyer, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 16, 1979, Ser. No. 3,840

Int. Cl.² A62D 5/00; G21F 1/10

U.S. Cl. 264-311

8 Claims

1. A method for producing a radiation protective, burn resistant material for drum liners used in radioactive waste storage, comprising the steps of: forming a mixture by mixing together substantially 10.8-16.2 weight percent of a first material consisting essentially of diglycidyl ether of Bisphenol-A, substantially 4.6-6.9 weight percent of a second material consisting essentially of an aliphatic diepoxide, substantially 4.6-6.9 weight percent of a third material consisting essentially of an aromatic amine, substantially 4.8-7.2 weight percent of a fourth material consisting essentially of an aliphatic amine, substantially 25-37.5 weight percent coal tar, and substantially 25-50 weight percent borax; and spinning the mixture in a centrifugator for a time period of about 8-16 hours for forming the mixture into a liner and for curing of the thus formed liner.

4,230,661

INDIRECT EXTRUSION PROCESS

Akira Asari, Osaka; Masakazu Ueda, and Takeo Nishimoto, both of Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

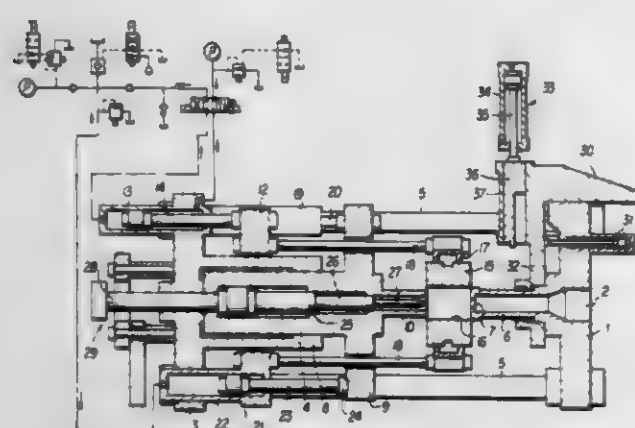
Filed Sep. 27, 1978, Ser. No. 946,331

Claims priority, application Japan, Oct. 15, 1977, 52-123908

Int. Cl.³ B29D 23/00

U.S. Cl. 264-323

4 Claims



1. An indirect hot extrusion process with an extrusion apparatus having a die member operatively associated with a main ram and a container which are adapted to be driven independently of each other, said container being moved during extrusion at a speed equal to or greater than that of said main ram, so as to produce an extrusion force on a billet mounted in said container for cooperation with said die member comprising: loading said billet in said container; extruding said billet at least partially through said die member; and preventing movement of said container relative to said main ram and adding power for moving the container to the

extrusion force so as to effect the extrusion without causing change in the relative position in accordance with the length of said billet by use of frictional force exerted between said container and said billet, so that the extrusion may be effected with respect to said container and said billet in a connected state of operation.

4,230,662

METHOD FOR FORMING HOLES IN THERMOFORMED ARTICLES

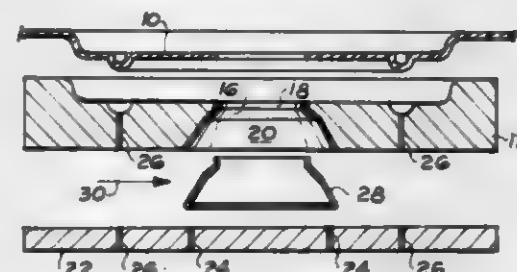
Clive D. Barnabee, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1979, Ser. No. 6,052

Int. Cl.³ B29C 17/04, 17/08

U.S. Cl. 264-553

5 Claims



1. A method of forming holes in articles during thermoforming of such articles from sheet material, said method comprising the steps of:

A. heating sheet material to an article forming temperature; B. placing the heated sheet material adjacent to a mold having

(1) a configuration corresponding to the article to be formed and

(2) an aperture which

(a) corresponds in area to the hole to be formed in the article and

(b) opens into a cavity having a cross-sectional area in a plane generally parallel to the aperture larger than the area of the aperture;

C. establishing a pressure differential across the sheet to

(1) form the sheet against the mold configuration, and (2) expand the sheet into the cavity, thereby thinning the sheet in the region of the aperture and trapping a portion of the sheet in the cavity; and

D. stripping the article from the mold thereby

(1) causing the thinned region of the material to fracture at the periphery of the aperture and

(2) leaving the trapped portion in the cavity to form a hole in the stripped article.

4,230,663

COLD GAS STERILIZATION PROCESS USING HYDROGEN PEROXIDE AT LOW CONCENTRATIONS

Richard J. Forstrom, Granada Hills, and Michael D. Wardle, La Canada, both of Calif., assignors to Moore-Perk Corporation, Indianapolis, Ind.

Division of Ser. No. 836,665, Sep. 26, 1977, Pat. No. 4,169,124.

This application Jul. 10, 1979, Ser. No. 56,177

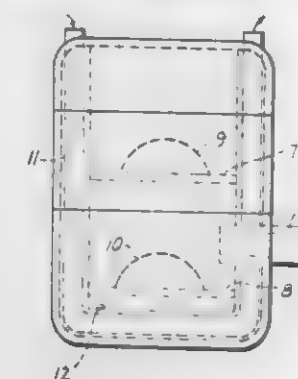
Int. Cl.³ A61L 2/20; A01N 59/00

U.S. Cl. 422-33

4 Claims

1. A method of disinfecting a contact lens without substantial liquid contact which comprises: placing said lens in a sealed container; contacting the lens with hydrogen peroxide gas

having a concentration of less than 75 mg/L; maintaining said gas in contact with such lens at temperatures below 80° C. until



such lens has been disinfected; venting the gas from the container; and removing the lens from the container.

4,230,665

APPARATUS FOR AUTOMATICALLY GENERATING AND MEASURING GASEOUS MEASURING SAMPLES FROM A SERIES OF LIQUID SAMPLES

Bernhard W. Huber, Überlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Überlingen, Fed. Rep. of Germany

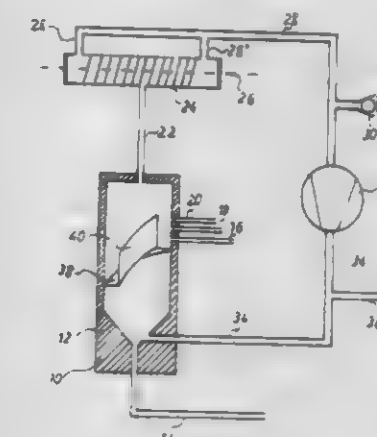
Filed Jun. 22, 1978, Ser. No. 917,829

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729744

Int. Cl.³ G01N 27/66, 21/13, 33/20

U.S. Cl. 422-64

16 Claims



1. An automatic system for generating gaseous samples from liquid samples and reagents and for transferring gaseous samples for measurements in an atomic absorption spectrometer, said system comprising:

means defining a reaction chamber having a first outlet in communication with an absorption spectrometer measuring cuvette and first, second, and third inlets for injecting liquid samples and first and second liquid reagents respectively into said chamber;

said reactor including a helical spillway adjacent its inner surface, said spillway having a vertical side wall for receiving injected fluids and directing said fluids downwardly along said spillway;

pumping means for withdrawing the liquid sample and the liquid reagents from respective supply vessels and injecting the sample and reagents through their respective inlets;

pump timing means for controlling the withdrawal and injection of sample and liquid reagents by said pumping means and operable in a plurality of discrete time periods within a test cycle including a first time period and a second time period subsequent to said first time period;

said pump timing means being operable during said first and second time periods to control said pumping means to substantially continuously inject liquid reagents at a substantially uniform rate into said reactor chamber;

said pump timing means being operable during said second time period to control said pumping means to substantially continuously inject liquid sample into said reactor at a substantially uniform rate, thereby enabling spectrometer analyses during said first and second time periods to provide indications of the amount of the element of interest contained in the liquid reagents and the amount of the element of interest contained in both the reagents and the liquid sample, respectively;

said reactor chamber being tubular and having a funnel shaped lower section, said first outlet being located adjacent the top of said tubular chamber, the apex of said funnel section terminating in a second outlet for draining liquid waste from said reactor chamber, means coupled and responsive to said pump timing means for draining liquid waste from said reactor chamber between the completion of said second time period and the beginning of the first time period of the next following test cycle.

4,230,664

TEST PACK KIT FOR IMMUNOASSAY

Michael Cals, Haifa, Israel, assignor to Technion Research & Development Foundation Ltd., Technion City, Israel

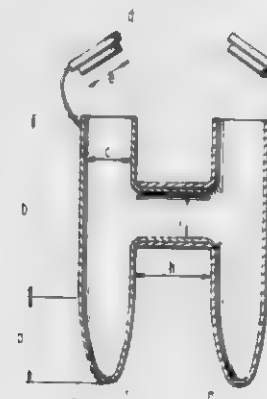
Continuation-in-part of Ser. No. 795,457, May 10, 1977. This

application Jan. 23, 1979, Ser. No. 5,754

Int. Cl.³ G01N 33/16

U.S. Cl. 422-61

14 Claims



1. A test pack kit for use in assaying a liquid medium for a ligand which comprises in a packaged combination:

(a) at least two assay tubes, each tube having a cylindrical side arm which can be interconnected with the side arm of another assay tube to form a leak-proof connecting channel;

(b) an antiserum;

(c) a conjugate of a metal-labelling substance with said ligand;

(d) a separation agent in vials containing material used for separating the bound antibody-metal labelling complex from the unbound metal labelling substance;

(e) assay calibration standards in vials containing known concentrations of unlabelled ligand, and

(f) instrument calibration standards in vials containing several containing several known concentrations of the metal-labelling substance.

4,230,666

HYDROCARBON PURIFICATION APPARATUS

Charles C. Chapman, and Joe Van Pool, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

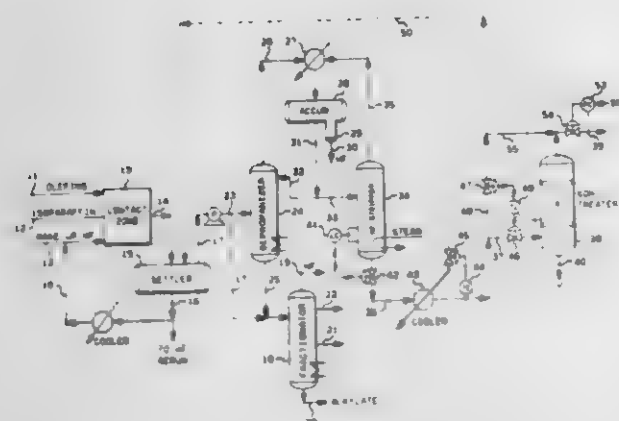
Division of Ser. No. 824,583, Aug. 15, 1977, Pat. No. 4,123,351.

This application Jul. 11, 1978, Ser. No. 923,607

Int. Cl.² G05D 9/00, 16/00, 23/00

U.S. Cl. 422-106

5 Claims U.S. Cl. 422-113



1. An apparatus for controlling the separation of HF from hydrocarbons in a manner such that excessive temperature increases above a preselected maximum allowable temperature due to unexpected excess HF is avoided, which apparatus comprises, in combination:

a stripping column having an inlet means for introducing feed into an intermediate portion of the column, an overhead outlet for removing materials stripped from the feed, and a bottom outlet for removing stripped feed containing residual HF and organic fluoride;

a vessel means containing solid KOH and having an inlet for introduction of stripped feed removed from said bottom outlet of said stripping column, an overhead outlet and conduit for removing KOH-treated feed, and a bottom outlet for removing sludge;

first conduit means connected to said bottom outlet of said stripping column and said feed inlet of said vessel means; heat exchange means in said first conduit means for cooling said stripped feed removed from said stripping column; by-pass conduit means connected to said first conduit means downstream of said heat exchange means for diverting flow of said stripped feed around said vessel means;

a first flow control valve which is normally open in said first conduit means positioned downstream of said heat exchange means and downstream of the junction point of said by-pass conduit means and said first conduit means and a second flow control valve which is normally closed positioned in said by-pass conduit means downstream of the junction point of said by-pass conduit means and said first conduit means; and

a temperature-sensing means in said vessel means connected to said first and said second control valves which are manipulated in response to a preselected maximum allowable temperature within said vessel means and when the measured temperature in said vessel means reaches a preselected maximum value said flow control valve is opened and said first flow control valve is closed so that flow of said stripped feed is diverted to said by-pass conduit means and around said vessel means.

4,230,667

REPLACEABLE CARTRIDGE TYPE OXYGEN GENERATOR AND OXYGEN SUPPLY SYSTEM INCLUDING A PLURALITY OF SUCH GENERATORS

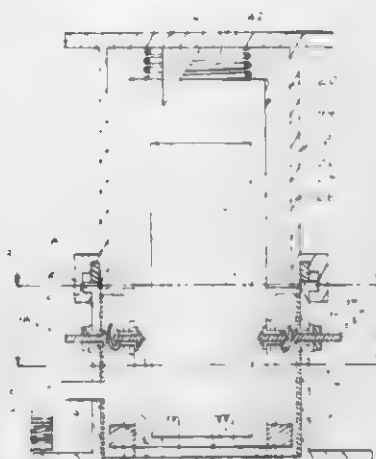
Irving Williams, 4 Harav Uziel St., Tel Aviv, Israel

Filed Sep. 19, 1978, Ser. No. 943,745

Claims priority, application Israel, Sep. 20, 1977, 52970

Int. Cl.² B01J 7/00

25 Claims



1. A replaceable cartridge type oxygen generator, comprising: a quick-opening pressure casing including a main casing section, an openable casing section quickly openable and closable with respect to the main casing section, and sealing means sealing the two sections when closed together; a chemical oxygen-generating cartridge disposed within the casing, said chemical oxygen-generating cartridge having a severable hermetically sealed container and an ignition device for igniting the cartridge; an actuating device at least a portion of which is fixed to the casing so as to be cooperable with said ignition device to ignite the cartridge when the cartridge is in effective position within the casing, and a spring engageable by the cartridge and spacing same from said effective position to render the actuating device ineffective to actuate the ignition device except when the spring is compressed by the closing of the openable casing section on the main casing section.

4,230,668

PROCESS AND APPARATUS FOR PRODUCING HALOGENATED UNSATURATED HYDROCARBONS

Harold R. Sheely, Orleans; F. Frederick Oricchio, Duxbury, and Domenic C. Ferrari, Winchester, all of Mass., assignors to The Badger Company, Inc., Cambridge, Mass.

Division of Ser. No. 493,536, Aug. 1, 1975, abandoned. This application Feb. 19, 1976, Ser. No. 659,508

Int. Cl.² B01J 8/22; F27B 15/00; C07C 21/06, 17/04

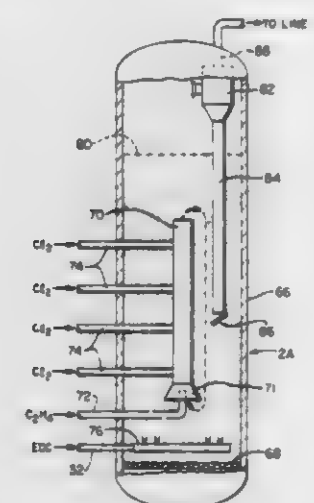
U.S. Cl. 422-140 9 Claims

1. Apparatus for producing vinyl chloride monomer, said apparatus comprising in combination:

a reaction vessel, a bed of non-catalytic solids in said reaction vessel, means for feeding ethylene dichloride into said reaction vessel so as to fluidize said bed of solids, at least one solid transfer line connected at one end to a solids exit port in the bottom of said reaction vessel and at the opposite end to a solids reentry port in the side of said reaction vessel, a plurality of chlorine injection ports spaced along said solids transfer line between its ends, and means for feeding ethylene into said line adjacent the end connected to said solids exit port so as to cause solids to circulate from the bottom of said bed into and through said line and into the side of said reaction vessel, so that heat produced by the reaction of ethylene and chlorine in said solids transfer line can be absorbed by said circulating solids and carried into said reaction vessel, means for removing a reaction products effluent from said reaction vessel, means for separately recovering hydrogen chloride and vinyl

chloride from the effluent withdrawn from said reaction vessel,

an oxyhydrochlorination reactor containing an oxyhydrochlorination catalyst, means defining a source of ethylene, a source of oxygen and means defining a source of hydrogen chloride, means connecting said sources of ethylene, oxygen and hydrogen chloride respectively to means for feeding ethylene, oxygen and hydrogen chloride to said



oxyhydrochlorination reactor for contact with said oxyhydrochlorination catalyst whereby to form ethylene dichloride, means for removing the oxyhydrochlorination reaction effluent from said oxyhydrochlorination reactor, and means for recovering ethylene dichloride from the effluent removed from said oxyhydrochlorination reaction effluent and delivering said recovered ethylene dichloride to said means for feeding ethylene dichloride to said reaction vessel.

4,230,669

RADIAL AMMONIA CONVERTER

Raymond S. Eagle, and Vishnu A. Patel, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,137

Int. Cl.² B01J 8/00, 3/04

U.S. Cl. 422-148

9 Claims

1. An ammonia converter system comprising: a first, a second and a third annular-shaped, ammonia synthesis catalyst bed;

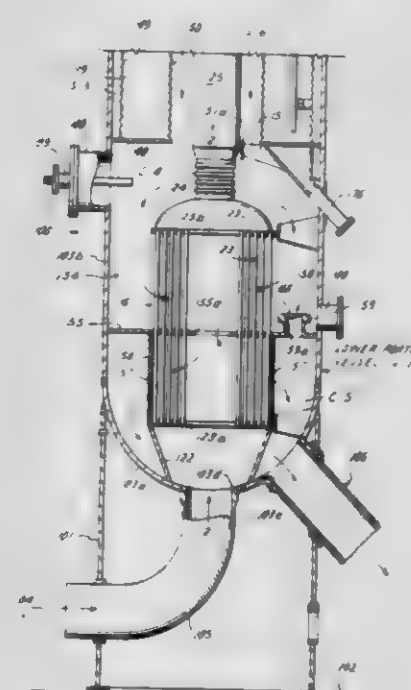
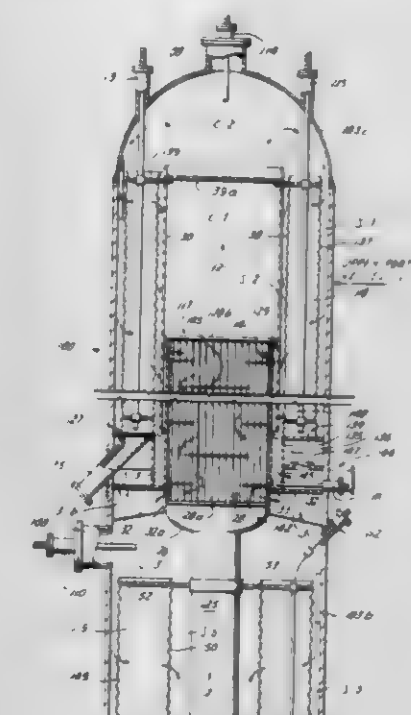
synthesis gas transfer means for directing essentially all ammonia synthesis gas to and for radially inward flow through said first catalyst bed to produce a first catalyst bed effluent containing ammonia;

first effluent transfer means for directing said first catalyst bed effluent as all the gas for radial flow through said second catalyst bed to produce a second catalyst bed effluent containing ammonia;

said first effluent transfer means including a tube bundle positioned inside of said first catalyst bed and in fluid communication therewith for cooling by indirect heat exchange the substantial portion of said effluent from said first catalyst bed prior to introduction of said first catalyst bed effluent into said second catalyst bed; and second effluent transfer means for directing said second catalyst bed effluent as all the gas for radial flow through said third catalyst bed to produce a third catalyst bed effluent containing additional ammonia;

said second effluent transfer means including a tube bundle positioned below said second catalyst bed for cooling by

indirect heat exchange the substantial portion of said effluent from said second catalyst bed prior to introduction of said second catalyst bed effluent into said third catalyst bed.



4,230,670

CARBON BLACK PRODUCING APPARATUS AND METHOD

Glenn J. Forseth, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 23, 1978, Ser. No. 871,676

Int. Cl.² C01B 49/00, 31/02

U.S. Cl. 422-151

15 Claims

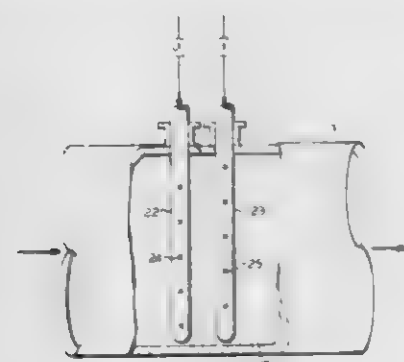
1. An apparatus for producing carbon black, said apparatus including:

a housing defining a chamber which includes a combustion compartment, a reaction compartment downstream of the combustion compartment, and a quench compartment downstream of the reaction compartment;

first inlet means communicating with said combustion compartment and being operable for introducing combustion gases into said combustion compartment;

second inlet means communicating with said combustion compartment and being operable for introducing a make hydrocarbon into said combustion compartment for py-

rolysis by contact with hot combustion gases to produce combustion products containing carbon black;
a plurality of tubular members extending into said quench compartment in spaced apart relationship to one another, each said tubular member having a plurality of discharge openings spaced apart along the length thereof and directed to introduce quench liquid in a plurality of sprays



into said quench compartment, discharge openings of one tubular member being offset along the length of the one tubular member relative to corresponding discharge openings along the length of another of the tubular members such that open spaces in the spray pattern of quench liquid from the discharge openings of one tubular member are substantially covered by sprays from the discharge openings of the other tubular member.

4,230,671

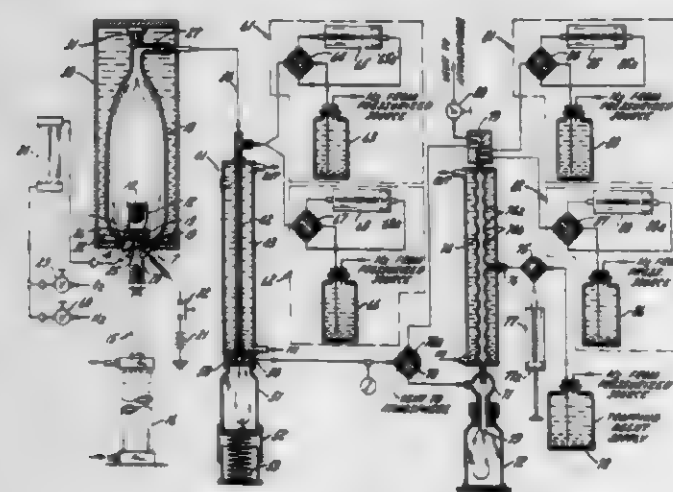
APPARATUS FOR PROCESSING FLUID MATERIALS PARTICULARLY IN THE PREPARATION OF SAMPLES FOR RADIOACTIVE ISOTOPE TRACER STUDIES

Niilo H. Kaartinen, Turku, Finland, assignor to Packard Instrument Company, Inc., Downers Grove, Ill.
Division of Ser. No. 706,499, Jul. 19, 1976, Pat. No. 4,148,608, which is a division of Ser. No. 277,261, Aug. 2, 1972, Pat. No. 3,979,503, which is a continuation of Ser. No. 728,939, May 14, 1968, abandoned. This application Aug. 21, 1978, Ser. No. 935,715

The portion of the term of this patent subsequent to Aug. 20, 1991, has been disclaimed.
Int. Cl.² G01N 31/12

U.S. Cl. 422-159

22 Claims



1. Apparatus for preparing isotope-containing samples for use in studies utilizing radioactive isotopes, said apparatus comprising the combination of

- (a) a combustion chamber for combusting a sample material containing the isotope tritium to produce combustion products containing tritiated water vapor,
- (b) means for continuously exhausting the tritiated water vapor from said combustion chamber during the combustion of said material,
- (c) a heat exchanger for continuously cooling the exhausted

- combustion products to convert the tritiated water vapor to a liquid during the combustion of said material,
- (d) a sample collection vessel and means for continuously removing said isotope-containing liquid from said heat exchanger during the combustion of said material and transferring said liquid to said collection vessel to provide a liquid sample containing the recovered isotopes for use in studies utilizing radioactive isotopes,
- (e) and means for purging said combustion chamber and heat exchanger between the combustion of successive isotope-containing samples.

4,230,672

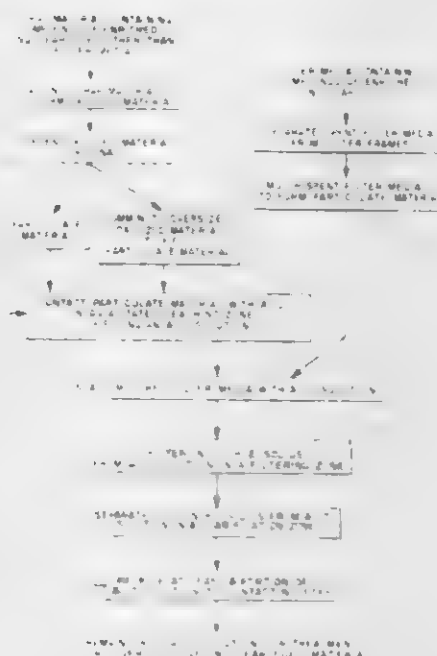
APPARATUS FOR RECOVERING NUCLEAR FUEL FROM SCRAP MATERIAL

Larry A. Divins, and Larry E. Short, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.
Division of Ser. No. 831,689, Sep. 8, 1977. This application Dec. 24, 1978, Ser. No. 972,525

Int. Cl.² B01J 1/00; G21F 9/30

U.S. Cl. 422-159

3 Claims



1. An apparatus for recovering nuclear fuel in solution form from scrap materials, including spent filter media, comprising in combination:

- (a) calcining means for calcining the scrap materials other than the spent filter media to form an oxidized material that is fed to
- (b) comminuting means for crushing the oxidized material into a particulate material of desired particle size for feeding to
- (c) a slab-shaped leaching means for contacting the particulate material with an acid solution at a rate enabling substantially complete dissolution of the nuclear fuel portion of the particulate material with the aid of mechanical agitation means to yield an acid solution,
- (d) mulching means for mulching the spent filter media to yield a mulched filter media in particulate form,
- (e) filter leach and repulping means for receiving the mulched filter media containing nuclear fuel material and for receiving the acid solution from the leaching means in a manner that the mulched filter media is contacted with the acid solution and the nuclear fuel material held by the mulched filter media is substantially dissolved in the acid solution,
- (f) separator means for receiving the acid solution with undissolved solids from means (e) and removing the non-suspended undissolved solids from the acid solution, said separator means feeding the acid solution to
- (g) leachate surge and reagent heat tank means for providing a constant output of the acid solution to

- (h) clarification means that removes suspended solids from the acid solution,
- (i) a recycle line for receiving at least a portion of the acid solution from the clarification means and recycling said portion to the leaching means, and
- (j) means for receiving the remainder of the acid solution.

4,230,673

APPARATUS FOR REMOVING NITROGEN TRICHLORIDE FROM CHLORINE GAS

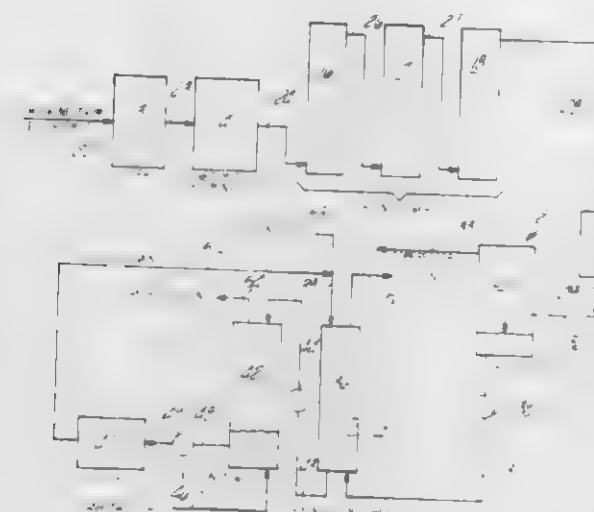
Edward N. Balko, Trenton, and Shyam D. Argade, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 803,133, Jun. 3, 1977, Pat. No. 4,138,296.
This application Feb. 5, 1979, Ser. No. 9,635

Int. Cl.² B01J 1/00, 7/02

U.S. Cl. 422-225

9 Claims



1. An apparatus for removing and destroying nitrogen trichloride contaminant present in chlorine produced electrolytically from brine comprising

- an extraction device for receiving chlorine containing accumulations of nitrogen trichloride,
- means for moving said contaminated chlorine and nitrogen trichloride to said extraction device,
- means for adding an inert organic solvent to said extraction device in an amount sufficient to provide a safely diluted solution of nitrogen trichloride therein,
- means for heating the extraction device to remove substantially all of the chlorine therefrom,
- reactor means,
- means for discharging chlorine from said extraction device,
- means for moving the diluted solution of nitrogen trichloride from the extraction device to the reactor means,
- means for adding a reaction component said reactor to react with nitrogen trichloride and to convert it to ammonium chloride,
- means for discharging chlorine formed in said reactor,
- means for removing the reaction mixture from said reactor,
- means for separating the solvent from the reaction mixture, removed from the reactor, after the conversion of the nitrogen trichloride, and
- means for recycling the separated solvent from said reactor to the extraction device.

4,230,674

CRUCIBLE-DIE ASSEMBLIES FOR GROWING CRYSTALLINE BODIES OF SELECTED SHAPES

Aaron S. Taylor, Acton, Mass., and Richard W. Stormont, Warwick, R.I., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Dec. 27, 1976, Ser. No. 754,422

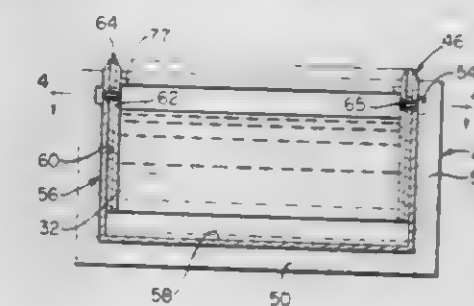
Int. Cl.² C30B 15/34

U.S. Cl. 422-246

11 Claims

1. Apparatus for use in a system for growing crystalline bodies of selected shape from a melt which is delivered from a

crucible to a liquid/solid growth interface by a capillary die, said apparatus comprising a crucible and capillary die combination in which (1) at least a part of the die is an integral portion of the crucible and (2) the crucible is an essential portion of the die, said crucible being (a) open at its top end, (b) closed at its bottom end and (c) having a side wall defining an



interior space for containing a melt, said crucible side wall (i) having an upper end defining at least one edge surface of the die, said side wall (ii) also forming one boundary surface of at least one capillary space which has one end communicating with said interior space and the other end terminating at said upper end.

4,230,675

APPARATUS FOR LEACHING CORE MATERIAL FROM CLAD NUCLEAR FUEL PIN SEGMENTS

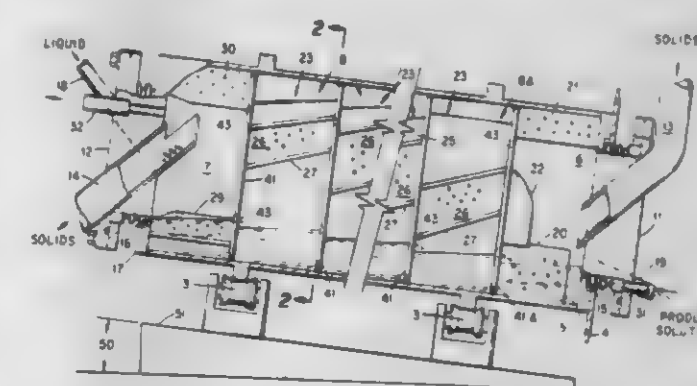
Orlan O. Yarbrow, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 15, 1978, Ser. No. 878,047

Int. Cl.³ B01D 11/02; B01F 1/00

U.S. Cl. 422-272

8 Claims



1. In rotary apparatus for countercurrently contacting liquids and solids, said apparatus including an elongated and generally cylindrical drum assembly which is rotatable in either direction about its longitudinal axis and which is divided by circumferentially sealed, transversely extending partitions into a solids-inlet/liquid-outlet compartment at one end of said assembly, a solids-outlet/liquid-inlet compartment at the other end thereof, and a plurality of leaching compartments therebetween, said partitions being provided with perforations for conveying liquid flow between adjacent compartments; each of said leaching compartments containing a solids-transfer chute assembly for advancing solids into the next compartment in the direction of solids flow when said drum assembly is rotated in a selected direction, each chute assembly including a solids-transfer chute and a perforated baffle for directing solids into said chute when said drum assembly is rotated in said selected direction; the improvement comprising:

said partitions being formed with corresponding outer annular imperforate regions, each region extending inwardly from the rim of its respective partition to an annular array of perforations concentric with said rim, each region having a width which prevents intercompartmental back-flow of relatively dense liquid along the bottom portion of said assembly and which corresponds to the desired maximum depth of liquid in said leaching compartments, and

said drum assembly being disposed with its solids-outlet/liquid-inlet end at a higher elevation than its other end, the longitudinal axis of said drum assembly forming an angle in the range of from about 3° to 14° with the horizontal, said angle establishing in said assembly liquid levels for effecting forward flow through the annular arrays while substantially preventing backflow therethrough of waves produced by said chutes.

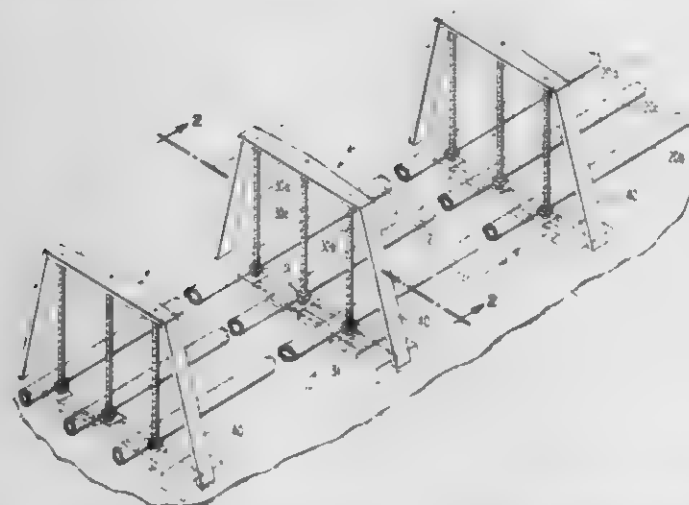
4,230,676

COMPOSTING APPARATUS

Lauren P. Taylor, Swarthmore, and Alex Petroski, Springfield, both of Pa., assignors to LRS Research, Broomall, Pa.
Filed May 14, 1979, Ser. No. 38,700
Int. Cl.² C05F 11/08

U.S. Cl. 422-62

24 Claims



1. A composting apparatus for use in composting organic material, said apparatus comprising:

- a plurality of frame members spaced from each other;
 - a plurality of support members connected to each frame member;
 - a plurality of hollow, perforated conduits extending between said frame members and connected to support members at adjacent frame members, said conduits being moveable vertically along said support members while connected to said support members;
 - injector means at one end of said conduits for injecting at least fluid into said conduits; and
 - evacuator means at the end of said conduits opposite said injector means for withdrawing at least fluid from said conduits.
7. A composting apparatus as claimed in claim 1, said apparatus further comprising:
- analysis means associated with said evacuator means for analyzing at least a portion of at least said fluid withdrawn from said material, whereby said analysis means indicates the compost state of said material.

4,230,677

RECOVERY OF Cr_2O_3 FROM A CHROMIUM BEARING SOLUTION

Tadashi J. Kagetsu, Lewiston; William B. De Atley, Grand Island, both of N.Y.; Joseph S. Fox, Altamonte Springs, Fla., and Oreste J. Malacarne, Grand Junction, Colo., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 357,511, Dec. 5, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 963,805
Int. Cl.³ C01G 37/033

U.S. Cl. 423-54

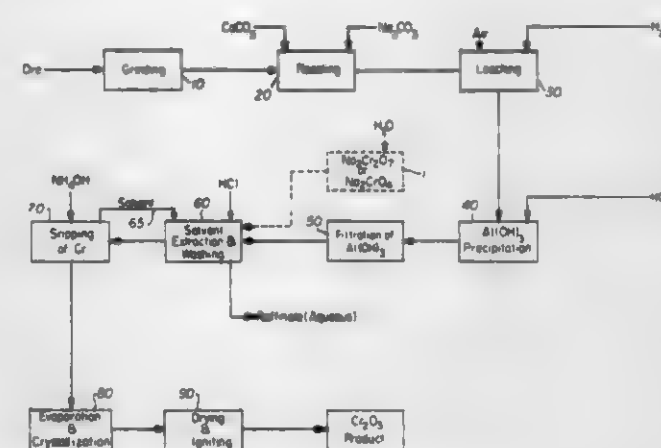
8 Claims

1. A method for recovering high purity Cr_2O_3 from chromium ore which comprises:

- roasting in a gaseous oxidizing environment a mixture of chromium ore with Na_2CO_3 and CaO at a temperature in the range of about 600° C. to 1100° C. for from about 0.5 to 6 hours, the amount of Na_2CO_3 being that which provides from about 1.4 to 4.2 pounds of Na_2CO_3 per pound

of Cr_2O_3 in the ore and the amount of CaO being that which provides from about 0.6 to 1 pound of CaO per pound of Cr_2O_3 in the ore;

- water leaching roasted material obtained in step (i) at a temperature of from about 5° C. to the boiling point of water for from about 5 minutes to 5 hours;
- adding acid to the leach liquor obtained in step (ii) to provide a pH of from about 3 to 9.5 to cause precipitation of aluminum impurities and separating said impurities from the leach liquor;
- adding acid to the leach liquor to provide a pH of about 1 to 2;



- contacting the acidified leach liquor obtained in step (iv) with a tertiary amine dissolved in an organic solvent essentially free of isodecanol to inhibit the formation of emulsion, to recover chromium values from the acidified leach liquor in a chromium containing organic liquid phase;

- treating the chromium containing organic phase with a water solution of NH_4OH to obtain a solution of $(\text{NH}_4)_2\text{CrO}_4$;
- subjecting the solution of $(\text{NH}_4)_2\text{CrO}_4$ to evaporation to provide a solid chromium-bearing material; and
- igniting the solid chromium-bearing material to obtain Cr_2O_3 .

4,230,678

PROCESS FOR RECOVERING ALUMINUM FROM ALUNITE

George J. Hartman, Arvada, and Vernon R. Ewing, Denver, both of Colo., assignors to Earth Sciences, Inc., Golden, Colo.; National Steel Corporation, Pittsburgh, Pa. and Southwire Company, Carrollton, Ga.

Continuation of Ser. No. 865,093, Dec. 27, 1977, abandoned, which is a continuation of Ser. No. 724,449, Sep. 20, 1976, abandoned, which is a division of Ser. No. 582,806, Jun. 2, 1975, Pat. No. 3,996,333. This application Feb. 14, 1979, Ser. No. 12,181

The portion of the term of this patent subsequent to Dec. 7, 1993, has been disclaimed.

Int. Cl.³ C01F 7/06, 7/14

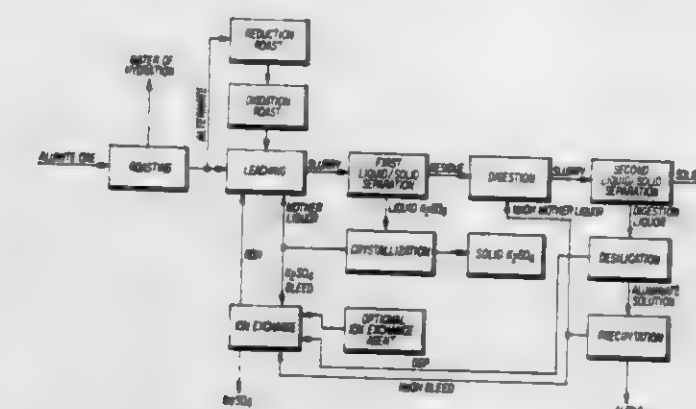
U.S. Cl. 423-112

10 Claims

1. A process for recovering aluminum hydroxide from aluminum-bearing ore containing substantial amounts of potassium and sulfate comprising the following steps:

- roasting the ore to remove water and leaching the roasted ore with an alkaline solvent or water to remove compounds of sulfur and alkali metals including potassium sulfate resulting in a residue containing aluminum values and a solution containing potassium sulfate;
- separating the residue and solution of step (a);
- recovering potassium sulfate from the solution of (b) by crystallization while bleeding off a portion of potassium sulfate from the mother liquor;
- contacting an anion exchange agent loaded with hydroxyl ions with the potassium sulfate bleed stream to

- replace said hydroxyl ion with sulfate to form potassium hydroxide and cycling said potassium hydroxide to the leaching of step (a);
- digesting the residue from step (b) with at least one alkali metal hydroxide at a concentration and at a temperature sufficient to dissolve substantially all of the aluminum values from said solid portion as aluminates;
- separating the liquid and solid portions of the slurry resulting from step (e);



- removing silica from the liquid portion resulting from step (f) by precipitation as a desilication product which is essentially sodium aluminum silicate;
- separating the liquid and solid portions resulting from step (g); and
- precipitating and recovering aluminum hydroxide from the aluminates in the liquid portion resulting from step (h).

4,230,679

POLY(SILICIC ACID)

Walter Mahler, and William O. Forshey, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1978, Ser. No. 972,423

Int. Cl.³ C01B 33/14

U.S. Cl. 423-325

17 Claims

1. Particulate, porous, water-insoluble hydrophilic, thermally stable, amorphous poly(silicic acid) which is of the empirical formula $[\text{Si}_3\text{O}_5(\text{OH})_2]_n(\text{H}_2\text{O})_m$ wherein n is a fractional or whole number within the range about 0 to 6 and which is characterized by an average pore diameter of 60 Å to about 300 Å and a surface area of greater than 850 m^2/g .

5. Particulate, porous, water-insoluble, amorphous poly(silicic acid) which is of the empirical formula $[\text{Si}_3\text{O}_5(\text{OH})_2]_n(\text{H}_2\text{O})_m$ wherein n is a fractional or whole number within the range about 0 to 6 and which is characterized by a pore volume of 1.8 ml/g to about 8.5 ml/g and a surface area of greater than 850 m^2/g .

7. Process for preparing particulate, porous, water-insoluble, hydrophilic, thermally stable, amorphous poly(silicic acid) by acidifying an appropriate aqueous silicate solution, allowing the silicic acid thus formed to polymerize to poly(silicic acid), freezing the acidified solution, and thereafter thawing the acidified solution and isolating therefrom, washing, drying and recovering particulate poly(silicic acid), said process further characterized in that:

- the amount of silicate in the aqueous silicate solution is such that the SiO_2 content of the acidified solution is about 4 to 25 weight % and such that the acidified solution contains about 15 to 150 weight %, based on the weight of SiO_2 , of at least one water-soluble compound which is precipitable from the acidified solution at -10° to -200° C. and which is inert to the silicate, silicic acid and poly(silicic acid);
- the aqueous silicate solution is acidified to a pH of about 3 to 9;
- the acidified solution is cooled to a temperature of about -10° to -200° C. until it is frozen to separate substantially all of the chemically unbound water as substantially pure ice and to precipitate water soluble compound within

the pores of the poly(silicic acid) particles being formed; said acidified solution being in gelled form prior to cooling.

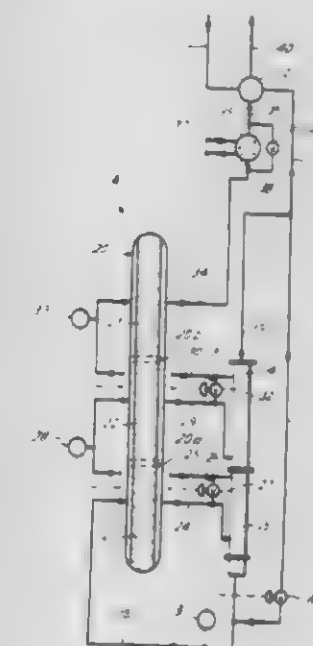
4,230,680

LOW ENERGY PROCESS FOR SYNTHESIS OF AMMONIA

Colman L. Becker, and Joseph R. LeBlanc, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.
Filed Jul. 17, 1978, Ser. No. 925,138
Int. Cl.² C01C 1/04

U.S. Cl. 423-360

11 Claims



1. A process for the synthesis of ammonia, comprising: passing a synthesis feed gas consisting essentially of hydrogen and nitrogen in approximately a 3 to 1 ratio through at least one heat exchanger to heat said synthesis feed gas to a first reaction temperature;

passing said heated synthesis gas at said first reaction temperature through a first ammonia synthesis catalyst bed wherein an exothermic reaction occurs to produce a first effluent containing ammonia;

passing a portion of said first catalyst bed effluent through a heat exchanger to cool said effluent portion and mixing said cooled first effluent portion with the remainder of said first catalyst bed effluent to adjust the temperature of said first catalyst bed effluent to a second reaction temperature;

passing said first catalyst bed effluent at said second reaction temperature through a second ammonia synthesis catalyst bed for exothermic reaction to produce a second catalyst bed effluent containing further ammonia;

passing a portion of said second catalyst bed effluent through another heat exchanger to cool said second effluent portion and mixing said cooled second effluent portion with the remainder of said second catalyst bed effluent to adjust the temperature of said second catalyst bed effluent to a third reaction temperature; and

passing said second catalyst bed effluent at said third reaction temperature through a third ammonia synthesis catalyst bed wherein an exothermic reaction occurs to produce a third effluent containing further ammonia.

4,230,681

METHOD OF MANUFACTURING HYDROGEN CHLORIDE FROM SOLUTIONS OF AMINE HYDROCHLORIDES

Alfred Coenen; Kurt Kosswig; Bernhard Hentschel, and Jürgen Ziebarth, all of Marl, Fed. Rep. of Germany, assigns to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany
Filed Feb. 6, 1979, Ser. No. 10,048

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1978, 2805933

Int. Cl.² C01B 7/08

U.S. Cl. 423—481

6 Claims

1. A method of manufacturing hydrogen chloride from solutions of amine hydrochlorides comprising:

- heating said solutions in an inert, organic essentially non-polar solvent at temperatures of about 120°–230° C., said solvent having a boiling point at least 20° C. above said temperature of heating;
- simultaneously with said heating, passing an inert gas stream through the heated solutions of (a) to split off hydrogen chloride and produce a mixture of hydrogen chloride and said inert gas; and
- separating said hydrogen chloride from said mixture of (b) wherein the amine component of said amine hydrochlorides is selected from the group consisting of tertiary alkylamines, tertiary arylalkylamines, secondary arylalkylamines, primary alkylalkylamines or mixtures thereof, each of said amine components containing 14 to 36 carbon atoms in the side chains bonded to nitrogen, not more than one of the side chains being a methyl group bonded to nitrogen and at least one of the side chains being an aliphatic radical, bonded to nitrogen, containing at least 6 carbon atoms.

4,230,682

CYCLIC THERMOCHEMICAL PROCESS FOR PRODUCING HYDROGEN USING CERIUM-TITANIUM COMPOUNDS

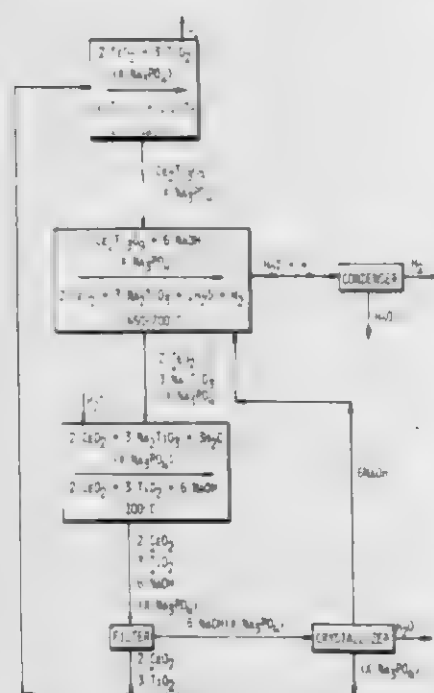
Carlos E. Bamberger, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 11, 1979, Ser. No. 47,447

Int. Cl.³ C01B 1/02

U.S. Cl. 423—579

8 Claims



1. A cyclic process for splitting water into hydrogen and oxygen, comprising the steps of:

- reacting ceric oxide and titanium dioxide to form cerium titanate and oxygen, and separating thus-formed oxygen from the reaction environment;
- reacting cerium titanate formed in step (1) with an alkali metal hydroxide, to form ceric oxide, an alkali metal

titanate, water and hydrogen, and recovering the thus-formed hydrogen;

- reacting ceric oxide and the alkali metal titanate formed in step (2) with water to yield ceric oxide, alkali metal hydroxide and titanium dioxide;
- recycling thus-produced ceric oxide and titanium dioxide to step (1); and
- recycling thus-produced alkali metal hydroxide to step (2).

4,230,683

HAPTEN CONJUGATED ANTIBODY FOR ANTIBODY OR ANTIGEN DETECTION

Richard H. Decker, Deerfield; Chung-Mei Ling, Antioch, and Lacy R. Overby, Lake Forest, all of Ill., assigns to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 9, 1978, Ser. No. 932,394

Int. Cl.² G01N 33/16; A61K 39/00, 43/00

U.S. Cl. 424—1

5 Claims

1. In an immunoassay method for determining an antigen or an antibody from a test sample and bound to a solid support, the improvement comprising reacting the antigen or antibody bound to the solid support with an antibody having a hapten conjugated thereto and then reacting the hapten portion with labeled anti-hapten antibody, and measuring the labeled anti-hapten antibody bound to the solid support.

4,230,684

METHOD FOR DETERMINING STEROIDS IN HUMAN BODY LIQUIDS

Soagja Pang, and Maria I. New, both of New York, N.Y., assigns to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,326

Int. Cl.² A61K 43/00; G01N 33/16; B65D 81/32

U.S. Cl. 424—1

16 Claims

1. A method for determination of a steroid contained in a sample of a human body liquid which comprises the steps of:

- transferring said liquid sample onto a sheet of material which is capable of uniformly absorbing said liquid sample;
- drying the sample-containing sheet;
- treating a portion of the dry sample-containing sheet, which is equivalent to a predetermined amount of the sample, with an aqueous solvent in order to obtain a mixture wherein the dried sample of human body liquid is substantially redissolved in the aqueous solvent;
- extracting said aqueous mixture with a volatile organic solvent capable of dissolving said steroid in order to obtain an organic extract containing said steroid dissolved therein;
- separating at least a portion of said organic extract from said aqueous mixture;
- recovering a residue containing the steroid from said organic extract;
- contacting said residue with an aqueous solution of an agent, said agent being capable of selectively binding said steroid, in the presence of a radioisotopically labeled form of the steroid, whereby part of said labeled steroid and part of said unlabeled steroid present in the sample, are bound by forming a complex with said binding agent, separating said bound steroids from unbound steroids in said aqueous solution and measuring the radioactivity of at least said separated binding agent-steroids-complex or said unbound steroids to determine the concentration of said hormone as a function of the measured radioactivity.

4,230,685

METHOD OF MAGNETIC SEPARATION OF CELLS AND THE LIKE, AND MICROSPHERES FOR USE THEREIN

Andrew E. Senyel, and Kenneth J. Widder, both of Chicago, Ill., assigns to Northwestern University, Evanston, Ill.

Filed Feb. 28, 1979, Ser. No. 15,895

Int. Cl.² G01N 31/00, 21/46

U.S. Cl. 424—12

10 Claims

1. A method for the separation of a select population of cells, bacteria, or viruses from a mixed population thereof, in which microspheres containing magnetic particles are coated with a layer of antibodies which selectively bind to the select population, the coated microspheres are contacted with said mixed population so that said microspheres are bound to the select population, and said bound select population is magnetically separated from the rest of said mixed population, wherein the improvement comprises: prior to coating said microspheres with antibodies modifying the surfaces of said microspheres to provide staphylococcal Protein A distributed thereover in adherent relation to said microspheres, then contacting said microspheres with antibodies which bind to Protein A and which also bind selectively to said select population, whereby said antibodies are arranged in oriented attachment on the surfaces of said microspheres with their Fab arms extending outwardly, and thereafter carrying out the rest of the steps of said method.

4,230,686

DRUG EXCIPIENT OF SILICONE RUBBER

Gisela Schopflin; Peter Fuchs, both of Berlin, and Karl H. Kolb, Holzhausen, all of Fed. Rep. of Germany, assigns to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 563,233, Mar. 28, 1975, abandoned, which is a division of Ser. No. 444,886, Feb. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 307,940, Nov. 20, 1972, abandoned. This application Dec. 23, 1976, Ser. No. 753,876

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1971, 2158226

Int. Cl.² A61K 9/22, 9/26

U.S. Cl. 424—22

16 Claims

1. A nontoxic pharmaceutical composition adapted for implantation into a human or animal body to provide a constant, uniform drug release rate over a time interval of several months or years, said composition being substantially free of peroxide, acetic acid and metal salts of carboxylic acids and consisting essentially of a homogeneous mixture of:

- 85–95 parts by weight of a LTV linear dimethylpolysiloxane resin containing 0.05–0.5 molar percent of methylvinylsiloxane units, having a molecular weight of 20,000–50,000 and containing an average of 1.58–2.02 monovalent hydrocarbon residues per silicone atom;
- correspondingly 15–5 parts by weight of a crosslinking composition consisting essentially of a dimethylpolysiloxane crosslinking agent substantially free of methylvinylsiloxane units, having a molecular weight of 500–1000 and containing 1–3 Si—H bonds per molecule;
- a catalytic amount of a noble-metal based crosslinking catalyst; and
- a pharmaceutically active amount of a nonionic, lipophilic drug dissolved or uniformly suspended in said composition.

4,230,687

ENCAPSULATION OF ACTIVE AGENTS AS MICRODISPERSIONS IN HOMOGENEOUS NATURAL POLYMERIC MATRICES

Louis Sair, Evergreen Park, and Ralph A. Sair, Lincolnwood, both of Ill., assigns to Griffith Laboratories U.S.A., Inc., Alsip, Ill.

Continuation-in-part of Ser. No. 779,463, Mar. 21, 1977, abandoned, and Ser. No. 719,740, Sep. 2, 1976, abandoned. This application May 30, 1978, Ser. No. 910,101

Int. Cl.³ A01N 25/28; A61K 9/26, 31/07; B01J 13/02

U.S. Cl. 424—22

15 Claims



1. A method of encapsulation of an active agent as a microdispersion in a storage-stable enveloping matrix of an encapsulating material selected from the group consisting of chemically modified starches, gums, proteins and mixtures thereof, said method being characterized in that the encapsulating material is transformed thereby into a homogeneous, continuous, paste-like phase during processing thereof, said method comprising:

combining 1 part by weight of said encapsulating material with from about 1/25th part up to about 5 parts by weight of said active agent, and water in a limited amount of from about 10% up to about 50% by weight of water based upon the total weight of water, encapsulating material and active agent, but in an amount limited to ensure development and maintenance of a homogeneous, high-viscosity paste system during processing thereof;

applying shearing stress and vigorous mechanical working and any necessary heat to said paste system to distribute said active agent throughout said encapsulating material as a microdispersion under processing conditions to avoid compaction and molding compression forces, thereby to prevent mechanical expulsion of said active agent from said encapsulating material,

mechanically working said paste system into a very viscous mobile and formable mass having a viscosity in excess of about 50,000 centipoises and in which said active agent is distributed as micro particles throughout said homogeneous encapsulating material,

mechanically shaping said mass without applying compression force effective to expel said active agent therefrom, thereby to provide a product of selectable physical configuration, and

drying said product by a process other than spray drying to provide a storage-stable homogeneous matrix of said encapsulating material having protectibly and releasably enveloped therewithin said active agent as a microdispersed phase distributed substantially uniformly therethrough.

9. A Vitamin A concentrate comprising Vitamin A distributed as a microdispersion throughout a homogeneous protective matrix consisting essentially of a natural polymeric encapsulating medium derived from a proteinaceous material, said concentrate being characterized by high stability of said encapsulated Vitamin A upon storage, and produced in accordance with the method of claim 1.

4,230,688

ACYCLIC CARBOXAMIDES HAVING A
PHYSIOLOGICAL COOLING EFFECT

David G. Rowsell, Staines; David J. Spring, Datchet, and Roger Hems, Maidenhead, all of England, assignors to Wilkinson Sword Limited, London, England
Continuation of Ser. No. 768,219, Feb. 14, 1977, Pat. No. 4,153,679, which is a division of Ser. No. 351,357, Apr. 16, 1973, abandoned. This application May 7, 1979, Ser. No. 36,662
Claims priority, application United Kingdom, Apr. 18, 1972, 17914/72

The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.

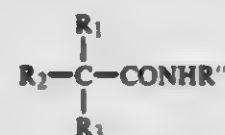
Int. Cl.³ A61K 7/16; A61L 9/04

U.S. Cl. 424—45

15 Claims

1. In a manufactured consumer product for application to or consumption by the human body, said product comprising a vehicle topically administrable to or consumable by the human body and containing as an adjuvant in said vehicle, a compound capable of stimulating the cold receptors of the nervous system in the surface tissues of the body when brought into contact therewith by topical application or consumption of the said vehicle, said product being:

- (i) A toiletry comprising a topically administrable vehicle containing as adjuvants therein (a) said cold receptor stimulating compound and (b) at least one of the following: an odorant, antiseptic, colourant or surfactant;
- (ii) a foodstuff or beverage comprising an orally ingestible vehicle containing as adjuvants therein (a) said cold receptor stimulating compound and (b) a flavourant; or
- (iii) a tobacco or tobacco-containing manufacture containing said cold receptor stimulating compound; the improvement which comprises using as said cold receptor stimulating compound an effective amount of a cold receptor stimulating acyclic carboxamide of the formula:



wherein

- R'' is C₁-C₅ alkyl, C₁-C₂hydroxyalkyl or alkylcarboxyalkyl of up to 6 carbon atoms;
R₁ is H or C₁-C₅ alkyl; and
R₂ and R₃ are each C₁-C₅ alkyl;
with the provisos that
(i) R₁, R₂ and R₃ together provide a total of at least 5 carbon atoms; and
(ii) when R₁ is hydrogen then R₂ is C₂-C₅ alkyl and R₃ is C₃-C₅ alkyl branched at the carbon atom in the alpha or beta position.

4,230,689

HAIR GROOMING COMPOSITION OF MATTER

Sue Choy, 4109 Whispering Ln., Annandale, Va. 22003

Filed May 1, 1979, Ser. No. 34,980

Int. Cl.³ A61K 7/06

U.S. Cl. 424—74

3 Claims

1. A composition of matter for use in the grooming of human hair, which composition is prepared by the process which comprises the steps of:

- (a) hydrating with water to hydration an admixture of 1 part white rice with 0.1 to 2 parts mung bean;
- (b) heating said admixture to a temperature of about 75° F. to about 212° F. in the presence of 1 cup of Ginseng tea;
- (c) enclosing said heated admixture in a closed environment to provide a means to acquire the condensate of the vapors of said heated and enclosed admixture; and
- (d) recovering said condensate of said heated and enclosed admixture as said hair grooming composition of matter.

4,230,690

HIGH-VISCOSITY EYE LOTIONS

Aizo Yamauchi, Atsugi; Yasuo Matsuzawa, Machida; Sadaoyoshi Kamiya, Nagoya; Keisuke Nishioka, Yao; Yoshiaki Hara, Kashiwara, and Shogo Matsushima, Nara, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo and Nihon, Tenganyaku Kenkyusho K.K., Aichi, both of Japan

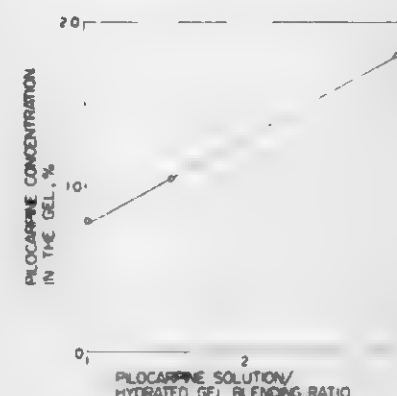
Filed Apr. 26, 1979, Ser. No. 33,523

Claims priority, application Japan, Apr. 30, 1978, 53-51098

Int. Cl.³ A61K 31/74

U.S. Cl. 424—78

6 Claims



1. high-viscosity eye lotion comprising a flowable swollen hydrated gel of a cross-linked polyvinyl alcohol having an equilibrium swelling ratio in the range from 70 to 100 by weight at room temperature as a carrier medium and an ophthalmically active ingredient in a therapeutically effective concentration in said carrier medium.

4,230,691

NERVE GROWTH FACTOR ANTIBODY AND PROCESS

David M. Young, Sherborn, Mass., assignor to The Massachusetts General Hospital, Boston, Mass.

Filed May 23, 1978, Ser. No. 908,762

Int. Cl.² A61K 39/00; C07G 7/00; A61K 37/02

U.S. Cl. 424—85

5 Claims

1. A composition having the property of inhibiting the plasminogen activator activity of nerve growth factor having a molecular weight of about 116,000 and being derived from a source selected from the group consisting of mouse submandibular gland, mouse saliva and mixtures thereof, said composition comprising the antibody of said nerve growth factor and being isolated from the blood serum of an animal to which said nerve growth factor has been previously added.

4,230,692

RAVIDOMYCIN AND PROCESS OF PREPARATION

Surendra N. Sehgal, Dollard des Ormeaux, and Claude Vezina, Oka, both of Canada, assignors to Ayerst McKenna & Harrison, Inc., Montreal, Canada

Filed Nov. 3, 1978, Ser. No. 957,509

Int. Cl.³ A61K 35/00

U.S. Cl. 424—122

6 Claims

1. Ravidomycin which:

- (a) is bright yellow crystalline compound, m.p. 255° C. with decomposition, after recrystallization from diethyl ether;
- (b) is soluble in acetone, methanol, ethanol, chloroform, and sparingly soluble in diethyl ether;
- (c) shows a uniform spot on thin layer plates of silica gel;
- (d) has a characteristic elemental analysis of about C, 65.73%, H, 6.34%, N, 2.73%;
- (e) exhibits the following characteristic absorption maxima in its ultraviolet absorption spectrum (95% v/v ethanol) 286 nm (E₁ cm⁻¹% 696) and 246 nm (E₁ cm⁻¹% 672);
- (f) has a characteristic infrared spectrum in chloroform as shown in accompanying FIG. 1; and

(g) has a characteristic nuclear magnetic resonance spectrum in deuteriochloroform as shown in accompanying FIG. 2.

4,230,693

ANTACID TABLETS AND PROCESSES FOR THEIR
PREPARATION

Henry J. Izzo, Naperville; Martin J. Moran, Oak Lawn, both of Ill., and Frederick G. Wheeler, Poplarville, Miss., assignors to Armour-Dial, Inc., Phoenix, Ariz.
Continuation of Ser. No. 569,947, Apr. 21, 1975, abandoned.
This application Dec. 3, 1976, Ser. No. 747,172

Int. Cl.³ A61K 33/10, 33/08

U.S. Cl. 424—156

5 Claims

1. In a process for preparing an antacid tablet in which an antacid ingredient, sugar and fat are combined to provide a powdered mixture, the step of feeding said mixture into a tableting machine while maintaining the plungers and dies of said machine at a temperature of from 110° to 125° F.

4,230,694

PROCESS FOR PREVENTION OF PLANT INFECTIONS
CAUSED BY SCATTERED SPORES AND COMPOSITION

Kiyoshi Saitome, 2-4-10, Setagaya, Setagaya-ku, Tokyo, Japan
Continuation-in-part of Ser. No. 798,033, May 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 630,889, Nov. 11, 1975, abandoned. This application Oct. 10, 1978, Ser. No. 949,852

Int. Cl.³ A01N 27/00, 61/02

U.S. Cl. 424—172

13 Claims

1. A method for protecting plants from diseases caused by airborne carriers which comprises:

- applying to a plant, an effective amount to protect said plants against such airborne diseases, of a W/O emulsion of a hard paraffin having substantially the same number of carbon atoms as that naturally present on the surface of the plant;
- said emulsion being prepared by emulsifying said paraffin with a C₁₂ to C₁₈ fatty acid soap to produce an emulsion having colloidal particles consisting essentially of those within the range of from 1 to 5 microns;
- said emulsion, after evaporation of water therefrom depositing a block-like film of paraffin on said plant.

4,230,695

ENHANCED PROTEIN ASSIMILATION WITH
FRUCTOSE

Richard E. Ecker, Hinsdale, Ill., assignor to Vitose Corporation, Clarendon Hills, Ill.

Filed Aug. 2, 1976, Ser. No. 710,572

Int. Cl.² A61K 37/02, 31/70

U.S. Cl. 424—177

8 Claims

1. A process for facilitating the assimilation of dietary protein into body tissue comprising:

- orally administering to a subject a dietary supplement including substantially pure fructose and a protein having a protein efficiency ratio of about 2.5 or greater; and
- eliminating the consumption by said subject of substantially all insulin-stimulating carbohydrates for a period prior to said oral administration of sufficient duration to reduce the insulin present in the bloodstream of said subject at the time of said administration to near basal levels and for a period subsequent to said oral administration of sufficient duration to allow substantially complete assimilation of said protein into body tissue.

4,230,696

POLYPEPTIDES USEFUL FOR THE PURPOSE OF
TREATING MULTIPLE SCLEROSIS

George A. Hashim, Irvington, N.Y., assignor to St. Luke's Hospital, New York, N.Y.

Continuation-in-part of Ser. No. 648,379, Jan. 12, 1976, Pat. No. 4,113,858, which is a continuation-in-part of Ser. No. 542,175, Jan. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 315,140, Dec. 12, 1972, Pat. No. 3,864,481. This application Sep. 11, 1978, Ser. No. 941,001

Int. Cl.³ A61K 37/00; C07C 103/52

U.S. Cl. 424—177

28 Claims

1. A synthetic compound selected from those of formula:



and the acid addition salts thereof, wherein R₁ and R₅ are each independently selected from the group consisting of hydrogen, hydroxy, the residue of an amino acid and the residue of a polypeptide and R₄ is selected from the group consisting of lysine and arginine residues; provided that R₁ and R₅ are not both hydrogen or both hydroxyl at the same time.

4,230,697

VIRUS-INACTIVATED HGI-GLYCOPROTEIN CAPABLE
OF STIMULATING PROLIFERATION AND
DIFFERENTIATION OF HUMAN GRANULOCYTE,
PROCESS FOR PREPARING SAME AND LEUKOPENIA
CURATIVE CONTAINING SAME

Masayuki Nishida, Osaka; Satoshi Funakoshi, Katano; Katsuhiko Ogasa, Yokohama; Morio Kuboyama; Nobuya Yanai, both of Tokyo, and Muneco Yamada, Kodaira, all of Japan, assignors to Morigata Milk Industry Co. Ltd., Tokyo and The Green Cross Corporation, Osaka, both of Japan
Filed May 9, 1979, Ser. No. 37,515

Claims priority, application Japan, Jul. 3, 1978, 53-80694; Jul. 3, 1978, 53-80695; Sep. 26, 1978, 53-118203

Int. Cl.³ A61K 37/00; C07C 103/52

U.S. Cl. 424—177

21 Claims

1. A virus-inactivated glycoprotein from human urine which stimulates human bone marrow cells to form colonies of granulocytes and which has the following physical and chemical properties:

- (a) molecular weight: 75,000 to 90,000 dalton as determined by gel filtration;
- (b) solubility: soluble in water, slightly soluble in chloroform, and insoluble in ethyl alcohol and acetone;
- (c) specific optical rotation: $[\alpha]_D^{20} = 0 \pm 40$ (0.25% aqueous solution);
- (d) pH: 5.0-6.0 (1% by weight aqueous solution);
- (e) isoelectric point: pH 4.7 \pm 0.2;
- (f) thermostability: on being heated at 60° \pm 0.5° C. for 30 minutes in 1% aqueous solution, the stimulating function on the proliferation and differentiation of the human granulocyte is completely lost;
- (g) electrophoresis: the relative mobility is 0.25 in the electrophoresis using sodium dodecyl sulfate-polyacrylamide gel;
- (h) infrared absorption: characteristic absorption at the following wave numbers (cm⁻¹): 3600-3200 (strong absorption), 1700-1600 (strong absorption), 1550 (medium absorption), 1430-1380 (medium absorption), and 1150-1000 (broad band);
- (i) color reaction: colors characteristic of saccharides are produced by the α -naphthol-sulfuric acid reaction, indole-sulfuric acid reaction, anthrone-sulfuric acid reaction and phenol-sulfuric acid reaction; colors characteristic of polypeptide linkage and amino acids are produced by the Lowry-Folin's reaction and by the ninhydrin reaction after hydrolysis with hydrochloric acid;
- (j) constituent amino acids of the protein moiety: proline, aspartic acid, threonine, serine, glutamic acid, glycine,

alanine, valine, methionine, isoleucine, leucine, tyrosine, phenylalanine, lysine, histidine, tryptophan and arginine;
(k) color and shape: substantially white and amorphous;
(l) sugar composition of the polysaccharide moiety: 10.0-13.0% by weight in terms of glucose of neutral sugars, 3.0-7.0% by weight of sialic acids and 1% by weight of other amino sugars;
(m) weight ratio of protein to polysaccharide: 75-85:13.0-20.0; and
(n) elementary analysis: 42.3-47.3% of carbon, 5.7-7.8% of hydrogen, 9.6-14.3% of nitrogen, 34.4-39.4% of oxygen and 0.2% or less of sulfur.

4,230,699
HEXURONYL HEXOSAMINOGLYCANE SULFATE AND RELATED THERAPEUTICAL USES

Fernando Fussi, Lesmo, and Gianfranco Fedelt, Milan, both of Italy, assignors to Hepar Chimie S.A., Fribourg, Switzerland
Filed Aug. 2, 1978, Ser. No. 930,540

Claims priority, application United Kingdom, Aug. 10, 1977, 33615/77

Int. Cl.² A61K 71/31; C07H 1/08; C12P 19/06

U.S. Cl. 424-181

3 Claims

1. Hexuronyl hexosaminoglycane sulfate, consisting essentially of:

Hexosamines	29 ± 3%
Huronic acids	27 ± 3%
(Organic) SO ₄ =	27 ± 4%
Acetyl groups	7 ± 1%
Sodium	10 ± 2%

such that the molar ratio of huronic acids: hexosamine:sulfate:acetyl:sodium is 1:1.2:2:1.2:3

PM (chromatography by exclusion on gel): 8.000-16.000

Specific rotary power

$[\alpha]_D^{20} = -30^\circ/-15^\circ$

Electrophoresis on cellulose acetate (buffer: pyridine-acetic acid-water = 1:10:229, pH 4.5 and development with toluidine blue): one main band with electrophoretic mobility $U = 1.90-1.95 \times 10^{-4} \text{ cm}^2 \text{ v}^{-1} \text{ s}^{-1}$

I.R. spectrum: characteristic bands are observed at 1740, 1647, 1555, 1375, 1235 and 1050 cm^{-1} .

solubility: soluble in water, in diluted mineral acids and diluted fixed alkalies but insoluble in ethanol.

2. A pharmaceutical composition, comprising a carrier and as the active ingredient the product of claim 1 in the dosage of 100-200 mg/day.

4,230,700
METHODS FOR INHIBITING MOBILIZATION OF CALCIUM PHOSPHATE IN ANIMAL TISSUE

Marion D. Francis, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

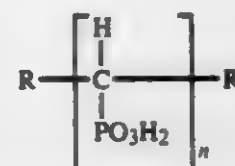
Continuation of Ser. No. 677,113, Apr. 15, 1976, abandoned, which is a continuation of Ser. No. 582,573, Jun. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 361,354, May 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 260,939, Jun. 8, 1972, abandoned. This application Dec. 7, 1977, Ser. No. 858,302

Int. Cl.² A61K 31/66, 31/59

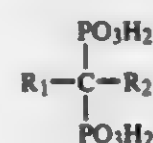
U.S. Cl. 424-204

21 Claims

1. A method of treating Paget's disease comprising conjointly administering to an animal afflicted therewith therapeutic dosages of a phosphonate selected from the group consisting of:



wherein each p is hydrogen or CH_2OH and n is an integer of from 3 to 10:



4,230,698
2-SUBSTITUTED ARABINOFURANOSYL NUCLEOSIDES AND NUCLEOTIDES

Miroslav V. Bobek, Williamsville; Alexander Bloch, Athol Springs, and Yung-Chi Cheng, Buffalo, all of N.Y., assignors to Research Corporation, New York, N.Y.

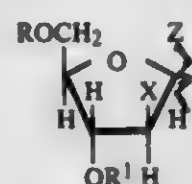
Filed May 12, 1978, Ser. No. 905,529

Int. Cl.³ A61K 31/70; C07H 17/00, 15/12, 17/00

U.S. Cl. 424-180

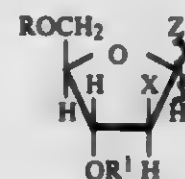
12 Claims

1. A compound selected from the group consisting of arabinofuranosyl nucleosides of the formula



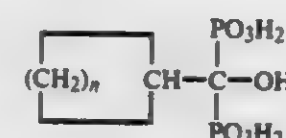
wherein Z is a pyrimidinyl-1 or purinyl-9 moiety, X is selected from the group consisting of amino, azido, and hydrocarbylamino of 1 to 7 carbon atoms, and each of R and R¹ is selected from the group consisting of hydrogen, acetyl, propionyl, butyryl, valeryl, isovaleryl, hexanoyl, heptanoyl, octanoyl, nonanoyl, undecanoyl, lauroyl, benzoyl, phenylacetyl, phenylpropionyl, o-, m-, and p-methylbenzoyl, β-cyclopentylpropionyl, and dihydrocinnamoyl, and acid addition salts thereof.

10. A composition in dosage unit form comprising an arabinofuranosyl nucleoside of the formula

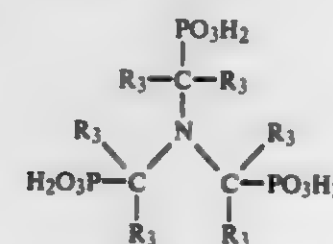


wherein Z is a pyrimidinyl-1 or purinyl-9 moiety, X is selected from the group consisting of amino, azido, and hydrocarbylamino of 1 to 7 carbon atoms, and each of R and R¹ is selected from the group consisting of hydrogen, acetyl, propionyl, butyryl, valeryl, isovaleryl, hexanoyl, heptanoyl, octanoyl, nonanoyl, undecanoyl, lauroyl, benzoyl, phenylacetyl, phenylpropionyl, o-, m-, and p-methylbenzoyl, β-cyclopentylpropionyl, and dihydrocinnamoyl, said nucleoside being either in the free base form or in the form of a pharmaceutically acceptable acid addition salt, and a sterile, compatible, pharmaceutical carrier for said nucleoside.

wherein R₁ is hydrogen, alkyl containing from 1 to about 20 carbon atoms, alkenyl containing from 2 to about 20 carbon atoms, phenylethenyl, benzyl, halogen, hydroxyl, amino, dimethylamino, diethylamino, $-\text{CH}_2\text{COOH}$, $-\text{CH}_2\text{PO}_3\text{H}_2$, $\text{CH}(\text{PO}_3\text{H}_2)(\text{OH})$, or $-\text{CH}_2\text{C}(\text{PO}_3\text{H}_2)_2\text{H}$ wherein n is 1 to 15, R₂ is hydrogen, lower alkyl, amino, benzyl, halogen, hydroxyl, $-\text{CH}_2\text{COOH}$, $-\text{CH}_2\text{PO}_3\text{H}_2$, or $-\text{CH}_2\text{CH}_2\text{PO}_3\text{H}_2$;



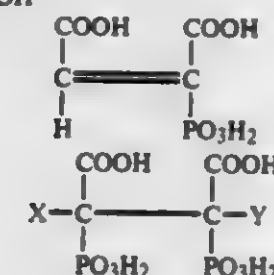
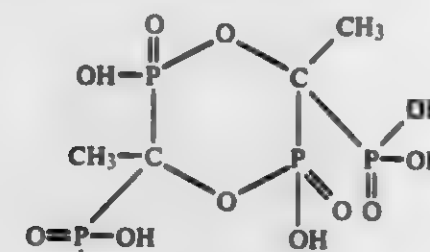
wherein n is an integer of from 3 to 9;



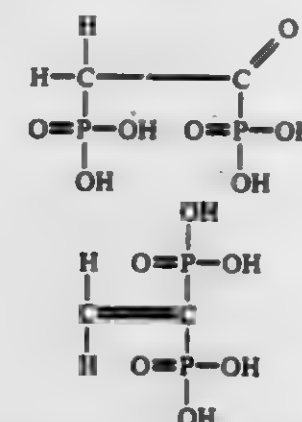
wherein each R₃ is hydrogen or lower alkyl;



wherein n is an integer of from 2 to 4;



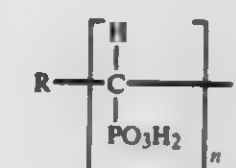
wherein X and Y are each hydrogen or hydroxy;



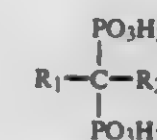
and the pharmaceutically acceptable salts thereof; and (2) from about 100 I.U. to about 50,000 I.U. of a Vitamin-D active antirachitic compound.

2. A method of treating osteoporosis comprising conjointly administering to an animal afflicted therewith therapeutic

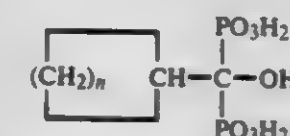
dosages of a phosphonate selected from the group consisting of:



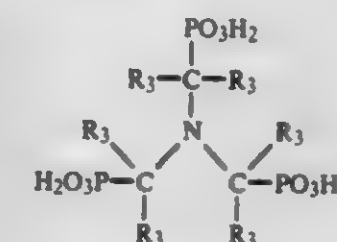
wherein each P is hydrogen or CH_2CH and n is an integer of from 3 to 10:



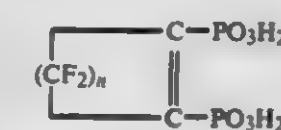
wherein R₁ is hydrogen, alkyl containing from 1 to about 20 carbon atoms, alkenyl containing from 2 to about 20 carbon atoms, phenylethenyl, benzyl, halogen, hydroxyl, amino, dimethylamino, diethylamino, $-\text{CH}_2\text{COOH}$, $-\text{CH}_2\text{PO}_3\text{H}_2$, $\text{CH}(\text{PO}_3\text{H}_2)(\text{OH})$, or $-\text{CH}_2\text{C}(\text{PO}_3\text{H}_2)_2\text{H}$ wherein n is 1 to 15, R₂ is hydrogen, lower alkyl, amino, benzyl, halogen, hydroxyl, $-\text{CH}_2\text{COOH}$, $-\text{CH}_2\text{PO}_3\text{H}_2$, or $-\text{CH}_2\text{CH}_2\text{PO}_3\text{H}_2$;



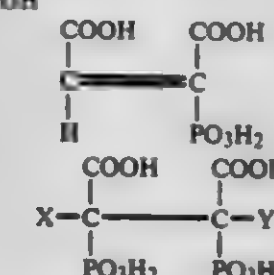
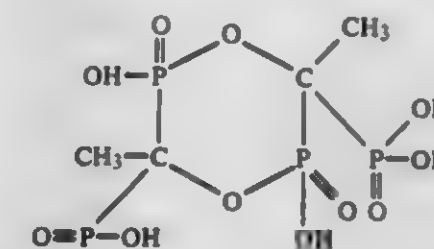
wherein n is an integer of from 3 to 9;



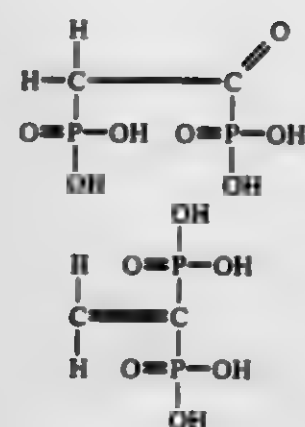
wherein each P₃ is hydrogen or lower alkyl;



wherein n is an integer of from 2 to 4;



wherein X and Y are each hydrogen or hydroxy;



and the pharmaceutically acceptable salts thereof, and (2) from about 100 I.U. to about 50,000 I.U. of a Vitamin-D active antirachitic compound.

4,230,701

ADMINISTRATION OF BIOLOGICALLY ACTIVE VITAMIN D₃ AND VITAMIN D₂ MATERIALS

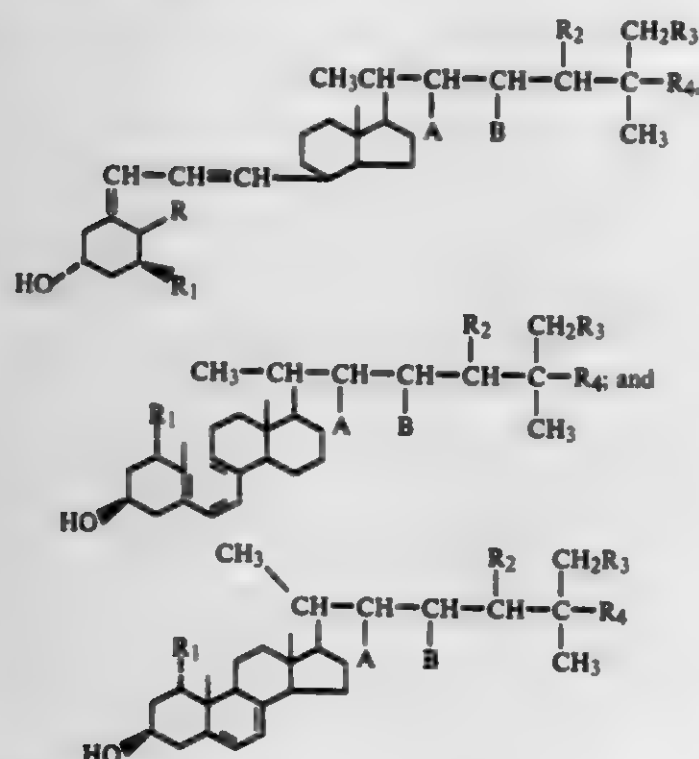
Michael F. Holick, Sudbury, Mass., and Milan R. Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 21, 1979, Ser. No. 22,393
Int. Cl.³ A61K 31/59

U.S. Cl. 424-236

6 Claims

1. A composition useful for treating disorders due to decreased calcium transport in the form of a topical preparation suitable for application to the skin comprising a therapeutic amount of a material selected from the group consisting of:



wherein R is methylidene or methyl; R₂ is hydrogen, hydroxy or methyl; R₁, R₃ and R₄ are hydrogen, hydroxy or halogen; A and B are individually hydrogen or taken together form a carbon to carbon bond; with the proviso that at least one of R₁, R₂, R₃ or R₄ is hydroxy and with the further proviso that when A and B form a carbon to carbon bond, R₂ is methyl, and a suitable inert carrier for topical preparation.

IX.

4,230,702 READILY ENTERALLY ABSORBABLE PHARMACEUTICAL COMPOSITIONS OF PER SE POORLY ENTERALLY ABSORBABLE PHARMACOLOGICALLY ACTIVE AGENTS

Theodor Eckert, and Fritz H. Kemper, both of Muenster, Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 9, 1978, Ser. No. 868,187
Int. Cl.³ A61K 31/56, 31/34

U.S. Cl. 424-242

18 Claims

1. A readily enterally absorbable pharmaceutical composition of a per se poorly enterally absorbable pharmacologically-active agent selected from the group consisting of (1) a steroid selected from the group consisting of pregn-4-ene-3,20-dione or a pregna-4,6-diene-3,20-dione, gestagen and medrogestone and (2) an agent which is effective in improving the capillary strength comprising 2-ethyl-3-(4-hydroxybenzoyl) benzofuran, which comprises a pharmacologically effective amount of the pharmacologically-active agent distributed in a vehicle comprising an absorption enhancing amount of a glyceride selected from the group consisting of monoglycerides and diglycerides of oleic acid, stearic acid and palmitic acid and mixtures thereof.

4,230,703

11-OXODIBENZ(B,E)AZEPINES

Yasushi Suzuki, Yokohama; Kunio Tsukamoto, Tokyo; Nobuyoshi Minami, Yokohama; Yukio Hasegawa; Tadaharu Watanabe, both of Kawasaki; Katsuhiko Miyasaka, Atsugi; Takashi Mikami, Tokyo, and Satoshi Funakoshi, Kawasaki, all of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

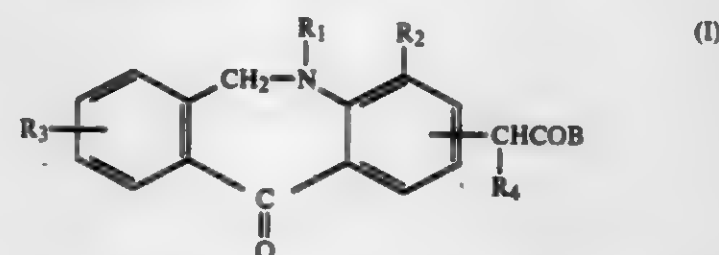
Filed Mar. 28, 1978, Ser. No. 891,112
Claims priority, application Japan, Apr. 1, 1977, 52-36065; Sep. 12, 1977, 52-108744

Int. Cl.³ C07D 223/20; A61K 31/55

U.S. Cl. 424-244

30 Claims

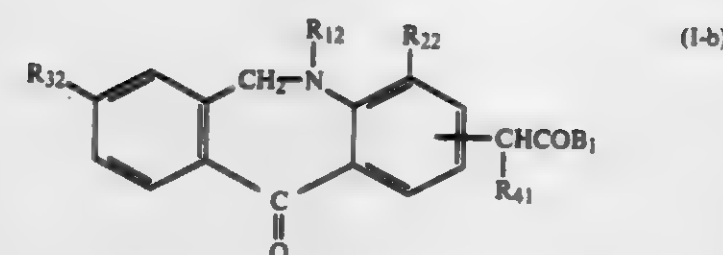
1. A compound of the formula



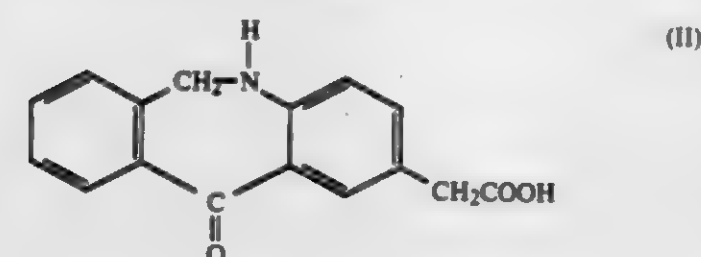
wherein R₁ represents alkyl of up to 6 carbon atoms, R₂ represents hydrogen, halogen or nitro, R₃ represents hydrogen or halogen, and R₄ represents hydrogen or alkyl of up to 6 carbon atoms; and B represents hydroxyl, —OR'₁₀₄ or —NHR'₁₀₅ wherein R'₁₀₄ is alkyl of up to 6 carbon atoms, mono- or dihydroxy alkyl of up to 6 carbon atoms, alkoxy-alkyl in which each of the alkoxy and alkyl groups have up to 6 carbon atoms, or 2,2-dimethyl-1,3-dioxolan-5-yl alkyl of up to 6 carbon atoms in the alkyl group, and R'₁₀₅ is hydrogen, hydroxyl, amino, alkyl of up to 6 carbon atoms or hydroxy alkyl of up to 6 carbon atoms, or a pharmaceutically acceptable salt of the compound wherein B is hydroxyl.

30. A pharmaceutical composition having analgesic end/or anti-inflammatory activity which comprises,

(A) as an active ingredient, a therapeutically effective amount of a compound selected from the group consisting of (1) a compound of the formula



wherein R₁₂ is methyl, ethyl or n-propyl, R₂₂ is hydrogen, chlorine or bromine, R₃₂ is hydrogen or chlorine, R₄₁ is hydrogen or methyl, and B₁ represents hydroxyl, —OR'₁₀₄ or —NHR'₁₀₅ in which R'₁₀₄ is methyl, ethyl, hydroxyethyl or 2,2-dimethyl-1,3-dioxolan-5-yl methyl, and R'₁₀₅ is hydrogen, methyl or hydroxyl; (2) an alkali metal salt, an alkaline earth metal salt or an aluminum salt of said compound of formula I-b wherein B₁ is hydroxyl; (3) a compound of the formula



an alkali metal, alkaline earth metal or aluminum salt of said compound of formula II; and (5) an alkyl ester of said compound of formula II in which the alkyl group contains up to 6 carbon atoms, and

(B) a non-toxic pharmaceutically acceptable carrier or excipient.

4,230,704

ISOTHIAZOLIDIN-3-ONES

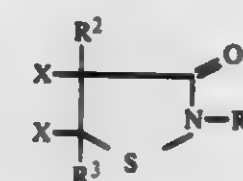
Ernest D. Weller, Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 804,971, Jun. 9, 1977, which is a continuation-in-part of Ser. No. 336,650, Feb. 28, 1973, abandoned. This application Apr. 20, 1979, Ser. No. 31,796
Int. Cl.³ A01N 43/80; C07D 275/02

U.S. Cl. 424-248.51

4 Claims

1. A biocidal composition which comprises an inert carrier and a compound of the formula

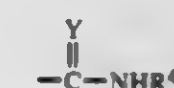


wherein

R¹ is

- a hydrogen atom;
- an unsubstituted alkyl group having 1 to 18 carbon atoms;
- a substituted alkyl group having up to 18 carbon atoms which is substituted with one substituent selected from the group consisting of hydroxyalkyl, haloalkyl, cyanoalkyl, alkylaminoalkyl, dialkylaminoalkyl, phenylalkylaminoalkyl, phenylaminoalkyl, carboxyalkyl, carbalkoxyalkyl, alkoxyalkyl, phenyloxyalkyl, alkylthioalkyl, phenylthioalkyl, isothiazolonylalkyl, and haloalkoxyalkyl, carbamoxalkyl, morpholinalkyl, piperidinoalkyl and pyrrolidonylalkyl;
- a cycloalkyl group having a 3 to 6 carbon atom ring and up to 12 carbon atoms;

- an unsubstituted aralkyl group having up to 10 carbon atoms;
- a phenylalkyl group having up to 10 carbon atoms wherein one of the hydrogen atoms on either the phenyl group or the alkyl chain is replaced by a substituent selected from the group consisting of halogen, nitro, (C₁-C₄) alkyl and (C₁-C₄) alkoxy;
- an unsubstituted phenyl or naphthyl group;
- a phenyl or naphthyl group which is substituted with one substituent selected from the group consisting of halogen, cyano, nitro, (C₁-C₄) alkyl, (C₁-C₄) alkoxy, (C₁-C₄) alkylphenylamino, (C₁-C₄) carbalkoxy and sulfonyl; or
- a carbamoyl group of the formula



wherein Y is an oxygen or a sulfur atom and R⁴ is an unsubstituted alkyl group having 1 to 18 carbon atoms, an alkylsulfonyl group having 1 to 4 carbon atoms, a phenylsulfonyl group having up to 10 carbon atoms, a phenylalkylsulfonyl group having up to 10 carbon atoms, a phenylalkoxy group having up to 10 carbon atoms, or a carbalkoxyalkyl group having up to 4 carbon atoms in each alkyl moiety;

R² is a halogen atom or an unsubstituted (C₁-C₄) alkyl group;

R³ is a halogen atom or an unsubstituted (C₁-C₄) alkyl group; and

X is a halogen atom.

4,230,705

6-PHENYL-1,2,4-TRIAZOLO[4,3-b]PYRIDAZINES AND THEIR USES IN TREATING ANXIETY

George R. Allen, Jr., Old Tappan, N.J.; John W. Hanifin, Jr.; Daniel B. Moran, both of Suffern, N.Y., and Jay D. Albright, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

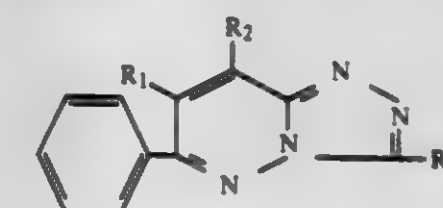
Filed Sep. 22, 1976, Ser. No. 725,597

Int. Cl.³ C07D 487/04; A61K 31/50; C07D 237/14

U.S. Cl. 424-250

2 Claims

1. The method of meliorating anxiety in a mammal which comprises administering internally to said mammal an effective amount of a compound selected from the group consisting of those of the formula:



wherein R₁, R₂, and R₃ are each individually selected from the group consisting of hydrogen and alkyl having up to four carbon atoms with the first proviso that when R₁ and R₂ are both hydrogen then R₃ may not be methyl and with the second proviso that when R₂ and R₃ are both methyl then R₁ may not be hydrogen; and the pharmacologically acceptable acid-addition salts thereof.

4,230,712

**7-METHYL-8-LOWER ALKYL OR
7-METHYL-8-LOWER ALKYL B/C CIS OR TRANS
MORPHINAN-6-ONE COMPOUNDS AND
THERAPEUTIC METHOD OF TREATING PAIN
EMPLOYING THEM**

Michael P. Kotick, Elkhart, Ind.; Robert N. Schut, Edwardsburg, Mich.; Joseph O. Polazzi, and David L. Leland, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

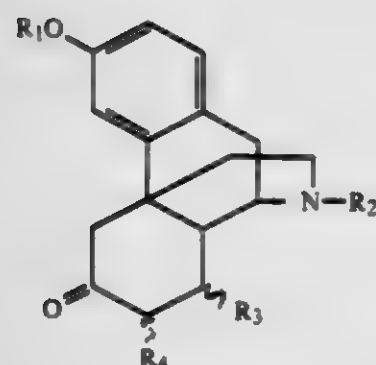
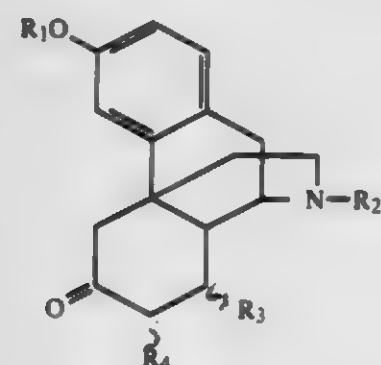
Continuation-in-part of Ser. No. 876,639, Feb. 10, 1978, abandoned. This application May 21, 1979, Ser. No. 40,664 Claims priority, application Canada, Dec. 12, 1978, 317750; Israel, Dec. 18, 1978, 56245; Fed. Rep. of Germany, Jan. 9, 1979, 2900644; Mexico, Jan. 9, 1979, 7636; France, Jan. 25, 1979, 79 01967; United Kingdom, Feb. 6, 1979, 7904030; Australia, Feb. 8, 1979, 44089/79; Japan, Feb. 8, 1979, 54-12883

Int. Cl.³ A61K 31/485; C07D 221/28

U.S. Cl. 424-260

44 Claims

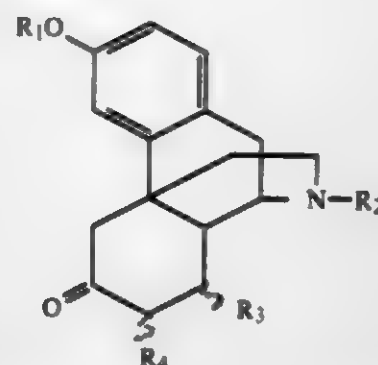
1. 7-methyl, 8β-lower alkyl and 7-methyl-8-lower alkyl substituted B/C cis or trans morphinan-6-one compounds characterized by the structural formula:



wherein R₁ is H or methyl, R₂ is cyclopropylmethyl or cyclobutylmethyl, R₃ is H, methyl, ethyl or n-propyl and R₄ is H or methyl, provided that:

- A. when the molecule is in the B/C cis configuration and R₂ is cyclobutylmethyl,
 - i. R₃ is β-methyl, β-ethyl or β-n-propyl when R₁ and R₄ are H,
 - ii. R₁ is methyl only when R₄ is H and R₃ is β-methyl, and
 - iii. when R₄ is α-methyl, R₁ is H and R₃ is β-methyl or β-ethyl,
- B. when the molecule is in the B/C cis configuration and R₂ is cyclopropylmethyl,
 - i. R₃ is β-methyl and R₄ is H or α-methyl when R₁ is methyl, and
 - ii. R₃ is H and R₄ is α-methyl when R₁ is H; and
- C. when the molecule is in the B/C trans configuration, R₁ is H and R₂ is cyclopropylmethyl,
 - i. R₃ is either α-methyl or H, and
 - ii. R₄ is β-methyl.

23. A therapeutic method of treating pain in an individual requiring such treatment which comprises administering to such individual an effective amount of a compound characterized by the formula:



wherein R₁ is H or methyl, R₂ is cyclopropylmethyl or cyclobutylmethyl, R₃ is H, methyl, ethyl or n-propyl and R₄ is H or methyl, provided that:

- A. when the molecule is in the B/C cis configuration and R₂ is cyclobutylmethyl,
 - i. R₃ is β-methyl, β-ethyl or β-n-propyl when R₁ and R₄ are H,
 - ii. R₁ is methyl only when R₄ is H and R₃ is β-methyl, and
 - iii. when R₄ is α-methyl, R₁ is H and R₃ is β-methyl or β-ethyl;
- B. when the molecule is in the B/C cis configuration and R₂ is cyclopropylmethyl,
 - i. R₃ is β-methyl and R₄ is H or α-methyl when R₁ is methyl, and
 - ii. R₃ is H and R₄ is α-methyl when R₁ is H, and
- C. when the molecule is in the B/C trans configuration, R₁ is H and R₂ is cyclopropylmethyl,
 - i. R₃ is either α-methyl or H, and
 - ii. R₄ is β-methyl.

4,230,713

HETEROCYCLIC

**TETRAHYDRO-1-ALKYL-4-OXO-1H-IMIDAZOL-2-YLI-
DENE UREA AND PHENYL ESTERS OF
TETRAHYDRO-1-ALKYL-4-OXO-1H-IMIDAZOL-2-YLI-
DENE CARBAMIC ACID COMPOUNDS**

Thomas M. Bare, West Chester, Pa., assignor to ICI Americas Inc., Wilmington, Del.

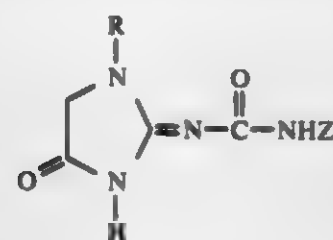
Filed Jan. 19, 1979, Ser. No. 4,675

Int. Cl.³ C07D 213/75, 233/28; A61K 31/44, 31/415

U.S. Cl. 424-263

22 Claims

1. A compound selected from the group consisting of those represented by the following formula (I):



wherein

R is a lower alkyl radical;
Z is a 2- or 4-pyridinyl, thienyl, furanyl, 6-lower alkyl-2-pyridinyl or 2-halogen-4-thienyl radical or a furanyl radical substituted with one substituent selected from the group consisting of hydroxyl, lower alkoxy, lower alkyl, halogen, nitro, NR¹R², CONR¹R², lower haloalkyl and CO₂R¹ where R¹ and R² are independently selected from hydrogen and lower alkyl;

or a pharmaceutically acceptable acid-addition salt thereof.

14. A pharmaceutical composition for the treatment of anxiety comprising a therapeutically effective amount of a compound of claim 1 in combination with a pharmaceutically acceptable carrier or diluent therefor.

4,230,714

IMIDAZOLE THERAPEUTIC AGENTS

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,807

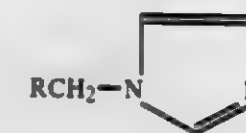
Claims priority, application United Kingdom, Aug. 15, 1978, 33456/78

Int. Cl.² A61K 31/44; C07D 401/06; A61K 31/47

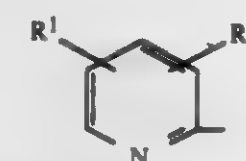
U.S. Cl. 424-263

14 Claims

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein R is 2-quinolyl or a pyridyl moiety of the formula:



wherein R¹ is hydrogen, halogen or alkyl of 1-4 carbon atoms; and R² is alkyl of 1-4 carbon atoms, or a group of the formula -OR³ wherein R³ is hydrogen, alkyl of 1-4 carbon atoms, allyl, prop-2-ynyl, cycloalkylmethyl having 3-6 carbon atoms in the cycloalkyl group, or benzyl in which the phenyl moiety is unsubstituted on the ring or is monosubstituted with halogen, alkyl of 1-4 carbon atoms or alkoxy of 1-4 carbon atoms; with the proviso that said -OR³ is always a group located at the 3- or 5-positions of the pyridine ring.

4,230,715

**1,2,4-TRIAZOLE-3-THIOLS AS ANTISECRETORY
AGENTS**

William L. Albrecht, and Winton D. Jones, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

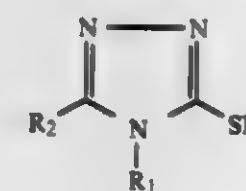
Filed Sep. 4, 1979, Ser. No. 71,814

Int. Cl.² A61K 31/41, 31/62; C07D 249/12

U.S. Cl. 424-269

5 Claims

1. A method of achieving antisecretory effects in a patient which comprises administering to a patient in which an antisecretory effect is desired an antisecretory amount of a compound of the formula



wherein

R₁ is H or NH₂;
R₂ is C₁₋₆ straight or branched chain alkyl; -CH₂OH;
-(CH₂)_n-O-(CH₂)_m-CH₃; phenyl; or -(CH₂)_pNH₂;
n is 1-3;
m is 0-3; and
p is 1-5;

or, for those compounds of basic character, a pharmaceutically acceptable acid addition salt thereof.

4,230,716

**TREATING IMMEDIATE HYPERSENSITIVITY
CONDITIONS WITH 3,5-DISUBSTITUTED HYDANTOIN
DERIVATIVES**

William B. Jamieson, Woking; William J. Ross, Lightwater; Robin G. Simmonds, Wokingham, and John P. Verge, Henley-on-Thames, all of England, assignors to Eli Lilly Industries Limited, London, England

Filed May 14, 1979, Ser. No. 39,077

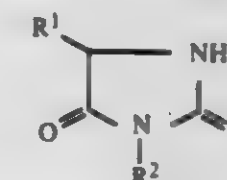
Claims priority, application United Kingdom, May 23, 1978, 21354/78

Int. Cl.³ A61K 31/415; C07D 233/78

U.S. Cl. 424-273 R

6 Claims

5. A method of prophylactic chemotherapy of immediate hypersensitivity conditions such as asthma which comprises administering to a human susceptible to such conditions a prophylactically effective amount of a compound of the formula



wherein R¹ is phenyl, C₁₋₄ hydroxyalkyl or carboxy C₁₋₄ alkyl and R² is C₁₋₆ alkyl.

4,230,717

**INDOMETHACIN-ANTIHISTAMINE COMBINATION
FOR GASTRIC ULCERATION CONTROL**

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Patricia A. Brown, Menlo Park, Calif., and Joan Vernikos, London, England

Continuation-in-part of Ser. No. 850,504, Nov. 10, 1977. This application Dec. 29, 1978, Ser. No. 974,476

Int. Cl.³ A61K 31/40

U.S. Cl. 424-274

2 Claims

1. A process for reducing gastric ulceration caused by the administration of indomethacin to a mammal under stress, which comprise administering to said mammal an antihistamine drug selected from the group consisting of metamide and cimetidine, said antihistamine drug being administered at the rate of about 0.2 to 1.5 g for each 0.025 to 0.200 g dose of indomethacin.

4,230,718

1-SUBSTITUTED-3,4-EPOXYPYRROLIDINES

David A. Walsh, and William J. Welstead, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Filed Jan. 9, 1979, Ser. No. 2,150

Int. Cl.³ C07D 295/02, 209/00

U.S. Cl. 424-274

22 Claims

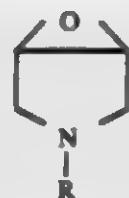
1. A compound selected from 1-substituted-3,4-epoxypyrrolidines having the formula:



wherein R is loweralkyl, cycloalkyl having 3 to 9 carbon atoms or phenylalkyl wherein the alkyl moiety includes radicals of up to 4 carbon atoms and the acid addition salts thereof.

8. A method for the prevention or amelioration of diabetes complications consisting of cataracts in a diabetic animal

which comprises administering to said animal an effective amount of a compound having the formula:



wherein R is loweralkyl, cycloalkyl having 3 to 9 carbon atoms or phenylalkyl wherein the alkyl moiety includes radicals of up to 4 carbon atoms and the pharmaceutically acceptable addition salts thereof.

4,230,719
NOVEL

2-[4-(3-METHYL-2-THIENYL)PHENYL]PROPIONIC ACID AND PHARMACEUTICALLY ACCEPTABLE SALT THEREOF AND METHOD FOR TREATING SYMPTOMS OF INFLAMMATION AND PAIN

Tsutomu Kodama, Toyama; Masao Nakabayashi, Namerikawa; Isao Watanabe, Toyama; Hiroshi Hirano, Oyabe; Norio Abe, Toyama; Katsufumi Tanaka, Toyama, and Hiroshi Arai, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

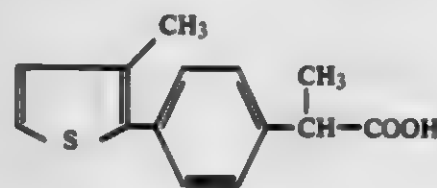
Continuation-in-part of Ser. No. 961,557, Nov. 17, 1978, abandoned. This application Aug. 31, 1979, Ser. No. 71,486
Claims priority, application Japan, Nov. 21, 1977, 52-138943; May 10, 1979, 54-56331

Int. Cl.³ C07D 333/24; A01K 31/38

U.S. Cl. 424-275

7 Claims

1. 2-[4-(3-methyl-2-thienyl)phenyl]propionic acid represented by the formula,



or a pharmaceutically acceptable salt thereof.

4,230,720

HETEROCYCLIC DITHIOPHOSPHATES OR PHOSPHONATES AS INSECTICIDES AND ACARICIDES
Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

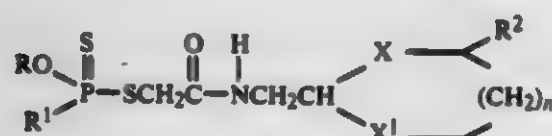
Filed Jul. 30, 1979, Ser. No. 62,202

Int. Cl.³ A01N 43/24; C07D 319/04

U.S. Cl. 424-278

6 Claims

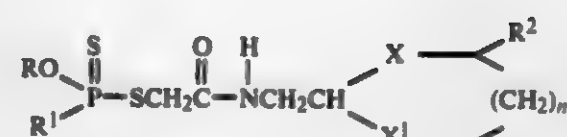
1. Compounds having the structural formula



wherein

R is alkyl having 1-4 carbon atoms;
R¹ is alkyl having 1-4 carbon atoms, or alkoxy having 1-4 carbon atoms;
R² is hydrogen or alkyl having 1-4 carbon atoms;
X is oxygen;
X¹ is oxygen and n is 1.

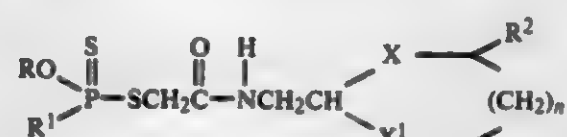
5. The method of controlling insects comprising applying to the habitat thereof an insecticidally effective amount of a compound of the formula



wherein

R is alkyl having 1-4 carbon atoms;
R¹ is alkyl having 1-4 carbon atoms, or alkoxy having 1-4 carbon atoms;
R² is hydrogen or alkyl having 1-4 carbon atoms;
X is oxygen;
X¹ is oxygen and n is 1.

6. The pesticidal composition comprising a pesticidally effective amount of a compound of the formula



wherein

R is alkyl having 1-4 carbon atoms;
R¹ is alkyl having 1-4 carbon atoms, or alkoxy having 1-4 carbon atoms;
R² is hydrogen or alkyl having 1-4 carbon atoms;
X is oxygen;
X¹ is oxygen and n is 1 and an inert carrier therefor.

4,230,721

BICYCLIC PROSTAGLANDINS

Carmelo Gandolfi, Milan; Carlo Passarotti, Gallarate; Alessandro Andreoni, Cologno Monzese; Angelo Fumagalli, Monza; Franco Faustini, Milan; Roberto Ceserani, Milan, and Maria M. Usardi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Continuation of Ser. No. 859,703, Dec. 12, 1977, abandoned.

This application Feb. 26, 1979, Ser. No. 15,148

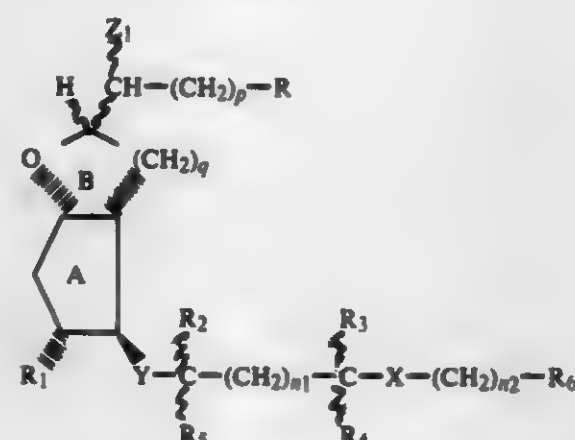
Claims priority, application Italy, Dec. 31, 1976, 31041 A/76; Jan. 14, 1977, 19283 A/77; Mar. 14, 1977, 21171 A/77; Mar. 21, 1977, 21412 A/77; Mar. 31, 1977, 21863 A/77

Int. Cl.³ A61K 31/557; C07D 307/935

U.S. Cl. 424-285

13 Claims

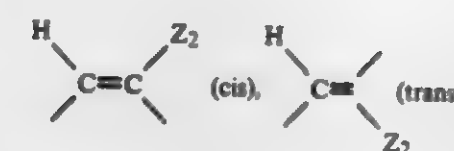
1. A compound of formula (I)



(I)

wherein

R is COOR' wherein R' is selected from the group consisting of H, C₁-C₁₂ alkyl and C₂-C₁₂ alkenyl;
Z₁ is hydrogen or halogen;
p is zero or an integer of 1 to 7;
q is 1;
R₁ is selected from the group consisting of C₁-C₆ alkoxy and benzyloxy;
Y is a member selected from the group consisting of —CH₂—CH₂—

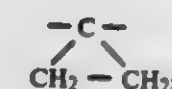


wherein Z₂ is hydrogen;

one of R₂ and R₃ is hydrogen or C₁-C₆ alkyl and the other is hydroxy, C₁-C₆ alkoxy, benzyloxy, or R₂ and R₅, taken together form an oxo group;
each of R₃ and R₄, which are the same or different, may be hydrogen, C₁-C₆ alkyl or fluorine or R₃ and R₄, taken together with the carbon atom to which they are linked, form the radical



or the radical



each of n₁ and n₂, which are the same or different, is zero or an integer of 1 to 6;

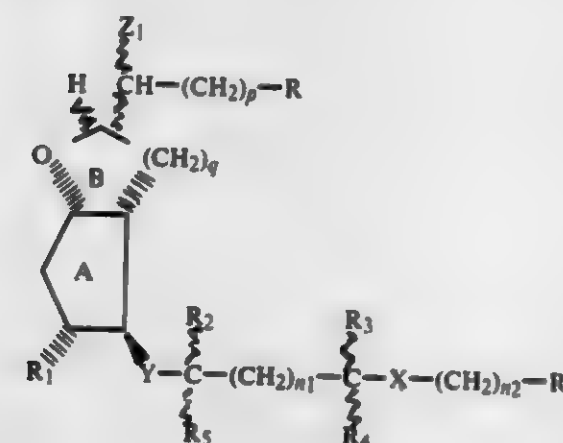
X is —(CH₂)_m— wherein m is zero or 1;

R₆ is a member selected from the group consisting of (a) hydrogen;

(b) C₁-C₄ alkyl;

and the pharmaceutically or veterinarily acceptable salts thereof.

3. A compound of formula (I)



wherein

R is COOR' wherein R' is selected from the group consisting of H, C₁-C₁₂ alkyl and C₂-C₁₂ alkenyl;

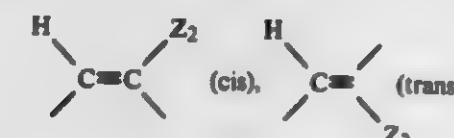
Z₁ is hydrogen or halogen;

p is zero or an integer of 1 to 7;

q is 1;

R₁ is selected from the group consisting of C₁-C₆ alkoxy and benzyloxy;

Y is a member selected from the group consisting of —CH₂—CH₂—



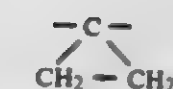
wherein Z₂ is hydrogen

one of R₂ and R₃ is hydrogen or C₁-C₆ alkyl, and the other is hydroxy, C₁-C₆ alkoxy, benzyloxy, or R₂ and R₅, taken together form an oxo group; each of R₃ and R₄, which are the same or different, may be hydrogen, C₁-C₆ alkyl or in which

fluorine or R₃ and R₄, taken together with the carbon atom to which they are linked, form the radical



or the radical



each of n₁ and n₂, which are the same or different, is zero or an integer of 1 to 6;

X is a member selected from the group consisting of —O—, —S— and —(CH₂)_m— wherein m is zero or 1;

R₆ is selected from the group consisting of phenyl, α-naphthyl and β-naphthyl, substituted or unsubstituted by one or more substituents selected from the group consisting of halogen, halo-C₁-C₆-alkyl, C₁-C₆ alkyl and C₁-C₆ alkoxy; and the pharmaceutically or veterinarily acceptable salts thereof.

4,230,722

DIHALOVINYLCYCLOPROPANETHIOLIC ACID ESTERS AND THEIR USE IN PEST CONTROL

Roger Malherbe, Muttens; Daniel Bellus, Riehen, and Laurenz Gsell, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,367

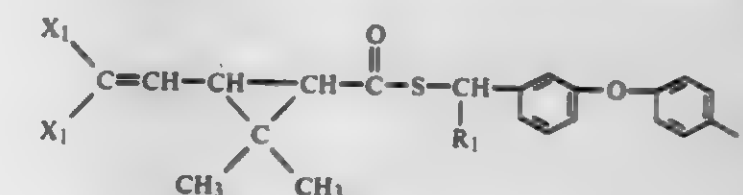
Claims priority, application Switzerland, Jun. 26, 1978, 6935/78; May 11, 1979, 4414/79

Int. Cl.³ A01N 37/14; C07C 153/023

U.S. Cl. 424-301

10 Claims

1. A cyclopropanecarboxylic acid ester of the formula



wherein X₁ represents fluorine, chlorine or bromine, R₁ represents hydrogen, methyl, ethynyl or cyano, and Y represents hydrogen, fluorine, chlorine or bromine.

4,230,723

COMBATING PLANT BACTERIA WITH ACYLHALOGENOMETHYL THIOCYANATES

Siegfried Oeckl, Cologne; Hans Scheinplug, Leverkusen, and Peter Kraus, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,627

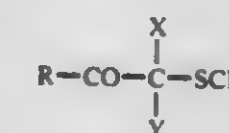
Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823658

Int. Cl.² A01N 9/18

U.S. Cl. 424-302

8 Claims

1. A method of combating phytopathogenic bacteria comprising applying to plants or seeds an acylhalogenomethyl thiocyanate of the formula



R is alkyl with up to 6 carbon atoms, thienyl, phenyl, naphthyl, or phenyl substituted by halogen, hydroxy, alkyl with 1 to 4 carbon atoms, alkoxy with up to 4 carbon atoms, nitro or phenyl,

X is halogen,

Y is halogen or hydrogen, the compound being applied in an amount effective to combat said bacteria but not substantially to affect plants or seed.

4,230,724

METHOD OF TREATING VASCULARIZATION OF THE EYE WITH FLURBIPROFEN

Charles A. Cooper, and Michael V. W. Bergamini, both of Irvine, Calif., assignors to Allergan Pharmaceuticals, Inc., Irvine, Calif.

Filed Jul. 16, 1979, Ser. No. 57,608

Int. Cl.³ A61K 31/19

U.S. Cl. 424—317

9 Claims

1. A method of treating trauma-induced vascularization of the cornea comprising topically administering to the eye an effective, vascularization-inhibiting amount of Flurbiprofen or a pharmaceutically acceptable salt thereof.

4,230,725

ANTIVIRAL AGENT

Masaru Fukui, Takarazuka; Shigeo Ogino, Nishinomiya, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Kao Soap Company, Limited, Tokyo, both of Japan

Continuation-in-part of Ser. No. 883,743, Mar. 6, 1978, abandoned. This application Sep. 5, 1978, Ser. No. 939,682

Claims priority, application Japan, Mar. 10, 1977, 52/26730

Int. Cl.³ A61K 31/13

U.S. Cl. 424—325

1 Claim

1. A method for the treatment of infectious diseases caused by herpes virus which comprises administering an amount pharmaceutically effective for the treatment of said infectious diseases of 1-amino-2,4-ethanobicyclo[3,3,1]nonane or its pharmaceutically acceptable salts to a patient suffering from said infectious diseases.

4,230,726

CONTROL OF PARASITIC MITES WITH ALKYL AMINES

William F. Fisher, Kerrville, Tex.; Malcolm J. Thompson, Baltimore, Md.; Fred C. Wright, Kerrville, Tex., and William E. Robbins, Silver Springs, Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

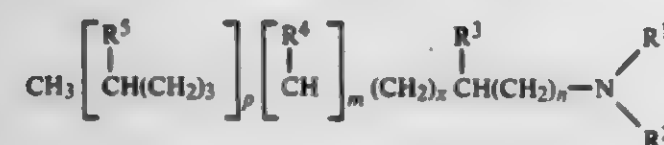
Filed Jun. 29, 1979, Ser. No. 53,475

Int. Cl.³ A01N 33/02, 43/84, 43/40, 37/18

U.S. Cl. 424—325

5 Claims

1. A method of controlling scabies mites and other parasitic mites comprising applying to said mites a miticidally effective amount of a compound of the general formula



wherein R¹ and R² are selected individually from the group consisting of H, lower alkyl,



x is a number from 5 to 17, n is a number from 1 to 5, m and p are individually zero or 1, and R³, R⁴ and R₅ are individually

H or lower alkyl.

4,230,727

COMPOSITIONS AND METHOD OF TREATMENT

George W. Nuss, Jr., Lansdale; Norman J. Santora, Roslyn, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

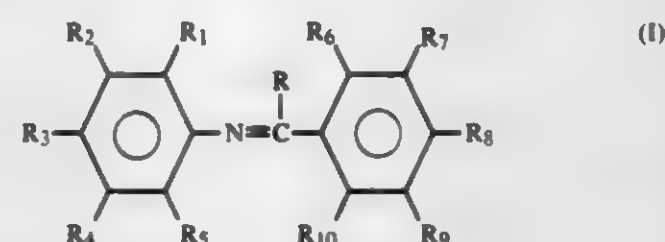
Continuation-in-part of Ser. No. 839,960, Oct. 6, 1977. This application Apr. 2, 1979, Ser. No. 26,334

Int. Cl.³ A61K 31/19, 31/135

U.S. Cl. 424—330

27 Claims

1. A method of inhibiting or preventing cellular proliferation in mammals which comprises administering to a mammal in need of treatment an effective amount of a compound of the formula:



where:

R is hydrogen or alkyl;

R₁, R₂, R₃, R₄, R₅, R₆, R₇, R₈, R₉, and R₁₀ may be the same or different and are hydrogen, alkyl, nitro, amino, haloloweralkoxy, haloloweralkyl, halo, loweralkoxy, hydroxy, carboxy and carbalkoxy; and

R₃ and R₈ may also be cycloalkyl, cycloalkenyl or aryl in a suitable pharmaceutically acceptable carrier.

4,230,728

PACKAGE FOR LAVER-WRAPPED RICE-BALL OR "ONIGIRI"

Akitomi Tezuka, 5-11 Kinuta 3-chome, Setagaya-ku, Tokyo, Japan

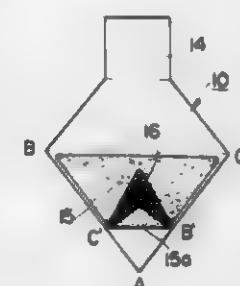
Filed Aug. 31, 1978, Ser. No. 938,349

Claims priority, application Japan, Sep. 30, 1977, 52-130740

Int. Cl.² B65D 81/32

U.S. Cl. 426—115

5 Claims



1. A packing sheet for temporarily hand-packing and completely enclosing a rice-ball of generally triangular shape together with a sheet of dry laver of generally equilateral triangular shape while substantially isolating the former from the

latter to protect the latter against moisture until the former is wrapped with the latter, comprising:

a moisture-proof packing sheet of generally diamond shape folded along a fold extending through a pair of opposite angles to form a pair of folded sheets of generally equilateral triangular shape with the dry laver contained in between;

a pull-out sheet extending from the top one of the unfolded angle portions of one of said folded sheets and folded back toward the fold of said packing sheet, said rice ball being positioned on said pull-out sheet and said pull-out sheet extending a sufficient margin from beneath and beyond said rice ball, to facilitate its manual pull out when the packing sheet is unfolded said rice ball being substantially separated from said dry laver;

the folded back pull-out sheet exposing a portion of the laver contained between said pair of folded sheets; the folded and unfolded angle portions being further folded together with edges of each of said angle portions overlapping each other so that the exposed portion of laver is also folded and sticks to a portion of the rice ball to facilitate a separation of said pull-out sheet from said rice ball to position said rice ball directly on said dry laver upon unfolding said packing sheet prior to consumption.

4,230,729

ONE PIECE, COLLAPSIBLE PACKAGE

Fred L. Hoelzel, Jr., 21 Greenham Ave., Westerly, R.I. 02891

Filed Mar. 16, 1979, Ser. No. 21,101

Int. Cl.² B65D 85/00, 5/10, 5/50, 5/56

U.S. Cl. 426—124

5 Claims



1. A one piece package containing contents comprising a pre-cooked, frozen lobster hermetically sealed in a boilable plastic bag, said package comprising:

(a) a generally trapezoidal shaped bottom panel having a central longitudinal crease running the length thereof,

(b) a first generally rectangular shaped side panel hingedly connected to said bottom panel having hingedly connected end flaps,

(c) a generally trapezoidal shaped top panel corresponding in shape and size substantially to said bottom panel and hingedly connected to said first side panel, having a central longitudinal crease running the length thereof and having hingedly connected end flaps and a plurality of hingedly connected window flaps which open inwardly to form one or more windows,

(d) a second generally rectangular shaped side panel corresponding in shape and size substantially to said first side panel and hingedly connected to said top panel, having hingedly connected end flaps, and

(e) a generally rectangular shaped panel hingedly connected to said second side panel and adhesively connected to said bottom panel; said inwardly opening window flaps being pushed by the contents of the package such that their edges contact the side panels, thereby defining fairly rigid inner walls which hold the contents of the package, provide lateral

support for the contents in the package and ensure that the contents are centered in the package, and said longitudinal creases on said top and bottom panels being parallel to each other thereby allowing the package to be collapsible when the contents of the package are removed and the end flaps are not engaged and further allowing the package to more readily conform to the shape of the contents.

4,230,730

LEAVENING ACID COMPOSITION

Robert M. Lauck, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 741,265, Nov. 12, 1976, abandoned.

This application Jan. 19, 1979, Ser. No. 6,420

Int. Cl.³ A21D 10/02, 2/02

U.S. Cl. 426—128

11 Claims

1. A leavening acid composition comprising:

(a) a sodium aluminum phosphate derivative selected from the group consisting of a potassium modified 1:3:8 sodium aluminum phosphate, the calcium modified derivatives thereof prepared by contacting a slurry of said potassium modified sodium aluminum phosphate with a calcium compound followed by granulating the product while drying and mixtures thereof; in combination with

(b) a slow alkali metal acid pyrophosphate having a doughnut dough rate of reaction of less than 30% CO₂ evolved after two minutes and less than 35% evolved CO₂ after ten minutes at 27° C.

4,230,731

MICROWAVE COOKING METHOD AND CONTROL MEANS

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 25, 1978, Ser. No. 909,461

Int. Cl.² A01K 43/00

U.S. Cl. 426—233

7 Claims



1. A method for microwave cooking a comestible to a predetermined cooked temperature using a temperature instrument having a temperature sensitive element carried by a probe and a temperature received responsive thereto:

(a) placing a comestible having an embedded temperature probe within a chamber;

(b) exposing the comestible to microwave energy to cook said comestible and receiving an indicated temperature from said probe;

(c) interrupting the application of microwave energy to the comestible when the indicated temperature received from said probe reaches a predetermined intermediate value, less than said predetermined cooked temperature;

(d) permitting the indicated temperature of the comestible received from said probe to equilibrate to an average comestible temperature;

(e) resuming the application of microwave energy to the comestible when the indicated temperature received from said probe stabilizes to substantially the average comestible temperature; and

(f) controlling the application of said microwave energy in step (e) in response to said stabilized average temperature.

4,230,732

METHODS OF CHILLING POULTRY

William L. Paradise, Jr., Dunwoody, Ga., and Mark L. Byars, Berkeley Heights, N.J., assignors to Airco, Inc., Montvale, N.J.

Filed Jan. 24, 1979, Ser. No. 6,150
Int. Cl.² A23L 1/315; B65B 25/00

U.S. Cl. 426—393

4 Claims

1. A process for chilling poultry comprising the steps of: removing parts of the poultry comprising the giblets from said poultry, chilling said poultry without said giblets to a temperature of about 32°–35° F. without freezing said poultry, freezing said giblets while removed from said poultry such that the average temperature of said giblets is reduced to about 28° F. or lower; and reinserting said frozen giblets into the breast cavity of said chilled poultry to thereby provide refrigeration to said chilled, but unfrozen, poultry to enable extended shelf life thereof without freezing portions of said poultry other than said giblets.

4,230,733

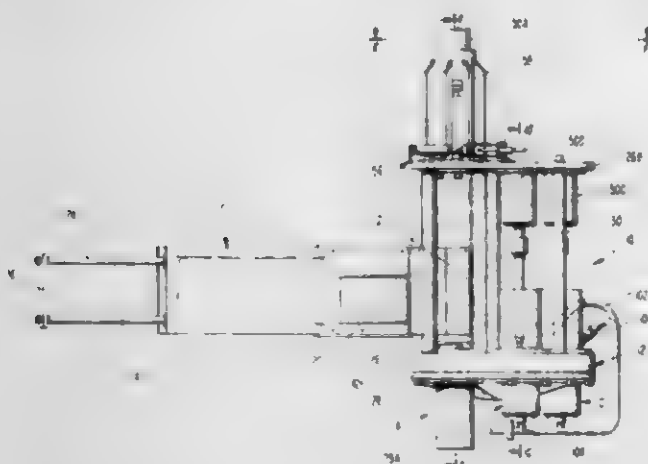
METHODS AND APPARATUS FOR EXTRACTING JUICE FROM PLANT MATERIAL

Sydney E. Tilby, Victoria, Canada, assignor to Intercane Systems, Inc., Ontario, Canada

Filed Jan. 4, 1979, Ser. No. 985
Int. Cl.² A23L 1/28

U.S. Cl. 426—429

23 Claims



1. Apparatus for extracting juice from plant material comprising:

carrier means defining a plurality of circumferentially spaced extracting stations and including a reciprocable compression members at each extracting station;

a rotary head mounted for rotation relative to said carrier means and including a plurality of cells alignable with said extracting stations, said cells each being arranged to carry a charge of plant material;

indexing means for rotating said head in step-by-step fashion to sequentially align said cells with successive ones of said extracting stations;

means for extending said compression members into compressing relationship with plant material in said cells to express juice from such material; and

conduit means connected to at least some of said extracting stations for introducing imbibition liquid ahead of the respective compression members to be pressed through the plant material during extension of such compression members.

18. Apparatus for expressing juice from plant fibers comprising a cell for receiving a charge of plant material, and a movable member arranged for entering said cell and compressing the plant material therein to express juice, said movable member comprising a compression surface in the form of an apertured screen which admits passage of juice, said movable member having an interior passage for conducting juice from said screen to a discharge opening, the apertures of said screen

being tapered so as to become wider in a direction away from said cell, to facilitate removal of plant solids.

23. A method of extracting juice from plant material comprising the steps of:

rotating a rotary head in step-by-step fashion such that circumferentially spaced plant material-carrying cells thereof become aligned successively with expressing stations on a stationary carrier;

moving movable members at said expressing stations into compressing relationship with plant material in said cells at each successive step of said head, to express juice from the plant material;

introducing imbibition liquid into one of said stations, thereafter moving the movable member associated with said one station into compressing relationship with plant material at said station while forcing said imbibition liquid through such plant material to mix the latter with plant juice, and introducing the resultant liquid/juice mixture into another of stations which receives each charge of plant material before said one station; and discharging exhausted plant material from its associated cell at a discharge station.

4,230,734

FLAVORING WITH

4-METHYL-4-FURFURYLTHIO-PENTANONE-2

Reinerus J. C. Kleipool, Amersfoort, Netherlands, assignor to Naarden International, N.V., Naarden-Bussum, Netherlands
Continuation of Ser. No. 776,763, Mar. 11, 1977, abandoned.

This application Dec. 8, 1978, Ser. No. 967,596

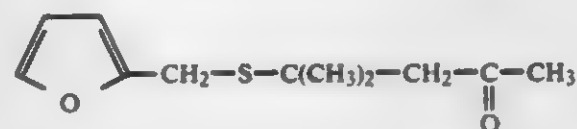
Claims priority, application Netherlands, Mar. 15, 1976, 7602689

Int. Cl.² A23L 1/231

U.S. Cl. 426—535

3 Claims

1. A process for amplifying or changing the flavor of a food product, comprising adding to the ingredients of said food product a thiopentanone compound of the formula



in an amount ranging between about 0.005 to about 100 ppm.

4,230,735

PROCESS FOR PRODUCING QUICK-COOKING NOODLES

Kiyotaka Yoshida, Tokorozawa; Yoshio Hatanaka, Akiawa; Kesayoshi Kudo, Tokyo, and Takao Aoki, Tokyo, all of Japan, assignors to Myojo Foods Company, Limited, Tokyo, Japan

Filed Mar. 27, 1978, Ser. No. 890,142

Claims priority, application Japan, Mar. 29, 1977, 52/34950
Int. Cl.² A23L 1/16

U.S. Cl. 426—557

14 Claims

1. In a process for producing quick-cooking noodles which comprises mixing a noodle formulation comprising a first flour selected from the group consisting of wheat flour, buckwheat flour, and mixtures thereof, salt, egg powder, water and at least one noodle dough conditioner, rolling the mixture to give a continuous noodle sheet, slitting the sheet into noodle strands, steaming the strands, cutting them into a predetermined length, drying them and packaging the resulting noodles as a clump together with flavoring agents and additives, the improvement which comprises that the noodle formulations further integrally contain at least one starch flour and at least one edible fat or one edible oil or mixtures thereof, and that after the noodle strands have been steamed and before they are dried, they are cooled to a temperature of from about 30° to about 60° C., wherein said starch flour is used in an amount of from about 30% to about 40% by weight based on the total weight of the

flour ingredients which consist of said first flour and said starch flour; and wherein said edible fat, oil or mixtures thereof are used in amount of from about 0.4% to about 4% by weight based on the total weight of said first flours and said starch flours.

4,230,736

INTAKE LIMITING LIQUID FEED SUPPLEMENT FOR RUMINANTS

Norman L. Betz, St. Louis, Mo.; Kent J. Lanter, Belleville, Ill., and Danny L. Williams, Manchester, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Dec. 18, 1978, Ser. No. 970,288

Int. Cl.² A23K 1/02

U.S. Cl. 426—601

20 Claims

1. An intake limiting liquid feed supplement for ruminants comprising a liquid carbohydrate medium containing an intake limiting amount of a chlorinated fat having a reacted chlorine content of between about 0.2 and 3.7% by weight of said fat.

4,230,737

MARGARINE FAT

Henning Heider, Bargteheide, and Theophil Wieske, Hamburg, both of Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,309

Claims priority, application United Kingdom, Nov. 10, 1977, 46842/77

Int. Cl.² A23D 5/00

U.S. Cl. 426—607

3 Claims

1. Margarine fat having a difference in dilation value at 15° and 25° C. of at least 100 and a dilation value at 35° C. of no more than 100, comprising at least 95 percent of fats containing at least 80 percent by weight of fatty acid residues with 18 carbon atoms, part of these fats being hardened and part of the non-hardened fats being interesterified with hardened fats which contain no more than 55 percent of trans-acids, such that the margarine fat contains 20–60 percent by weight of interesterified fats, and 80–40 percent by weight of non-interesterified fats the non-interesterified fats containing both non-hardened fats and fats hardened to a trans-content of 50–70 percent, the weight ratio between hardened and non-hardened fats in the non-interesterified part being from 1:1 to 1:5 and the weight ratio between the hardened and non-hardened fats in the interesterified part being from 4:1 to 1:3.

4,230,739

METHOD OF EVAPORATING MELTS OF ALLOYS OF METALS HAVING DIFFERENT VAPOR PRESSURES

Hans Aichert; Walter Dietrich, both of Hanau am Main; Alfred Hauff, Bruchköbel; Peter Sommerkamp, Hanau am Main, and Herbert Stephan, Bruchköbel, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

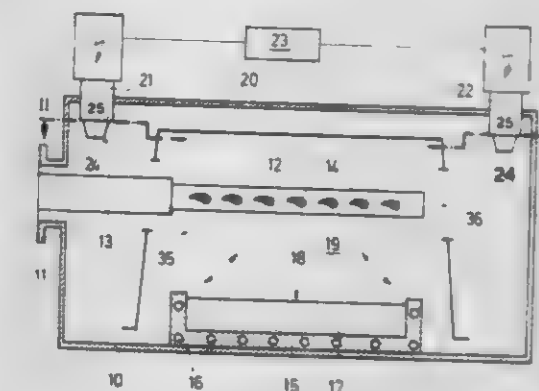
Filed Nov. 22, 1978, Ser. No. 963,236

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812285

Int. Cl.² B05D 3/06

U.S. Cl. 427—42

9 Claims



1. Method for evaporating melts of alloys of metals of different vapor pressures from a continuously fed, large-area evaporating crucibles by direct bombardment of the bath surface with focused electron beams which are periodically deflected according to a pattern wherein the alloy material is deposited on a plurality of substrates which are disposed in a field above the evaporating crucible with local adaptation of the energy density to the thermal economy of the melt bath which comprises deflecting at least one electron beam onto at least two substantially rectangular beam fields F_1, F_2, \dots , guiding the electron beam in each of these fields through a line raster at a frequency of at least 100 Hz, shifting periodically from one to the other field at a shift frequency of at most 5 Hz, the dwell time of the electron beam within each field being selected at T_1, T_2, \dots ; the area ratios of the beam fields F_1, F_2 and the relative dwell times T_1, T_2 being adjustable independently of one another, and the sum of the areas of all beam fields being between 10% and 80% of the area of the bath surface.

4,230,740

HEAT STABLE, NON-YELLOWING PHOTOPOLYMER COMPOSITIONS

Joseph D. Moyer, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

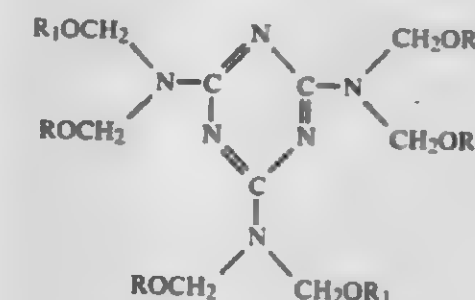
Continuation-in-part of Ser. No. 882,021, Feb. 28, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,627

Int. Cl.² B05D 3/06; C08F 8/18

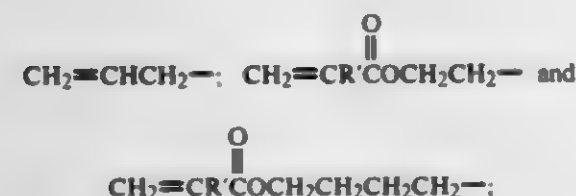
U.S. Cl. 427—54.1

2 Claims

1. The process of forming a non-yellowing, cured polythioether heat stable at 450° F. for at least 15 minutes which comprises admixing a composition comprising a polythiol, a photoinitiator and a polyene of the formula:



wherein R are all the same member of the group consisting of



R₁ is —CH₃ or R, and R' is —CH₃ or H and thereafter exposing said composition to UV radiation.

4,230,741

METHOD OF FORMING COATED LAYER OF FLUORESCENT SUBSTANCE ON INNER SURFACE OF BULB

Hiroshi Yamazaki, and Hiroshi Ito, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 970,044

Claims priority, application Japan, Dec. 21, 1977, 52/153808; Dec. 21, 1977, 52/153809

Int. Cl.³ B05D 3/02, 7/22; H01J 61/46; C09K 11/02

U.S. Cl. 427—67 9 Claims

1. In a method of forming a coated layer of a fluorescent substance on the inner surface of a bulb which comprises coating a suspension incorporating a fluorescent substance, an organic water soluble polymer, a surfactant, a fine powdery aluminum oxide as binder, and a bulb heat-treating step of burning out said organic water soluble polymer and said surfactant from the coated layer, the improvement which comprises incorporating boric acid and hydrogen peroxide or a precursor thereof in said suspension.

4,230,742

METHOD FOR APPLYING MATERIAL TO A SUBSTRATE

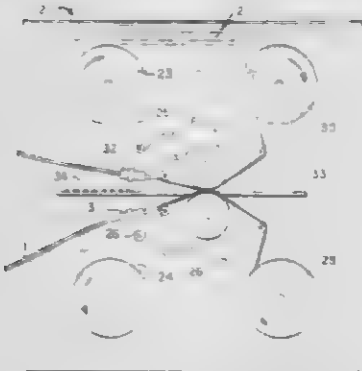
Gerhart P. Klein, Manchester, Mass., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 684,129, May 7, 1976, abandoned, which is a continuation of Ser. No. 527,682, Nov. 27, 1974, abandoned. This application Dec. 12, 1977, Ser. No. 860,036

Int. Cl.³ B05D 5/12

U.S. Cl. 427—79

14 Claims



1. A method of continuously applying a band of material completely around at least a selected portion of an anode riser for a capacitor comprising the steps of dispensing material on two continuous belt means, the belt means in an opposed, substantially parallel relationship with each other at at least one point and causing the material on the belt means to come in contact with the anode riser and thereby transfer at least some of the material onto the anode riser forming a band of material completely around the selected portion of the anode riser.

4,230,743

PROCESS FOR PRODUCING PRESSURE-SENSITIVE COPYING PAPER

Hiroaki Nakamura; Shiro Kaneko, and Takeshi Watanabe, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

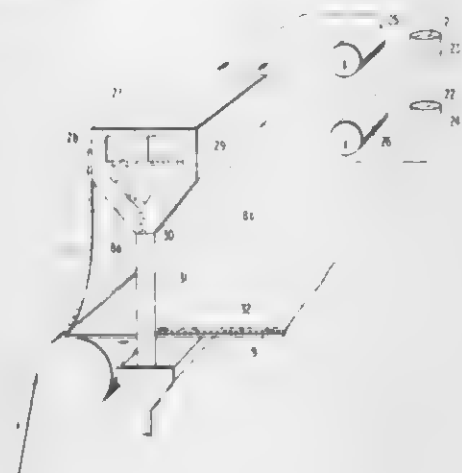
Continuation-in-part of Ser. No. 810,700, Jun. 28, 1977, abandoned. This application Feb. 16, 1978, Ser. No. 878,353

Claims priority, application Japan, Jun. 28, 1976, 51-76743

Int. Cl.² B41M 5/12; B41L 1/00

U.S. Cl. 427—146

20 Claims



1. A process for producing a pressure-sensitive copying paper which comprises forming a single-layer, free-fall, vertical curtain of a coating solution containing microcapsules as a main component, said microcapsules containing a color former therein, and coating said coating solution onto a continuously running web by passing said running web through said single-layer, free-fall, vertical curtain.

4,230,744

SYSTEM FOR DELIVERING MATERIALS TO DEPOSITION SITE ON OPTICAL WAVEGUIDE BLANK

Michael G. Blankenship, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

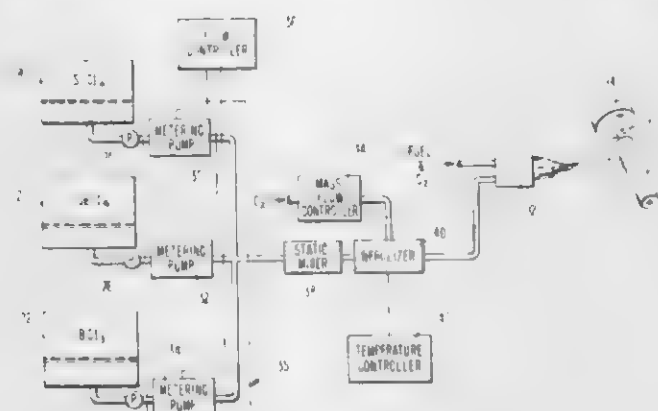
Division of Ser. No. 885,215, Mar. 10, 1978, Pat. No. 4,173,305.

This application Feb. 21, 1979, Ser. No. 13,281

Int. Cl.² G02B 5/14, 1/10

U.S. Cl. 427—163

4 Claims



1. The method of forming an optical waveguide blank, comprising the steps of: providing a vapor deposition means for receiving source material vapor and directing said vapor toward a starting member; providing a starting member in proximate relation to said vapor deposition means for accumulating source material thereon; providing glass forming source materials in liquid form; delivering each of said liquids at individually controlled rates and in liquid form to a common site;

OCTOBER 28, 1980

thoroughly intermixing said liquids; nebulizing the intermixed liquids; delivering the nebulized, mixed liquids to said vapor deposition means and; depositing the materials in said nebulized, mixed liquids on said starting member to form said optical waveguide blank.

4,230,745

METHOD OF ENCAPSULATING A MOLDED CERAMIC MEMBER

Wolfgang Betz, Munich, and Axel Rossmann, Karlsruhe, both of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,725

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737209

Int. Cl.² C23C 11/00, 13/00; B05D 3/00

U.S. Cl. 427—255.4

4 Claims

1. In a method for encapsulating a molded member of ceramic, such as silicon ceramic for high-temperature isostatic pressing; the improvement comprising coating said molded member with a dense surface coating of Si melt; and thereafter exposing said coating to an N₂ atmosphere at a temperature in the range of about 800° C. to 1400° C. until the Si coating is converted into a Si₃N₄ coating.

4,230,746

FOAMING COMPOSITION FOR TEXTILE FINISHING AND COATINGS

Roop C. Nahta, Charlotte, N.C., assignor to GAF Corporation, New York, N.Y.

Division of Ser. No. 21,564, Mar. 16, 1979, which is a division of Ser. No. 897,378, Apr. 18, 1978, Pat. No. 4,198,316. This

application Sep. 24, 1979, Ser. No. 77,997

Int. Cl.³ B05D 3/02; C08J 9/28, 9/30

U.S. Cl. 427—373

10 Claims

1. The process of applying a coating to a substrate which comprises; foaming a composition containing from about 50 to about 70 parts by weight of a synthetic resin coating agent; and from about 2 to about 8 parts by weight of an acid type catalyst; from about 5 to about 14 parts by weight of the expansion mixture for foaming coatings which comprises a foamable mixture of:

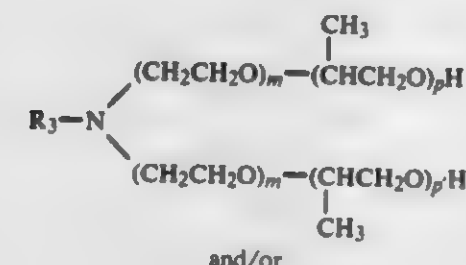
(a) 15 to 53 weight % of a compound having the formulae:



and/or

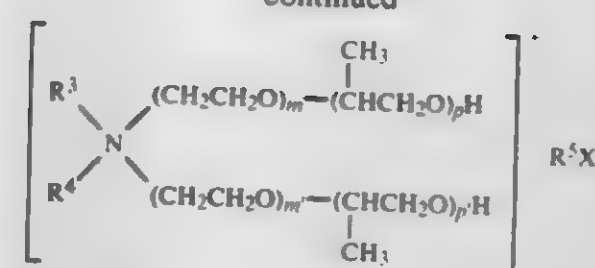


wherein R is alkyl of 6 to 18 carbon atoms or hydroxyalkyl of 6 to 18 carbon atoms; R¹ is hydrogen, alkyl of 6 to 18 carbon atoms or phenoxy substituted with not more than two alkyl groups each having 1 to 23 carbon atoms; n is an integer having a value of 0 to 10; and M is sodium, potassium, calcium, ammonium or an alkyl- or alkyloxy-amine radical of 1 to 6 atoms; (b) 5 to 42 weight % of a compound having the formulae:

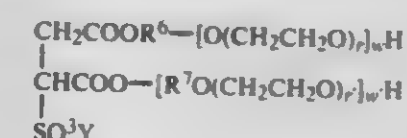


and/or

-continued



wherein R³ is alkyl of 6 to 20 carbon atoms; R⁴ and R⁵ are independently alkyl of 1 to 4 carbon atoms; X is sulfate, halide or phosphate; m and m' are integers independently having a value of 4 to 20; and p and p' are integers independently having a value of 0 to 20; and (c) 5 to 45 weight % of a compound having the formula:



wherein R⁶ and R⁷ are independently alkylene of 4 to 22 carbon atoms; r and r' are independently integers each having a value of 0 to 15; w and w' are integers independently having a value of 0 to 1; and y is sodium or potassium; and from about 2 to about 26 parts of diluent per part of coating agent; expanding said mixture up to about 1,000%; contacting the substrate and the resulting foam to provide a layer of foam on said substrate; and drying said foam coated substrate at a temperature between about 175° F. and about 390° F. for a period of from about 30 seconds to about 60 minutes.

4,230,747

FLAME SPRAY POWDER MIX

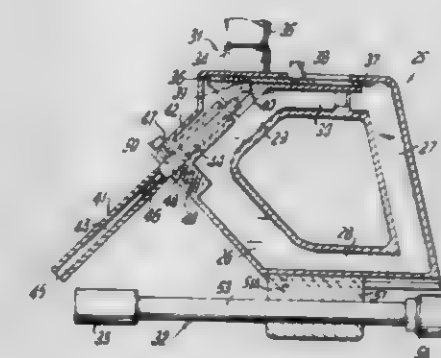
Mahesh S. Patel, Albertson, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Division of Ser. No. 915,938, Jun. 15, 1978. This application Aug. 15, 1979, Ser. No. 66,691

Int. Cl.³ B05D 1/10

U.S. Cl. 427—423

9 Claims



1. A method of producing an adherent bond coat on a metal substrate which comprises, flame spraying onto said metal substrate a powder mixture formed of agglomerates at least one metal silicide selected from the group consisting of disilicides of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Co, and boron silicide and magnesium silicide mixed with a coating metal powder, the average size of said agglomerates and said coating metal powder ranging from about 30 to 140 microns, said agglomerates being made up of fine particles of said metal silicide of average size less than about 20 microns bound together in a matrix of a fugitive binder, the composition of said powder mixture ranging from about 2% to 15% by weight of said silicide, with substantially the balance said coating metal powder,

and continuing said spraying to form an adherent bond coat on said substrate characterized by improved bond strength.

4,230,748

FLAME SPRAY POWDER MIX

Mahesh S. Patel, Albertson, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

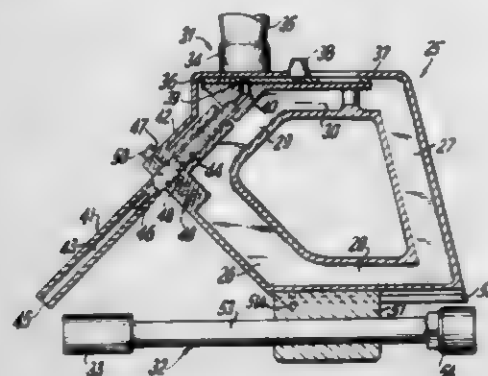
Division of Ser. No. 915,729, Jun. 15, 1978. This application

Aug. 15, 1979, Ser. No. 66,700

Int. Cl.³ B05D 1/10

U.S. Cl. 427-423

10 Claims



1. A method of producing an adherent bond coat on a metal substrate which comprises, flame spraying onto said metal substrate a powder mixture formed of agglomerates of an oxidizable metal separately mixed with a coating metal powder, the average size of said agglomerates and said coating metal powder ranging from about 20 to 140 microns, said agglomerates being made up of fine particles of said oxidizable metal of average size less than about 20 microns bound together in a matrix of a fugitive binder, said oxidizable metal being characterized by a negative free energy of formation of the oxide of at least 30,000 calories per gram atom of oxygen referred to 25° C. and a melting point above 350° C., the composition of said powder mixture ranging from about 2% to 15% by weight of said oxidizable metal, with substantially the balance said coating metal powder, and continuing said spraying to form an adherent bond coat on said substrate characterized by improved bond strength.

4,230,749

FLAME SPRAY POWDER MIX

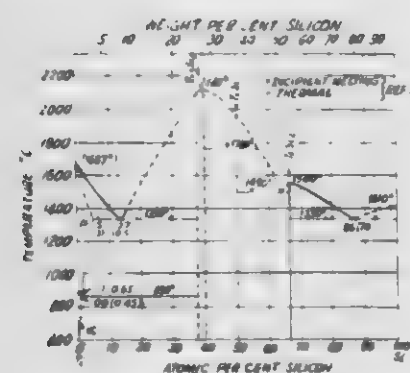
Mahesh S. Patel, Albertson, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Division of Ser. No. 967,919, Dec. 11, 1978, which is a continuation-in-part of Ser. No. 915,938, Jun. 15, 1978. This application Aug. 15, 1979, Ser. No. 66,875

Int. Cl.³ B05D 1/10

U.S. Cl. 427-423

7 Claims



1. A method of producing an adherent bond coat on a metal substrate which comprises, flame spraying onto said metal substrate a powder mixture

formed of agglomerates of at least one metal disilicide selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Re, Mn, and Co combined together with silicon and mixed with a coating metal powder, said metal disilicide (MSi₂) and silicon when thermally fused together providing a eutectic phase of the binary MSi₂-Si, the average size of said agglomerates and said coating metal powder ranging from about 30 to 140 microns, said agglomerates being made up of fine particles of said metal disilicide and silicon of average size less than about 20 microns bound together in a matrix of a fugitive binder, the composition of said powder mixture ranging from about 2% to 15% by weight of said metal disilicide and sufficient silicon in the range of about 2% to 15% by weight to provide a eutectic phase of said binary MSi₂-Si, with substantially the balance of said flame spray powder mixture being said coating metal powder, and continuing said spraying to form an inherent bond coat on said substrate characterized by improved bond strength.

4,230,750

METALLO-THERMIC POWDER

George Yurasko, Jr., Glencove, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Division of Ser. No. 962,673, Nov. 21, 1978. This application

Aug. 15, 1979, Ser. No. 66,876

Int. Cl.³ B05D 1/10

U.S. Cl. 427-423

16 Claims



1. A method of producing an adherent bond coat on a substrate which comprises, flame spraying onto said metal substrate a powder mixture formed of agglomerates of a metallo-thermic heat-generating composition mixed with a coating material,

said agglomerates of metallo-thermo heat-generating composition comprised essentially of fine particles of a reducible metal oxide formed from a metal characterized by a negative free energy of oxidation ranging up to about 60,000 calories per gram atom of oxygen referred to 25° C. intimately combined together by means of a thermally fugitive binder with fine particles of a strong reducing agent consisting essentially of a metal characterized by a negative free energy of oxidation referred to 25° C. of at least about 90,000 calories per gram atom of oxygen, said agglomerates being uniformly mixed in an amount ranging from about 10% to 80% by weight with about 90% to 20% by weight of at least one coating material selected from the group consisting of metals, alloys, refractory oxides, and carbides, silicides, nitrides, and borides of the refractory metals of the 4th, 5th, and 6th Groups of the Periodic Table, and continuing said spraying to form an adherent bond coat on said substrate.

4,230,751

TREATING COMPOSITION, FORMING A MIXED-CARBIDE LAYER OF VA-GROUP ELEMENTS AND OF CHROMIUM ON A FERROUS-ALLOY SURFACE AND RESULTING PRODUCT

Noboru Komatsu; Tohru Arai, both of Toyoake, and Hironori Fujita, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota, Nagoya and Chuo Kenkyusho, Aichi, both of, Japan

Filed Aug. 8, 1978, Ser. No. 931,953

Claims priority, application Japan, Aug. 11, 1977, 52-95571

Int. Cl.³ C23C 9/16; C25D 3/66; B32B 15/18

U.S. Cl. 427-443.1

38 Claims



1. A treating material having as sole initial essential constituent ingredients:

I. a member selected from the group consisting of boric acid and a borate and

II. a combination selected from the group consisting of:

A. a chromium oxide and at least one Va-Group element in metal or alloy form and

B. chromium in metal or alloy form and at least one Va-Group element in oxide form.

4,230,752

CIGARETTE BURN PROOF ARTIFICIAL GRASS

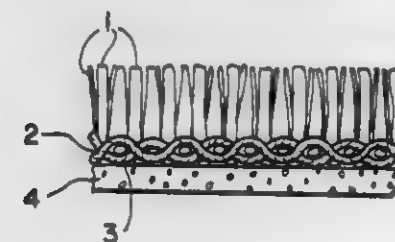
Joseph C. Benedyk, Highland Park, Ill., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 26, 1979, Ser. No. 33,479

Int. Cl.³ A41G 1/00

U.S. Cl. 428-17

26 Claims



1. A cigarette burn proof artificial grass product, comprising: a pile fabric with twisted yarn comprised of a plurality of fibers made of an ethylene-vinyl acetate copolymer and having an elastic modulus of from 25,000 p.s.i. to 100,000 p.s.i. and a moment of inertia of from $1.06 \times 10^{-10} \text{ in.}^4$ to $8.33 \times 10^{-9} \text{ in.}^4$, the fibers extending from and substantially perpendicular to a backing to which the fibers are secured, wherein the yarn is twisted at the part of emergence from the backing, and wherein the copolymer is cross-linked by exposure to an effective amount of ionizing radiation to achieve a gel content of from about 25 to 75 percent.

4,230,753

PRESSURE SENSITIVE COMPOSITE ARTICLE

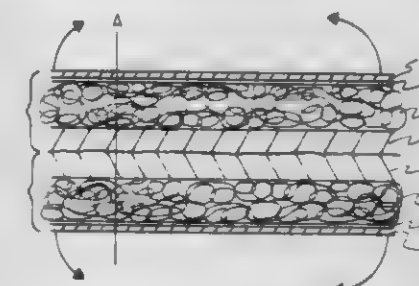
Gregory M. Sheyon, Anderson, S.C., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 7, 1978, Ser. No. 922,718

Int. Cl.³ B29C 3/00

U.S. Cl. 428-40

16 Claims



1. A pressure sensitive, composite article which comprises: (a) a heat bondable plastic film; (b) a backing attached to the film on one side thereof; (c) a substantially continuous and uniform layer of a pressure sensitive adhesive bonded to the side of the backing which is opposite the plastic film; and (d) a polymeric release liner attached to the adhesive layer opposite the side of said layer which is bonded to the backing, the liner having a melting point which is below the temperature at which the plastic film is heat bondable.

4,230,754

BONDING ELECTRONIC COMPONENT TO MOLDED PACKAGE

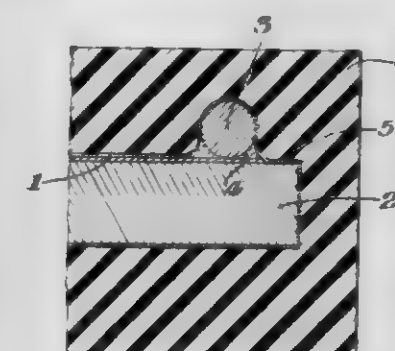
John P. Maher, Adams, Mass., and Elan Kam-Lum, Amherst, N.H., assignors to Sprague Electric Company, North Adams, Mass.

Filed Nov. 7, 1978, Ser. No. 958,598

Int. Cl.³ H01L 23/28; B32B 27/38

U.S. Cl. 428-76

2 Claims



1. In the manufacture of a fully-molded electronic component having leads attached thereto, the steps of: applying a thin seal layer of an epoxy-reactive silane directly onto said component including that portion of said attached leads adjacent said component, then curing said layer to co-react said silane with said component and leads and form said seal, then subjecting said component with attached leads and said seal to a transfer molding operation to surround said component and said portion of attached leads in an epoxy package, said silane being chosen from the group consisting of gamma-aminopropyl trimethoxy silane, gamma-aminopropyl triethoxy silane, gamma-glycidoxypropyl trimethoxy silane, and gamma-glycidoxypropyl triethoxy silane and bonding said sealed component and leads to said epoxy package by reaction during said transfer molding operation.

2. A molded electronic component comprising an electronic network on a substrate with lead wires forming a unit, a sealing layer of epoxy silane or epoxy-reactive silane surrounding said unit and bonded thereto, and a molded epoxy package surrounding said unit and layer and bonded to said unit via said

layer wherein said layer is cured prior to molding said epoxy package.

4,230,755

MOLDABLE UNITARY COMPOSITE CARPET STRUCTURE

Robert W. Morris, Shermans Dale, Pa., assignor to C. H. Masland & Sons, Carlisle, Pa.

Filed Nov. 23, 1976, Ser. No. 744,312

Int. Cl.³ B32B 5/18; D04H 11/00

U.S. Cl. 428—95

2 Claims



1. As a new article of manufacture, a flat unitary composite carpet structure having good fiberbond, tuftbind and sound deadening qualities and being capable of being heat molded permanently into nonplanar shape and also capable of having an underpad adhesively attached to its underside, comprising a textile fabric, a relatively thick layer of cured polyurethane foam adhered to the underside of the textile fabric, and a layer of coalesced polyethylene powder adhered to the underside of the layer of polyurethane.

4,230,756

RIBBED TICK WITH INSULATING FILLER

Sigurd S. Hansen, Fruens Bøge, Denmark, assignor to Nordisk Fjerfabrik Aktieselskab, Copenhagen, Denmark

Continuation of Ser. No. 513,464, Oct. 9, 1974, Pat. No.

4,137,111. This application Jan. 8, 1979, Ser. No. 1,747

Claims priority, application Denmark, Oct. 29, 1973, 5479/73; Jul. 5, 1974, 3620/74

Int. Cl.³ B32B 1/06, 3/28, 7/10, 7/14

U.S. Cl. 428—101

3 Claims



1. A ribbed tick adapted to be filled with a flexible insulating filler to form a pillow, quilt, feather bed or eiderdown comprising a top and a bottom sheet of textile material, the top and bottom sheets being connected at their edges, and a single intermediate sheet interposed between the top and the bottom sheet, the intermediate sheet being alternately connected to the inner surfaces of both the top and bottom sheets by a plurality of seams formed from layers of thermoplastic material, the seams between the intermediate sheet and the top sheet being parallel to and offset from the seams between the inter-

mediate sheet and the bottom sheet so as to form a plurality of channels for containing said flexible insulating filler.

4,230,757

SONICALLY SECURING ARTICLES IN PLASTIC MOUNTS

James K. Toner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 21, 1978, Ser. No. 917,623

Int. Cl.³ B32B 3/10, 31/16

U.S. Cl. 428—137

11 Claims



1. A method for securing an object having a predetermined thickness in a laminated mount, said method comprising the steps of:

placing the object in a recess of a first thermoplastic sheet, said recess having a depth greater than the object thickness;

covering the first sheet with a second thermoplastic sheet having a plurality of energy director elements projecting from one surface by a distance substantially equal to the difference between the object thickness and the recess depth such that (1) a first portion of the energy director elements engage the surface of the first sheet about the recess and (2) a second portion of the energy director elements are aligned with the recess and the object therein; and

applying compressive force and high frequency vibratory energy to the sheets, whereby thermoplastic material in the region of the first portion of the energy director elements melts and the second portion of the energy director elements moves into engagement with the object.

4,230,758

FLUORINE RESIN COATED STRUCTURE OF ALUMINUM OR ALUMINUM ALLOY

Shuzo Nagai, Seiji Watabe, Takao Ogino, and Koichi Okita, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 847,466, Oct. 31, 1977, abandoned, which is a continuation of Ser. No. 658,940, Feb. 17, 1976, abandoned. This application Aug. 6, 1979, Ser. No. 64,277

Claims priority, application Japan, Feb. 14, 1975, 50/19340

Int. Cl.³ A47J 36/02; B32B 3/00, 15/08, 15/20

U.S. Cl. 428—141

3 Claims

1. A fluorine resin coated structure comprising:

(a) An aluminum or aluminum alloy substrate having fine raised and depressed portions on the surface thereof and wherein said surface is chemically or electrochemically etched;

- (b) an anodized layer of aluminum oxide formed on said surface; and
- (c) A baked coating of a fluorine resin formed on top of the aluminum oxide coating, the entirety of said fluorine resin surface being in contact with the aluminum oxide coating and with said fluorine resin coating having a thickness of about 5 to about 100 microns, wherein the surface roughness of said coated structure is represented by an R_{max} value of about 5 to about 60(μ) and an R_z value of about 4 to about 50(μ).

4,230,759

PROCESS OF FORMING AN EMBOSSED SURFACE COVERING

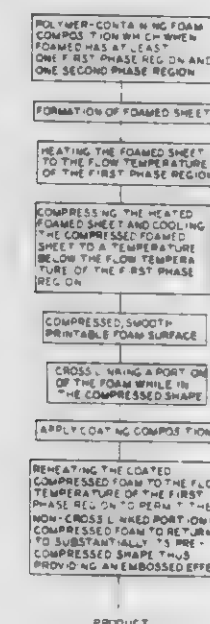
William J. Kauffman, Lancaster, and George L. Lilley, Mannheim, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Aug. 9, 1978, Ser. No. 932,346

Int. Cl.³ B32B 3/30, 31/28

U.S. Cl. 428—159

10 Claims



1. A process of forming an embossed surface covering, which process comprises:

- (a) depositing a mechanically frothed foam or forming a chemically blown foam on a backing, at least a portion of said foam being capable of being cross-linked, the foam comprising at least one polymer and having at least a first phase region and a second phase region, both phase regions existing at least in the surface region of said foam;
- (1) the first phase region exhibiting a flow temperature above room temperature and being present in the foam in an effective amount to hold the compressed shape of the foam in step (c) below;
- (2) the second phase region remaining elastomeric at the flow temperature of the first phase region;
- (b) heating the foam to a temperature at least equal to the flow temperature of the first phase region;
- (c) compressing the heated foam sufficient to form a level print surface and cooling the foam in the compressed shape to a temperature below the flow temperature of the first phase region such that the first phase region holds the compression of the foam upon removal of the compressing force, thus forming a level, printable, compressed foam surface;
- (d) cross-linking a portion of the foam while the foam is in the compressed shape; and
- (e) reheating the resulting compressed foam to a temperature at least equal to the flow temperature of the first phase region to permit the noncross-linked portion of the compressed foam to return to substantially its precompressed shape.

10. An embossed surface covering produced according to the process of claim 1.

4,230,760 FOIL WEB FOR FILLING AUTOMATS WITH A REMOVAL APPARATUS

Eugene Schneider, Romerstr. 4, 6701 Altrip, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,568

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719450

Int. Cl.³ B32B 3/02, 7/14; B05D 5/00

U.S. Cl. 428—195

3 Claims



1. A wrapping bag foil web to be used in a filling machine in association with removal rollers or belts juxtaposed to at least one of the sides of the web, said foil having applied thereto narrow spaced parallel stripes of pigmented material parallel to the longitudinal edges of the web, to impart thereto spaced roughened non-slip surfaces commensurate with the position of the rollers or belts.

4,230,761

COMPOSITE OF A HIGH NITRILE COPOLYMER ADHERED TO AN OLEFIN BASED POLYMER

William A. Watts, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 26, 1978, Ser. No. 872,405

Int. Cl.³ B32B 27/08, 27/32, 27/30

U.S. Cl. 428—215

9 Claims

1. A composite comprising a high nitrile copolymer of 55 to 95 mol percent of a nitrile monomer selected from the class consisting of acrylonitrile, methacrylonitrile and ethacrylonitrile, and the balance composed of butadiene or styrene and a monomer of alkyl acrylate or methacrylate where the alkyl radical contains from 2 to 10 carbon atoms adhered to an olefinic base polymer of simple olefins of 2 to 6 carbon atoms and an olefinic carboxylic acid of 3 to 8 carbon atoms with a two-phase block polymer adhesive comprising an elastomeric base block having at least two terminal nonelastomeric blocks, said elastomeric base block being the polymer of a conjugated diene of 4 to 8 carbon atoms and the nonelastomeric block being the polymer of a monomer selected from the class consisting of styrene, alpha-methylstyrene and vinyl toluene.

4,230,762

ASPHALT WATER-PROOFING MATERIAL

Hajime Iwasaki, Kuninori Mizuta, both of Tokyo; Yoshinori Kobayashi, Iwakuni; Tadayoshi Yoshikawa, Ohtake, and Kyozu Muraoka, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries Ltd. and Mitsubishi Sangyo Co., Ltd., both of Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,326

Claims priority, application Japan, Jul. 24, 1978, 53-89341

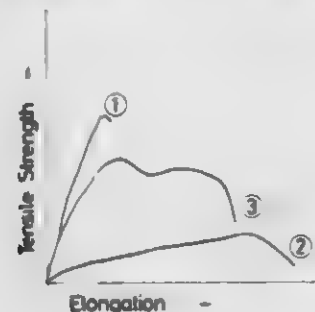
Int. Cl.³ B32B 5/06

U.S. Cl. 428—234

10 Claims

1. An asphalt water-proofing material comprising a composite material including a non-woven fabric layer made of long filaments of synthetic resin arranged in random fashion and a

woven or knitted fabric layer, said layers being connected together by needle-punching to form the integral composite material, and a petroleum asphalt saturating said composite material, said petroleum asphalt having softening point of 70°-120° C. and penetration of 10-60 at 25° C., said composite



material and/or asphalt water-proofing material having tensile strength of at least 6 kg/10 mm width in longitudinal direction and at least 4 kg/10 mm width in lateral direction at the time of 3% elongation thereof and elongation of at least 50%, thereby providing superior crumpling-resistant, shrinkage-resistant, restoring, crack-resistant or other fatigue-resistant properties.

4,230,763

OPEN WEAVE DRAPERY FABRIC IN ASSOCIATION WITH A SOLAR LIGHT-CONTROL FILM

Barry Skolnick, East Windsor, N.J., assignor to Saxon Industries, Inc., New York, N.Y. 10020

Filed Jan. 5, 1978, Ser. No. 867,148

Int. Cl.² A47H 23/08, 23/10; B32B 3/02, 33/00

U.S. Cl. 428-246

10 Claims

1. A window covering system providing improved insulating characteristics comprising an open weave drapery fabric, said decorative material having at least about a 5% open area, a flexible solar control film having at least one metallized surface layer, a flexible inner bonding stratum joining said drapery fabric and said solar control film to form a window covering, said solar control film having a visible light transmission level which permits the transmission of visible light through the open area of the open weave drapery fabric but substantially blocks the transmission of air therethrough, said window covering system being positioned on the interior side of a window to form a stagnant air barrier between said window and said window covering system so as to provide said improved insulating characteristics.

4,230,764

PRESTRESSED ARTICLE

Irving E. Figge, and Edward H. Dean, both of Newport News, Va., assignors to The United States of America as represented by the Secretary of the Army, Alexandria, Va.

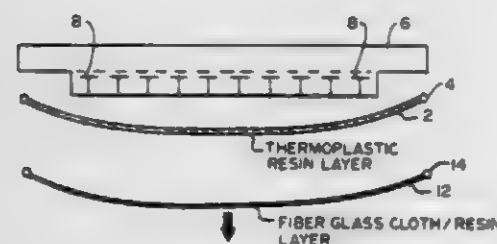
Division of Ser. No. 906,186, May 15, 1978, Pat. No. 4,194,938.

This application Apr. 30, 1979, Ser. No. 34,816

Int. Cl.³ B32B 27/10; B65D 5/56

U.S. Cl. 428-268

1 Claim



1. A thermoformed article in the form of a three dimensionally curved surface embodying laminae of alternate epoxy resin layers fused to thermoplastic resin layers, each epoxy

resin layer being an epoxy resin-impregnated high tensile strength fibrous web, each thermoplastic resin layer being an acrylonitrile polymer, the epoxy resin layers being pretensioned by stresses developed during thermoforming.

4,230,765

NOVEL AMORPHOUS SILICA, AND PRODUCTS THEREOF

Akira Takahashi, and Toru Takikawa, both of Gifu, Japan, assignors to Kabushiki Kaisha Osaka Packing Seizosho, Osaka, Japan

Continuation of Ser. No. 670,543, Mar. 25, 1976, abandoned.

This application Jun. 29, 1978, Ser. No. 920,204

Claims priority, application Japan, Mar. 25, 1975, 50-36298; Mar. 25, 1975, 50-36299; Mar. 25, 1975, 50-36300

Int. Cl.³ C01B 33/12

U.S. Cl. 428-283

8 Claims

1. A shaped body of amorphous silica consisting essentially of primary particles of amorphous silica having a surface area of 250 to 600 M²/g and an oil adsorption of 300 to 900 cc/g, 100 randomly three-dimensionally interlocked with one another integrally into the body in the absence of binders and voids interspersed therebetween, each of the primary particles containing at least 98% by weight of SiO₂ when dehydrated by ignition and chemically analyzed and having a crystalline appearance, at least two surfaces in symmetric relation, a length of about 1 to about 500 μ and a thickness of about 50 Å to about 1 μ, the length being at least about 10 times the thickness.

4,230,766

FIBER-BASE COMPOSITE MATERIAL HAVING HIGH TENSILE STRENGTH

Gilbert Gaussens, Meudon; Francis Lemaire, Chatillon, and Bach Van Nguyen, Bures-sur-Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 13, 1978, Ser. No. 942,032

Claims priority, application France, Sep. 16, 1977, 77 28001

Int. Cl.³ D04H 1/58; B32B 27/30, 27/38

U.S. Cl. 428-288

9 Claims

1. A fiber-base composite material having high tensile strength, obtained by impregnating fibers with a composition containing at least one unsaturated epoxy resin having a double bond index within the range of 0.10 to 0.40, obtained by modifying a saturated epoxy resin by acrylic acid or methacrylic acid, at least a first ethylenically unsaturated monomer selected from the group consisting of vinyl-pyrrolidone, 2-vinyl-pyridine, 4-vinyl-pyridine, 2-vinyl-5-methyl-pyridine, methylamino-ethyl methacrylate, methoxy-ethyl acrylate, butoxy-ethyl acrylate, at least a second ethylenically unsaturated monomer selected from the group consisting of butyl acrylate, butyl methacrylate, isobutyl acrylate, isobutyl methacrylate, at least one ethylenically polyunsaturated monomer selected from the group consisting of hexane-diol diacrylate, diethyleneglycol diacrylate, tetraethyleneglycol, diacrylate, polyethylene-glycol diacrylate, pentaerythritol tetraacrylate, a photoinitiator and an organic peroxide, said composition comprising 30-60% by weight of said unsaturated epoxy resin, 5-30% by weight of said first monomer, 5-40% by weight of said second monomer, 5-25% by weight of said polyunsaturated monomer, 1-5% by weight of said photoinitiator and 1-5% by weight of said organic peroxide, by prepolymerizing said composition by means of ultraviolet rays in a first step, and then cross-linking said composition in a second step.

6. A method of fabrication of a fiber-base material having high tensile strength, wherein the fibers are impregnated with a composition containing at least one unsaturated epoxy resin having a double bond index within the range of 0.10 to 0.40, obtained by modifying a saturated epoxy resin by acrylic acid or methacrylic acid, at least a first ethylenically unsaturated monomer selected from the group consisting of vinyl-pyrrolidone, 2-vinyl-pyridine, 4-vinyl-pyridine, 2-vinyl-5-methyl-

pyridine, methylaminoethyl methacrylate, methoxy-ethyl acrylate, butoxy-ethyl acrylate, at least a second ethylenically unsaturated monomer selected from the group consisting of butyl acrylate, butyl methacrylate, isobutyl acrylate, isobutyl methacrylate, at least one ethylenically polyunsaturated monomer selected from the group consisting of hexane-diol diacrylate, diethylene-glycol diacrylate, tetraethylene-glycol diacrylate, polyethylene-glycol diacrylate, pentaerythritol tetraacrylate, a photoinitiator and an organic peroxide, said composition comprising 30-60% by weight of said unsaturated epoxy resin, 5-30% by weight of said first monomer, 5-40% by weight of said second monomer, 5-25% by weight of said polyunsaturated monomer, 1-5% by weight of said photoinitiator and 1-5% by weight of said organic peroxide, said composition is prepolymerized by means of ultraviolet rays in a first step and then cross-linked in a second step.

4,230,767

HEAT SEALABLE LAMINATED PROPYLENE POLYMER PACKAGING MATERIAL

Tsutomu Isaka; Maki Matsuo, and Yukinobu Miyazaki, all of Inuyama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

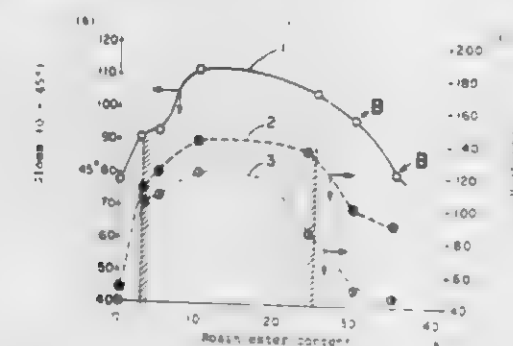
Filed Feb. 8, 1979, Ser. No. 10,641

Claims priority, application Japan, Feb. 8, 1978, 53-13932; Dec. 29, 1978, 53-165137

Int. Cl.³ B32B 27/32, 31/16

U.S. Cl. 428-349

51 Claims



1. A packaging material having excellent heat seal packaging properties, which comprises (A) a base layer consisting of a stretched film made of a polymer composition comprising (a-1) a propylene polymer and (B) a surface layer consisting of a stretched film made of a polymeric mixture comprising a polymer blend provided on at least one surface of said base layer, said polymer blend comprising (b-1) a copolymer of ethylene and propylene having an ethylene content of 10 to 0.5% by weight and a propylene content of 90 to 99.5% by weight and (b-2) a copolymer of butene and another polymerizable monomer having ethylenic unsaturation having a butene content of 70 to 99% by weight and the other polymerizable monomer content of 30 to 1% by weight, (b-1) and (b-2) being combined in a weight proportion of 5:95 to 95:5; the total thickness of (B) being 0.2 to 50% of the total thickness of (A) and (B).

28. A process for preparing a packaging material having excellent heat seal packaging properties, which comprises stretching an unstretched composite film in the machine direction and then stretching the stretched film in a direction substantially perpendicular to said machine direction, said unstretched composite film comprising (A) a base layer made of a polymer composition comprising (a-1) a propylene polymer and (B) a surface layer made of a polymeric mixture comprising a polymer blend provided on at least one surface of said base layer, said polymer blend comprising (b-1) a copolymer of ethylene and propylene having an ethylene content of 10 to 0.5% by weight and a propylene content of 90 to 99.5% by weight and (b-2) a copolymer of butene and another polymerizable monomer having ethylenic unsaturation having a butene content of 70 to 99% by weight and the other polymerizable monomer content of 30 to 1% by weight, (b-1) and (b-2) being combined in a weight proportion of 5:95 to 95:5; the total

thickness of (B) being 0.2 to 50% of the total thickness of (A) and (B).

4,230,768

LAMINATED LIGHT-POLARIZING SHEET

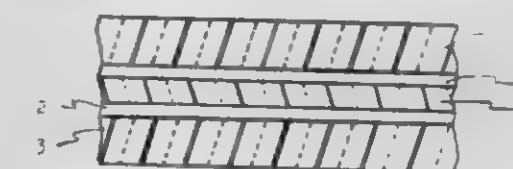
Hiroyuki Hamada; Rinjiro Ichikawa, and Hajime Suzuki, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Mar. 29, 1979, Ser. No. 25,234

Int. Cl.² C09J 7/02; B32B 27/32; G02B 5/30

U.S. Cl. 428-352

13 Claims



1. A laminated light-polarizing sheet comprising a light-polarizing film of a halogenated vinyl or vinylidene polymer containing polyene chains formed by partial dehydrohalogenation, said chains being oriented by stretching, and a film or sheet of an acrylate of methacrylate polymer laminated on at least one surface of the light-polarizing film.

5. A laminated light-polarizing sheet according to claim 1, wherein a pressure sensitive adhesive layer covered by a release film is further provided on at least one surface of the laminated light-polarizing sheet.

4,230,769

GLASS-POLYCARBONATE LAMINATE

John C. Goostens, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 29, 1979, Ser. No. 7,039

Int. Cl.² B32B 17/10, 27/08

U.S. Cl. 428-412

12 Claims

1. A laminate of glass and polycarbonate resin comprising at least one polycarbonate resin lamina bonded to at least one glass lamina, the glass lamina which is bonded to the polycarbonate lamina being primed on the surface thereof adjacent to the polycarbonate lamina with two adhesion promoting primer layers consisting essentially of (i) a first primer layer disposed on said surface of said glass lamina and consisting essentially of the equilibrated reaction product of (a) water, (b) a C₁₋₈ alkanol, and (c) the reaction mixture of 1 to 3 moles of an aminoalkyl polyalkoxysilane per mole of diorganocarbonate, where there is employed in such equilibrated reaction product, on a volume basis, from 0.5 to 10 parts of (a), and from 0.5 to 100 parts of (c) per 100 parts of (b); and (ii) a second primer layer disposed on said first primer layer and consisting essentially of from about 1 to about 15 weight percent of an epoxy resin and from about 85 to about 99 weight percent of a polysiloxane-polycarbonate copolymer, said primed surface of said glass lamina being adhered to said polycarbonate resin lamina by means of an adhesive interlayer of a polysiloxane-polycarbonate copolymer.

10. A method for making a multi-ply composite which comprises heating to an elevated temperature an assembly comprising a glass ply, a polycarbonate resin ply, and a polysiloxane-polycarbonate copolymer adhesive interlayer disposed between said glass ply and said polycarbonate resin ply, while subjecting such assembly to a pressure of at least about one atmosphere, where the glass ply has been primed on the surface thereof adjacent said interlayer with two primer layers consisting essentially of (i) a first primer layer disposed on said glass consisting essentially of the equilibrated reaction product of (a) water, (b) a C₁₋₈ alkanol, and (c) the reaction mixture at temperatures in the range of between about 0° C. to about 90° C. of 1 to 3 moles of an aminoalkyl polyalkoxysilane per mole of a diorganocarbonate, where there is employed in such equilibrated reaction product, on a volume basis, from 0.5 to 10 parts

of (a), and from 0.5 to 10 parts of (c) per 100 parts of (b); and (ii) a second primer layer disposed on said first primer layer consisting essentially of from about 1 to about 15 weight percent of an epoxy resin and from about 85 to about 99 weight percent of a polysiloxane-polycarbonate copolymer.

4,230,770

METAL PHOTOPOLYMER SUBSTRATES

Raymond B. Roennan, Stow; Daniel A. Chung, North Canton, and Shirish Jasani, Monroe Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 6, 1978, Ser. No. 949,314
Int. Cl.³ B32B 27/40; G03C 5/00

U.S. Cl. 428—424.4

5 Claims

1. A printing plate composed of a conversion coated aluminum sheet adhered to a layer of photocured ordered polyetherurethane containing acrylates or methacrylate radicals with an adhesive composed of a set mixture of a polyvinyl chloride/vinyl acetate resin and an epoxy resin.

4,230,771

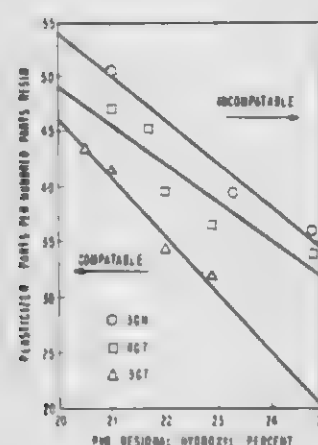
POLYVINYL BUTYRAL LAMINATES WITH TETRAETHYLENEGLYCOL DI-N-HEPTANOATE PLASTICIZER

Thomas R. Phillips, Belpre, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 31, 1979, Ser. No. 71,535
Int. Cl.³ C08F 45/38; B32B 17/10, 27/42

U.S. Cl. 428—437

7 Claims



1. A laminar structure comprising at least one layer of glass and a layer of a plastic composition comprising polyvinyl butyral and, in compatible admixture therewith, a plasticizer comprising at least about 10 weight percent tetraethyleneglycol di-n-heptanoate of the formula:



4,230,772

AMINE CROSSLINKED METHACROLEIN COPOLYMERS FOR COATINGS, BINDERS AND ADHESIVES

Graham Swift, Blue Bell; Benjamin Bartman, Norristown, and Harry J. Cenci, Warminster, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 2, 1979, Ser. No. 26,145
Int. Cl.³ B32B 17/10; B05D 3/02

U.S. Cl. 428—442

15 Claims

1. A crosslinked vinyl addition polymer comprising methacrylaldimine crosslinking groups.

4,230,773

DECREASING THE POROSITY AND SURFACE ROUGHNESS OF CERAMIC SUBSTRATES

Peter Bakos, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,188

Int. Cl.³ B05D 3/02, 5/12; B32B 9/04; C07F 7/02

U.S. Cl. 428—447

32 Claims

1. A method for reducing the porosity and surface roughness of a ceramic substrate which comprises applying a liquid coating composition containing at least one nonpolymeric silicon compound selected from the group of organosilanes, silicon halides, or mixtures thereof to at least one surface of said substrate; drying the coated substrate; and exposing the dried coated substrate to an elevated temperature higher than that employed in the drying of the coated substrate to thereby convert the nonpolymeric silicon compound to silicon oxides, and thereby obtaining a ceramic substrate having reduced porosity and surface roughness.

25. A ceramic substrate of reduced porosity and surface roughness obtained by the process of claim 1.

4,230,774

HEAT SEALABLE LAMINATE

William A. Watts, Uniontown, and Mark D. Creekmore, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 21, 1978, Ser. No. 879,824

Int. Cl.³ B32B 27/30

U.S. Cl. 428—518

1 Claim

1. A laminate comprising a film of a blend of 40 to 80 parts of polyvinyl chloride and 60 to 20 parts of a copolymer of about 60–70% by weight of butadiene and about 40–30% by weight of acrylonitrile adhered to a film of polypropylene with an adhesive layer of a copolymer of vinylidene chloride and a second monomer of vinyl chloride or acrylonitrile.

4,230,775

POLYVINYL BUTYRAL INK FORMULATION

Burton N. Derick, Mineral Wells, W. Va.; Robert E. Moynihan, Lowell, Ohio, and Jon W. Wolfe, Matthews, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1977, Ser. No. 861,568

Int. Cl.³ B32B 27/06

U.S. Cl. 428—525

1 Claim

1. In a printing ink comprising unplasticized polyvinyl butyral, dye and solvent, the improvement which comprises unplasticized polyvinyl butyral having a hydroxyl content of about from 29 to 35 weight percent.

4,230,776

THERMOSENSITIVE RECORDING PAPER IMPROVED IN PRINTING QUALITY

Takao Konaka, Takasago, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,497

Claims priority, application Japan, Dec. 16, 1977, 52-151383

Int. Cl.³ B32B 21/04

U.S. Cl. 428—537

2 Claims

1. In a thermosensitive recording paper comprising a support and, supported thereon, a combination of a colorless or slightly colored lactone compound color former and phenolic compound capable of rendering said lactone compound to develop color, the improvement whereby the printing quality is improved, which improvement is characterized in that said support is a cast coated paper having a Bekk smoothness of 80 seconds or more.

4,230,777

BATTERY HOLDER WITH INTEGRAL ACCESS DOOR AND POWER SWITCH

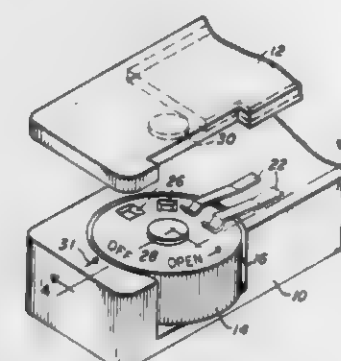
Donald F. Gatto, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1979, Ser. No. 26,623

Int. Cl.³ H01M 2/10

U.S. Cl. 429—97

3 Claims



1. A battery cell housing arrangement for an electronic device having circuitry therein and comprising in combination: a rotatable insulating element having a first recess therein, the first recess being dimensioned to receive a battery cell and having a first aperture in a side wall, the first aperture being dimensioned to admit the battery cell to the first recess, and having at least one second aperture in the upper surface thereof, positioned intermediate the center and the perimeter of the surface for exposing a portion of the battery cell case; an insulating housing having a second recess with a third aperture therein, the second recess being dimensioned to fixedly retain the rotatable element for 360° rotation, with substantially less than one-half of the rotatable element projecting from the third aperture of housing element; a first conductive member supported by the housing and coupled to circuitry therein and positioned to make continuous electrical contact with a first terminal of the battery cell; and at least one second conductive member formed of a resilient material, supported by the housing and coupled to circuitry therein, positioned to contact and ride upon the upper surface of the rotatable element and, as the rotatable element is rotated to at least one first predetermined position, contacting a second cell terminal through one of the second apertures in the rotatable element, and, in a predetermined position, being insulated from the second cell terminal by the upper surface of the rotatable element; and where no portion of the first aperture is aligned with the third aperture when the rotatable element is in one of the first and second positions.

4,230,778

SODIUM-SULFUR BATTERY WITH GLASS ELECTROLYTE

Klaus von Benda, Ostfildern, and Holger Kistrup, Stuttgart, both of Fed. Rep. of Germany, assignors to Deutsche Automobilgesellschaft mbH, Hanover, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,208

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811687

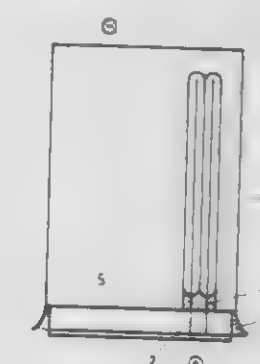
Int. Cl.³ H01M 10/39

U.S. Cl. 429—104

21 Claims

1. A sodium-sulfur battery including positive and negative electrodes, in which sodium is the active mass of the negative electrode and sulfur or a sulfur-containing substance is the active mass of the positive electrode, said battery further including a glass electrolyte which is represented as a plurality of capillary tubes disposed substantially parallel to one another, and wherein the improvement comprises that the glass capillary tubes having outer diameters up to 1.0 mm contain the active mass of the positive electrode of the battery and are each

completely sealed with fused glass of said capillary tubes and each of said capillary tubes contains a metallic wire for making electrical contact with said positive electrode mass, said wire extending substantially throughout the length of each capillary



4,230,779

BATTERY PLATE

Brajendra P. Varma, Levittown, Pa., assignor to Eltra Corporation, Toledo, Ohio

Continuation of Ser. No. 904,436, May 9, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,650

Int. Cl.³ H01M 6/04

U.S. Cl. 429—204

7 Claims

1. A positive plate for a lead acid battery, said plate consisting essentially of a lead or lead alloy grid, a composition containing lead dioxide, and from 0.1 to 0.4 percent based upon the weight of said plate, of at least one element selected from the group consisting of manganese and chromium, said element having been introduced by electrolysis into said plate from solution in an electrolyte.

5. A lead acid storage battery including at least one negative plate, at least one positive plate, and an electrolyte, said positive plate consisting essentially of a lead or lead alloy grid, a composition containing lead dioxide, and from 0.1 to 0.4 percent, based upon the weight of said positive plate, of at least one element selected from the group consisting of manganese and chromium, said element having been introduced by electrolysis into said plates from solution in an electrolyte.

4,230,780

SODIUM-SULPHUR ELECTRIC CELL

Jean Jacquelin, Limours, France, assignor to Societe Anonyme dite: Compagnie Generale d'Electricite, Paris, France

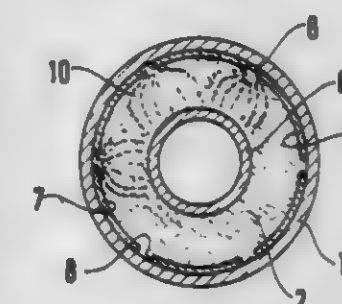
Filed Oct. 22, 1979, Ser. No. 86,955

Claims priority, application France, Oct. 27, 1978, 78 30592

Int. Cl.³ H01M 10/39

U.S. Cl. 429—104

6 Claims



1. A sodium-sulphur type electric cell which includes: a positive compartment which contains a positive active

material which is liquid at operating temperature, and a positive current collector;
 a negative compartment which contains a negative active material which is liquid at operating temperature, and a negative current collector; and
 a solid electrolyte tube which separates the two compartments; wherein the positive current collector is at least partially coated with an electronically insulating layer, means which are suitable for concentrating the lines of ionic current which prevails between said electrolyte tube and said positive collector being provided in such a way that during the cell recharging process, the positive active material is preferentially deposited in the vicinity of said means.

4,230,781

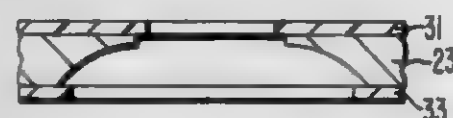
METHOD FOR MAKING ETCH-RESISTANT STENCIL WITH DICHROMATE-SENSITIZED ALKALI-CASEINATE COATING

Joseph J. Placinski, Leola, and Ernest E. Doerschuk, III, East Petersburg, both of Pa., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 505,511, Sep. 12, 1974, abandoned. This application Feb. 19, 1976, Ser. No. 659,269
 Int. Cl.² G03C 5/00

U.S. Cl. 430—5

10 Claims



1. A method for producing an etch-resistant stencil upon a surface comprising applying to said surface a coating of a liquid composition having a pH of about 5.8 to 7.0 and comprising

- (i) an alkali caseinate,
- (ii) an alkali dichromate photosensitizer for said caseinate
- (iii) hydrated sodium borate, the weight of said hydrated sodium borate comprising 0.10 to 0.35 of the weight of said alkali caseinate, and
- (iv) water,

drying said coating, photoexposing said coating to a light image, developing said exposed coating to produce said stencil, and then baking said stencil in air to render said pattern etch resistant.

4,230,782

MIGRATION IMAGING SYSTEM WITH MENISCUS DEVELOPMENT

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 300,940, Oct. 26, 1972, abandoned, which is a division of Ser. No. 84,691, Oct. 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 837,780, Jun. 30, 1969, Pat. No. 3,975,195, and Ser. No. 483,675, Aug. 30, 1965, abandoned, said Ser. No. 837,780, is a continuation-in-part of Ser. No. 483,675, Aug. 30, 1965, and Ser. No. 725,676, May 1, 1968, abandoned, and Ser. No. 460,377, Jun. 1, 1965, Pat. No. 3,520,681, and Ser. No. 403,002, Oct. 12, 1964, abandoned, said Ser. No. 483,675, and Ser. No. 460,377, is a continuation-in-part of Ser. No. 403,002, abandoned. This application May 15, 1978, Ser. No. 905,906
 Int. Cl.² G03G 17/00, 13/22

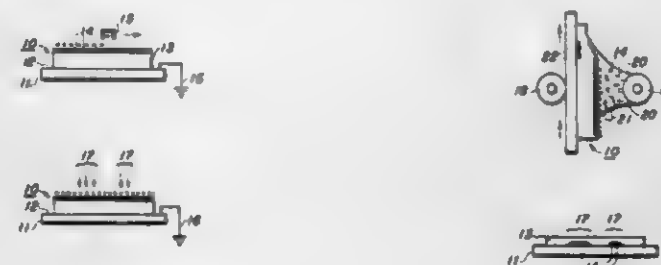
U.S. Cl. 430—41

40 Claims

1. In a method for developing an electrical latent image on a migration imaging member, said member comprising a substrate, a layer of softenable material on said substrate and migration material in or in contact with said softenable material, wherein the surface of said member opposite said substrate bears said latent image which is brought into and out of contact with a volume of liquid capable of developing said image by softening said softenable material sufficiently to cause migration of said migration material in depth in said softenable layer, the improvement comprising positioning a liquid support mem-

ber adjacent said surface and in contact with said liquid volume which extends between said adjacent support member and said surface whereby a meniscus is formed on each liquid surface continuously between said surface and support, moving said imaging member past said support member and causing said liquid to flow in a direction away from the direction of said imaging member to provide turbulent flow of said liquid adjacent said surface whereby unmigrated migration material is removed from said imaging member and carried away in said flow.

23. In a method for developing an electrical latent image on a migration imaging member, said member comprising a substrate, a layer of softenable material on said substrate and migration material in or in contact with said softenable material, wherein the surface of said member opposite said substrate bears said latent image and is brought into and out of contact



with a volume of liquid capable of developing said image by softening said softenable material sufficiently to cause migration of said migration material in depth in said softenable layer, the improvement comprising moving said member past an adjacent liquid support member, said liquid support member being in contact with said liquid and forming a meniscus continuously between said surface and said support at least at the point of exit of said imaging member from said liquid and causing said liquid to flow in a direction away from the direction of said imaging member whereby (1) the surface tension forces of said liquid bridging said surface and said support member and (2) the relative movement of said imaging member to the liquid, cause removal of at least a portion of said development liquid which contains the unmigrated migration material from the imaging member as it passes said support member as said member is brought out of contact with said volume of liquid.

4,230,783

PROCESS AND APPARATUS FOR ELECTROPHOTOGRAPHY

Takao Aoki, Abiko; Hidejiro Kadowaki, Yokohama, and Naoki Iwami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,729

Claims priority, application Japan, Jun. 17, 1977, 52-71901
 Int. Cl.² G03G 13/01, 13/24

U.S. Cl. 430—42

11 Claims

1. A process of electrophotography employing a photosensitive medium basically composed of an insulating top layer, an electrically conductive base layer, and a photoconductive layer therebetween, said process comprising the steps of: applying a uniform corona discharge of a predetermined polarity to said photosensitive medium; exposing said photosensitive medium to an original light image; applying a secondary corona discharge having at least a component of the opposite polarity to that of said uniform corona discharge to said photosensitive medium simultaneously with or immediately after said exposing step; uniformly exposing the photosensitive medium to near infrared range light during at least a part of said secondary corona discharging step; and exposing the whole surface of said photosensitive medium to

white light to form an electrostatic latent image corresponding to said original light image.

4,230,784

ELECTROSTATIC IMAGE FORMING PROCESS AND PARTICLES COMPRISING REACTIVE SUBLIMABLE DYE, SUBLIMING DEVELOPER AND CONDUCTIVE SUBSTANCE

Hisanori Nishiguchi, Neyagawa; Eisuke Ishida, Nara, and Yuji Takashima, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 819,506, Feb. 26, 1977, abandoned.

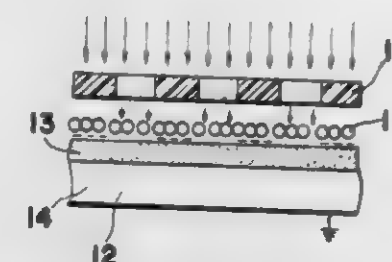
This application Sep. 13, 1978, Ser. No. 942,500

Claims priority, application Japan, Jul. 27, 1976, 51-89927

Int. Cl.² G03G 9/08

U.S. Cl. 430—42

19 Claims



1. Image forming particles for use in an electrostatic image formation process which comprises the steps of:

- (1) providing a photoconductive support member and said image forming particles;
- (2) imparting to said photoconductive support an electrostatic charge, whereby said image forming particles are caused to adhere to the surface of said photoconductive support by electrostatic induction;
- (3) exposing the charged photoconductive support member of (2) having said particles adhered thereto by electrostatic force, to a light image, the charge of the photoconductive support member at portions thereof being exposed to the light through the particles being attenuated, whereby the image of said particles is formed on said support by utilizing the difference in electrostatic attraction between the photoconductive support member and said image forming particles, said image on said support corresponding to said light image;
- (4) heating the particles on the photoconductive support member obtained by the step (3) to cause a sublimable substance contained in said particles to be sublimed, whereby the colored image is obtained by causing said sublimable substance to adhere to said photoconductive support member or image receptor containing therein developing color agent which forms the colored image through reaction with said sublimable substance;

said particles comprising a sublimable substance selected from the group consisting of a colored subliming dye, a subliming colorless dye which is colorless in its normal state and develops color upon reaction with developing agent and a subliming developing agent which is colorless in its normal state and develops color upon reaction with a colorless dye and an electrically conductive substance which facilitates the electrostatic induction of said particles, and

said particles being capable of transmitting light and having a specific resistance of less than 10^{10} ohm cm.

19. An electrostatic image formation process which comprises the steps of:

- (1) providing a photoconductive support member and image forming particles;
- (2) imparting to said photoconductive support an electrostatic charge, whereby said image forming particles are caused to adhere to the surface of said photoconductive support by electrostatic induction;
- (3) exposing the charged photoconductive support member of (2) having said particles adhered thereto by electrostatic force, to a light image, the charge of the photocon-

ductive support member at portions thereof being exposed to the light through the particles being attenuated, whereby the image of said particles is formed on said support by utilizing the difference in electrostatic attraction between the photoconductive support member and said image forming particles, said image on said support corresponding to said light image;

(4) heating the particles on the photoconductive support member obtained by the step (3) to cause a sublimable substance contained in said particles to be sublimed, whereby the colored image is obtained by causing said sublimable substance to adhere to said photoconductive support member or image receptor containing therein developing color agent which forms the colored image through reaction with said sublimable substance;

said particles comprising a sublimable substance selected from the group consisting of a colored subliming dye, a subliming colorless dye which is colorless in its normal state and develops color upon reaction with developing agent and a subliming developing agent which is colorless in its normal state and develops color upon reaction with a colorless dye and an electrically conductive substance which facilitates the electrostatic induction of said particles, and

said particles being capable of transmitting light and having a specific resistance of less than 10^{10} ohms cm.

4,230,785

PRESSURE SENSITIVE ADHESIVE ELECTROPHOTOGRAPHIC REPRODUCTION SHEETS

Lee A. Carlson, Southboro, and Richard G. Miekka, Sudbury, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 655,595, Feb. 5, 1976, abandoned, which is a continuation of Ser. No. 327,536, Jan. 29, 1973, abandoned, which is a continuation of Ser. No. 86,950, Nov. 4, 1970, abandoned. This application Feb. 27, 1978, Ser. No. 881,332

Int. Cl.² G03G 5/02

U.S. Cl. 430—56

9 Claims

1. An electrographic member which can be used as a mailing label and the like, comprising

a conductive base member having oppositely positioned outer surfaces,
 an electrophotographic layer on one of said surfaces for the formation of an electrostatic image therein,
 a non water-soluble pressure sensitive adhesive layer on the other of said surfaces, and
 a release sheet temporarily overlying said adhesive layer, the conductivity of said pressure sensitive adhesive layer being controlled by the addition of a water-soluble conductive material to permit the transport of charges through said adhesive layer in the formation of said electrostatic image without impairment of the adherence of said adhesive layer to said release sheet and to a receiving surface when said release sheet is removed.

4,230,786

ELECTROGRAPHIC PROCESS OF IMAGING BY MODULATION OF IONS

Masaji Nishikawa; Toshio Nakatsubo, both of Hachioji; Hiroshi Tsuda, Mitaka; Shigo Fujie, Shizuoka; Masaki Kanamaru, Shizuoka, and Shosaku Koseki, Shizuoka, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Sep. 8, 1978, Ser. No. 940,659

Claims priority, application Japan, Sep. 12, 1977, 52-108910

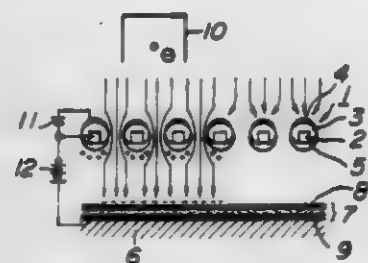
Int. Cl.² G03G 15/00

U.S. Cl. 430—53

6 Claims

1. An electrographic process of producing, on a dielectric coated record medium, an electrostatic copy latent image by modulating a flow of corona ions with the aid of an electrostatic latent image which has been produced on a photoconductive photosensitive screen, characterized by making a ratio

K of a maximum surface potential V volts of the electrostatic copy latent image produced on said dielectric coated record medium to an intensity of the electric field E volts/mm established between said photoconductive photosensitive screen and said dielectric coated record medium, i.e. $K = V/E$ smaller



than about 0.18 for the purpose of preventing enlargement of dots of the copy picture image, said intensity of the electric field E established between said photoconductive photosensitive screen and said dielectric coated record medium being about 500 to 1,000 volts/mm.

4,230,787

MAGNETIC TONER FOR DEVELOPING LATENT ELECTROSTATIC IMAGES AND A PROCESS FOR THE PREPARATION THEREOF

Shotaro Watanabe, Machida; Katsutoshi Tozawa, Kokubunji, and Shigeru Uetake, Sayama, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi, Japan

Filed Aug. 8, 1977, Ser. No. 822,786

Claims priority, application Japan, Aug. 10, 1976, 51/95197

Int. Cl.² G03G 9/08, 9/14

U.S. Cl. 430—107

8 Claims

1. In a one component developer for developing a latent electrostatic image, a magnetic toner containing magnetic particles and binder resins as main components, the improvement comprising said magnetic particles being substantially coated with electric charge-controlling dyestuffs before being combined with said binder resins, the content of said magnetic particles being 30 to 70% by weight, the content of said electric charge-controlling dyestuffs being 0.02 to 5% by weight and the specific resistance of said magnetic toner being at least $10^{13} \Omega \text{cm}$.

4,230,788

METHOD OF MANUFACTURING AN EXTERNAL ELECTRICALLY CONDUCTING METAL PATTERN

Elisabeth J. Spiertz; Christian F. W. Flinsenberg, and Leendert K. H. van Beek, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 720,809, Sep. 7, 1976, abandoned, which is a continuation of Ser. No. 525,154, Nov. 19, 1974, abandoned. This application Oct. 11, 1978, Ser. No. 950,508

Claims priority, application Netherlands, Nov. 26, 1973, 7314102

Int. Cl.² G03C 1/58, 5/24

U.S. Cl. 430—153

3 Claims

1. In the method of manufacturing an external electrically conducting metal pattern on a hydrophobic support which is at least superficially non-conducting, which method comprises subjecting to actinic radiation desired areas of a photosensitive coating adhering to said support and containing uniformly dispersed in an organic binder selected from the group consisting of polyesters and epoxy resins a photosensitive material selected from the group consisting of diazosulfides and diazo-sulfonates, and capable, upon exposure to actinic light, of producing a light reaction product which in the presence of water is capable of forming free silver and mercury metal from water-soluble silver and mercurous compounds to thereby form light reaction products at exposed areas of said coating, exposing said coating to treatment with at least one water-soluble salt selected from the group consisting of a water-soluble

mercury salt and a water soluble silver salt in the presence of water to thereby form a latent metal image and then physically developing said latent metal image by treatment with an aqueous solution of a metal salt and a reducing agent for said metal salt, the improvement wherein at least in the step wherein the coating is exposed to treatment with at least one water-soluble salt in the presence of water to form a latent image in place of water there is employed a mixture of water and at least one water-soluble liquid organic solvent for said photosensitive material selected from the group consisting of chloroform, toluene, ethylacetate, liquid alcohols and liquid ketones in a ratio by volume of the total amount of organic solvent to water of 1:10 to 2:1 and wherein said mixture is capable of swelling said binder.

4,230,789

THERMAL DIAZOTYPE SHEETS

Herbert J. Fish, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 13, 1978, Ser. No. 885,877

Int. Cl.² G03C 1/60

U.S. Cl. 430—159

5 Claims

1. A heat reactive diazotype sheet having at least two layers, with one layer coated upon the other, one of said layers comprising a heat-softenable binder material and an acid-stabilized light sensitive diazonium salt capable of reacting with an azo-coupler compound to form a dye, and the other of said layers comprising a heat-softenable binder material and an acid-neutralizer component capable of providing basic equivalents in an amount at least sufficient to neutralize said acid stabilization of said diazonium salt so as to provide a weakly basic environment for the diazonium salt in the sheet and to render said acid-stabilized diazonium salt reactive with said azo-coupler compound, and at least one of said layers containing an azo-coupler, said diazotype sheet being characterized by said acid-neutralizer component being comprised of at least 25% by weight imidazoline acid-neutralizer compound selected from the group consisting of 2-phenyl-2-imidazoline, 1,5-tetramethylene-2-o-tolylimidazoline, 2-benzyl-2-imidazoline, trifuryl-2-imidazoline, and 1,2-diphenyl-4,4-dimethyl-2-imidazoline.

4,230,790

PHOTOPOLYMERIZABLE COMPOSITIONS USEFUL IN DRY FILM PHOTORESIST

Martin J. Hill, Sayre, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 802,485, Jun. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 593,106, Jul. 3, 1975, abandoned. This application Jan. 31, 1979, Ser. No. 8,048

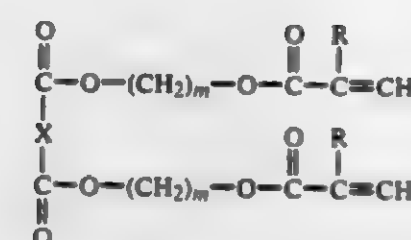
Int. Cl.² G03C 1/68

U.S. Cl. 430—288

6 Claims

1. In a photopolymerizable composition consisting essentially of:

- (a) a photoinitiator;
- (b) a macromolecular linear organic film-forming polymeric binder; and
- (c) a photopolymerizable monomer, the improvement comprising in combination:
 - (i) 0.001 to 20 parts by weight, based on the weight of monomer, of non-peroxide photoinitiator, which is activatable by actinic radiation and thermally inactive at and below 85° C.;
 - (ii) 10 to 95 parts by weight, based on the total weight of the photopolymerizable composition, of binder; and
 - (iii) 5 to 90 parts by weight, based on the total weight of the photopolymerizable composition of an ethylenically unsaturated addition-polymerizable compound having a molecular weight of at least 150 and a boiling point of above 100° C. and having the formula:



where R = H, CH₃;



or (CH₂)_{n-2}; and m and n are independently from 2 to 10.

4,230,791

CONTROL OF VALLEY CURRENT IN A UNIUNCTION TRANSISTOR BY ELECTRON IRRADIATION

Hing C. Chu, and Y. S. Edmund Sun, both of Liverpool, N.Y., assignors to General Electric Company, Auburn, N.Y.

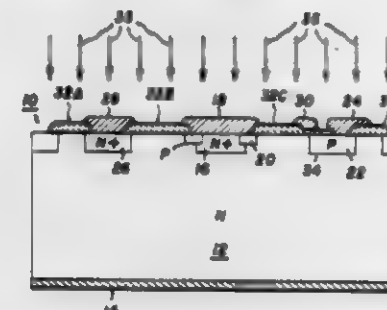
Division of Ser. No. 828,028, Aug. 26, 1977, abandoned. This

application Apr. 2, 1979, Ser. No. 25,871

Int. Cl.³ H01L 7/00

U.S. Cl. 430—296

10 Claims



1. A method for changing the valley current of a unijunction transistor of the type including an emitter-base junction comprising:

exposing at least said emitter-base junction of said unijunction transistor to lattice defect causing radiation for a time sufficient to change said valley current of said unijunction transistor.

4,230,792

LITHOGRAPHIC PRINTING PLATE FROM SILVER HALIDE EMULSION

Yasuo Tsubai; Akio Yoshida, and Shigeyoshi Suzuki, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 812,893, Jul. 5, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 811

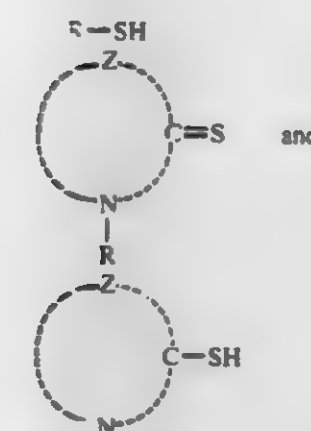
Claims priority, application Japan, Jul. 15, 1976, 51-84164

Int. Cl.² G03F 7/02

U.S. Cl. 430—302

20 Claims

1. In a method for making a lithographic printing plate, which comprises exposing a photosensitive material including a silver halide emulsion layer, and developing the exposed material, the improvement comprising making an undeveloped silver halide portion of said silver halide emulsion layer receptive to oleophilic inks by treating the developed material either (1) simultaneously with at least one solvent for silver halides and at least one organic mercapto or thion compound selected from the group consisting of compounds having the formulae (I), (II) and (III):



wherein R is alkyl having at least 10 carbon atoms, aryl or aralkyl group R' is hydrogen, an alkyl having not more than 12 carbon atoms, aryl or aralkyl group, and Z is an atomic group required to form a 5- or 6-membered heterocyclic compound together with N and C in the formulae, or (2) successively, first with said solvent and second with said organic mercapto or thion compound, said organic mercapto or thion compound being capable of forming a compound which is more stable and has a lower solubility than a soluble silver complex formed by said solvent to make an undeveloped silver halide portion receptive to oleophilic inks.

4,230,793

PROCESS FOR THE PRODUCTION OF SOLDER MASKS FOR PRINTED CIRCUITS

Ewald Losert, Rheinfelden, and Heinz Rembold, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

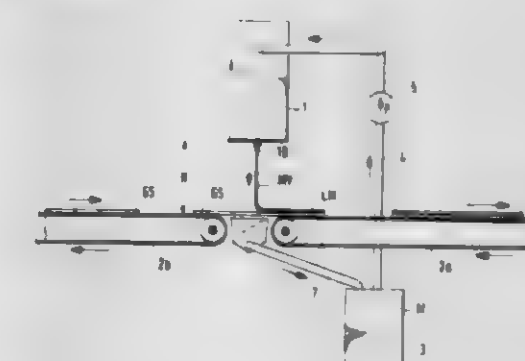
Filed Nov. 15, 1978, Ser. No. 960,971

Claims priority, application Switzerland, Nov. 21, 1977, 14182/77

Int. Cl.² G03C 5/00

U.S. Cl. 430—315

3 Claims



1. A process for producing solder masks on printed circuits having at least one aperture therethrough by applying a thin layer of a liquid substance curable by irradiation to a printed circuit, irradiating the layer except in the those areas of the circuit to be soldered, and developing the layer with an agent which dissolves the-unirradiated zones: wherein the improvement comprises, applying said layer to said circuit by conveying the circuit beneath a free falling curtain of said liquid substance whose viscosity is selected from the range 500 to 1200 mPa's at impingement on said circuit, adjusting the height of said curtain above said circuit to produce a rate of flow at impingement selected from the range 60 to 100 m/min, and adjusting the rate at which said circuit is conveyed beneath said curtain to be greater than a rate slightly less than the rate at which said curtain falls on said circuit.

4,230,794

IMPROVING ETCH RESISTANCE OF A CASEIN-BASED PHOTORESIST

Donald C. McCarthy, Delran, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,325

Int. Cl.³ G03C 5/00

U.S. Cl. 430—323

15 Claims

1. A method of improving the etch resistance of a casein-based photoresist pattern to a low specific gravity ferric chloride based etchant solution comprising, treating a dried casein-based photoresist pattern with a formaldehyde solution, and thereafter drying the treated photoresist pattern.

4,230,795

MULTIPART PHOTSENSITIVE ELEMENT WITH BOTH FIXED CONTRAST AND VARIABLE CONTRAST PART RECORDS

Donald Krause, 8 Clintwood Dr., Apt. #8A, Brighton, N.Y. 14620

Continuation-in-part of Ser. No. 847,583, Nov. 1, 1977, Pat. No. 4,175,967. This application Apr. 26, 1979, Ser. No. 33,378

Int. Cl.³ G03C 1/76, 3/00

U.S. Cl. 430—503

11 Claims

1. A multipart photosensitive element comprising: a support, a plurality of partial record portions carried on said support; all of said partial record portions together forming a full record; each of said partial record portions having a preselected density range of said full record and all of said partial record portion densities combined forming the total density range of said full record; at least one of said partial record portions including a fixed contrast emulsion and at least one of said partial record portions including a variable contrast emulsion for varying the contrast of that partial record portion over its preselected density range; each of said variable contrast emulsions being photoresponsive in a different spectral region from the other variable contrast emulsions in the other partial record portions for independently selectively varying the contrast in each of the partial record portions including variable contrast emulsions.

4,230,796

HIGH SPEED LITHOGRAPHIC FILM ELEMENT

Herbert Gunther, Dreieich, Fed. Rep. of Germany, and Herbert Blank, Darmstadt, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 22, 1978, Ser. No. 945,061

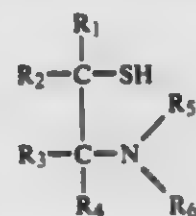
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802016

Int. Cl.³ G03C 1/06, 1/28

U.S. Cl. 430—523

8 Claims

1. A lithographic film element comprising a film support having one or more light-sensitive gelatino-silver halide emulsion layers coated thereon, each of which contains a development accelerator of the general formula:



or a salt thereof, wherein each of R_1 and $R_2 = H$ or C_1-C_5 alkyl, each of R_3 and $R_4 = H$ or $-COOR$, where R , R_5 , and $R_6 = C_1-C_5$ alkyl.

4,230,797

HETEROGENOUS SPECIFIC BINDING ASSAY EMPLOYING A COENZYME AS LABEL

Robert C. Boguslaski, Elkhart; Robert J. Carrico, Bremen, both of Ind., and James E. Christner, Ann Arbor, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation of Ser. No. 667,982, Mar. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 572,008, Apr. 28, 1975, abandoned. This application Apr. 10, 1978, Ser. No. 894,838

Int. Cl.² C12Q 1/66

U.S. Cl. 435—7

26 Claims

1. In a heterogeneous specific binding assay method for determining a ligand in a liquid medium, which method comprises the steps of:

(a) contacting said liquid medium with reagent means including a labeled conjugate comprising a specific binding substance coupled to a labeling substance, said reagent system producing

(1) a bound-phase of the labeled conjugate in which the specific binding substance therein is bound by a specific binding partner thereto and

(2) a free-phase of the labeled conjugate in which the specific binding substance therein is not bound by a specific binding partner thereto,

(b) separating said bound-phase and said free-phase; and (c) determining said labeling substance in said bound-phase or said free-phase as a function of the amount of said ligand in said liquid medium;

the improvement wherein said labeling substance in said labeled conjugate is a nucleotide coenzyme, and wherein said labeling substance measuring the extent to which said coenzyme participates in an enzymatic reaction involving an enzyme which requires said coenzyme for activity.

11. In a reagent means for use in determining a ligand in a liquid medium, which means comprises (i) a labeled conjugate comprising said ligand or a specific binding analog thereof coupled to a labeling substance, and (ii) a specific binding partner of said ligand which binding partner is in a form which is insoluble in said liquid medium,

the improvement wherein said labeling substance in said labeled conjugate is a nucleotide coenzyme.

4,230,798

UNITIZED URIC ACID TEST COMPOSITION AND DEVICE

Eppie S. Chang, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 13, 1978, Ser. No. 877,500

Int. Cl.² G01N 31/14

U.S. Cl. 435—10

16 Claims

1. In test means for the detection of uric acid comprising a uricase-active substance, at least one chromogen, and peroxidase, the improvement wherein the uricase-active substance is animal-originated uricase which has been dialyzed against a low metal binding constant buffer, has a pH of from about 6.8 to about 7.5, is stable in said pH range and, is free of pH sensitive contaminants having a molecular weight of less than about 6,000.

4,230,799

PROCESS FOR THE PREPARATION OF ANTIBIOTIC W-10 COMPLEX AND FOR THE ISOLATION OF ANTIBIOTIC 20561 AND ANTIBIOTIC 20562 THEREFROM

David Taplin, Miami, Fla.; Marvin J. Weinstein, East Brunswick, N.J.; Raymond T. Testa, Verona, N.J.; Joseph A. Marquez, Montclair, N.J., and Mahesh G. Patel, Verona, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 767,102, Feb. 9, 1977, Pat. No. 4,137,224. This application Oct. 19, 1978, Ser. No. 953,050

Int. Cl.³ C12P 19/62; C12R 1/01

U.S. Cl. 435—76

4 Claims

1. A process for preparing Antibiotic W-10 Complex which comprises cultivating under controlled aerobic conditions in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen an Antibiotic W-10 Complex producing member of *Aeromonas* sp. W-10 until a composition of matter having substantial antifungal activity is produced and recovering the Antibiotic W-10 Complex from said medium.

4,230,800

PROCESS FOR PRODUCING A POLYSACCHARIDE USING PSEUDOMONAS POLYSACCHAROGENES M-30

Toshihiro Takayama; Fujio Endo; Tsuneo Nozawa; Yoshiro Masuda; Motokuni Mori, and Toshiji Kanayama, all of Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited and Mitsubishi Yuka Pharmaceutical Co., Ltd., both of Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,142

Claims priority, application Japan, Nov. 8, 1977, 52/133104

Int. Cl.³ C12P 19/04; C12R 1/38

U.S. Cl. 435—101

2 Claims

1. A process for the production of a polysaccharide which comprises cultivating a microorganism having the identifying characteristics of *Pseudomonas polysaccharogenes* M-30 in a medium containing methanol as a sole or major carbon source and isolating a polysaccharide from a cultured broth.

4,230,801

PRODUCTION OF α -EMULSIONS

David L. Gutnick, Ramat Aviv, and Eugene Rosenberg, Raanana, both of Israel, assignors to Biotechnologie Aktiengesellschaft für Emulsion, Basel, Switzerland

Filed Feb. 22, 1979, Ser. No. 12,974

Int. Cl.² C12P 19/04

U.S. Cl. 435—101

23 Claims

1. A process for producing extracellular microbial lipopolysaccharides which comprises (A) inoculating an aqueous fermentation medium containing a growth-sustaining amount of one or more fatty acid salts with a culture of *Acinetobacter* Sp. ATCC 31012 or its mutants; (B) aerobically growing the microorganism in such fermentation medium, while adding additional amounts of such fatty acid salt or salts to sustain growth, for a period of time sufficient to produce extracellular microbial protein-associated lipopolysaccharides (herein collectively called " α -emulsions") in which the lipopolysaccharide components (herein collectively called " α -emulsions") of such α -emulsions are N- and O-lipoacylated heteropolysaccharides made up of major amounts of D-galactosamine and an aminouronic acid, such apo- α -emulsions containing at least 5 percent or above by weight of fatty acid esters in which (1) the fatty acids contain from about 10 to about 18 carbon atoms; and (2) about 50 percent by weight or more of such fatty acids are composed of 2-hydroxydodecanoic acid and 3-hydroxydodecanoic acid; and (C) separating substantially all of the microbial cell mass from the emulsion-containing culture medium.

4,230,802

UNREFINED GLUCOSE SYRUP AS SUBSTRATE BY GLUCOSE ISOMERIZING ENZYME IN PRODUCING FRUCTOSE FROM GLUCOSE

Irving Ehrenthal, University City, Mo.; Louis F. Slapshak, Belleville, Ill., and Jagdish Rajpara, St. Louis County, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Jan. 5, 1976, Ser. No. 646,629

Int. Cl.³ C12P 19/24

U.S. Cl. 435—94

7 Claims

1. A process for converting glucose to fructose comprising the steps of:

A. adding to a refined high glucose substrate, a glucose isomerizing enzyme and at least about 0.1% by weight based on the weight of dry solids of the component of starch conversion mud which comprises fatty acids, esterified fatty acids, coagulated proteins, and hemi-cellulose, said refined substrate containing more than about 90% glucose and being free from extraneously added cobalt salt,

B. continuing the conversion without adding any extraneous cobalt salt, and

C. recovering a glucose-fructose syrup which is free from extraneously added cobalt salt and which contains at least 30% fructose.

4,230,803

PREPARATION OF WATER-INSOLUBLE ENZYME COMPOSITIONS

Guenter Weidenbach, Hanover, and Dirk Bonse, Arpke, both of Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 31, 1978, Ser. No. 911,227

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726188

Int. Cl.² C07G 7/02

U.S. Cl. 435—176

27 Claims

1. A process for preparing a water-insoluble enzyme composition wherein an enzyme is covalently bonded to an inorganic support material whereby a maximum activity of the insoluble enzyme composition is achieved with the lowest possible amount of enzyme, said process comprising the steps of:

(a) selecting an inorganic support material having the most frequent pore-diameter which produces an enzyme composition having the highest absolute activity when a plurality of inorganic support materials having different most frequent pore-diameters are each individually contacted with an enzyme solution containing a given concentration of enzyme, said most frequent pore-diameter producing the highest absolute activity being independent of the enzyme concentration in the solution;

(b) selecting an aqueous enzyme solution containing the concentration of enzyme which produces a composition that has a relative activity of substantially 100% when the support material of step (a) is contacted with a plurality of enzyme solutions having different concentrations of enzyme;

(c) contacting the support material of step (a) with the enzyme solution of step (b) whereby a portion of the enzyme from the solution is taken up by the support material to produce a water-insoluble enzyme composition; and

(d) separating the resulting water-insoluble enzyme composition from the remaining solution.

4,230,804

WATER-INSOLUBLE PENICILLIN ACYLASE PREPARATION

Thomas A. Savidge, Stayning, and Lawson W. Powell, Worthing, both of England, assignors to Beecham Group Limited, England

Continuation of Ser. No. 832,343, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 709,009, Jul. 26, 1976, abandoned, which is a division of Ser. No. 532,051, Dec. 12, 1974, Pat. No. 4,001,264. This application Oct. 27, 1978, Ser. No. 955,224

Claims priority, application United Kingdom, Dec. 28, 1973, 59975/73

Int. Cl.² C07G 7/02

U.S. Cl. 435—180

6 Claims

1. A re-usable water-insoluble penicillin acylase complex wherein penicillin acylase is adsorbed on a methacrylic acid-divinyl benzene macroporous copolymer cationic exchange resin having a substantial proportion of carboxylic acid groups in free acid or anionic form and the adsorbed penicillin acylase is cross linked with a water-soluble aldehyde selected from the group consisting of glutaraldehyde, glyoxal and formaldehyde.

4,230,805

THEOPHYLLINE ANTIGENS AND ANTIBODIES

Prithipal Singh, Santa Clara, and Mae W. Hu, Sunnyvale, both of Calif., assignors to Syva Company, Palo Alto, Calif.

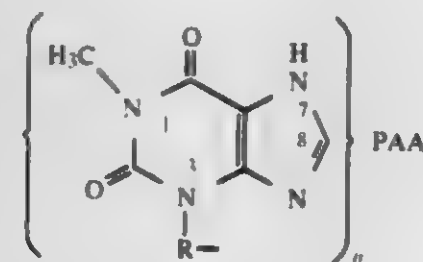
Continuation of Ser. No. 787,829, Apr. 15, 1977, Pat. No. 4,156,081. This application Jan. 11, 1979, Ser. No. 2,527

Int. Cl.² C07G 7/00, 7/02

U.S. Cl. 435—188

18 Claims

1. A compound of the formula



wherein:

PAA is a poly(amino acid) of at least about 5,000 molecular weight;

n is at least 1 and up to the molecular weight of PAA divided by 1,500; and

R is a linking group of from 1 to 12 atoms other than hydrogen which are carbon, oxygen, nitrogen and sulfur.

4,230,806

PROCESS FOR THE PRODUCTION OF MICROBIAL PROTEIN AND LIPID FROM VEGETABLE CARBOHYDRATES BY CULTURE OF MICROBES

Michihiko Nojiri, Takaishi; Kazuo Kakutani, Nishinomiya; Shigezo Uedono, Kigawahigashi; Kazuo Uenakai, Sakai, and Masafumi Matsumoto, Shibutani, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1977, Ser. No. 804,442

Int. Cl.¹ C10N 1/16

U.S. Cl. 435—253

11 Claims

1. A process for the production of protein and lipid from carbohydrates by culture of a yeast selected from the group consisting of the *Candida* strain and the *Rhodotorula* strain, comprising a first enzymatic step of liquefying the carbohydrate with a dextrinogenic enzyme to prepare a culture medium for the yeast, thereafter sterilizing said culture medium, thereafter a second enzymatic step of effecting simultaneous enzymatic saccharification and culture of said yeast by aseptically adding a saccharogenic amylase to said culture medium

while culturing said yeast therein, and thereafter separating the cultured yeast cells and lipid from said culture medium.

11. A continuous multi-stage culture method for producing microbial protein, comprising:

liquefying a carbohydrate to form a culture medium; thereafter sterilizing said culture medium to produce a sterilized culture medium;

providing at least three culture tanks connected in series; continuously introducing said sterilized culture medium, an amylase and a yeast culture into the first of said culture tanks to form a cultivation liquid;

continuously conducting the cultivation liquid from said first tank serially through the remainder of said culture tanks; maintaining conditions suitable for yeast growth and saccharification of the carbohydrate in said first tank;

maintaining conditions suitable for logarithmic growth of said yeast in said second tank;

maintaining conditions suitable for stationary growth of said yeast in said third tank;

returning a portion of said cultivation liquid from said second tank to said first tank thereby maintaining the yeast concentration in the first tank at a desired level;

maintaining pressure of 1,000–2,500 mm. Aq. in the first of said tanks, 600–1,800 mm. Aq. in the second of said tanks, and 300–1,500 mm. Aq. in the third of said tanks to control the flow rates of the culture medium from tank to tank and the level of the culture medium in each tank within the desired range and to promote a spontaneous flow from tank to tank; and

recovering microbial protein from the third tank.

4,230,807

METHOD FOR REGENERATING A WEAK BASE ANION EXCHANGER

Sheldon Evans, Overveen, Netherlands, assignor to Hoogovens IJmuiden, B.V., IJmuiden, Netherlands

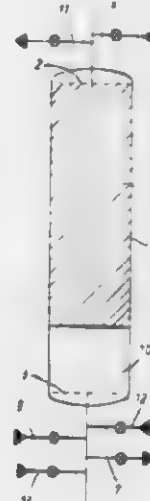
Filed Jul. 9, 1976, Ser. No. 703,814

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 2530677

Int. Cl.² B01D 15/06

U.S. Cl. 521—26

8 Claims



1. A method for regenerating a weak base anion exchanger which comprises passing a regenerating chemical in an upward direction through a granular resinous mass of such exchanger, thereupon displacing said chemical and rinsing the mass with water, said regenerating chemical being a lime slurry having a concentration of 1 to 5% by weight, which is both supplied to and withdrawn from the granular mass in an evenly distributed flow with a flow rate of at least 10 m³ per hour, per m³ resin material (m³/h/m³), while said granular mass is in a compacted state.

4,230,808

METHOD FOR MAKING SOLID MATERIALS HAVING A FLASH POINT OF LESS THAN 500° C. FIRE ALARMING, FIRE ALARMING AND SELF EXTINGUISHING, OR FIRE ALARMING, SELF-EXTINGUISHING AND FIRE ABATING

Anthony H. Pietersen, Thoiry Feniere, St. Genis Pouilly, France

Filed Nov. 29, 1978, Ser. No. 964,693

Claims priority, application Netherlands, Dec. 1, 1977, 7713309; Sep. 12, 1978, 7809289

Int. Cl.¹ C08G 8/00

U.S. Cl. 428—307

22 Claims

1. In a method of making solid materials having a flash point of less than 500° C. fire alarming, or fire alarming and self extinguishing, or fire alarming, self extinguishing and fire abating, the improvement comprising applying to said solid material at least one surface layer containing micro capsules of a bromofluoroalkane, the micro capsules having an external diameter of from 200 to 260 micrometers, and further having walls consisting of a polymer having pores therein, the pores having been sealed by means of a hydrophobic polycondensation product of an aromatic polyhydroxy compound and an aldehyde, and the bromofluoroalkane within the micro capsules being liquid at ambient temperature and having a critical temperature of at least 100° C.

4,230,809

PRESSURE-RESISTANT POLYURETHANE-POLYUREA PARTICLES FOR THE ENCAPSULATION OF ACTIVE INGREDIENTS AND PROCESS FOR THEIR MANUFACTURE

Rudolf Heinrich, Kelkheim; Heinz Frensch, Frankfurt am Main, and Konrad Albrecht, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,099

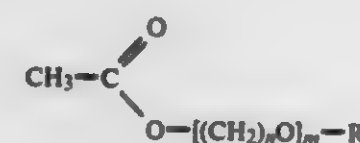
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757017

Int. Cl.² C08G 18/14, 18/08

U.S. Cl. 521—65

14 Claims

1. A process for the manufacture of pressure-resistance internally textured polyurethane-polyurea particles which comprises forming an organic solvent solution of isocyanate prepolymer which is a reaction product of a stoichiometric excess of an aliphatic, aromatic, cycloaliphatic or araliphatic di- or polyisocyanate with a diol or polyol, said reaction product having a mean molecular weight of from about 300 to 10,000, said organic solvent solution also containing from 2 to 85% by weight an alkyl and/or alkoxyalkyl acetate of the formula



in which

m is 0 to 2

n is 1 to 4 and

R is (C₁–C₅)alkyl

and dispersing said solvent solution as an organic phase at a temperature of 0° to 95° C. in an aqueous phase comprising water, a protective colloid and optionally a surface-active agent to form droplets of said organic phase wherein said isocyanate prepolymer reacts with the water of said aqueous phase to form said polyurethane-polyurea particles.

4,230,810

METHOD OF PREPARING RESIN

Richard R. Lattime, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 7, 1979, Ser. No. 36,957

Int. Cl.¹ C08F 2/00, 20/04, 22/06, 2/16

U.S. Cl. 526—224

7 Claims

1. A method of preparing a resin composition and having a softening point in the range of about 100° C. to about 300° C., which comprises free radical polymerizing, in an aqueous medium having a pH in the range of about 2 to about 7 and in the presence of a free radical initiator and organic mercaptan chain transfer agent, a monomer mixture, based on 100 weight percent of monomers, in a dispersion by mixing with or in water (A) about 0.25 to about 2 weight percent of at least one water soluble, polymerizable surfactant in the form of a bifunctional monomer in acid form or neutralized salt thereof, said monomer composed of (i) a first, hydrophilic functional component selected from at least one reactive acid radical or neutralized metal salt thereof selected from at least one of sulfate, sulfonate, carboxylate or phosphate radicals where said metal salts thereof are selected from at least one of sodium, potassium, ammonium or organic amine salts and (ii) a second hydrophobic functional component comprised of at least one of (a) alkenyl aromatic radical selected from at least one of styrene, α-methylstyrene and vinyl toluene or (b) selected from at least one of ethylene, propylene, butene, pentene, hexene, heptene, octene, nonene, decene, undecene, dodecene, tridecene, tetradecene, pentadecene and hexadecene of (c) an n-alkylol amide of an alpha-beta-olefinically unsaturated carboxylic acid having 4–10 carbon atoms, (B) about 60 to about 95 weight percent of at least one hard segment hydrophobic enhancing monomer selected from styrene, α-methylstyrene, acrylonitrile, methacrylonitrile, vinyl toluene, methyl methacrylate, vinyl chloride and vinylidene chloride, (C) about 0 to about 35 weight percent of at least one soft segment hydrophobic enhancing monomer selected from at least one acrylate selected from methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate, lauryl acrylate, or at least one vinyl ether selected from methyl, ethyl, butyl, octyl, decyl, dodecyl and cetyl vinyl ether and/or at least one diene selected from 1,3-butadiene, isoprene and 2,3-dimethyl butadiene, provided that said dienes of monomer part (C) and said monomer part (B) vinyl chloride and vinylidene chloride are not mixed together and copolymerized, and (D) about 0.25 to 5.0 weight percent of at least one hydrophilic enhancing organic acid selected from acrylic, methacrylic, fumaric, itaconic and maleic acid; and where in said aqueous polymerization medium, if additional emulsifier(s) is used, it is used in an amount up to a maximum of about 5 weight percent of said bifunctional monomer surfactant used.

4,230,811

COPOLYMERS OF ETHYLENE AND ETHYLENICALLY UNSATURATED MONOMERS, PROCESS FOR THEIR PREPARATION AND DISTILLATE OIL CONTAINING SAID COPOLYMERS

Stephen Illycky, Maplewood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 461,621, Apr. 17, 1974, abandoned.

This application Oct. 2, 1978, Ser. No. 947,813

The portion of the term of this patent subsequent to May 11, 1995, has been disclaimed.

Int. Cl.² C08F 210/02, 218/08

U.S. Cl. 526—227

3 Claims

1. In a method of preparing an oil-soluble copolymer of ethylene and vinyl acetate useful as a middle distillate fuel oil flow improver for depressing the pour point of said oil and limiting the size of wax crystals that form on cooling said oil below its cloud point, by free radical initiation, wherein said copolymer has a number average molecular weight by Vapor Phase Osmometry in the range of 1,000 to 5,000 and consists essentially of about 3 to 20 molar proportions of ethylene per

4,230,822

FLAME-RETARDANT POLYURETHANE FOAMS

Robert M. Murch, Brinklow, Md.; Phyllis I. Meyer, Madison, Wis., and John J. Eagan, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 795,216, May 9, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 950,038
Int. Cl.¹ C08G 18/14

U.S. Cl. 521—106.

27 Claims

1. In a crosslinked hydrophilic flame-retardant polyurethane foam prepared by reacting a hydrophilic polyoxyalkylene urethane prepolymer under foam-forming conditions with at least 20 moles of water for every mole of NCO groups in the prepolymer and in the presence of alumina hydrate and a phosphorous fire-retardant compound with said alumina hydrate carried in the water phase, the improvement comprising: incorporating, into the water phase prior to contact with the prepolymer in the foam-forming reaction, a water-dispersible and combustible organic carbon compound selected from the group consisting of a phenol having at least 2 hydroxyl groups per mole, starch, lignin, and wood cellulose, said carbon compound providing an essentially neutral pH when dissolved or dispersed in water, said carbon compound being present from about 5 to about 30 parts by weight based on 100 parts by weight of the prepolymer, provided that when said carbon compound is wood cellulose it is present from about 2 to about 10 parts by weight of the prepolymer, and said carbon compound not functioning as a gelatinizing agent at the concentration employed.

4,230,823

POLYURETHANE FOAMS AND ELASTOMERS BASED ON MODIFIED POLYETHER POLYOLS

Heinrich Alberts, Cologne, and Gerhard Balle, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,307

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2837026

Int. Cl.¹ C08G 18/14, 18/50; C08K 5/06

U.S. Cl. 521—137

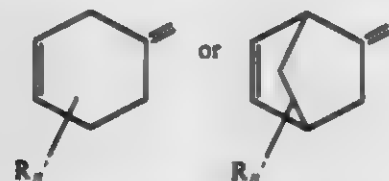
15 Claims

1. A process for the preparation of modified polyether polyols comprising polymerizing of from 1 to 50 parts by weight of a mixture of 20 to 100% by weight (based on the total quantity of monomers) of acrylonitrile and 0 to 80% by weight of styrene in 50 to 99 parts by weight of the polyether polyol in the presence of a polymerization initiator which yields radicals, wherein said polymerization is carried out in the presence of from 0.1 to 1.5% by weight, based on the total quantity of monomers put into the process, of a compound of the formula:



wherein

A represents a divalent group



R represents a C₁₋₁₈ alkyl, C₁₋₁₀ cycloalkyl, or substituted or unsubstituted benzyl group,
R' represents C₁₋₈ alkyl group,
n represents 0, 1 or 2 and
X represents oxygen or sulfur.

4,230,824

SUCROSE BASED POLYETHER POLYOLS

Neil H. Nodelman, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jun. 12, 1978, Ser. No. 914,266

Int. Cl.¹ C08G 18/50, 65/26, 18/14

U.S. Cl. 521—167

11 Claims

1. In a process for the preparation of sucrose-based polyether polyols having a functionality of at least 6.5 and an OH number of 400 or less by the alkoxylation of sucrose with an alkylene oxide, the improvement which comprises reacting the alkylene oxide with a sucrose mixture containing:

- (A) 100 parts by weight of sucrose;
- (B) up to 1.3 parts by weight of water;
- (C) 4–50 parts by weight of a polyalkylene polyamine containing at least three nitrogen atoms and at least four active hydrogen atoms attached to the nitrogen atoms;
- (D) from about 50–110 parts by weight of an aromatic hydrocarbon solvent.

11. In a process for the preparation of rigid polyurethane foam in which polyisocyanates are reacted with compounds containing active hydrogen atoms in the presence of a blowing agent and other auxiliary components, the improvement which comprises using as the active hydrogen containing compound a sucrose-based polyether produced by the process of claim 1.

4,230,825

UNIFORM HYDROLYSIS CATALYST ADDITION TO ETHYLENE-VINYL ESTER POLYMERS

Michael F. Hardy, Cincinnati, Ohio, and Terry Tgavalekos, Peabody, Mass., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Oct. 26, 1978, Ser. No. 954,959

Int. Cl.¹ C08F 8/12

U.S. Cl. 525—62

8 Claims

1. In the process for the alcoholysis of an ethylene-vinyl ester interpolymer containing from 3 to 45 weight percent of vinyl ester in a reaction medium comprising as components thereof said interpolymer, a low-boiling alcohol, a hydrocarbon solvent and an alkaline or acidic catalyst, the hydrocarbon solvent and low-boiling alcohol being incorporated in the reaction medium in the proportion from about 1:5 to about 10:1 parts by volume, wherein the interpolymer is incorporated in the reaction medium in an amount of from about 20 to about 50 percent by weight of the hydrocarbon solvent and low-boiling alcohol the improvement which comprises adding the catalyst to the alcoholysis reaction medium during the reaction within a period of from about 0.1 to about 20 minutes at a substantially uniform rate which does not vary over the period of catalyst addition by more than about $\pm 25\%$ to thereby provide an alcoholized interpolymer in which discoloration is inhibited or suppressed.

4,230,826

ORGANOPOLYSILOXANE COMPOSITIONS AND ELASTOMERS FORMED THEREFROM

Oswin Sommer, Burghausen; August Schiller, Markt; Norman Dorach, and Alois Strasser, both of Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 25, 1979, Ser. No. 33,280

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823011

Int. Cl.¹ C08L 83/06, 33/20

U.S. Cl. 525—100

5 Claims

1. A composition which can be stored under anhydrous conditions but which cross-links to form an elastomer when exposed to moisture at room temperature, comprising (1) an organopolysiloxane having terminal condensable groups, (2) a silicon compound having at least 3 Si-bonded hydrolyzable groups per molecule and (3) from 30 to 100 percent by weight based on the weight of the organopolysiloxane (1) of a powder

obtained from the polymerization of an acrylonitrile in an aqueous medium.

4,230,827

ETHYLENE OXIDE POLYMERS AS IMPACT MODIFIERS FOR PVC

Robert M. Myers, Philadelphia, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 6, 1978, Ser. No. 966,935

Int. Cl.¹ C08L 27/06

U.S. Cl. 525—121

8 Claims

1. Composition comprising an impact-resistant blend of polyvinyl chloride and a polymer derived from a monomer system comprised of at least about 80 percent by weight ethylene oxide having a viscosity average molecular weight of about 200,000 to 10,000,000 and free of pendant epoxy groups along the polymer chain, said polymer comprising about 1 to 30 parts by weight based on 100 parts of polyvinyl chloride in the blend.

4,230,828

POLYMER BOUND MULTIDENTATE COMPLEXES

John H. Gaul, Jr., Midland, Mich., and Russell S. Drago, Champaign, Ill., assignors to The University of Illinois Foundation, Urbana, Ill.

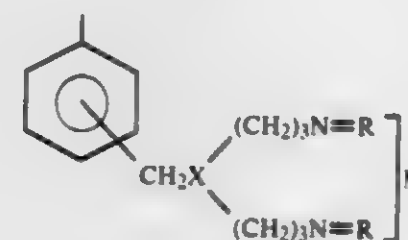
Filed Dec. 11, 1978, Ser. No. 968,123

Int. Cl.¹ C08F 8/30, 8/32, 8/28, 8/04

U.S. Cl. 525—153

9 Claims

5. A polymer bound multidentate metal complex comprising an insoluble crosslinked polymer support and, attached thereto, at least one pendant Schiff base ligand containing the metal complex, the complexed ligand being represented by the formula



where X is nitrogen or phosphorus, R is derived from a carbonyl compound selected from the group consisting of aldehydes and ketones, and M is a metal selected from the group consisting of Co(II), Mn(II), Ni(II), Cu(II), Zn(II), Fe(II), and Fe(III).

4,230,829

POWDERY COATING COMPOSITION

Ichiro Yoshihara; Tadashi Watanabe, and Osamu Iwase, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Dec. 13, 1978, Ser. No. 969,195

Claims priority, application Japan, Dec. 21, 1977, 52-154916

Int. Cl.¹ C08L 61/28

U.S. Cl. 525—162

14 Claims

1. A powdery coating composition comprising (1) 10 to 40% by weight of a solid cross-linking agent having softening point of 50° to 120° C. and prepared by heating 40 to 70% by weight of polyester having free hydroxyl groups with 60 to 30% by weight of an alkoxyaminotriazine at a temperature of 50° to 120° C. in the presence of a solvent for 1 to 6 hours, and (2) 90 to 60% by weight of a polyester, acrylic resin or mixtures thereof having a softening point of 60° to 130° C. and an acid value of up to 30 and containing 0.4 to 2.0 moles of free hydroxyl groups per kilogram of the resin, the alkoxyaminotriazine having 0 to 1 non-methylolated NH bond per triazine ring, at least 80% of the methylol groups of the alkoxyaminotriazine having been alkoxyolated with alcohol.

4,230,830

ADHESIVE BLENDS CONTAINING THERMALLY GRAFTED ETHYLENE POLYMER

Stephen R. Tanny, and Philip S. Blatz, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 30, 1979, Ser. No. 25,564

Int. Cl.¹ C08L 23/26

U.S. Cl. 525—222

6 Claims

1. A polymer blend consisting essentially of
a. about from 80–99% by weight of a first olefinic polymer selected from
(i) non-polar ethylene polymers and copolymers having a density of 0.930 to 0.965 g/cc and
(ii) copolymers of ethylene having up to about 30 weight percent of at least one ethylenically unsaturated ester having from 4 to 12 carbon atoms; and
b. about from 1–19% of a second olefinic polymer selected from the group consisting of
(i) non-polar ethylene polymers and copolymers having a density of about from 0.945 to 0.965 g/cc and
(ii) terpolymers of ethylene, at least one α -olefin having from 3–6 carbon atoms, and at least one nonconjugated diene;
the second olefinic polymer being thermally grafted with unsaturated acid or anhydride to give a copolymer having about from 0.02 to 4.0 weight percent of grafted succinic groups, provided, however, that when the second olefinic polymer is (ii), then the first olefinic polymer is (ii).

4,230,831

POLYETHYLENE BLEND COMPOSITION

Hisaya Sakurai; Yoshihiko Katayama; Tadashi Ikegami; Kiso Moriguchi, and Shigeru Mizutani, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1979, Ser. No. 78,737

Claims priority, application Japan, May 18, 1979, 54-60387

Int. Cl.¹ C08L 23/06

U.S. Cl. 525—240

20 Claims

1. An intimately melted and homogenized polyethylene composition comprising a high-medium density polyethylene having a high molecular weight (A), a high-medium density polyethylene having a low molecular weight (B) and a low density polyethylene (C):
(i) the average molecular weight of said (A) being 100,000–1,000,000, the average molecular weight of said (B) being 1,000–100,000, the molecular weight ratio of (A) to (B) being 5 to 200, and said (C) having an intrinsic viscosity $[\eta]$ of 0.70 dl/g or more in decalin at 135° C. and an expansion factor of 3.3 or more; and
(ii) the mixing ratio (A)/(B) being 30/70 to 80/20 and the mixing ratio of (C) in the composition being within the range from 1% by weight to less than 15% by weight.

4,230,832

PROCESS FOR PREPARING RESISTANT VINYL HALIDE POLYMERS

Chung H. Wei, Wilmington, Del., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 497,846, Aug. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 402,494, Oct. 1, 1973, abandoned. This application Dec. 2, 1975, Ser. No. 636,878

Int. Cl.¹ C08L 27/06; C08F 259/04; C08L 47/00; C08F 2/20

U.S. Cl. 525—260

2 Claims

1. In a process for forming an impact resistant vinyl chloride polymer by first forming a porous vinyl chloride polymer by suspension polymerization using a suspending agent followed by polymerizing a monomer composition adapted to form a rubber containing interpolymer having a T_g of less than 25° C. in the presence of the porous vinyl chloride polymer, wherein the improvement comprises using a catalyst system of from

about 0.003% to about 0.6% by weight of a water soluble, free radical polymerization catalyst in combination with from about 0.005% to about 1.0% by weight of a monomer soluble, free radical polymerization catalyst during the suspension polymerization of the vinyl chloride and using polyvinyl alcohol as the suspending agent.

4,230,833

SINGLE STAGE CONTINUOUS GRAFT POLYMERIZATION PROCESS AND PRODUCT
Marshall T. Purvis, Newtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 8, 1979, Ser. No. 10,356

Int. Cl.² C08F 279/02, 279/06

U.S. Cl. 525-260

15 Claims

1. A single stage process comprising continuously introducing a solution of synthetic rubber in a monomer system comprising methyl methacrylate into a single reactor in the presence of a free radical initiator, continuously stirring said solution to create a turbulent flow, controlling the temperature at about 161 to 195° C., controlling the average residence time to below 90 minutes, and continuously removing the resultant graft polymer having a dispersed rubber phase and a continuous hard phase from said reactor.

4,230,834

PRIMERS FOR POLYMERIZABLE ACRYLATE-CHLOROSULFONATED POLYETHYLENE ADHESIVES AND TWO-PART ADHESIVES PREPARED THEREWITH

Julius Sirota, South Plainfield, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 14, 1978, Ser. No. 969,610

Int. Cl.³ C08L 61/22, 33/12

U.S. Cl. 525-308

9 Claims

6. A two-part adhesive which comprises a joined mixture of (1) an acrylate or methacrylate monomer, a chlorosulfonated polyethylene and a peroxy polymerization initiator and (2) an aldehyde-amine condensation product and a salt of a non-transition metal selected from the group consisting of lead, tin, zinc, calcium, barium, strontium and cadmium wherein the aldehyde-amine condensation product is used in an amount of 0.15 to 5% and the non-transition metal salt in an amount of 0.00001 to 0.5% by weight of the adhesive composition and wherein the ratio of the aldehyde-amine condensation product to the non-transition metal salt is within the range of 1:1 to 15:1.

4,230,835

METHOD OF REMOVING POLYBUTADIENE GELS FROM SOLUTIONS

Richard C. Well, Monroeville Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 12, 1979, Ser. No. 11,350

Int. Cl. C08F 279/02

U.S. Cl. 525-316

6 Claims

1. Method of removing gels from a solution of polybutadiene in styrene comprising passing the solution through a filter medium of viscose rayon felt.

4,230,836

CHEMICALLY CROSS-LINKED POLY(P-METHYLSTYRENE)

Peter J. Canterino, Towaco, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 870,778, Jan. 19, 1978, abandoned. This application Apr. 26, 1979, Ser. No. 33,603

Int. Cl.² C08F 8/00

U.S. Cl. 525-332

3 Claims

1. A chemically cross-linked polymer of methyl ethenyl benzene derived from a polymerizable mixture of isomers of methyl ethenyl benzene consisting essentially of less than 10

percent by weight 1-methyl-3-ethenyl benzene, at least 90 percent by weight 1-methyl-4-ethenyl benzene, and 0 to 0.1 percent 1-methyl-2-ethenyl benzene.

4,230,837

OLEFIN CONTAINING POLYMERS TREATED WITH OXYCARBONYLSULFENYL HALIDES

Stanley J. Brois, Westfield, and Gary Ver Strate, Matawan, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 634,266, Nov. 21, 1975, abandoned.

This application Feb. 2, 1978, Ser. No. 874,656

Int. Cl.² C08F 8/34; C08C 19/20; C08J 3/24

U.S. Cl. 525-343

6 Claims

1. A method for chemically modifying and crosslinking polymers having olefin unsaturation so as to provide said polymers with hydroxyl functionality, said polymers being selected from the group consisting of synthetic and natural hydrocarbon elastomers, vinyl and vinylidene polymers, olefinically unsaturated acrylic polymers, polyvinyl esters and copolymers thereof, unsaturated polyesters and allyl polymers, which comprises reacting said polymer at the site of the olefinic linkage with an aliphatic organic oxycarbonylsulfenyl chloride of the general formula $R(OC(=O)SCl)_n$, wherein n is an integer of at least 2 and R represents a saturated aliphatic radical being the residual portion of a polyhydric alcohol or a polyalkylene ether polyol containing residual hydroxyl functionality.

4,230,838

MOULDBLE AND EXTRUDABLE POLYETHER-ESTER-AMIDE BLOCK COPOLYMERS

Paul Foy, Paris; Camille Jungblut, and Gérard E. Deleens, both of Orsay, all of France, assignors to ATO Chimie, Courbevoie, France

Continuation of Ser. No. 784,723, Apr. 5, 1977, which is a continuation of Ser. No. 582,428, May 30, 1975, abandoned. This application Oct. 3, 1978, Ser. No. 948,297

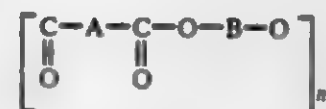
Claims priority, application France, May 31, 1974, 74 18913

Int. Cl.² C08L 77/00

U.S. Cl. 525-408

11 Claims

1. A mouldable and extrudable polyetherester-amide block copolymer having the formula:



wherein A is a linear saturated aliphatic amide sequence formed from a lactam or amino acid having a hydrocarbon chain containing 4 to 14 carbon atoms, or from a dicarboxylic acid and a diamine, wherein said diacid is in aliphatic carboxylic diacid having 4 to 40 carbon atoms; said amide having an average molecular weight between 800 and 5000; and B is a polyether sequence formed from linear or branched aliphatic polyoxyalkylene glycols, mixtures thereof or copolymers derived therefrom, said polyethers having a molecular weight of from 400 to 3000; wherein the proportion by weight of polyoxyalkylene glycol with respect to the total weight of polyether-ester-amide is from 5 to 50%; and n indicates a sufficient number of repeating units so that said polyether-ester-amide has an intrinsic viscosity of from 0.8 to 2.05; said polyether-ester-amide being obtained by reacting in the fused state a dicarboxylic saturated polyamide having carboxylic chain ends and an average molecular weight of 300 to 15,000 with a linear or branched aliphatic polyoxyalkylene glycol having hydroxylic chain ends and an average molecular weight of 200 to 6,000, said reaction being carried out under high vacuum at a temperature between 100° and 400° C. in the presence of a catalyst comprising a tetra-alkylortho-titanate

having the formula $Ti(OR)_4$, wherein R is a linear or branched aliphatic hydrocarbon radical having from 1 to 24 carbon atoms, the amount of said catalyst with respect to the reactive mixture is between 0.01 and 5% by weight.

4,230,839

QUATERNARY AMMONIUM ADDUCTS OF POLYMERIZABLE TERTIARY AMMONIUM SALTS AND ACRYLONITRILE

Rudolf S. Burika, Allen R. Fauke, and David W. Griffiths, all of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 523,813, Nov. 24, 1974. This application

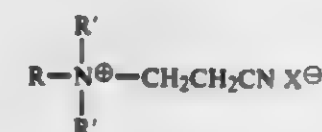
Oct. 27, 1978, Ser. No. 955,443

Int. Cl.² C08F 2/00, 11/04, 22/60, 22/60/00

U.S. Cl. 526-75

8 Claims

1. A polymer which is a homopolymer or copolymer of a monomer which is a quaternary ammonium adduct of the formula



where R is a polymerizable group terminated in



the R' groups are alkyl groups, X is an anion, and where the quaternary nitrogen is attached to four carbon atoms.

4,230,840

PROCESS FOR PRODUCING HYDROCARBON RESINS HAVING IMPROVED COLOR AND THERMAL STABILITY

Shigeru Katayama, Iwakuni, and Mutsuhiro Aoki, Ohtake, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 973,445

Int. Cl.² C08F 240/00

U.S. Cl. 526-77

23 Claims

1. A process for producing a hydrocarbon resin having improved color and thermal stability, which comprises contacting a petroleum cracking or reforming fraction containing at least 20% by weight of cationically polymerizable hydrocarbons and not more than 0.7% by weight, based on the fraction, of cyclopentadienes and having a boiling range of from 140° C. to 280° C., with 0.8 to 3.0 moles, per mole of the cyclopentadienes, of a dienophile compound having a carbon-to-carbon double bond and a carbonyl or cyano group adjacent to the double bond; and then polymerizing the treated petroleum fraction in the presence of a polymerization catalyst.

4,230,841

PROCESS FOR MEDIUM VINYL POLYBUTADIENE
Robert T. Prudence, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 31, 1979, Ser. No. 7,741

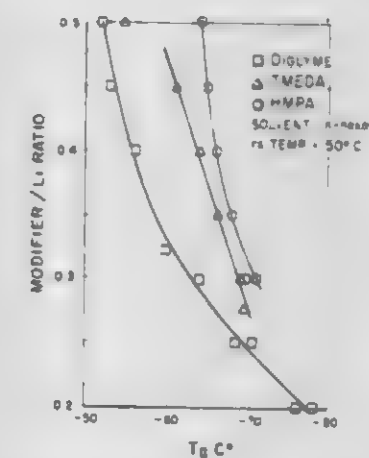
Int. Cl.³ C08F 236/06, 36/06, 4/48

U.S. Cl. 526-179

4 Claims

1. A process for the preparation of medium vinyl polybutadiene which comprises copolymerizing butadiene with small amounts of divinylbenzene in a hydrocarbon solvent system employing as a catalyst an alkyl lithium compound, which process has been modified by mixtures of polar compounds, at least one of which is a strong polar compound and is selected from the group consisting of hexamethylphosphoric acid triamide (HMPA), N,N,N',N'-tetramethylethylenediamine (TMEDA), ethylene glycol dimethyl ether (glyme), diethylene

glycol dimethyl ether (diglyme), triethylene glycol dimethyl ether (triglyme) and tetraethyleneglycol dimethyl ether (tetraglyme), in which the mole ratio of the strong polar compound to the alkyl lithium ranges between about 0.15/1 and 0.50/1, and at least one of which is a weak polar compound and is selected from the group consisting of tetrahydrofuran (THF), 1,4-diazobicyclo[2.2.2]octane (DABCO), diethylether, triethylamine, tri-n-butylamine, tri-n-butylphosphine and p-diox-



ane, in which the mole ratio of the weak polar compound to the alkyl lithium ranges between about 0.90/1 to about 1.50/1, in which the temperature is maintained constant throughout the polymerization and in which the mole ratio of the divinylbenzene to active alkyl lithium catalyst ranges between about 0.10 and about 0.90, and in which the amount of alkyl lithium catalyst is between about 0.10 and 1.0 millimoles of active alkyl lithium per hundred grams of butadiene.

4,230,842

HYDROCARBON RESIN

Herbert L. Bullard, Norton Village, and Robert A. Osborn, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 552,690, Feb. 24, 1975, abandoned.

This application Oct. 28, 1976, Ser. No. 736,635

Int. Cl.³ C08F 210/08

U.S. Cl. 526-185

4 Claims

1. A hydrocarbon-derived, tack enhancing, piperylene/2-methyl-2-butene backbone resin, modified with a minor amount of α -methylstyrene, characterized by having a softening point in the range of about 85° C. to about 100° C. prepared by the method which consists essentially of reacting at a temperature in the range of 10° C. to about 50° C. in the presence of a solvent selected from at least one of hexane, heptane and unreacted hydrocarbons and a catalyst selected from at least one of aluminum chloride and ethylaluminum dichloride, a monomer mixture consisting of about 88 to about 98 weight percent of a diolefin/olefin mixture in a weight ratio in the range of about 0.6/1 to about 1.4/1 and, correspondingly, about 12 to about 2 weight percent α -methylstyrene, where said diolefin is piperylene, optionally modified by containing up to about 5 weight percent isoprene based on the piperylene/isoprene mixture, where said olefin is 2-methyl-2-butene and where said polymerization monomer mixture is optionally modified by containing up to about 10 weight percent of at least one of the group selected from piperylene dimers, piperylene trimers, 2-methyl-1-butene, 2,3-dimethyl-1-butene, 2,3-dimethyl-2-butene, 2-methyl-1-pentene, 2-methyl-2-pentene, cyclopentene and 1,3-cyclopentadiene based on the total monomer mixture.

4,230,843

POLYMERIC COMPOSITIONS, METHOD FOR THEIR PREPARATION, AND LUBRICANTS CONTAINING THEM

Lester E. Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Division of Ser. No. 433,322, Jan. 14, 1974. This application Feb. 2, 1979, Ser. No. 8,737
Int. Cl.³ C08F 2/08

U.S. Cl. 526—204

6 Claims

1. A method for preparing a composition of matter which comprises polymerizing, under free radical polymerization conditions and at a temperature of about 30°–90° C., (A) at least one ethylenically unsaturated monomer having from 3 to about 10 carbon atoms and a terminal olefinic bond and selected from the group consisting of unsaturated monohydric or polyhydric alcohols, carboxylic acid esters thereof, esters of unsaturated carboxylic acids and saturated alcohols, vinyl cyclic compounds, unsaturated ethers, unsaturated ketones, amides of unsaturated carboxylic acids, unsaturated aliphatic hydrocarbons, alkenyl halides and unsaturated nitriles; in the presence of (B) at least one oil-soluble dispersant incapable of addition polymerization and characterized by the presence within its molecular structure of an acyl or acylimidoyl radical containing at least about 34 carbon atoms and an oxygen atom attached directly to said acyl or acylimidoyl radical, said oxygen atom also being attached to a hydrocarbon radical or a substituted hydrocarbon radical in which the substituents do not alter significantly the character or reactivity of the radical and comprise no more than about 10% by weight of said radical.

4,230,844

PROCESSES FOR THE PREPARATION OF POLYMERIC THICKENERS AND USES THEREOF

David C. Chang, Springfield; Michael Fryd, Philadelphia, both of Pa., and Achim R. Krueger, Cherry Hill, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 770,364, Feb. 22, 1977, abandoned, which is a division of Ser. No. 643,390, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 525,008, Nov. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 416,200, Nov. 15, 1973, abandoned. This application Sep. 28, 1978, Ser. No. 946,715
Int. Cl.³ C08F 2/06, 2/10

U.S. Cl. 526—210

1 Claim

1. A process for preparing a polymer useful as a thickening agent in aqueous polymeric latices comprising:

- (a) adding to a reaction zone about 10 to 50% by weight of the total of the monomers and sufficient ethylene glycol or propylene glycol, with 0 to about 50% by weight of water based on the weight of glycol, to give a final product having a solids content between 5 and 35% by weight, said monomers consisting essentially of (i) about 30–65% by weight of acrylic acid or methacrylic acid, and (ii) about 70–35% by weight of an ester of the formula



wherein

R is hydrogen or methyl,

x is a positive integer of 10 to 50, and

R₃ is an alkyl group of 8 to 20 carbon atoms;

(b) heating the mixture of (a) to a temperature in the range of about 70° to 110° C.;

(c) adding to the reaction zone about 2 to 50% by weight of the total of a free-radical polymerization catalyst dissolved in a solvent;

- (d) continuously feeding to the reaction zone the remainder of the monomers and catalyst; and
(e) cooling the reaction product and then adding ammonia or a water-soluble organic amine after the polymerization is complete to adjust the pH to about 7 to 10.

4,230,845

POLYHYDROXY-ALKYL-3,5-DISUBSTITUTED-2,4,6-TRIODOCARBANILATES

Kenneth R. Smith, Black Jack, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

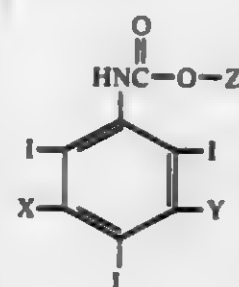
Division of Ser. No. 512,004, Oct. 4, 1974, Pat. No. 4,125,709.
This application Aug. 31, 1978, Ser. No. 938,342

Int. Cl.³ C07H 13/12; C07C 102/00, 103/20

U.S. Cl. 536—4

7 Claims

1. A compound of the formula:



wherein X and Y are each selected from the group consisting of lower alkoxy, hydroxy-(lower alkoxy), lower alkoxy-(lower alkoxy), lower acylalkyl, lower acylamino-(lower acylamino), hydroxy-lower acylamino, N-(lower alkyl)-lower acylamino, lower alkylsulfonamido, N-(lower alkyl)-lower alkylsulfonamido, 3,3-bis-(lower alkyl)-ureido, lower perfluoroacylamino, carbamyl, N-(lower alkyl) carbamyl, N,N-di-(lower alkyl) carbamyl, lower alkoxy-(lower acylamino), lower alkoxy-alkoxy-(lower acylamino), hydroxy and hydroxy-lower alkyl functions and Z is the monovalent residue of a polyol selected from the group consisting of cyclic polyols, acylamino polyols and alkyl glycosides, said monovalent residue containing not more than 7 carbon atoms in its chain or ring.

4,230,846

1,5-CARBAMATES OF FORTIMICIN B AND DERIVATIVES

John S. Tadanter, and Jerry R. Martin, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

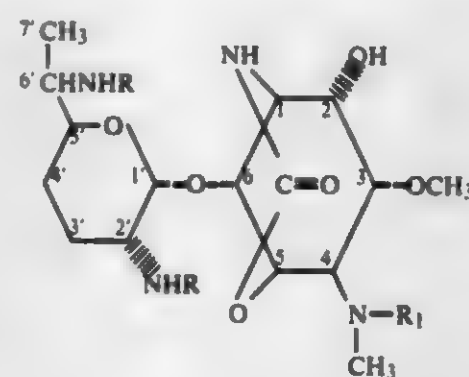
Filed Sep. 26, 1979, Ser. No. 79,133

Int. Cl.³ C07H 17/00

U.S. Cl. 536—4

14 Claims

1. A 1,5-fortimicin B carbamate represented by the formula:



wherein each R is hydrogen or benzyloxycarbonyl and R₁ is selected from the group consisting of: loweralkyl, hydroxy-loweralkyl, hydrogen, aminoloweralkyl, N-loweralkylamino-loweralkyl, N,N-diloweralkylaminoloweralkyl, trihaloalkoxycarbonyl, an amino acid residue and an N-protected amino acid residue and the pharmaceutically acceptable salts thereof.

4,230,847

AMINOGLYCOSIDE ANTIBIOTIC COMPOUNDS

Tattanaahalli L. Nagabhushan, Parsippany; William N. Turner, Bloomfield, and Alan Cooper, West Caldwell, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Continuation-in-part of Ser. No. 697,297, Jun. 17, 1976, Pat. No. 4,136,254. This application May 18, 1978, Ser. No. 906,895
Int. Cl.³ C07H 15/22

U.S. Cl. 536—10

4 Claims

1. A 3,2',6'-tri-N-acyl-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol selected from the group consisting of 3,2',6'-tri-N-Y-aisomicin, 3,2',6'-tri-N-Y-verdamycin, 3,2',6'-tri-N-Y-tobramycin, 3,2',6'-tri-N-Y-gentamicin C₁, 3,2',6'-tri-N-Y-gentamicin C_{1a}, 3,2',6'-tri-N-Y-gentamicin C₂, 3,2',6'-tri-N-Y-gentamicin C_{2a}, 3,2',6'-tri-N-Y-gentamicin C_{2b}, 3,2',6'-tri-N-Y-Antibiotic 66-40B, 3,2',6'-tri-N-Y-Antibiotic 66-40D, 3,2',6'-tri-N-Y-Antibiotic JI-20A, 3,2',6'-tri-N-Y-Antibiotic JI-20B, 3,2',6'-tri-N-Y-Antibiotic G-52, the 5-epi-, 5-deoxy-, and 5-epi-azido-5-deoxy analogs of the foregoing; 3,2',6'-tri-N-Y-kanamycin B, 3,2',6'-tri-N-Y-3',4'-dideoxykanamycin B, 3,2',6'-tri-N-Y-nebramycin factor 4, 3,2',6'-tri-N-Y-nebramycin factor 5, 3,2',6'-tri-N-Y-3',4'-dideoxy-3',4'-dehydrokanamycin B, and 3,2',6'-tri-N-Y-3',4'-dideoxy-6'-N-methylkanamycin B; wherein Y is an acyl blocking group.

4,230,848

PROCESS FOR PRODUCING 3-O-DEMETHYLFORTIMICINS

William Rosenbrook, Jr., Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,238

Int. Cl.³ C07H 15/22

U.S. Cl. 536—17 R

12 Claims

1. A method of O-demethylating a fortimicin antibiotic comprising the steps of dissolving a fortimicin to be O-demethylated in an inert solvent, cooling the resulting solution to a temperature of from -72° to 4° C., treating said cooled solution with a boron trihalide and thereafter recovering the O-demethylated antibiotic from the reaction mixture.

4,230,849

PROCESS FOR THE ACTIVATION OF CARBOXYLIC ACIDS

Antonio L. Palomo Coll, and Jose Diego Meseguer, both of Barcelona, Spain, assignors to Antibioticos, S.A., Spain

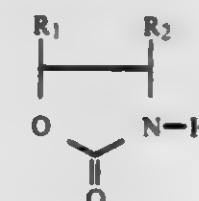
Filed Jul. 2, 1979, Ser. No. 53,804

Int. Cl.² C07D 499/00, 501/02

U.S. Cl. 544—28

4 Claims

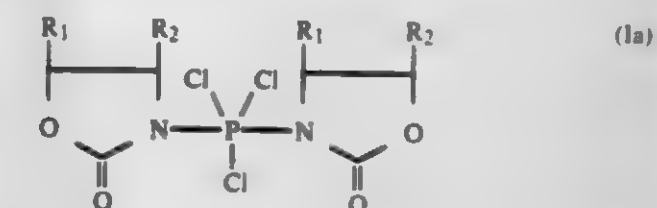
1. A process for the activation of carboxylic acids, useful for the subsequent conversion of said carboxylic acids into their corresponding esters or amides, comprising the steps of
(a) reacting one equivalent of a 2-oxazolidinone of the general formula



(II)

wherein R₁ and R₂ are selected from a group consisting of hydrogen and alkyl groups having from one to four carbon atoms, with a solvent with at least one half equivalent of phosphorus pentachloride at temperatures from -15° C. to +100°

C. to yield P-trichlorinated N,N'-bis-3(oxazolidinyl-2-one) phosphoranes of the formula



where R₁ and R₂ are likewise selected from a group consisting of hydrogen and alkyl groups having from one to four carbon atoms;

(b) then adding a salt of the carboxylic acid to be activated, to obtain an activation reaction mixture; and

(c) treating the resulting activation reaction mixture with one of a compound of the group comprising the compounds having an amine function and the compounds having a hydroxyl function to yield, respectively, an amide or an ester.

4,230,850

3-SUBSTITUTED-4-AMINOALKOXY-5,6-CONDENSED RING-2-PYRANONES

Philippe Briet; Jean-Jacques Berthelon, and Jean-Claude Depin, all of Lyons, France, assignors to LIPHA, Lyonnaise Industrielle Pharmaceutique, Lyons, France

Continuation of Ser. No. 768,745, Feb. 15, 1977, abandoned.

This application Mar. 9, 1979, Ser. No. 18,875

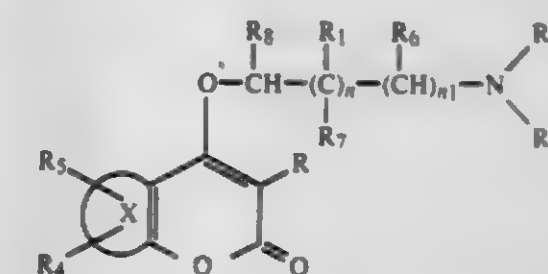
Claims priority, application France, Feb. 25, 1976, 76 05234

Int. Cl.³ C07D 413/12, 311/56

U.S. Cl. 544—151

6 Claims

1. A substituted pyranone represented by the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein:

n is 0 or 1;

n₁ is 0 or 1;

R is lower alkyl, phenyl, phenyl substituted by at least one halogen atom or lower alkoxy group, or benzyl;

R₁ is hydrogen, a hydroxy or lower alkyl group, or a 3,4,5-trialkoxybenzoyloxy radical;

R₂ is a straight-chain or branched lower alkyl group;

R₃ is hydrogen or lower alkyl; or

R₁ and R₂ are joined together to form with the adjacent nitrogen atom a saturated heterocyclic ring with n being 1 and n₁ being 0, or

R₂ and R₃ are joined together to form with the adjacent nitrogen atom a saturated heterocyclic ring optionally containing a further hetero atom;

X is benzene, cyclohexene, cycloheptene, cyclooctaene, cyclododecaene, naphthalene, dihydronaphthalene, or indeno (2,1-6) pyrano;

R₄ is H, halogen, hydroxy, lower alkyl, lower alkoxy, morpholinoalkoxy or phenyl;

R₅ is H, a substituent selected from hydroxy, straight-chain or branched lower alkyl, lower alkoxy and morpholinoalkoxy groups;

R₆ is hydrogen or a lower alkyl group;

R₇ is hydrogen or a lower alkyl group; and

R₈ is hydrogen or a lower alkyl group.

4,230,851

PROCESS FOR THE PRODUCTION OF 2-EQUIVALENT YELLOW COUPLERS

Günter Renner, and Quirin Scheben, both of Cologne, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 74,895

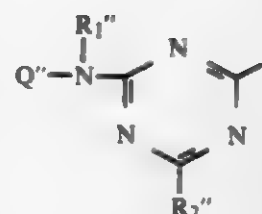
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840381

Int. Cl.¹ C07D 253/04, 239/88, 233/64, 473/08

U.S. Cl. 544—183

5 Claims

1. The process for the production of a 2-equivalent α -acylacetamide yellow coupler substituted in the α -position with an organic substituent selected from the group consisting of phenoxy groups and groups derived from NH acidic organic compounds by removal of the acidic hydrogen atom in which process a 2-equivalent α -halo- α -acylacetamide yellow coupler is reacted with a compound selected from the group consisting of phenols and NH-acidic organic compounds in the presence of a basic condensing agent, in which process the improvement comprises using as basic condensing agent a non-alkylatable bicyclic nitrogen-containing base containing from 6 to 14 carbon atoms and at least 2 nitrogen atoms.

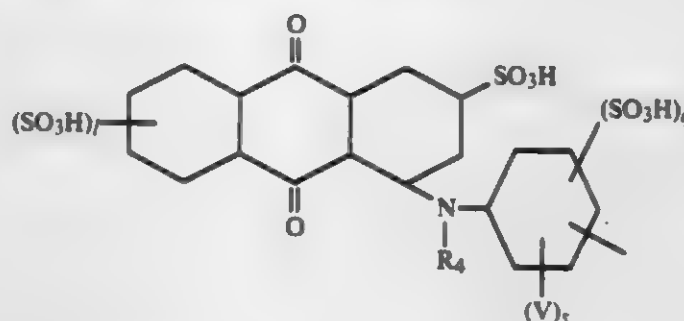


wherein

R_1 , R_1' , and R_1'' each are hydrogen or C_1 - C_4 alkyl,

R_2 , R_2' , and R_2'' each are halogen, and

Q , Q' , and Q'' each are dye residues and are independently one member selected from the group consisting of members of the formulae as a free acid form



wherein

R_4 is hydrogen or C_1 - C_4 alkyl,

V is halogen or methyl,

l and q are each 0, 1, or 2 and

s is 0, 1, or 3 with the proviso that X , Y , and Z are not hydrogen at the same time.

4,230,853

PROCESS FOR PREPARING CHLORO-BIS(ALKYLAMINO)-s-TRIAZINES

Vittorio Messori, and Renato Francesc, both of Turin, Italy, assignors to Rumianca S.p.A., Turin, Italy

Filed Oct. 1, 1979, Ser. No. 80,720

Claims priority, application Italy, Sep. 29, 1978, 28219 A/78

Int. Cl.¹ C07D 251/50

U.S. Cl. 544—204

11 Claims

1. In a process for preparing chloro-bis(alkylamino)-s-triazine by step-wise replacement of two chlorine atoms of cyanuric chloride by means of alkylamino groups in an alkaline medium comprising water and a liquid organic compound which is a solvent for cyanuric chloride, in which a molar excess of alkylamine is used in the second replacement step, the method of suppressing the formation of tris(alkylamino)-s-triazines which comprises adding to the reaction mixture, after the second chlorine atom has been replaced with an alkylamino group, an oxidizing agent selected from the group consisting of hydrogen peroxide and alkali metal hypochlorites, persulfates and permanganates, in an amount of at least 1 equivalent for every mole of unreacted alkylamine present in the said reaction mixture.

4,230,854

ANALOGUES OF ERGOT ALKALOIDS

Enzo Beacco, Limbiate; Maria L. Bianchi, Milan; Annaceto Minghetti, Milan, and Celestino Spalla, Milan, all of Italy, assignors to Societa Farmaceutici Italia S.p.A., Milan, Italy

Filed Mar. 21, 1978, Ser. No. 888,750

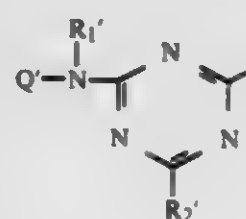
Claims priority, application United Kingdom, Apr. 19, 1977, 16096/77

Int. Cl.² C07D 511/02

U.S. Cl. 544—346

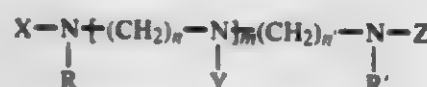
1 Claim

1. Ergot alkaloids of formula



and

Z is hydrogen or a group of the formula



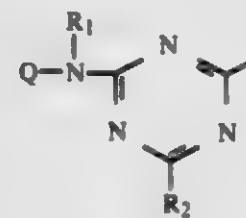
wherein

R and R' each are hydrogen, C_1 - C_4 alkyl or C_1 - C_4 hydroxy-alkyl,

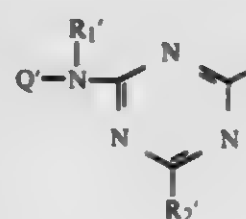
m is an integer from 1 to 6,

n and n' are each an integer from 2 to 4, and when m is 2 or more, n may be the same or different between 2 and 4,

X is hydrogen or a group of the formula



Y is hydrogen or a group of the formula



4,230,857

(I) CARBONATES AND URETHANES OF 2,2'-ALKYLENE OR -CYCLOALKYLENE-BIS-4,6-DISUBSTITUTED PHENOLS AS STABILIZERS FOR ORGANIC MATERIALS

William O. Drake, Raritan, N.J.; Hans Hinsken, Lörrach, Fed. Rep. of Germany; Horst Mayerhoefer, Oberwil, and Wolfgang H. Mueller, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed May 23, 1978, Ser. No. 908,721

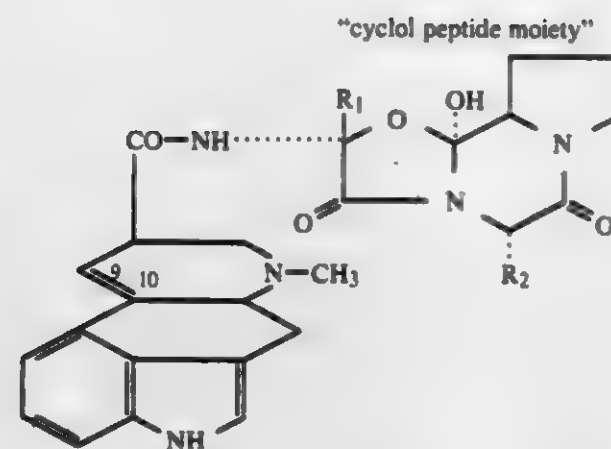
Claims priority, application Switzerland, May 23, 1977, 6324/77; May 25, 1977, 6439/77

Int. Cl.² C07D 295/20; C07C 125/06, 69/96; C07D 321/12

U.S. Cl. 544—388

5 Claims

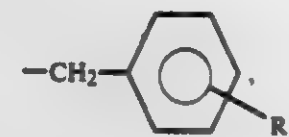
1. A compound of the formula,



and their 9,10 dihydroderivatives, wherein

R_1 is selected from the group consisting of methyl, ethyl and isopropyl;

R_2 is selected from the group consisting of



halogen-substituted linear C_3 - C_5 alkyl-group and halogen-substituted isobutyl-group;

R_3 being selected from the group consisting of C_1 - C_4 alkyl and halogen.

4,230,855

METHOD OF PREPARATION OF IMPROVED NIGROSINE AND INDULINO DYES

Mario Capaccioni, Milan; Laurentino Gentile, Cogliate, and Aldo Rusconi, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Oct. 30, 1978, Ser. No. 955,798

Claims priority, application Italy, Oct. 31, 1977, 29174 A/77

Int. Cl.³ C07D 241/36

U.S. Cl. 544—348

2 Claims

1. A process for preparing a nigrosine base or an induline base having improved dispersibility, fluidity and flowability in the coloring of plastics and in the preparation of inks, comprising treating a nigrosine base or induline base, at a temperature between 135° and 150° C., with between 15 and 30% by weight of phthalic anhydride, based on the weight of the base.

4,230,856

1,2,3,4-TETRAHYDROPYRROLO-[1,2-a]-PYRAZINE

Alexandr P. Skoldinov, ulitsa Alabiana, 3, kv. 60; Arkady M. Likhoshesterov, ulitsa Smolnaya, 33, kv. 107, and Vitaly P. Peresada, ulitsa Astradamskaya, 8, kv. 31, all of Moscow, U.S.S.R.

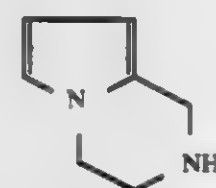
Filed Jul. 26, 1978, Ser. No. 927,995

Int. Cl.² A61K 31/495; C07D 487/04

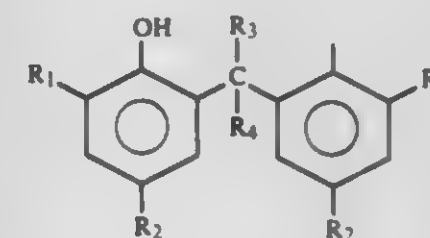
U.S. Cl. 544—349

1 Claim

1. 1,2,3,4-Tetrahydropyrrolo-[1,2-a]-pyrazine of the formula:



unit forms a (C_5-7) saturated aliphatic hydrocarbon ring, with the proviso that both groups of the formula



are identical.

4,230,858

PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID DIIMIDE PIGMENT, ITS MANUFACTURE AND ITS USE
Ludwig Gall, Frankenthal, and Wolfgang Fabian, Wilhelmsfeld, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 725,852, Sep. 23, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 928,874

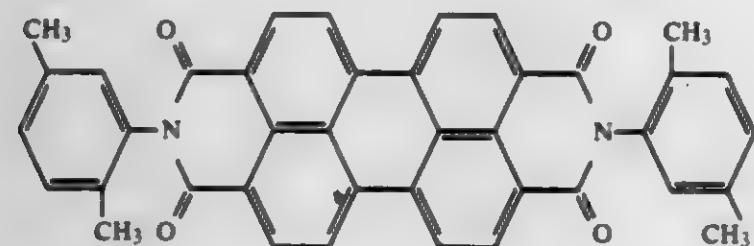
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1975, 2546266

Int. Cl.³ C07D 471/06

U.S. Cl. 546—37

3 Claims

1. A perylene-3,4,9,10-tetracarboxylic acid diimide pigment of the formula



which has a specific surface area, measured by the BET method, of from 5 to 20 m²/g, and is obtained by recrystallization by the steps of mixing crude perylene-3,4,9,10-tetracarboxylic acid bis-(2,5'-dimethylphenylimide) in the form of agglomerates of from 0.1 to 100 microns which consist of primary particles having a size of from 0.05 to 0.1 microns, in organic liquids selected from the group consisting of aliphatic ketones of 3 to 6 carbon atoms, ethylene glycol, diethylene glycol, ethylene glycol monoalkyl ethers, diethylene glycol monoalkyl ethers, where alkyl is of 1 to 4 carbon atoms, dioxane, tetrahydrofuran, propanol, n-butanol, isobutanol and benzene hydrocarbons, heating the mixture from 50° to 200° C., and maintaining the mixture at this temperature for a period from 7 to 20 hours to obtain a pigment which exhibits complete absorption at from 350 to 560 nm, followed by a sharp rise in reflectance up to a maximum at 650 nm.

4,230,859

PROCESS FOR THE PREPARATION OF N-SUBSTITUTED ESTERS OF 9,10-DIHYDROLYSERGIC ACIDS

Rudolf Rucman, Ljubljana, Yugoslavia, assignor to LEK, tovarna farmacevtskih in kemičnih izdelkov, n.s.o., Ljubljana, Yugoslavia

Filed Jul. 7, 1978, Ser. No. 922,692

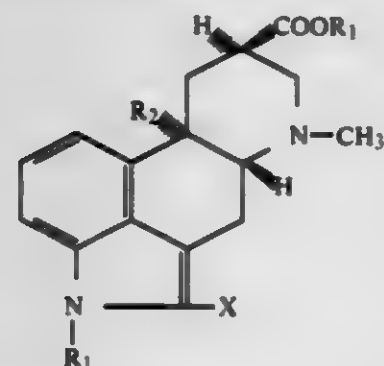
Claims priority, application Yugoslavia, Jul. 21, 1977, 1819/77

Int. Cl.² C07D 457/04

U.S. Cl. 546—69

24 Claims

1. In a process for the preparation of N-substituted esters of 9,10-dihydrolysergic acids of the formula:



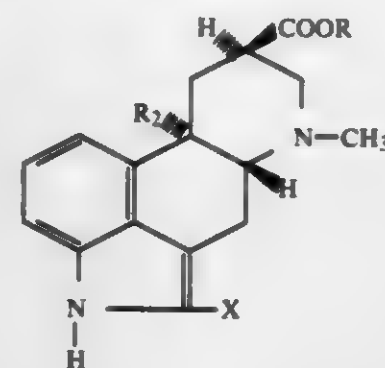
capable of being converted to pharmacologically active compounds wherein

R₁ is an alkyl group of 1-5 carbon atoms, an alkenyl group

of 2-5 carbon atoms, or a cycloalkyl group of 3-5 carbon atoms,

R₂ is hydrogen or an alkoxy group of 1-3 carbon atoms, and X is hydrogen or halogen,

the improvement which comprises carrying out the alkylation of the compounds of the formula:



(II)

wherein

R is hydrogen or a hydrolyzable organic group capable of being hydrolyzed in alkaline medium,

X is hydrogen or halogen, and

R₂ has the meaning as stated above,

with a compound of the formula:

R₁Y

(III)

wherein

R₁ has the meaning as stated above,

Y is halogen or sulphate,

in the presence of a catalyst for phase transition of the formula:

Z₄QA

(IV)

wherein

Z represents the same or different alkyl, cycloalkyl, aryl, arylalkyl or alkylaryl groups with 1-16 carbon atoms,

Q is a quaternary nitrogen or phosphorus atoms, and

A is an anion,

in a two phase aqueous alkali medium-organic solvent system wherein the organic phase includes a hydrocarbon which is immiscible with water.

4,230,860

PROCESSES FOR THE SEPARATION OF ENANTIOMERS BY SELECTIVE CRYSTALLIZATION
Sivaraman Raghu, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 6, 1978, Ser. No. 958,215

Int. Cl.³ C07D 453/04; C07B 19/00

U.S. Cl. 546—134

8 Claims

1. A process for preparing the d-enantiomer of trans-1,2-cyclobutane dicarboxylic acid which consists essentially in the steps of: dissolving racemic trans-1,2-cyclobutane dicarboxylic acid and cinchonidine in an aqueous solvent to form a solution thereof, cooling the latter solution, and recovering thus-formed crystals enriched in d-trans-1,2-cyclobutane dicarboxylic acid.

4,230,861

1-AND/OR 7-SUBSTITUTED-6-HYDROXY (OR OXO)-3-DECAHYDROQUINOLINE CARBOXYLIC ACIDS

Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 31,641, Apr. 19, 1979, which is a continuation-in-part of Ser. No. 5,061, Jan. 22, 1979, abandoned. This application Sep. 14, 1979, Ser. No. 75,618

Int. Cl.³ A61K 31/47; C07D 215/14

U.S. Cl. 546—164

3 Claims

1. A compound of the formula



wherein

R is (C₁-C₃)alkyl, allyl or benzyl and;

R¹ is COOZ' wherein Z' is (C₁-C₂)alkyl or phenyl-substituted (C₁-C₂)alkyl.

4,230,862

ANTIFERTILITY COMPOUNDS

Tulio Suarez, and C. David Jones, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

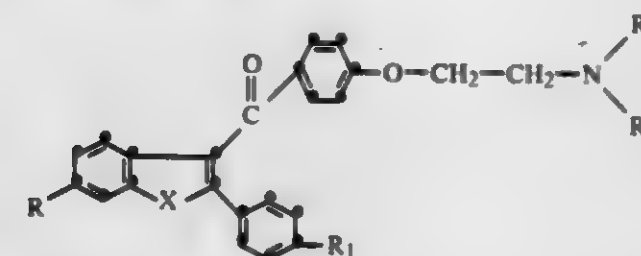
Continuation of Ser. No. 761,930, Jan. 24, 1977, abandoned, and a continuation-in-part of Ser. No. 724,202, Sep. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 625,991, Oct. 28, 1975, abandoned. This application Aug. 3, 1978, Ser. No. 930,639

Int. Cl.³ C07D 295/08; A01N 31/40, 31/445, 31/395

U.S. Cl. 546—237

23 Claims

1. A compound of the formula



in which X is —CH₂—CH₂— or —CH=CH—; R is hydrogen, hydroxyl, or C₁-C₅ alkoxy; R₁ is hydrogen, hydroxyl, or C₁-C₅ alkoxy; and R₂ and R₃ taken together with the nitrogen to which they are bonded constitute a heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, and hexamethyleneimino; and pharmaceutically acceptable non-toxic acid addition salts thereof.

4,230,863

INSECTICIDAL SULFONIUM SALTS

Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

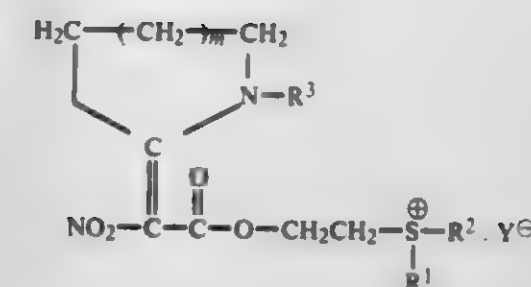
Filed Jun. 2, 1975, Ser. No. 582,575

Int. Cl.³ C07D 211/16, 207/24

U.S. Cl. 546—246

3 Claims

1. A sulfonium salt of the formula:



wherein m is 0 or 1, Y is an anion, R¹ is alkyl of 1 to 3 carbon atoms, R² is alkyl of 1 to 10 carbon atoms and R³ is hydrogen or alkyl of from 1 to 3 carbon atoms.

4,230,864

PROCESS FOR MAKING 5-TRIFLUOROMETHYL PYRIDONE

Thomas D. Bailey, Indianapolis, Ind., assignor to Reilly Tar & Chemical Corp., Indianapolis, Ind.

Filed Jan. 29, 1979, Ser. No. 7,518

Int. Cl.³ C07D 213/04

U.S. Cl. 546—303

7 Claims

1. A process for preparing 5-trifluoromethyl-2-pyridone comprising the step of reacting an amount of 2-hydroxy-5-carboxypyridine with a suitable fluorinating agent to selectively transform the 5-carboxy group without altering the oxygen function in the 2-position of the ring.

4,230,865

PHARMACOLOGICALLY ACTIVE TRIAZOLE AND THIADIAZOLE THIIOUREA AND UREA COMPOUNDS

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 805,491, Jun. 10, 1977, Pat. No. 4,137,234, which is a division of Ser. No. 638,005, Dec. 5, 1975, Pat. No. 4,053,473, which is a division of Ser. No. 451,333, Mar. 14, 1974, Pat. No. 3,950,353, which is a continuation-in-part of Ser. No. 290,584, Sep. 20, 1972, abandoned, which is a

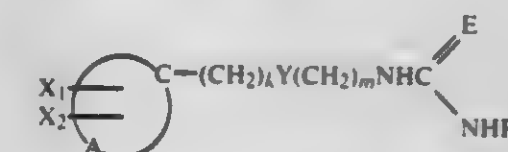
continuation-in-part of Ser. No. 230,451, Feb. 29, 1972, abandoned. This application Sep. 8, 1978, Ser. No. 940,547
Claims priority, application United Kingdom, Mar. 9, 1971, 6352/71; Jul. 22, 1971, 34334/71

Int. Cl.³ A61K 31/41; C07D 285/12

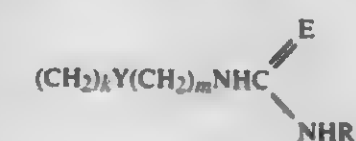
U.S. Cl. 548—138

10 Claims

1. A compound of the formula:



wherein A is such that there is formed together with the carbon atom shown an unsaturated heterocyclic nucleus, said unsaturated heterocyclic nucleus being a triazole or thiadiazole, ring; X₁ is hydrogen, lower alkyl, hydroxyl, trifluoromethyl, benzyl, halogen, amino or



X₂ is hydrogen or when X₁ is lower alkyl, lower alkyl or halogen; k is 0 to 2 and m is 2 or 3, provided that the sum of k and m is 3 or 4; Y is oxygen, sulphur or NH; E is oxygen or sulphur; and R₁ is hydrogen, lower alkyl, benzoyl or di-lower

alkylamino-lower alkyl or a pharmaceutically acceptable addition salt thereof.

4,230,866

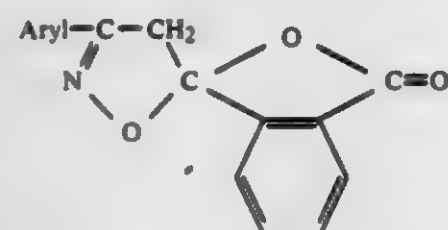
PREPARATION OF 3-ARYL-ISOXAZOL-5-YL-BENZOIC ACID AND SALTS THEREOF

Kou-Chang Lin, Creve Coeur, and Robert K. Howe, Bridgeton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed May 17, 1979, Ser. No. 39,935
Int. Cl.³ C07D 261/08

U.S. Cl. 548—247

9 Claims

1. A process for preparing a salt of 3-aryl-isoxazol-5-yl-benzoic acid which comprises reacting a spiro compound having the formula



with a base having a pK_a of 11 or more, in the presence of a water-miscible solvent.

4,230,867

PROCESS FOR THE PRODUCTION OF 2-ARYL-2H-BENZOTRIAZOLES

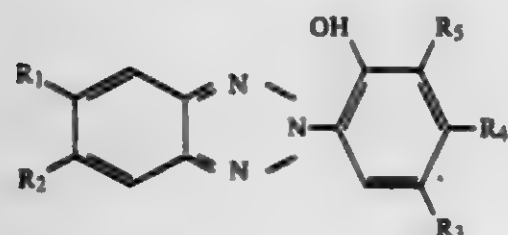
Siegfried Kintopf, and Ulrich Kress, both of Bensheim, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation of Ser. No. 668,344, Mar. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 577,385, May 14, 1975, abandoned. This application Nov. 25, 1977, Ser. No. 855,040

Int. Cl.³ C07D 249/20

U.S. Cl. 548—260

21 Claims

1. A process for the production of 2-aryl-2H-benzotriazoles of the formula I



wherein

R₁ is hydrogen or chlorine,

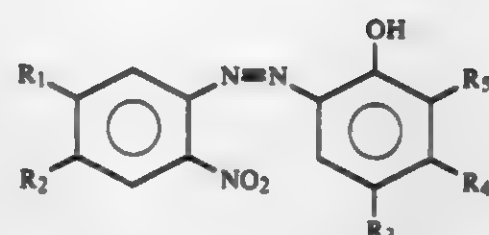
R₂ is hydrogen, chlorine, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, carboxy or —SO₃H,

R₃ is alkyl of 1 to 12 carbon atoms, alkoxy of 1 to 4 carbon atoms, phenyl, phenyl substituted with alkyl groups, said alkyl groups having 1 to 8 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, chlorine, carboxyethyl or phenylalkyl of 7 to 9 carbon atoms,

R₄ is hydrogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, chlorine or hydroxyl, and R₅ is hydrogen, alkyl of 1 to 12 carbon atoms, chlorine, cycloalkyl of 5 to 6 carbon atoms or phenylalkyl of 7 to 9 carbon atoms,

which comprises

reducing and cyclizing the corresponding o-nitroazobenzene



with hydrogen at a temperature in the range of from about 20° C. to about 100° C. and at a pressure in the range of from about 15 psia (1.05 kg/cm², 1 atmosphere) to about 1000 psia (70 kg/cm², 66 atmospheres) while mixed in an alkaline organic solvent mixture comprising an organic amine in a concentration of at least 0.1 mole of amine per mole of o-nitroazobenzene in the presence of hydrogenation catalyst selected from the group consisting of the noble metals of Group VIII of the Periodic Table with the proviso that the hydrogenation catalyst cannot be palladium-on-asbestos, and with the proviso that, when R₁, R₂, R₃, R₄ or R₅ is chlorine, the hydrogenation catalyst cannot be palladium,

separating the catalyst which is suitable for recycle, and recovering the desired 2-aryl-2H-benzotriazole.

4,230,868

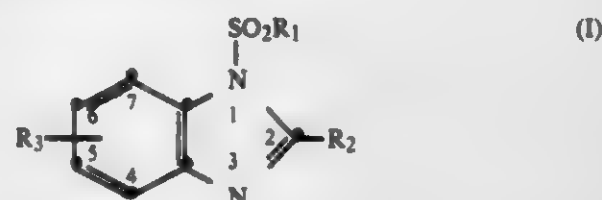
α-ALKYL-α-HYDROXYBENZYL-SUBSTITUTED I-SULFONYLBENZIMIDAZOLES

Charles J. Paget; James W. Chamberlin, both of Indianapolis, and James H. Wikel, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 883,113, Mar. 3, 1978, which is a division of Ser. No. 750,991, Dec. 15, 1976, Pat. No. 4,118,742, which is a continuation of Ser. No. 608,415, Aug. 28, 1975, abandoned. This application Apr. 17, 1979, Ser. No. 30,782
Int. Cl.² C07D 235/30, 413/12, 401/12, 403/12

U.S. Cl. 548—306

14 Claims

1. A compound of the formula



wherein

R₁ is C₁–C₅ alkyl, C₃–C₇ cycloalkyl, phenyl, furyl, thienyl or R₄R₅N—, wherein R₄ and R₅ are independently C₁–C₃ alkyl or R₄ and R₅, when taken together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino or morpholino;

R₂ is amino, formamido, acetamido, propionamido or butyramido;

R₃ is α-C₁–C₇ alkyl-α-hydroxybenzyl and R₄ is at the 5 or 6 position.

4,230,869

PROCESS FOR PREPARING 5-(4-HYDROXYPHENYL)HYDANTOIN

Koji Yoneda, Amagasaki; Takehisa Ohashi; Tomoaki Nagamachi, both of Kobe; Hirohisa Fukumitsu, Kakogawa, and Satoshi Takahashi, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Mar. 16, 1978, Ser. No. 887,132
Claims priority, application Japan, Mar. 18, 1977, 52-30824; Feb. 25, 1978, 53-21305

Int. Cl.³ C07D 233/78

U.S. Cl. 548—314

5 Claims

1. A process for preparing 5-(4-hydroxyphenyl)hydantoin which comprises subjecting glyoxylic acid, urea and phenol to

reaction in an aqueous medium at a temperature of not less than 40° C. in the presence of a strong mineral acid, the concentration of which in the reaction system is not less than 2 N.

4,230,870

NOVEL PHOTOGRAPHIC COLOR COUPLERS

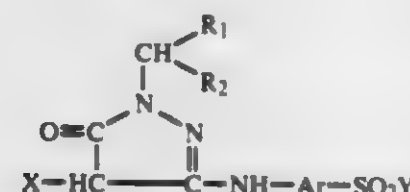
Hector A. Vanden Eynde, Edegem, and Raphaël K. Van Poucke, Berchem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium
Division of Ser. No. 452,326, Mar. 18, 1974, Pat. No. 3,947,272. This application Mar. 29, 1976, Ser. No. 671,382
Claims priority, application United Kingdom, Apr. 6, 1973, 16627/73

Int. Cl.³ C07D 231/00

U.S. Cl. 548—360

6 Claims

1. A colour coupler corresponding to the general formula:



wherein:

R₁ represents hydrogen, alkyl or aryl,

R₂ represents a fluoroalkyl group X(CF₂)_n— wherein X is hydrogen or fluorine and n is 1 to 10, an α-cyanoalkyl group, or a phenyl group,

X represents hydrogen or a substituent that exhibits 2-equivalent character,

Ar represents a phenylene group, and

Y represents an alkyl group, an aryl group, a monoalkylamino group, a monoarylamino group, a dialkylamino group or an alkylarylamino group.

4,230,871

PROCESS FOR PREPARING 5,6-DIHYDRO-2-METHYL-1,4-OXATHIIN DERIVATIVES

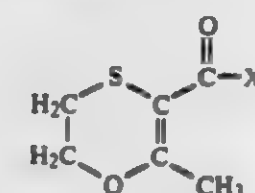
Wha S. Lee, c/o 678 Portage St., Ottawa, Canada (K1G 1T4)
Continuation of Ser. No. 839,129, Oct. 3, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 25,834

Int. Cl.³ C07D 327/06

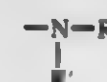
U.S. Cl. 549—14

3 Claims

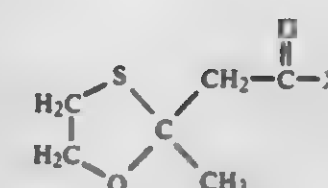
1. A process of preparing 5,6-dihydro-2-methyl-1,4-oxathiin derivative I of the formula



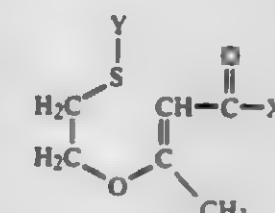
wherein X is an amino group having the formula,



wherein R and R' are the same or different and are selected from the group consisting of hydrogen, phenyl, alkyl having up to 15 carbon atoms, cyclohexyl, nitrophenyl, alkoxyphenyl in which the alkoxy group has up to 4 carbon atoms, benzyl, furfuryl, halophenyl, tolyl, naphthyl, biphenyl, or X is an alkoxy group—OR, in which R is primary, secondary or tertiary alkyl group having up to 6 carbon atoms; comprising treating the 1,3-oxathiolane IV of the formula:



wherein X is the same as in the formula I, with halogen (chlorine or bromine) in a nonhydroxylic solvent at a temperature in the range between —60° C. and room temperature whereby ring expansion takes place via a sulfonyl compound of the formula



wherein Y is Cl or Br which cyclizes with loss of hydrogen halide to form the compound I, and subsequently isolating this from the resulting mixture.

4,230,872

POLYENE COMPOUNDS

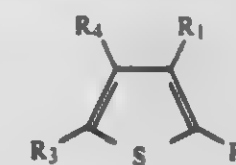
Michael J. Klaus, Weil am Rhein, Fed. Rep. of Germany, and Beverly A. Pawson, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 801,688, May 31, 1977, Pat. No. 4,116,975, which is a division of Ser. No. 733,507, Oct. 18, 1976, Pat. No. 4,061,656, which is a continuation-in-part of Ser. No. 632,029, Nov. 14, 1975, abandoned. This application May 11, 1978, Ser. No. 904,950

Int. Cl.³ C07D 333/24, 333/26, 333/28, 333/30

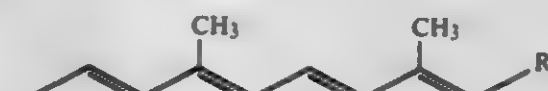
U.S. Cl. 549—62

19 Claims

1. A compound represented by the formula



wherein one of R₁ or R₂ is



and the other of R₁ or R₂ and R₃ and R₄ are hydrogen, lower alkoxy-lower alkyl, hydroxy methyl, halogen, lower alkyl, lower alkoxy, amino, carboxyl, mono(lower alkyl)amino, lower alkyl thio, di(lower alkyl)amino, mono(lower alkyl)amino lower alkyl, di(lower alkyl)amino lower alkyl, hydroxy, lower alkenyl, lower alkenoxy, lower alkanoyl, lower alkanoyloxy, nitro, lower alkoxy-carbonyl, lower alkanoylamido or a nitrogen containing heterocycle, selected from the group consisting of piperidino, morpholino, thiomorpholino and pyrrolidino and R₅ is formyl, hydroxymethyl, alkoxy-methyl, alkanoyloxymethyl, alkoxy-carbonyl, aroyloxymethyl or an N-heterocyclylcarbonyl selected from the group consisting of piperidino, morpholino, thiomorpholino and pyrrolidino; with the proviso that when R₅ is alkoxy-carbonyl, at least one of R₁, R₂, R₃ and R₄ is lower alkoxy-lower alkyl, hydroxy methyl, halogen, lower alkoxy, amino, carboxyl, mono(lower alkyl)amino, lower alkyl thio, di(lower alkyl)amino, mono(lower alkyl)amino lower alkyl,

di(lower alkyl)amino lower alkyl, hydroxy, lower alkenyl, lower alkenoxy, lower alkanoyl, lower alkanoyloxy, lower alkoxy, lower alkanoylamido or a nitrogen containing heterocycle, selected from the group consisting of piperidino, morpholino, thiomorpholino and pyrrolidino.

4,230,873

THIOPHENE DERIVATIVES

Otto Hromatka, and Dieter Binder, both of Vienna, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 606,656, Aug. 21, 1975, abandoned.

This application Mar. 2, 1977, Ser. No. 773,716

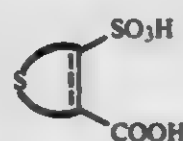
Claims priority, application Switzerland, Aug. 26, 1974, 11582/74; Sep. 9, 1974, 12157/74; Jul. 9, 1975, 8963/75

Int. Cl.³ C07D 333/24; A61K 31/38

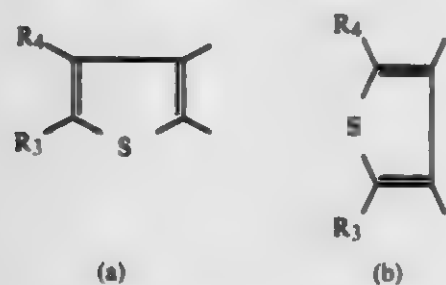
U.S. Cl. 549—64

3 Claims

1. Sulphothiophene-carboxylic acids of the general formulae



Wherein A together with the two carbon atoms to which it is attached forms the group



and the broken line represents the double bond present in group (a), R₃ and R₄ each represent a hydrogen atom or a lower alkyl group.

4,230,874

N-(BENZENESULFONYL) CARBAMATES-HERBICIDAL ANTIDOTES

Ferenc M. Pallos, Walnut Creek, and Edmund J. Gaughan, Berkeley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

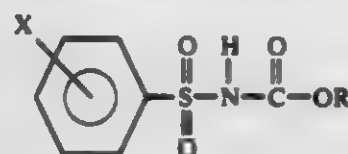
Continuation-in-part of Ser. No. 619,114, Oct. 2, 1975, abandoned. This application Sep. 13, 1976, Ser. No. 721,721

Int. Cl.³ C07C 147/13

U.S. Cl. 560—12

3 Claims

1. Compounds according to the formula



in which X is trifluoromethyl and R is haloalkyl having 2 to 6 carbon atoms, inclusive, and wherein halo is chloro or fluoro from 1 to 6, inclusive.

4,230,875
FUNGICIDAL, MITICIDAL AND OVICIDAL
ALKOXYCARBONYLALKYL-SUBSTITUTED AND
CARBAMYLALKYL-SUBSTITUTED
N-HALOALKYLTHIOSULFONAMIDES

David C. K. Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 734,858, Oct. 22, 1976, Pat. No. 4,112,237.

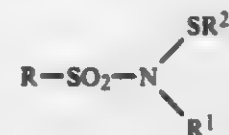
This application Jul. 3, 1978, Ser. No. 921,385

Int. Cl.³ C07C 145/02

U.S. Cl. 560—12

12 Claims

1. A compound of the formula



wherein R is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; alkoxy, carbonylalkyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; R¹ is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl or 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromoethyl, or alkyl of 1 to 4 carbon atoms; alkoxy, carbonylalkyl of 2 to 6 carbon atoms, carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; and R² is alkyl of 1 to 2 carbon atoms and of 1 to 5 fluoro, chloro, bromo or iodo atoms, with the proviso that one R or R¹ group is alkoxy, carbonylalkyl, carbamylalkyl of 1 to 6 carbon atoms, N-alkylcarbamylalkyl of 2 to 6 carbon atoms or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms.

4,230,876

PROCESS FOR THE PREPARATION OF URETHANES

Hans-Joachim Scholl, Cologne, and Armin Zenger, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,638

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2868990

Int. Cl.³ C07C 125/07

U.S. Cl. 560—25

6 Claims

1. In a process for the preparation of urethanes by the reaction of aromatic nitro compounds with aliphatic, cycloaliphatic or araliphatic alcohols and carbon monoxide in the presence of a catalyst system, the improvement wherein said reaction is conducted in the absence of carboxylic acids and phenols and said catalyst system comprises (1) selenium or a selenium compound; (2) a bicyclic amidine; and (3) an aromatic amino and/or aromatic urea compound.

4,230,877

METHOD FOR INCREASING THE 4,4'-DICARBAMATE ISOMER OF THE DIPHENYLMETHANE

DICARBAMATES DURING PREPARATION THEREOF

Edward T. Shawl, Wallingford, and Gerald A. Bullano, Glen Mills, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 22, 1979, Ser. No. 22,749

Int. Cl.³ C07C 125/04

U.S. Cl. 560—25

13 Claims

1. A method for the preparation of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates having an increased amount of 4,4'-diphenylmethane dicarbamate isomer in the total diphenylmethane dicarbamate produced which comprises reacting in a single phase system an N-aryl carbamic

acid ester with a carbonyl compound selected from formaldehyde, para-formaldehyde or trioxane or mixtures thereof, at a temperature of from about ambient to about 170° C. in the presence of a mineral acid condensation catalyst while said N-aryl carbamic acid ester is dissolved in an inert organic solvent having a dielectric constant of at least 20 at 20° C. and at a concentration of N-aryl carbamic acid ester in said solvent of from 0.1 to 50 weight percent and recovering the desired carbamates.

4,230,878

HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC 4-[(CYCLOPROPYL ALKYL)AMINO]BENZOIC ACIDS AND DERIVATIVES

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

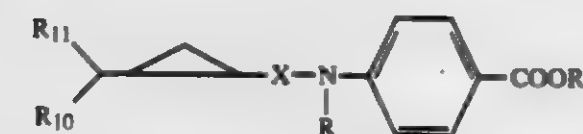
Filed Mar. 8, 1978, Ser. No. 884,673

Int. Cl.³ C07C 101/62, 101/60

U.S. Cl. 560—48

6 Claims

1. A compound of the formula:



wherein R₇ is hydrogen, or a loweralkyl group; R₁₁ is hydrogen or a C₁ to C₁₅ alkyl group unsubstituted or substituted with at least one methyl group; R₁₀ is hydrogen methyl; X is a bond or a C₁ to C₁₅ branched or unbranched alkylene group unsubstituted or substituted with at least one methyl group; and R is selected from the group consisting of hydrogen or methyl and the pharmaceutically acceptable non-toxic acid-addition and cationic salts thereof.

4,230,879

15-DEOXY-16-HYDROXY-16-FORMYO OR DIMETHOXY-METHYL-PROSTANE DERIVATIVES OF THE E AND F SERIES

Allen Wissner, Westchester, and Charles V. Grudzinskas, Nyack, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

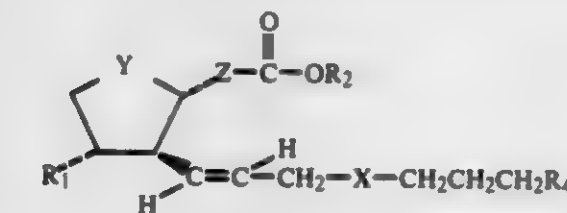
Filed Jun. 7, 1979, Ser. No. 46,513

Int. Cl.³ C07C 177/00

U.S. Cl. 560—121

18 Claims

1. An optically active compound of the structure:



wherein
X is



Y is



R₁ is selected from the group consisting of hydrogen and hydroxyl;

R₂ is selected from the group consisting of hydrogen and C₁-C₆ alkyl;
R₃ is selected from the group consisting of formyl and dimethoxymethyl;
R₄ is selected from the group consisting of hydrogen and C₁-C₃ alkyl;
Z is selected from the group consisting of a divalent moiety of the formula —(CH₂)_n—, —(CH₂)_mOCH₂— and —(CH₂)_mSCH₂— wherein n is 5 to 7, and m is 3 to 5; the racemic mixture thereof, and when R₂ is hydrogen, the pharmaceutically acceptable salt thereof.

4,230,880

2,5-DIKETOGLUCONIC ACID ESTERS

Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 843,946, Oct. 20, 1977, Pat. No. 4,159,990, which is a continuation-in-part of Ser. No. 749,509, Dec. 10, 1976, abandoned. This application Feb. 16, 1979, Ser. No. 12,683

Int. Cl.³ C07C 69/675

U.S. Cl. 560—174

3 Claims

1. A normal-alkyl ester of 2,5-diketogluconic acid wherein said alkyl group is of 1 to 4 carbon atoms.

4,230,881

PREPARING OXALIC ACID ESTERS

Ugo Romano, Milan, and Franco Rivetti, Schio, both of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed Apr. 6, 1978, Ser. No. 894,139

Claims priority, application Italy, Apr. 7, 1977, 22209 A/77

Int. Cl.³ C07C 67/36, 69/36

U.S. Cl. 560—193

14 Claims

1. The method of preparing an ester of oxalic acid from carbon monoxide and an alcohol, wherein the reaction is carried out in the presence of a catalyst consisting of a complex of palladium selected from the group consisting of:

(a) the complexes of bivalent palladium of the formula LL'PdXX' or L''PdXX' in which L and L' are monodentate neutral ligands, L'' is a chelating neutral ligand, X and X', the same or different, are anionic ligands;
(b) the complexes of zerovalent palladium having the formula PdL'''' in which n can be varied from 2 to 4, and L'''' is a neutral ligand; and
(c) the complexes of zerovalent palladium of the formula Pd_x(CO)_yL''''_z wherein x is 1 or 3, y is 1 or 3, z is 3 or 4 and L'''' is a tertiary phosphine; and
a co-catalyst consisting of a compound having acidic properties selected from the group consisting of amine salts, carboxylic acids, phenol, succinimide and phthalimide.

4,230,882

PROCESS FOR THE PRODUCTION OF A HIGH PURITY TEREPHTHALIC ACID

Maomi Seko, Tetsuya Miyake, both of Tokyo; Hiroshi Takenchi, and Masatoshi Tanouchi, both of Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1978, Ser. No. 907,773

Int. Cl.³ C07C 51/33

U.S. Cl. 562—416

18 Claims

1. In a process for the production of a high purity terephthalic acid by a liquid phase oxidation reaction of para-xylene by means of molecular oxygen or a molecular oxygen-containing gas in an aliphatic monocarboxylic acid solvent in the presence of a cobalt-manganese-bromine catalyst system, the improvement wherein in the liquid phase oxidation reaction, there are used acetaldehyde in an amount of 0.05 to 0.60 mole per mole of para-xylene and as the cobalt-manganese-bromine catalyst system (A) at least one cobalt compound selected from the group consisting of cobalt acetate, cobalt propionate, cobalt butyrate, cobalt naphthenate, cobalt carbonate, cobalt benzoate, cobalt bromoacetate, cobalt bromide and hydrates

thereof, (B) at least one manganese compound selected from the group consisting of manganese acetate, manganese propionate, manganese butyrate, manganese naphthenate, manganese carbonate, manganese benzoate, manganese bromoacetate, manganese bromide and hydrates thereof and (C) at least one bromine compound selected from the group consisting of hydrogen bromide, cobalt bromide and hydrates thereof, manganese bromide and hydrates thereof, bromoacetic acid, cobalt bromoacetate and a hydrate thereof, manganese bromoacetate and a hydrate thereof, alkyl bromides and alkane bromides, in amount such as will provide a cobalt atom concentration of 0.01 to 0.05% by weight based on the aliphatic monocarboxylic acid solvent, a manganese atom concentration of 35 to 100% by weight based on the cobalt atom and a bromine atom concentration of 0.10 to 0.40% by weight based on the aliphatic monocarboxylic acid solvent, and the liquid phase oxidation reaction is effected at a temperature of 170° to 190° C. under an elevated pressure while maintaining the water concentration in the reaction system at a level of 3 to 9% by weight based on the aliphatic monocarboxylic acid, followed by separation and recovery of terephthalic acid crystals from the reaction mixture.

4,230,883

PREPARATION OF HYDROXYPHENYLALANINE HYDROHALIDE SALTS

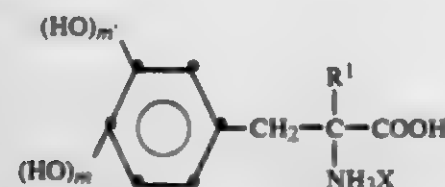
David D. Saperstein, Mountainside, and Seemon H. Pines, Murray Hill, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 12, 1977, Ser. No. 859,415
Int. Cl.² C07C 99/00, 101/72

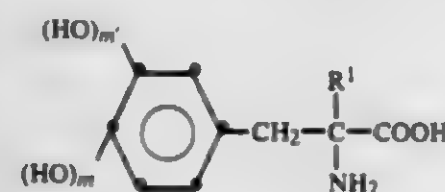
U.S. Cl. 562-445

7 Claims

1. A process for preparing a 1:1 microcrystalline salt product of the formula:



wherein
m and m' are independently zero or one but not both zero,
X is chloro or bromo, and
R¹ is H or alkyl of one through four carbons which comprises reacting amino acid the formula:



with liquid HBr or HCl, the reactants being substantially free of water and other polar solvents, such that said product consists essentially of equimolar amounts of said amino acid and HBr or HCl, substantially free of impurities.

4,230,884

PROCESS FOR PREPARING

2-(3-BENZOYLPHENYL)-PROPIONIC ACID

Boris Zupančič and Mirko Sopčič, both of Ljubljana, Yugoslavia, assignors to LEK, tovarna farmacevtskih in kemičnih izdelkov, n.s.o., Ljubljana, Yugoslavia

Filed Apr. 10, 1979, Ser. No. 28,779

Claims priority, application Yugoslavia, Apr. 10, 1978, 853/78
Int. Cl.³ C07C 59/84

U.S. Cl. 562-460

5 Claims

1. Process for preparing 2-(3-benzoylphenyl)-propionic acid or salt thereof wherein 3-benzoylphenyl acetonitrile or an alkoxide thereof comprising 1 to 4 carbon atoms in the alkoxy

moiety are reacted with a methylating agent in a two-phase system under conditions of phase transfer catalysis, whereupon the mixture is hydrolyzed and optionally the obtained acid is converted into a metal salt or an addition salt of a nitrogen-containing base, characterized in that the methylation is performed in the presence of neutral non-cyclic ligands with an open polyether chain as a catalyst at a temperature within the range of -10° to +50° C.

4,230,885

CONVERSION OF AROMATIC CARBOXYLATES TO TEREPHTHALATE

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 12, 1978, Ser. No. 914,835

Int. Cl.³ C07C 51/347, 51/353

U.S. Cl. 562-481

2 Claims

1. A process for converting alkali metal benzoates to alkali metal terephthalates which comprises heating to a reaction temperature in the range of from about 380° to about 430° C. at least two alkali metal benzoate salts selected from sodium, potassium and cesium benzoates, wherein each alkali metal benzoate is present in an amount equal to at least two weight percent of the total alkali metal benzoate present, in the presence of a catalyst selected from the benzoate salts of zinc, zinc and cadmium, zinc and silver, and zinc and iron, wherein when two salts are combined to form the catalyst each component of the catalyst will be present in amounts greater than about 10 mole percent of total catalyst, and wherein when the catalyst is zinc benzoate the alkali metal benzoates present are sodium, potassium, and cesium.

4,230,886

METHOD OF OBTAINING DRIED TEREPHTHALIC ACID

Fujio Tsuchiya; Kenzo Yamamoto; Katsunobu Yamaguchi, and Akio Okagami, all of Yokohama, Japan, assignors to JGC Corporation, Tokyo and Orient Kagaku Kogyo K.K., Osaka, both of Japan

Filed Jun. 8, 1979, Ser. No. 46,824

The portion of the term of this patent subsequent to Aug. 26, 1997, has been disclaimed.

Int. Cl.³ C07C 51/42

U.S. Cl. 562-486

9 Claims

1. A method of obtaining dried terephthalic acid by removing acetic acid and/or water from a slurry containing terephthalic acid and acetic acid and/or water, characterized by feeding the slurry to a tubular type heater having at least one heating tube which opens at one end in a separation chamber to change the slurry to a solid-gas mixture in the heating tube, discharging the mixture into the separation chamber to separate the solid component and the gas component, thus obtaining terephthalic acid in the form of dried powder; and terephthalic acid content in the slurry being less than the value "C" defined by the formula:

$$C = (2.56^{0.4} + 66)\alpha + (3.26^{0.35} + 74)(1 - \alpha)$$

wherein C is expressed as % by weight, θ is temperature (°C.) of the heating tube, θ is molar ratio of water in the slurry medium and (1- α) is molar ratio of acetic acid in the slurry medium.

4,230,887

RECOVERY OF ANHYDROUS ACIDS

William T. Mitchell, Corpus Christi, and Phillip S. Snyder, Houston, both of Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 16, 1978, Ser. No. 878,196

Int. Cl.² C07C 51/42, 51/44, 51/48, 53/08, 53/22, 55/02, 57/04, 57/14

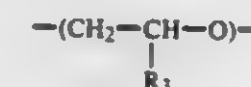
U.S. Cl. 562-593

20 Claims

1. A process for recovering a C₂-C₆ carboxylic acid from a gaseous mixture comprising said carboxylic acid and water, said carboxylic acid being a monocarboxylic acid or a dicarboxylic acid and being composed only of carbon, hydrogen and oxygen, said process comprising: (a) in a gas absorption zone, intimately contacting said gaseous mixture, while maintained in the vapor phase, with a solvent which is maintained in the liquid phase whereby C₂-C₆ carboxylic acid is absorbed from said gaseous mixture into said solvent, said solvent comprising a polymer of the formula:



wherein R₁ and R₂ may be alike or different and are hydrogen or alkyl groups of 1 to 20 carbon atoms, and wherein X is a divalent polyoxyalkylene radical consisting essentially of repeating oxyalkylene units of the formula:



wherein R₃ is hydrogen or a lower alkyl radical of from 1 to 6 carbon atoms and wherein R₃ may be alike or different on the repeating oxyalkylene units, said polymer having a molecular weight within the range of about 250 to 5,000, the intimate contact of said gaseous mixture and said solvent being accomplished at a temperature which is below the boiling point of said solvent at the pressure involved and which is above the dew point of said gaseous mixture at the pressure involved so as to prevent condensation of the water from said gaseous mixture; and, (b) removing from said gas absorption zone a liquid, acid enriched solvent fraction consisting essentially of said solvent having C₂-C₆ carboxylic acid absorbed therein, and recovering C₂-C₆ carboxylic acid from said solvent fraction.

4,230,888

PROCESS FOR PURIFICATION OF ACRYLIC ACID BY FRACTIONAL CRYSTALLIZATION

Stephen C. Pasppek, Cleveland, and William A. Every, Twinsburg, both of Ohio, assignors to Standard Oil Company (Ohio)

Filed Dec. 15, 1977, Ser. No. 860,937

Int. Cl.² C07C 51/42, 57/04; B01D 9/02

U.S. Cl. 562-600

12 Claims

1. A method of separating acrylic acid from an aqueous solution containing acrylic acid comprising adding a salt that eliminates the eutectic point between acrylic acid and water to the aqueous solution in an amount sufficient to saturate said aqueous solution, and fractionally crystallizing said aqueous solution to obtain acrylic acid.

4,230,889

DESENSITIZED SOLUTION OF DIHYDROPEROXYCYCLOHEXANE

Hendrik Hansma, Schalkhaar, and Arnold Schroeder, Deventer, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jun. 30, 1978, Ser. No. 922,145

Claims priority, application Netherlands, Jul. 4, 1977, 7707356

Int. Cl.³ C07C 179/053

U.S. Cl. 568-559

9 Claims

1. A stable composition containing a cyclohexanone perox-

ide and a solvent, characterized in that the peroxide contained in the composition is a cyclohexanone peroxide consisting essentially of 1,1-dihydroperoxycyclohexane and the solvent contained in it is water; a mono- or polyhydric alcohol; an alcohol ether; an ester derived from an aliphatic or aromatic monocarboxylic acid or polycarboxylic acid and a monohydric or polyhydric alcohol; a ketoalcohol or a ketoether.

4. A method for desensitizing solid 1,1-dihydroperoxycyclohexane which comprises dissolving it in water, an alcohol, an ester or ketoether.

4,230,890

METHOD OF RECOVERING DIALKYLBENZENE DIHYDROPEROXIDE

Ward J. Burkholder, Baton Rouge, La., assignor to The Good-year Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 34,634, May 4, 1970, abandoned. This application Jul. 19, 1978, Ser. No. 926,139
Int. Cl.³ C07G 179/035

U.S. Cl. 568-576

16 Claims

1. A method for recovering dialkylbenzene dihydroperoxide from an oxidation reaction product containing dialkylbenzene dihydroperoxide, dialkylbenzene monohydroperoxide, and unreacted dialkylbenzene, comprising the steps:

- (a) mixing said oxidation reaction product with an amount of water immiscible organic solvent in a volume ratio of organic solvent to reaction product of about 0.1/1 to about 6/1, said organic solvent being of a type which is substantially non-reactive, under the processing conditions, with said reaction product or alkali metal hydroxide and in which alkali metal salts of dialkylbenzene dihydroperoxides are substantially insoluble;
- (b) treating, at a temperature maintained below about 130° C., the oxidation reaction product-solvent mixture with alkali metal hydroxide in a molar ratio of hydroxide to dihydroperoxide of about 0.5/1 to about 5/1 to precipitate the alkali metal salt of the dialkylbenzene dihydroperoxide from said solution;
- (c) separating the solid alkali metal salt of the dihydroperoxide from the solution; and
- (d) converting the dihydroperoxide salt to dialkylbenzene dihydroperoxide.

8. A method for recovering diisopropylbenzene dihydroperoxide from an oxidation reaction product which contains said diisopropylbenzene dihydroperoxide, diisopropylbenzene monohydroperoxide in an amount of about 2 to 3 times the amount of said diisopropylbenzene dihydroperoxide, (2-hydroperoxy-2-propyl) phenyl dimethyl carbinol, and unreacted diisopropylbenzene, comprising the steps:

- (a) mixing said oxidation reaction product with a water immiscible organic solvent in a volume ratio of solvent to oxidation reaction product of between about 0.1/1 to about 6/1 to form a reaction product-solvent mixture, said organic solvent being of a type which is substantially non-reactive, under the processing conditions, with said reaction product or alkali metal hydroxide and in which alkali metal salts of dialkylbenzene dihydroperoxides are substantially insoluble;
- (b) treating, at a temperature maintained below about 130° C., the oxidate-solvent solution with alkali metal hydroxide in a molar ratio of alkali metal hydroxide to diisopropylbenzene dihydroperoxide of between about 0.5/1 to 5/1 to precipitate the alkali metal salt of said diisopropylbenzene dihydroperoxide from said solution;
- (c) recovering said precipitated solid alkali metal salt of said diisopropylbenzene dihydroperoxide substantially free of diisopropylbenzene monohydroperoxide and (2-hydroperoxy-2-propyl) phenyl dimethyl carbinol;
- (d) redissolving said alkali metal salt in an aqueous solution; and
- (e) recovering diisopropylbenzene dihydroperoxide from said aqueous alkali metal salt solution.

4,230,891

**2-(2,2-DIHALOVINYL)-3,3-DIMETHYLCYCLO-
PROPANECARBALDEHYDE DIMETHYL ACETAL**

Pieter A. Verbrugge; Petrus A. Kramer; Johannes Van Berkel, and Hendrik C. Kelderman, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 5, 1978, Ser. No. 966,681

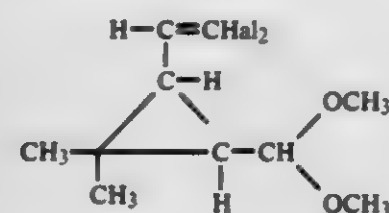
Claims priority, application United Kingdom, Dec. 16, 1977, 52466/77

Int. Cl.³ C07C 43/313

U.S. Cl. 568—591

3 Claims

1. A compound of the formula I



wherein each Hal independently is selected from chlorine, bromine or fluorine.

4,230,892

**ALCOHOLYSIS PROCESS FOR PREPARING
POLY-(TETRAMETHYLENE ETHER) GLYCOL**

Gerfried Pruckmayr, Media, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 905,972, May 15, 1978, abandoned, and a continuation-in-part of Ser. No. 767,510, Feb. 14, 1977, abandoned, and a continuation-in-part of Ser. No. 672,557, Mar. 31, 1976, abandoned. This application Jul. 20, 1979, Ser. No. 59,137

Int. Cl.³ C07C 43/11

U.S. Cl. 568—617

7 Claims

1. A process for converting a poly(tetramethylene ether) diester to PTMEG, the process comprising

(A) preparing a mixture of

- (1) a poly(tetramethylene ether) diester having a pH of about 7,
- (2) an alkanol of 1-4 carbon atoms, and
- (3) 1-25 mol percent, based on the diester, of a catalyst which is an oxide or hydroxide of calcium, strontium or barium;

(B) bringing the mixture to its boiling point and holding it there while the vapors of the alkanol/alkyl ester azeotrope which form are continuously removed from the reaction zone, until conversion is substantially complete; and then

(C) removing the catalyst, and optionally the residual alkanol and residual alkyl ester, from the reaction mass.

4,230,893

**1,1-DI(4-HYDROXY-3-METHOXYPHENYL)-2-ALKOXY-
PROPANE**

George Gal, Watchung, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

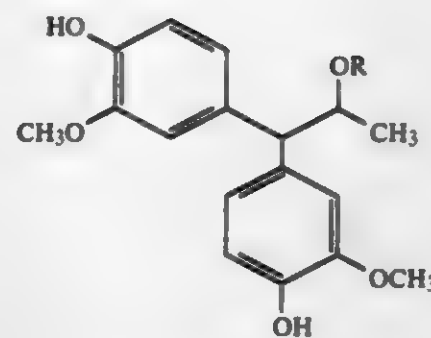
Filed Sep. 13, 1979, Ser. No. 75,345

Int. Cl.³ C07C 43/20, 101/77

U.S. Cl. 568—640

3 Claims

1. A compound of structural formula:



wherein R is C₁₋₅ alkyl.

4,230,894

**METHOD FOR PRODUCING 3-ALKYLPHENOLS AND
1,3-HYDROXYBENZENE**

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,627

Int. Cl.³ C07C 37/08, 179/047, 15/085

U.S. Cl. 568—768

13 Claims

1. In the process for the production of hydroxybenzene compounds having substituents in the 1 and 3 positions on the benzene ring, said process comprising: (A) alkylation of an aromatic compound with an alkylating agent "comprising an unsaturated hydrocarbon or a compound capable of generating an unsaturated hydrocarbon" to produce an isomeric mixture of dialkylbenzene compounds; (B) separation of the isomers of said dialkylbenzene compounds to obtain a material enriched with respect to the 1,3-dialkylbenzene isomer; (C) oxidation of said material enriched with respect to said 1,3-dialkylbenzene isomer with oxygen to yield the hydroperoxide thereof; and (D) acid catalyzed rearrangement of said hydroperoxide to yield a 1,3-disubstituted benzene compound having at least one hydroxyl substituent thereon; the improvement comprising: in separation step (B) contacting said isomeric mixture of dialkylbenzene compounds with a shape selective zeolite catalyst, at a temperature of between about 150° C. and about 800° C. and a pressure of between about 10⁴ N/m² and about 10⁷ N/m², to selectively react the 1,4-dialkyl isomer of said dialkylbenzene compounds, the reaction mixture thereby becoming enriched with respect to the 1,3-dialkyl isomer thereof, said shape selective zeolite catalyst being characterized by a constraint index within the range of from about 1 to about 12 and further by a silica to alumina ratio of at least 12.

4,230,895

**THERMAL HYDRODEALKYLATION OF ALKYL
PHENOLS**

Francis P. Daly, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Nov. 30, 1978, Ser. No. 964,813

Int. Cl.³ C07C 37/50

U.S. Cl. 568—805

11 Claims

1. A process for thermal dealkylation of alkylated phenols to form a phenol product comprising mixing a feed solution comprising at least one alkylated phenol with hydrogen and reacting the mixture in the presence of added water vapor at a temperature of from about 1000° to about 1500° F., the amount of water vapor used ranging from about 10 to about 40% by weight, based on the total weight of the feed solution.

4,230,896

**CATALYTIC STEAM DEALKYLATION OF ALKYL
PHENOLS**

Francis P. Daly, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Nov. 30, 1978, Ser. No. 964,814

Int. Cl.³ C07C 37/50

U.S. Cl. 568—805

11 Claims

1. A process of dealkylating alkyl phenol to form a phenol product comprising reacting a feed solution comprising a mixture of alkyl phenols with steam in the presence of a catalyst, the catalyst comprising a hydrous carrier, from about 0.1 to about 10% by weight of at least one catalyst deactivation suppressor selected from the group consisting of Group I-A and Group II-A metals, and from about 0.1 to about 20% by weight of at least one promoter selected from the group consisting of Group VIII metals and Group VI-B metal oxides, the mole ratio of steam to alkyl phenols being from about 1:1 to about 15:1, the reaction being carried out at a temperature of from about 250° to about 700° C. and at a pressure of from about 1 to about 50 atmospheres, the weight hourly space velocity of the alkyl phenols is from about 0.1 to about 5.0 gm phenol/hr/gram catalyst.

4,230,897

**PROCESS FOR SELECTIVELY HYDROGENATING A
HYDROCARBON CUT CONTAINING AT LEAST ONE
DIOLEFINIC HYDROCARBON AND AT LEAST ONE
ACETYLENIC HYDROCARBON USING A PALLADIUM
CATALYST WITH CRYSTALLITES OF AT LEAST 50
ANGSTROMS**

Jean Cosyns, Maule; Robert Stern, Paris, and Jean-François Le Page, Rueil Malmaison, all of France, assignors to Institut Français du Pétrole, Rueil-Malmaison, France

Filed Apr. 4, 1979, Ser. No. 26,984

Claims priority, application France, May 5, 1978, 78 10490

Int. Cl.³ C07C 5/08, 7/00

U.S. Cl. 585—260

16 Claims

1. In a process for selectively hydrogenating a hydrocarbon fraction containing simultaneously at least one diolefinic hydrocarbon and at least one acetylenic hydrocarbon, including the hydrogenation of the acetylenic hydrocarbon but without substantial hydrogenation of the diolefinic hydrocarbon, wherein said fraction, at least partially in the liquid phase, and hydrogen are contacted with a catalyst of palladium on alumina, the improvement wherein the average size of the palladium crystallites in said catalyst is of at least 50 Angstroms, whereby the selective hydrogenating activity of the catalyst is substantially prolonged.

ELECTRICAL

4,230,895

ELONGATED FILAMENT LATTICE STRUCTURE

Leroy L. Emmel, 1800 Wallace Ave., Apt. R, Costa Mesa, Calif. 92627

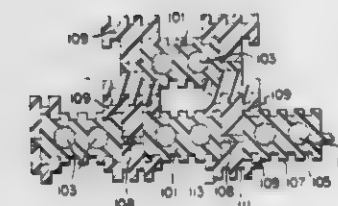
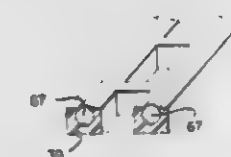
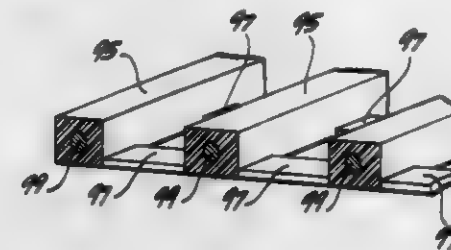
Division of Ser. No. 784,603, Apr. 4, 1977, Pat. No. 4,097,324.

This application Oct. 19, 1977, Ser. No. 843,459

Int. Cl.² H01B 7/08, 11/00

U.S. Cl. 174-32

8 Claims



1. A lattice cable comprising:
 - a plurality of more than three elongated insulative elements extending parallel to one another and being interconnected along their lengths by insulative ribs at spaced locations between points of closest proximity of adjacent said insulative elements, and
 - said insulative elements and said insulative ribs being continuously and integrally formed from an elastic, homogeneous, thermoplastic, insulative material so that each of said insulative elements is uniform in cross section along its length, and
 - at least one elongated filament embedded in each of said insulative elements.
4. A lattice cable comprising:
 - a plurality of elongated insulative elements extending parallel to one another and being interconnected along their lengths by insulative ribs at spaced locations between points of closest proximity of adjacent said insulative elements, and
 - said insulative elements and said insulative ribs being continuously and integrally formed from an elastic, homogeneous, thermoplastic, insulative material so that each of said insulative elements is uniform in cross section along its length, and
 - at least one elongated filament embedded in each of said insulative elements with at least one of said embedded filaments having a portion of the surface thereof continuously exposed along its length.
7. A lattice cable comprising:
 - a plurality of elongated insulative elements having a first dielectric constant, said elongated insulative elements extending parallel to one another and being interconnected at spaced locations along their lengths by integrally formed insulative ribs;
 - at least one electrical conductor embedded in each of said elongated insulative elements;
 - each of said elongated insulative elements having grooves

and ridges formed on an exterior surface thereof and extending along the length thereof;

at least one strip of insulative material having a second dielectric constant that is different from said first dielectric constant, said strip having grooves and ridges extending along the length thereof on an exterior surface thereof; said ridges of said strip of insulative material mating with said grooves of said elongated insulative elements, and said grooves of said strip of insulative material mating with said ridges of said elongated insulative elements; and one of said ridges of said insulative strip contacting at least one of said ribs interconnecting adjacent elongated insulative elements.

4,230,899

ELECTROCONDUCTIVE HOSE FOR CLEANER

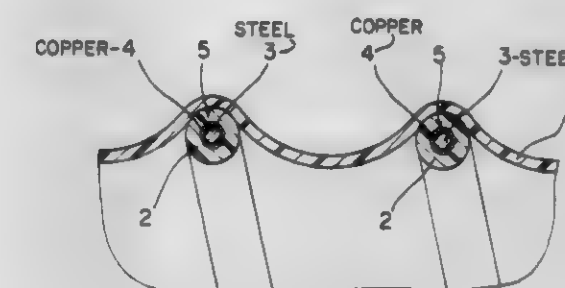
Shiro Kanao, 32-460, Nanpeidai, Takatsuki-shi, Osaka-fu, Japan

Filed Aug. 21, 1978, Ser. No. 935,375

Int. Cl.³ A47L 9/24; F16L 11/12; H01B 5/10, 7/00

U.S. Cl. 174-47

6 Claims



1. An electroconductive hose for cleaners comprising a bellows-shaped hose main body and two reinforcing synthetic resin elements arranged side by side axially of the hose and helically wound on and attached to the inner surface of the hose main body, each of the reinforcing helical elements having embedded therein an electrical conductor comprising a hard steel wire and a plurality of thin copper wires provided on the outer periphery of the hard steel wire and extending longitudinally thereof, said thin copper wires arranged substantially parallel to said hard steel wire.

4,230,900

POWER POLE ASSEMBLY

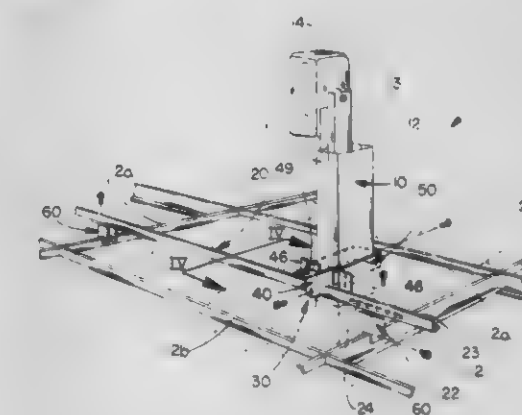
Larry A. Speet, Holland, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Jun. 13, 1978, Ser. No. 915,127

Int. Cl.³ E04B 1/38

U.S. Cl. 174-48

19 Claims



1. In a power pole assembly for bringing wiring through a hollow power pole from above and through a suspended grid supported ceiling, said grid including spaced suspended rails which in turn support ceiling panels, the improvement comprising: a crossbar; pole clamping means releasably, movably mounted on said crossbar and on said pole, whereby said pole

can be secured at different heights to said crossbar and at different points along the length of said crossbar; two rail clamping means releasably, movably, and pivotally joined to said crossbar at spaced points along the length thereof, each including securing means for releasably, movably securing each to a grid rail at different points along its length, whereby said crossbar can be oriented at a plurality of different angles to said grid rails and said hollow pole can be located at a plurality of different points between adjacent grid rails and at a plurality of different angles with respect thereto; said rail clamping means comprising a bracket having a generally U-shaped lateral, horizontal cross-section defined by a back wall and a pair of spaced side walls, said side walls being notched to define hooks for hooking over a grid rail; a screw threaded through said back wall of said rail clamping means whereby said screw can be tightened against a grid rail; said rail clamping means including a tab projecting therefrom; said crossbar including at least two elongated slots extending along the length thereof, one located generally towards each end thereof; a screw passing through each said slot and being threaded into an aperture in said tab on said clamping means whereby said clamping means can be tightened on said crossbar at a plurality of pivotal angles with respect thereto and at any point along the length of said elongated slot.

4,230,901

HOUSING FOR SEMICONDUCTOR DEVICE

Christian Wengler, and Herbert Vogt, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

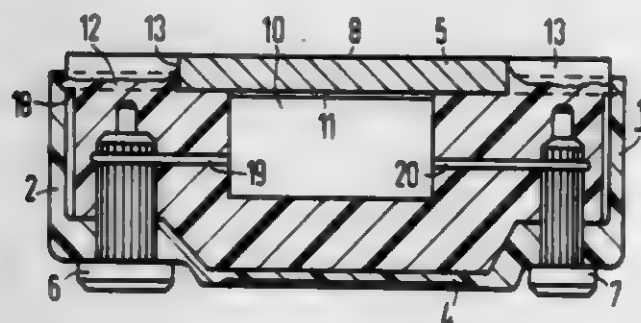
Filed May 1, 1979, Ser. No. 35,271

Claims priority, application Fed. Rep. of Germany, May 3, 1978, 2819499

Int. Cl.³ H05K 7/20

U.S. Cl. 174-52 PE

5 Claims



1. Housing for a semiconductor device, comprising a housing cup in which the semiconductor device is disposed, said housing cup having a bottom, a wall and a metal plate disposed opposite said bottom, said metal plate being thermally connected to the semiconductor device and having a mounting surface connectable to a heat sink and a lateral surface perpendicular to said mounting surface, contacts extending from inside said housing cup through said bottom and being firmly connected thereto, and cutouts formed in said metal plate at the edges thereof opposite said contacts, said mounting surface of said metal plate extending beyond said wall opposite said bottom, said housing being filled with sealing compound through said cutouts to an extent where at least part of said lateral surface of said metal plate is wetted with sealing compound.

4,230,902

MODULAR LASER PRINTING SYSTEM

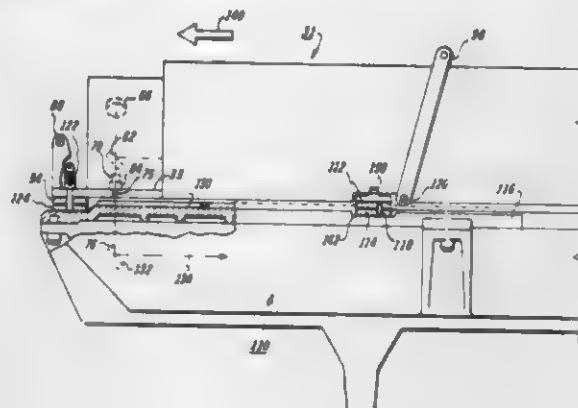
William F. Hug, Pasadena, and Leonard C. De Benedictis, Los Angeles, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1978, Ser. No. 911,021

Int. Cl.³ H04L 15/34; H04N 1/04

U.S. Cl. 178-15

12 Claims



1. In a laser printing system having means for generating a beam of high intensity light, a recording medium sensitive to said high intensity light, optical means comprising a plurality of optical elements interposed between said light generating means and said recording medium for imaging said beam to a spot at the surface of said medium, modulating means located between said light generating means and a scanner device for modulating the light beam in accordance with the information content of electrical signals, said scanner device comprising a multi-faceted polygon located in the path of said modulated beam between said beam generating means and said recording medium and having reflective facets for reflecting the beam incident thereon onto said medium, means for rotating said polygon such that the reflected light is scanned in successive traces across said medium, the improvement comprising:

a first module forming a part of said laser printing system, said first module comprising said light beam generating means and at least one of said optical elements, said light beam generating means and said at least one of said optical elements being mounted on a common base member, said first module being adapted to be removed from said laser printing system and replaced with a second module, similar to said first module, the beam of light provided by a beam generating means in said second module and exiting therefrom being maintained in optical alignment with other elements in said laser printing system external to said second module within predetermined tolerances, the light beam generated by said light beam generating means in said first module being in optical alignment with other elements in said laser printing system external to said first module and also being within said predetermined tolerances.

4,230,903

DATA TRANSMISSION SYSTEM

Takeo Fukuda, and Kazuaki Kawabata, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 20, 1979, Ser. No. 31,737

Claims priority, application Japan, Apr. 28, 1978, 53/51668

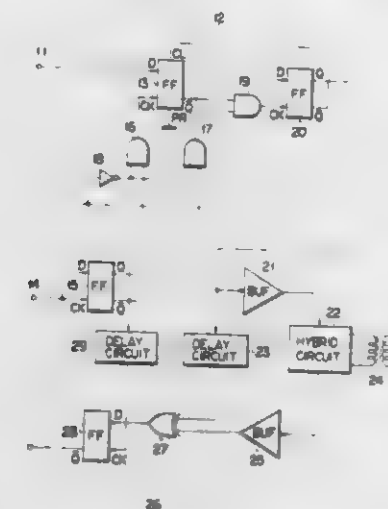
Int. Cl.³ H04L 5/14

U.S. Cl. 370-24

5 Claims

1. A data transmission system for data transmission between local and remote terminals by means of a two-wire transmission line, said local terminal including a first encoder for converting binary data formed of a plurality of binary data bits into a diphasic data signal having first and second portions, respectively, representing first and second binary bit states and provided, respectively, with two transitions and one transition, and a means for transmitting the diphasic data signal from said

first encoder to a two-wire transmission line, said remote terminal including a means for receiving said diphasic data signal from said local terminal, a decoder for decoding said diphasic data signal received by said receiving means into said binary data, a second encoder for converting, under the modulating influences of said diphasic data signal, data to be transmitted from said remote terminal to said local terminal, thereby pro-



ducing a remote terminal diphasic data signal, and a means for transmitting the remote terminal diphasic data signal from said second encoder to said two-wire transmission line, and said local terminal further including a means for receiving said remote terminal diphasic data signal from said remote terminal, and a means for demodulating said remote terminal diphasic data signal by means of said diphasic data signal from said first encoder.

4,230,904

SIGNAL CONTROL CIRCUIT

Kazuyoshi Fujiyoshi, and Kyoji Murakami, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

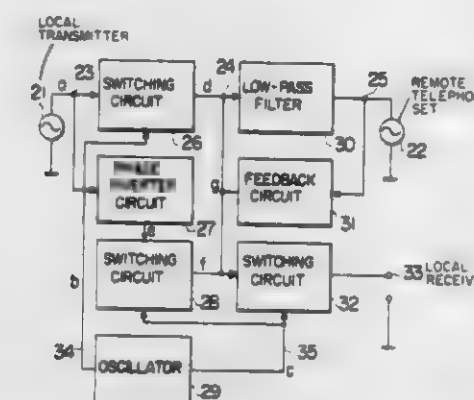
Filed Dec. 22, 1978, Ser. No. 972,368

Claims priority, application Japan, Dec. 27, 1977, 52-157654

Int. Cl.³ H04M 1/60

U.S. Cl. 179-1 HF

3 Claims



1. A signal control circuit comprising: first input means connected to a first signal source circuit; second input means connected to a second signal source circuit; output means; an oscillator having first and second outputs for generating first and second output signals, respectively, said second output signal being in opposite phase with respect to said first output signal; a first switching circuit having inputs thereto connected respectively to said first input to said signal control circuit to and said first output of said oscillator, said first switching circuit being driven by said first output signal from

said oscillator to provide a first switched output signal at an output thereof; a second switching circuit having inputs thereto connected respectively to said first input to said signal control circuit through a phase inverter circuit and to said second output of said oscillator, said second switching circuit being driven by said second output signal from said oscillator to provide a second switched output signal at an output thereof; a low-pass filter having an input thereto connected to a junction point of the outputs of said first and second switching circuits, the output of said low-pass filter being connected to said second input of said signal control circuit; a feedback circuit having an input thereto connected to said second input of said signal control circuit and an output thereof connected to said junction point of the outputs of said first and second switching circuits; and a third switching circuit having inputs thereto connected respectively to said junction point of the outputs of said first and second switching circuits and to said second output of said oscillator, said third switching circuit having an output thereof connected to said output of said signal control circuit and driven by said second output signal from said oscillator to provide a third switched output signal at said output of said signal control circuit, said signal control circuit preventing transmission of signals from said first input means to said output means despite changes in the impedances of a signal source circuit.

4,230,905

STEREOPHONIC SYSTEM WITH DISCRETE BASS CHANNELS

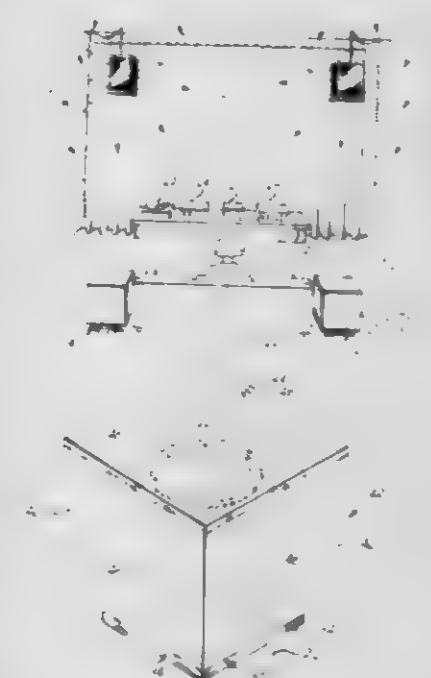
Ronald J. Crum, 10208 28th Ave. SW., Seattle, Wash. 98146, and Edward J. Churchill, 2835 SW. 102nd, Seattle, Wash. 98146

Continuation of Ser. No. 803,674, Jun. 6, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 935,029

Int. Cl.³ H04R 5/02, 1/02

U.S. Cl. 179-1 GA

14 Claims



7. A subwoofer for a stereo system, comprising: an inner housing comprising a closed bottom wall, closed side walls and a top wall including a speaker opening, together forming a first chamber; a larger outer housing comprising a closed top wall, closed side walls, and an open lower end, said outer housing being inverted over the inner housing; connector means between the inner and outer housing sup-

tape transport means for receiving said tape;
sensing means coupled to said tape;
transport means for detecting said indicia;
means for recording a desired announcement on each of said announcement information sections of said tape;
announcement control means coupled to said transport means and said sensing means, and responsive to selected ones of said indicia and to a telephone ring signal for reproducing said announcement from one of said announcement information sections as a first audio signal;
means for coupling said first audio signal to a telephone line;
message recording means coupled to said transport means and said sensing means, and responsive to a second audio signal on said telephone line for recording a corresponding message on the particular message information section of said tape adjacent and following said one announcement information section;
timing means coupled to said sensing means and responsive to selected ones of said indicia for disabling said announcement control means and enabling said message recording means a first predetermined time after occurrence of said ring signal, and for disabling said message recording means a second predetermined time thereafter; and
playback means coupled to said transport means and said sensing means, and responsive to selected ones of said indicia for reproducing from said particular message information section of said tape an audible signal corresponding to said second audio signal.

4,230,910

SIGNALLING AND CHANNEL LOOP TEST CIRCUITS FOR STATION CARRIER TELEPHONE SYSTEM

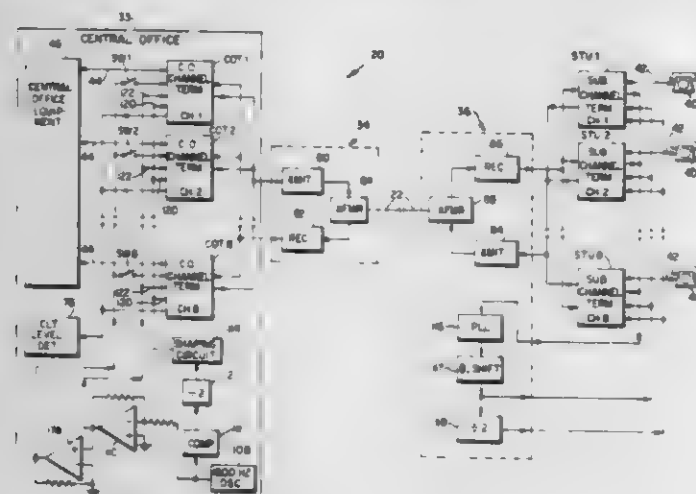
Frank L. Simokat, Babylon, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Filed Aug. 11, 1978, Ser. No. 932,704

Int. Cl.² H04J 1/06

U.S. Cl. 370-71

33 Claims



1. A method of signalling an incoming telephone call for a subscriber who is served by a plural channel amplitude modulated station carrier telephone system in which a plurality of frequency division multiplexed channel carrier signals are transmitted over a transmission line from a central office and in which each of said channel carrier signals is assigned to a different one of the subscribers served by the carrier system, said method comprising the steps of modulating the channel carrier signal assigned to the subscriber being called with first and second a.c. signals at the central office, receiving and demodulating the called subscriber's channel carrier signal upon transmission of the channel carrier signal over said transmission line to recover said first and second signals, utilizing said first signal to cause the synchronous detection of said second signal following the demodulation of the called subscriber's channel carrier signal, and ringing the called subscriber's telephone in response to the synchronous detection of said second signal.

4,230,911

CARRIER TERMINAL UNIT

Frank Fellinger, and James M. Ruffing, both of Delaware, Ohio, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,456

Int. Cl.² H04J 3/06

U.S. Cl. 370-84

12 Claims



1. Apparatus for converting incoming PCM signals each represented as a data bit having a first clock rate and arranged as frames of voice information data bits and other data bits in a first format to frames of outgoing PCM signals having a second clock rate and format, said apparatus comprising:
means for synchronizing each incoming data bit to said second clock rate;
first memory means adapted to store said other data bits from a plurality of frames;
first means for storing synchronized ones of said other data bits in said first memory means;
second memory means comprising a plurality of addressable memory locations, the number of said locations being greater than the number of voice information data bits in one of said frames;
said second memory means being organized as n overlapping groups of locations, each of said groups of locations being adapted to store one frame of voice information data bits of n successive frames of voice information bits, where n is a predetermined number greater than 1;
second means for storing synchronized ones of said voice information data bits in said second memory means at said first clock rate;
means for reading said stored voice information data bits from said second memory means at said second rate and for reading said other data bits of a preceding frame from said first memory means, said reading of said first and second memory means being in accordance with a predetermined sequence; and
means for multiplexing said other data bits read from said first memory means and said voice information data bits from said second memory means to provide said frames of outgoing PCM signals.

4,230,912

DIAL PULSE SENSOR AND REPEATER CIRCUIT

David Q. Lee, Boca Raton, Fla., and Richard M. Rovnyak, Schaumburg, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 21, 1979, Ser. No. 13,598

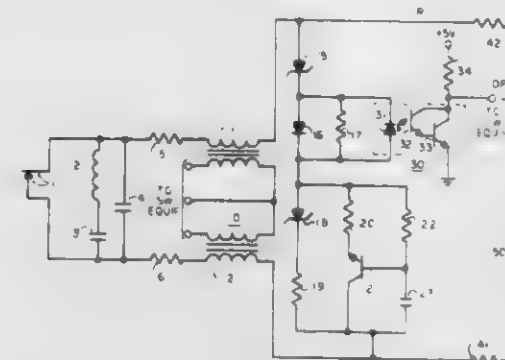
Int. Cl.² H04Q 1/36

U.S. Cl. 179-16 EA

7 Claims

1. A dial pulse sensor and repeater circuit for use in a telephone system including at least one telephone subscriber station connected to a switching center including a battery and switching equipment via a first and a second leads, said subscriber station including dial contacts for causing conduction and interruptions of a DC signal on said first and said second leads, said dial pulse sensor and repeater circuit comprising:
voltage level sensing means connected between said first and

said second leads operated to detect a particular voltage level between said leads in response to said switching center battery applied to said leads by pulses generated by said dial contacts;
optical coupler means including a light emitting diode and a resistor adjusted to provide a precise voltage and current threshold for operation of said light emitting diode, said optical coupler means connected between said voltage level sensing means and said switching equipment operated in response to said voltage level detected by voltage



level sensing means to provide an output signal representative of said dial contact pulses for transmission to said switching equipment; and
circuit timing means connected to said voltage level sensing means and to said first lead for permitting current flow during said interruptions caused by said dial contacts of said subscriber station, said circuit timing means operated during said interruptions of said dial contacts and said circuit timing means non-operated during said conduction of said dial contacts.

4,230,913

LINE CONCENTRATOR

Gene A. Brothers, Scottsbluff, John A. Neely, and Patrick W. Kieffe, both of Gering, all of Nebr., assignors to Eltra Corporation, Toledo, Ohio

Filed Jan. 4, 1979, Ser. No. 956

Int. Cl.² H04Q 3/60; H04J 3/00

U.S. Cl. 179-18 FC

38 Claims



15. A line concentrator system comprising:
a central office unit receiving a plurality of incoming subscriber lines,
a remote field unit adapted for connection to the subscribers, a plurality of trunk lines less than the number of said subscribers,
one line in said remote unit,
means in said remote unit for connecting a subscriber line and a subscriber to one of said trunk lines and two sub-

scribers over said one line under control of said central office unit,
means in said central office unit for connecting a called and calling subscriber over first and second trunk lines and their corresponding subscriber lines upon receiving an off hook interrupt and dialing code from said remote unit,
said means including first means for storing the identity of each subscriber connected to said remote unit, and second means determining from said interrupt, dialing code and said storage means that the called and calling subscribers are connected to said remote unit, generating a control signal sent to said remote unit for establishing connection between said subscribers over said one line and, said second means also generating another control signal to said remote unit and said central office unit for disconnecting the trunk lines connecting the called and calling subscribers and
wherein said first means includes a random access memory, and said second means include a microprocessor.

4,230,914

SYSTEM FOR AND METHOD OF INDICATING INTRUDER PRESENCE ON TELEPHONE LINES, AND METHOD OF INSTALLATION OF TELEPHONE INTRUDER ALARM SYSTEM

Paul Korwin, Flushing, N.Y., and Eric S. Cohen, South Orange, N.J., assignors to Case Technology Corporation, New York, N.Y.

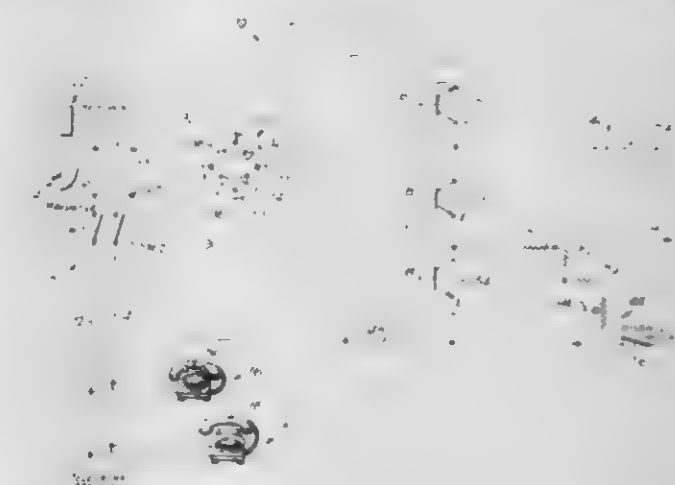
Filed Nov. 30, 1978, Ser. No. 964,947

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.

Int. Cl.² H04M 1/68

U.S. Cl. 179-81 E

28 Claims



1. A compact telephone intruder alarm system for indicating the subsequent interconnection and disconnection of an extension telephone with a telephone line to a current on-line user, comprising:

- (a) means for detecting electrical OFF and ON-hook signals which are respectively generated in response to interconnection and disconnection of an auxiliary extension telephone with a telephone line;
- (b) means responsive to the detection of the electrical OFF and ON-hook signals for indicating to a current on-line user of a primary extension telephone which is already interconnected with the telephone line of the subsequent interconnection and disconnection of the auxiliary extension telephone, to thereby alert the on-line user to the presence of an intruder on the telephone line;
- (c) means for mounting both said detecting means and said indicating means on the primary extension telephone, to thereby simplify installation of the compact telephone intruder alarm system with conventional telephones;
- (d) said primary extension telephone including a microphone transmitter and a handset having an interior; and
- (e) said mounting means being operative for mounting both

said detecting means and said indicating means within the interior of the handset to thereby make the installation of the compact alarm system with conventional telephones hardly discernible, said mounting means including a carrier plate on which both said detecting means and said indicating means are mounted, and a transmitter cover mounted on the handset in overlying relationship with the microphone transmitter and said carrier plate.

4,230,915

RECORD CARRIER WITH AN OPTICALLY READABLE RADIATION-REFLECTING INFORMATION STRUCTURE

Jan G. Dil, and Bernardus A. J. Jacobs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

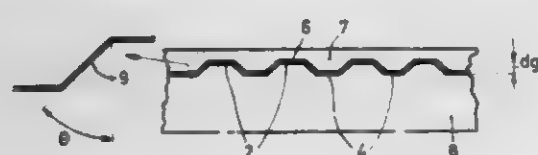
Filed Dec. 26, 1978, Ser. No. 972,754

Claims priority, application Netherlands, Sep. 11, 1978, 7809227

Int. Cl.² G11B 7/24

U.S. Cl. 179—100.1 G

4 Claims



1. An improved record carrier in which information is stored in a radiation-reflecting information structure at least one side of which is readable with an optical radiation beam and which comprises information areas arranged in tracks which areas, in the track direction and transverse to the track direction, are spaced from each other by intermediate areas, the surfaces of the information areas being disposed substantially in a first plane, the surface of the intermediate areas substantially in a second plane, and the distance between the first and the second plane being substantially constant over the entire record carrier, the improvement being characterized in that the angle of inclination between the walls of the information areas and a normal to the record carrier has one value between 30° and 65°, and the geometric distance between the first and the second plane has one value between 165/N and 270/N nanometers, N being the refractive index of a transparent medium which is disposed between the first and the second plane on the optically readable side of the information structure.

4,230,916

MULTIWAY CHANGE-OVER SWITCH HAVING JOY-STICK ACTUATOR

Asaji Mochizuki, Kawasaki, Japan, assignor to Showa Musen Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1978, Ser. No. 954,834

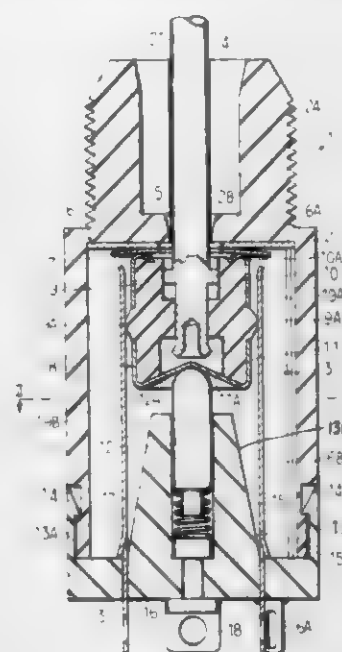
Int. Cl.³ H01H 25/04

U.S. Cl. 200—6 A

8 Claims

1. A multiway change-over switch for a circuit comprising: an electrically insulated hollow cylindrical casing including a main body portion which defines a switching chamber and a head portion which defines a lobed opening, an upper terminal having a portion positioned on the inner surface of the top wall of said switching chamber, a rocking change-over means rockably received in said switching chamber in contact with said upper terminal, a lower terminal in abutment against the undersurface of said rocking change-over means for rockably supporting the rocking change-over means, a base member secured to the bottom of said casing and loosely receiving said lower terminal, a coiled spring positioned between said lower terminal and base member for normally urging said lower terminal against said rocking change-over means and at least one pair of peripheral terminals positioned in diamet-

rically opposite positions in the outer periphery of said base member and having portions extending into said switching chamber to surround said rocking change-over means, said rocking change-over means including a substantially hollow cylindrical operation member having an annular projection in the center of the outer periphery against which said peripheral terminals normally abut, an upper contact surrounding the portion of said operation



member above said annular projection and normally in contact with said upper terminal and a lower contact surrounding the portion of said operation member below said annular projection and normally in contact with said lower terminal such that said rocking change-over means can selectively contact said at least one pair of peripheral terminals with said upper and lower terminals and complete said circuit.

4,230,917

REMOVABLE-KEY ROCKER TYPE SWITCH FOR TWO CIRCUITS

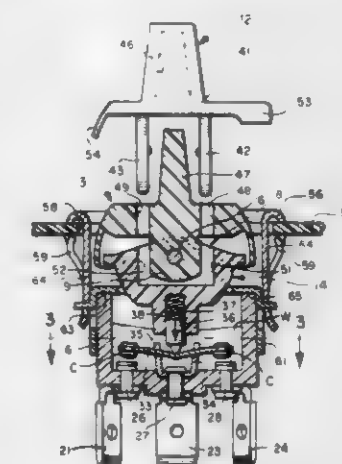
Thomas F. Osika, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Filed Feb. 12, 1979, Ser. No. 11,206

Int. Cl.³ H01H 27/06

U.S. Cl. 200—42 T

11 Claims



1. In a removable key operated electrical switch of the rocker type having switch housing means with a rocker member and a carrier member and a keyway in each for receiving a key, each such member being pivotally mounted therein on an axis common to both and each being pivotal independently of the other, and contact bridging means operatively connected with said carrier member for movement upon pivotal

movement of said carrier member, the improvement with said housing means of stationary contact means for said contact bridging means for selectively making two different electrical circuits therethrough upon operation of said switch, and a key insertable in said switch having means for coupling together said rocker member and said carrier member at said keyways for rockably moving said members about said common axis in one of two opposite directions to complete a selected one of said two different circuits, said key being removable from said coupling of said members in said switch, being rotatable through 180° about a single axis, and said key being of such configuration that it can be reinserted in said switch after such rotation in a second position for again coupling said rocker member and said carrier member at said keyways for movement thereof in the other of the two opposite directions, with said key movements in said recited switching being such that only one circuit can be completed in each of said two inserted positions of said key.

4,230,918

VEHICLE WINDOW GLASS BREAKAGE DETECTOR

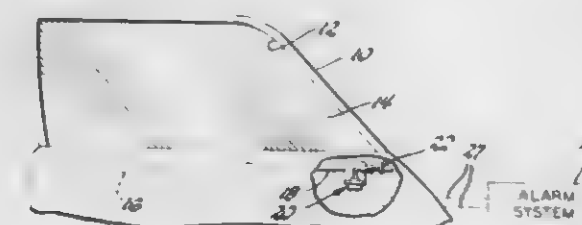
Thaddeus Schroeder, Sterling Heights, Mich., and Norman L. Traub, Cortland, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1978, Ser. No. 967,632

Int. Cl.³ H01H 3/16

U.S. Cl. 200—61.62

5 Claims



1. In combination, a glass breakage detector, a window glass in a vehicle door having an edge of the window glass extending into the door interior and support means engaging a portion of the said edge such that part of the glass edge is unsupported, the glass comprising a tempered glass which cracks into small pieces throughout its extent when the glass is broken, comprising

a switch mounted in the door interior and positioned adjacent the said edge of the window glass, an actuator coupled to the switch and secured to the unsupported part of the glass edge and effective when moved to actuate the switch, the switch being effective through the actuator to apply a force to the glass to cause movement of the glass, when broken, and cause the actuator to move and actuate the switch.

4,230,919

SNAP ACTING SWITCH

Spencer C. Schantz, 16608 W. Rogers Dr., New Berlin, Wis. 53151, and Gary R. Kuebler, 5506 N. 76 St., Milwaukee, Wis. 53218

Continuation-in-part of Ser. No. 736,608, Oct. 28, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 886,213

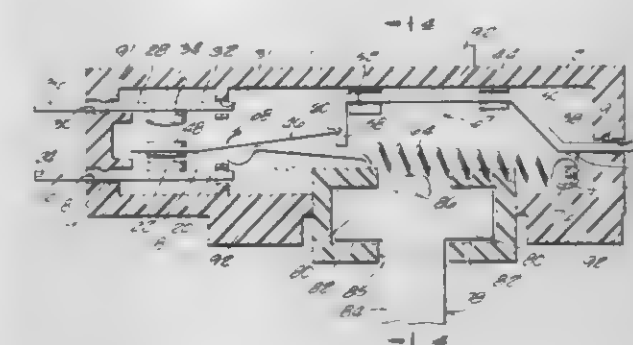
Int. Cl.³ H01H 21/04, 1/22

U.S. Cl. 200—67 B

18 Claims

1. In an electric snap-action switch having a housing, a switch blade fulcrumed within said housing, having a first electrical contact on said switch blade, having a second electrical contact mounted within said housing in cooperative relationship with said first contact, having spring means arranged to be movable to either side of the fulcrum for said switch blade to cause snap opening and snap closing of said contacts, and having actuator means positioned to be responsive to an external force for shifting a portion of said spring means from one side of said fulcrum to the other, the improvement wherein said actuator means comprises a lever, means for pivotally

mounting said lever on said housing intermediate its length for rocking movement about an axis parallel to the longitudinal axis of said spring for movement of the lever in a plane transverse to said spring and the longitudinal extent of said switch



4,230,920

GAS-BLAST SWITCH

Richard Thaler, Unterentfelden, Switzerland, assignor to Sprecher & Schub AG, Aarau, Switzerland

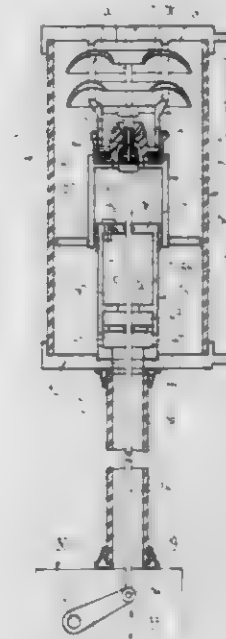
Filed Nov. 20, 1978, Ser. No. 962,217

Claims priority, application Switzerland, Mar. 30, 1978, 3404/78

Int. Cl.³ H01H 33/88

U.S. Cl. 200—148 A

7 Claims



1. A gas-blast switch comprising: a gas tight electrically insulating housing; said insulating housing defining a blast chamber therein; a fixed contact surrounded by said blast chamber arranged within said insulating housing; a movable contact arranged within said insulating housing; a pump device; a blast nozzle connected with said pump device and movable along with said movable contact; said pump device comprising a pump cylinder movable in conjunction with said movable contact; a stationary pump piston upon which there is displaceable said pump cylinder; means operatively coupled with said pump cylinder and impinged by pressurized gas heated by the arc in order to augment the pumping stroke of the pump device; and said means coupled with said pump cylinder comprises an

impact plate secured to the periphery of said pump cylinder and radially protruding therefrom.

4,230,921

ELECTRIC SWITCH

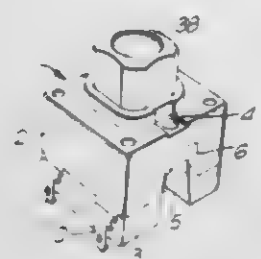
Brian J. Wearing, North Weald, and Syed M. A. Zaidi, Harrow Weald, both of England, assignors to B.S.R. Limited of Monarch Works, Warley, England

Filed Feb. 26, 1979, Ser. No. 14,885

Claims priority, application United Kingdom, Feb. 28, 1978, 7701/78

Int. Cl.³ H01H 3/52

U.S. Cl. 200—153 J



1. An electric switch adapted to be opened and closed by successive operations of a push-button, said switch comprising a housing containing two fixed terminal members, a push-button protruding from the housing and movable axially into the housing against the bias of a spring, a rotatable member movable axially in response to movement of said button, radially projecting arms on the rotatable member defining cam surfaces, guide ribs formed within the housing and located to co-operate with the said projecting arms to guide said arms during part of the axial movement of the rotatable member, said ribs terminating with cam surfaces, stop surfaces located between some respective pairs of the ribs to restrict axial movement of said rotatable member when said arms are located between said respective pairs of ribs, further means carrying cam surfaces and movable in response to movement of the push-button, the cam surfaces of said further means being adapted to engage the cam surfaces of the rotatable member on each depression of the button to move said arms of the rotatable member axially from between said ribs and subsequently to rotate said rotatable member, and an electric contact member movable with said rotatable member between a first position in which the contact member touches the contact terminals, and a second position in which the contact member does not touch the contact terminals, wherein the said electric contact member is carried by a contact carrier which comprises said further means comprising cam surfaces, and the rotatable member is located on the opposite side of the contact carrier to the said push-button, and a first spring is provided to bias the rotatable member and the contact carrier away from said terminals and a second spring is provided to bias the said contact carrier towards said terminals, said housing defining two upstanding fingers which surround the first spring and which are arcuate in plan, the fingers having a common radius of curvature and a common centre of curvature, said guide ribs being formed on the innermost surfaces of said arcuate fingers, the lower surfaces of said guide ribs being inclined to form said cam surfaces, and the arrangement is such that when the switch is in an initial condition in which the projecting arms engage with said stop surfaces the contact carrier is retained in a first predetermined position in which the contact member touches the contact terminals, subsequent depression of the push-button causing the cam surfaces of the contact carrier to engage the corresponding cam surfaces of the arms of said rotatable member to rotate said rotatable member whilst moving the rotatable member against the bias of the first spring, subsequent release of the push-button permitting the rotatable member to be moved by the bias of the first spring, against the bias of the second spring, the rotatable member being further rotated by engagement of the cam surfaces of said arms with

the cam surfaces defined by the guide ribs of the housing to a position in which the rotatable member is free to move axially in response to the bias of the first spring, the contact carrier thus being moved to a second position in which the contact member does not touch the contact terminals, the switch being returnable to its first condition by a subsequent depression and release of the push-button, which causes further rotation of the rotatable member so that the arms of the rotatable member again engage the stop surfaces.

4,230,922

SEAL ASSEMBLY FOR SWITCH ACTUATOR

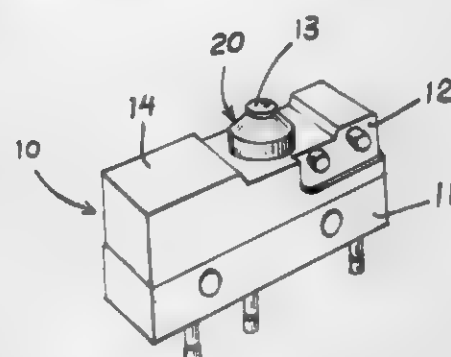
John W. Habecker, Zion, Ill., assignor to Cherry Electrical Products Corp., Waukegan, Ill.

Filed Apr. 30, 1979, Ser. No. 34,255

Int. Cl.³ H01H 9/04; F16J 15/32

U.S. Cl. 200—302

1 Claim



1. The combination of a boot seal and a movable switch actuator of an electrical switch comprising:
a switch housing having an opening formed in one wall through which the switch actuator is reciprocally movable,
a circular switch actuator movably positioned in said opening and having an end portion positioned externally of said housing and provided with an exposed concave groove,
a recessed circular bearing is provided by the one wall of the switch housing and defines the opening through which said switch actuator is movable,
a boot seal of resilient material adapted to extend between and be connected to said circular bearing and said switch actuator,
said boot seal having a base ring the inner diameter of which is adapted to fit into the recess provided by said bearing so as to attach said boot seal to said switch housing,
a cylindrical stabilizing means provided by said boot seal and extending at right angles from said base ring and parallel to said actuator,
a truncated cone projecting outwardly of said stabilizing means and providing a center opening the diameter of which is equal to said concave groove formed in the wall of said switch actuator so as to connect the top of said boot seal to said actuator,
said cone collapsing uniformly within said stabilizing means as said actuator is moved through the opening formed in said switch housing wall while maintaining the sealing connection of said base ring with said circular bearing and said center opening of said cone with said concave groove formed in said switch actuator.

4,230,923

DEVICE FOR INDUCTION WELDING

Jan-Bertil Jeppsson, Lomma, Sweden, assignor to AB Akerlund & Rausing, Sweden

Filed Jun. 2, 1978, Ser. No. 912,084

Claims priority, application Sweden, Jun. 20, 1977, 7707091

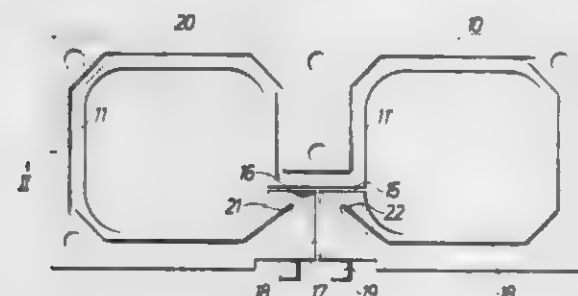
Int. Cl.³ B23K 13/02; H05B 6/42

U.S. Cl. 219—10.53

10 Claims

1. A device for inductive welding comprising:
metallic plate means having an arbitrary contour formed of

highly conductive material, said metallic plate means having at least one aperture therein configured to admit materials to be welded, and said metallic plate means having a slot therein defining a high frequency current path within said metallic plate means about said aperture; cover plate means configured to cover at least a portion of said metallic plate means about said at least one aperture, said cover plate means being made of nonconductive material and having therein at least one aperture corresponding generally in configuration to said at least one



aperture within said metallic plate means when said cover plate means is in a covering relationship therewith, said metallic plate means and said cover plate means defining a cooling fluid groove therebetween in the form of a closed passage disposed substantially about said at least one aperture for conveying cooling fluid thereabout, said cooling fluid groove defined being configured to cool said metallic plate means in response to inductive heating; and means for applying high frequency voltage to said high frequency current path within said metallic plate means.

4,230,924

METHOD AND MATERIAL FOR PREPACKAGING FOOD TO ACHIEVE MICROWAVE BROWNING

William A. Brastad, Minneapolis, and Nelson J. Beall, St. Michael, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 910,262, May 30, 1978, abandoned. This application Oct. 12, 1978, Ser. No. 950,759

Int. Cl.³ H05B 6/80; B65D 81/34

U.S. Cl. 219—10.55 E

21 Claims



1. A package containing an article of food, at least a portion thereof being capable of having either its color changed or crispened, said food article to be heated in a microwave oven, comprising a flexible dielectric material having at least a section thereof conforming generally to the shape of said portion of the food article, and individual electrically resistive islands carried by said dielectric material for converting some of the microwave oven energy to heat, said electrically resistive islands also conforming generally to the shape of said portion of food and residing in a proximal relation therewith, whereby the microwave energy converted to heat by said dielectric material and islands modifies the color or crispness of the food portion adjacent thereto.

4,230,925

CIRCUIT BOARD WIRE BONDING AND CUTTING APPARATUS

Daniel J. Lascelles, De Land, Fla., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Aug. 28, 1978, Ser. No. 937,412

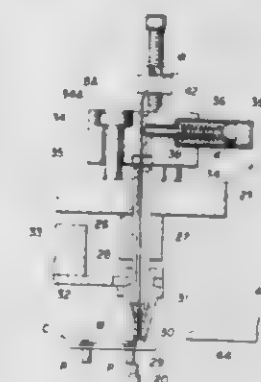
Int. Cl.³ B23K 11/16

U.S. Cl. 219—56.1

12 Claims

1. Wire bonding and cutting apparatus for establishing wire circuits to several terminals in a printed circuit board, said apparatus comprising: a hollow electrode having an end en-

gageable with the circuit board terminals; a supply of circuit wire extending through said hollow electrode and protruding from said electrode end; means adjacent said electrode end and operable to wipe across the electrode end and bend the protruding wire at least into a 90° bent position; means operable to advance said electrode and bent wire into contact with a first one of the circuit board terminals to weld the wire to start a



circuit and to weld another portion of the wire to at least one other terminal; tubular cutter means telescopically related to said electrode and having a cutter end adjacent said electrode end; and means operably connected to said tubular cutter to move the tubular cutter relative to said electrode and advance said cutter end into wire cutting position beyond said electrode end at the one other terminal to end the circuit.

4,230,926

ELECTRIC DISCHARGE MACHINE WITH MECHANISM FOR ORBITING THE ELECTRODE

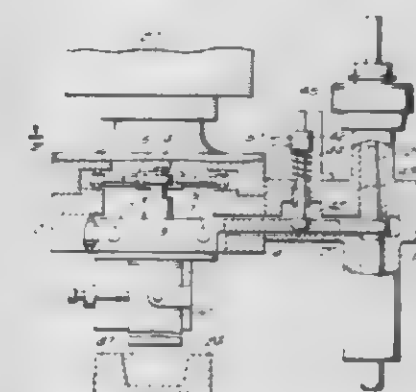
William J. Gaumond, 2556 N. 96th St., Wauwatosa, Wis. 53226

Filed May 1, 1978, Ser. No. 901,958

Int. Cl.³ B23P 1/12

U.S. Cl. 219—69 V

4 Claims



1. In an electric discharge machine having an electrode holder and means for driving said holder on an orbital path, said means including a post on the electrode holder, a rotor about the post and a first resiliently loaded drive arm mounted on the rotor and engaged with the post, the improvement comprising a second resiliently loaded drive arm mounted on the rotor and engaged with the post at a point offset circumferentially from the point of engagement with the post of the first-mentioned drive arm whereby the post is subject to the composite driving force of both drive arms.

4,230,927

APPARATUS FOR ELECTRICAL DISCHARGE MACHINING OF CYLINDRICAL WORK

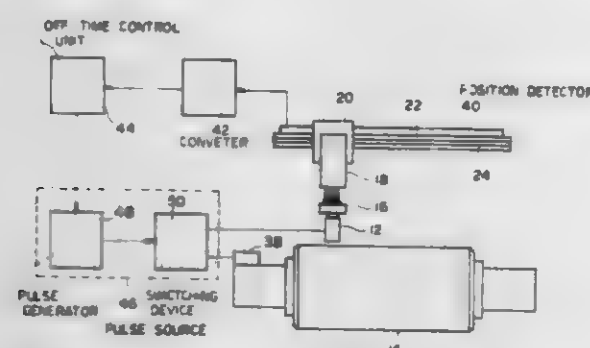
Kunihiko Sato, Owari-Asahi; Tetsuro Urata; Tetsuhiro Asamoto, both of Nagoya; Kobun Asakawa, Fukuyama; Takeo Uebayashi, Fukuyama, and Haruo Taguchi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 920,984

Int. Cl.³ B23P 1/02

U.S. Cl. 219-69 C

1 Claim



1. In an electrical discharge machining apparatus comprising a pulse generator and a switching device for applying a pulse voltage across an electrode and a cylindrical work in response to output pulse signals from said pulse generator, wherein an electrical discharge machining is effected on the outer surface of said cylindrical work by means of a working current while rotating the cylindrical work and moving said electrode and said work relative to each other in the direction of the axis of rotation of said cylindrical work to define an electrode working area, the improvement wherein said apparatus comprises: an electrode position detecting means for detecting a decrease in the electrode working area caused when the end portions of the cylindrical work are being machined and generating an output signal corresponding thereto; converter means for generating a signal proportional to a deviation between the output signal of said electrode position detecting means and a preset value caused when the former exceeds the latter; and a control unit for controlling said pulse generator so as to change the output pulse signals thereof in accordance with the signal from said converter means; said pulse generator, said switching device, said electrode position detecting means, said converter means and said control unit working together to decrease the working current in proportion to a decrease in the area where the cylindrical work is to be machined, caused when the end portions of the work are being machined, whereby to maintain the working rate per unit area of the cylindrical work constant to thereby satinize the end portions of the cylindrical work uniformly with the central portion thereof.

4,230,928

METHOD AND MACHINE FOR REBUILDING TRACK ROLLER ASSEMBLIES

Harvey W. Janssen, Lafayette, Calif., assignor to Wolff Manufacturing Company, Burlingame, Calif.

Continuation of Ser. No. 783,790, Apr. 1, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,112

Int. Cl.³ B23K 09/04

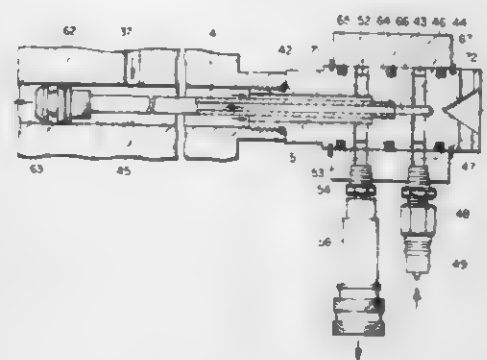
U.S. Cl. 219-76.11

4 Claims

1. A machine for rebuilding by welding hard metal on track roller assemblies of the type having an external rim rotatably supported by an internal structure with lubricant passages formed in and between said internal structure and rim including:

- means for supporting said track roller assembly;
- means for rotating at least the rim of said track roller assembly;
- a first coolant probe adapted to be inserted into a lubricant

passage of said roller assembly to circulate coolant through said passages to cool the roller assembly; welding means for depositing metal on the surface of said rim as it is rotated; a second coolant probe adapted to be inserted into a lubricant passage of a second track roller assembly to circulate coolant through said passages to cool said second roller assembly after said second roller assembly has been rebuilt, whereby while the roller assembly is supported in the machine and being welded said second roller assembly is being cooled to prevent damage; and



a coolant system for circulating coolant through said lubricant passages; said system including a fluid reservoir, means for supplying coolant from said reservoir to each of said probes for circulation through said passages, means for monitoring the temperature of the coolant in said roller assemblies and means for controlling the reservoir coolant temperature so that the temperature of the coolant entering and leaving said roller assemblies has a temperature within a predetermined temperature range.

4,230,929

CONTROL CIRCUIT FOR A WELDING DEVICE

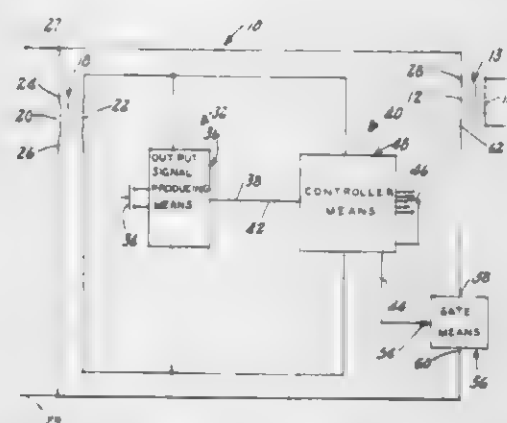
Bruce A. Blair, and Howard G. McClure, both of Jackson, Mo., assignors to Lenco, Inc., Jackson, Mo.

Filed Jan. 12, 1978, Ser. No. 868,899

Int. Cl.³ B23K 11/00

U.S. Cl. 219-111

11 Claims



1. A control circuit for a welding device for establishing a weld time duration and controlling the time duration completion of a power circuit to the welding device comprising first and second connection means for connecting said control circuit to a power source, a welding transformer having primary and secondary windings thereof, said primary winding having first and second terminals thereon, a control transformer having primary and secondary windings thereof, said primary winding having first and second terminals thereon, said first terminal of the primary winding of the control transformer being connected to said first terminal of the primary winding of the welding transformer and to said first connection means, said second terminal of the primary winding of the control transformer being connected to second connection means, a trigger circuit portion connected across said second-

ary winding of the control transformer, said trigger circuit portion including operator actuatable means and means for producing a trigger output signal in response to actuation of said operator actuatable means, said means for producing a trigger output signal including a pulse generator for generating periodic signals and gate means, said gate means being responsive to the generation of a periodic signal at a time when said operator actuatable means are actuated to produce a trigger output signal, control status means capable of being in one of two control states and including a bistable device with first and second input means, said first input means operatively connected to said trigger circuit portion to receive said trigger circuit output signal, said bistable device being responsive to receipt of said trigger output signal of said trigger circuit portion to establish a first control state in said control status means, a timing circuit portion connected in parallel with said trigger circuit portion across said secondary winding of the control transformer, said timing circuit portion including timing means and operator adjustable means for selecting and establishing a weld time interval, said timing means including means for detecting the control state of said control status means and time passage means responsive to detection of the first control state of said control status means for generating a time interval output after the passage of an amount of time equal to the selected weld time interval established by the selective adjustment of said operator adjustable means, said second input means of said control status means connected to said timing circuit portion to receive said time interval output, said bistable device being responsive to receipt of said time interval output of said timing circuit portion to establish a second control state in said control status means, a gating circuit having gate input means connected to said second terminal of the primary winding of the welding transformer and gate output means connected to said second connection means, said gating circuit including control input means connected to said control status means to detect the control state thereof and other means responsive to detection of said first control state of said control status means for completing a circuit between said gate input means and said gate output means, said circuit completion enabling current to flow through said primary winding of said welding transformer so long as said control status means is in said first control state, means responsive to establishment of said first control state in said control status means for preventing the production of more than one trigger output signal for each activation of said operator actuatable means, and a high-pass RC filter circuit having an input connected to said operator actuatable means and an output connected to said gate means, said responsive means for preventing the production of more than one trigger output signal for each activation of said operator actuatable means including means to alter the time constant of said filter circuit.

4,230,930

LASER WELDING METHOD FOR ELECTRICAL WIRE CONNECTION TO A TERMINAL PIN OF AN EXHAUST GAS SENSOR

Uck I. Chang, Farmington Hills, and Kenneth W. Casey, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 25, 1979, Ser. No. 6,943

Int. Cl.³ B23K 27/00

U.S. Cl. 219-121 LD

11 Claims

1. A method for welding an electrical lead wire to a terminal pin, the terminal pin having a head with an internal opening, the electrical lead wire being received within the opening and having a portion extending to the exterior of the terminal-pin head, the method comprising the steps of:

- (a) supporting the terminal pin with the head thereof being located such that the portion of the electrical lead wire extending therefrom is substantially vertical and the exterior portion of the lead wire has its end terminating at a predetermined distance above the terminal-pin head;

- (b) positioning a laser beam source above the exterior portion of the lead wire;
- (c) causing the laser beam from the source to be propagated in a direction substantially coinciding with the force of gravity, the laser beam having a focal point located above the electrical lead wire end and the laser beam impinging on the end of the electrical lead wire and on the head of the terminal pin; and



- (d) applying the laser beam to the electrical lead wire and terminal-pin head, as specified in step (c) above, for a time period sufficient to enable the end of the electrical lead wire to liquify, to progressively move in the liquified state toward the terminal-pin head, and thereafter to coalesce with metal in the terminal-pin head concurrently liquified by the laser beam.

4,230,931

ELECTRIC CIGAR LIGHTER

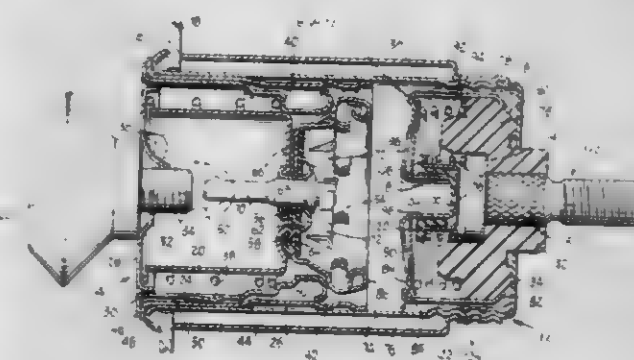
Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 950,023

Int. Cl.³ F23Q 7/24

U.S. Cl. 219-265

38 Claims



1. A cigar lighter, comprising in combination:

- (a) a holder device including a socket having two electrical contacts forming part of a cigar lighter electrical circuit,
- (b) an ignitor plug receivable in the socket and constituting a manually-operable part movable in the socket between energizing and de-energizing positions,
- (c) said plug having an electrical resistance heating coil carried at its inner end,
- (d) means for establishing an electrical circuit from the holder device electrical contacts through the heating coil when the said plug is shifted to its energizing position, said means including an electrical switch having relatively-movable cooperable electrical contact parts, all of which are carried by the holder device, and
- (e) means responsive to heating to said heating coil, for actuating said electrical switch to break said electrical

circuit and de-energize the coil, said means including a bimetallic member carried by said holder device and having a circuit-opening position and a closed-circuit position, said bimetallic member carrying no electrical current and having an actuator portion which is free and clear of permanent attachment to any other parts, said actuator portion being adapted for abutting engagement with one of the cooperable electrical contact parts of said electrical switch to effect the actuation thereof.

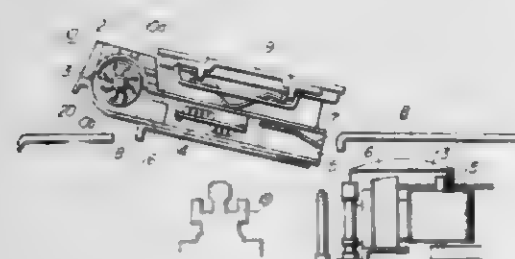
4,230,932

BLOWERS FOR DRYING VIDEO TAPE RECORDERS
Kathumi Mikamo; Shinya Ichimura, and Kenichi Yamaguchi, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan
Filed Sep. 1, 1978, Ser. No. 938,958

Claims priority, application Japan, Sep. 5, 1977, 52-118534[U]
Int. Cl.³ G11B 15/60

U.S. Cl. 219—370

5 Claims



1. A blower for drying a tape running mechanism of a video tape recorder including a tape guide cylinder provided with a rotary head and a cassette holder for guiding a tape cassette between an open position and a playback or record position, the blower comprising:

an air conducting portion having a laterally widened outlet port at an end thereof for directing a flow of air to a tape running mechanism, said air conducting portion being adapted to be inserted into a cassette holder and having an outer configuration similar to a tape cassette normally insertable into the cassette holder;

air blowing means for taking in air from the exterior, for conveying the air through said air conducting portion, and for discharging the air from said outlet port;

means for heating the air introduced from the exterior into said air blowing means; and
means provided on the blower for limiting a downward movement of the cassette holder from an open position to a playback or record position when the air conducting portion is inserted into the cassette holder.

4,230,933

ELECTRIC AIR HEATING ELEMENT

Dov Z. Glucksmann, 43 Norwood Ave., Newton, Mass. 02159, and Karl H. Weidemann, Brookline, Mass., assignors to Dov Z. Glucksmann, Newton, Mass.

Filed Feb. 17, 1978, Ser. No. 878,945

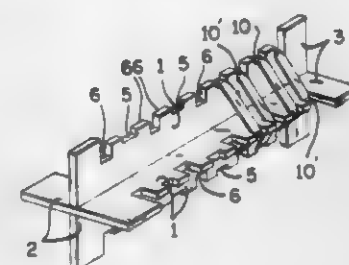
Int. Cl.³ H05B 3/02

U.S. Cl. 219—375

6 Claims

1. In combination, a tubular air discharge unit and heating element for a hair dryer, said element being positioned in said tubular air discharge duct in coaxial alignment therewith, said heating element comprising a solid coil-carrier of non-conductive and heat resistant material and including at least four longitudinal fins extending radially outwards from a common

center line coinciding with the axis of such an air duct, said fins being of equal thickness and having the major extent of their outer edges serrated by inwardly extending substantially rectangularly shaped sets of notches of at least two different depths, said notches being equally spaced by a common spacing module and adjacent sets of notches having a different common depth so as to be intermittently higher and lower throughout such major extent of such outer edges, said notches being axially staggered by a quarter spacing module in respect



of every two fins lying at right angles to one another to provide a helical path for resistor element, and a coil in the shape of a flat ribbon resistor wound helically around said coil carrier with the windings being laid successively in said notches with the ribbon lying in the bottom of the notches and extending parallel to the outer edges of the fins to provide intermittent layers in different parallel planes to provide high heat transfer with low flow resistance and to increase air turbulence around the said coil to facilitate breaking up the air boundary layer and providing at least one crossover of the ribbon.

4,230,934

INTERNALLY HEATABLE NOZZLE HAVING A DIVISIBLE HOUSING AND A DIVISIBLE CORE

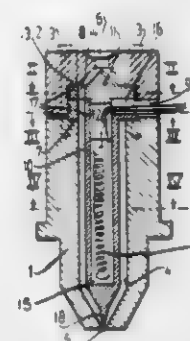
Albertus ter Beek, and Gerrit J. ter Beek, both of Hengelo, Netherlands, assignors to Ter Beek Hengelo (T.B.H.) B.V., Hengelo, Netherlands

Filed May 8, 1979, Ser. No. 37,039

Int. Cl.³ F27B 14/00

U.S. Cl. 219—421

7 Claims



1. An internally heatable nozzle comprising a divisible housing having a cylindrical bore narrowed at one end towards a mouth opening of the nozzle, in which bore a cylindrical, divisible core of thermally conductive material is connected at one end in said housing, said core having a conical end proximate to and tapering toward said mouth opening and being provided with an internal heating element with connecting leads passed laterally through said housing, an annular channel being arranged between said core and said housing and connected with at least one feeding channel passing through the housing on the side remote from the mouth opening, said core being divisible in a transverse direction to present two parts provided with directly adjacent flanges, said flanges having axially extending channels communicating said feeding channel with the channel between the housing and the core and said flanges fitting between inner shoulders on the two parts of the

housing, between which parts tensile elements are operative to tighten the core parts together.

4,230,935

IMMERSION HEATER

Hans Meixner, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

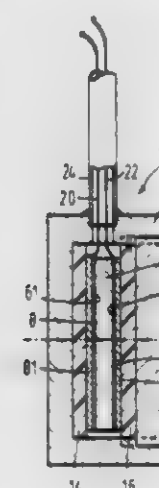
Filed Feb. 13, 1979, Ser. No. 12,053

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806159

Int. Cl.³ H05B 3/06

U.S. Cl. 219—523

8 Claims



1. A liquid immersion high output heater, comprising: a sealed metal housing means having heat conductive walls for immersion into a liquid to be heated; said housing means having mounted therein an electric heating element provided with current feed lines; an insulation means insulating at least one of the feed lines and a portion of the heating element from the housing means; the heating element being a positive temperature coefficient (PTC) thermistor means comprising ferroelectric ceramic material for automatic overheating cutoff; said heating element being formed as a thin 0.5 to 2 mm thick flat disc-like member on whose two major surfaces lying opposite one another the current feed lines are attached by metal electrodes over the entire respective major surfaces of the heating element; the major surfaces of the heating element each having a same heat contact with said housing heating surfaces; and the PTC thermistor means material having a Curie temperature T_C lying at least 50°K . above a given desired cutoff temperature T_A , and having a specific resistance at the Curie temperature T_C of

$$\rho_{TC} = (U^2 / 0.08(T_C - T_A))$$

with a tolerance width of approximately $0.5\rho_{TC}$ to $2\rho_{TC}$, where U is a given operating voltage, whereby a high power output immersion heater of greatly improved reliability is provided.

4,230,936

BIORHYTHMIC SLIDE RULE

Daniel P. Oerth, 10124 Rosin Ave., Whittier, Calif. 90603

Filed Feb. 17, 1978, Ser. No. 878,708

Int. Cl.³ G06G 1/06

U.S. Cl. 235—70 A

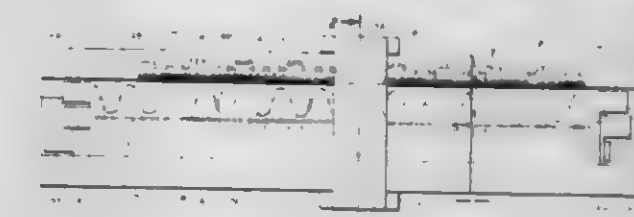
3 Claims

1. A biorhythmic slide rule comprising:
a housing having a guide track assembly, said guide track assembly comprising three (in number) separate adjacent parallel guide tracks, there being a separate said slide located within a separate said track, said housing having a front side, a first sequential indicia located on said front side;

a member movably mounted on said housing, said member having a thin hairline the longitudinal axis of which is

located transverse to the longitudinal arrangement of said first indicia;

a first substantially transparent slide and a second substantially transparent slide and a third substantially transparent slide being movably mounted within said guide track assembly, each said slide including a different opaque sine wave curve, said sine wave curve being observable through said front side of said housing in an overlying relationship, each said slide having a sequential series of numerical indicia arranged adjacent its respective said sine wave curve, each said numerical indicia having an established upper limit correlated to its respective said sine wave curve with said upper limits being different, each



said numerical indicia comprising a series of opaque evenly spaced apart first marks, the spacing between each of said first marks being identical for each said numerical indicia, said hairline to be alignable with said first mark of each said numerical indicia; and

handle means attached to each said slide to facilitate sliding movement and positioning of each said slide within its said guide track assembly, said handle means comprises a longitudinal extending member located at each longitudinal end of each said slide, with said slide located in an overlying relationship the said extending members at each said end being located in a staggered relationship in respect to each other.

4,230,937

FUEL DELIVERY SAFETY LIMIT MECHANISM

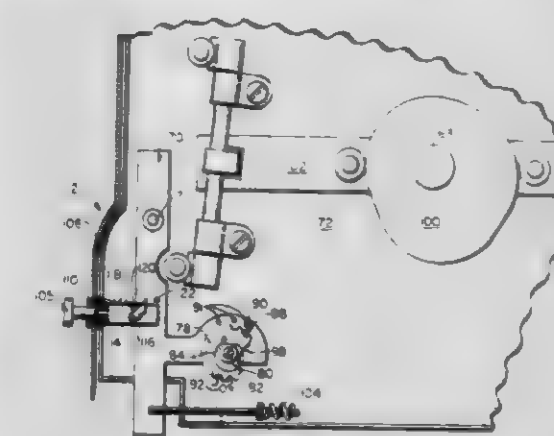
Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Mar. 23, 1979, Ser. No. 23,239

Int. Cl.³ B67D 5/22; G06C 15/42

U.S. Cl. 235—94 R

5 Claims



1. In a fluid dispenser having a resettable register for registering the amount of fluid dispensed, a fluid delivery system with control means selectively operable to activate and deactivate the fluid delivery system for dispensing fluid and a limit mechanism for operating the control means to deactivate the delivery system after an established amount of fluid is dispensed, the improvement wherein the limit mechanism comprises trip gearing with a rotary drive gear rotated by the resettable register in accordance with the amount of fluid dispensed and a rotary trip gear in operative intermeshing engagement with the drive gear and rotated thereby in one angular direction during the delivery of fluid from an initial angular position thereof to a trip angular position thereof, the trip gear having a circumferentially extending peripheral re-

cess for receiving the drive gear when the trip gear reaches its trip position, a shiftable trip member rotatably supporting the trip gear and shiftable from a first position of the trip member to a second trip position thereof, when the trip gear receives the drive gear at its trip angular position, to operate the control means to deactivate the dispenser, and reset means for resetting the trip gear to its said initial angular position and the trip member to its first position.

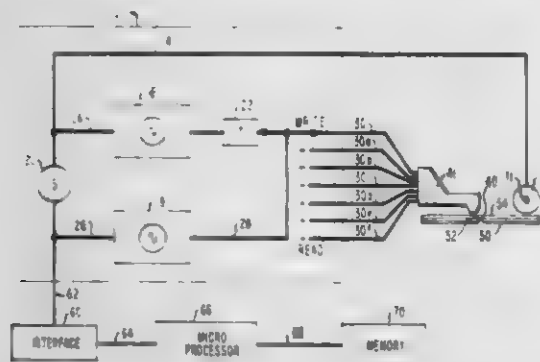
4,230,938

COMPUTER INPUT/OUTPUT DEVICE

George D. Margolin, Newport Beach, and Victor V. Vurpillat, Laguna Niguel, both of Calif., assignors to Centurion Data Corporation, King of Prussia, Pa.

Filed Feb. 21, 1978, Ser. No. 879,116

Int. Cl.² G06K 7/06, 19/06; G01D 15/08; G03G 17/00
U.S. Cl. 235-441 35 Claims



1. An input and output device able to read from and write on electrosensitive material comprising:
first sensing means; said sensing means comprising a plurality of styli;
first controlling means for controlling said sensing means, said control means having a high level output and a low level output and a switch means to control which output level is operative;
first moving means for causing relative motion between said sensing means and said paper; and,
said first sensing means is operable under the control of said first controlling means to write on said electrosensitive material and also to be able to read what was written, said electrosensitive material having a removable outer surface which when removed changes the electrical characteristics of the electrosensitive material.

4,230,939

INFORMATION-RECORDING ELEMENT HAVING A DYE-CONTAINING AUXILIARY LAYER

Marius R. J. de Bont; Petrus J. Kivits; Cornelis J. Schoot, and Pieter Zalm, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 946,987

Claims priority, application Netherlands, Sep. 29, 1977, 7710634; Sep. 8, 1978, 7809159

Int. Cl.² G06K 19/02, 7/00; G01D 15/10
U.S. Cl. 235-488 6 Claims



1. An improved information-recording element in which information can be written and read optically, which com-

prises a transparent substrate, an auxiliary layer provided on the substrate, an information-recording layer which is provided on and abuts the auxiliary layer and having a reflecting power with respect to a laser light beam used for writing or reading, the improvement being characterized in that the auxiliary layer is a laser light-absorbing dye-containing layer.

4,230,940

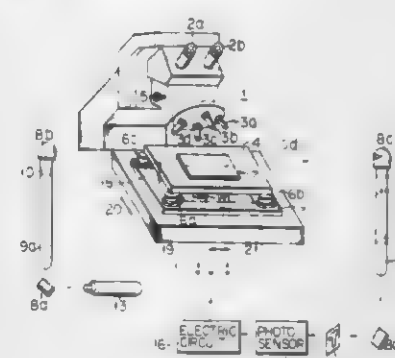
AUTOMATIC FOCUSING APPARATUS

Masana Minami, and Tomohide Watanabe, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 14, 1978, Ser. No. 924,722

Claims priority, application Japan, Jul. 22, 1977, 52-87271; Feb. 8, 1978, 53-12367

Int. Cl.³ G01J 1/36
U.S. Cl. 250-201 15 Claims



1. An automatic focusing apparatus for focusing a lens system for the observation of a sample placed on a stage on the surface of said sample, comprising: a collimated beam source; an incident optical means for leading a collimated beam from said collimated beam source to said sample surface at a predetermined inclined incident angle in an incident pattern, said incident pattern having a flattened shape; photosensitive means to produce an electric signal corresponding to the intensity of light received; a reflection optical means for receiving the collimated beam reflected from said sample surface, said reflection optical means including an imaging lens means for imaging an image of said incident pattern on said photosensitive means; a detecting means for detecting a shift distance of said sample in the direction of the thickness thereof by means of the electric signal from said photosensitive means and for producing a signal corresponding to said shift distance; and shift means for shifting said stage in the direction of the thickness of said sample by means of a signal from said detector means to focus said lens system on said sample surface, wherein said automatic focusing apparatus is optically separate from said lens system.

4,230,941

CORRECTOR LENS

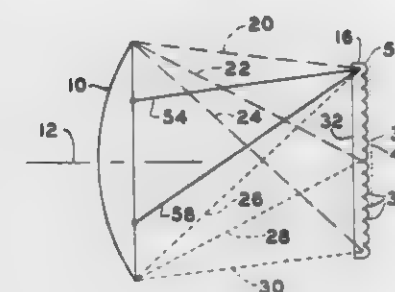
Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 26, 1979, Ser. No. 23,865

Int. Cl.³ G01J 1/36
U.S. Cl. 250-204 13 Claims

5. Apparatus of the class described comprising, in combination:
a moveable objective lens for focusing radiation from a remote object and when properly positioned to provide an image of the object at a first image plane;
a plurality of lenslets each having an optic axis and mounted proximate the first image plane;
a corrector lens mounted between said objective lens and said plurality of lenslets so that radiation from said objective lens is directed by said corrector lens to the lenslets and each lenslet directs radiation generally symmetrically

about its optic axis to provide an image of the exit pupil of said objective lens at a second image plane; and
a plurality of radiation responsive detectors mounted proximate the second image plane and arranged in pairs so that



the detectors of each pair are mounted substantially equidistant on opposite sides of the optic axis of each lenslet and receive substantially equal radiation when said objective lens is properly positioned.

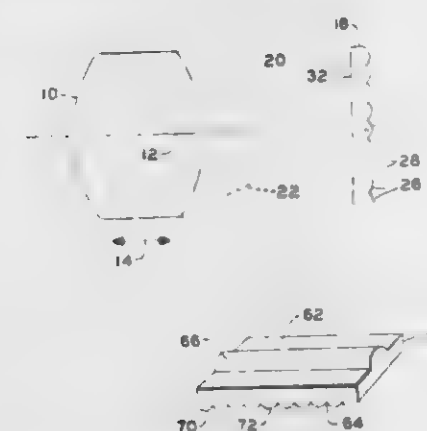
4,230,942

CROSSED CYLINDRICAL LENS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 26, 1979, Ser. No. 23,866

Int. Cl.³ G01J 1/36
U.S. Cl. 250-204 11 Claims



1. In apparatus for use in an optical system having an objective lens, the objective lens having an optic axis and producing an image of a remote scene at an image plane, lenslets means mounted proximate the image plane and operable to produce an image of the exit pupil of the objective lens and radiation detector means mounted within the image of the exit pupil, the improvement comprising:
a first cylindrical lens forming a part of the lenslet means, said first cylindrical lens extending in a first direction on a first plane substantially perpendicular to the optic axis; and
a plurality of second cylindrical lenses forming a part of the lenslet means spaced from said first cylindrical lens along the optic axis and extending in a second direction on a second plane substantially perpendicular to the optic axis and transverse to the first direction so that the image of the exit pupil is oblong.

4,230,943

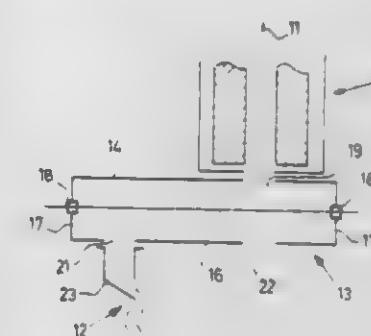
MASS SPECTROMETER

Jochen Franzen, Wildehausen, and Gerhard Weiss, Varrel I, both of Fed. Rep. of Germany, assignors to Dr. Franzen Analysentechnik GmbH & Co. Kommanditgesellschaft, Bremen, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,414

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754685

Int. Cl.² B01D 59/44; H01J 39/34
U.S. Cl. 250-281 11 Claims



1. A mass spectrometer, comprising:
an ion source;
a mass filter having an axis;
at least one ion detector;
said mass filter and said ion detector being arranged not in alignment but laterally staggered to each other; and
a metal wire for the generation of an elongated electrostatic, essentially cylindrical, radial guide field extending between said mass filter and said ion detector, which guide field guides ions with a velocity component extending axially to the guide field into elliptic helical paths about its axis toward the input of said ion detector, said metal wire essentially extending between said mass filter and said ion detector, said wire being charged with a charge opposite to ions to be examined, said wire being fastened by clamping only on one side and, on its free end, being bent toward said mass filter in the direction of said axis of said mass filter.

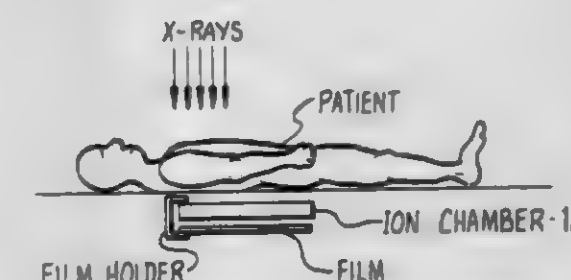
4,230,944

X-RAY SYSTEM EXPOSURE CONTROL WITH ION CHAMBER

Douglas C. Wiegman, La Grange Park, and James A. Grichnik, Elk Grove Village, both of Ill., assignors to Advanced Instrument Development, Inc., Melrose Park, Ill.

Filed Feb. 9, 1979, Ser. No. 10,550

Int. Cl.³ G01T 1/42, 1/00
U.S. Cl. 250-355 2 Claims



1. An X-ray exposure control system for an X-ray diagnostic installation including an X-ray generator and an X-ray tube directing X-rays through the patient to an X-ray film, said exposure control system comprising in combination means providing kVp and mA settings for said X-ray generator, the kVp and mA settings affecting the exposure time required to

produce desired images on said film, an ion chamber including a plurality of selectively energizable ionizable fields for monitoring the amount of radiation provided to an X-ray film by said X-ray generator, and said ion chamber fields being electrically coupled to said X-ray generator selectively terminating the output of said X-ray generator, electronic circuitry for monitoring and controlling the time of operation of said X-ray generator, said circuit receiving a first voltage proportional to the kVp being applied to the associated tube, means for providing a reference voltage, means for combining said first voltage with said reference voltage to provide a first control signal, means for combining a voltage proportional to a density selection factor to said first control signal to obtain a second control signal, means for obtaining a voltage dependent on the radiation impinging on the selected fields of said ion chamber and means for comparing the said dependent voltage with said second control signal to provide an output control signal to terminate the radiation from said X-ray generator, said ion chamber including a plurality of discrete fields which may be selectively energized, said fields comprising an emitter electrode extending over a limited area, a collector electrode of substantially the same size as said emitter electrode spaced from said emitter electrode, spacer material positioned between said electrodes and having apertures formed therein adjacent said fields to form air chambers, a second emitter electrode of substantially the same size as said collector electrode spaced from said collector electrode, the X-rays passing through said apertures ionizing the air thereon, and holes in said fields adjacent said apertures for balancing the ionizing potential.

4,230,943

DEVICE FOR DETECTING IONIZING RADIATION

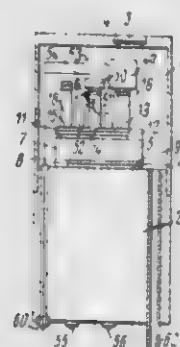
Vladimir A. Meir, ulitsa Nalichnaya, 36, korpus 2, kv. 167; Alexei N. Zhukovsky, Serebristiy bulvar, 24, korpus 4, kv. 374; Vladimir S. Ponomarev, ulitsa Stasovoi, 2, kv. 363, all of Leningrad; Vladimir G. Subbotin, ulitsa Vavilova 5, kv. 11, Dubna Moskovskoi oblasti; Jury P. Kharitonov, ulitsa 50-letia Komsomola, 19, kv. 44, Dubna Moskovskoi oblasti; Vladimir F. Kuzniruk, ulitsa 50-letia Komsomola, 5, kv. 29, Dubna Moskovskoi oblasti; Lukyan I. Anatyuk, Sportivny proezd, 4, kv. 21; Anatoly P. Melnik, ulitsa Khudyakova, 1, kv. 50, both of Chernovtsy; Vladimir A. Skakodub, ulitsa Siltselma, 5, kv. 76, and Alexander D. Sokolov, ulitsa Lenina, 159, kv. 1, both of Riga, all of U.S.S.R.

Filed Apr. 24, 1978, Ser. No. 899,515

Int. Cl.² G01T 1/22

U.S. Cl. 250—370

15 Claims



1. A spectrometer for detecting ionizing radiation comprising:

- a vacuum chamber having an entrance window to pass the radiation therethrough;
- a thermoelectric cooler formed by a set of Peltier elements, said thermoelectric cooler having a hot side and a cold side and being arranged within said vacuum chamber;
- a heat conducting plate mounted on said cold side of said thermoelectric cooler;
- a radiator mounted on said hot side of said thermoelectric cooler to remove heat therefrom;
- a first set of Peltier elements, having a hot side and a cold

side and being integral with said thermoelectric cooler, said hot side of said first set being in contact with said heat conducting plate, the Peltier elements of this first set being stacked so as to develop the minimum temperature conditions on said cold side of said first set;

- a semiconductor detector mounted on said cold side of said first set of Peltier elements;
- a second set of Peltier elements, having a hot side and a cold side and being integral with said thermoelectric cooler, said hot side of said second set being in contact with said heat conducting plate and the Peltier elements of this second set being stacked so as to develop the maximum refrigeration capacity conditions on said cold side of said second set;
- a field-effect transistor mounted on said cold side of said second set of Peltier elements.

4,230,946

CRYOGENIC COLLIMATOR APPARATUS AND METHOD

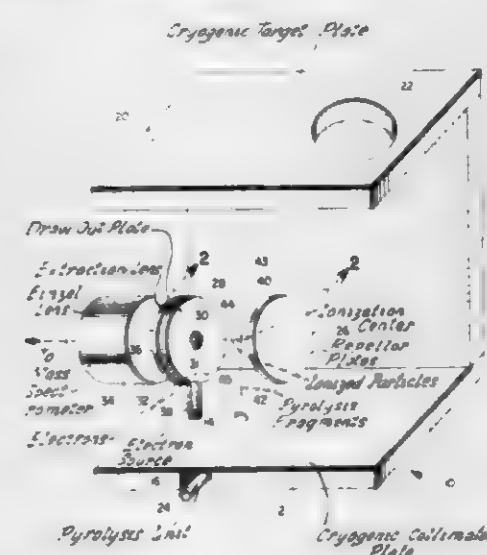
Gregory J. Wells, Murray, and Kent J. Voorhees, Bountiful, both of Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Mar. 19, 1979, Ser. No. 21,417

Int. Cl.³ H01J 27/00

U.S. Cl. 250—425

7 Claims



1. An improved ion source for a mass spectrometer wherein pyrolysis fragments from a pyrolysis unit are directed into an ionization center for ionization and the ionized particles of pyrolysis fragments are directed into the mass spectrometer for analysis, the improvement comprising a cryogenic means having an aperture therethrough, the cryogenic means being adapted to be placed adjacent the pyrolysis unit with the aperture in a direct line between the pyrolysis unit and the ionization center, the cryogenic means thereby holding pyrolysis fragments impinging thereon with the aperture collimating pyrolysis fragments from the pyrolysis unit into the ionization center.

4,230,947

APPARATUS FOR TREATING FLOWABLE MATERIAL

Robert D. Cram, Ipswich, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Filed Jul. 2, 1979, Ser. No. 54,002

Int. Cl.³ G01N 23/00

U.S. Cl. 250—434

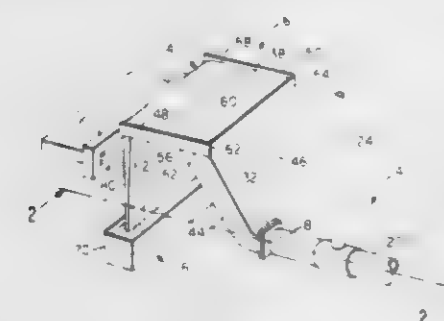
9 Claims

1. An apparatus for treating flowable material by the irradiation thereof comprising in combination:

- (a) a container for holding a quantity of such material including
- (1) a base portion having front, rear, left, and right edges, a rear section, and a front section, said rear section including front and rear end walls and convergent side

walls defining an open substantially wedge-shaped cavity, and said front section including a flat substantially rectangular ramp extending on an upward slant from the top of said front end wall to the front edge of said base; and

- (2) vertical side walls rising from the left, right, and rear edges of said base, said side walls being appropriately connected to each other along the left-rear and right-rear corners thereby defined;
- (b) inlet conduit means connecting the interior of said container with a source of material to be irradiated through the lower portion of said rear end wall;
- (c) material delivery means associated with said inlet conduit means for delivering material to be irradiated through said inlet conduit means and into the interior of said container



at a predetermined rate selected so as to cause the material filling said container to flow over the front edge of said base portion as a thin, nonturbulent, cohesive layer without overflowing said vertical side walls;

- (d) irradiation means disposed for directing at least one beam of radiation substantially perpendicularly onto the layer of material falling from the front edge of the base portion under the influence of gravity, said beam being moved back and forth across said layer at a speed much faster than that at which the material contained in said layer falls such that all material falling through the irradiation zone wherein the beam impinges upon the layer is substantially uniformly treated; and
- (e) outlet reservoir means disposed to catch the material falling from the irradiation zone.

4,230,948

ARRANGEMENT FOR THE PRODUCTION OF X-RAY SECTIONAL PICTURES

Eckhard Storck, and Ulrich Wolff, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

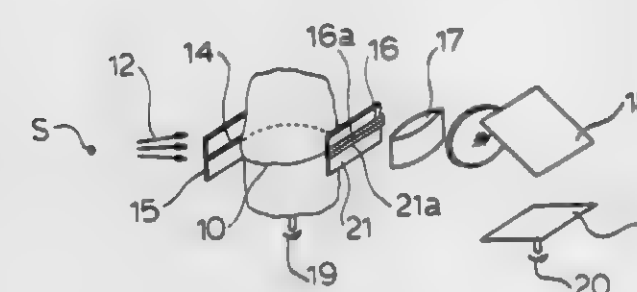
Filed Sep. 21, 1978, Ser. No. 944,364

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743678

Int. Cl.³ G03B 41/16

U.S. Cl. 250—445 T

5 Claims



1. An arrangement for the production of x-ray pictures, comprising an x-ray source for the production of x-rays which penetrate the object in at least one sectional plane, an x-ray screen which serves to convert the x-rays which have penetrated through into radiation to which a given recording medium is sensitive, a focusing optics by means of which each point of the screen is portrayed in the form of a line onto the

recording medium, where points located beside one another are portrayed as lines located beside one another, and a rotation device by means of which the object and the x-ray source with the screen can be rotated relative to one another about an axis of rotation which is at right angles to the sectional plane, characterized by a recording medium which possesses a modulation transmission function having high-pass or band-pass filter characteristics.

4,230,949

TOMOGRAPHIC APPARATUS FOR PRODUCING TRANSVERSE LAYER IMAGES OF A RADIOGRAPHY SUBJECT

Walter Distler, Erlangen, and Karl-Georg Heinzelmann, Neunkirchen a. Brand, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

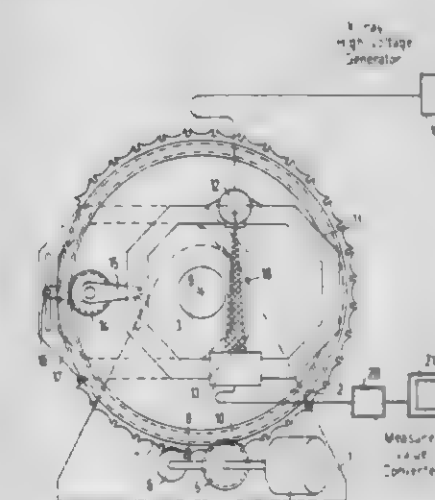
Filed May 31, 1979, Ser. No. 44,057

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 2829179

Int. Cl.² A61B 6/00

U.S. Cl. 250—445 T

6 Claims



1. A tomographic apparatus for producing transverse layer images of a radiography subject, having a radiation measuring arrangement which comprises a radiation source producing a radiation beam which penetrates the radiography subject and whose cross sectional extent perpendicular to the layer plane is equal to the layer thickness, and also a radiation receiver which determines the radiation intensity behind the subject, a movable support carrying the measuring arrangement and displaceable parallel to the plane of the layer, a rotating track carrying the movable support, and motor means for driving the rotating track for irradiating the radiography subject from various directions and for driving the movable support, and a measured value converter for transforming the signals supplied by the radiation receiver into a layer image, characterized in that a ring (10) is rotatably mounted on a common axis with the rotating track (2) and is driven by the motor means (4) for a continuous rotation of said ring (10), and a step by step drive unit (6, 7, 8) energized by the motor means (4) and driving said rotating track, a gear wheel (14) being rotatably mounted on the rotating track (2) and being driven by said ring (10), and crank means (15) driven by said gear wheel (14) for effecting movement of said movable support.

4,230,950

ELECTRO-OPTIC SMOKE DETECTOR

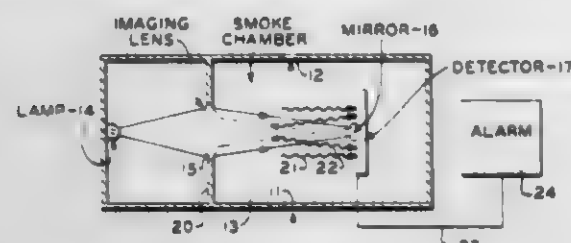
John A. Form, Excelsior, and Tzuo-Chang Lee, Bloomington, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 16, 1979, Ser. No. 39,467

Int. Cl.³ G08B 17/10

U.S. Cl. 250-574

8 Claims



1. Optical smoke detector apparatus comprising: a smoke sensing chamber having air inlet and outlet means; an optical sensor in said chamber having a face comprising a light receiving portion and a light reflecting portion, said light receiving portion being of a relatively large area with respect to said light reflecting portion; light source means in said apparatus; means directing the light from said source substantially onto said light reflecting portion and minimally onto said light receiving portion, whereby the light directed on said light reflecting portion is reflected generally back towards said source without falling on said light receiving portion; and whereby in the presence of smoke in said chamber light is scattered thereby, and falls on said light receiving portion to indicate the presence of said smoke.

4,230,951

WAVE SHAPING CIRCUIT

Yasoji Suzuki, Ayase, and Susumu Kouyama, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

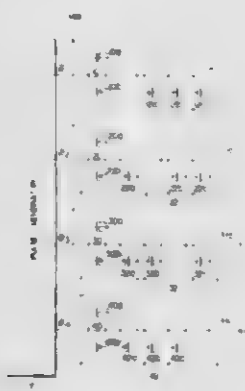
Filed Feb. 28, 1978, Ser. No. 882,147

Claims priority, application Japan, Feb. 28, 1977, 52-21366

Int. Cl.³ H03K 1/10, 5/08, 17/16

U.S. Cl. 307-200 B

11 Claims



1. A wave shaping circuit comprising: a plurality of signal lines connected to receive a plurality of clock signals having different phases and apply the clock signals to a capacitive active device, each of said clock signals having an active level to activate the capacitive active device and a non-active level; a plurality of switching circuits connected between a reference potential point and said signal lines, each of said switching circuits having a control signal input means connected to at least one of said signal lines adjacent to that one of the signal lines to which said each of said switching circuits is connected, wherein a switching circuit connected through the control signal input means to a signal line receiving an active level clock signal is rendered conductive and drives said adjacent signal line to the reference potential point.

4,230,952

REGENERATOR CIRCUIT FOR CCD ARRANGEMENTS IN A MULTI-LAYER METALLIZATION STRUCTURE

Karl Knauer, Gauting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

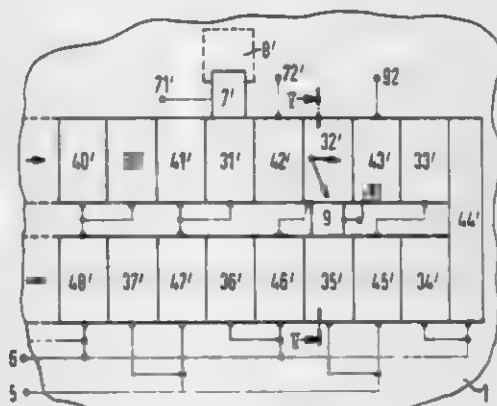
Continuation of Ser. No. 725,551, Sep. 22, 1976, abandoned. This application Jun. 2, 1978, Ser. No. 912,094

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1975, 2542832

Int. Cl.² G11C 19/28; H01L 29/78

U.S. Cl. 307-221 D

3 Claims



1. A regenerator system in a charge coupled device loop for removing leakage current produced charges and echo signals produced by incomplete transfer of signal charge between storage areas, comprising:

- (a) first and second spaced apart charge shift channels with a connecting electrode connecting the channels to each other at one end;
- (b) each channel having a substrate and charge shift electrodes forming shift elements above the substrate;
- (c) first and second clock pulse lines connecting to the shift electrodes;
- (d) a first regenerator electrode arranged at a side of the first shift channel next to a first electrode of the first shift channel;
- (e) a diffusion zone of first conductivity type opposite a second conductivity type of the substrate at a side of the first regenerator electrode on a surface of the substrate, said diffusion zone laterally extending to the first regenerator electrode;
- (f) a second electrode of the first shift channel sequentially adjacent the first electrode in a direction of charge shift not being connected to either of said first and second clock pulse lines;
- (g) a second regenerator electrode lying between a third electrode of the first shift channel and a first electrode of the second shift channel;
- (h) a fourth electrode of the first shift channel sequentially adjacent the third electrode in the direction of charge shift, said fourth electrode not being connected to either of said first and second clock pulse lines;
- (i) first potential means periodically connected to the second regenerator electrode for transferring a portion of charge of magnitude corresponding to the echo to the second shift channel first electrode; and
- (j) second potential means periodically connected to the fourth electrode for retaining said portion of charge beneath the third electrode.

4,230,953

NON-LINEAR CONTROL CIRCUIT

Milton E. Wilcox, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

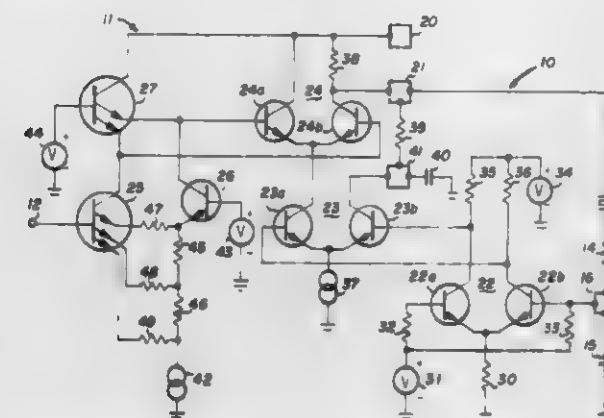
Division of Ser. No. 819,746, Jul. 28, 1977, Pat. No. 4,132,964.

This application Jul. 31, 1978, Ser. No. 929,872

Int. Cl.³ H03F 3/45, 1/10, 1/32

U.S. Cl. 307-230

4 Claims



1. A control circuit having a non-linear transfer characteristic as a function of an applied control potential, said circuit comprising:

- a differential amplifier stage having a differential control input, a common mode input, and an output; and
- a differential control stage having a differential output coupled to said control input of said differential amplifier stage, and a differential input, said differential control stage including a pair of transistors each constructed so as to have substantially different characteristics whereby the signal transfer characteristic from said common mode input to said differential amplifier stage output is a non-linear function of said potential applied to said input of said differential control stage.

4,230,955

METHOD OF AND APPARATUS FOR ELIMINATING PRIMING AND CARRIER SWEEP-OUT LOSSES IN SCR SWITCHING CIRCUITS AND THE LIKE

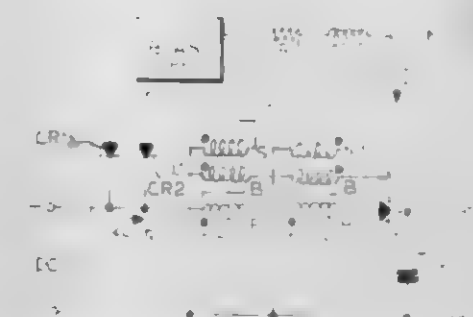
Paul R. Johannessen, Lexington, Mass., assignor to Megapulse Incorporated, Bedford, Mass.

Filed Apr. 6, 1978, Ser. No. 893,966

Int. Cl.³ H03K 17/72, 17/292

U.S. Cl. 307-252 J

11 Claims



1. A method of eliminating priming and carrier sweep-out losses in SCR switching circuits associated with power supplies and in which energy is stored in response to SCR switching in such circuits, said method comprising delaying the rise of SCR current upon such switching for a predetermined priming interval, thereby also generating additional minority carriers in the SCR; limiting the current during the priming interval; generating a reverse voltage to effect sweep-out of such minority carriers during a sweep-out interval, limiting the current during the sweep-out interval; and transferring the energy resulting in each of said priming and sweep-out intervals back to said power supplies to eliminate heat dissipation of the said resulting energy.

4,230,956

DOUBLY BALANCED MIXER WITH OPTIMIZED DYNAMIC RANGE

Donald H. Steinbrecher, Carlisle, Mass., assignor to Steinbrecher Corporation, Woburn, Mass.

Division of Ser. No. 725,714, Sep. 23, 1976, Pat. No. 4,112,374.

This application May 15, 1978, Ser. No. 906,214

Int. Cl.³ H03K 17/74

U.S. Cl. 307-257

5 Claims



4,230,954

PERMANENT OR SEMIPERMANENT CHARGE TRANSFER STORAGE SYSTEMS

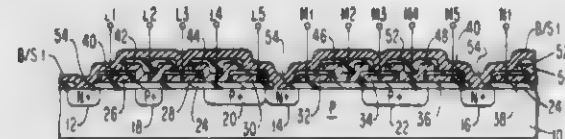
Lawrence G. Heller, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,409

Int. Cl.³ H03K 5/00; H01L 29/78; G11C 11/34; H01L 29/34

U.S. Cl. 307-238

18 Claims



1. A storage system comprising: a semiconductor substrate of a first conductivity type; a first diffusion region of a second conductivity type disposed within said substrate; a plurality of adjacent devices coupled to said substrate having different threshold voltages and disposed adjacent to said diffusion region; means for transferring charge from said diffusion region to each of said devices; and means coupled to said diffusion region for selectively detecting charge stored in said devices.

1. A circuit comprising: (a) a source of an RF signal, (b) means for dividing the rf signal into a pair of balanced equal current components, (c) first and second diode bridge means coupled to the dividing means such that during one polarity of the rf signal the first diode bridge means is forward biased and forms a conductive path, for both current components and the second diode bridge means is reverse biased and such that

during the other polarity of the rf signal the second diode bridge means is forward biased and forms a conductive path for the current components and the first diode bridge means is reverse biased, and

(d) means for providing matched termination for each of the current components of the rf signal during each polarity of the rf signal, and

(e) means for coupling all diodes of each bridge in series with respect to each other with respect to the average dc current component of the rf signal to enhance the matched operation of the diodes.

4,230,957

LOGIC JK FLIP-FLOP STRUCTURE

Christian Piguet, Neuchatel, Switzerland, assignor to Centre Electronique Horloger S.A., Neuchatel, Switzerland

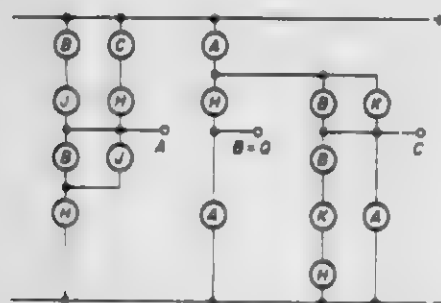
Filed Jul. 7, 1978, Ser. No. 922,844

Claims priority, application Switzerland, Jul. 8, 1977, 8474/77

Int. Cl.³ H03K 3/286, 3/353, 19/094, 19/20

U.S. Cl. 307—279

13 Claims



1. A logic bistable JK flip-flop structure capable of being realized in integrated circuit technology with complementary MOS transistors, comprising at least three logic gates each of which comprises a first group of transistors of a first conduction type and a second group of transistors of a second conduction type, these two groups of transistors being connected in series across the terminals of a voltage supply source and their common connection point forming the output node of the gate, the conduction paths of the transistors of each group being connected in series and/or in parallel with each other, so that the conduction state of these transistors define the potential at the output node of the gate, which represents the inner variable provided by this gate and may take values substantially equal to those at the two terminals of the voltage supply source, each transistor being controlled by an inner variable or by an external control variable such as J, K or H, H being a clock signal, the said structure comprising the following logic gates, respectively indicated by the inner variable they provide, said gates being formed by transistors indicated for each group and designated by their respective control variables, the connection of the conduction paths of these transistors being indicated in each group by "series" or "parallel", an assembly indicated between brackets being considered as a whole:

Gate A:

first group: (B series J) parallel (C series H)

second group: (B parallel J) series H

Gate B:

first group: A series H

second group: A

Gate C:

first group: A series (B parallel K)

second group: (B series K series H) parallel A,

the transistor controlled by A in the first groups of the gates B and C being preferably common to these gates and the output variable Q of the circuit being the variable B.

4,230,958

LOSS OF CLOCK DETECTOR CIRCUIT

Harry J. Boll, Berkeley Heights, and Michael K. Maul, Whitehouse Station, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1978, Ser. No. 932,266

Int. Cl.³ H03K 5/19

U.S. Cl. 307—353

9 Claims



1. Semiconductor apparatus comprising:

(a) an MOS differentiator (Δ) having an input terminal;

(b) an MOS thresholding amplifier (A) having an input terminal connected to an output terminal of the differentiator (Δ);

(c) an MOS unidirectional current inhibitor (D) having an input terminal connected to an output terminal of the amplifier (A);

(d) an MOS storage capacitor (C) having one terminal connected to an output terminal of the inhibitor (D);

(e) a leakage current source (JL) connected to said one terminal for providing a leakage current thereto if and only if the charge on said terminal is above a threshold, said inhibitor (D) directed for delivering charge in a direction tending to charge said one terminal and said leakage current being in a direction tending to discharge said one terminal; whereby the voltage level at said one terminal is a binary indication of whether or not clock pulse voltage is being applied to the input terminal of the differentiator (Δ).

4,230,959

MAGNETOHYDRODYNAMIC (MHD) CHANNEL CORNER SEAL

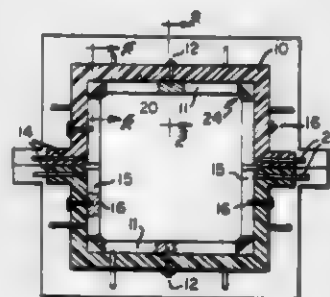
Francis R. Spurrier, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 6, 1979, Ser. No. 18,099

Int. Cl.³ H02K 45/00

U.S. Cl. 310—11

8 Claims



1. In a magnetohydrodynamic channel including an elongated duct, rectangular in cross section, which defines a passageway for an electrically conducting working fluid and which has electrodes and insulators extending transversely across opposed faces of the channel said insulators being disposed between the electrodes said electrodes being supported from the duct at midpoints along their length, the improvement comprising seals disposed in the corners of the duct and extending the length of the channel to impede leakage of work-

ing fluid along the corners of the duct, said seals including a compressible portion which contacts the duct and an insulating portion which contacts the electrodes and insulators, said insulating portion being segmented into pieces of the same thickness as the electrodes and insulators and aligned therewith, the pieces aligned with the insulators being of a different size from the pieces aligned with the electrodes to create a stepped configuration along the corners of the duct.

4,230,960

FLEXIBLE MOUNTING FOR AN END-SUPPORTED STATOR CORE

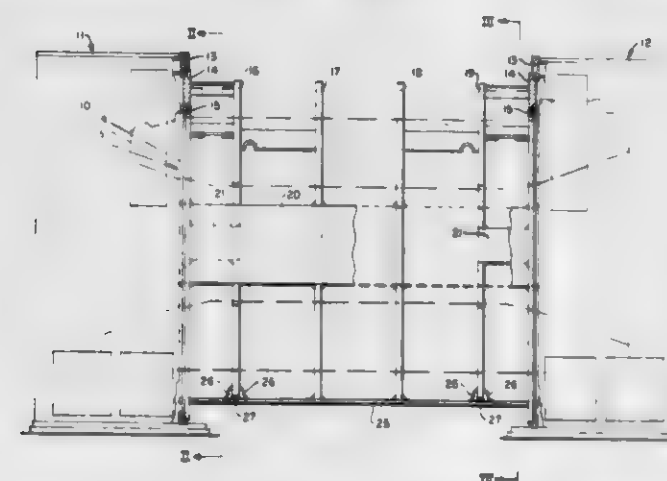
James M. Mayher, West Mifflin, and Andrew S. Ying, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 30, 1978, Ser. No. 965,007

Int. Cl.³ H02K 5/24

U.S. Cl. 310—51

8 Claims



1. A flexible mounting for an end-supported stator core in a dynamoelectric machine comprising the combination of: a plurality of bore rings encircling the stator core at coaxially, spaced-apart locations therealong;

an end box disposed at each end of the stator core,

outer and inner springs extending independently at each exterior side of the stator core within the horizontal center plane thereof to independently interconnect the bore rings with the end boxes, said springs defining a resiliency radially of the stator core to isolate double-frequency core vibration and a stiffness tangentially to the stator core to resist a short-circuit torque, each outer spring being joined to a bore ring disposed axially between other bore rings, and each inner spring being joined to a bore ring at one end of the stator core, and

a stabilizer joined to the bore rings and extending between the end boxes below the stator core within the vertical central plane thereof.

4,230,961

MAGNETIC FLUX SENSOR FOR LAMINATED CORES
Raymond M. Calko, Pittsburgh, and Arthur Mulach, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 12, 1978, Ser. No. 941,616

Int. Cl.³ H02K 11/00

U.S. Cl. 310—68 R

4 Claims

1. In combination: a magnetic core comprising a plurality of laminations clamped together under pressure;

flux sensing means embedded in said core, said sensing means comprising a flat, multi-turn coil located between two adjacent ones of said plurality of laminations and parallel to the plane of said laminations proximate the end region of the core in a position to sense axial magnetic flux, said coil having no magnetic material extending through the turns thereof, said coil having flat conductive leads extending therefrom and between said two adjacent laminations to the exterior of said magnetic core;

means for insulatively enclosing said coil and for supporting the pressure contact of said adjacent laminations, said



4,230,962

BRUSH PLATE ASSEMBLY

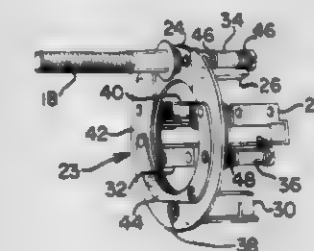
Edward E. Carda, 5540 Robbins Ave., Portage, Ind. 46368

Filed Aug. 11, 1978, Ser. No. 932,809

Int. Cl.³ H02K 13/00

U.S. Cl. 310—239

3 Claims



1. An improved brush plate assembly for use in a direct current operated starter motor comprising: a brush plate having a plurality of brush holders secured to said brush plate; an elongated stud member removeably secured to said brush plate and acting to provide electrical communication between a direct current source and said brush plate; and at least one threaded screw acting to secure one of said brush holders to said brush plate and to removeably secure said stud member to said brush plate by extending into holes formed in said one of said brush holders, said brush plate and said stud member.

4,230,963

HYDRO-THERMIC ENERGY CONVERTER

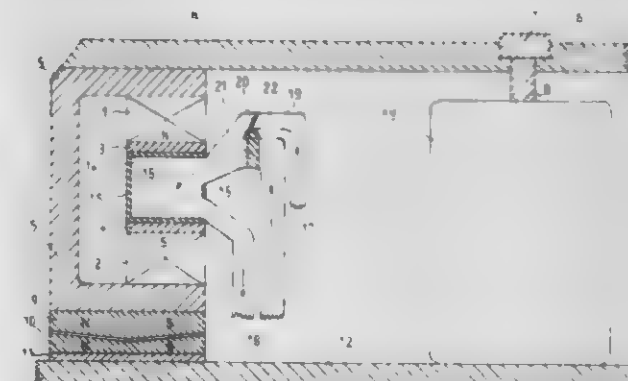
Waldemar H. Kurpanek, Mercatorstr. 3, D-4000 Duesseldorf-11, Fed. Rep. of Germany

Filed Jan. 9, 1978, Ser. No. 867,971

Int. Cl.³ H01J 45/00

U.S. Cl. 310—306

10 Claims



1. A hydro-thermic energy converter capable to convert

energy contained in hot water in mechanical energy comprising, a ring-shaped stator unit consisting of a radially arranged chamber system with ferromagnetic chamber plates of a low Curie-point and a (in-) inlet and an outlet tubing system with valves and vent pipe to permit a flushing of the chamber system with hot (and) or cool water thus permitting alternate heating (and) or cooling the said ferromagnetic chamber plates respectively above (and) or below (their) the Curie-point and that furthermore a rotor system consisting of at least one rotatable mounted rotor arm (with) on which magnets are arranged such that a directional magnetic field is established between which the stator unit slides thus generating a rotational force without contacting the magnets.

4,230,964

COLOR HIGH-PRESSURE SODIUM VAPOR LAMP
Ranbir S. Bhalla, West Paterson, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 11, 1978, Ser. No. 923,597

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.³ H01J 61/36

U.S. Cl. 313—220

6 Claims



1. A high-pressure sodium vapor discharge lamp including an outer envelope sealed to a standard base and an arc tube having a tubular polycrystalline alumina or sapphire body mounted within said outer envelope by a mounting frame, which is electrically connected to said base, said discharge lamp further comprising:

- a refractory metal end cap sealed to each end of the arc tube body, each of said end caps including a silicon coating on the interior surface thereof and a glassy sealing frit principally comprising alumina and calcia interposed between said silicon coating and said arc tube body,
- a discharge sustaining electrode mounted to each of said end caps, said discharge sustaining electrodes spaced a predetermined distance from each other,
- a discharge sustaining fill within said arc tube body, said discharge sustaining fill principally comprising a sodium-mercury amalgam of predetermined proportions; and
- cylindrical heat shields mounted to said mounting frame and surrounding said end caps and a portion of each end of said arc tube.

4,230,965

MEANS FOR POSITIONING AN ELECTRICAL CONTACTOR ON A CRT MASK ASSEMBLY
Kurt H. Brenner, Jr., Seneca Falls, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 11, 1979, Ser. No. 38,356

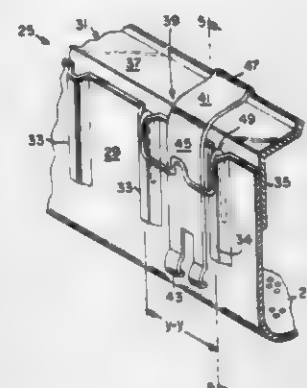
Int. Cl.³ H01J 9/18, 29/07

U.S. Cl. 313—407

8 Claims

1. Relative to a cathode ray tube mask electrode assembly, of the type spatially located within the viewing panel of a CRT, and constructionally including a multi-opening areal component peripherally attached to a rigid framing member, a combi-

nation of cooperating means for positioning a forwardly-directed resilient mask-panel electrical contactor having a flexural portion with an integral attachment portion affixed to said mask assembly to effect selective temporary retractive positioning of said electrode contactor at a placement substantially contiguous with the side of said mask assembly, said combination of cooperating contactor positioning means comprising: receiving means in the form of at least two parallel open-ended hollow-rib means integrally oriented in spaced apart relationship on the side of said mask assembly with one



rib-being on either side of said contactor; and coadjutant insertive means formed as a pronged structure having two parallel legs projecting from a supportive transverse member, said legs being formed to provide a pair of tines dimensionally spaced for insertive accommodation within said contactor-related hollow rib means whereupon the sliding engagement of said transverse member along said ribs and said contactor, beginning proximal to the attachment portion and continuing along the flexural portion thereof, effects retractive placement of said contactor.

4,230,966

METAL STRIP ATTACHED TO HIGH VOLTAGE CONTACT WITH GETTER AT ONE END AND CONTACT TO SHIELD CONE AT THE OTHER

Johannes M. A. A. Compen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

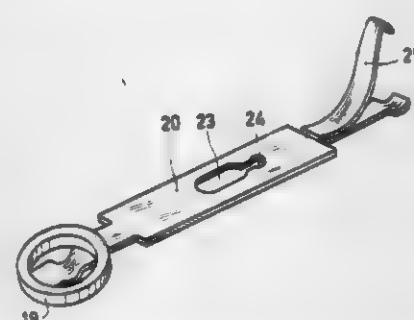
Filed Oct. 20, 1978, Ser. No. 953,330

Claims priority, application Netherlands, Nov. 18, 1977, 7712707

Int. Cl.³ H01J 29/07, 29/84

U.S. Cl. 313—481

2 Claims



1. A colour television display tube comprising an envelope having a neck, a cone portion and a window portion, an electrode system positioned in said neck for generating at least two electron beams, a display screen provided on the interior surface of said window portion, a colour selection electrode positioned in said envelope adjacent said display screen, a magnetic screening cone secured to said color selection electrode and extending within the cone portion towards said neck, said screening cone being electrically connected to said colour selection electrode, a resistive layer provided on an internal wall portion of the envelope between said electrode system

and said display screen, a high voltage contact extending through said envelope at a position between said electrode system and said display screen and being connected electrically to said resistive layer, a getter and a metal strip having one end affixed to said getter for securing said getter to said high voltage contact, said strip being attached to said high voltage contact and having on the other end a metal spring in electrical contact with said screening cone to thereby electrically connect said screening cone and said colour selection electrode to said high voltage contact and said resistive layer.

4,230,967

CATHODE RAY TUBE WITH TOUCH-SENSITIVE DISPLAY PANEL

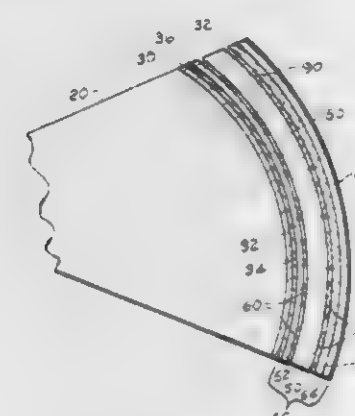
George E. Holz, North Plainfield; James A. Ogle, Neshaan Station, and George J. Przybylek, Warren, all of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 28, 1978, Ser. No. 928,959

Int. Cl.³ H01J 29/26; H01G 7/00

U.S. Cl. 315—3

5 Claims



1. A touch panel assembly comprising an insulating plate having an outer surface and an inner surface,
- a plurality of narrow column conductors on said outer surface and a column of first relatively large-area transparent electrodes disposed adjacent to each of said column conductors, said first electrodes also being aligned in rows, interleaved means intimately coupling each column conductor to the column of first large-area electrodes adjacent to it,
- a plurality of rows of second large-area transparent electrodes on the inner surface of said plate, each second electrode lying beneath a first electrode on the outer surface and being capacitively coupled thereto, and
- a narrow row conductor extending along and coupling together the second electrodes in each row on said inner surface.

4,230,968

CATHODE STRUCTURE FOR MAGNETRONS
Tomokatsu Oguro, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 799,546, May 23, 1977. This application Feb. 7, 1979, Ser. No. 10,311

Claims priority, application Japan, May 26, 1976, 51-60048; Jun. 2, 1976, 51-63601; Jun. 25, 1976, 51-74370

Int. Cl.³ H01J 25/50

U.S. Cl. 315—39.51

15 Claims

1. In a magnetron of the type including a cathode structure and an anode structure surrounding the cathode structure, wherein said cathode structure includes a filament, upper and lower end shields secured to the opposite ends of the filament for supporting the same, and a center support and a side support respectively supporting said upper and lower end shields and also acting as electric leads, the improvement comprising: a filament in the form of a metallic cylindrical body provided with a plurality of openings therethrough; said upper and lower end shields further including upper and

lower cylindrical cups having the openings thereof facing each other for receiving the cylindrical filament



and wherein the opposite ends of the cylindrical filament are contained within and supported by the cylindrical cups.

4,230,969

IGNITION TIMING TESTING DEVICE

Mogens D. Nieuwenhuis, Amsterdam, and Raymond Van Bracht, Veld, both of Netherlands, assignors to Aquapro A.G., Switzerland

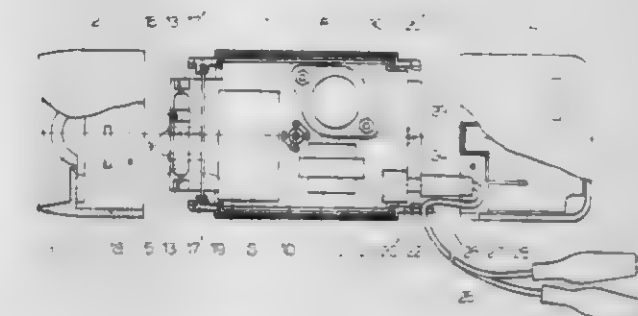
Filed Jun. 5, 1979, Ser. No. 45,737

Claims priority, application Netherlands, Jun. 5, 1978, 7406096

Int. Cl.³ H05B 41/34

U.S. Cl. 315—241 S

7 Claims



1. Device for stroboscopically testing the ignition timing of an internal-combustion motor, comprising a casing of flat elongate shape including a middle casing part, a rear casing part and a front casing part removably attached to said middle casing part, a flash lamp of the ionised-gas type having a triggering electrode, means for exchangeably mounting said flash lamp at the forward end of said middle casing part, trigger circuit means for said flash lamp arranged in said middle casing part, said front casing part having an opening in its forward side and a lens mounted in said opening in front of said flash lamp, and a metal antenna member mounted inside said rear casing part and operatively connected to said trigger circuit means so as to control said latter means to trigger said flash lamp in response to impulses received by said antenna means from the ignition system of the motor being tested.

4,230,970

METHOD AND APPARATUS FOR SAVING ENERGY

Gene B. Potter, and Martin H. Jurick, both of Santa Ana, Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Mar. 7, 1978, Ser. No. 884,147

Int. Cl.³ G05F 1/00; H05B 37/02, 39/04, 41/36

U.S. Cl. 315—307

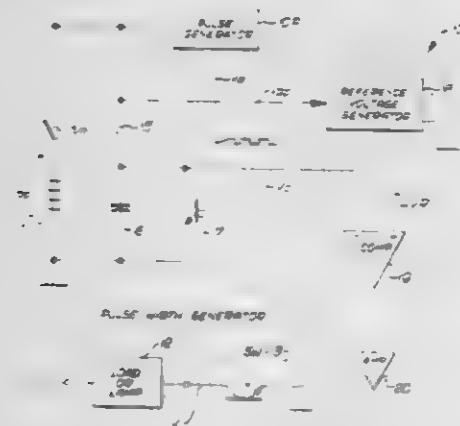
12 Claims

1. Apparatus for maintaining a substantially constant RMS voltage across a load device powered from a power source having a decreasing output voltage with time comprising means adapted to be coupled to said power source in parallel circuit relationship for providing a reference output voltage signal that has an inverse relationship to the voltages

of the power source and with a substantially constant slope.

a serial resistor-capacitor network having a junction between the resistor and capacitor and adapted to be coupled to said power source in parallel circuit relationship therewith to permit the capacitor to be exponentially charged from said source through the resistor.

first switching circuit means adapted to be coupled to said power source through said serial resistor and including a parallel circuit path connected to opposite sides of the capacitor and being normally arranged in a nonconductive condition and to be automatically rendered conductive at preselected time intervals for discharging the capacitor by means of the parallel circuit path during the conductive time intervals of the parallel circuit path, the time intervals the parallel circuit path is conductive is short relative to the nonconductive time intervals, pulse generating means adapted to be coupled to said power



source for generating pulses of a preselected repetition rate and a preselected short pulse width and being coupled to said first switching circuit means for rendering said conductive in response thereto.

comparison circuit means coupled to be responsive to said reference output signal and to the signals at the junction between the resistor and the capacitor for periodically providing output pulses having pulse widths that vary as the inverse square of the output voltages from said source only when the signals at said junction are less than the amplitude of the reference output signals, and

second switching circuit means coupled to be responsive to the output pulses from said comparison circuit means to be rendered conductive thereby for the time duration of said output pulses, and a load device adapted to be coupled to said power source to be powered therefrom through the second switching circuit means during the time intervals the second switching means is rendered conductive in response to said output pulses.

4,230,971

VARIABLE INTENSITY CONTROL APPARATUS FOR OPERATING A GAS DISCHARGE LAMP

Francis H. Gerhard, San Juan Capistrano, and Gerald A. Felper, Anaheim, both of Calif., assignors to Datapower, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 865,209, Dec. 28, 1977, Pat. No. 4,168,453. This application Sep. 7, 1978, Ser. No. 940,435 Int. Cl.³ H05B 41/39

U.S. Cl. 315—307

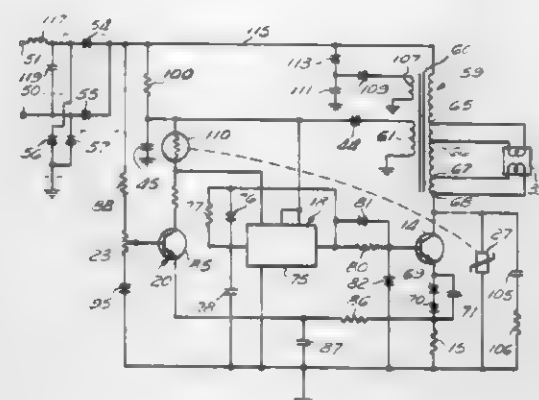
18 Claims

1. A circuit for energizing a gas discharge lamp comprising: first means for storing magnetic energy connected in parallel combination with the electrodes of the gas discharge lamp;

second means for connecting a rectified AC power supply to said parallel combination;

third means operatively coupled to said second means for interrupting the connection between said power supply

and said parallel combination for a predetermined length of time, shorter than the period of said AC power supply, whenever the current through said parallel combination has increased to a predetermined level; and



fourth means for programming said predetermined level to vary in accordance with the varying AC voltage of said rectified AC power supply.

4,230,972

DYNAMIC FOCUS CIRCUITRY FOR A CRT DATA DISPLAY TERMINAL

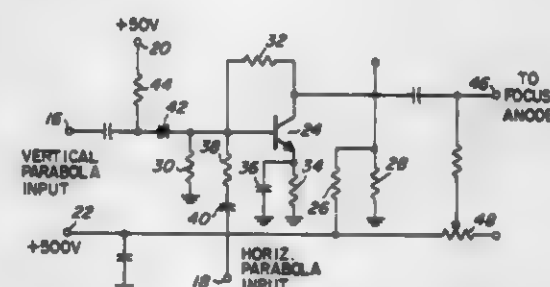
Michael P. Bafaro, Park Ridge, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1979, Ser. No. 24,359

Int. Cl.³ H01J 29/58

U.S. Cl. 315—382

3 Claims



1. In a cathode ray tube device requiring high resolution as for data display, the combination comprising:

means for supplying an electron beam; focusing means positioned to focus said electron beam; high voltage supply means coupled to the focusing element for supplying an adjustable DC focus voltage;

first circuit means coupled to the focusing element for supplying a signal having a parabolic waveform at the vertical frame rate;

second circuit means coupled to the focusing element for supplying a second signal having a parabolic waveform at the horizontal line rate; and

circuit means coupled to the focusing element for multiplying the output signals of the first and second circuit means to provide a dynamic focusing voltage.

4,230,973

DC COUPLED, WIDE BAND WIDTH HIGH VOLTAGE MODULATOR

Robert H. Bickley, Scottsdale, and Michael J. Dewey, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1979, Ser. No. 34,218

Int. Cl.³ H01J 29/52

U.S. Cl. 315—383

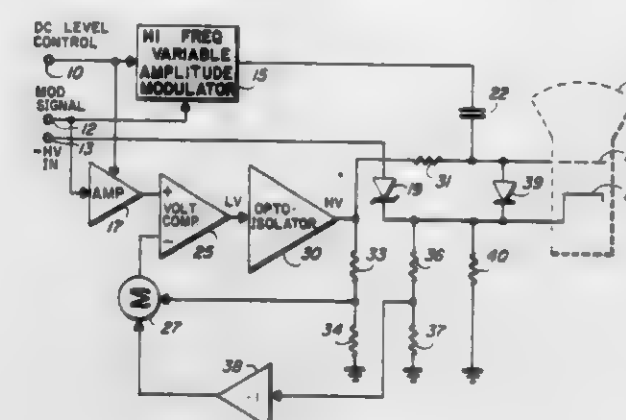
13 Claims

1. A modulator for controlling the intensity of a display on a cathode ray tube by means of signals including a DC intensity level component and AC components, said modulator comprising:

(a) monitoring means associated with the cathode ray tube

for sensing control voltages applied to the cathode ray tube;

(b) optical isolator means having a relatively low voltage, control input signal and a relatively high voltage control output signal coupled to the cathode ray tube for producing a desired intensity; and



(c) a control loop including comparator means coupled to said monitoring means and said optical isolator means for comparing the DC intensity level component and relatively low frequency AC components to the sensed control voltage applied to the cathode ray tube and supplying the control input signal to said optical isolator means maintaining the intensity of the cathode ray tube at the desired level.

4,230,974

CATHODE RAY TUBE DEFLECTION CIRCUIT HAVING DISPLAY FORMAT SELECTION

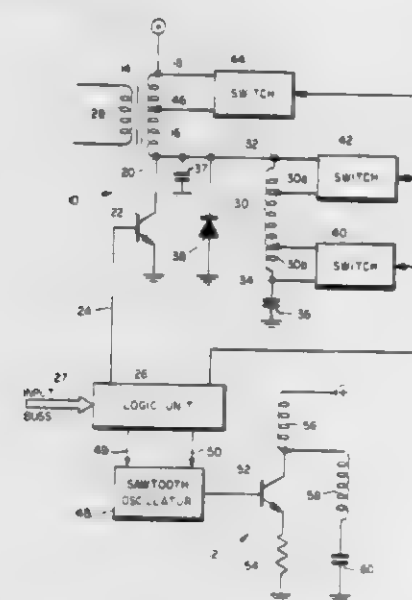
Gary R. Haak, Park Ridge, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Apr. 16, 1979, Ser. No. 30,256

Int. Cl.³ H01J 29/70, 29/76

U.S. Cl. 315—399

4 Claims



1. An apparatus for selectively changing the display on the screen of a cathode ray tube from a first format to a second format in response to a format control signal including a horizontal deflection circuit 10 having an inductance 16, 30 with a first inductive value resonated with a capacitor 37 to a first horizontal sweep frequency, means 26 for generating a horizontal drive signal 24 in response to the format selection signal for driving the horizontal deflection circuit 10, the horizontal deflection circuit 20 determining the horizontal size of the display, means 26, 40, 42, 44, responsive to the control signal 27, for changing the inductive value of said inductance 16, 30 to a second value and thus changing the resonant frequency of the horizontal deflection circuit to a second value, means 26 responsive to the control signal 27, for changing the frequency

of said horizontal drive signal to a second frequency related to the second resonant frequency of the horizontal deflection circuit 10, and a vertical deflection circuit 12 including means 26 responsive to the format control signal for varying the amplitude of the output of the vertical deflection circuit from a first value to a second value

CHARACTERIZED BY:

said horizontal deflection circuit inductance 16, 30 including a yoke 30 and said inductive value changing means 26, 40, 42, 44 including a switch 40, 42 for effectively shorting at least a portion of the turns of said yoke 30 so as to reduce the inductance of the yoke 30.

4,230,975

CONTROL CIRCUIT ARRANGEMENT FOR DC MOTORS

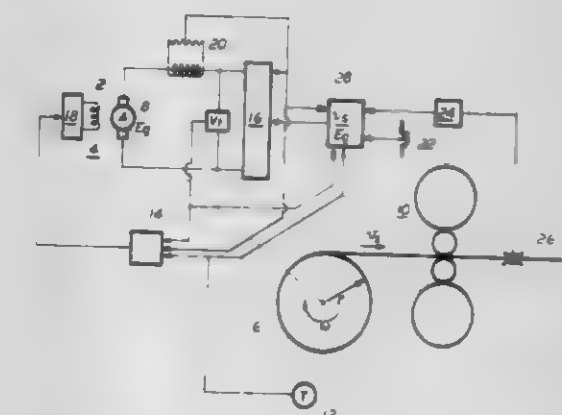
Paul C. Donatelli, Trafford, Pa., and Kenneth G. Main, Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 3, 1978, Ser. No. 893,006

Int. Cl.³ H02P 5/00

U.S. Cl. 318—6

3 Claims



1. A method of providing constant tension on a strip of material being wound on or unwound from a coil of material driven by the armature of a DC motor, the method comprising the steps of

supplying the armature with electrical power, measuring a physical characteristic of the material being wound or unwound,

utilizing this measurement to establish a predetermined level of current flow in the circuit of the armature,

continuously measuring the voltage across the armature of the motor, continuously measuring the rate of travel of material being wound or unwound, and developing from the combination thereof a counter voltage for the field of the motor that functions to offset changes in the voltage of the armature,

continuously directing said counter voltage to the field, and increasing the current in the armature by an amount corresponding to the reduction of armature voltage when the speed of rotation of the armature is decreased to the extent that the field of the motor becomes saturated, the increase in armature current being effective to maintain the power output of the motor constant, and thus provide constant tension on the strip of material being wound or unwound from the coil driven by the motor.

4,230,976

BRUSHLESS, PERMANENT MAGNET D-C MOTOR WITH IMPROVED COMMUTATION CONTROL

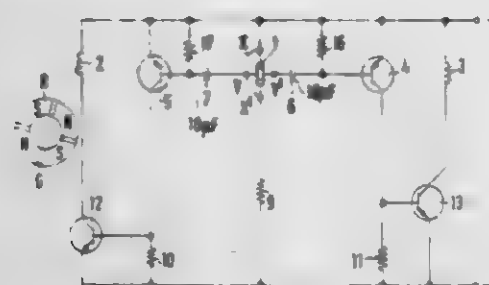
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany
Continuation of Ser. No. 879,143, Feb. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 627,130, Oct. 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 527,345, Nov. 26, 1974, Pat. No. 3,986,086, which is a division of Ser. No. 363,290, May 23, 1973, Pat. No. 3,873,897. This application May 25, 1979, Ser. No. 42,362

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804561

Int. Cl.² H02K 37/00

U.S. Cl. 318—138

32 Claims



1. Brushless d-c motor comprising a permanent magnet rotor (R) and stator winding means (2, 3, 110) and a Hall effect device (1) positioned to be controlled by magnetic flux from said permanent magnet rotor, the magnitude and direction of said flux being rotor position dependent, said Hall effect device providing in operation two output signals at its outputs,

electrical commutating device means connected to be controlled by the output signals of said Hall effect device to selectively connect said stator winding means (2, 3) to a source of power to generate, in operation, an alternating magnetic field,

means (Y, Y') to supply current to said Hall effect device (1),

means (9) to modulate the Hall supply current supplied by said current supply means in synchronism with the rotor rotation to reduce said Hall supply current when the flux density at the Hall effect device is zero or in the neighborhood of zero, and to control said commutating device means to substantially reduce or interrupt the current flowing in said stator winding means at the instant when the flux density from the rotor (R) to which the Hall effect device is exposed is zero or in the neighborhood of zero.

4,230,977

SPEED CONTROL FOR ELECTRIC MOTOR

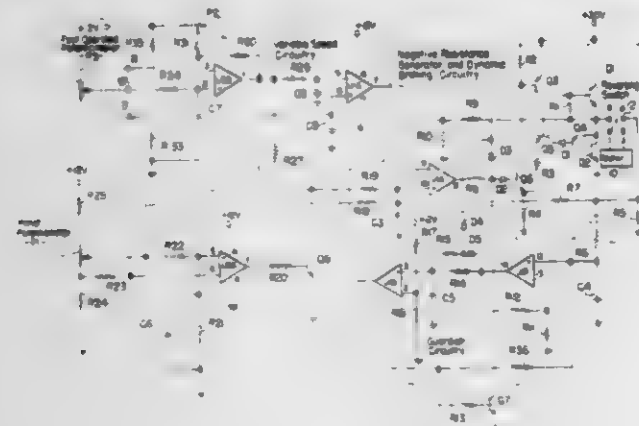
David A. Nelson, 22031 Dumetz Ave., Woodland Hills, Calif. 91364

Filed Jul. 3, 1978, Ser. No. 921,771

Int. Cl.³ H02P 5/06

U.S. Cl. 318—305

7 Claims



1. A speed control system for an electric motor comprising:

a first potentiometer; first circuitry connected to said first potentiometer; power amplifier circuitry connected to said first circuitry to supply power to the motor under control of said first potentiometer; disabling circuitry included in said power amplifier circuitry; a first comparator means connected to said first potentiometer and to said disabling circuitry for causing said disabling circuitry to disable said power amplifier circuitry when said first potentiometer is moved to an off position and to cause said power amplifier to be enabled when said first potentiometer is moved away from the off position; a second potentiometer; second circuitry connected to said second potentiometer and to said power amplifier circuitry to cause said power amplifier circuitry to supply power to the motor under the control of the second potentiometer; and second comparator means connected to said second potentiometer and to said first circuitry to disable said first circuitry when said second potentiometer is moved away from an off position.

4,230,978

IMPULSE DRIVE SYSTEM

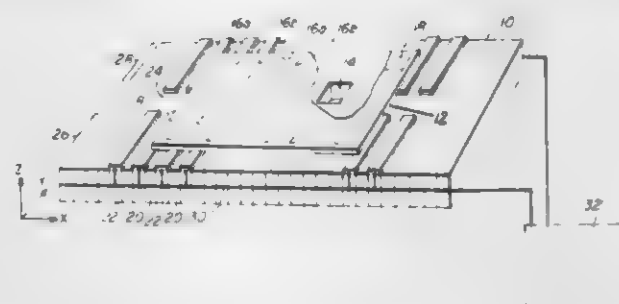
John F. Gardella, Jr., Bedford; George W. King, Concord; Eric A. Kolm, Brookline, and Henry H. Kolm, Wayland, all of Mass., assignors to Compugraphic Corporation, Wilmington, Mass.

Filed Feb. 24, 1978, Ser. No. 881,024

Int. Cl.³ G05B 11/00

U.S. Cl. 318—687

44 Claims



1. An impulse drive device comprising
a generally planar stator including means for producing a plurality of regions of magnetic field extending substantially perpendicularly from a stator first planar surface, said regions being regularly spaced apart in the plane of said stator,

a generally planar movable member supported parallel to and perpendicular displaced from said stator first planar surface for movement in a direction parallel thereto, said movable member including a plurality of electrically conductive segments distributed substantially parallel to each other and to said regions of magnetic field, said segments being electrically connected and having a spacing between immediately adjacent segments in the plane of said movable member substantially equal to the spacing of said regions of magnetic field; and

pulse sequence generating means for generating sequences of current pulses and for delivering the same to said plurality of electrically conductive segments so that the passage of current pulses through each of said plurality of segments interacts with adjacent ones of said plurality of regions of magnetic field to generate motion of said movable member parallel to the plane of said stator from any of a plurality of predetermined initial positions of said movable member with respect to said stator to any of a plurality of predetermined final positions of said movable member with respect to said stator.

4,230,979

CONTROLLED CURRENT INVERTER AND MOTOR CONTROL SYSTEM

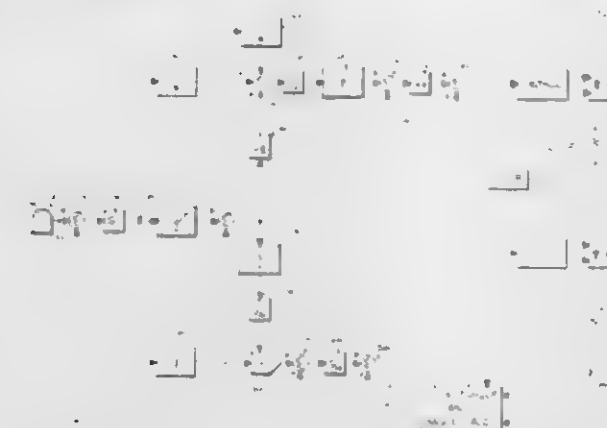
Paul M. Espelage, Ballston Lake, N.Y.; Loren H. Walker, Salem, Va., and William G. Wright, deceased, late of Schenectady, N.Y. (by Mary Nobel Wright, executrix), assignors to General Electric Company, Salem, Va.

Filed Apr. 10, 1978, Ser. No. 895,189

Int. Cl.² H02P 5/28, 3/18, 7/36

U.S. Cl. 318—721

25 Claims



1. A control for an a.c. electric motor having a stator and a rotor spaced from the stator by a gap across which gap flux is produced in response to an electrical motor current of variable magnitude and frequency through windings associated with said stator, said control serving to control the electrical torque of said motor and comprising:

(a) means to determine, with respect to the motor, the instantaneous electrical torque and the instantaneous angle between the gap flux and the motor current and to provide signals proportional thereto;

(b) means to establish a torque reference signal proportional to a desired level of electrical torque;

(c) means to compare said torque reference signal with said signal proportional to the instantaneous electrical torque and to generate a current error signal representative of any difference therebetween, said current error signal acting as the primary control parameter serving to vary the magnitude of the motor current;

(d) means responsive substantially solely to said torque reference signal to derive an angle reference signal representative of the desired angle between the gap flux and the motor current; and,

(e) means to compare said angle reference signal with said signal proportional to the instantaneous angle between the gap flux and motor current and to generate a frequency error signal representative of any difference therebetween and effective to vary the frequency of the motor current.

4,230,980

BIAS CIRCUIT

Yoshiaki Sano; Toshio Hanazawa, both of Kawasaki, and Hideo Honda, Yokohama, all of Japan, assignors to Fujitsu Limited, Japan

Filed May 18, 1979, Ser. No. 40,406

Claims priority, application Japan, May 24, 1978, 53-61927

Int. Cl.³ G05F 3/20

U.S. Cl. 323—19

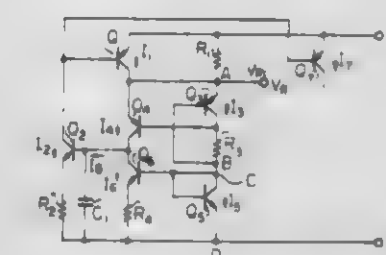
12 Claims

1. A bias circuit, having a d.c. supply terminal, a bias output terminal, and a reference potential terminal, comprising:
first and second elements arranged in series between the bias output terminal and the reference potential terminal of said bias circuit, said first and second elements generating a voltage between the bias output terminal and the reference potential terminal, said voltage being equal to the sum of two voltage drops in a forward p-n junction;
first and second transistors connected in series, the collectors of said first and second transistors being connected at a node, each of said first and second transistors having a base which is connected to a terminal between said first

and second elements, wherein said first and second transistors generate a difference current at said node equal to the difference between the collector currents of said first and second transistors;

resistor means, operatively connected to said second element, for determining the value of a constant current for generating bias voltages;

a third transistor arranged between the bias output terminal and the d.c. supply terminal;



a negative feedback circuit arranged between the base of said third transistor and said node, said difference current being introduced as an input thereto;

a starting element, connected to the d.c. supply terminal, for supplying currents to said first and second elements and to said first and second transistors in an initial state when the power is turned on, whereby said negative feedback circuit operates to generate said constant current.

4,230,981

CURRENT SUPPLY INSTALLATION WITH VOLTAGE-CONTROLLED CURRENT SUPPLY DEVICES CONNECTED IN PARALLEL ON THE OUTPUT SIDE

Klaus Rambold, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

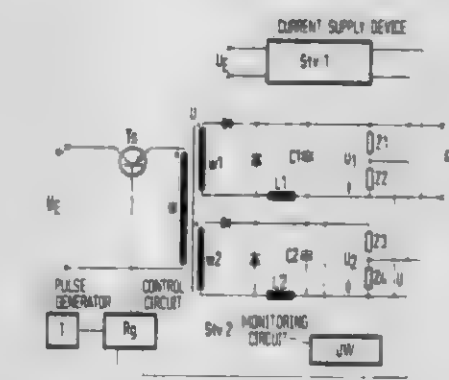
Filed Dec. 6, 1978, Ser. No. 967,109

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755510

Int. Cl.³ G05F 1/64; H02J 1/12

U.S. Cl. 323—25

8 Claims



1. A current supply installation comprising: at least two voltage-controlled current supply devices connected in parallel at an output side without decoupling means; each current supply device having voltage control means controlled by an actual voltage value; each current supply device having means for forming a compound voltage value from a first voltage proportional to its no-load voltage and a second voltage proportional to its output voltage; said compound voltage value forming a basis for the actual voltage value for the voltage control means; and means for evaluating the no-load voltage for monitoring purposes.

4,230,982

PROCESS AND DEVICE FOR SHORT-CIRCUIT MONITORING OF ELECTRICAL LINES

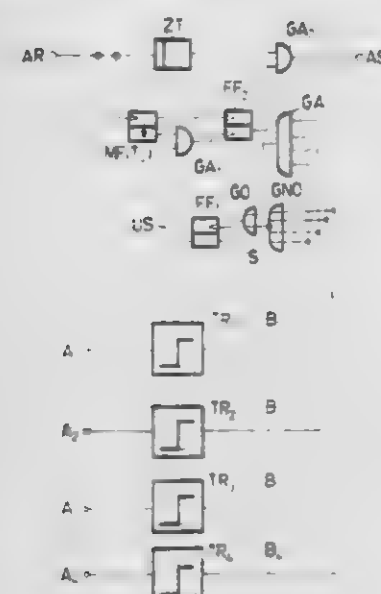
Ivan De Mesmaeker, Flisbach, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Oct. 23, 1978, Ser. No. 953,637

Claims priority, application Switzerland, Oct. 28, 1977, 13123/77

Int. Cl.³ G01R 31/08

U.S. Cl. 324—52

3 Claims



1. A method for monitoring an electric line for short-circuits occurring within a predetermined distance from a measuring location at the line, in which line phase detection signals dependent on the distance between the measuring location and the short-circuit location are formed from the line current and the line voltage at the measuring location, and in which time-wise immediately successive ones of said detection signals are subjected to a detection and comparison of their relative phase angles with a threshold value of at least approximately 180° to produce a triggering signal in the event of a short-circuit occurring within said predetermined distance, comprising the steps of:

- forming at least three reference signals proportional to the voltage drop across a reference impedance each caused by a line current signal applied to the respective reference impedance, said at least three reference signals defining a polygonal trigger region;
- forming from each of said reference signals a detection signal by forming the difference between a corresponding reference signal and a line voltage signal;
- subjecting positive and negative half-waves of said detection signals to said threshold value comparison to produce two binary signals; and
- subjecting said two binary signals to a logical OR-operation to produce said triggering signal.

4,230,983

SEED VIABILITY ANALYZER

William C. Steere, Grass Lake, and Stephen S. Wilson, Ann Arbor, both of Mich., assignors to Agro Sciences, Inc., Ann Arbor, Mich.

Filed Nov. 24, 1978, Ser. No. 963,378

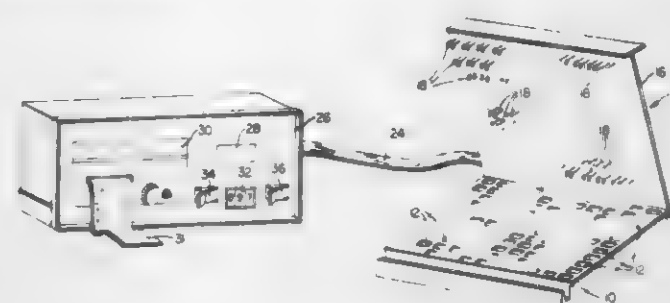
Int. Cl.³ G01N 27/00

U.S. Cl. 324—71 R

25 Claims

1. A method of analyzing seed characteristics comprising:
- placing a plurality of seeds one each into a plurality of cells in a tray;
 - filling the cells with a deionized liquid;

- allowing the seeds to imbibe the liquid and produce an exudate; and



- sequentially measuring the conductivity of each of the seed exudates thereby providing an indication of the seed characteristic under analysis.

4,230,984

METHOD AND APPARATUS FOR DRIVING AN AIR CORE GAGE

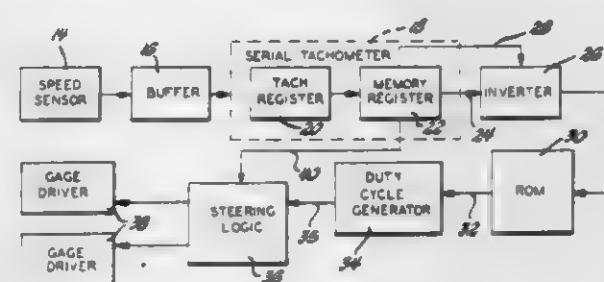
David W. Taylor, Grand Bland, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1979, Ser. No. 22,822

Int. Cl.³ G01R 15/08

U.S. Cl. 324—115

4 Claims



4. Apparatus for driving a gage to indicate a value proportional to the magnitude of an input quantity wherein the gage has first and second coils in quadrature to establish a resultant magnetic field and a pointer angularly positioned by the resultant field, comprising

- a circuit responsive to the input quantity to generate a binary number proportional to the magnitude of the quantity, the binary number comprising a set of most significant bits changing in value stepwise as the said magnitude increases and a set of least significant bits changing in a repetitive pattern as the said magnitude increases,
- a memory addressed by the set of least significant bits for storing a table of numbers representing the tangent of an angle represented by the set of least significant bits to provide a binary output,
- a circuit responsive to the binary output for producing a varying signal proportional to the tangent of the angle represented by the set of least significant bits,
- and a steering logic and drive circuit controlled by the varying signal and by the set of most significant bits for producing a variable drive current proportional to the varying signal and a reference drive current equal to the maximum value of the variable drive current, and for selectively applying the two drive currents to the two coils respectively and for controlling the polarity thereof to establish a resultant magnetic field in a direction to position the pointer according to the magnitude of the input quantity.

4,230,985

FIXTURING SYSTEM

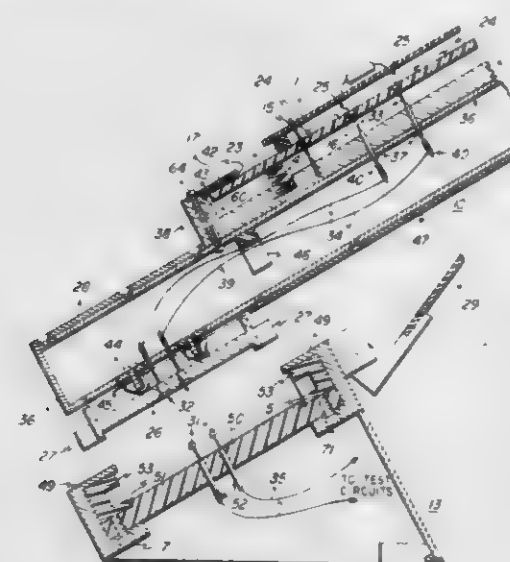
John L. Matrone, Gunderland, and Robert D. Roberts, Colonie, both of N.Y., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Jan. 12, 1978, Ser. No. 868,822

Int. Cl.³ G01R 31/02, 15/12

U.S. Cl. 324—158 F

20 Claims



1. A fixturing system for making electrical connections between selected points on a product and an electrical apparatus comprised of:

- a product access unit adapted to mate with a receiver and having a field of probes for contacting the selected points, and also having a field of posts electrically connected to the probes, the field of posts being disposed laterally outboard from the field of probes such that all the electrical connections are externally accessible during use and operation of the fixturing system;
- a receiver having a field of probes connected to the apparatus and adapted to make electrical contact with the posts when the receiver is mated with the product access unit; and
- means for mating the product access unit with the receiver, said mating means including

- at least one mating guide connected to the product access unit,
- a track slidably mounted on the receiver and having at least one mating slot therein for receiving the guide and a camming surface communicating with each slot for engaging the guide and drawing it into the receiver as the track is slid, and
- means for sliding the track on the receiver.

4,230,986

APPARATUS FOR FACILITATING THE SERVICING OF PRINTED CIRCUIT BOARDS

Richard A. Deaver, Ralph C. Eifort, and John A. Nagel, all of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio
Filed Dec. 18, 1978, Ser. No. 970,768

Int. Cl.³ G01R 31/22

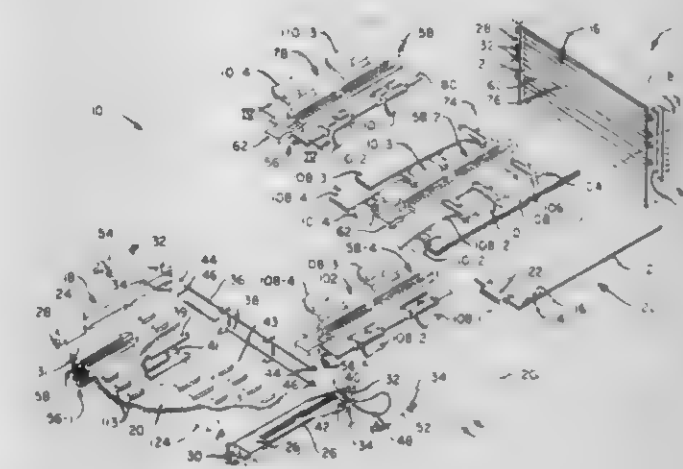
U.S. Cl. 324—158 F

9 Claims

1. In a device having a support structure and a plurality of circuit boards slidably mounted in spaced parallel relationship therein; at least some of said circuit boards forming a group which are electrically intercoupled by means comprising a first member on one side of a said circuit board in said group and a second member located on the opposite side thereof, whereby the first member on said one side of one of said circuit boards is brought into coupling relationship with a said second member of a first adjacent said circuit board in said group and the second member located on said opposite side of said one of said circuit boards is brought into coupling relationship with a said first member on a second adjacent said circuit board in said

group as said one of said circuit boards in said group is moved into said support structure; the improvement comprising:

- means for supporting one of said circuit boards from said group (hereinafter referred to as the board under test) after it is removed from its space within said support structure;
- a coupling means having a said first member on one side thereof and a said second member located on the opposite side thereof whereby the first member of said coupling means is brought into coupling relationship with the second member of said first adjacent circuit board and the second member on said coupling means is brought into coupling relationship with the first member on said second adjacent circuit board as said coupling means is moved into said space from which said board under test is removed;
- first means for electrically coupling said first member on said coupling means with said first member on said board under test, and
- second means for electrically coupling said second member on said coupling means with said second member on said board under test whereby said board under test is operatively coupled to said first and second adjacent circuit



boards to facilitate testing, servicing and the like on said board under test.

9. A means for supporting a planar member adjacent to a support structure comprising:
- first and second support members with said first and second support members each having a recess therein to receive an opposed edge of said planar member;
 - each said first and second support members having first, second, third and fourth holes in one end thereof, with said third and fourth holes being aligned to at least partially intersect said first and second holes, respectively;
 - first and second rods, with each said rod having an annular recess formed near each end thereof;
 - first and second locking pins for each said support member to pass through the associated said third and fourth holes, respectively, to engage the associated said annular recesses of said first and second rods, respectively, when the ends of said first and second rods are inserted in the associated first and second holes, respectively, to thereby maintain said first and second support members in spaced parallel relationship and to also support said opposed edges of said planar member in said recesses; and
 - means for securing said supporting means to said support structure.

4,230,987

DIGITAL EDDY CURRENT APPARATUS FOR GENERATING METALLURGICAL SIGNATURES AND MONITORING METALLURGICAL CONTENTS OF AN ELECTRICALLY CONDUCTIVE MATERIAL

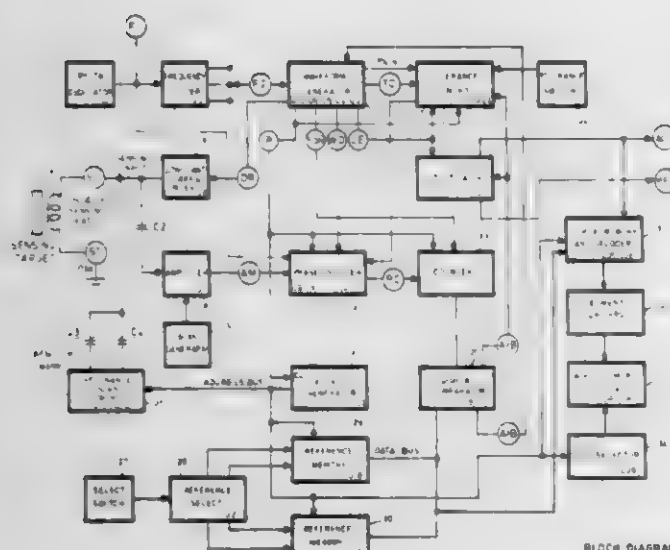
George Mordwinkin, Scottsdale, Pa., assignor to Sensor Corporation, Scottsdale, Pa.

Filed Feb. 26, 1979, Ser. No. 15,061

Int. Cl.³ G01N 27/72; G01R 33/12

U.S. Cl. 324-236

9 Claims



1. Digital eddy current apparatus for identifying specimens of electrically conductive material of unknown composition comprising:

- Driving means supplying a square wave which is used as reference;
- Sensing means coupled to the driving means comprising an inductance, the impedance of which varies depending on eddy current characteristics of the specimen magnetically coupled thereto, and a capacitance connected with the inductance;
- Scanning means for varying the value of said capacitance in steps over a range including the value which resonates with said inductance magnetically coupled to a specimen at the frequency of the driving means square wave and produces a voltage waveform thereacross which is in phase with the square wave, said range also including values of capacitance larger and smaller than the resonating value which produce voltage waveforms out of phase with the square wave;
- Converting means coupled to the sensing means converting the voltage waveforms across the inductance corresponding to said values of capacitance connected therewith into rectangular pulse outputs, the rectangular pulse output corresponding to the resonating capacitance being positioned in the center of one-half the square wave, the rectangular pulses corresponding to other values of capacitance being offset from the center of one-half the square wave, said offsets being a function of the phase shift of the voltage waveforms; and
- Means coupled with the converting means for monitoring the successive values of capacitance and the offsets of the waveforms corresponding to the respective capacitance values so as to provide a capacitance-offset relation which is a function of the metallurgical characteristics of the specimen.

4,230,988

RESISTANCE NEUTRALIZING SYSTEM FOR ELECTROCHEMICAL DEVICES

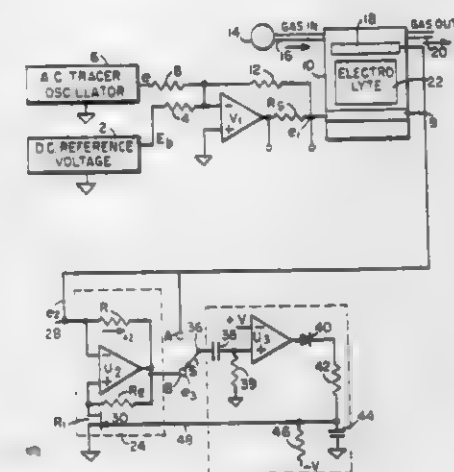
Raymond B. Stelling, Needham, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 7, 1978, Ser. No. 940,427

Int. Cl.² G01N 27/42

U.S. Cl. 324-439

14 Claims



1. Apparatus for measuring the concentration of a gas, comprising

an electrochemical cell having first and second electrodes and arranged to contain an electrolyte between said electrodes, said cell having resistance associated with each of its electrodes and its electrolyte when the electrolyte is present in the cell and capacitance between each electrode and the electrolyte when the electrolyte is present in the cell,

a source of direct current potential, means providing negative resistance, means connecting said cell, said source of direct current potential and said means for producing negative resistance in a circuit, and means for measuring direct current flowing in said circuit.

4,230,989

COMMUNICATIONS SYSTEM WITH REPEATER STATIONS

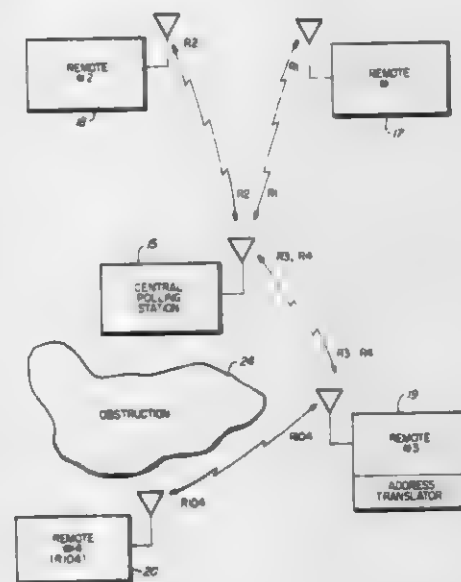
William B. Buehrie, Phoenix, Ariz., assignor to Engineered Systems, Inc., Tempe, Ariz.

Filed May 11, 1979, Ser. No. 37,657

Int. Cl.² H04B 7/14

U.S. Cl. 375-4

8 Claims



1. A radio communications system including a central station and at least first and second remote stations, said central

station transmitting messages each preceded by a unique address to said first and second remote stations, said system including in combination:

first and second remote stations; said first remote station having receiving means for receiving messages from said central station and including means for decoding a first unique address for operating utilization means at said first remote station in response to receipt and decoding of such first address, said first station also having means for decoding a second unique address for said second remote station and translating said second address to a new address for said second remote station, said first remote station including means for transmitting said new address followed by messages received by said first remote station and originally preceded by said second address to said second remote station; and means for causing said second remote station to be responsive to said new address for operating utilization means to said second remote station and for rendering said second remote station nonresponsive to said second address transmitted from said central station.

4,230,990

BROADCAST PROGRAM IDENTIFICATION METHOD AND SYSTEM

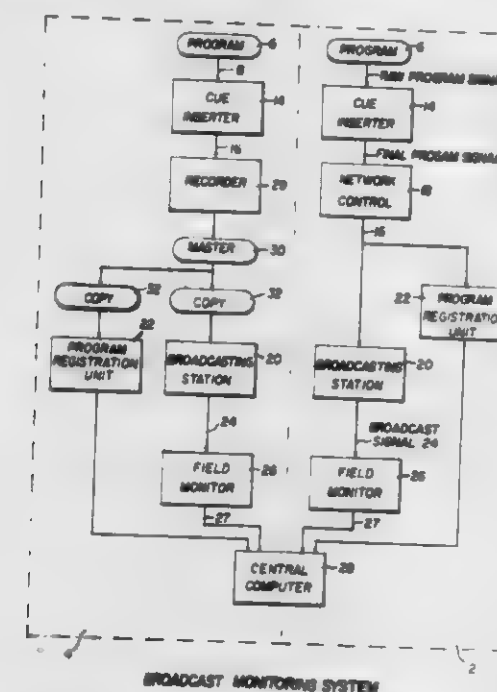
John G. Lert, Jr.; Peter W. Lert, both of 9549 La Jolla Shores Dr., La Jolla, Calif. 92037, and John F. Cornelius, 1828 Dora Dr., Cardiff by the Sea, Calif. 92007

Filed Mar. 16, 1979, Ser. No. 21,567

Int. Cl.² H04B 1/00, 1/06; H04N 7/00; G06K 9/00

U.S. Cl. 455-67

67 Claims



1. The method of identifying certain programs transmitted by a broadcasting station, wherein at least one predetermined and readily identifiable signalling event occurs in conjunction with the broadcast of ones of said programs, said method comprising the steps of:

generating a digital reference feature set from ones of said programs by a transformation of at least one segment of a said program's analog signal content, said segment beginning at a predetermined time with reference to one of said signalling events and being of a predetermined duration; identifying by a label code the program from which each said reference feature set was derived; storing a set of said reference feature sets and said associated program label codes in a memory; detecting said signalling events within the broadcast signal of said broadcasting station; generating a digital broadcast feature set from ones of said programs broadcast by said broadcasting station, said broadcast feature set being generated by said transformation of at least one segment of the analog broadcast signal

content, said segment beginning at a predetermined time with reference to one of said signalling events and being of a predetermined duration; comparing at least one said broadcast feature set to at least one said reference feature set to produce a recognition output when the degree of similarity between a broadcast feature set and a reference feature set meets a predetermined standard, the broadcast program from which said broadcast feature set was derived being identified by the program label code associated with said reference feature set.

4,230,991

DIGITAL FREQUENCY PROCESS AND METHOD USING FREQUENCY SHIFTING TECHNIQUES, ESPECIALLY FOR LOW FREQUENCY MEASUREMENTS

Alexandre Paphitis, Rua Djalma Ulrich 57, Apt. 1006, Copacabana, 20,000 Rio de Janeiro ZC-37, Brazil

Filed Sep. 11, 1978, Ser. No. 941,495

Int. Cl.³ H04B 1/02

U.S. Cl. 328-140

22 Claims

1. Digital frequency processing method comprising the steps of:

- providing a first train of pulses having a first frequency f_1 ;
- dividing said first train of pulses into a plurality of x second trains of pulses;
- counting n pulses of a second frequency f_2 for each pulse of each second train of pulses; and
- providing an output related to the total number of pulses of said second frequency which have been counted during a time base, said first and second frequencies obeying the following condition:

$$nf_1 \geq f_2 \geq (n/x)f_1$$

4,230,992

REMOTE CONTROL SYSTEM FOR TRAFFIC SIGNAL CONTROL SYSTEM

John A. Munkberg, Forest Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 803,037, Jun. 3, 1977, Pat. No. 4,162,477.

This application May 4, 1979, Ser. No. 36,067

Int. Cl.³ H03K 5/153

U.S. Cl. 328-140

3 Claims

1. A signal discriminating circuit for providing a control signal only in response to a consecutive predetermined number of input signals presented at a predetermined frequency, the circuit including

a digital delay circuit; a coincidence circuit; an input synchronizing circuit portion for receiving the input signals and having its output operatively connected to the input of said delay circuit and to an input of said coincidence circuit, said delay circuit having its output

a source of potential defined between a point of supply potential and a point of reference potential; means, including a first source of charging current coupled between a first end of said first and second charging capacitance means and said point of supply potential and a connection between a second end of said charging capacitance means and said point of reference potential, for forming a ramp voltage across said first and second capacitance means;

voltage division means comprising first and second end terminals and having a tap therebetween, said first end terminal connected to said point of supply potential; first coupling means coupled between said first end of said first and second charging capacitance means and said second end terminal of said voltage division means, for coupling said voltage division means in parallel with said first source of charging current; and second coupling means for coupling said tap to said juncture of said first and second serially coupled capacitance means for applying a second charging current to said juncture in response to the voltage at said tap; voltage sensing means coupled to said first end of said capacitance means for generating a control signal when said ramp voltage reaches a predetermined level; and constant current discharge means coupled between said first end of said capacitance means and said point of reference potential and responsive to said control signal for providing a constant current discharge path for said capacitance means.

4,230,999

OSCILLATOR INCORPORATING NEGATIVE IMPEDANCE NETWORK HAVING CURRENT MIRROR AMPLIFIER

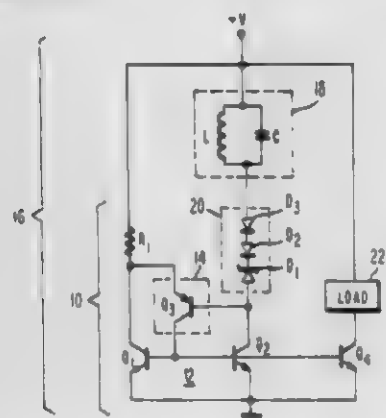
Adel A. A. Ahmed, Clinton Twp., Huntardon, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,601

Int. Cl.³ H03B 7/06

U.S. Cl. 331—115

8 Claims



1. In a negative impedance network of the type which includes a current mirror amplifier having bipolar master and slave path transistors of a first conductivity type in master and slave paths, respectively, the improvement comprising:

bias means for applying current through a path independent of both the master and slave paths to an interconnection of the control electrodes of the master and slave path transistors in inverse proportion to the voltage impressed across the slave path for making the current supplied by the slave path vary inversely to the voltage thereacross and thereby derive the negative impedance through the slave path, including

a bipolar bias means transistor of a second conductivity type complementary to the first, said bias means transistor having an emitter electrode to which the collector electrode of said master path transistor is direct coupled, a collector electrode connected to the interconnection of the control electrodes of the master and slave path transistors to apply the bias current thereto, and having a bias

electrode to which the voltage applied across the slave path is impressed; the master and slave path transistors having their emitter electrodes commonly connected to a reference voltage level,

a supply voltage level being applied through a resistance to the collector electrode of the master path transistor; an intermediate voltage level between said supply voltage level and said reference voltage level being applied to both the base electrode of said bias means transistor and the collector electrode of the slave path transistor; and said intermediate voltage level being applied through a tuned inductance-capacitance circuit having an equivalent dynamic resistance, the negative impedance of the network being derived as the change in said intermediate voltage level divided by the change resulting therefrom in the level of current flow through the slave path and having a magnitude of at least the magnitude of said equivalent dynamic resistance to thereby result in oscillatory current flow through the slave path at the resonant frequency of said tuned circuit.

4,231,000

ANTENNA FEED SYSTEM FOR DOUBLE POLARIZATION

Eberhard Schuegraf, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

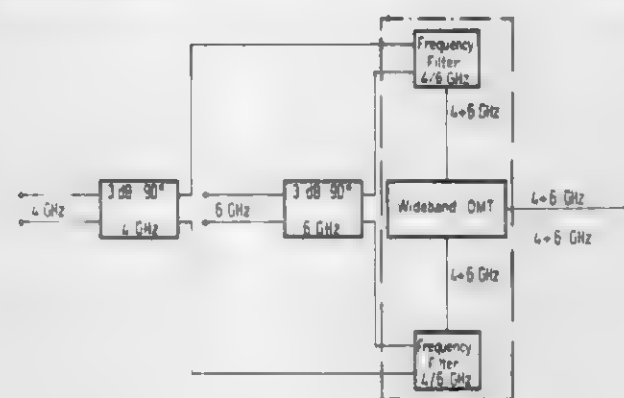
Filed Apr. 10, 1978, Ser. No. 895,122

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1977, 2719283

Int. Cl.² H01P 5/18, 5/12

U.S. Cl. 333—109

20 Claims



1. Antenna feed system for double polarization in two high-frequency bands of different frequency position, consisting of a polarization shunt with a connecting flange in common on the antenna side for both frequency bands and two directional connections respectively allocated to one polarization direction for a respective frequency shunt whose connection in common for said two frequency bands is respectively connected to one of said directional connections of said polarization shunt, consisting of a first three decibel directional coupler for the lower frequency band whose double axis is respectively connected to one further connection of both frequency shunts allocated to the lower frequency band, and consisting of a three decibel directional coupler for said upper frequency band which is respectively connected to one further connection of the frequency shunts allocated to said upper frequency band, characterized in that the polarization shunt is constructed phase-symmetrical with respect to its pass-through paths, in that the directional connections of said polarization shunt are connected directly to the frequency shunts or respectively are connected via two 45° twisted pieces of different twisting direction which are precisely constructionally symmetrical, and in that the connecting lines between said frequency shunts and said three decibel directional couplers for respectively two frequency bands of the same frequency ranges, said frequency bands existing in dual polarization directions, are constructed

at the respectively same line location as phase-symmetrical line pairs with connection elements which coincide by pairs.

4,231,001

CONSTANT RESISTANCE COUPLING NETWORK

Ronald Hutchinson, Galleywood, England, assignor to The Marconi Company Limited, Chelmsford, England

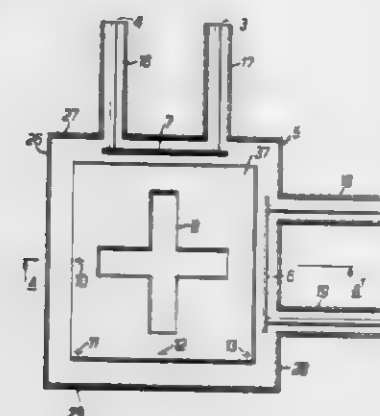
Filed Mar. 12, 1979, Ser. No. 19,924

Claims priority, application United Kingdom, Apr. 11, 1978, 14688/78

Int. Cl.³ H01P 5/18, 1/213

U.S. Cl. 333—110

12 Claims



1. A constant resistance electrical network including a resonator plate mounted within a cavity and two coupling loops arranged as transmission lines exhibiting the same characteristic resistance as each other, each loop being mounted adjacent to the resonator plate and the wall of the cavity so as to be electrically insulated from each with the two ends of each loop passing through the wall and being connected to the center conductor of an input and an output coaxial line respectively, each coaxial line having said characteristic resistance and each output coaxial line being terminated by the characteristic resistance and with the plane of each loop being parallel to the resonator plate whereby when energy is applied to one input coaxial line none is reflected thereby, and the energy is shared between the two output coaxial lines in dependence on the frequency of the energy in relation to the resonant frequency of the plate.

4,231,002

TRANSVERSAL FILTER HAVING PARALLEL INPUTS

Karl Knauer, Kirchseeon, and Hans-Joerg Pfeleiderer, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

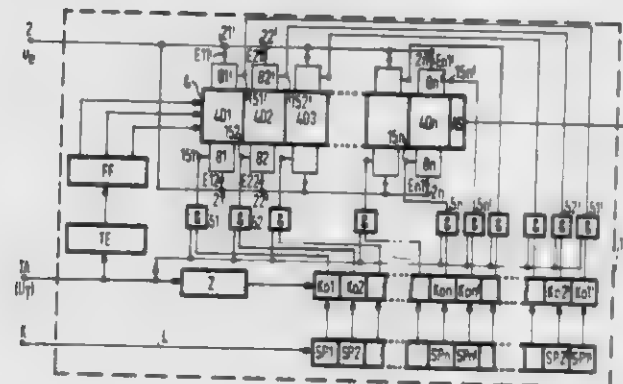
Filed Mar. 5, 1979, Ser. No. 17,242

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2814053

Int. Cl.² H03H 7/28, 7/10; H03K 5/156; G11C 19/28

U.S. Cl. 333—165

12 Claims



1. In a transversal filter of the type in which an analog charge transfer device shift register is integrated on a doped semiconductor substrate and includes a plurality of stages

which have parallel inputs for receiving an input signal and a plurality of evaluation circuits connected thereto, each evaluation circuit including an area doped opposite to the substrate, first and second input gates and a transfer gate immediately adjacent the transfer channel of the charge transfer device shift register, one of the input gates connected to an input signal, the other input gate connected to a constant voltage and the oppositely doped area and the transfer gate respectively connected to receive first and second clock pulses from a clock, and in which the charge transfer device shift register includes an output, in combination therewith, the improvement comprising:

a counter connected to receive and operated by clock pulses from the clock, and including a plurality of outputs; a plurality of comparators each including first and second inputs and an output, the first inputs connected to said counter; a plurality of gate circuits connected to the evaluation circuits; and a plurality of memories operable to provide a plurality of output signals at a plurality of outputs connected to respective inputs of said comparators, said outputs of said comparators connected to said gate circuits for causing blocking the evaluation circuits to one of the clock pulses as a function of the respective comparison results between said counter output signals and said memory output signals.

4,231,003

SHIELD-TYPE COAXIAL VACUUM FEEDTHROUGH

Hajime Ishimaru, Ibaraki, Japan, assignor to The Director-General of National Laboratory for High Energy Physics, Ibaraki, Japan

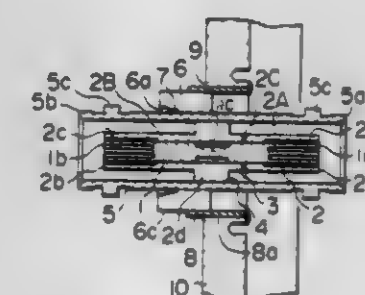
Filed Dec. 20, 1978, Ser. No. 971,340

Claims priority, application Japan, Dec. 21, 1977, 52-153866

Int. Cl.³ H01P 1/04, 5/00

U.S. Cl. 333—33

4 Claims



1. A shield-type coaxial vacuum feedthrough comprising a pin of metal round bar, a first ceramic cylinder enclosing the metal pin, a first metal cylinder enclosing the first ceramic cylinder, a second ceramic cylinder enclosing the first metal cylinder, and a second metal cylinder enclosing the second ceramic cylinder, the first ceramic cylinder air-tightly fixing to the metal pin at a first fixing point and to the first metal cylinder at a second fixing point axially departing from the first fixing point, the second ceramic cylinder air-tightly fixing to the first metal cylinder at a third fixing point axially departing

from the first and second fixing points and to the second metal cylinder at a fourth fixing point axially departing from the first, second and third fixing points, wherein the first ceramic cylinder has a larger-diameter part fixing to the first metal cylinder and the metal pin has a smaller-diameter part in a position corresponding thereto so that the characteristic impedance of the area corresponding to the larger-diameter part is matched with the characteristic impedance of the adjacent area.

4,231,005
CONSTANT FALSE ALARM RATE RADAR SYSTEM AND METHOD OF OPERATING THE SAME

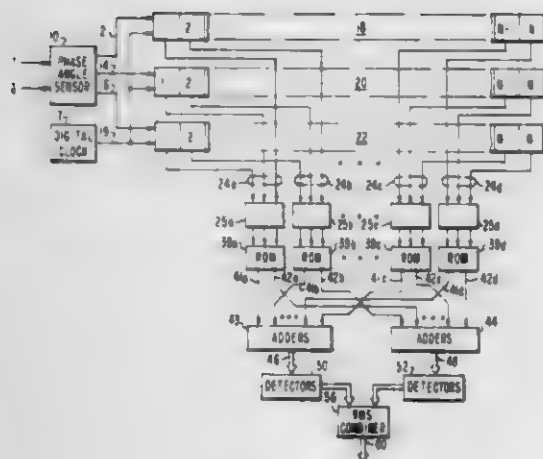
John W. Taylor, Jr., Baltimore City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 9, 1979, Ser. No. 55,889

Int. Cl.³ G01S 13/02

U.S. Cl. 343—5 NQ

32 Claims

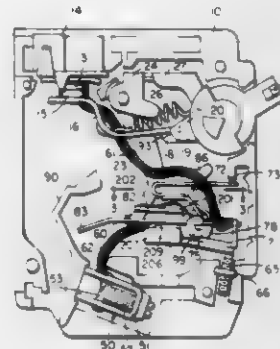


13. A phase angle sensor for use in a constant false alarm rate (CFAR) type radar receiver which derives the in-phase (I) and quadrature (Q) components of received radar echo signals with respect to a local reference oscillator, said sensor comprising: means for measuring the phase angle of the vector of the received echo signal as one of four phase angle quadrants, segmented from the phase angle interval of 0° to 360° with respect to the local reference oscillator, based on the relative polarity of the I and Q components; and means for further measuring the phase angle of the vector of the echo signal as one of the two octants of the phase angle quadrant into which the vector of the echo signal is resolved in accordance with a function based on the relationships of the I and Q echo vector components.

4,231,006
CIRCUIT BREAKER HAVING A THERMALLY RESPONSIVE LATCHING MEMBER
Harold E. Belttary, Rio Piedras, P.R., assignor to Sylvania Circuit Breaker Corporation, Canovanas, P.R.
Filed Mar. 26, 1979, Ser. No. 23,800
Int. Cl.³ H01H 73/48

U.S. Cl. 335—36

4 Claims



1. A circuit breaker including in combination a housing of insulating material;
 - a fixed contact mounted in said housing;
 - a movable handle mounted in said housing;
 - a contact carrier with a movable contact thereon and pivotally engaging said handle at a pivot point;
 - a trip arm pivotally mounted in said housing;
 - an overcenter spring connected between said contact carrier and said trip arm urging said contact carrier against said handle;
 - said handle, contact carrier, and overcenter spring forming an overcenter arrangement for closing said contacts when the spring is on one side of said pivot point and for opening said contacts when the spring is on the other side of said pivot point;
 - a load terminal mounted in said housing;
 - a thermally responsive latching member connected in circuit between said load terminal and said movable contact, said latching member having a locating hole therewithin;
 - an armature;
 - an armature spring affixed to said armature and having a free end provided with an annular boss adapted to fit within said locating hole;
 - a mounting member holding the thermally responsive latching member at a portion thereof adjacent to one end;
 - said mounting member being pivotally mounted in said housing at a pivotal connection;
 - a U-shaped field piece affixed to said mounting member with legs of said piece extending at both sides and toward said thermally responsive latching member and facing said armature;
 - a support member mounted in said housing and bearing against said field piece; and
 - a mounting spring bearing against the housing and urging said field piece against said support member whereby said pivotal connection, said support member, said field piece, and said mounting member in combination hold the portion of the thermally responsive latching member adjacent said one end fixed with respect to the housing, said thermally responsive latching mechanism being rotatable about the pivotal connection against the urging of said mounting spring;

said thermally responsive latching member having a latching surface adjacent the opposite end thereof engaging said trip arm and maintaining said trip arm in a set position when said contacts are closed, with said overcenter spring urging said trip arm toward a tripped position;

said thermally responsive latching member bending in response to a predetermined current condition to move said opposite end of the thermally responsive latching member and disengage said latching surface from said trip arm releasing said trip arm for movement to the tripped position;

said U-shaped field piece being adapted to intercept lines of flux of a magnetic field created by a predetermined amount of current flowing through said thermally responsive latching member to attract said armature against said latching member to rotate said latching member thereby disengaging said latching surface from said trip arm, releasing said trip arm for movement to said tripped position; and

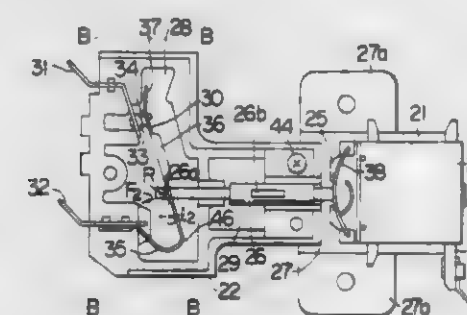
movement of the trip arm to the tripped position moving the overcenter spring to the other side of said pivot point causing said contacts to open.

4,231,007
HIGH VOLTAGE SWITCH FOR COOKING APPARATUS
Junzo Tanaka, Fujieda, and Chikao Urashima, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 782,166, Mar. 28, 1977, abandoned.
This application Dec. 22, 1978, Ser. No. 972,498
Claims priority, application Japan, Mar. 31, 1976, 51-36428; Sep. 25, 1976, 51-115303

Int. Cl.³ H01H 51/08

U.S. Cl. 335—131

12 Claims



1. A high voltage switch comprising:
 - a contact making and breaking chamber made of insulative material for accommodating a conducting movable member carrying a movable contact for switching a high voltage and a stationary contact member carrying a stationary contact, said conducting movable member being made of a resilient material having at one end a U-shaped hinge portion and having at the other end said movable contact, said one end of said conducting movable member having the U-shaped portion being fixed to a wall of said contact making and breaking chamber thereby to maintain normally closed said movable and said stationary contacts by a resilient force exerted by the U-shaped hinge portion;
 - an electromagnet device having a movable armature pivotally supported at one end thereof by a yoke;
 - an elongated slider made of insulative material and having one end coupled to a free end of said movable armature and having the other end coupled to said conducting movable member for transmitting a driving force of said electromagnetic device to said conducting movable member;
 - a slider guide chamber made of insulative material for guiding said elongated insulative slider and for insulatively isolating said contact making and breaking chamber from said electromagnet device, said slider guide chamber having apertures formed in opposite walls for slidably guiding therethrough said elongated insulative slider and

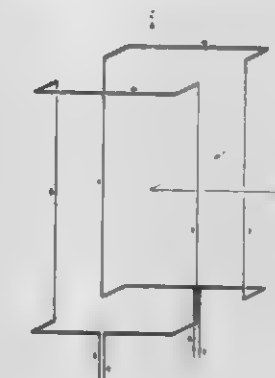
for enclosing substantially the entire length of said elongated insulative slider in a dust-proof manner.

4,231,008
COIL FOR THE PRODUCTION OF HOMOGENEOUS MAGNETIC FIELDS
Gottfried J. Krueger, Reno di Leggiano, Italy, assignor to European Atomic Energy Community, Luxembourg
Filed Nov. 29, 1978, Ser. No. 964,640
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755357

Int. Cl.³ H01F 7/06, 7/22

U.S. Cl. 335—209

6 Claims



1. A coil for the production of a magnetic field, the coil comprising 2n turns, n being a positive integer greater than unity, said coil having n sets of coil sides, each set being disposed parallel to a common axis and the coils in each set being disposed symmetrically with respect to two orthogonal axes at right angles to said common axis, and wherein the distance R_μ of the coil sides to said common axis and the angle ϕ_μ between an axis (x) of the two axes and a notional line joining the common axis to the coil side in the first quadrant of the coordinate system defined by said two axes are such that n equations are satisfied for equal currents through every coil side, each of said equations being of the form

$$\sum_{\mu=1}^n \cos(2r+1)\phi_\mu/R_\mu(2r+1) = 0$$

where r is a positive integer, which for the respective n equations, has the values 1, 2, 3 . . . n.

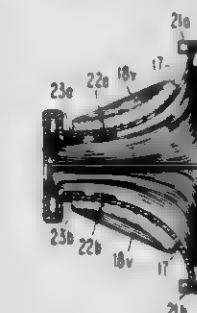
4,231,009
DEFLECTION YOKE WITH A MAGNET FOR REDUCING SENSITIVITY OF CONVERGENCE TO YOKE POSITION
William H. Barkow, Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1978, Ser. No. 938,243

Int. Cl.³ H01F 7/00

U.S. Cl. 335—212

11 Claims



1. A self-converging deflection yoke assembly for use with a wide-angle in-line color television kinescope, comprising: means for producing deflection fields having a nonzero average nonuniformity for substantially converging the

electron beams at all points on the raster, and also having a region about the entrance end of said yoke in which the average field nonuniformity is substantially zero for reducing the effect of yoke positioning relative to said electron beams.

4,231,010

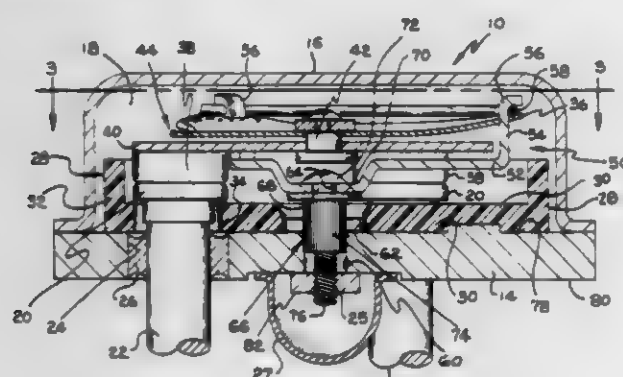
THERMOSTATIC SWITCH EMPLOYING A STUD MEMBER FOR CALIBRATION OF THE SWITCH

Willfred W. Cardin, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1978, Ser. No. 965,447

Int. Cl.³ H01H 61/01

U.S. Cl. 337-94



1. A thermostatic electrical switch comprising fixed contact means; means including a member having a through bore therein supporting the fixed contact means; movable contact means; thermostatic means carrying the movable contact means for moving the movable contact means in response to selected temperature changes; and means mounting the thermostatic means on said member, said mounting means comprising stud means having a portion secured to said thermostatic means, having a portion of selected diameter extending into a selected part of said bore from one side of the member with an interference fit in said part of bore to prevent rotation of the stud means in the bore and to prevent axial movement of the stud means further into the bore from said one side of the member, and having a threaded portion passing through the remainder of said bore to extend from the opposite side of the member, and nut means threadably engaging said threaded portion of the stud means and bearing against said opposite side of the member to prevent axial movement of the stud means in an opposite direction within said bore, thereby to locate the thermostatic means in a selected position spaced from said one side of the member so that the thermostatic means is adapted to move the movable contact means between an open circuit position spaced from the fixed contact means and a closed circuit position engaged with the fixed contact means in response to said selected temperature changes.

4,231,011

DISCONTINUOUS METAL FILM RESISTOR AND STRAIN GAUGES

Robert M. DelVecchio, Vandergrift, and Zvi H. Meiksin, Pittsburgh, both of Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Sep. 24, 1979, Ser. No. 78,486

Int. Cl.³ G01L 1/22

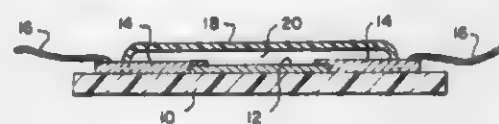
U.S. Cl. 338-2

1. A strain gauge comprising:

a. a substrate composed of nonconductive material,

b. a discontinuous metal film on the substrate,

c. a plurality of electrodes attached to the metal film, and



d. means for maintaining an environment having a constant humidity in the range of 15% to 45% about the discontinuous metal film.

4,231,012

DRUM BRAKE WEAR INDICATOR

Gerard Volan, Velizy, and Jean-Jacques Carre, Montreuil, both of France, assignors to Societe Anonyme DBA, Paris, France

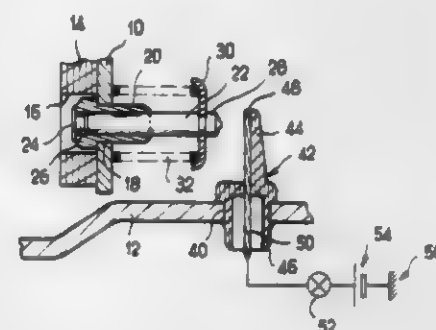
Filed May 31, 1979, Ser. No. 43,986

Claims priority, application France, Jun. 15, 1978, 78 17938

Int. Cl.³ B60T 17/22

U.S. Cl. 340-52 A

12 Claims



1. A drum brake friction lining wear indicator of the kind comprising a plunger slidably mounted in a conductive sleeve inserted into the rim of the segment and comprising a flared head adapted to be worn by contact with the drum surface after a certain amount of wear on the segment lining, a spring pressing the plunger towards means forming an electric contact, against which the free end of the plunger presses when the plunger head is worn and the spring is released and slides the plunger along the sleeve, a plate holding the drum brake and bearing the electric contact means substantially in line with the sleeve at a distance from the end of the sleeve which is less than the length of the sleeve, said electric contact means being formed on a connecting block extending through the plate holding the brake and having a surface comprising at least one electric contact opposite the free end of the plunger inside the sleeve, electric means being provided in that part of the block which projects from the outer surface of the plate.

4,231,013

VEHICLE BRAKE LIGHT ILLUMINATION SYSTEM

William H. Freeman, 765 W. Oak Dr., Glendale, Mo. 63122, and David C. Golden, St. Peters, Mo., assignors to William H. Freeman, Glendale, Mo.

Continuation of Ser. No. 700,015, Jun. 25, 1976, abandoned.

This application Aug. 17, 1978, Ser. No. 934,607

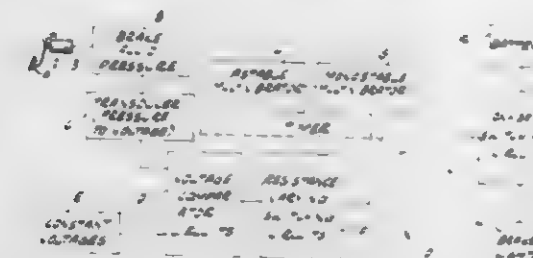
Int. Cl.³ B60Q 1/26, 1/44

U.S. Cl. 340-72

11 Claims

1. An improved brake light illumination system for a vehicle having a force actuated brake control and at least one brake light, the improvement comprising transducer means engaged to said brake control for generating an electrical signal proportionate to the magnitude of force applied to said brake control, and circuit means connecting said transducer means and said at least one light for intermittently energizing said light at a duty cycle providing an intermittent rate dependent upon the magnitude of said electrical signal, said rate being sufficiently great that the human eye cannot detect any pulsation of the light

being emitted from said brake light, thereby steadily illuminating said light at intensity levels which are directly related to the magnitude of force applied to said brake control, said circuit means including a signal modifying circuit responsive to said electrical signal for converting said electrical signal to a



control signal having a multiplicity of discrete steps, and a control circuit responsive to said multiplicity of steps of said control signal for causing said duty cycle of energizing said light to provide a corresponding multiplicity of discrete intensity levels.

4,231,014

PROCESS AND APPARATUS FOR AUTOMATICALLY IDENTIFYING DISCOUNT COUPONS AND THE LIKE BY MEANS OF ELECTRONIC COMPARISON

Vittorio Ponzio, Via Tortora 74, Milan, Italy

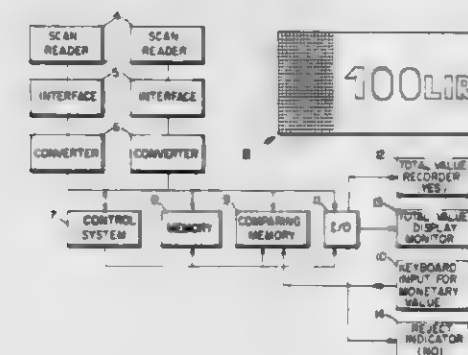
Continuation-in-part of Ser. No. 780,162, Mar. 22, 1977,

abandoned. This application Apr. 17, 1979, Ser. No. 30,910

Int. Cl.² G06K 9/00

U.S. Cl. 340-146.3 Y

11 Claims



1. A process for automatically identifying coupons having zones of different color tones comprising the steps of: (a) introducing a sample word into a comparing memory; (b) scan reading all zones of both surfaces of said coupons; (c) converting and adding signals relating to said zones of different color tones to form a word identifying each of said coupons; (d) comparing said word with said sample word; and (e) obtaining and separating acceptance signals and rejection signals relating to respective accepted and rejected coupons.

4,231,015

MULTIPLE-PROCESSOR DIGITAL COMMUNICATION SYSTEM

Donald C. Union, La Jolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Sep. 28, 1978, Ser. No. 946,566

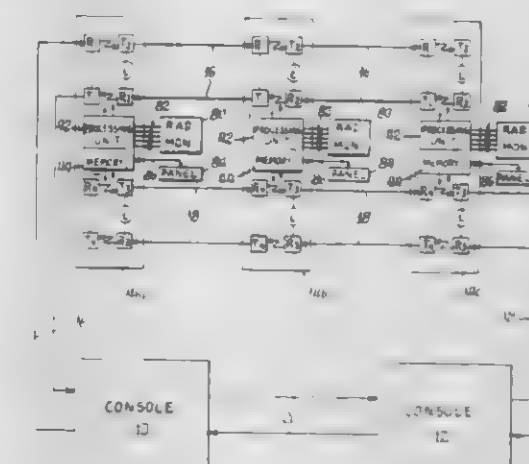
Int. Cl.³ H04Q 9/00; G06F 11/00

U.S. Cl. 340-147 R

1 Claim

1. A system for communicating among two central consoles and a plurality of local controllers, comprising: first and second central consoles for controlling the communication of said system, said consoles selectively issuing command messages to said controllers and for receiving response messages therefrom; a first two line communication path for selectively transmitting messages in both directions, said first path extending

from one central console serially to and being connected to all of said plurality of controllers; a second two line communication path for selectively transmitting messages in both directions, said second path extending from the other console serially to and being connected to all of said plurality of controllers, the controllers being connected nearer to said first console via said first path also being connected relatively farther from said second console via said second path;



an interconnecting communication path interconnecting said consoles;

said first console being capable of communicating with each of said controllers via said first path and via said interconnecting path, said second console and said second path; said second console being capable of communicating with each of said controllers via said second path and via said interconnecting path, said first console and said first path.

4,231,016

INPUT SIGNAL RECOGNITION CIRCUIT

Shigeki Ueda, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

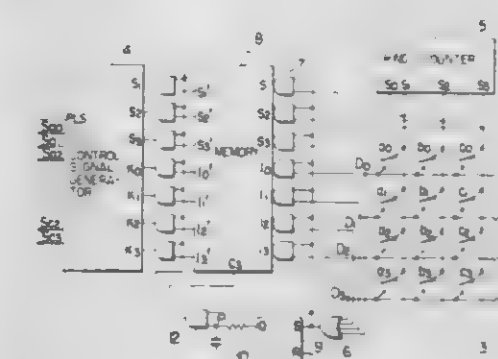
Filed Nov. 27, 1978, Ser. No. 964,054

Claims priority, application Japan, Dec. 2, 1977, 50/145251

Int. Cl.³ H04Q 9/00; G08C 9/00

U.S. Cl. 340-166 R

3 Claims



1. An input signal recognition circuit comprising: an input section having a plurality of switching elements arranged in rows and columns forming an electrical matrix for keying in operation commands; a sense signal generating section for cyclically producing, on a plurality of sense lines respectively connected to the switching elements in a column of said matrix, respective sense signals, the sense signals in each cycle being sequentially produced on said plurality of sense lines to provide a sense signal sequence which successively scans said sense lines; a control section including a memory section for storing row data indicating the activated switching elements in a column of said matrix, said row data being detected by said

control section during the presence of a sense signal on a sense line associated with a column of said matrix, said control section decoding data stored in said memory section and producing an output representing said row data after all sense lines associated with columns of said matrix have been scanned by respective sensing signals in a sense signal cycle, said control section clearing the contents of said memory section and supplying no output representing row data when, in a sense signal cycle, row data is detected from different columns of said matrix.

4,231,017

SWITCHING MATRIX EQUIPMENT HAVING A SERIES CIRCUIT OF RELAY COIL AND SELF-HOLDING DIODE AT EACH CROSSPOINT

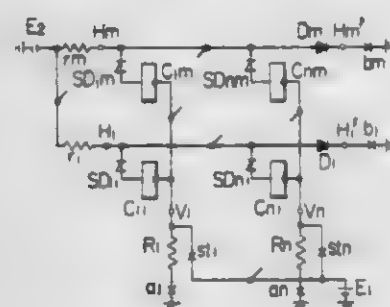
Toshikatsu Kiriya, Fujisawa, and Yoshiro Hasegawa, Kama-kura, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Feb. 22, 1979, Ser. No. 13,832

Claims priority, application Japan, Feb. 22, 1978, 53-18456

Int. Cl.³ H04Q 9/00

U.S. Cl. 340—166 R

6 Claims



1. A switching matrix equipment comprising:

- (a) a relay matrix having series circuits each including at least one relay coil connecting at one end to one end of a self-holding diode with a threshold level and each disposed at each crosspoint;
- (b) a first means with first and second switch groups for designating a row and a column of said relay matrix, in which a crosspoint of said relay matrix is selected by closing a single switch of each of said first and second switch groups and a voltage exceeding the threshold voltage level of the self-holding diode at the selected crosspoint is applied to the diode thereby to fire the same diode;
- (c) a second means with a third switch group for holding the crosspoint selected of said relay matrix, in which the self-holding diode at the crosspoint selected by said first means is fired and then the crosspoint selected is held at a voltage below the threshold voltage level which is applied through a switch of said third switch group correspondingly related to the crosspoint selected.

4,231,018

tone signal detector

Masayuki Imigawa, and Toshihiro Mori, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1977, Ser. No. 854,868

Claims priority, application Japan, Nov. 26, 1976, 51-141860

Int. Cl.³ G01R 23/02; H04Q 9/00

U.S. Cl. 340—171 R

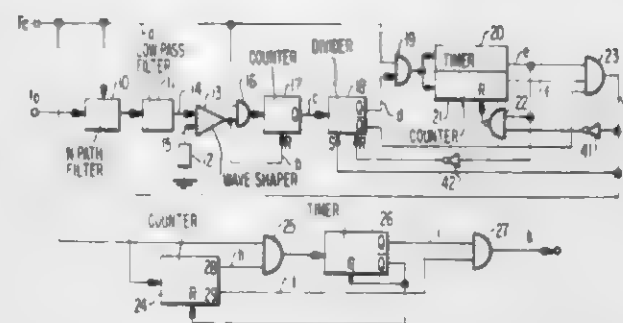
3 Claims

1. A tone signal detector for receiving and detecting tone signals comprising:

- a clock signal generator for generating clock pulses of a frequency equal to N times the frequency of said tone signals, where N is an integer equal to or greater than 2;
- an N-path filter for sampling and selecting said tone signals according to the output signals of said clock signal generator;
- a low-pass filter connected to said N-path filter for eliminat-

ing the component of the frequency of said clock pulses included in the sampled tone signals;

- a wave shaping circuit for shaping the signals having passed said low-pass filter to produce pulses;
- a gate circuit for controlling the passing of said clock pulses in accordance with the output pulses of said wave shaping circuit;



a counter for counting the number of the output pulses of said gate circuit; and means responsive to said clock pulses and the output of said counter for detecting whether or not said tone signals are the designated signals by the count of said counter in a prescribed period of time.

4,231,019

REMOTE CONTROL ARRANGEMENT FOR A MEDICAL APPLIANCE

Klaus M. Junginger, Rastatt, and Hermann Kieferle, Karlsruhe, both of Fed. Rep. of Germany, assignors to Stierlen-Maquet Aktiengesellschaft, Fed. Rep. of Germany

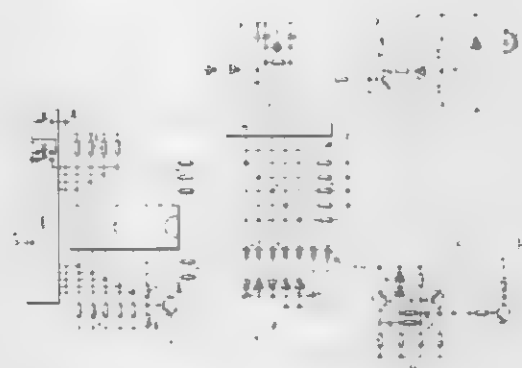
Filed Aug. 23, 1978, Ser. No. 936,065

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738155

Int. Cl.² H04Q 3/00

U.S. Cl. 340—171 R

11 Claims



1. A remote control arrangement for a medical appliance comprising a transmitter and a receiver associated with at least one appliance, said transmitter having a number of feed-in keys corresponding to the number of the functions of the appliance to be controlled, said feed-in keys combined physically to form a feed-in keyboard for feeding-in binary command signals in the 1-of-n code associated with the functions, a frequency generator having a plurality of inputs controllable as to its frequency by the feeding-in of a code word corresponding to the relevant command signal, and switchable on as a function of the presence of a command signal, and a transmission converter fed by the frequency generator and transmitting frequency signals corresponding to the command signals, and an amplifier having a reception converter and means for selective amplification of the frequency signal received and of their reconversion into the command signals, and said frequency generator being constructed to generate a group frequency signal in addition to the frequency signals corresponding to the command signals as a function of the feeding-in of an additional group code word, said transmitter having an impulse

generator which can be set in action as a function of the appearance of a command signal, said impulse generator generating output impulses whereby the group code word can be fed into the frequency generator instead of the code word corresponding to the relevant command signal, and said receiver having a circuit which controls the emission of the command signals as a function of the alternate reception of a frequency signal corresponding to a command signal and of the group frequency signal, said frequency generator being constructed to generate a plurality of additional group frequency signals as a function of the feeding-in of one at a time of a corresponding number of different group code words, said impulse generator having two complementary outputs, and the inputs of said frequency generator being connected each through a diode to an output of the impulse generator so that in a prescribed switching state of the impulse generator the potentials corresponding to the binary values appearing at its outputs are connectable through all the diodes poled in the passage direction with reference to the respective potential in accordance with the respective bits of a prescribed group code word to the inputs of said frequency generator.

4,231,020

DIGITAL TO ANALOG CONVERTER HAVING SEPARATE BIT CONVERTERS

Daniel Azzia, Villeneuve Loubet, and Francois X. Delaporte, Cros de Cagnes, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

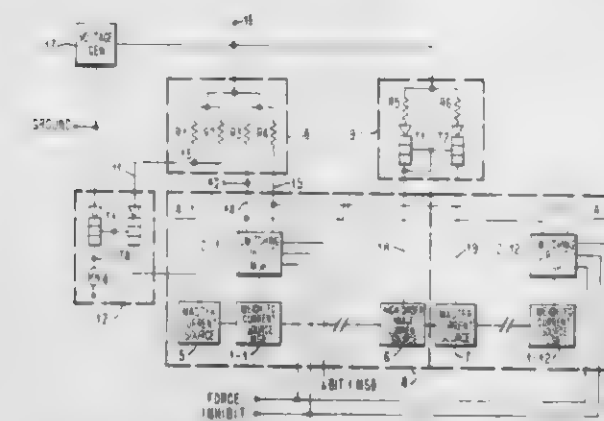
Filed Aug. 29, 1978, Ser. No. 938,273

Claims priority, application France, Sep. 30, 1977, 77 30171

Int. Cl.² H03K 13/02

U.S. Cl. 340—347 DA

4 Claims



1. An improved monolithic D/A converter able to convert N-bit words, of the type including N weighted current sources connected to switching circuits, each switching circuit being controlled by a bit of the word to be converted and steering the current of the associated source either towards an output line or towards a dump line, according to the value of the control bit, wherein the improvement comprises: a first group of weighted current sources of a first type including a high order master current source, n slave current source for generating the high order weighted currents and a slave source which is the image of one of said high order current sources, a second group of weighted current sources of a second type including a low order master current source and m slave sources generating the low order weighted currents, with $N=n+m$, a first group of n switching circuits of a first type connected to said n high order weighted current sources, each switching circuit being provided with an input receiving the current from the source to which it is connected and two outputs, one output being connected to the output line and the second one being connected to the dump line and at least a control input for receiving one bit of the word to be converted, a second group of m switching circuits of a second type connected to the m low order weighted current sources, each switching circuit being provided with an input for receiving the current from the source to which it is connected and two outputs, one output being connected to the output line and the second output being connected to the dump line and at least a control input

receiving one bit of the word to be converted, a reference voltage generator being provided with an output delivering a stabilized voltage, first calibrating means connected between the output terminal of said reference voltage generator and said high order master current source, to provide a first calibrating current in accordance with the reference voltage, to said master source, second calibrating means connected to the output terminal of the reference voltage generator and receiving the current from said image source and providing to said low order master source a second calibrating current, the value of which is established relatively to the value of said image source current with a given multiple of two; said current sources of said first group being comprised of identical cells, each cell including a Darlington circuit of switching and driving transistors, the arrangement, comprising at least a pair of transistors, the switching transistor of each pair having an individually biased base and the driving transistor of the pair having a base connected in common with the corresponding bases of the other driving transistors in the other said cells in said source, the number of said cells in each said source defining the current of said source; and

said current sources of said second group being comprised of a certain number of identical cells, each said cell including a single transistor.

4,231,021

ADDRESS DATA CONVERTER

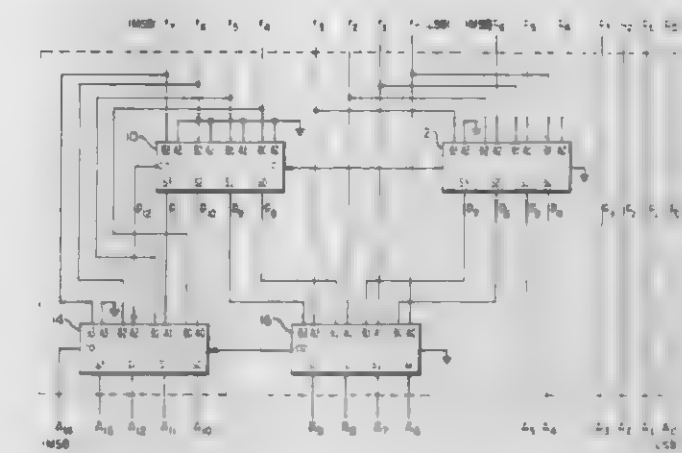
Donald L. Clark, Holliston, and William P. Graves, Westboro, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 1, 1978, Ser. No. 956,554

Int. Cl.² G06F 3/00

U.S. Cl. 340—347 DD

6 Claims



1. An address data converter for converting binary row address information R_A and binary column address information C_A corresponding to data character display locations of a display device having a row/column display field to binary absolute address information, the absolute address information corresponding to each display location being represented by $A = C_A + 2^4 R_A + 2^6 R_A$, where C_A has a value between 0 and 79, said data converter comprising:

first circuit means operative to receive the binary row information R_A and the binary column information C_A corresponding to each character display location of the display field of the display device and in response thereto to produce binary partial summation information representing a binary summation of two of the three expressions in $A = C_A + 2^4 R_A + 2^6 R_A$; and second circuit means coupled to the first circuit means and operative to receive the binary partial summation information produced by the first circuit means and the binary row information R_A and in response thereto to produce absolute address information representing a binary summation of the partial summation information and the remaining expression in $A = C_A + 2^4 R_A + 2^6 R_A$.

4,231,022

INTERPOLATIVE PCM DECODER UTILIZED FOR μ -LAW AND A-LAW

Hiroshi Kosugi, Yokohama; Hirofumi Inoue, Ichikawa, and Hirotsu Shirasu, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

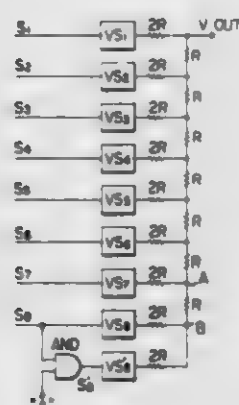
Filed Dec. 15, 1978, Ser. No. 969,841

Claims priority, application Japan, Jan. 6, 1978, 53-215

Int. Cl.³ H03K 13/02

U.S. Cl. 340-347 DA

3 Claims



1. In an interpolative PCM decoder having holding means for holding a polarity bit signal, segment selection bit signals and uniform quantization bit signals for one sampling period, means for receiving uniform quantization bit signals from the holding means and expanding the bit signals into a group of 1-bit signals on a time axis, means for adding the signals from the expansion means and the segment selection bit signals, a digital-to-analog converter which generates an analog value of a lower end of each segment, and a logic circuit for the μ -law which receives an output of the addition means and which delivers a selection signal for generating the analog value to cause the output of the digital-to-analog converter to be switched from the lower boundary value of a given segment to the lower boundary value of the next higher segment as a function of time within one sampling period, said interpolative PCM decoder further comprising an AND circuit which receives the selection signal for selecting a minimum unit of the analog value of the lower end of the segment and a control signal for change-over between the μ -law and the A-law, and means for generating the same analog value as the minimum unit of the first-mentioned analog value in accordance with an output of said AND circuit.

4,231,023

BINARY TO TERNARY CONVERTER

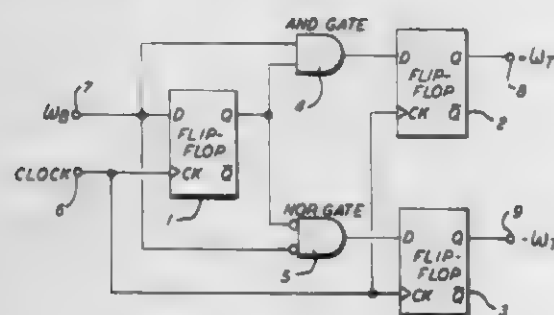
Richard C. Warner, Morris Plains, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Mar. 12, 1979, Ser. No. 19,991

Int. Cl.³ H03K 13/24

U.S. Cl. 340-347 DD

3 Claims



1. A circuit for translating ternary data being transmitted in serial binary code on one input line into ternary data coded for binary transmission on two output lines, the input data signaling a first ternary state by means of a signal alternating at an established rate for at least one cycle, a second ternary state by

the presence of a signal at a first level for the period of at least one cycle, and a third ternary state by the presence of a signal at a second level for the period of at least one cycle, including

- first means for storing the present state of the input signal during each half cycle and providing said state as an output;
- first logic means having as inputs the output of said means for storing and said input signal and providing an output when both are at said first level;
- second logic means having as inputs the output of said means for storing and said input signal and providing an output when both are at said second level;
- second means for storing the state of the output of said first logic means and providing said state as an output;
- third means for storing the state of the output of said second logic means and providing said state as an output;
- a clock developing a clock signal occurring each half cycle synchronously with said input signal, each of said first, second and third means for storing responsive to said clock signal to store the state at their respective inputs and provide said states at their outputs, whereby, when said input signal remains at said first level for two half cycles, an output will be provided from said second means, when said input signal is at said second level for two half cycles, said third means for storing will provide an output and when said signal alternates between said first and second levels over a cycle, neither of said second and third means for storing will provide an output.

4,231,024

DEVICE FOR A DIGITAL ARITHMETIC PROCESSING APPARATUS

Eiichi Munetsugu, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

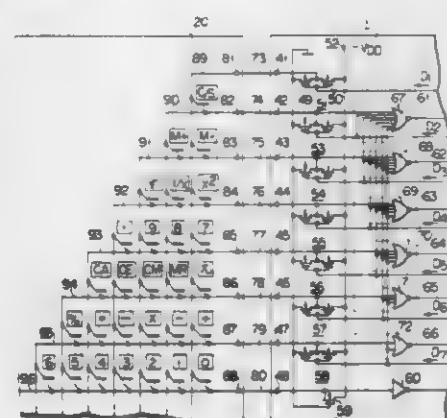
Filed Nov. 12, 1976, Ser. No. 741,504

Claims priority, application Japan, Nov. 14, 1975, 50-136188

Int. Cl.³ G06F 3/02

U.S. Cl. 340-365 S

7 Claims



- A data entry device comprising:
 - a keyboard device having a first keyboard terminal, at least one second keyboard terminal, and a third keyboard terminal;
 - a plurality of keyboard switch means for selectively interconnecting said first, second, and third keyboard terminals;
 - a semiconductor integrated circuit for cyclically providing at least first and second keyboard sampling pulses at different times with respect to each other;
 - a first terminal pin;
 - at least one second terminal pin;
 - a third terminal pin;
 - a first gate circuit through which said first terminal pin receives said first keyboard sampling pulses;
 - a second gate circuit through which said at least one second terminal pin receives said second keyboard sampling pulses;

an output-only lead connecting said first terminal pin and said first keyboard terminal for transmitting said first keyboard sampling pulses from said first terminal pin to said first keyboard terminal;

an output/input lead connecting said at least one second terminal pin with said at least one second keyboard terminal, said output/input lead (1) for transmitting a said first keyboard sampling pulse from said at least one second keyboard terminal to said at least one second terminal pin when a said keyboard switch means is selected to interconnect said first keyboard terminal to said at least one second keyboard terminal during the occurrence of a said first keyboard sampling pulse, and (2) for transmitting said second keyboard sampling pulses from said at least one second terminal pin to said at least one second keyboard terminal;

at least one timing-inhibition circuit having an input terminal connected to a said at least one second terminal pin for generating a key select signal only in response to said transmission of a said first keyboard sampling pulse to said at least one second terminal pin; and

an input-only lead connecting said third keyboard terminal to said third terminal pin for transmitting said first keyboard sampling pulses to said third terminal pin when a said keyboard switch means is selected to interconnect said first keyboard terminal to said third keyboard terminal, and for transmitting said second keyboard sampling pulses to said third terminal pin when a said keyboard switch means is selected to interconnect a said at least one second keyboard terminal to said third keyboard terminal.

4,231,025

LEVEL AND TEMPERATURE READOUT AND ALARM SYSTEM

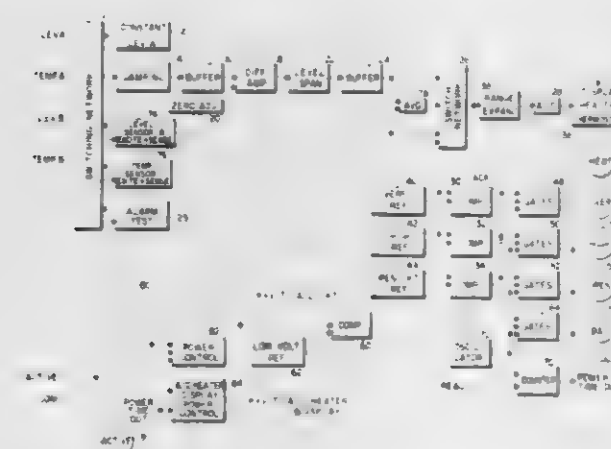
John H. Turner, Jr., Cambridge, Mass., assignor to Metritape, Inc., West Concord, Mass.

Filed Nov. 1, 1979, Ser. No. 90,392

Int. Cl.³ G08B 19/00

U.S. Cl. 340-521

13 Claims



- For use with a resistance level and temperature sensor operative to provide a measure of the level and temperature of a fluent material, a readout and alarm system comprising:
 - a first housing containing:
 - an intrinsically safe first battery source for powering the circuits in the first housing;
 - circuit means for excitation of said resistance level sensor and sensing of sensor signal representing fluent material level;
 - circuit means for excitation of said resistance temperature sensor and sensing of sensor signal representing fluent material temperature;
 - an analog-to-digital converter;
 - switching means for selectively coupling the level sensor voltage or temperature sensor voltage to said converter;
 - a digital display for visually indicating fluent material level or temperature as selected by said switching means;
 - an alarm circuit for providing a level alarm signal upon

- sensing of a level sensor voltage which differs from a predetermined threshold;
- an alarm level indicator activated by said level alarm signal;
- a circuit for sensing low battery voltage of said first battery source and providing a low battery alarm signal;
- a low battery indicator activated by the low battery alarm signal of said first battery source;
- a circuit for sensing an open circuit condition and providing an open circuit alarm signal;
- an open circuit indicator activated by the open circuit alarm signal;
- a first terminal connected to said alarm circuit;
- a second terminal coupled to electrical ground;
- a third terminal connected to the first battery source;
- a second housing containing:
 - an intrinsically safe second battery source for powering the circuits in the second housing;
 - a circuit for sensing low battery voltage of said second battery source and providing a low battery alarm signal;
 - a threshold circuit for providing an alarm threshold level;
 - an audible alarm sounder;
 - driver circuit means for said alarm sounder including means for causing said sounder to produce a first sound in response to an alarm signal above the alarm threshold level, and a second sound in response to said low battery alarm signal;
 - a cable coupling said first, second and third terminals to respective fourth, fifth and sixth terminals of said second housing;
 - the fourth terminal for coupling a received alarm signal to said threshold circuit;
 - a fifth terminal coupled to electrical ground; and
 - switch means operative to interconnect said fifth and sixth terminals and connect said battery source to electrical ground.

4,231,026

BATTERY DISCHARGE LEVEL DETECTION CIRCUIT

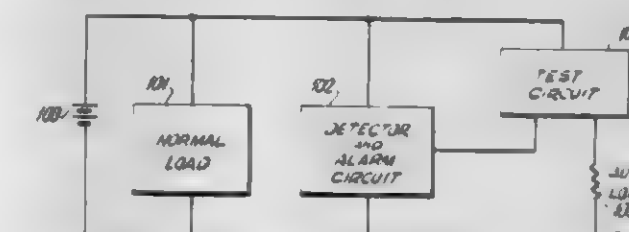
James R. Sullivan, Nanuet, N.Y., assignor to Power Conversion, Inc., Mount Vernon, N.Y.

Filed Sep. 13, 1978, Ser. No. 941,933

Int. Cl.³ G08B 21/00

U.S. Cl. 340-636

5 Claims



- A circuit for detecting the energy level of a long life battery, such as lithium battery, comprising:
 - means for normally loading the battery at a predetermined current level;
 - means for periodically increasing the battery load to a current level higher than said predetermined current level;
 - means responsive to said increasing means for detecting a decrease in battery voltage output resulting from the increase in battery load, and
 - means responsive to said detecting means for establishing an alarm condition at the time said decreased battery voltage is detected, said increasing means including means for generating a pulse train of a predetermined frequency, means for counting down the pulse train, means responsive to the counting means for generating an enabling pulse, and means responsive to said enabling pulse for increasing the battery load.

4,231,027

BATTERY MONITORING MEANS FOR AN IMPLANTABLE LIVING TISSUE STIMULATOR

Brian M. Mann, Northridge, and Russell R. Beane, Sepulveda, both of Calif., assignors to Pacesetter Systems, Inc., Sylmar, Calif.

Filed Feb. 28, 1979, Ser. No. 16,200

Int. Cl.³ A61N 1/36; G08B 21/00; G01N 27/46

U.S. Cl. 340—636

6 Claims



1. In an implantable living tissue stimulator powered by a battery and having a telemetry means for transmitting and receiving signals related to the operation of said tissue stimulator, a battery monitoring means comprising: means for providing said battery output voltage to said telemetry means; load means for altering current through said battery; and means for connecting said load means to said battery thereby altering said battery output voltage by an amount related to the internal impedance of said battery.

4,231,028

READY INDICATOR FOR HIGH-VOLTAGE SWITCHGEAR

John A. Zulaski, Mount Prospect, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Nov. 3, 1978, Ser. No. 957,275

Int. Cl.³ G08B 21/00

U.S. Cl. 340—644

12 Claims



1. A ready indicator for switch-gear usable in a high-voltage electrical system; the switch-gear being of the type having an interrupter switch in a normal first position, the switch being selectively movable to a second position by a switch operator selectively energized by a selectively actuatable control device responsive to electrical conditions of the system, the indicator comprising: first means for generating a first signal if the switch is in the first position; second means for generating a second signal if the switch

operator is capable of moving the switch to the second position; third means for generating a third signal if the control device is capable of energizing the switch operator; and first indicating means for producing a human-sensible indication of the simultaneous generation of the signals.

4,231,029

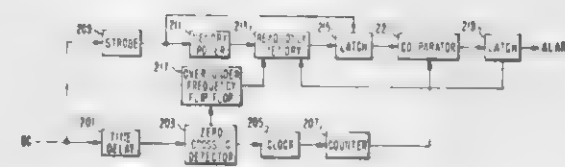
AUTOMATIC TRANSFER CONTROL DEVICE AND FREQUENCY MONITOR

Paul M. Johnston, Hempfield Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa. Division of Ser. No. 706,975, Jul. 19, 1976, Pat. No. 4,090,090. This application Feb. 28, 1978, Ser. No. 881,926

Int. Cl.³ G08B 21/00

U.S. Cl. 340—658

12 Claims



1. Apparatus for monitoring the frequency of an alternating current power source, comprising: means for measuring the frequency of said source during each cycle; means having an address input and a data output for storing a plurality of limit values; means connected to said measuring means and said storage means for comparing measured and stored values; means connected to said comparing means for generating an alarm signal when a measured value falls outside a limit value; and means connected to said storage means for selecting alternate limit values to present to said comparing means on alternate cycles, whereby alternate testing functions are performed on alternate cycles.

4,231,030

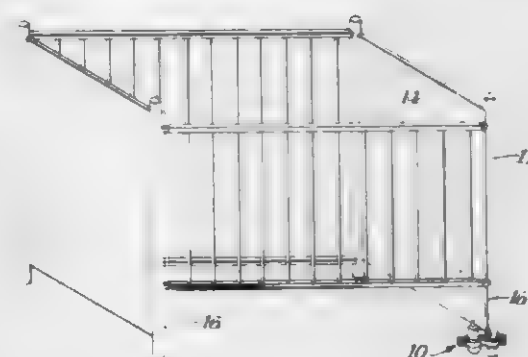
SAFETY DEVICE FOR A CRIB

Mary G. Weiss, 530 S. Ocean Blvd., Palm Beach, Fla. 33480 Filed Jan. 23, 1979, Ser. No. 6,261

Int. Cl.³ G08B 21/00

U.S. Cl. 340—686

1 Claim



1. A safety device for an infant's crib having a crib gate and useful in combination thereof to provide a visual indication and background illumination when the crib gate is in a down, unlocked position, comprising: a housing; an electrically actuated light source mounted within said housing; an electrical power source mounted within said housing and connected to said light source; a mechanically actuated spring biased switch mechanically connected through said housing and electrically con-

4,231,032

VARIABLE ACCURACY TREND GRAPH DISPLAY APPARATUS

Toshitaka Hara, and Nagaharu Hamada, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

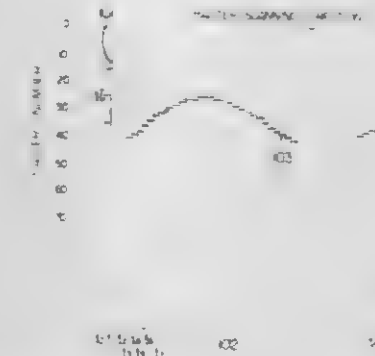
Filed Sep. 7, 1978, Ser. No. 940,367

Claims priority, application Japan, Sep. 9, 1977, 52-107720

Int. Cl.³ G06F 3/14

U.S. Cl. 340—703

6 Claims



4,231,031

REMOTE CONTROL SYSTEM CAPABLE OF TRANSMITTING THE INFORMATION WITH THE AID OF AN INFRA RED BEAM USING PPM OR AN ULTRASONIC BEAM USING PDM

Gerald O. Crowther, Sutton; Terence A. Douglas, Banstead, and Howard M. Farmer, Selsdon, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

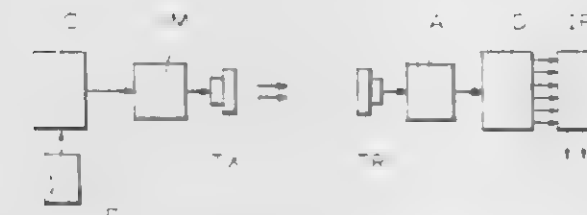
Continuation of Ser. No. 875,338, Feb. 6, 1978. This application Apr. 7, 1978, Ser. No. 894,245

Claims priority, application United Kingdom, Feb. 9, 1977, 5300/77

Int. Cl.² H04B 7/00, 11/00; H03K 13/24

U.S. Cl. 340—695

9 Claims



1. A remote control system comprising a transmitter having an encoder and a receiver having a decoder, in which each of a plurality of remote control functions is represented by a message sequence comprising a plurality of binary bits of which a binary bit 0 and a binary bit 1 are distinguishable from each other by having, for the whole duration of a bit period, different time ratios of two different parameters, being respectively a high level and a low level portion of a bit period, forming a pulse duration signal comprising an edge each time the said signal is changing from one level to the other, said message sequence being repeated at least twice by said transmitter, wherein in order to be able to use the same encoder at the transmitter side and the same decoder at the receiver side both for ultrasonic and infra-red transmission of said binary bits, the encoder comprises means for converting, in the case of infra-red transmission, said pulse duration signal into a pulse position modulation signal whereby a data pulse is transmitted on each edge of said pulse duration signal, and wherein the decoder comprises means for reconstituting, in case of infra-red transmission, the received pulse position modulation signal into the original pulse duration signal and wherein the encoder further comprises an extra pulse generator for generating an additional pulse (EP) which is transmitted between alternate message sequences whereby each alternate message sequence is inverted when decoded by said decoder to ensure that, in the event of undesirable initial message sequence inversion in the decoder, a correct message sequence is received at least once.

4,231,033

LOGIC LEVEL SHIFTERS AND THEIR APPLICATION IN LUMINOUS DISPLAY CIRCUITS

Alexandre Paphitis, Rua Djalma Ulrich 57, Apt. 1006, Copacabana, 20.000 Rio de Janeiro ZC-37, Brazil

Filed Sep. 11, 1978, Ser. No. 940,812

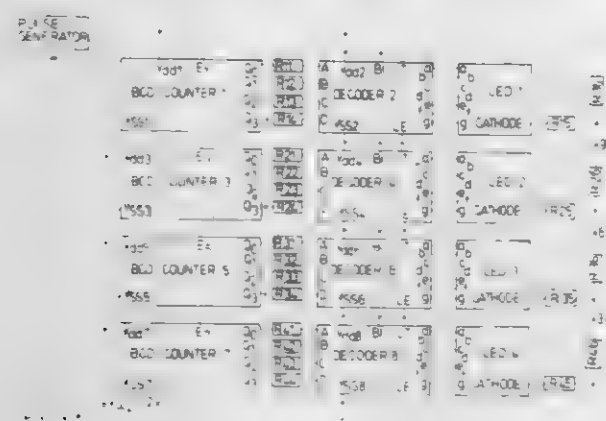
Int. Cl.³ G09G 3/14

U.S. Cl. 340—762

5 Claims

1. A multi-stage luminous display circuit, each stage comprising a driver having binary outputs, a decoder connected to said driver outputs and having a plurality of outputs, and a luminous display device having the same said plurality of electrodes of a first relative polarity and at least one electrode of a second relative polarity, said plurality of electrodes being connected to said decoder outputs and said at least one electrode being connected to the power input terminal of the decoder of an adjacent stage so that said display devices are effectively connected in series through said decoders, the power supply potentials of each said driver being so related to the power supply potentials of its associated same stage de-

coder that the logic one and logic zero signals produced on said driver outputs lie within the ranges of safety and tolerance



of said same stage decoder to be recognized as logic ones and zeros.

4,231,034

DISPLAY DEVICE FOR ILLUSTRATING VARIABLE AND FIXED INFORMATION

Martin Bechteler, Ortsteil Heimstetten, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

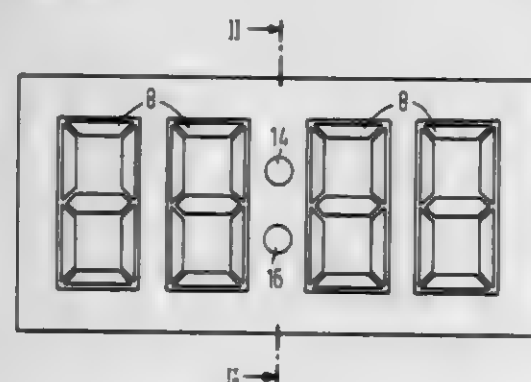
Filed Apr. 16, 1979, Ser. No. 30,018

Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823845

Int. Cl.² G02F 1/13

U.S. Cl. 340—765

10 Claims



1. A liquid crystal cell display device for illustrating variable and fixed information characters, said cell comprising two carrier plates enclosing a medium therebetween which can be switched between optically different states, said fixed information characters being at least partially provided by spacers located between said two carrier plates and being optically contrasting against their surroundings.

4,231,035

LIQUID CRYSTAL DISPLAY FOR LARGE TIME MULTIPLEXING FACTORS

Cornelis Z. van Doorn, and Jacobus J. M. J. DeKlerk, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,325

Claims priority, application Netherlands, Oct. 27, 1977, 7711775

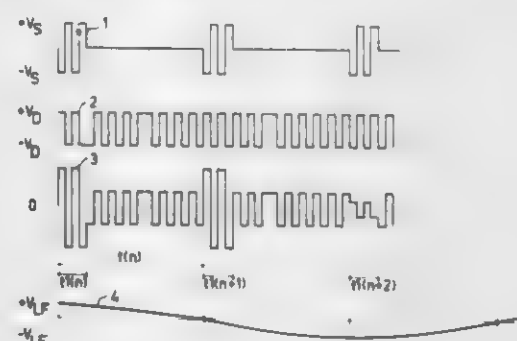
Int. Cl.² G06F 3/14

U.S. Cl. 340—784

3 Claims

1. A display device comprising a liquid crystal display structure including a first cover plate, a liquid crystal having dielectric relaxation, a second cover plate, and sealing means for enclosing said liquid crystal between said first and second cover plate; a plurality of first electrodes disposed on said first cover plate at a side facing said liquid crystal, and a plurality of

second electrodes disposed on said second cover plate at a side facing said liquid crystal; a plurality of display elements each formed by a portion of said liquid crystal located between a first electrode of said plurality of first electrodes and a second electrode of said plurality of second electrodes; auxiliary optical means for making visible orientation states of groups of molecules of said liquid crystal; first generating means for generating a high-frequency first AC voltage; second generating means for generating a low-frequency second AC voltage; selection circuit means for sequentially coupling said first generating means to always at least one of said first electrodes; control circuit means for coupling said first generating means to said second electrodes;



coupling circuit means for continuously coupling all of said display elements to said second generating means; and means for controlling the AC voltage applied to one of said first electrodes at one of said display elements to be in phase with the AC voltage applied to said second electrode corresponding to said one display element so that a first orientation state of molecules of said liquid crystal is adjusted, while a second orientation state of said molecules is such that said AC voltage at said second electrode is out of phase with said AC voltage at said first electrode; wherein the difference between the dielectric constant in the average direction of the longitudinal axes of the molecules and the dielectric constant in a direction transverse thereto has an opposite sign between said difference for said high frequency first AC voltage and that for said low frequency second AC voltage.

4,231,036

BLIP SCAN ANALYZER

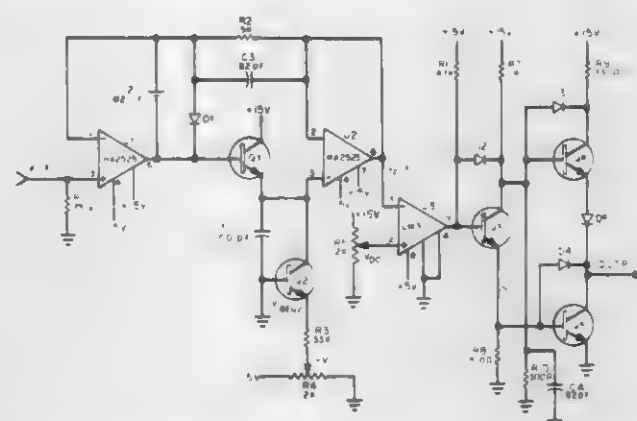
Roger H. Peabody, Kings Park, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 21, 1977, Ser. No. 789,393

Int. Cl.³ G01S 7/22; H03K 3/017

U.S. Cl. 343—5 EM

2 Claims



1. A device for improving target detection and identification in a signal processing system comprising:

means for providing a plurality of variable amplitude echo signals representing target information; and means responsive to said signals for forming a two-dimensional amplitude pattern representing a target wherein said amplitude pattern is formed as a plurality of illuminated line segments with each segment extending from a target range for a length proportional to an individual echo signal amplitude, said means for forming the two-dimensional amplitude pattern comprising, a charging circuit coupled to receive each of said variable amplitude echo signals and provide a voltage output for each received signal, a discharge circuit coupled to receive each voltage output and discharge said voltage at a given rate, a threshold circuit coupled to said voltage output for providing a threshold signal when said voltage output is above a predetermined threshold, means responsive to said threshold signal for providing a constant amplitude pulse having a pulse width equal to the time that the voltage exceeds said threshold, and means responsive to each of said pulses for forming the line segments.

4,231,037

RADAR CLUTTER SUPPRESSOR

Maurice W. Long, 1036 Somerset Dr., NW., Atlanta, Ga. 30327

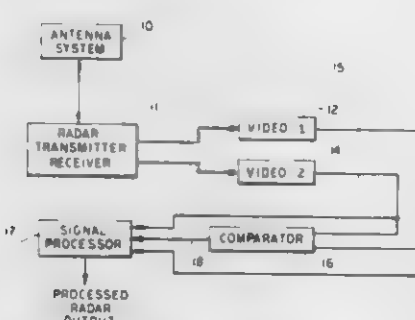
Continuation-in-part of Ser. No. 797,197, May 16, 1977,

abandoned. This application Feb. 23, 1978, Ser. No. 880,624

Int. Cl.² G01S 13/00

U.S. Cl. 343—5 CE

37 Claims



1. A radar clutter suppressor comprising: a first means for providing at least three different carrier frequencies; a second means for providing at least three received signals representing said carrier frequencies wherein for each one of said carrier frequencies there is a particular one of said received signals representing said one of said carrier frequencies; a third means for providing at least three video signals in response to said received signals, wherein for each one of said received signals there is a particular one of said video signals responsive to said one of said received signals; comparator means for comparing the magnitudes of said video signals, by pairs, and for providing an output only when the ratio of the magnitudes of each pair of at least two pairs of said received signals is a ratio within one of a plurality of predetermined ranges of ratios, and each of said plurality of predetermined ranges of ratios includes unity ratio; processing means responsive to said output for providing clutter-suppressed radar output and for indicating the presence of a target in the presence of said output.

4,231,038

DOPPLER RADAR DEVICE

Kenneth Holford, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

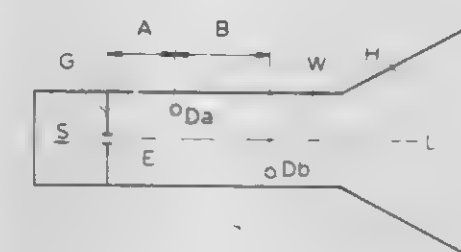
Filed Jan. 24, 1979, Ser. No. 6,063

Claims priority, application United Kingdom, Feb. 9, 1978, 05240/78

Int. Cl.¹ G01S 13/56

U.S. Cl. 343—5 DD

8 Claims



1. Apparatus for use in a Doppler radar or the like comprising a length of waveguide having a reflective termination at one end, means at said one end for introducing microwave energy into the waveguide and two mixer diodes arranged within and spaced apart along the waveguide so that energy to be transmitted can flow in one direction along the waveguide past the diodes to the other end of the waveguide and return energy reflected from a target can flow past the diodes in the opposite direction, the mixer diodes being spaced apart along the axis of the waveguide by a distance $(2n+1)\lambda/4 + \gamma\lambda$ where n is zero or a positive integer, λ is the wavelength at the designed operating frequency and γ is a factor which compensates for the effect of the diodes on propagation within the guide and wherein the distance along the axis of the waveguide between the termination and the mixer diode nearer thereto is substantially $(2m+1)\lambda/8$ where m is zero or a positive integer.

4,231,039

RADAR SPEEDOMETER

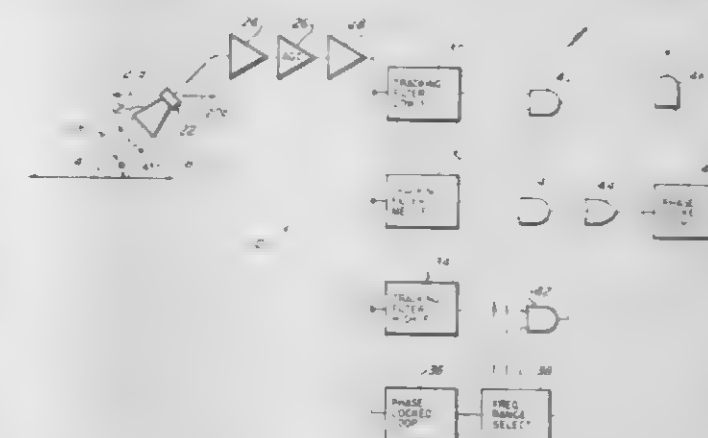
Jack D. Fritzlen, Vail, and James L. Witler, Avon, both of Colo., assignors to Glymar, Vail, Colo.

Filed Dec. 28, 1978, Ser. No. 973,942

Int. Cl.² G01S 9/44

U.S. Cl. 343—8

21 Claims



1. Apparatus for measuring the speed of a vehicle moving over a fixed surface comprising: first means adapted to be mounted on the vehicle for transmitting a narrow beam of microwave energy toward the surface at a predetermined angle with respect to the direction of travel of the vehicle, for receiving microwave energy reflected from the surface, and for producing an output Doppler frequency spectrum which is a function of the speed of the vehicle; signal processing means responsive to all signals in the Doppler frequency spectrum and outputting a normalized

Doppler spectrum having a number of signals of different amplitudes and frequencies; and second means to which the normalized Doppler spectrum is applied for producing an output signal which is the weighted mean of the normalized Doppler spectrum and which is substantially a predetermined function of the speed of the vehicle with respect to the surface.

4,231,040

SIMULTANEOUS MULTIPLE BEAM ANTENNA ARRAY MATRIX AND METHOD THEREOF

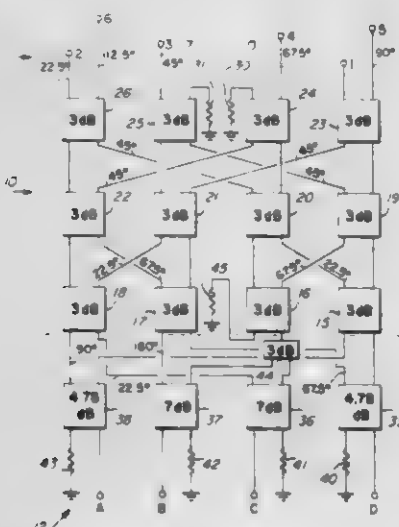
Scott H. Walker, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 11, 1978, Ser. No. 968,583

Int. Cl. H04B 7/00

U.S. Cl. 343—100 SA

13 Claims



1. In a simultaneous multiple beam antenna array matrix including a Butler matrix having $3^m \cdot 2^n$ input ports and $3^m \cdot 2^n$ output ports, where m and n are any whole positive integer either of which may include zero, a method of maximizing the power output for a predetermined side lobe level comprising the steps of:

- shifting the phases of signals at the $3^m \cdot 2^n$ output ports in a fixed phase progression of approximately 180° divided by the number of output ports to locate one multiple beam approximately along the array axis; and
- combining portions of the one beam with each adjacent beam to produce resultant adjacent beams with an amplitude taper providing a predetermined amplitude of side lobe and approximately maximizing the efficiency.

4,231,041

ELECTRICALLY CONDUCTING LEAD TERMINATION APPARATUS FOR A THIN FILM ANTENNA

Joseph H. Graeser, Jr., Cortland, and Robert J. Adkins, Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 18, 1979, Ser. No. 49,440

Int. Cl. H01Q 1/50

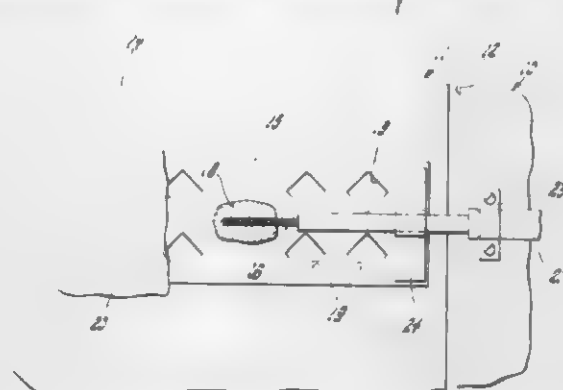
U.S. Cl. 343—767

1 Claim

1. Apparatus for connecting an antenna lead conductor to a non-solderable, electrically conducting antenna member, the apparatus comprising, in combination:

- a strip of electrically conducting solderable tape fixed to the antenna member with an adhesive material which may be an insulator, the strip being adapted to receive the lead conductor soldered thereto and provided with one or more cutout openings therethrough, whereby inner edges are provided, the total strip edge length is increased and inner openings to the antenna member are created; and
- a coating of electrically conducting paint over the strip and

cutout openings, the coating providing electrical connection between the strip and the antenna member through



the cutout openings and providing environmental protection for the apparatus.

4,231,042

HYBRID MODE WAVEGUIDE AND FEEDHORN ANTENNAS

Richard H. Turrin, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1979, Ser. No. 68,621

Int. Cl. H01Q 13/02

U.S. Cl. 343—786

12 Claims



1. A hybrid mode feedhorn antenna comprising:

- a hollow waveguide body including an inner surface and comprises a first section (12) of uniform cross-section which converts into a second section (14) that flares outward from one end of the first section to form a mouth of the feedhorn antenna

characterized in that

the feedhorn antenna further comprises:

- a spiro-helical projection (18, FIGS. 1-3; 38, FIG. 4) comprising a helically wound dielectrically coated wire bonded to the waveguide body with a dielectric layer, said wire being helically wound in closely spaced turns which about one another starting at the end of the first section further from the second section and covering a first portion (II-IV, FIG. 2; 30, FIG. 4) of the inner surface of the first section in a manner capable of providing a smooth transition for a TE_{11} mode signal propagating there-through, the helical windings continuing in a second portion (V, FIG. 2; 32, FIG. 4) of the first section adjacent said first portion with turns which gradually have the spacing therebetween increased in a linear manner which is capable of converting the TE_{11} mode of a signal propagating therethrough into a HE_{11} mode, and the helical windings continuing in the remaining portion of the feedhorn antenna with a uniform pitch.

4,231,043

TECHNIQUE FOR REDUCING NEAR-IN SIDELOBES OF AN OFFSET ANTENNA

Ralph A. Semplak, Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1979, Ser. No. 68,731

Int. Cl. H01Q 13/02, 19/13

U.S. Cl. 343—786

5 Claims

1. An antenna comprising:

an offset main reflector (20) including a reflecting surface and a focal point associated therewith; and absorbing material means (24, 32 in FIG. 1; 40 in FIG. 3; 41, 60 in FIG. 5; 70, 80 in FIG. 7) disposed on the reflecting surface of the main reflector capable of reducing sidelobes



CHARACTERIZED IN THAT

the means capable of reducing sidelobes comprises at least one piece of absorbing material disposed only on an edge portion of a sector of the reflecting surface of the main reflector closest to the focal point of said reflector.

4,231,044

POSITIONING AND ORIENTING A MOBILE EQUIPMENT CARRIER FOR AN ANTENNA MAST

Otto Henkel, Delmenhorst, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

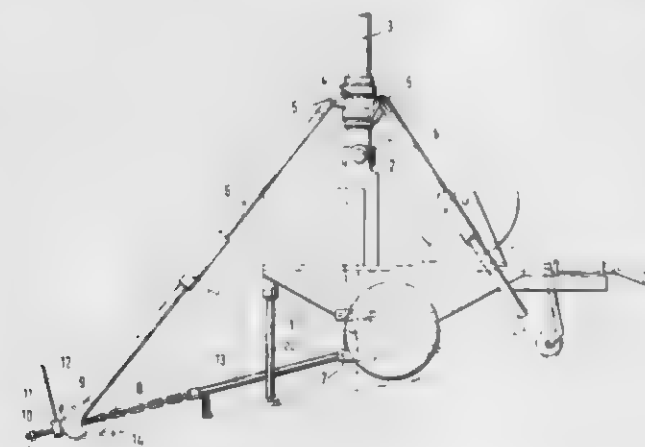
Filed Sep. 18, 1978, Ser. No. 943,044

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742431

Int. Cl. H01Q 1/32, 1/08

U.S. Cl. 343—881

5 Claims



1. Structure for setting up, positioning and orienting a mobile equipment carrier, comprising:

- a support structure on the carrier, establishing two vertically spaced support locations;
- at least three legs, having their upper end hinged to said support structure at an upper one of the two locations; and tension elements adjustable as to their length and being with one end each affixed to said support structure at a lower one of the locations, and further affixed with their respective other end to portions of the legs near respective lower ends thereof so that the lower ends of the legs can be individually pivoted towards the carrier by shortening individually the effective lengths of the tension elements, permitting lifting of the support structure to thereby lift the carrier off the ground.

4,231,045 WEATHER PROOF RADIO TOWER BEARING ASSEMBLY

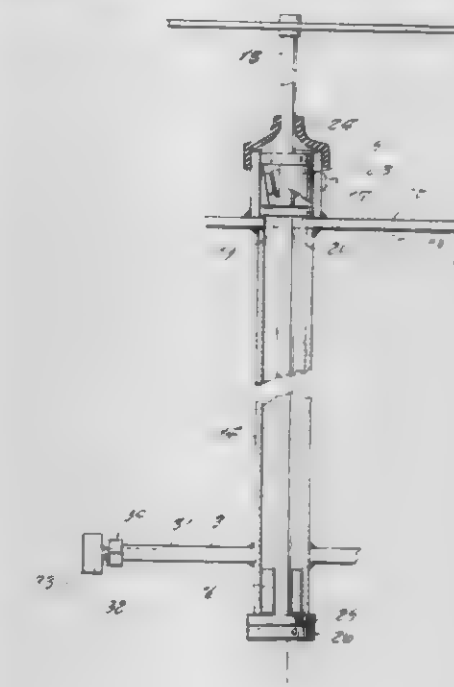
Orrin E. Ingles, 5004 N. Graceland Dr., Peoria, Ill. 61614

Filed Jul. 30, 1979, Ser. No. 61,600

Int. Cl. H01Q 3/04

U.S. Cl. 343—882

2 Claims



1. A weather proof, radio tower, bearing assembly, comprising in combination a tubular housing through which a shaft extends having an antenna on its upper end, a tapered upper bearing supporting an upper end of said shaft, and a bronze lower bearing in a lower end of said housing supporting a lower end of said shaft rotatably free, and means for support of said housing on the legs of said radio tower, wherein said means comprises a triangular plate affixed to an upper end of said housing, and stub shafts at corners of said plate engaging said posts, wherein said means further comprises sideward arms from a lower portion of said housing for bearing against sides of said legs, and wherein a boot and case enclose said tapered bearing.

4,231,046

INK ISSUANCE ORIFICE PROTECTION IN AN INK JET SYSTEM PRINTER

Masahiko Aiba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

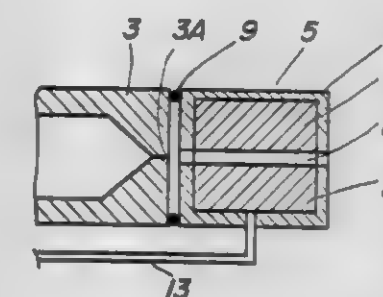
Filed Nov. 13, 1978, Ser. No. 960,030

Claims priority, application Japan, Nov. 14, 1977, 52137002

Int. Cl. G01D 15/18

U.S. Cl. 346—75

8 Claims



1. In an ink jet system printer of the charge amplitude controlling type which emits ink droplets from an orifice formed in a nozzle, charges said ink droplets by a charging tunnel in accordance with print information, deflects said charged ink droplets as they pass through a constant high-voltage electric field, and deposits said charged, deflected ink droplets on a

record receiving member, thereby printing desired symbols on said record receiving member, the improvement comprising: film formation means incorporated in said charging tunnel for selectively forming a protection film in front of said orifice in order to isolate said orifice from the ambience; and drive means for activating said film formation means so that said protection film is formed when said ink jet system printer does not operate, and said protection film is removed when said ink jet system printer operates.

4,231,047

INK-JET PRINTING METHOD AND DEVICE THEREFOR

Kyuhachiro Iwasaki, Fujisawa; Yutaka Kodama, Tokyo; Koichiro Jinnai, Kawasaki, and Masanori Horike, Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

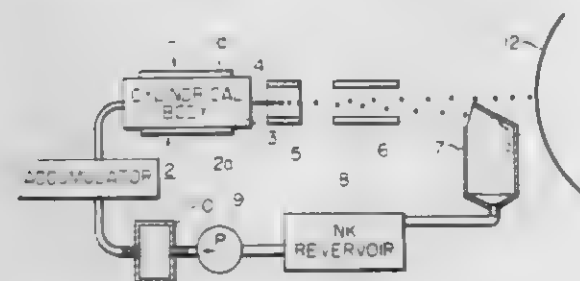
Filed May 30, 1979, Ser. No. 43,638

Claims priority, application Japan, Jul. 6, 1978, 53-68527

Int. Cl.³ G01D 15/18

U.S. Cl. 346—75

8 Claims



1. An ink-jet printing method of the type including the steps of imparting ultrasonic vibrations to the pressurized ink so as to cause the ink jet to emerge through a nozzle and break into a train of ink drops equally spaced apart from each other in time in flight and using a charge electrode and a pair of deflection electrodes in such a way that said ink drops may be selectively steered to travel to strike against a recording medium or to a gutter, CHARACTERIZED by providing an ink drop generator with a first ultrasonic transducer and a second ultrasonic transducer so as to impart the ultrasonic vibrations to the pressurized ink.

energizing normally said first ultrasonic transducer in such a way that the formation of each ink drop or breakup of the ink jet into each ink drop may be so timed that each ink drop may be charged or not charged when only said first ultrasonic transducers is energized or when both said first and second ultrasonic transducers are energized simultaneously in response to the ink-placement signal de-energizing or energizing said second ultrasonic transducer, whereby the formation of each ink drop may be so timed as to cause said each ink drop to be not charged or to be charged thereby steering the uncharged or charged ink drop so as to strike against said recording medium.

4,231,048

INK JET RECORDING APPARATUS

Masanori Horike, Yokohama; Koichiro Jinnai, Tokyo, and Kyuhachiro Iwasaki, Tokyo, assignors to Yutaka Kodama, Tokyo, all of Japan and Ricoh Co., Ltd., Japan

Filed Dec. 22, 1978, Ser. No. 972,325

Claims priority, application Japan, Dec. 29, 1977, 52/160314

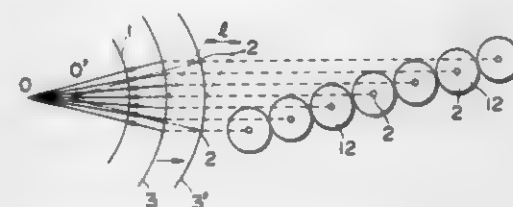
Int. Cl.³ G01D 15/18

U.S. Cl. 346—140 R

13 Claims

1. An ink jet recording apparatus comprising: an ink reservoir; printing head means provided with a plurality of ink jet nozzles connected to said ink reservoir; a printing surface having a center of curvature for supporting a sheet thereon; and a carriage movably supporting said printing head and said

ink reservoir for movement toward and away from said printing surface; said ink jet nozzles being arranged such that ink is ejected



radially with respect to the center of curvature of the printing surface and the spacing between said printing head means and said printing surface is adjusted by movement of said carriage.

4,231,049

HETEROJUNCTION PHOTODIODE OF THE AVALANCHE TYPE

Thomas Pearsall, Paris, France, assignor to Thomson-CSF, Paris, France

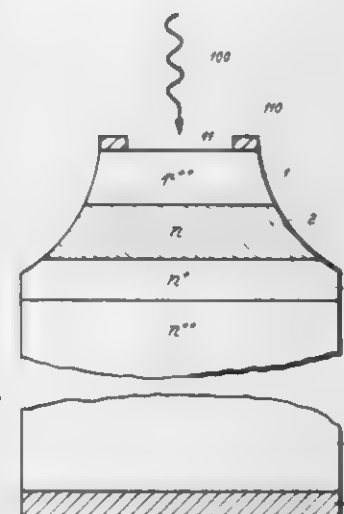
Filed Nov. 7, 1978, Ser. No. 958,385

Claims priority, application France, Nov. 10, 1977, 77 33916

Int. Cl.² H01L 29/90, 29/14

U.S. Cl. 357—13

3 Claims



1. An avalanche photodiode of the type provided with a semiconductor junction consisting of two different materials having opposite types of conductivity, comprising:

- a first semiconductor layer of an alloy having the formula In P, intended to absorb photons the energy of which is greater than or equal to E_1 , the material constituting said first layer exhibiting a forbidden band gap having a width of E_2 , expressed in energy;
- a second semiconductor layer adjacent to the first layer, and formed of an alloy having the formula

$$\text{Ga}_x\text{In}_{1-x}\text{As}$$

wherein $x=0.47$ within a few thousandths, said second layer exhibiting a forbidden band gap having a width of E_3 , expressed in energy; a monocrystalline substrate having the formula In P; said semiconductor junction being formed by said first layer having a first type of conductivity, which is strongly doped, and said second layer having an opposite type of conductivity, less doped than the first layer, the energies E_1 , E_2 and E_3 complying with the following double relationship:

$$E_1 > E_2 \geq 2E_3.$$

4,231,050

REDUCTION OF SURFACE RECOMBINATION CURRENT IN GAAS DEVICES

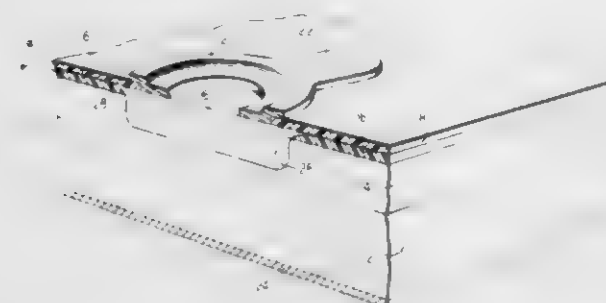
Horace C. Casey, Jr.; Alfred Y. Cho, both of Summit, and Phillip W. Foy, Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 30, 1979, Ser. No. 7,790

Int. Cl.³ H01B 29/161

U.S. Cl. 357—16

8 Claims



1. A GaAs device with reduced surface recombination current comprising

- a monocrystalline GaAs body (10) having a localized zone (26) of conductivity different from adjacent portions of said body,
- a monocrystalline layer (16) of oxygen-doped AlGaAs on a major surface of said body, said AlGaAs layer having a low resistivity central portion (16.2) in substantial registration with said zone and a semi-insulating peripheral portion (16.1) surrounding said central portion,
- a dielectric passivation layer (18) covering said peripheral portion of said AlGaAs layer,
- a first electrical contact (20) to said central portion of said AlGaAs layer, and
- a second electrical contact (24) to said body.

4,231,051

PROCESS FOR PRODUCING MINIMAL GEOMETRY DEVICES FOR VLSI APPLICATIONS UTILIZING SELF-ALIGNED GATES AND SELF-ALIGNED CONTACTS, AND RESULTANT STRUCTURES

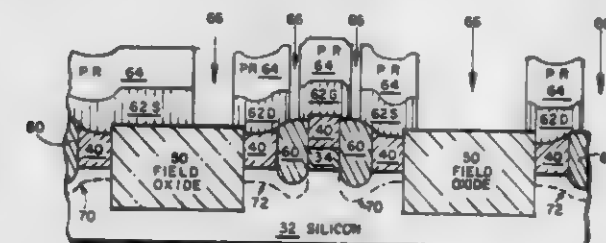
Frank Z. Custode, Norco, and Matthias L. Tam, Monterey Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 6, 1978, Ser. No. 913,258

Int. Cl.² H01L 29/78

U.S. Cl. 357—23

10 Claims



1. A process for providing a self-aligned contact to the gate of a field effect device having source, gate and drain regions and formed on a predetermined area of a silicon semiconductor substrate, said gate comprising a gate electrode formed on a gate dielectric in turn formed on the gate region, said gate region extending across said predetermined area generally centrally thereof and defining said source and drain regions in the remaining portions of said selected area, comprising the steps of:

- forming an oxide layer of greater width than said gate and extending across said predetermined area covering said gate region,
- forming a layer of polysilicon at least over said oxide layer,

forming a silicon nitride layer on said polysilicon layer extending over said selected area of said substrate, selectively removing portions of said silicon nitride layer so as to define a remaining silicon nitride gate button extending across said predetermined area in alignment with said oxide layer and of the width of said gate,

removing portions of the polysilicon layer exposed by the removal of said portions of said nitride layer and removing any portions of said dielectric layer exposed by removal of said portions of said polysilicon layer, said dielectric layer thereby being conformed in width to the desired width of said gate, and said substrate surface being exposed in first and second portions respectively underlying the removed portions of said silicon nitride, polysilicon, and dielectric layers,

doping said substrate at said exposed surfaces thereof, forming an oxide of said substrate material on said exposed portions of said substrate and contiguous with said gate, extending at least to the level of said silicon nitride gate button, and removing said gate nitride button by a material selective removal process which has substantially no effect on the material of, or on oxides of the material of said substrate, thereby to expose the surface underlying said gate nitride button as a self-aligned contact to said gate electrode; said process further forming a diffused conducting line in said substrate surface in a second selected area isolated from said first selected area, further comprising the steps of:

- simultaneously applying said layer of polysilicon over said second selected area,
- simultaneously providing a silicon nitride layer over said polysilicon layer over said second selected area,
- simultaneously delineating said silicon nitride button overlying said polysilicon layer in said second selected area at a desired position,
- simultaneously removing the portions of the polysilicon layer over said second selected area exposed by removal of said silicon nitride layer thereby to retain only that portion of said polysilicon layer over said second selected area underlying said diffused conducting line contact button thereby to expose the corresponding underlying portion of said substrate in said second selected area,
- simultaneously oxidizing said exposed surface portion of said substrate in said second selected area, and
- simultaneously removing said diffused conducting line nitride button to expose the underlying surface of said remaining polysilicon layer portion and afford thereby a self-aligned contact to said diffused conducting line.

4,231,052

APPARATUS FOR PARALLEL-IN TO SERIAL-OUT CONVERSION

Derek J. Day, and Charles T. Elliot, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 2, 1978, Ser. No. 956,960

Claims priority, application United Kingdom, Nov. 4, 1977, 45995/77

Int. Cl.² H01L 29/78

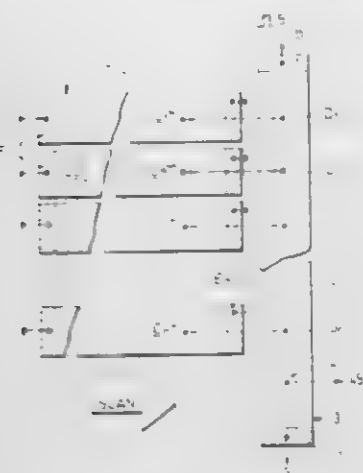
U.S. Cl. 357—24

10 Claims

1. A transfer device for converting information in parallel form to information in serial form comprising:

- a substrate of semiconductor material capable of sustaining spatial distribution of ambipolar carriers; first and second current electrodes formed on the substrate a spaced distance apart; detector means situated between the current electrodes for detecting a parameter dependant upon a local density of ambipolar carriers when current is applied between the current electrodes, and the ambipolar carriers are caused to drift towards the detector means; and a plurality of inputs situated between the first current elec-

trode and the detector means, for injecting information carriers into an active region of the substrate between the



electrodes, and for enabling thereby the accumulation of the spatial distribution of ambipolar carriers.

4,231,053

HIGH ELECTRICAL FREQUENCY INFRARED DETECTOR

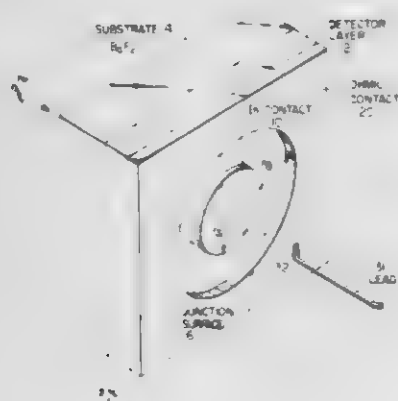
Richard B. Schoolar, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 771,717, Feb. 24, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,217

Int. Cl.³ H01L 27/14

U.S. Cl. 357—30

60 Claims



1. A photovoltaic detector, comprising: an electrically insulating substrate of an alkali-halide; an epitaxial layer twelve hundred or less Angstrom units thick of semiconductor material having a first type conductivity, deposited on said substrate; the material selected from the group consisting of: lead chalcogenides, cadmium chalcogenides, or mixtures thereof; two major surfaces being, respectively, the top and the substrate-mating surfaces of said layer; a rectifying contact disposed on an area coplanar with one of said major surfaces when said layer is at about room temperature; a region formed in situ by the induced field of the rectifying contact; the region having a second and opposite type conductivity; and a P-N junction formed by the contiguous surfaces of said region and said layer.

4,231,054 THYRISTOR WITH STARTING AND GENERATING CATHODE BASE CONTACTS FOR USE IN RECTIFIER CIRCUITS

Christian Ruetsch, Turgi, and Roland Sittig, Umiken, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

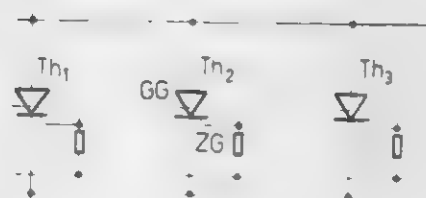
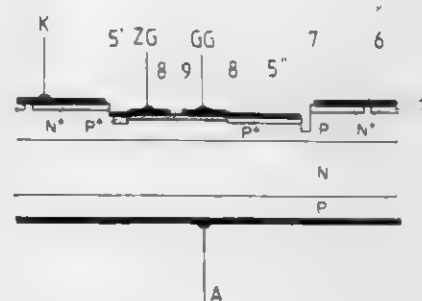
Filed May 22, 1979, Ser. No. 41,332

Claims priority, application Switzerland, Jun. 15, 1978, 6522/78

Int. Cl.² H01L 29/74

U.S. Cl. 357—38

8 Claims



1. An output thyristor connected to an operating circuit and fired by a controlling circuit, said thyristor having at least four semiconductor zones of alternating conductivity type, including a cathode zone, a cathode-base zone, an anode-base zone and an anode zone, said thyristor further having at least two electrodes formed on the cathode base zone, including a starting gate used to control firing of said thyristor and a generator gate used to generate an output current upon firing of said thyristor, said operating circuit supplying anode current and voltage to said thyristor and said controlling circuit supplying starting voltage and current to said starting gate, comprising: said thyristor having a lateral resistance $R_{GK'}$ between the generator gate and the cathode zone thereof formed such that while conducting an anode current smaller than a surge limit of said thyristor, sufficient current is removable from said generator gate such that said output thyristor can be adapted to ignite a corresponding thyristor connected in parallel therewith by application of the removable current from the output thyristor to a starting gate of the corresponding thyristor; and said output thyristor having a lateral resistance R_{GK} between the starting gate and cathode zone sufficiently small, with $R_{GK} < R_{GK'}$, so that a starting voltage applied to the starting gate thereof acts directly on the semiconductor junction between the cathode and the cathode base zones.

4,231,055 COMPLEMENTARY MOS TRANSISTORS WITHOUT AN ISOLATION REGION

Tetsuya Iizuka, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

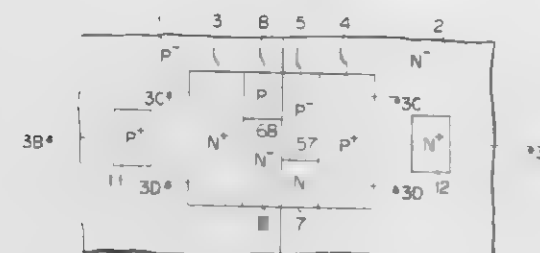
Filed Nov. 3, 1978, Ser. No. 957,443

Claims priority, application Japan, Nov. 16, 1977, 52/137649; Nov. 16, 1977, 52/137650; Nov. 22, 1977, 52/140204

Int. Cl.² H01L 27/02, 29/78

U.S. Cl. 357—42

10 Claims



1. A complementary metal-oxide-semiconductor (MOS) transistor comprising one of a semiconductor substrate and a semiconductor region provided on an insulating substrate, which includes a first semiconductor region of a first conductivity type and a second semiconductor region of a second conductivity type formed adjacent to said first semiconductor region; a third semiconductor region of the second conductivity type provided on said first semiconductor region; a fourth semiconductor region of the first conductivity type provided on said second semiconductor region; a first channel region formed between said first semiconductor region and said fourth semiconductor region and having a subregion with a prescribed conductivity type having a specified impurity concentration; a second channel region formed between said second semiconductor region and said third semiconductor region and having a subregion with a prescribed conductivity type having a specified impurity concentration; a fifth semiconductor region of the second conductivity type provided in a portion of said first channel region and adjacent to the subregion of said second channel region; a sixth semiconductor region of the first conductivity type formed in a portion of said second channel region and adjacent to the subregion of said first channel region; and gate electrode means positioned above said first and second channel regions through an insulation layer for controlling said first and second channel regions; an MOS transistor of the first channel type of said complementary MOS transistor including said fourth semiconductor region, the subregion of said first channel region and said sixth semiconductor region; an MOS transistor of the second channel type of said complementary MOS transistor including said third semiconductor region, the subregion of said second channel region and said fifth semiconductor region.

4,231,056

MOAT RESISTOR RAM CELL

David L. Taylor, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 20, 1978, Ser. No. 953,137

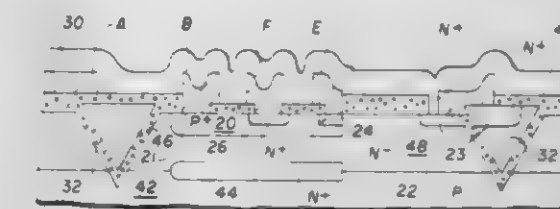
Int. Cl.² H01L 27/04, 27/12, 27/02

U.S. Cl. 357—50

17 Claims

1. An integrated semiconductor structure comprising: a body of semiconductor material; a first transistor having an emitter region, a base region and a collector region formed in said body; a second transistor having an emitter region, a base region and a collector region formed in said body; dielectric walls isolating laterally said first and second transistors from each other; a polycrystalline semiconductor moat surrounding the lateral walls of said first and second transistors and isolated

therefrom by said dielectric walls and forming a pair of resistors; means for selectively interconnecting the regions of said first and second transistors and said polycrystalline moat resistors; and



said polycrystalline moat being discontinuous to define said pair of resistors being connected at one end to a common point in said moat and disconnected at their other ends to prevent a low resistance path between the regions of said first and second transistors which are interconnected to a respective moat resistor.

4,231,057

SEMICONDUCTOR DEVICE AND METHOD FOR ITS PREPARATION

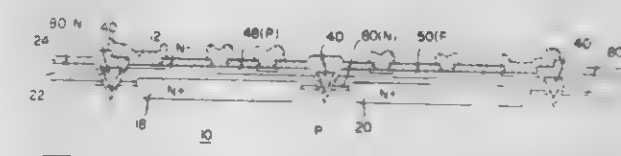
Yoshinobu Momma, Sagami, Japan; Yunosuke Kawabe, Yokohama, and Osamu Hataishi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 13, 1978, Ser. No. 960,228

Int. Cl.¹ H01L 27/04

U.S. Cl. 357—50

10 Claims



1. A semiconductor device comprising: a semiconductor substrate having a first conductivity type; a plurality of buried layers of a second conductivity type opposite to said first type formed in selected portions of the surface of said semiconductor substrate an epitaxial layer of said second conductivity type formed over said semiconductor substrate and said buried layers; a plurality of isolation regions formed between adjacent ones of said buried layers, said isolation regions extending downward from the surface of said epitaxial layer to said semiconductor substrate; an epitaxial layer of said second conductivity type formed over said semiconductor substrate and said buried layers; a plurality of first regions having said first conductivity type formed in said epitaxial layer corresponding to said buried layers, each said first region extending to respectively contact said isolation regions; and a plurality of second regions having said second conductivity type formed between said semiconductor substrate and said epitaxial layer, and between said isolation regions and

said buried layers, said second conductivity type regions having higher conductivity than that of said epitaxial layer and have a depth shallower than the deepest portion of the buried layers.

4,231,058

TUNGSTEN-TITANIUM-CHROMIUM/GOLD SEMICONDUCTOR METALLIZATION

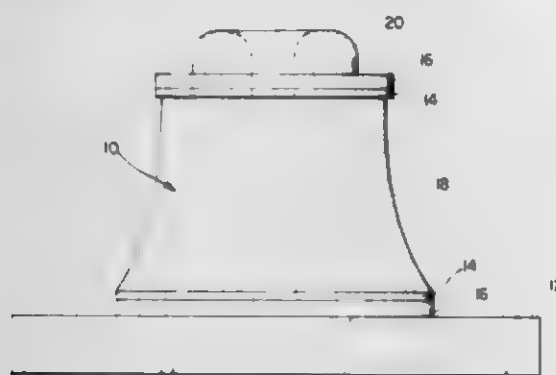
K. Reed Gleason, Portland, Oreg., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1978, Ser. No. 963,067

Int. Cl.³ H01L 23/48, 29/46, 29/62

U.S. Cl. 357-67

6 Claims



1. An improved diode in which the improvement comprises: a metallization layer of an alloy of chromium, titanium and tungsten on silicon followed by a layer of gold.

4,231,059

TECHNIQUE FOR CONTROLLING EMITTER BALLAST RESISTANCE

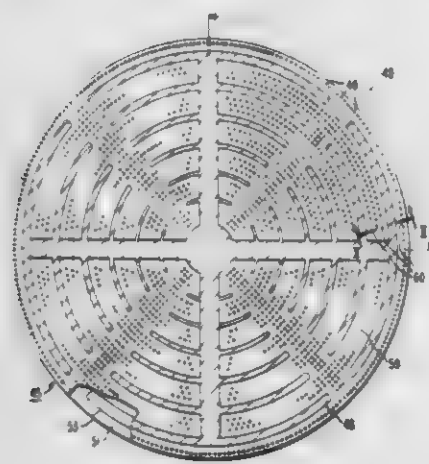
Philip L. Hower, Pittsburgh, and Derrick J. Page, Murrysville Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 1, 1978, Ser. No. 956,813

Int. Cl.² H01L 23/48

U.S. Cl. 357-68

16 Claims



1. A transistor comprising:
 - (a) a body of semiconductor material having first and second substantially flat opposed surfaces and an edge extending therebetween, said body of semiconductor material including an emitter region, a base region and a collector region, portions of said emitter and base regions extending to said first surface and said collector region extending to said second surface;
 - (b) a collector electrode affixed to said collector region;
 - (c) a base electrode affixed to said base region;
 - (d) an emitter electrode; and
 - (e) an emitter metallization comprising a plurality of non-abutting metallized regions affixed to said emitter region, said emitter metallization forming an electrical connection

between said emitter region and said emitter electrode with the number and area of said metallized regions being selected such that said transistor has a desired effective emitter resistance.

4,231,060

COLOR-PULLING COMPENSATION IN A BEAM-INDEX DISPLAY TUBE

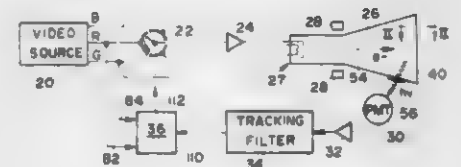
Robert G. Culter, Seattle, Wash., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 16, 1979, Ser. No. 30,262

Int. Cl.² H04N 9/24

U.S. Cl. 358-69

6 Claims



1. A beam-index display system comprising:
 - (a) means for receiving first and second video drive signals representative respectively of first and second differentiable characteristics of an image to be produced;
 - (b) a beam-index cathode-ray tube including a display medium, means for producing an electron beam, and means for directing said beam toward said medium;
 - (c) means for causing said electron beam to sweep across said display medium;
 - (d) means associated with said beam-index cathode-ray tube for producing a control signal representative of the position of said electron beam relative to said display medium;
 - (e) means for comparing the magnitude of said first drive signal with that of said second drive signal;
 - (f) means responsive to said comparison of said drive signals for shifting the phase of said control signal an amount proportional to the results of said comparison;
 - (g) means responsive to said shifted control signal for sequentially selecting said drive signals for application to said beam-producing means of said beam-index cathode-ray tube; and
 - (h) means for modulating the current density of said electron beam in accordance with the magnitudes of said selected drive signals.

4,231,061

INSTANT COLOR SLIDE RECORDER OF CRT IMAGE

Samuel Freeman, 13 Birchwood Ct. East, Syosset, N.Y. 11791

Filed Apr. 9, 1979, Ser. No. 28,199

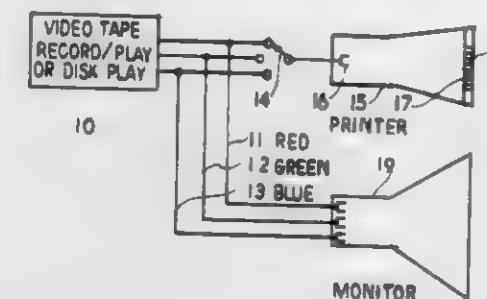
Int. Cl.³ H04N 1/46

U.S. Cl. 358-76

9 Claims

1. An instant "daylight" system of recording a hard-copy film reproduction of any still image displayed on the faceplate of a cathode-ray tube, comprising a monitor cathode-ray tube with a visible display of a still image, means to apply to a second cathode-ray tube the same video signal(s) as applied to said first monitor cathode-ray tube, said second cathode-ray tube with electron-gun means for optimum electron-beam

density and with optimum ultraviolet-emitting phosphor means deposited on a fiber-optic faceplate means having opti-



imum ultraviolet-transmissivity, and ultraviolet-sensitive film means exposed in direct contact with said faceplate means.

4,231,062

CHARGE-COUPLED DEVICE IMAGER SYSTEM

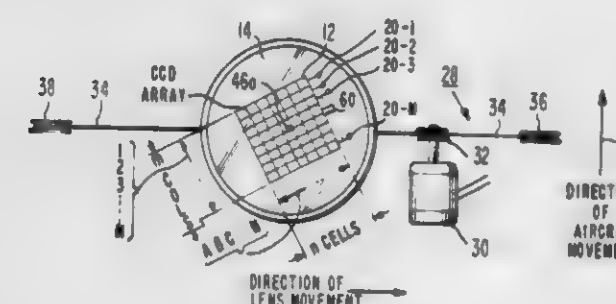
Max W. Stewich, Chelmsford, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1978, Ser. No. 964,387

Int. Cl.³ H04N 3/15, 7/18

U.S. Cl. 358-109

3 Claims



1. A system for providing electronic signals representing an image of an object, said system comprising in combination:
 - means for producing relative motion between said object and said system in a first direction such that the distance between said system and said object remains substantially invariant;
 - a charge-coupled device array comprising m columns, each of n elements, each column being coupled to an output terminal where $m > 1$ and $n > 1$;
 - a lens positioned between said array and said object such that said array is in the focal plane of said lens;
 - means for producing relative motion between said lens and said array such that said array remains in the focal plane of said lens and said object is scanned in a second direction normal to said first direction such that points on said object along an imaginary line lying on said object in said second direction are imaged along the elements of a given array column, each of said points being imaged on each of said elements of said given column in succession, points along imaginary lines parallel to said first imaginary line being similarly imaged on various elements of various other columns of said array associated with said imaginary lines; and
 - means coupled to said array for electronically translating signals contained in the elements thereof in respective columns from one element to the next along said respective columns at the same rate and direction that the image moves along said array such that a given point of said object is imaged serially on successive elements in a given column as a signal representative of said given point is stored in said successive elements, said direction that said image moves being toward the output terminals such that said electronic signals are translated thereto.

4,231,063

FRAME SYNCHRONIZER HAVING A WRITE-INHIBIT CIRCUIT

Yutaka Ito; Yuzo Inoue; Takao Shimizu; Masao Inaba; Atsumi Sugimoto, and Takeo Emori, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

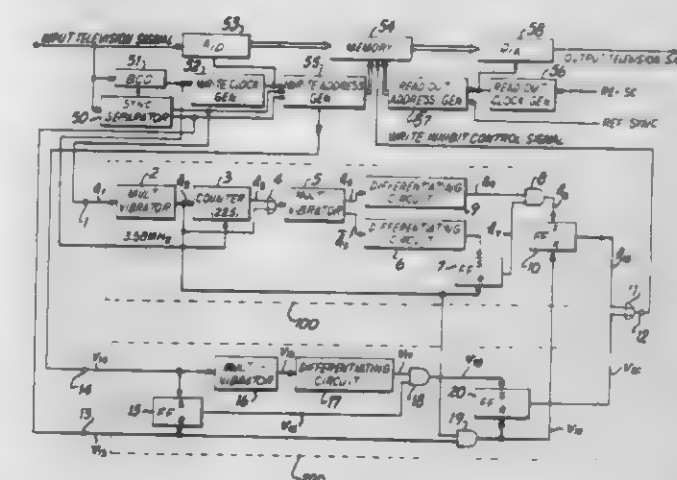
Filed May 16, 1979, Ser. No. 39,321

Claims priority, application Japan, May 19, 1978, 53-60228

Int. Cl.³ H04N 5/04, 5/22, 9/46

U.S. Cl. 358-148

5 Claims



1. A frame synchronizer including means for digitizing an input television signal, a memory for storing the digitized television signal, write-in address generator means for generating address signals to write the digitized television signal in said memory in accordance with a scanning sequence of the input television signal, read-out address generator means for generating address signals to read the digitized television signal out of said memory in accordance with a reference signal, means for converting the signal read out of said memory into an analog signal, and means for producing a write-inhibit signal to inhibit the write-in of said digitized television signal into said memory, said write-inhibit signal producing means comprising:
 - first means responsive to one of the synchronizing pulses contained in said input television signal for generating a first pulse disposed at a time position before the time position of the synchronizing pulse immediately following said one synchronizing pulse;
 - a flip-flop adapted to be set by the leading edge of said first pulse and to be reset by said synchronizing pulses of said input television signal;
 - second means responsive to the trailing edge of said first pulse for generating a second pulse having a narrower pulse width than said first pulse; and
 - third means responsive to said second pulse and said set state of said flip-flop for providing an output as said write-inhibit signal.

4,231,064

VERTICAL SYNCHRONIZATION CIRCUIT FOR A CATHODE-RAY TUBE

Tomoaki Uchida, Iwai, Japan, assignor to Victor Company of Japan Ltd., Yokohama, Japan

Filed May 15, 1979, Ser. No. 39,333

Claims priority, application Japan, May 18, 1978, 53-65787[U]; May 18, 1978, 53-65788[U]

Int. Cl.² H04N 5/04

U.S. Cl. 358-158

5 Claims

1. A vertical synchronization circuit comprising:
 - means for separating a horizontal synchronizing signal and a vertical synchronizing signal from a composite video signal introduced as input;
 - oscillation means for oscillating and generating, in response to the horizontal synchronizing signal thus separated, clock pulses of a frequency of repetition which is an even-number multiple of the horizontal scanning frequency;

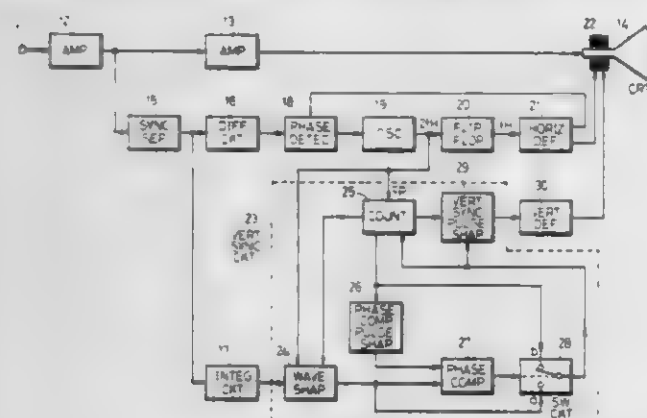
a first counter for counting the clock pulses thus generated and producing as output a first pulse when the pulse count becomes a predetermined number correlated to the ratio of the horizontal scanning period and the vertical scanning period of the composite video signal;

a waveform shaping circuit supplied with the vertical synchronizing signal thus separated and the clock pulses thus generated and producing as output a second pulse, which is synchronized with the clock pulses, every time the vertical synchronizing signal is supplied as input;

means for shaping the first pulse from the first counter and producing as an output phase comparing pulse;

phase comparison means for comparing the phases of the phase comparing pulse thus produced as output and of the second pulse from the waveform shaping circuit;

switching means controlled in switching operation by out-



put pulses of the phase comparison means and thereby carrying out the operation of selectively producing as output the second pulse out of the first and second pulses and supplying the second pulse to the first counter thereby to place the first counter in a first reset state when the phases of the two input pulses supplied to the phase comparison means are not continuously coincident during a specific vertical scanning period and the operation of selectively producing as output the first pulse and supplying the same to the first counter thereby to place the first counter in a second reset state when the phases of two input pulses supplied to the phase comparison means are continuously coincident in specific vertical scanning periods; and

means for shaping pulses produced as output from the first counter and synchronized with the vertical synchronizing signal.

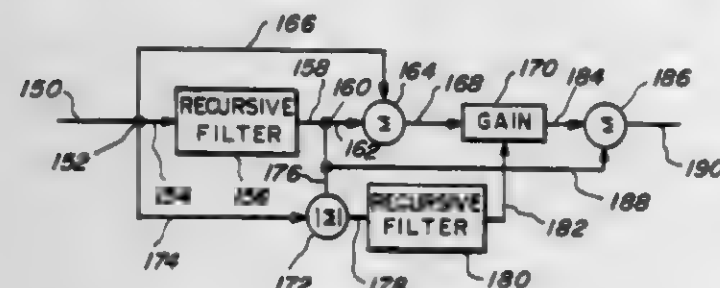
4,231,065

LOCAL AREA CONTRAST ENHANCEMENT DEVICE
Robert C. Fitch, Roseville, and Patrenahalli M. Narendra, Plymouth, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 11, 1979, Ser. No. 2,489
Int. Cl.³ H04N 5/14

U.S. Cl. 358-166

8 Claims



1. A system for providing local area contrast enhancement of an input signal comprising two dimensional recursive filter means connected to receive the input signal for producing a

running average of the input signal, first means connected to receive the input signal and connected to said recursive filter means to receive the running average for subtracting the running average from the input signal to produce a subtracted signal, second means connected to said first means to receive the subtracted signal for amplifying the subtracted signal by an amount which varies with the running average to produce an amplified signal and third means connected to said second means to receive the amplified signal and connected to said first means to receive the running average for adding a portion of the running average to the amplified signal to produce an enhanced signal.

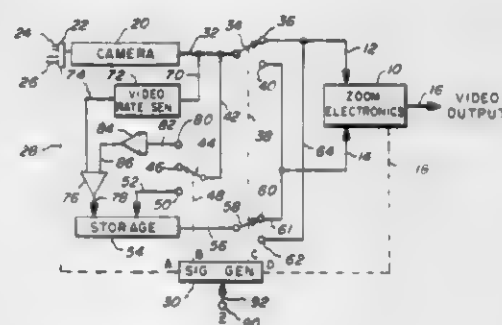
4,231,066

ELECTRONIC ZOOM SYSTEM IMPROVEMENT
John Merchant, Needham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 12, 1979, Ser. No. 2,832
Int. Cl.³ H04N 3/22, 5/26

U.S. Cl. 358-180

10 Claims



1. Apparatus comprising:
radiation sensing means providing an output signal indicative of the radiation received thereby;
wide field of view means;
narrow field of view means;
means mounting said wide field of view means and said narrow field of view means in first and second interchangeable positions with respect to said radiation sensing means so as to direct radiation from a scene being viewed to said radiation sensing means;
changing means operable to interchange said wide field of view means and said narrow field of view means;
storage means having an input connected to receive and store the output of said radiation sensing means and to produce an output representative of the stored output of said radiation sensing means; and
connective means connecting the output of said radiation sensing means to a first output connection while connecting the output of said storage means to a second output connection when said wide field of view means is in the first interchangeable position and connecting the output of said radiation sensing means to the second output connection while connecting the output of said storage means to the first output connection when said narrow field of view means is in the first interchangeable position.

4,231,067

TELEVISION IMAGE PROJECTION APPARATUS
Henry J. Jewell, Belleair, and Richard L. Meyer, Largo, both of Fla., assignors to Viewpoint, Inc., Largo, Fla.

Filed Oct. 30, 1978, Ser. No. 955,884
Int. Cl.² H04N 5/74

U.S. Cl. 358-237

16 Claims

1. A unit for supporting a television receiver housing and projecting an image from the face of a CRT thereof to a remote, reflective viewing screen, said unit comprising:

(a) a base having a top wall upon which said CRT is placed defining a planar support surface with front, rear and side edges, said front and rear edges being horizontally dis-

posed and said side edges being inclined upwardly from said rear to said front edge;

(b) a stop member having a forward edge parallel to said front edge and adjustably positionable with respect thereto;

(c) a projection lens mounted in a unitary lens barrel;

(d) a hollow hood having a first end defining a first opening at least as large as the face of the CRT of the receiver supported by said unit, and a second end defining a second opening of substantially the same dimensions as said lens



barrel and adapted to frictionally engage said lens barrel for adjustable positioning thereof along the optical axis of said lens, said hood defining an enclosed path between said first and second openings; and

(e) means for attaching said hood to said base with said first opening arranged adjacent to and above said front edge, said attaching means including means extending below the bottom edge of said first opening for adjustably positioning said hood in a direction substantially perpendicular to said support surface.

4,231,068

OPTICAL SCREENS

Geoffrey H. Hunt, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

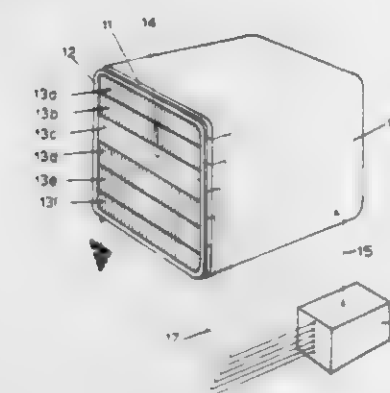
Filed Jun. 12, 1978, Ser. No. 914,771

Claims priority, application United Kingdom, Jun. 15, 1977, 24090/77

Int. Cl.² H04N 5/72

U.S. Cl. 358-252

13 Claims



1. An optical screen for use with a cathode ray tube having a display face and a raster, comprising a series of parallel strips aligned with the writing direction of said raster, each of said parallel strips comprising a layer of electro-optical substance, and means for sequentially varying a voltage applied across said strips so that each strip is transparent when said raster is writing behind it and becomes light absorbent when said raster is not writing behind it.

4,231,069

METHOD AND APPARATUS FOR PRODUCING IMAGE COMBINATIONS

Klaus Wellendorf, Kitzberg near Kiel, and Ruediger Sommer, Raisdorf, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

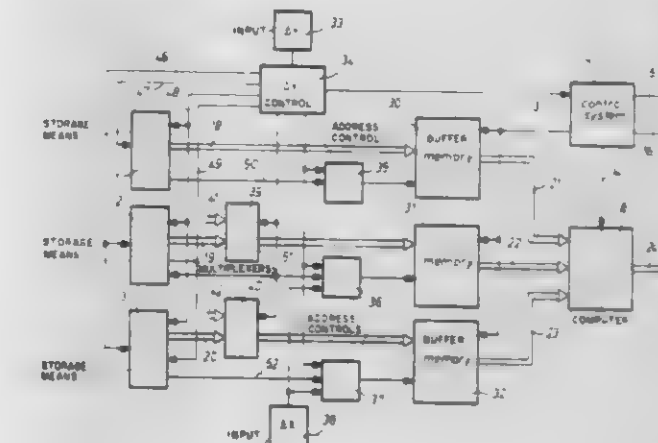
Filed May 8, 1978, Ser. No. 903,878

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720944

Int. Cl.³ H04N 1/00, 1/38

U.S. Cl. 358-256

13 Claims



1. A method for the production of image combinations of a master wherein the image data of the images to be copied into each other are stored in digital memories, and a mask is produced from one of the images for superimposing and copying the images and said mask is scanned, comprising the steps of forming and storing intermediate recordings true to register and scale from first and second images to be combined, forming a mask signal from the second image to be inserted into the other image and forming said mask of a size of the second image to be copied, scanning the second image to be copied and storing the information; eliminating the image data located outside the mask, but within the data inventory of the second image to be copied under control of the mask signal; placing the masked intermediate second image recording on the intermediate recording of the first image into which it is to be copied, and shifting it into the proper position; measuring the shiftings in scanning direction and transversely to the scanning direction, that is in x and y direction to obtain measured Δx and Δy values; and combining the Δx and Δy values with the stored data of the first image with the stored second image data of the other image to form a total image.

4,231,070

HIGH SPEED COPYING MEANS AND METHOD
Robert W. Pitts, Jr., Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,327

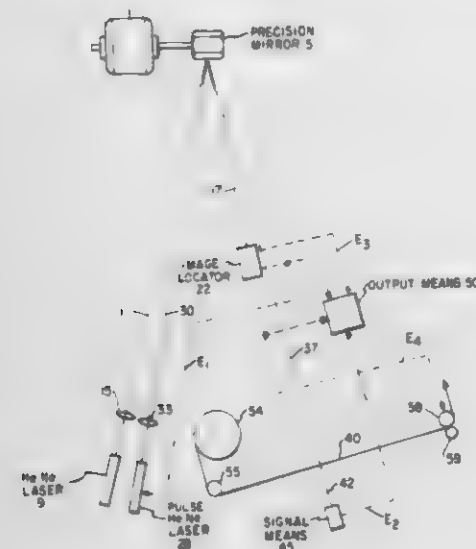
Int. Cl.² H04N 1/04, 1/36, 1/02

U.S. Cl. 358-285

7 Claims

1. Apparatus for providing output signals corresponding to a copy comprising a first laser emitting a beam of light, a mirror having a plurality of faces is spatially related to the first laser so that the light beam is reflected by the mirror when it is rotating in a manner so as to perform a scanning operation, means for rotating the mirror at a predetermined rate, image locator means spatially related to the copy and to the mirror for providing control pulses in accordance with the scanning of the light beam, a second laser spatially related with the first laser and the mirror and connected to the image locator means provides pulses of light which strike the surface of the mirror at the same point that the light beam strikes and is reflected therefrom to impinge upon the copy, light sensitive means spatially related to the copy for receiving pulses of light from

the copy and providing electrical pulses on a one-for-one basis with received light pulses, and means connected to the light



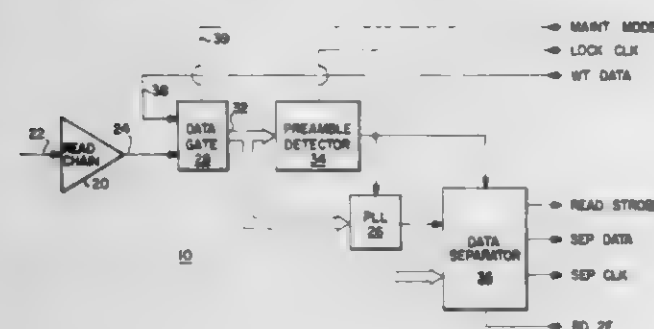
sensitive means for providing the output signals in accordance with the electrical pulses from the light sensitive means.

4,231,071 READER FOR DATA RECORDED ON MAGNETIC DISKS AT PLURAL DENSITIES

Albert L. Anderson, Lexington, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Jul. 17, 1978, Ser. No. 925,534
Int. Cl.³ G11B 5/09

U.S. Cl. 360-40

19 Claims



1. In apparatus for reading data from a rotating magnetic disk whereon binary data has been recorded on a plurality of data fields, the data being recorded on each data field at a known density rate selected from among a set of substantially differing density rates, and wherein a control signal is provided to select the density rate for reading data from each field, the improvement comprising:

said control signal comprising, for each data field, a density-selection signal selected from among a plurality of available signals, each of which represents one of the available density rates of the set; and

means responsive to the control signal for reading each data field at the density rate represented by the density-selection signal for that field, the density rate for reading each data field thereby being independent of the density rate for reading each other data field,

whereby any combination of data fields on a disk record may be read in any arbitrary, desired order, in a single pass over the disk, regardless of the density rate variations from one data field to another.

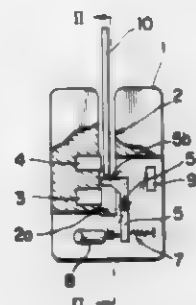
4,231,072 RECORD/PLAYBACK DEVICE FOR MAGNETIC RECORDING

Akira Toyama, Shimosuwa, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Shimosuwa, Japan
Filed Mar. 24, 1978, Ser. No. 889,802

Claims priority, application Japan, Mar. 30, 1977, 52-39168[U]; Sep. 8, 1977, 52-120889[U]
Int. Cl.³ G11B 5/80, 19/16, 25/04

U.S. Cl. 360-88

19 Claims



1. Magnetic record/playback device operated by the magnetic card on which a record/playback area and a timing signal area are formed, characterized by comprising:

- a magnetic card path formed therein;
- a fixed card guide formed in said magnetic card path;
- a movable card guide, located at a specific distance from said fixed card guide, which can pop in or out of said magnetic card path;
- a read-only magnetic head, located facing said magnetic card path over the entering position of said movable card guide;
- a write-only magnetic head located facing said magnetic card path below the entering position of said movable card guide; and
- a popping means to pop in or out said movable card guide.

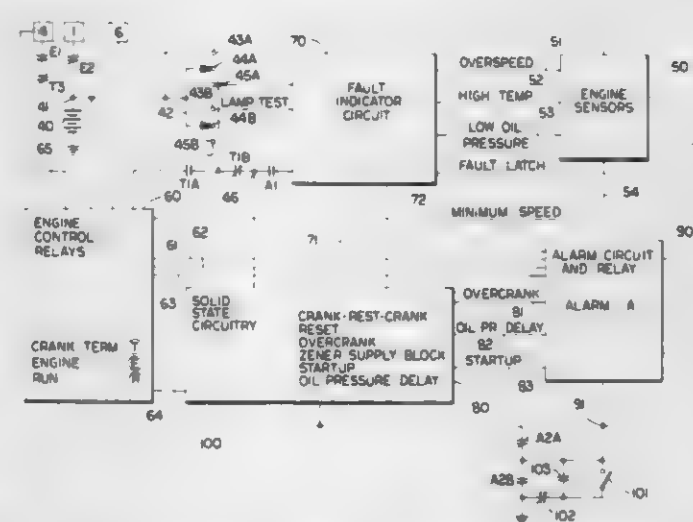
4,231,073 AUTOMATIC IMPROVED ENGINE CONTROL SYSTEM CONTAINING BOTH SOLID STATE CIRCUITS AND RELAYS

Adam J. Suchko, 636 N. Oakland Ave., Indianapolis, Ind. 46201
Filed Nov. 8, 1978, Ser. No. 958,825

Int. Cl.³ H02H 3/04

U.S. Cl. 361-1

21 Claims



1. In an automatic engine controller for monitoring and controlling the operation of an internal combustion engine including:

- (a) start means for activating the start of the engine;
- (b) shutdown means for activating the shutdown of the engine;
- (c) cranking module means for activating and deactivating said start means and including a solid state oscillator circuit which cycles on and off during crank mode;

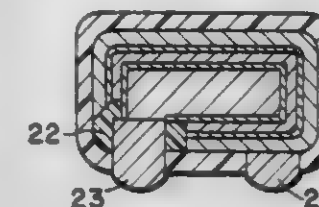
- (d) an overcrank module means for responding to an overcrank condition and deactivating said start means when the engine does not start within a specified time and including a solid state circuitry;
- (e) a supply battery having a first and a second terminal;
- (f) a first switch;
- (g) a second switch;
- (h) a common electrical point;
- (i) fault sensors connecting to the first terminal of said battery; and
- (j) a fault response circuit means for activating said shut-down means in response to a fault condition and containing fault sensors; an improvement comprising:
- (k) said fault response circuit means having a fault response relay and associated means for operating said fault response relay in response to a fault condition, said fault response relay having first fault response relay contacts which are open in response to a fault condition and second fault response relay contacts which are closed in response to a fault condition;
- (l) said common electrical point connecting separately (1) through said first switch to the second terminal of said battery and (2) through said second fault response relay contacts to the second terminal of said battery;
- (m) said common electrical point connecting separately (1) through said cranking module and through said overcrank module to the first terminal of said battery and (2) through said sensors and through said fault response relay to the first terminal of said battery; and
- (n) said fault response relay connecting to a terminal of said battery through said second switch.

4,231,075 SOLID ELECTROLYTE CAPACITOR

Koichi Morimoto, and Tatsuo Tokumaru, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Division of Ser. No. 763,660, Jan. 28, 1977, Pat. No. 4,097,985.
This application Apr. 3, 1978, Ser. No. 892,871
Claims priority, application Japan, Jan. 30, 1976, 51/9064
Int. Cl.³ H01G 9/00

U.S. Cl. 361-433

3 Claims



1. A solid electrolyte capacitor comprising a porous anode body of valve-metal, a dielectric layer of oxide of said valve-metal formed over the entire surface of said anode body except for an anode contact region thereof, a solid electrolyte layer formed over the entire surface of said dielectric layer except for a portion of said dielectric layer in the neighborhood of said anode contact region, a cathode conductive layer formed over said solid electrolyte layer, an anode terminal attached to said anode contact region, and an electrically conductive connecting means formed between said anode contact region and said anode terminal, said conductive connecting means being selected from the group of a silver paste, a solder adhesive to ceramics, and a conductive organic polymer.

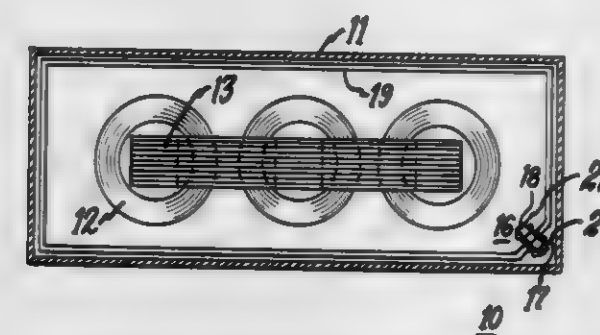
4,231,074 ZERO SEQUENCE CURRENT SOURCE FOR TRANSFORMER HAVING A NONWOUND TERTIARY William J. McNutt, Pittsfield, Mass., and James R. Wilson, Cincinnati, Ohio, assignors to General Electric Company, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,235

Int. Cl.³ H02H 3/08, 7/04

U.S. Cl. 361-44

12 Claims



1. A zero sequence current source for use with transformers comprising:

- a nontertiary autotransformer within a casing and having primary and secondary windings arranged around a core;
- an auxiliary conductor within the transformer proximate said casing and surrounding both said core and said windings for intercepting zero sequence flux from the core and the windings during an external ground fault occurrence; and
- a current transformer surrounding a part of the auxiliary conductor for sensing zero sequence current.

4,231,076 TANTALUM FOIL CAPACITOR WITH STRONG ACID ELECTROLYTE

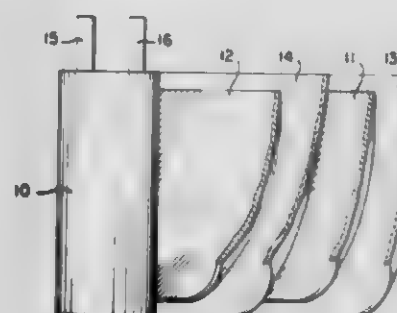
Mark Markarian, and Kenneth B. Meyer, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sep. 27, 1978, Ser. No. 945,981

Int. Cl.³ H01G 9/00; B01J 17/00

U.S. Cl. 361-433

3 Claims



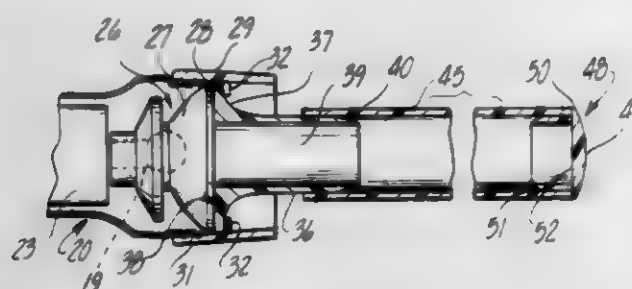
1. A wound tantalum foil electrolytic capacitor comprising an anodized tantalum foil anode, a tantalum foil cathode, a porous chemically-resistant spacer sheet interposed between said anode and said cathode foils and wound contiguous therewith throughout the entire length of said foils, an aqueous 30-40 wt % sulfuric acid electrolyte in contact with said foils and said spacer throughout the winding, said spacer being chosen from the group consisting of microporous polypropylene film, porous perfluoroethylene cloth, polyolefin fiber paper, porous woven polypropylene, polypropylene screen, and porous woven glass cloth, said capacitor having a low equivalent series resistance and increased capacitance per given length of foil.

4,231,077 LIGHT TOY

James E. Joyce, and John P. Joyce, both of 878 Darien Cir.,
Rochester, Mich. 48063
Filed Dec. 27, 1977, Ser. No. 864,973
Int. Cl.³ F21V 7/09

U.S. Cl. 362-32

16 Claims



1. A light emitting device comprising:
 - a flashlight body;
 - a light source within said body for producing a beam of light;
 - a light tunnel further comprising a cylindrical hollow, cylindrical tube of lightweight, relatively flexible plastic having non-opaque walls, fastened at one end to said body such that at least a substantial part of the beam of light emanating from said source is directed into the interior of the tube and along the length thereof; and
 - a reflecting cap with a reflective inner surface fastened to the other end of said light tunnel to reflect said beam back into the interior of the cylindrical tube;
- whereby light from said source is emitted through the walls of said light tunnel.

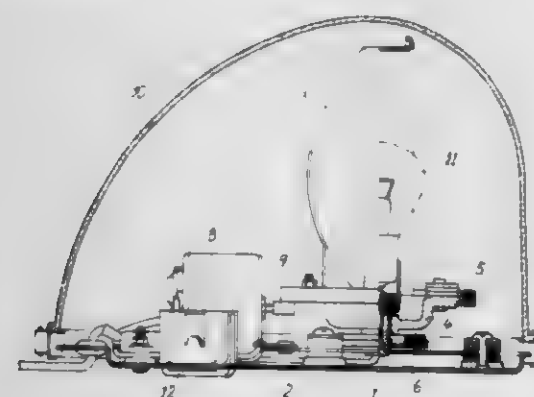
4,231,078 BEAM-ROTARY LAMP

Shozo Hitora, Nara, Japan, assignor to Sasaki Electric Mfg. Co.
Ltd., Osaka, Japan

Filed Jan. 3, 1979, Ser. No. 781
Int. Cl.³ F21V 21/30

U.S. Cl. 362-35

10 Claims



1. A beam-rotary lamp comprising a base; a transparent globe supported on said base and defining therewith an enclosed space; a motor having a driving shaft, said motor being housed within said enclosed space; a support shaft carrying a lamp socket within said enclosed space; a rotor rotatably supported on said support shaft within said enclosed space and having a periphery; a resilient ring positioned about said periphery of said rotor adjacent said driving shaft of said motor; a reflector positioned on said rotor to rotate therewith; at least one magnetic means fixedly attached to said support shaft for providing a magnetic force to bring said resilient ring into firm frictional contact with said driving shaft of said motor.

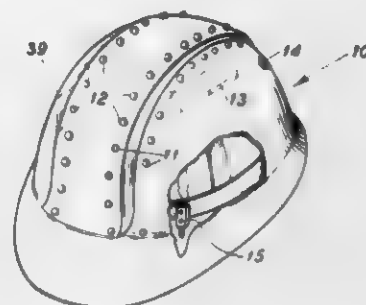
4,231,079

ARTICLE OF WEARING APPAREL

Stephen R. Hemminger, 4032 N. Avera, Chicago, Ill. 60618
Filed Mar. 28, 1979, Ser. No. 24,672
Int. Cl.² F21L 15/14

U.S. Cl. 362-106

8 Claims



1. A hat assembly comprising, in combination:
 - (a) a rigid opaque hat having a side exposed to view when worn, and having perforations through said side leading to the space above the head of the wearer;
 - (b) a series of light emitting diodes of the display type disposed in and projecting through said perforations for being viewed, the terminals thereof being disposed out-of-view;
 - (c) a battery for powering said diodes; and
 - (d) control circuitry interconnecting said battery and said diode terminals, said circuitry being adapted to energize said diodes sequentially at a rate to optically simulate motion and including
 - (1) an electronic clock adapted to emit electrical pulses,
 - (2) an electronic counter driven by said clock pulses, and
 - (3) a decoder connecting said counter to predetermined ones of said diodes.

4,231,080

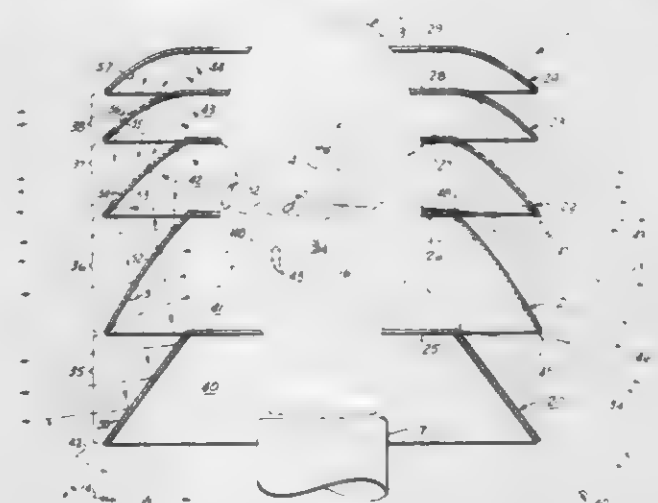
LUMINAIRE WITH REFLECTING LOUVERS

Wayne W. Compton, Irvine, Calif., assignor to Kim Lighting, Inc., City of Industry, Calif.

Filed Mar. 23, 1978, Ser. No. 889,193
Int. Cl.³ A47B 19/00

U.S. Cl. 362-298

6 Claims



1. A luminaire having a vertical axis, and at least four horizontal reflector members, each said reflector member being a surface of revolution around and centered on said axis for at least a substantial portion of its periphery, said portion being coaxial, said reflector members being axially spaced apart from one another, and each having a central opening to receive a lamp which when energized to emit light emits light in a region of major luminance with an upper end and a lower end, said region extending from end to end for a substantial distance along said vertical axis, said reflectors being axially spaced apart to form a first, lower, aperture between a first, lower, one

of said reflector members, and the next-above second one of said reflector members, and a second aperture between said second reflector member and the next-above third one of said reflector members, and a third aperture between said third reflector member and the next-above fourth one of said reflector members, the upper surface of said portion of said first reflector member being specularly reflective and so shaped, disposed, and arranged as to cut off light from the upper end to define the least vertical angle of directly-emitted light, the lower surface of said portion of said second reflector member being specularly reflective, and so disposed and arranged as to reflect light from said region to the said reflecting surface of the first reflector member so that the first reflector member reflects said light in a pattern extending from a maximum vertical angle for light emitted from said lower end, to a lower angle for light emitted from the region above the lower end, and so as to cut off light from the region above the lower end from direct emission above a maximum vertical angle of directly emitted light, the upper surface of said portion of said second reflector member and the lower surface of said portion of said third reflector member being specularly reflective, at least some direct escape of light being permitted between them, with the third reflector so disposed and arranged as to cut off said direct light at or below said maximum vertical angle of directly-emitted light, said last-named upper and lower surfaces sequentially reflecting light from said lower end at the maximum vertical cut-off angle, and from locations above said bottom end, at lesser vertical angles, whereby light emitted from said first and second apertures is a combination of directly emitted and doubly reflected light cut off at said maximum and minimum vertical angles, the inner margin of said third reflector member and the outer margin of said fourth reflector member axially overlapping to prevent direct escape of light from the luminaire, above 90° horizontal, the upper surface of said portion of the third reflector member and the lower surface of said portion of the fourth reflector member being specularly reflective and respectively convex upwardly and concave downwardly, and so proportioned, disposed, and arranged that sequentially reflected light departs at an angle at or beneath said maximum vertical angle.

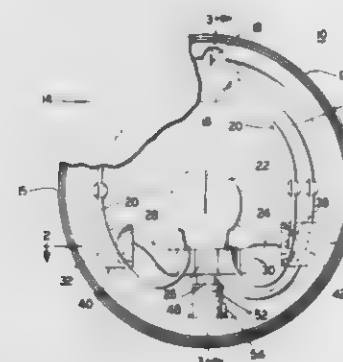
4,231,081

BULB MOUNT FOR VEHICLE LAMPS

Joseph V. Borruano, Edison, N.J., assignor to Abex Corporation, New York, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,360
Int. Cl.³ H01G 1/14

U.S. Cl. 362-306



1. A lamp for use in a vehicle subjected to shock and vibration having a rigid reflector, a lens attached to the reflector and cooperative therewith to define a cavity, a flexible bulb support having a central bulb receiving portion, and a bulb in the central receiving portion, characterized by means for resiliently mounting the flexible support in said cavity in the lamp, wherein a reduced amount of vehicle shock and vibration received by the lamp is transmitted to the bulb support since the resilient mounting permits movement of the entire bulb support relative to the reflector whereby the resilient mounting absorbs some shock and vibration and a reduced amount of the shock and vibration received by the bulb support is trans-

mitted to the bulb since flexure of the bulb support absorbs some of the shock and vibration transmitted from the resilient mounting to the bulb support.

4,231,082

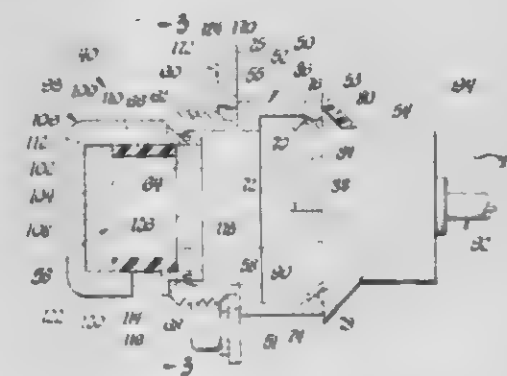
LAMP ASSEMBLY LIGHT SHIELD AND RETAINING MEANS

David W. Bull, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

Filed Feb. 10, 1978, Ser. No. 876,720
Int. Cl.³ F21S 1/06

U.S. Cl. 362-368

17 Claims



1. A light shield for detachable connection to associated support structure, comprising a shield main body portion, said main body portion comprising a generally relatively forwardly disposed first closed end and a generally relatively rearwardly disposed second end, a recess-like cavity formed in said main body portion, said cavity having an end opening in said second end for receiving at least a portion of an associated bulb means therein, aperture means formed in said main body portion generally transversely thereof as to be located generally between said first and second ends, said aperture means permitting the passage therethrough of light rays generated by said associated bulb means, and light ray filter means, said filter means being situated within said cavity and fixedly secured to and carried by said main body portion in a manner at least partly covering said aperture means.

4,231,083

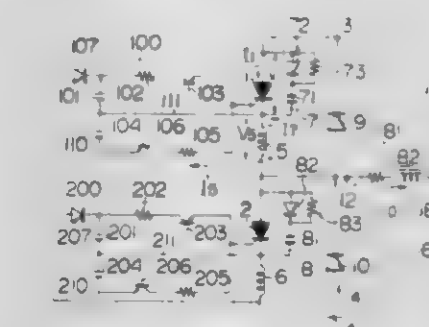
POWER CONVERSION APPARATUS

Yasuo Matsuda, Kazuo Honda, and Nobuyoshi Muto, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 4, 1978, Ser. No. 931,008
Int. Cl.² H02M 7/155; H02H 7/122

U.S. Cl. 363-135

12 Claims



1. A power conversion apparatus for converting a D.C. input to an A.C. output, comprising:
 - first and second input terminals;
 - first and second gate turn-off thyristors (GTO's) and first and second reactors connected between said first and second input terminals;
 - an anode of said first GTO being connected to said first input terminal, said first reactor being connected between a cathode of said first GTO and an anode of said second GTO, and said second reactor being connected between a

cathode of said second GTO and said second input terminal;
 first and second gate circuits for supplying turn-on currents and turn-off currents to said first and second GTO's, respectively;
 a first diode connected in parallel with a first circuit including said first GTO;
 a second diode connected in parallel with a second circuit including said second GTO;
 an output terminal connected to the junction node of said first reactor and said second GTO;
 a first connection line for connecting a positive terminal of a first gate power supply included in said first gate circuit to the junction node of said first reactor and said second GTO, through a third diode;
 a second connection line for connecting a negative terminal of said first gate power supply to the junction node of said first reactor and said first GTO;
 a third connection line for connecting a positive terminal of a second gate power supply included in said second gate circuit to the junction node of said second reactor and said second input terminal, through a fourth diode; and
 a fourth connection line for connecting a negative terminal of said second gate power supply to the junction node of said second reactor and said second GTO.

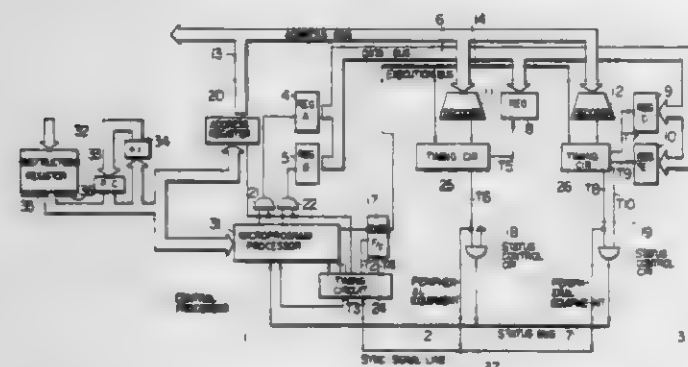
4,231,084

DATA TRANSFER SYSTEM

Masaaki Yoshizaki, and Kenichi Mizuno, both of Yokohama, Japan, assigns to Hitachi, Ltd., Japan
 Continuation-in-part of Ser. No. 794,116, May 5, 1977, abandoned. This application Dec. 8, 1977, Ser. No. 858,820
 Claims priority, application Japan, May 10, 1976, 51-52225
 Int. Cl. G06F 3/04

U.S. Cl. 364-200

7 Claims



1. A data transfer system comprising:
 a central processor for processing information by fetching and executing an output instruction stored in and read out of a main memory equipment, the output instruction including address information and command information,
 a plurality of peripheral equipments each having a data storing capacity, at least one of said peripheral equipments having a larger data storing capacity than that of remaining peripheral equipments, and
 a group of buses including an address bus, a data bus and a status bus and connecting the central processor to each of the plurality of the peripheral equipments,
 said central processor comprising a plurality of data registers for storing data to be transferred, address transfer means for transmitting to said address bus the address information indicative of one of the peripheral equipments to which the data stored in said data registers is to be transferred, first data transfer means for permitting transmission to said data bus the data stored in one of said data registers in response to a data transfer control signal applied thereto, second data transfer means for operatively permitting transmission to said data bus the data stored in another one of the remaining data registers other than said one data register, said data registers transmitting data repeatedly one after another without changing the address

information of said address transfer means due to maintenance of the same output instruction fetched, and means for terminating the data transfer.

said peripheral equipment each comprising means, connected to the address bus to receive said address information transmitted therethrough for judging whether or not said address information designates the associated peripheral equipment, data receiving means for receiving data transmitted through said data bus when the associated peripheral equipment is designated by said address information, said data receiving means having a data storing capacity which corresponds to that of the associated peripheral equipment, and is required for operation of the associated peripheral equipment, and status signal means for judging whether or not the data received by said data receiving means is less than the data required for the operation of the associated peripheral equipment and for generating a status signal indicating that the data received by said data receiving means is less than the data required for the operation of the associated peripheral equipment, said status signal means operating to transmit the thus generated status signal to the status bus for transmission to said central processor,

said second data transfer means being responsive to the status signal transmitted through the status bus and operatively permitting transmission to said data bus the data stored in the another of said plurality of said data registers, and

said terminating means being responsive to the absence of the status signal on the status bus and operatively terminating the data transfer by said first and second data transfer means,

whereby more than one data transfer from the central processor to a selected one of the peripheral equipments is effected by transmission of the status signal from the selected one of the peripheral equipments to said central processor under the same output instruction fetched by said central processor.

4,231,085

ARRANGEMENT FOR MICRO INSTRUCTION CONTROL

Dieter Bazlen, Stuttgart; Rolf Berger, Schoenaich; Arnold Blum, Gchingen; Dietrich W. Bock; Herbert Chilinski, both of Schoenaich; Hellmuth R. Geng, Herrenberg; Johann Hajdu; Fritz Irro, both of Boeblingen, and Udo Wille, Holzgerlingen, Siegfried Neuber, Sindelfingen, all of Fed. Rep. of Germany, assigns to International Business Machines Corporation, Armonk, N.Y.

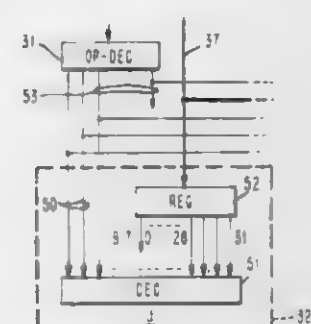
Filed Aug. 18, 1978, Ser. No. 934,781

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747304

Int. Cl. G06F 9/12

U.S. Cl. 364-200

5 Claims



1. In a modularly structured data processing system controlled by microinstructions, said system including plural data processing modules, a central source of microprogrammed control signals common to said modules, first bus means having plural bit lines for transferring control bit signals in parallel form from said central source to said modules, a central source of data signals common to said modules, second bus means

having plural bit lines for transferring data bit signals in parallel form from said central source of data signals to said modules, the improvement for selectively transferring additional control bit signals to said modules through selected bit lines in said second bus means which intermittently are not used for transferring data bits, wherein said central source of control bit signals includes a first control store for storing microinstruction words having operation code syllables, first decoding means coupled to said first control store for producing said control bit signals in response to microinstruction word outputs of said first control store, means coupling outputs of said first decoding means to said first bus means for transfer to said modules, comprising:

a decoder internal to each said module for decoding control bit signals to generate control signals for internal control of data bit processing operations in the respective module;

and
 coupling means internal to each said module for coupling control bit signals to the respective decoder from all of the bit lines in said first bus means, and for coupling additional control bit signals to the respective decoder from said selected lines in said second bus means; each said decoder being responsive to control bit signals coupled thereto by said respective coupling means for operating selectively in first and second modes;

each said decoder being operative in said first mode to decode said control bit signals and additional control bit signals in combination and in said second mode to decode only said control bit signals for generating control signals for controlling the internal data bit processing operations in the respective module.

4,231,086

MULTIPLE CPU CONTROL SYSTEM

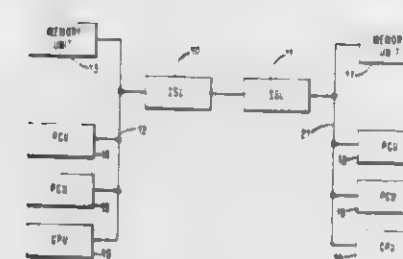
Bruce H. Tarbox, Billerica, Mass.; Kenneth E. Bruce, Nashua, N.H.; John W. Conway, Waltham, and Ralph M. Lombardo, Jr., Lowell, both of Mass., assigns to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Oct. 31, 1978, Ser. No. 956,382

Int. Cl. G06F 9/46, 3/04

U.S. Cl. 364-200

1 Claim



1. A logic system for controlling the access of plural central processing units (CPUs) on a local communication bus to a remote communication bus to avoid CPU deadlocks which may occur when plural CPUs on said local bus issue bus cycle requests requiring the use of same logic flow paths through intersystem link (ISL) units to said remote bus in a data processing system having plural communication busses each providing a common information path for plural data processing units including memory units, peripheral control units, ISL units and CPUs electrically interfacing therewith, and each of

said busses are in electrical communication with an ISL unit, and ISL units in turn are in electrical communication in pairs, which comprises:

- (a) register means in a local ISL unit in electrical communication with said local bus for storing at the bus rate binary coded information received from said local bus;
- (b) bus cycle compare logic means in said local ISL unit and in electrical communication with said register means and said local bus, and responsive to ACK, NAK and WAIT signals received from said remote bus by way of a remote ISL unit for indicating the occurrences of equivalents and non-equivalents between binary coded information stored in said register means and binary coded information on said local bus;
- (c) mode control means in said local ISL unit and in electrical communication with said register means and said remote ISL unit for storing a NAK retry bit signal supplied by said local or said remote bus during an ISL configuration mode to indicate the presence of plural CPUs on said local bus; and
- (d) NAK logic control means responsive to said non-equivalents and said NAK retry bit signal for issuing a NAK signal to those of said plural CPUs having an access priority higher than that of a lowest priority one of said plural CPUs, thereby providing said lowest priority one CPU with access to said remote bus.

4,231,087

MICROPROCESSOR SUPPORT SYSTEM

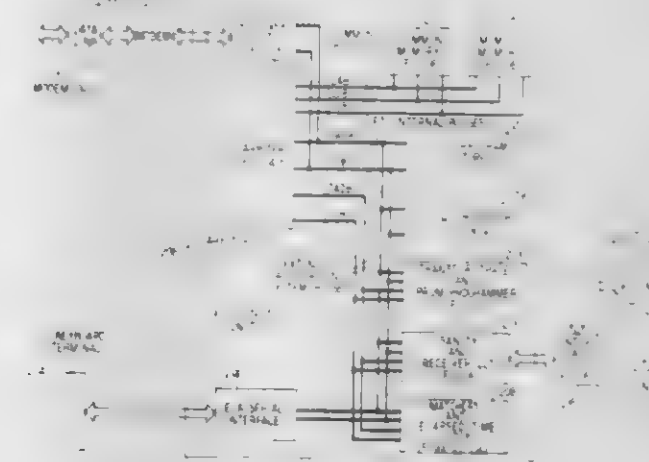
Dennis J. Hunsberger, Fair Haven; Charles E. Nahabedian, Mendham; Thomas M. Quinn, Little Silver, and James H. VanOrnum, Hazlet, all of N.J., assigns to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 18, 1978, Ser. No. 952,278

Int. Cl. G06F 11/00

U.S. Cl. 364-200

18 Claims



1. A processor support system for providing maintenance and software development for an application system which is controlled by an application processor via data, address, and control buses, wherein said processor support system comprises:

computer means for running an operating system to generate and store software for said application system;
 field test unit means connected between said computer means and said application system for interfacing said computer means with said application system, wherein said field test unit means comprises:
 program store means for storing control instructions generated by said computer means for regulating the operation of said field test unit means;
 processor means for controlling the operation of said application system;
 memory means for storing said software generated by said computer means and written in said memory means by said computer means;

interface means responsive to said processor means and directly connectable to said application system data, address, and control buses for connecting said application processor to said memory means;
field test unit bus means connected to said program store means and to said processor means for applying said control instructions to said processor means; and
wherein said processor means is responsive to said control instructions for directing said application processor via said interface means to execute said software stored in said memory means.

4,231,088

ALLOCATING AND RESOLVING NEXT VIRTUAL PAGES FOR INPUT/OUTPUT

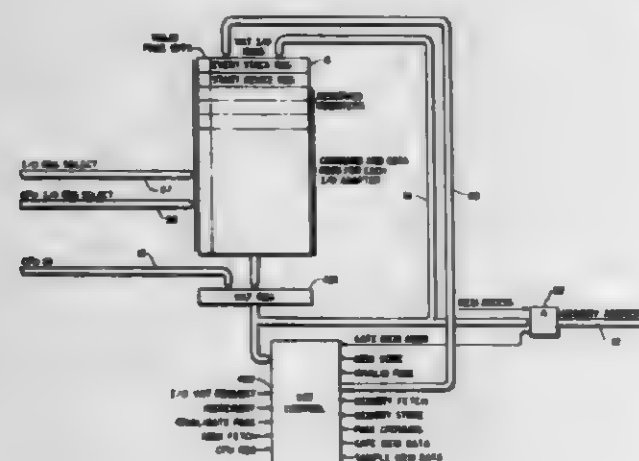
William E. Hammer; David O. Lewis, both of Rochester; John W. Reed, Pine Island; Thomas S. Robinson, and Keith K. Slack, both of Rochester, all of Minn., assigns to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,656

Int. Cl.³ G06F 3/00

U.S. Cl. 364—200

7 Claims



1. In a computer system having virtual memory partitioned into pages, an addressable main storage for storing an input/output (I/O) event stack and in which virtual pages may reside, a central processing unit (CPU) for retrieving I/O events from the I/O event stack and for processing said I/O events, a plurality of I/O adapters connected to control I/O devices and a channel connecting the plurality of I/O adapters to the CPU and main storage, the improvement comprising:
page request means under the control of the I/O adapters for requesting that a particular virtual page be made available in addressable main storage, said page request means specifying channel function information and virtual address information for the requested page;
means responsive to the page request means for forming a page request function event incorporating the channel function information and the virtual address information;
and
means for storing the formed page request function event on the I/O event stack.

4,231,089

DATA PROCESSING SYSTEM WITH APPARATUS FOR CORRECTING MICROINSTRUCTION ERRORS

Donald A. Lewine; Thomas M. Dundon, both of Marlborough, and Ronald J. Setera, Leominster, all of Mass., assigns to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 15, 1978, Ser. No. 969,956

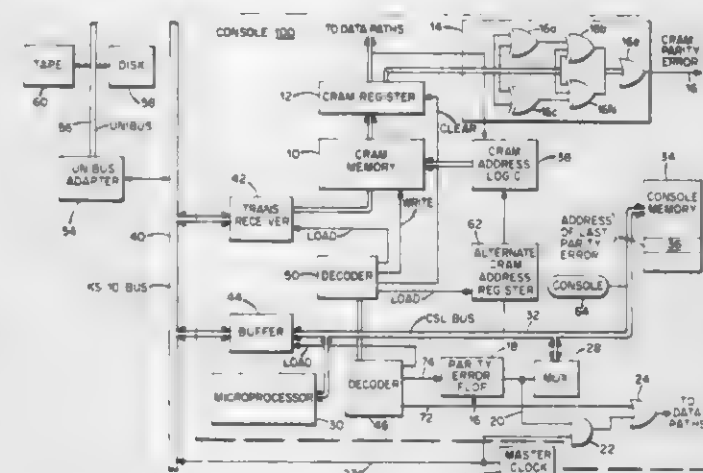
Int. Cl.³ G06F 11/16

U.S. Cl. 364—200

10 Claims

1. Apparatus for correcting instruction errors in a data processing system comprising, in combination:
first and second instruction memory means for storing instructions in memory locations defined by addresses;

register means for receiving and holding instructions from said first and second instruction memory means;
instruction error detection means operable in association with the register means for evaluating an instruction held in said register means to determine whether the instruction is valid or erroneous;



means for freezing the state of at least a portion of the data processing system in response to the detection of an erroneous instruction by the instruction error detection means; and
means operable in response to the detection of an erroneous instruction for replacing the erroneous instruction in said register means with a corresponding valid instruction retrieved from the second instruction memory means.

4,231,090

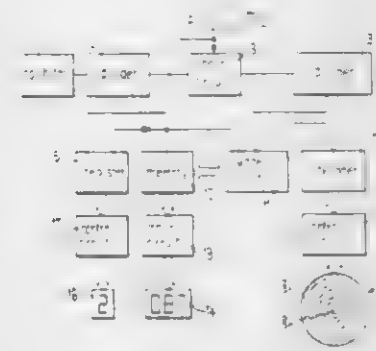
ELECTRONIC GAME OF ADROITNESS INCORPORATED IN AN ELECTRONIC WATCH

Jean-Claude Fatton, Le Landeron, Switzerland, assignor to Ebauches Electroniques SA, Marin, Switzerland
Filed Oct. 19, 1977, Ser. No. 843,570

Claims priority, application Switzerland, Nov. 5, 1976, 13958/76
Int. Cl.³ G04C 3/00; A63B 7/00; G08B 23/00

U.S. Cl. 364—411

5 Claims



1. Electronic game of adroitness incorporated into an electronic watch comprising:
electronic circuits for the measurement of time;
display means capable of displaying a plurality of different states;
electronic means in cooperation with at least part of said time measurement circuits for determining a sequence in time of said different states of said display means and repetitively producing said sequence at a rate such that a player can recognize the changes of said different states, said electronic means comprising:

- a first control circuit;
- a decoder;
- a frequency divider, the outputs of which controlling said display means through said decoder and said first control circuit;

a logic circuit normally transmitting pulses delivered by said electronic time measurement circuit to said frequency divider;
a memory;
a first numeric display;
a calculator unit connected to the output of said frequency divider and cooperating with said memory so as to maintain therein a sum of a plurality of individual results;
a second control circuit through which said memory controls said first numeric display capable of indicating said sum;
a second numeric display;
a third control circuit;
a register for determining the choice of a plurality of players, said register controlling said second numeric display through said third control means to indicate the number of the chosen player; and
control means for being actuated by the player of said electronic game for interrupting said sequence of different states according to the instantaneous state of said display means and of the adroitness of the player and which, when actuated, acting on said logic circuit to interrupt the pulses delivered by said electronic time measurement circuits at the output of said logic circuit and according to the chosen player acting at least indirectly through said register upon said memory and said calculator unit.

4,231,091

ENGINE CONTROL SYSTEM

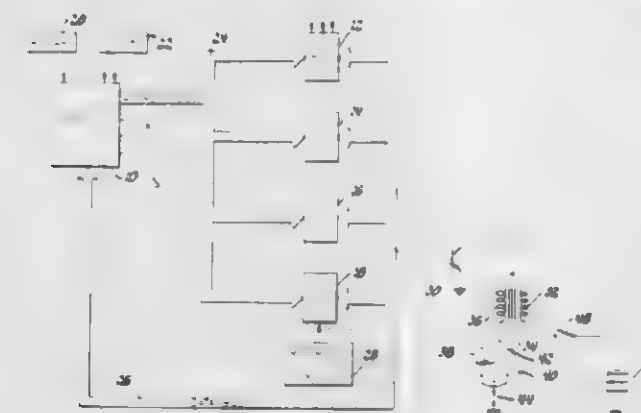
Phillip R. Motz, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1978, Ser. No. 963,693

Int. Cl.³ G05B 15/00; H03K 3/017; F02B 5/00

U.S. Cl. 364—431

5 Claims



3. Apparatus for controlling the spark timing of an engine comprising:

- means for generating a train of input reference pulses indicative of engine crankshaft position and having a repetition rate proportional to engine speed,
- counter means,
- clock means operating at a predetermined frequency,
- means responsive to said clock means for incrementing said counter means at a submultiple of said predetermined frequency,
- read/write memory means responsive to said clock means comprising a RISREF register for storing a binary word corresponding to the content of said counter means when said output should rise, a FALREF register for storing a binary word corresponding to the content of said counter means when said output should fall, an ESTDWELL register for storing a binary word corresponding to the number of counts of said counter means that said output should remain high, an OLDFAL register for storing a binary word corresponding to the number of counts of said counter means that should occur between the fall of said output and the occurrence of a reference pulse, a REFTIME register for storing the content of said counter means upon the occurrence of a reference pulse, a REPPER register for storing a binary word correspond-

ing to the number of counts of said counter means between reference pulses, a NEXR register for storing a binary word corresponding to the predicted content of said counter means at the next reference pulse,
means responsive to engine operating conditions of periodically updating the contents of said OLDFAL and ESTDWELL registers,
means responsive to said clock means for performing arithmetic operations relative to the content of said read/write memory registers and said counter means,
bistable output means responsive to said clock means and said arithmetic means for producing a rectangular wave output signal synchronized with said clock means,
control means responsive to said clock means and including a ROM containing a plurality of subroutines, each subroutine containing one or more instructions, said control means including means responsive to a plurality of inputs for accessing said ROM in response to said inputs or combinations thereof for initiating a subroutine associated with each of said inputs or input combinations, said control means including means responsive to said instructions for controlling data transfers between said counter means, said arithmetic means and said read/write memory means and, for controlling the operation of said arithmetic means and for controlling the state of said output means in accordance with the results of operations of said arithmetic means,

said control means responsive to an input indicative of a rise of said output for initiating a subroutine which updates the content of said FALREF register with the sum of the contents of said OLDFAL and REFTIME registers and which adds the content of said REPPER register thereto a sufficient number of times to cause the content of said FALREF register to be equal to or greater than the content of said counter means,

said control means responsive to a submultiple of said clock frequency and an input indicating that the output has risen for periodically initiating a subroutine which compares the content of said counter means with the content of said FALREF register and which causes the output to fall when the content of said counter means is equal to or greater than the content of said FALREF register,

said control means responsive to an input indicative of a fall of said output for initiating a subroutine which updates the content of said RISREF register with the difference between the content of said ESTDWELL register and the sum of the contents of said FALREF and REPPER registers,

said control means responsive to said submultiple of said clock frequency and an input indicating that said output has fallen for periodically initiating a subroutine which compares the content of said counter means with the content of said RISREF register and which causes the output to rise when the content of said counter means is equal to or greater than the content of said RISREF register,

said control means responsive to a reference pulse for initiating a subroutine which modifies the content of said FALREF and RISREF registers by the difference between the content of said counter means and the content of said NEXR register, which updates the content of said REPPER register by the difference between the content of the counter means and the content of said REFTIME register, which updates the content of said NEXR register by the sum of the content of the counter means and said REPPER register and which updates the content of said REFTIME register with the content of said counter means, and

an ignition circuit responsive to said output signal.

pattern such that radiation beam scans of said subject can be effected in different directions;
 means for detecting the direction and intensity of radiation beams penetrating said subject;
 means for converting to projection data parallel components of said detected radiation beams;
 memory means for storing said projection data as said data values D_j in sequential memory storage positions;
 means for calculating said interpolation values I_j from said data values D_j to reconstruct an image corresponding to a distribution of absorption factor data of said radiation beams in cross-sectional areas of said subject, said calculating means comprising (1) an N-bit register having an upper M-bit portion for addressing said data values D_j stored in said memory means, and a lower (N-M) bit portion for generating weighting coefficient data to obtain an interpolation value I_j from two sequential data values D_j , D_{j+1} stored in said memory means, and (2) a calculator unit for computing an interpolation value I_j from said addressed two sequential data values D_j , D_{j+1} and said weighting coefficient data;
 a counter incremented by a fixed value each time an interpolation value is computed by said calculating unit, said counter for generating an end signal after a predetermined number of interpolation values have been computed;
 an adder for incrementing said lower portion of said N-bit register by an amount equal to a sampling interval for said interpolated data each time an interpolation value is computed;
 a central processing unit coupled to said memory means, said N-bit register, said adder, and said counter for (1) controlling the storing of said projection data in said memory means, (2) supplying the initial address of a said projection data D_j in said memory means to said higher bit portion of said N-bit register, (3) supplying the initial weighting coefficient data to said lower bit portion of said N-bit register, and (4) clearing said counter in response to said end signal;
 image memory means for storing said computed interpolation values;
 means for converting said interpolation values stored in said image memory means to corresponding analog values; and
 means controlled by said analog values for displaying an image of said subject scanned by said radiation beams.

4,231,098

CASING OF ELECTRONIC CALCULATORS

Akira Tanimoto, Kashiwara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

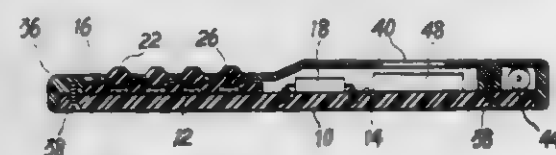
Continuation of Ser. No. 611,678, Sep. 9, 1975, abandoned. This application Aug. 3, 1978, Ser. No. 930,679

Claims priority, application Japan, Sep. 9, 1974, 49-104254; Dec. 30, 1974, 50-1630; Apr. 23, 1975, 50-56086[U]

Int. Cl.³ H05K 7/02

U.S. Cl. 364-708

17 Claims



1. An electronic calculator comprising:

- an upper cover;
- wiring patterns directly formed on an inner surface of the upper cover;
- a display unit mounted on the inner surface of the upper cover and electrically connected to the wiring patterns;
- a computation circuit unit mounted on the inner surface of the upper cover and electrically connected to the wiring patterns;
- key contact patterns formed directly on the inner surface

of the upper cover and electrically connected to the wiring patterns;
 f. key switches electrically associated with the key contact patterns; and
 g. a bottom and side cover fixed to the upper cover.

4,231,099

DIGITAL FUNCTION GENERATOR

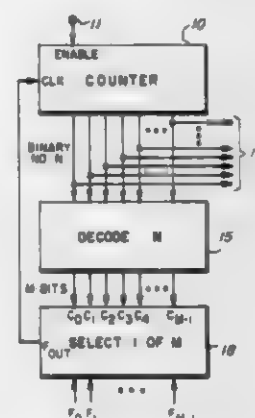
Juris Stauers, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 30, 1979, Ser. No. 62,096

Int. Cl.³ G06F 1/02

U.S. Cl. 364-718

6 Claims



1. A digital function generator comprising:

- a counter having an input for receiving pulses to be counted and a plurality of outputs;
- switching means having a plurality of pulse inputs connected to receive pulses thereon with the pulses having a different repetition rate on each of the different inputs, an output, and a plurality of selection inputs for coupling a selected pulse input to the output in response to a signal applied to a specific selection input, the output being further connected to the input of said counter; and
- decode means having a plurality of inputs connected to the plurality of outputs of said counter and a plurality of outputs connected to the plurality of selection inputs of said switching means for providing signals on the selection inputs in a predetermined sequence and at the occurrence of predetermined counts in said counter.

4,231,100

ARRANGEMENT FOR FILTERING COMPRESSED PULSE-CODE-MODULATED SIGNALS

Ludwig D. J. Eggermont, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

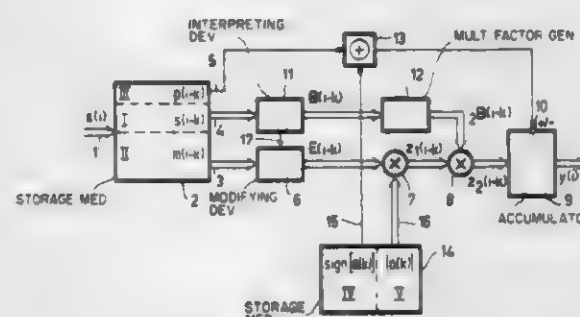
Filed Dec. 22, 1978, Ser. No. 972,605

Claims priority, application Netherlands, Jan. 13, 1978, T900406

Int. Cl.³ G06F 15/31

U.S. Cl. 364-724

3 Claims



1. A digital filter arrangement for filtering non-uniformly quantised pulse code-modulated signals formed by a sequence of code groups $x(i)$ each comprising a segment number $s(i)$ and a mantissa number $m(i)$, which digital filter arrangement comprises:

a first storage medium comprising first storage locations for storing the segment numbers $s(i-k)$, second storage locations for storing the mantissa numbers $m(i-k)$ of a given plurality of N consecutive code groups $x(i-k)$, where $k=0, 1, 2, \dots, N-1$ and $i = \dots, -3, -2, 0, 1, 2, 3, \dots$, and outputs for sequentially supplying the stored code groups;
 a second storage medium for storing the absolute magnitudes $|a(k)|$ of N filter coefficients $a(k)$ and having outputs for sequentially supplying the stored absolute magnitudes; means coupled to the second storage location of said first storage medium for modifying the mantissa numbers $m(i-k)$ and for generating modified mantissa numbers $E(i-k)$;
 first multiplying means connected to the modifying means and coupled to the second storage medium for generating first product numbers $z_1(i-k) = E(i-k)|a(k)|$;
 second multiplying means connected to the first multiplying means;
 means for coupling the second multiplying means to the output of the first storage locations of said first storage medium; and
 accumulating means coupled to the second multiplying means for accumulating the product formed in said second multiplying means.

4,231,101

DIGITAL FILTER ARRANGEMENT FOR NON-UNIFORMLY QUANTIZED PCM

Ludwig D. J. Eggermont, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

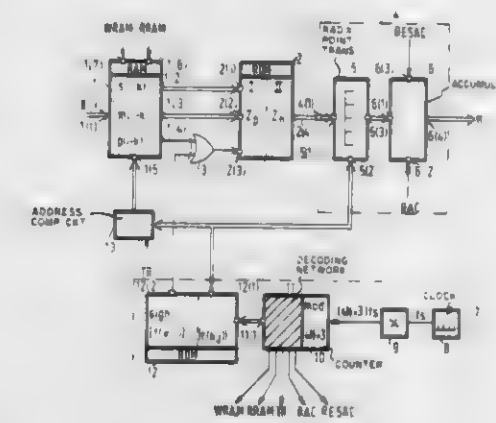
Filed Feb. 2, 1979, Ser. No. 8,805

Claims priority, application Netherlands, Feb. 20, 1978, T901466

Int. Cl.³ G06F 15/31

U.S. Cl. 364-724

6 Claims



1. Digital filter arrangement for filtering non-uniformly quantised pulse code-modulated signals formed by a sequence of code groups $x(i)$, each comprising a polarity bit $p(i)$, a segment number $s(i)$ and a mantissa number $m(i)$, wherein this arrangement comprises:

means for cyclically generating a series of consecutively occurring predetermined auxiliary code words each of which is formed by a second polarity bit and an address code, said means comprising a second polarity bit output and an address code output;

a first storage medium having addressable storage locations and being arranged for storing N consecutively occurring code groups $x(i-k)$ where $k=0, 1, 2, \dots, N-1$ and $i = \dots, -3, -2, -1, 0, 1, 2, 3, \dots$, which first storage medium comprises a storage location address input, an input for receiving said code groups $x(i-k)$, a segment number output, a mantissa number output and a polarity bit output;

means for coupling the address code output of the generating means to the storage location address input of the first storage medium;

a second storage medium having a first and a second storage

field, each addressable by means of a storage field address code, each storage field comprising storage locations which are addressable by means of storage location address codes, the second storage medium comprising storage location address inputs, a storage field address input and an output;

means for coupling the segment number and mantissa number outputs of the first storage medium to the respective storage location address inputs of the second storage medium;

exclusive OR-gate means comprising inputs connected to the polarity bit output of the generating means and the first storage medium, respectively, and comprising an output connected to the storage field address input of the second storage medium;

accumulating means, operating in 1- or 2-complement, comprising an input coupled to the output of the second storage medium and means for shifting, relative to one another, the number supplied by the second storage medium and the accumulating means content, the shifting means being controlled by shift commands applied to the accumulating means through a shift command input; and
 means for coupling the shift command input to the address code output of the generating means.

4,231,102

CORDIC FFT PROCESSOR

Paul C. Barr, Framingham, and Herbert L. Groginsky, Wellesley, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 21, 1978, Ser. No. 972,123

Int. Cl.³ G06F 15/332

U.S. Cl. 364-726

9 Claims



1. In combination:

a plurality of pairs of arithmetic elements adapted for input of two digital words, each of said elements providing as an output either a sum or difference of two input digital words;

a storage means connected to the output of each of said elements;

means for connecting said pairs of elements and storage means in a series, said connecting means hardware connecting bits of the contents of storage means to inputs of both of the elements of the next sequential pair of elements in said series; and

said connecting means comprising means for bit transpositioning where necessary such that if the contents of two said storage means of a pair of elements are X_i and Y_i , where i is the number of the arithmetic element pair in said series, the outputs of the next sequential pair of arithmetic

elements in said series will be $X_i \pm 2^{-i} Y_i$ and $Y_i \pm 2^{-i} X_i$, respectively.

4,231,103

FAST FOURIER TRANSFORM SPECTRAL ANALYSIS SYSTEM EMPLOYING ADAPTIVE WINDOW

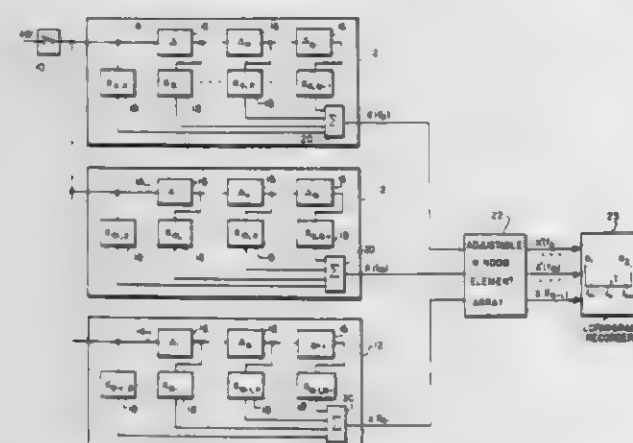
John E. Timm, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 12, 1979, Ser. No. 11,339

Int. Cl.³ G06F 15/332

U.S. Cl. 364-726

16 Claims



1. Spectral analysis apparatus comprising:

- a Fast Fourier Transform processor receiving a time domain signal for providing the frequency domain coefficients of the Fast Fourier Transform of said time domain signal which is generated when said processor is operated to sample said time domain signal at a specified number of intervals over a time period of specified duration, each of said coefficients comprising an initial estimate;
- a selected number of adjustable window means, a given one of said adjustable window means receiving a selected number of said initial estimates for sensing the presence of a leakage component in a given one of said received initial estimates, and for providing an adjusted signal strength estimate, said adjusted signal strength estimate comprising the difference between said given received initial estimate and said sensed leakage component; and
- means for monitoring the adjusted signal strength estimate of said given adjustable window means, and also for monitoring other adjusted signal strength estimates provided by the remaining adjustable window means.

4,231,104

GENERATING TIMING SIGNALS

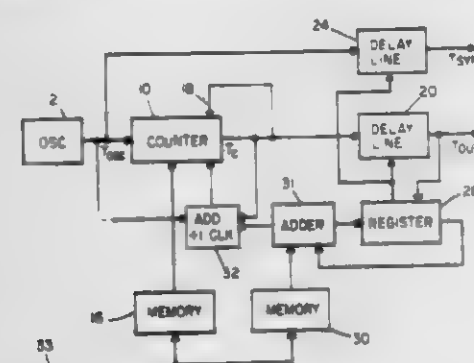
Richard P. St. Clair, Simi Valley, Calif., assignor to Teradyne, Inc., Boston, Mass.

Filed Apr. 26, 1978, Ser. No. 900,189

Int. Cl.³ G06F 1/04; G06M 3/02

U.S. Cl. 364-900

14 Claims



1. A signal generator, comprising

a clock for generating clock signals separated in time by a clock period,
programmable counting means for counting said clock signals and providing outputs at predetermined counts, said outputs being separated in time by an integer multiple of said clock period,
delay means for providing a timing signal after a delay interval following each said output, the resolution of said delay means being greater than that of said clock, and
programmable delay means for repeatedly changing said delay interval for successive said timing signals so that said timing signals are separated in time by other than integer multiples of the period of said clock.

4,231,105

VENDOR CONTROL CIRCUIT

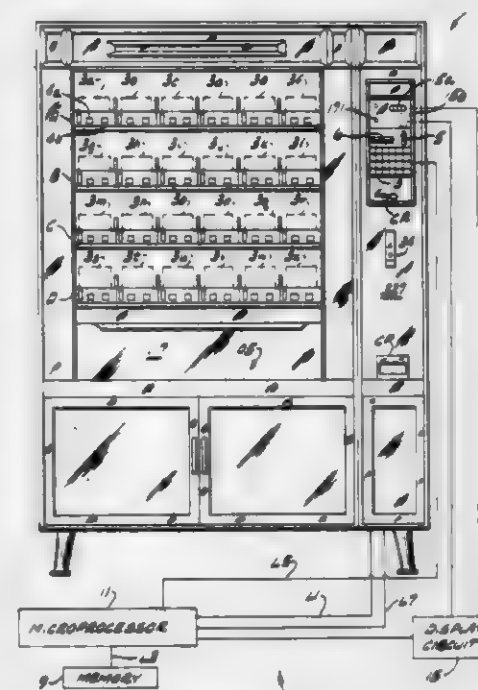
James T. Schuller, St. Louis County; Paul N. Albrecht, Ballwin, and Hugo M. Canizares, Bridgeton, all of Mo., assignors to UMC Industries, Inc., Stamford, Conn.

Filed Jul. 5, 1978, Ser. No. 921,960

Int. Cl.³ G07F 11/62; G06F 15/21

U.S. Cl. 364-900

38 Claims



1. Apparatus for controlling the functioning of a vendor for vending a plurality of items, each item having at least one parameter associated therewith, comprising:

- a memory having a plurality of addresses for storing values of at least some of the parameters in predetermined memory addresses, the parameter values stored in the predetermined memory addresses being electrically alterable;
- processing means responsive to a plurality of vendor status inputs, a plurality of inputs from the memory, and a plurality of control inputs, for performing arithmetic and logic operations with those inputs and with the values of the parameters associated with the items in a sequence controlled by a preselected set of instructions which constitute a program and for supplying output signals based upon results obtained from said operations to control functioning of the vendor, the predetermined memory addresses being accessible by the processing means and the parameter values stored therein being alterable by said processing means;
- interrogation means operable by authorized personnel for retrieving from memory the values of at least some of the parameters stored therein; and
- display means for visually displaying a parameter value retrieved from memory by the interrogation means independently of any other input of said processing means being equal in value to the value of the parameter retrieved from the memory, whereby authorized personnel

may utilize the interrogation means to retrieve the value of a desired parameter from the memory.

4,231,106

PERFORMANCE MONITOR APPARATUS AND METHOD

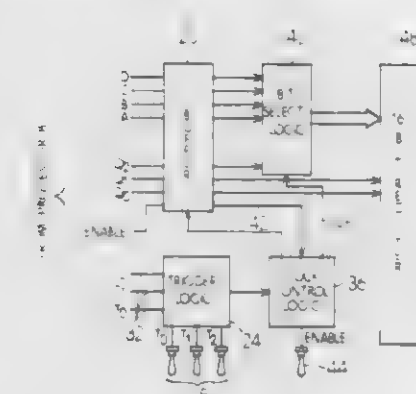
David L. Heap, Centerville, and Allen L. Kenner, Magna, both of Utah; assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,242

Int. Cl.³ G06F 9/00

U.S. Cl. 364-900

14 Claims



1. Performance monitor apparatus for receiving instruction data words and for developing various output signals in response thereto, said instruction data words including address bits and operation bits, said apparatus including buffer means for receiving and temporarily registering an instruction data word, register means comprising a plurality of bistable elements, each for producing either a first or second output signal in response to receipt of a first or second operation signal respectively and receipt of a select signal, select logic means for applying a select signal to a particular bistable element identified by the address bits of the instruction data word registered in said buffer means, and means for supplying to said bistable elements either a first or second operation signal as determined by the operation bits of the instruction data word registered in said buffer.

4,231,107

SERRIFORM STRIP CROSSTIE MEMORY

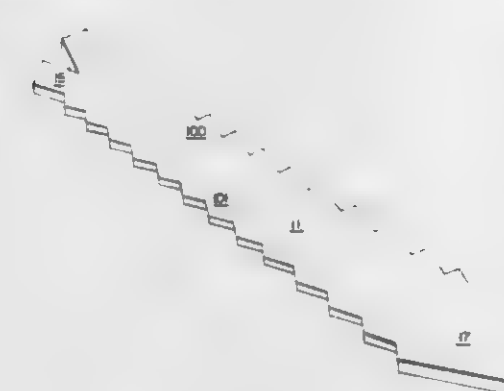
Leonard J. Schweg, Coleville; Henry R. Irons, and Wallace E. Anderson, both of Beltsville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1978, Ser. No. 877,633

Int. Cl.³ G11C 19/08

U.S. Cl. 365-87

77 Claims



1. In a logic system, a serially accessible crosstie memory element, comprising:
a ferromagnetic oblong layer having, denticulated margins parallel to and symmetric about the oblong centerline of the layer; and,
electrical means external to, electrically insulated from, and

running along the centerline of said ferromagnetic layer for creating a field pattern on said ferromagnetic layer; whereby along said centerline a domain wall may be positioned, and along said domain wall crossties may be nucleated at and Bloch lines may be nucleated between, opposite narrow cross-sections of said margins, and Bloch lines may be propelled.

4,231,108

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Masao Suzuki, Kodaira; Toshio Hayashi, Tokorozawa; Kuniyasu Kawanada, Musashino; Kazuhiro Toyoda, Yokohama, and Chikai Ono, Kawasaki, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Fujitsu Limited, both of Tokyo, Japan

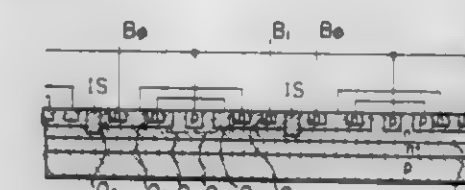
Filed Jun. 13, 1979, Ser. No. 48,256

Claims priority, application Japan, Jun. 14, 1978, 53-71666

Int. Cl.³ G11C 11/40

U.S. Cl. 365-174

9 Claims



1. A semiconductor integrated circuit device having an array of integrated injection logic memory cells, each said integrated injection logic memory cell comprising a pair of first and second transistors of first conduction type with common emitters forming an injector connected to a first word line, a pair of third and fourth transistors of second conduction type having their collectors connected to the collectors of said first and second transistors, respectively, the base of said third transistor being connected to said collector of said fourth transistor and the base of said fourth transistor being connected to said collector of said third transistor, said first and second transistors having bases connected in common to emitters of said third and fourth transistors and to a second word line, said second word line thusly connecting to each said memory cell of said at least one array, said semiconductor integrated circuit device comprising

a bulk of said semiconductor device forming said second word line,
at least two current sources connected in a distributed fashion to said second word line of said memory cell array.

4,231,109

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Chikai Ono, Kawasaki, and Kazuhiro Toyoda, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

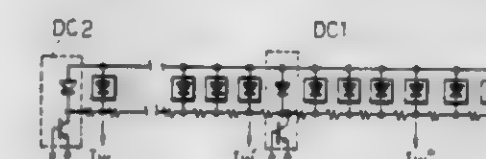
Filed Jun. 29, 1979, Ser. No. 53,274

Claims priority, application Japan, Jun. 30, 1978, 53-79391; Dec. 29, 1978, 53-165131

Int. Cl.³ G11C 11/40

U.S. Cl. 365-174

12 Claims



1. A semiconductor integrated circuit device having an array of integrated injection logic memory cells, each said memory cell comprising first and second transistors having common emitters of a first conduction type and comprising an injector of the cell, third and fourth transistors having emitters

of a second conduction type opposite to said first conduction type with their collectors respectively connected to the collectors of said first and second transistors, said third transistor having its base connected to the collector of said fourth transistor and said fourth transistor having its base connected to the collector of said third transistor, said first and second transistors having bases connected in common and to the emitters of said third and fourth transistors, and first and second word lines along respective lines of said array, each said first word line being connected to said injectors of the cells of the respective line of the array and each said second word line being similarly connected to the bases of said first and second transistors, said semiconductor integrated circuit device comprising each said second word line comprising a semiconductor bulk portion,

dummy cells distributed in each said line of said memory cell array, each of said dummy cells comprising a shunt circuit for shunting a respective portion of a write current supplied to selected ones of said integrated injection logic memory cells of the respective line of cells, each of said shunt circuits comprising an injector, and a hold current supply transistor for selectively supplying a hold current to said memory cells of said respective line of cells.

4,231,110

MEMORY ARRAY WITH SEQUENTIAL ROW AND COLUMN ADDRESSING

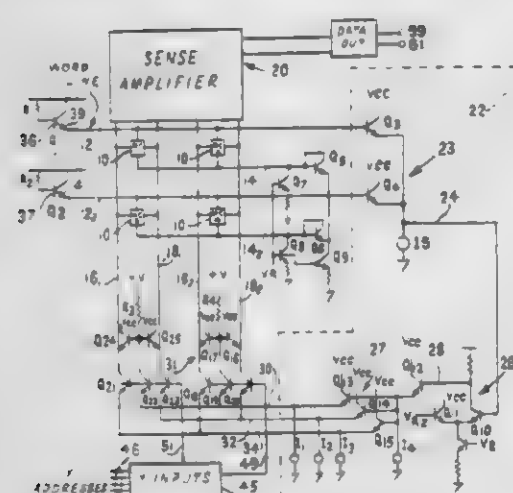
Jonathan J. Stinehelfer, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Filed Jan. 29, 1979, Ser. No. 7,103

Int. Cl.³ G11C 8/00, 7/00

U.S. Cl. 365-194

8 Claims



4. An electronic static memory having a plurality of static memory cells arranged in an array of rows and columns wherein each cell exists in a selected logic state of at least two stable logic states, means for selectively addressing each row, means for selectively addressing each column, and means for sensing the logic states of the cells, characterized in that the memory includes means for delaying addressing of a column until after an addressed row has achieved a voltage level suitable for the sensing means to sense.

4,231,111

MARINE CABLE LOCATION SYSTEM

Walter P. Neeley, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,916

Int. Cl.³ G01V 1/38

U.S. Cl. 367-19

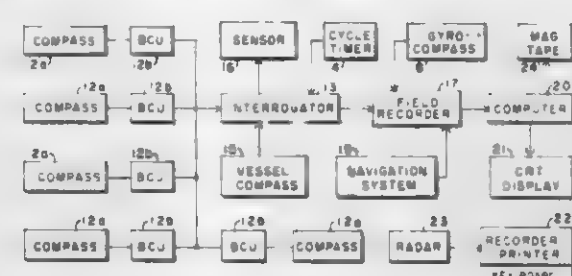
6 Claims

1. A system for visually displaying the position of a cable towed by a marine vessel, comprising:

- (a) means for providing navigational information signals identifying the X-Y coordinate of said marine vessel,
- (b) a sensor located on said marine vessel for providing a

signal representative of the heading of said marine vessel as it tows said cable through the water,

- (c) a plurality of sensors located at select points along said cable for providing signals representative of the heading of tangents to the cable at said select points,
- (d) means responsive to the signals from said cable sensors, from said marine vessel sensor, and from said navigational information means for determining the X-Y coordinate of each of said plurality of cable sensors,
- (e) a visual display having a matrix of display squares,
- (f) means for entering the X-Y position of said marine vessel



along with the X-Y position of said plurality of selected cable points into the matrix of said visual display, whereby squares of the display matrix identified with said entered X-Y positions are visually distinguishable from the remaining squares to display a locus of points defining the configuration of the towed cable,

- (g) means for identifying the X-Y coordinates of obstacles in the path of said cable as it is being towed by said marine vessel, and (h) means for entering the X-Y coordinates of said obstacles into the matrix of said visual display to visually display a mark representing the position of the obstacle relative to the cable.

4,231,112

HIGH-POWER UNDERWATER TRANSDUCER WITH IMPROVED PERFORMANCE AND RELIABILITY CHARACTERISTICS AND METHOD FOR CONTROLLING SAID IMPROVED CHARACTERISTICS

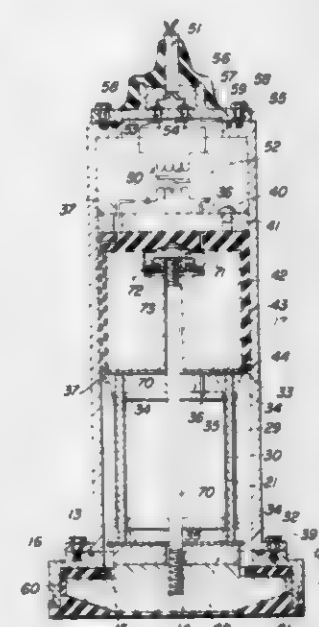
Frank Massa, Cohasset, Mass., assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, both of Cohasset, Mass.

Filed Jul. 30, 1970, Ser. No. 59,656

Int. Cl.² G01V 1/00; H04B 13/00

U.S. Cl. 367-158

11 Claims



- 8. A method of adjusting the resonant frequency of an electroacoustic transducer including a polarized ceramic tube mechanically coupled between a vibratile piston and an inertial mass element to simultaneously transmit oscillatory forces to both said piston and said element, said method including the steps of: (1) measuring the mechanical compliance of said ceramic tube; (2) selecting a weight having a magnitude which

corresponds to the magnitude of the compliance of the particular ceramic tube; and (3) attaching said selected weight to said piston in combination with said measured ceramic tube.

4,231,113

ANTI-JAM COMMUNICATIONS SYSTEM

Herman L. Blasbalg, Baltimore, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

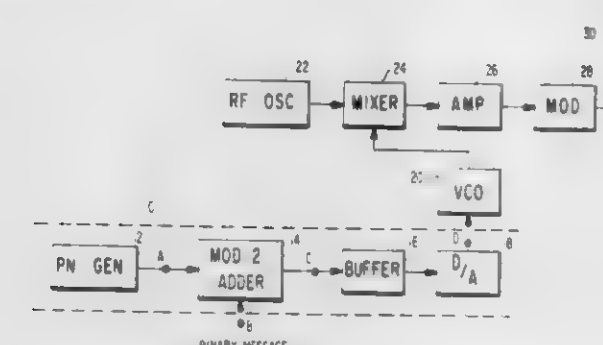
Continuation of Ser. No. 378,302, Jun. 26, 1964. This application

Mar. 11, 1968, Ser. No. 713,564

Int. Cl.³ H04K 1/02; H04L 9/02

U.S. Cl. 455-29

21 Claims



- 18. A method for transmitting binary data in the form of transmitted electrical signals comprising the steps of: generating a pseudo-random binary sequence composed of bits each bit 1/N the length of a binary message bit where N is greater than one; modulating said pseudo-random sequence with binary message bits; and successively controlling at least one parameter of the transmitted signals in response to the analog values of successive portions of said modulated pseudo-random sequence.

4,231,114

SYNCHRONIZING MEANS FOR A TWO-WAY COMMUNICATION SYSTEM

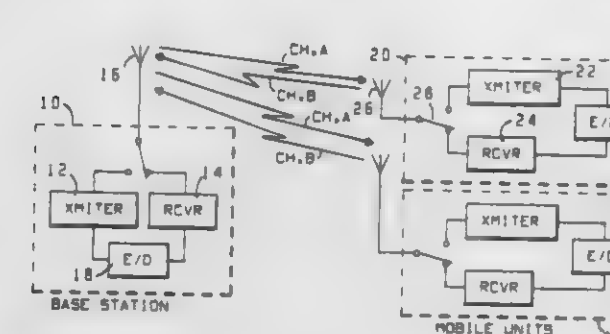
Arman V. Dolikian, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1978, Ser. No. 681,307

Int. Cl.³ H04B 1/50

U.S. Cl. 455-49

5 Claims



- 1. In a two-way communication system comprised of a base station and a plurality of mobile stations wherein the base station transmits to all mobiles over a first channel and the mobile stations transmit to the base station over a second channel and wherein the information carried by each transmission is encoded using a predetermined transmit clock signal, with proper decoding of each transmission requiring phase synchronization to said transmit clock signal, the improvement in a mobile station comprising:

a master oscillator for producing a signal of frequency kf_0 at an output where k is a predetermined integer; detector means for preparing said base station transmissions for decoding, and coupling a prepared signal to an output; a clock recovery means, being coupled to the outputs from the master oscillator and the detector means, for producing

ing a receiver clock signal which is phase locked to said prepared signal; and means for utilizing the clock recovery means receiver clock signal as the transmit clock time base for an encoded transmission by said mobile station such that the transmission by said mobile station over said second channel is substantially synchronized to the base station transmission over the first channel.

4,231,115

MODULAR RADIO

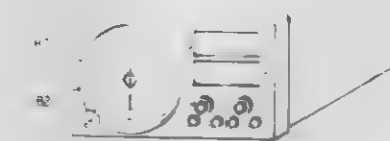
Claude L. Henderson, Camby, and Edmund L. Abner, Indianapolis, both of Ind., assignors to General Aviation Electronics, Inc., Indianapolis, Ind.

Division of Ser. No. 870,678, Jan. 19, 1978, Pat. No. 4,134,070, which is a continuation-in-part of Ser. No. 784,161, Apr. 4, 1977, abandoned. This application Nov. 27, 1978, Ser. No. 963,700

Int. Cl.³ H04B 1/38

U.S. Cl. 455-73

6 Claims



- 1. A combination NAV/COM aviation radio and VOR indicator comprising: a main body receiver portion; a VOR indicator electrically connected within said main body receiver portion and removable therefrom; means for selectively mounting said VOR indicator in a first orientation within said main body receiver portion and in a second orientation separately from said main body receiver portion; and cable means electrically connecting said main body receiver portion with said VOR indicator.

4,231,116

RADIO STATION SYSTEM

Nobuo Sekiguchi, Kodaira; Yukinari Fujiwara, Musashimurayama; Mitsuo Toya, Fujisawa, and Yoichi Kaneko, Tokorozawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

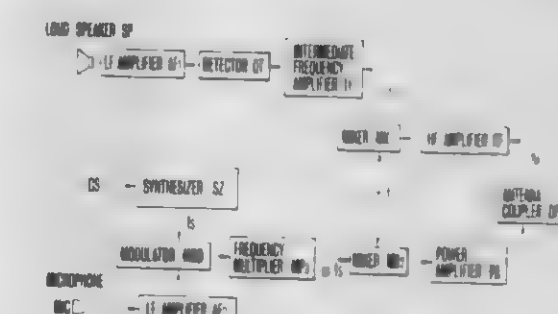
Filed Nov. 24, 1978, Ser. No. 963,431

Claims priority, application Japan, Mar. 27, 1978, 53-35122

Int. Cl.³ H04B 1/50

U.S. Cl. 455-87

3 Claims



- 1. In a radio station system for transmission and reception of signals from a modulation signal source utilizing multichannel transmission and reception frequencies of the type comprising a transmitter and receiver wherein a multi-frequency signal source is supplied with a channel designation input to produce

the local reference frequency signal for the receiver and the transmission frequency signal for the transmitter and wherein the difference between the transmission and reception frequencies is made equal to the intermediate frequency with respect to respective channels, the improvement which comprises means for directly utilizing a variable frequency output of said multifrequency signal source and said local reference frequency signal, said variable output being responsive to said channel designation input to select channel frequencies, means for producing a fixed frequency output from said multi-frequency

signal source, means responsive to said fixed frequency and said modulation signal for producing a modulated carrier wave having a frequency twice said intermediate frequency, means for shifting the frequency of said variable output by the frequency of said carrier wave, and means for utilizing said frequency shifted output to determine said transmission frequency.

DESIGNS

OCTOBER 28, 1980

257,448

BABY BONNET

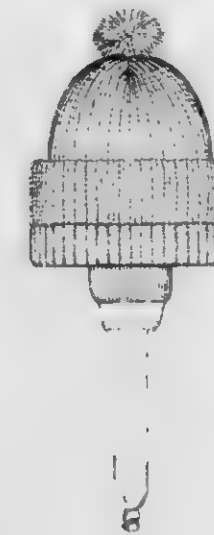
Paul E. Johnson, Jr., 5921 SW. 1st Ct., Cape Coral, Fla. 33904

Filed Jan. 3, 1979, Ser. No. 767

Term of patent 14 years

Int. Cl. D02-03

U.S. Cl. D2-243



257,450

CHAIR

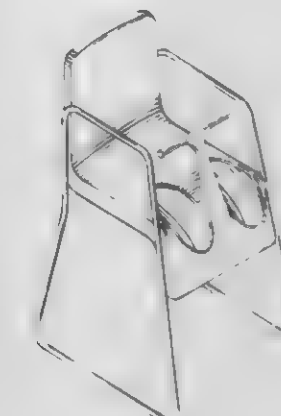
John R. Radek, Hinsdale, Ill., assignor to Ready Metal Mfg. Co., Chicago, Ill.

Filed May 19, 1978, Ser. No. 907,886

Term of patent 14 years

Int. Cl. D6-07

U.S. Cl. D6-7



257,451

OTTOMAN

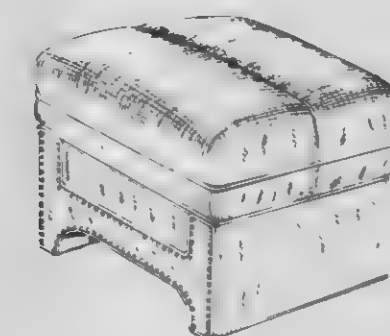
Randy R. Culler, High Point, N.C., assignor to Kroehler Mfg. Co., Naperville, Ill.

Filed Jan. 2, 1979, Ser. No. 652

Term of patent 14 years

Int. Cl. D6-07

U.S. Cl. D6-36



257,449

BABY BONNET

Paul E. Johnson, Jr., 5921 SW. 1st Ct., Cape Coral, Fla. 33904

Filed Jan. 3, 1979, Ser. No. 768

Term of patent 14 years

Int. Cl. D02-03

U.S. Cl. D2-243



257,452

SEAT OR SIMILAR ARTICLE

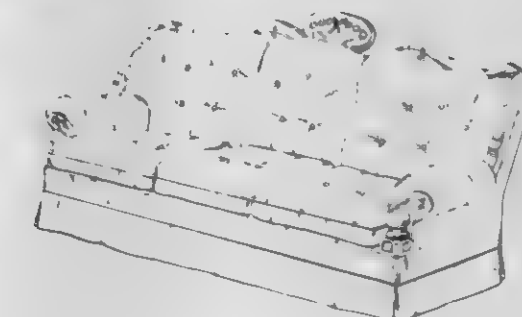
David P. G. Williams, Englewood, N.J., assignor to Schweiger Industries, Inc., Jefferson, Wis.

Filed Dec. 29, 1978, Ser. No. 974,321

Term of patent 7 years

Int. Cl. D6-07

U.S. Cl. D6-62



257,453

SEAT OR SIMILAR ARTICLE

Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.

Filed Dec. 20, 1978, Ser. No. 971,529

Term of patent 7 years

Int. Cl. D6—01

U.S. Cl. D6—63



257,456

SEAT

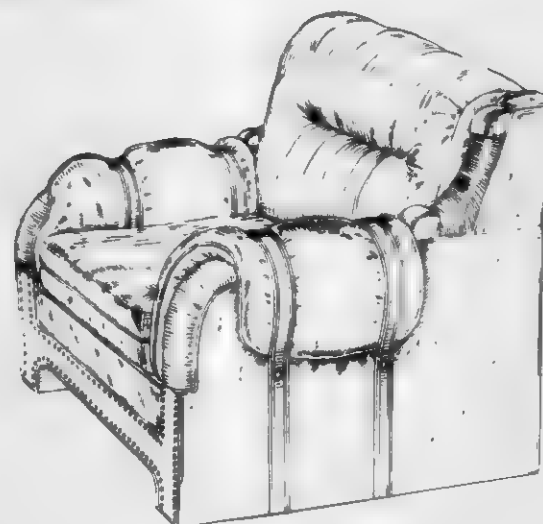
Randy R. Culler, High Point, N.C., assignor to Kroehler Mfg. Co., Naperville, Ill.

Filed Jan. 2, 1979, Ser. No. 653

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—63



257,454

SEAT OR SIMILAR ARTICLE

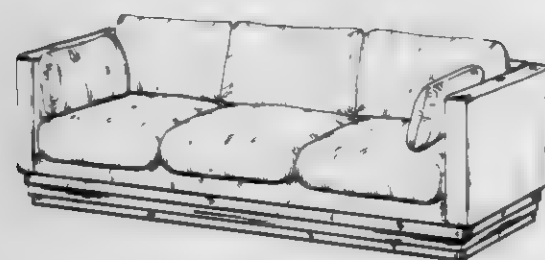
Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.

Filed Dec. 20, 1978, Ser. No. 971,530

Term of patent 7 years

Int. Cl. D6—01

U.S. Cl. D6—63



257,457

SEAT OR SIMILAR ARTICLE

Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.

Filed Jan. 8, 1979, Ser. No. 1,967

Term of patent 7 years

Int. Cl. D6—01

U.S. Cl. D6—63



257,458

CADDY FOR DENTAL CARE IMPLEMENTS

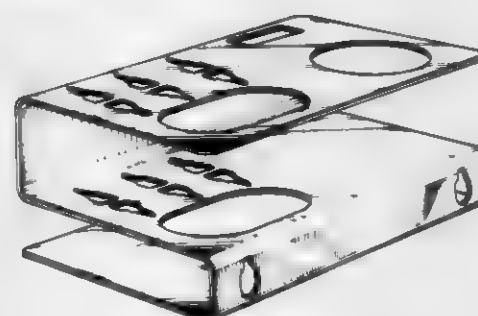
Lucien E. Benoit, R.F.D. #1, Ridge Hill Rd., Woonsocket, R.I. 02895

Filed Nov. 27, 1978, Ser. No. 965,250

Term of patent 14 years

Int. Cl. D23—02; D6—04

U.S. Cl. D6—91



257,455

SOFA

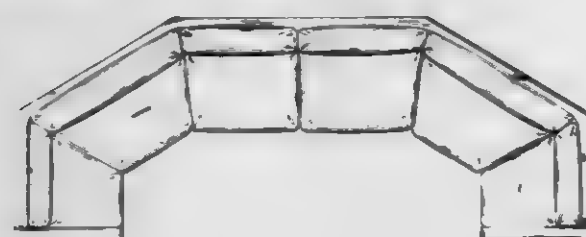
Richard Brooks, North Hollywood, Calif., assignor to Schweiger Industries, Inc., Jefferson, Wis.

Filed Dec. 20, 1978, Ser. No. 971,531

Term of patent 7 years

Int. Cl. D6—01

U.S. Cl. D6—63



257,459

DINING ROOM TABLE

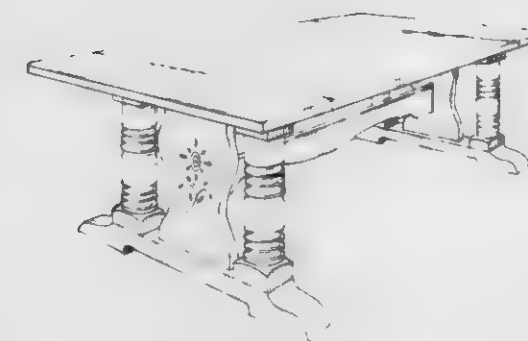
Melbourne F. Smith, Jr., Hickory, N.C., assignor to Broyhill Furniture Industries, Inc., Lenoir, N.C.

Filed Oct. 30, 1978, Ser. No. 956,214

Term of patent 14 years

Int. Cl. D6—03

U.S. Cl. D6—177



257,462

COMBINED CONTAINER FOR CANDY OR THE LIKE AND TOY BUILDING BLOCK

Peter K. Bayly, Eltham North, Australia, assignor to Nicholas Proprietary Limited

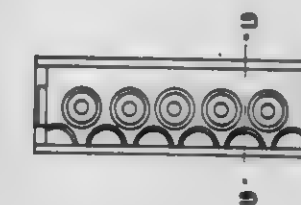
Continuation-in-part of Ser. No. 788,899, Apr. 19, 1977, Pat. No. Des. 252,978. This application Apr. 27, 1978, Ser. No. 901,022

Claims priority, application Australia, Apr. 11, 1977, 73249/77

Term of patent 14 years

Int. Cl. D9—01

U.S. Cl. D9—10



257,463

BEVERAGE CONTAINER

Arin L. Campbell, and Roger B. Cannon, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Aug. 17, 1977, Ser. No. 825,466

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—216



257,460

DEVICE TO REFORM THREADS

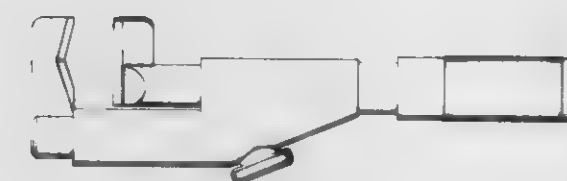
Henry A. Laub, Jr., 1736 N. Allen, Pasadena, Calif. 91104, and Steven D. Laub, 9340 E. Olive St., Temple City, Calif. 91780

Filed Jan. 30, 1978, Ser. No. 873,399

Term of patent 14 years

Int. Cl. D08—05

U.S. Cl. D8—51



257,464

BIN FOR GRANULAR MATERIAL

John D. Persiani, 633 Cree Ct., San Jose, Calif. 95123

Filed Nov. 16, 1978, Ser. No. 961,117

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—222



257,461

COMBINATION TOOL FOR GLAZING

Danny L. King, 618 S. Driftwood Dr., Santa Ana, Calif. 92704

Filed Dec. 4, 1978, Ser. No. 966,066

Term of patent 14 years

Int. Cl. D8—03

U.S. Cl. D8—55



257,465 WRITING INSTRUMENT

Clarence Zierhut, Richardson, Tex., assignor to The Gillette Company, Boston, Mass.
Filed Feb. 23, 1979, Ser. No. 14,378
Term of patent 14 years
Int. Cl. D19-06

U.S. Cl. D19-51



257,466 PAPERWEIGHT

Richard R. Smith, 600 Slaydon, Henderson, Tex. 75652
Filed Jan. 2, 1979, Ser. No. 563
Term of patent 14 years
Int. Cl. D19-02

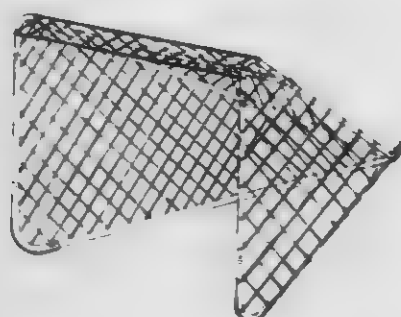
U.S. Cl. D19-97



257,467 GAME GOAL

Edward L. Long, 5956 Atteentee Rd., Springfield, Va. 22150
Filed Aug. 15, 1978, Ser. No. 933,975
Term of patent 14 years
Int. Cl. D21-02

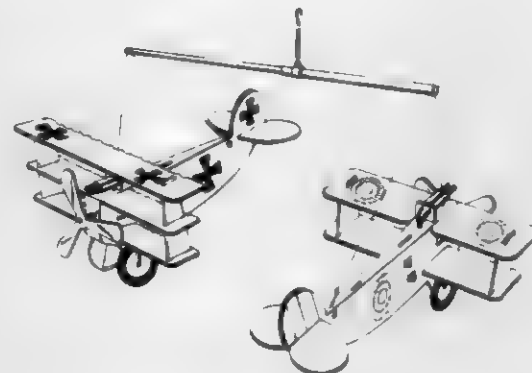
U.S. Cl. D21-200



257,468 SIMULATIVE TOY MOBILE

Robert R. Schoch, 517 Otteray Dr., High Point, N.C. 27260
Filed Jun. 26, 1978, Ser. No. 919,259
Term of patent 14 years
Int. Cl. D21-01

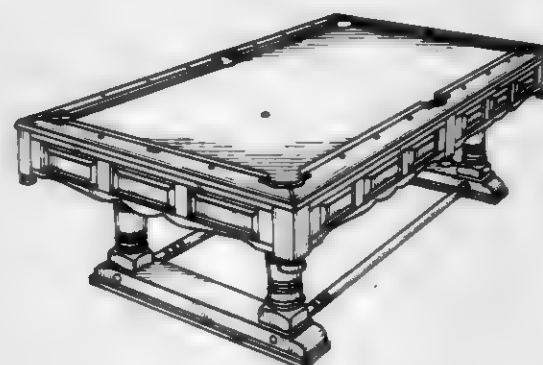
U.S. Cl. D21-62



257,469 BILLIARD TABLE

William D. Moore, High Point, N.C., assignor to Brunswick Corporation, Skokie, Ill.
Filed Dec. 6, 1978, Ser. No. 966,960
Term of patent 14 years
Int. Cl. D21-01

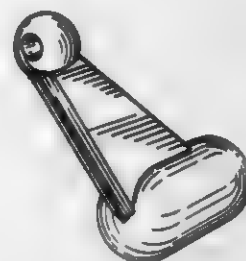
U.S. Cl. D21-232



257,470 FISHING SINKER

Henry Cieclerski, 15602 Union Ave., Harvey, Ill. 60426, and James J. Nieckula, Star Rte. Box 6315, Solon Springs, Wis. 54873
Filed Mar. 21, 1979, Ser. No. 22,416
Term of patent 14 years
Int. Cl. D22-05

U.S. Cl. D22-30



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF OCTOBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. B. Chance Company: See—
Bosch, Mahlon L.; and McKeivy, Marvin D., 4,230,357, Cl. 294-19.00R.
- A. Ehrenreich GmbH & Co. KG: See—
Scheerer, Wolfgang, 4,230,415, Cl. 403-122.000.
- A. H. Robins Company, Inc.: See—
Walsh, David A.; and Welstead, William J., Jr., 4,230,718, Cl. 424-274.000.
- A. Stucki Company: See—
Wiebe, Donald, 4,230,047, Cl. 105-197.00D.
- A-T-O Inc.: See—
Becker, Michael L., 4,230,024, Cl. 92-13.100.
- AB Akerlund & Rausing: See—
Jeppason, Jan-Bertil, 4,230,923, Cl. 219-10.530.
- Abbott Laboratories: See—
Decker, Richard H.; Ling, Chung-Mei; and Overby, Lacy R., 4,230,683, Cl. 424-1.000.
- Rosenbrook, William, Jr., 4,230,848, Cl. 536-17.00R.
- Tadanier, John S.; and Martin, Jerry R., 4,230,846, Cl. 536-4.000.
- Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, to Nissan Motor Company, Limited. Low-noise-level internal combustion engine, 4,230,087, Cl. 123-193.0CH.
- Abe, Norio: See—
Kodama, Tsutomu; Nakabayashi, Masao; Watanabe, Isao; Hirano, Hiroshi; Abe, Norio; Tanaka, Katsufumi; and Arai, Hirotoshi, 4,230,719, Cl. 424-275.000.
- Abex Corporation: See—
Borruso, Joseph V., 4,231,081, Cl. 362-306.000.
- Abner, Edmund L.: See—
Henderson, Claude L.; and Abner, Edmund L., 4,231,115, Cl. 455-73.000.
- Abramovich, Dan: See—
Springett, Charles N.; Abramovich, Dan; Uyeda, Stanley T.; and Radu, E. John, 4,230,421, Cl. 405-168.000.
- Ack-Ti-Lining, Inc.: See—
Alexander, Norman R.; and Sutton, Harold F., 4,229,834, Cl. 2-146.000.
- Acro-Matic, Inc.: See—
Birrell, Peter L., 4,230,239, Cl. 222-185.000.
- Acroform Corporation: See—
Fisher, Robert E., 4,230,446, Cl. 431-123.000.
- Adelmann, Siegfried; Margotte, Dieter; and Vernaleken, Hugo, to Bayer Aktiengesellschaft. Polycarbonates with end groups containing bonds which can be crosslinked by UV light, 4,230,548, Cl. 204-159.140.
- Adkins, Robert J.: See—
Graesser, Joseph H., Jr.; and Adkins, Robert J., 4,231,041, Cl. 343-767.000.
- Advanced Instrument Development, Inc.: See—
Wiegman, Douglas C.; and Grichnik, James A., 4,230,944, Cl. 250-355.000.
- Agence Nationale de Valorisation de la Recherche: See—
Le Corre, Maurice; Hercouet, Alain; and Begasse, Beatrice, 4,230,624, Cl. 260-345.200.
- Vedrine, Alain; Gacon, Jean-Claude; Boulon, Georges; and Trotier, Danielle, 4,230,598, Cl. 252-301.40H.
- Agence Nationale de Valorisation de la Recherche-Anvar: See—
Pegourie, Jean-Pierre, 4,229,984, Cl. 74-125.500.
- AGFA-Gevaert, A.G.: See—
Moller, Ursula, 4,230,407, Cl. 355-27.000.
- Renner, Gunter; and Scheben, Quirin, 4,230,851, Cl. 544-183.000.
- Wick, Richard; Stemme, Otto; Lermann, Peter; Wagner, Karl; Borowski, Kurt; Cocron, Istvan; and Fauth, Gunter, 4,230,400, Cl. 354-25.000.
- AGFA-GEVAERT N.V.: See—
Vanden Eynde, Hector A.; and Van Poucke, Raphael K., 4,230,870, Cl. 548-360.000.
- Agro Sciences, Inc.: See—
Steere, William C.; and Wilson, Stephen S., 4,230,983, Cl. 324-71.00R.
- AHI Operations Limited: See—
Phillips, Dougald S. M.; and Phillips, Peter A. J., 4,229,972, Cl. 73-304.00R.
- Ahmed, Adel A. A., to RCA Corporation. Television vertical ramp generator, 4,230,998, Cl. 331-111.000.
- Ahmed, Adel A. A., to RCA Corporation. Oscillator incorporating negative impedance network having current mirror amplifier, 4,230,999, Cl. 331-115.000.
- Aiba, Masahiko, to Sharp Kabushiki Kaisha. Ink issuance orifice protection in an ink jet system printer, 4,231,046, Cl. 346-75.000.
- Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Sommerkamp, Peter; and Stephan, Herbert, to Leybold-Heraeus GmbH. Method of evapo-
- rating melts of alloys of metals having different vapor pressures, 4,230,739, Cl. 427-42.000.
- Air Industrie: See—
Rebours, Albert; and Guibet, Jean-Pierre, 4,230,468, Cl. 55-294.000.
- Air Products and Chemicals, Inc.: See—
Bartish, Charles M., 4,230,641, Cl. 568-454.000.
- Klee, David J., 4,229,947, Cl. 62-374.000.
- Airco, Inc.: See—
Paradise, William L., Jr.; and Byars, Mark L., 4,230,732, Cl. 426-393.000.
- Airfix Industries Limited: See—
Sutch, Brian L. C., 4,230,659, Cl. 264-266.000.
- Aisin Seiki Kabushiki Kaisha: See—
Goto, Hiromi; and Kagata, Tooru, 4,230,211, Cl. 192-35.000.
- Mizuno, Kiyofumi; Maeda, Hiroaki; Takahashi, Shigeo; Sato, Masanori; and Suzuki, Satomi, 4,229,998, Cl. 74-865.000.
- Akzona Incorporated: See—
Hansma, Hendrik; and Schroeder, Arnold, 4,230,889, Cl. 568-559.000.
- Lustig, Klaus P.; and Kaper, Louris, 4,230,502, Cl. 106-314.000.
- Praetorius, Heinz; Seibert, Karl; and Holtvoigt, Werner, 4,230,612, Cl. 260-33.20R.
- Alamar Associates: See—
Weiss, Allen, 4,230,417, Cl. 403-301.000.
- Albany International Corp.: See—
McConaughy, David F., 4,230,419, Cl. 405-66.000.
- Alberts, Heinrich; and Balle, Gerhard, to Bayer Aktiengesellschaft. Polyurethane foams and elastomers based on modified polyether polyols, 4,230,823, Cl. 521-137.000.
- Albrecht, Konrad: See—
Heinrich, Rudolf; Frensch, Heinz; and Albrecht, Konrad, 4,230,809, Cl. 521-65.000.
- Albrecht, Paul N.: See—
Schuller, James T.; Albrecht, Paul N.; and Canizares, Hugo M., 4,231,105, Cl. 364-900.000.
- Albrecht, William L.; and Jones, Winton D., to Richardson-Merrell Inc. 1,2,4-Triazole-3-thiols as antiseptretory agents, 4,230,715, Cl. 424-269.000.
- Albright, Jay D.: See—
Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., 4,230,705, Cl. 424-250.000.
- Alcan Research and Development Limited: See—
Archer, Anthony M.; Cambridge, Edward L.; and Hewgill, Douglas F., 4,230,540, Cl. 204-67.000.
- Aldea, Jacques; Eligen, Jean-Jacques; and Thiollier, Gabriel, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull. Particle feed arrangement for applying solid particles to the image carrier of a non-impact printer, 4,230,069, Cl. 118-653.000.
- Aldington, Thomas. Railway car wheelset and rails therefor, 4,230,043, Cl. 104-1.00A.
- Alexander, Norman R.; and Sutton, Harold F., to Ack-Ti-Lining, Inc. Neckwear construction, 4,229,834, Cl. 2-146.000.
- Alexandrov, Adolf M.: See—
Slavinsky, Valentin N.; Bairon, Genrikh V.; Alexandrov, Adolf M.; Alexeev, Gennady M.; Matveev, Vladimir M.; Minin, Oleg D.; Tsimbler, Jury A.; Vasiliev, Vladimir A.; and Provalsky, Gennady B., 4,229,946, Cl. 62-341.000.
- Alexeev, Gennady M.: See—
Slavinsky, Valentin N.; Bairon, Genrikh V.; Alexandrov, Adolf M.; Alexeev, Gennady M.; Matveev, Vladimir M.; Minin, Oleg D.; Tsimbler, Jury A.; Vasiliev, Vladimir A.; and Provalsky, Gennady B., 4,229,946, Cl. 62-341.000.
- Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., to American Cyanamid Company. 6-Phenyl-1,2,4-triazolo[4,3-b]pyridazines and their uses in treating anxiety, 4,230,705, Cl. 424-250.000.
- Allen, Jim E.; and Farris, Robert E., to Kaiser Aluminum & Chemical Corporation. Method of repairing a refractory structure, 4,230,652, Cl. 264-30.000.
- Allergan Pharmaceuticals, Inc.: See—
Cooper, Charles A.; and Bergamini, Michael V. W., 4,230,724, Cl. 424-317.000.
- Allied Chemical Corporation: See—
Amin, Surendra A.; Bollen, Phillip S.; and Sacks, William, 4,230,656, Cl. 264-171.000.
- Stephenson, Robert L., 4,230,342, Cl. 280-803.000.
- Allied Industries, Inc.: See—
Avery, Hugh E., Jr.; and Paulson, Jerome I., 4,230,426, Cl. 406-191.000.
- Aluminum Company of America: See—
Donatelli, Paul C.; and Main, Kenneth G., 4,230,975, Cl. 318-6.000.

- Amann, Herbert; and Morlock, Gerhard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Polyoxymethylene molding composition containing melamine formaldehyde polycondensate. 4,230,606, Cl. 260-6.000.
- Amerace Corporation: See—
Kotski, Edward J., 4,230,389, Cl. 339-75.00M.
- American Can Company: See—
Bowen, Mack D.; and Purdy, Kenneth R., 4,230,602, Cl. 252-421.000.
- American Cyanamid Company: See—
Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., 4,230,705, Cl. 424-250.000.
Raghu, Sivaraman, 4,230,860, Cl. 546-134.000.
Shepherd, Robert G., 4,230,628, Cl. 260-404.000.
Shepherd, Robert G., 4,230,878, Cl. 560-48.000.
Wissner, Allen; and Grudzinskas, Charles V., 4,230,879, Cl. 560-121.000.
- American Home Products Corporation: See—
Sarantakis, Dimitrios, 4,230,617, Cl. 260-112.50S.
- AMF Incorporated: See—
Kilty, Michael; and Pernigotti, Allan, 4,230,573, Cl. 210-767.000.
- Amin, Surendra A.; Bollen, Phillip S.; and Sacks, William, to Allied Chemical Corporation. Transparent sheets and containers formed from polycarbonate-polyester blends and formation thereof. 4,230,656, Cl. 264-171.000.
- Ammon, J. Preston; and Weaver, Harry R., to Elfab Corporation. Printed circuit board, electrical connector and method of assembly. 4,230,385, Cl. 339-17.00R.
- AMP Incorporated: See—
Fornwalt, Robert G.; and Shatto, Walter C., Jr., 4,230,008, Cl. 83-456.000.
- Amstad, John H., to Atlas Pacific Engineering Company. Apparatus for continuous produce surface treatment. 4,230,034, Cl. 99-587.000.
- AMSTED Industries Incorporated: See—
Kaim, John W., 4,230,228, Cl. 213-62.00A.
- Anatychuk, Lukyan I.: See—
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- Anderson, Albert L., to Digital Equipment Corporation. Reader for data recorded on magnetic disks at plural densities. 4,231,071, Cl. 167-401.000.
- Anderson, Jerrold L.: See—
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- Anderson, Jan A. R.: See—
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- Andrews, Glenn C., to Pfizer Inc. 2,5-Diketogluconic acid esters. 4,230,880, Cl. 560-174.000.
- Angelosanto, Donald J., to Huck Manufacturing Company. Pull-type blind fastener construction. 4,230,017, Cl. 85-70.000.
- Anhalt, John W., to International Telephone and Telegraph Corporation. Electrical contact. 4,230,384, Cl. 339-17.00R.
- Anheuser-Busch, Incorporated: See—
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- Aniszewski, Bodo; and Ehmann, Willy. Hair curler. 4,230,133, Cl. 132-40.000.
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- Antill, John E., to United Kingdom Atomic Energy Authority. Alloys of Fe, Cr, Si, Y and Al. 4,230,489, Cl. 75-124.000.
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- Aoki, Shigeta: See—
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- Aono, Shunji: See—
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- Aoyama, Tetsuo: See—
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- Appleton Papers Inc.: See—
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- Aquascooter, Inc.: See—
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- Aramayo, Rene S. Catheter attachment for blood sampling. 4,230,128, Cl. 128-763.000.
- Arcamone, Federico: See—
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- Archer, Anthony M.; Cambridge, Edward L.; and Hewgill, Douglas F., to Alcan Research and Development Limited. Technique for automatic quenching of anode effects in aluminium reduction cells. 4,230,540, Cl. 204-67.000.
- Arcouette, Pierre. Kayak. 4,229,850, Cl. 9-1.400.
- Argade, Shyam D.: See—
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- Armour-Dial, Inc.: See—
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- Armstrong Cork Company: See—
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- Corrigan, James L., 4,229,913, Cl. 52-38.000.
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- Seko, Maomi; Miyake, Tetsuya; Takeuchi, Hiroshi; and Tanouchi, Masatoshi, 4,230,882, Cl. 562-416.000.
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- Tokutomi, Seijiro; Jyojiki, Masao; and Nakamura, Kazuo, 4,230,401, Cl. 354-25.000.
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- Asari, Akira; Ueda, Masakazu; and Nishimoto, Takeo, to Kobe Steel, Limited. Indirect extrusion process. 4,230,661, Cl. 264-323.000.
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- Atkins, Herbert A., to Beecham Group Limited. Bottle with closure cap. 4,230,232, Cl. 215-330.000.
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- Atlas Pacific Engineering Company: See—
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- ATO Chimie: See—
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- Aude, Thomas C., to Bechtel International Corporation. Apparatus and method for slack flow elimination in a slurry pipeline. 4,230,137, Cl. 137-8.000.
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- Auer, Robert E.: See—
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- Austin, George K., Jr. Multiple dental handpiece control system. 4,230,452, Cl. 433-28.000.
- Austin, John J., to Champion International Corporation. Lunch box carton and a blank for forming same. 4,230,261, Cl. 229-52.00B.
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- Autodynamics, Inc.: See—
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- Automotive Products Limited: See—
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- Avery, Hugh E., Jr.; and Paulson, Jerome L., to Allied Industries, Inc. Method for treating conduit to improve flow characteristic and resulting conduit product. 4,230,426, Cl. 406-191.000.
- Avrea, Walter C.; and Hansen, Robert N. Ball component for coupling apparatus. 4,230,336, Cl. 280-507.000.
- Ayala, Kyuhei, to Shikoku Kakooki Co., Ltd. Bottle aligning machine. 4,230,217, Cl. 198-397.000.
- Ayerst McKenna & Harrison, Inc.: See—
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- Azevedo, Albert J. Backhoe finishing tool. 4,230,435, Cl. 414-722.000.
- Azzis, Daniel; and Delaporte, Francois X., to International Business Machines Corporation. Digital to analog converter having separate bit converters. 4,231,020, Cl. 340-347.00A.
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- B.S.R. Limited of Monarch Works: See—
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- Babcock & Wilcox Company, The: See—
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- Bach Laboratories, Inc.: See—
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- Bach, Nicholas J.: See—
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- Badders, Edwin T. Fluid control valve. 4,230,145, Cl. 137-410.000.
- Badger Company, Inc., The: See—
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- Bafaro, Michael P., to Motorola, Inc. Dynamic focus circuitry for a CRT data display terminal. 4,230,972, Cl. 315-382.000.
- Bailey, John R. W.; Carter, Michael R. L.; and Fox, Richard, to ICI Australia Limited. Explosive fuse cord. 4,230,041, Cl. 102-27.00R.
- Bailey, Thomas D., to Reilly Tar & Chemical Corp. Process for making 5-trifluoromethyl pyridone. 4,230,864, Cl. 546-303.000.
- Bairon, Genrikh V.: See—
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- Baker, George H., Sr. Drapery pleating apparatus and method. 4,230,171, Cl. 160-84.00R.
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- Bamberger, Carlos E., to United States of America, Energy. Cyclic thermochemical process for producing hydrogen using cerium-titanium compounds. 4,230,682, Cl. 423-579.000.
- Banzhaf, Werner: See—
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- Baranek, Bodo: See—
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- Bare, Thomas M., to ICI Americas Inc. Heterocyclic tetrahydro-1-alkyl-4-oxo-1H-imidazol-2-ylidene urea and phenyl esters of tetrahydro-1-alkyl-4-oxo-1H-imidazol-2-ylidene carbamic acid compounds. 4,230,713, Cl. 424-263.000.
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- Barkow, William H., to RCA Corporation. Deflection yoke with a magnet for reducing sensitivity of convergence to yoke position. 4,231,009, Cl. 335-212.000.
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- Bartish, Charles M., to Air Products and Chemicals, Inc. Hydroformylation of olefins. 4,230,641, Cl. 568-454.000.
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- Battelle Memorial Institute: See—
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- Baxter, Stephen M.; Baxter, M. David; and Eadline, James D. Boat-mountable fish-cleaning tray. 4,229,858, Cl. 17-44.000.
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- Bazlen, Dieter; Berger, Rolf; Blum, Arnold; Bock, Dietrich W.; Chilikski, Herbert; Geng, Hellmuth R.; Hajdu, Johann; Irro, Fritz; and Neuber, Siegfried, to International Business Machines Corporation. Arrangement for micro instruction control. 4,231,085, Cl. 164-201.000.
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 Bernard, Roy A. Separable mower blade, 4,229,933, Cl. 56-295.000.
 Bernasconi, Felix R., to BBC Brown, Boveri & Company, Limited. Locking mechanism for an adjustable spindle drive, 4,229,995, Cl. 74-625.000.
 Bernauer, Karl; Pfoertner, Karlheinz; Schneider, Fernand; Schmid, Hans, deceased (by Schmid-Appenzel, Kathe Anna, heir); by Baumann-Schmid, Mary Margrith, heir; by Schmid-Suter, Maria Albertine, heir; by Wawria-Schmid, Jeannette Martha, heir; and by Schmid-Gautschi, Ernst Georges, heir, to Hoffmann-La Roche Inc. Pyrrolidine derivatives, 4,230,623, Cl. 260-326.55M.
 Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., to E. R. Squibb & Sons, Inc. Steroid derivatives and their use in radioimmunoassays, 4,230,621, Cl. 260-239.570.
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 Bertelsen, Corey A.; and Spars, Byron G., to Chevron Research Company. Removal of entrained solids from retorted hydrocarbonaceous vapors, 4,230,557, Cl. 208-8.00R.
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 Bhalla, Ranbir S., to Westinghouse Electric Corp. Color high-pressure sodium vapor lamp, 4,230,964, Cl. 313-220.000.
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- Brickman, Eugene L.: See—
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- Bridgestone Tire Co., Ltd.: See—
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- Makino, Shigeo; Sugimura, Norboru; and Aoki, Shigeta, 4,230,512, Cl. 152-209.00R.
- Briet, Philippe; Berthelon, Jean-Jacques; and Depin, Jean-Claude, to LIPHA, Lyonnaise Industrielle Pharmaceutique, 3-Substituted-4-aminalkoxy-5,6-condensed ring-2-pyranones, 4,230,850, Cl. 544-151.000.
- Briggs, Richard L.; and Meacham, Sterling A., to United States of America, Energy, Liquid sodium dip seal maintenance system, 4,230,526, Cl. 176-38.000.
- Brobeck, Glenn H. Portable pipe cleaning apparatus, 4,229,852, Cl. 15-3.500.
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- Brois, Stanley J.; and Ver Strate, Gary, to Exxon Research & Engineering Co. Olefin containing polymers treated with oxycarbonylsulfonyl halides, 4,230,837, Cl. 525-343.000.
- Bronson, Nathaniel R., II: See—
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- Brooks, Kenneth R., to Otis Elevator Company, Transistorized elevator control button, 4,230,206, Cl. 187-29.00R.
- Brothers, Gene A.; Neely, John A.; and Kieffe, Patrick W., to Eltra Corporation, Line concentrator, 4,230,913, Cl. 179-18.0FC.
- Broughton, Roy M., Jr.; Callander, Douglas D.; Pengilly, Brian W.; Schirmer, Joseph P.; and Winters, Terence E., to Goodyear Tire & Rubber Company, The Reduction of glycol ethers in polyesters, 4,230,818, Cl. 528-272.000.
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- Brown, Patricia A.: See—
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- Brown, Robert W.: See—
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- Brown & Root, Inc.: See—
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- Brunelli, Alessandro: See—
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- Brunswick Corporation: See—
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- Buchwald, Hubert W.; and Houle, Peter C., to TII Corporation, Apparatus for removing foam, 4,230,467, Cl. 55-178.000.
- Buckley, Lawrence W., to National Instrument Company, Inc. Adjustable suck-back device for sanitary pumps, 4,230,160, Cl. 141-116.000.
- Buckner, Carol E., to Smoky Mountain Enterprises, Inc. Fireplace door, 4,230,093, Cl. 126-190.000.
- Buehrle, William B., to Engineered Systems, Inc. Communications system with repeater stations, 4,230,989, Cl. 375-4.000.
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- Burger, Alfred; and Paar, Adalbert, to EVVA-Werk Spezialerzeugung von Zylinder- und Sicherheitschlossern GmbH & Co. Control device particularly for use in a lock, 4,229,958, Cl. 70-366.000.
- Burika, Rudolf S.; Fauske, Allen R.; and Griffiths, David W., to Petrolite Corporation, Quaternary ammonium adducts of polymerizable tertiary ammonium salts and acrylonitrile, 4,230,839, Cl. 526-75.000.
- Burke, Edward F., Jr., to MFE Corporation, Two-axis optical scanner, 4,230,393, Cl. 350-6.500.
- Burke, Thomas P.: See—
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- Burkert GmbH: See—
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- Burnett, Robert R.; and Box, John W., to Coulter Electronics, Inc. Closure cap, 4,230,231, Cl. 215-329.000.
- Burnham, Ralph L., to United States of America, Navy, Electrically excited mercury halide laser, 4,230,995, Cl. 331-94.50G.
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- Burroughs Corporation: See—
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- Burton, Allen H. Method and device for facilitating the watering of hanging plants, 4,229,904, Cl. 47-58.000.
- Bush Universal, Inc.: See—
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- Bustard, Thomas S.; and Pohl, Corriene S., to Hittman Corporation, Conversion of radioactive waste materials into solid form, 4,230,597, Cl. 252-301.10W.
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- Butler, Payson M.; and Butler, Jack O. Conjugate two-piece packing ring with limiter, 4,230,325, Cl. 277-117.000.
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- Byers, Thomas L. Oscillating plate animated motion display machine, 4,229,895, Cl. 40-614.000.
- Bykhovsky, David G.; and Sobolev, Vyacheslav G. Method of producing nonconsumable electrode for use in arc techniques, 4,229,873, Cl. 29-420.000.
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- Cais, Michael, to Technion Research & Development Foundation Ltd. Test pack kit for immunoassay, 4,230,664, Cl. 422-61.000.
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- Camilleri, Thomas M. Positive turret indexing apparatus, 4,230,315, Cl. 273-54.00R.
- Campo, Edgar A.; and Lewis, Robert B., to Du Pont de Nemours, E. I., and Company, Material converger, 4,229,861, Cl. 19-161.100.
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- Hashimoto, Shigeru; Mitani, Taizo; Isobe, Takashi; Aoyagi, Masao; Sumi, Akiyasu; and Tanaka, Katsumi, 4,230,403, Cl. 354-286.000.
- Tsuji, Sadahiko; and Sato, Yasuhisa, 4,230,398, Cl. 350-184.000.
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- Canterino, Peter J., to Mobil Oil Corporation, Chemically cross-linked poly(p-methylstyrene), 4,230,836, Cl. 525-332.000.
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- Carolan, Donald L., to Deere & Company, Two-stage deadman control for walk-behind mowers, 4,230,200, Cl. 180-272.000.
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- Chang, Eppie S., to Miles Laboratories, Inc. Unitized uric acid test composition and device, 4,230,798, Cl. 435-10.000.
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- Chapman, Dwain R., to SWS Silicones Corporation, Preparation of heat stable silicone fluids, 4,230,632, Cl. 556-401.000.
- Chapman, Jay P., to Bechtel International Corporation, Back pressure system for slurry pipeline, 4,230,153, Cl. 137-599.000.
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- Cherry, Gordon E.: See—
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- Clark, Robert L., to Textron, Inc. Cam shaft manufacturing process. 4,230,506, Cl. 148-3.000.
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- Commonwork Enterprises Limited: See—
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- Cosyna, Jean; Stern, Robert; and Le Page, Jean-Francois, to Institut Francais du Pétrol. Process for selectively hydrogenating a hydrocarbon cut containing at least one diolefinic hydrocarbon and at least one acetylenic hydrocarbon using a palladium catalyst with crystallites of at least 50 angstroms. 4,230,897, Cl. 585-260.000.
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- Crews, Donald R., to Caterpillar Tractor Co. Floating radiator tank top. 4,230,176, Cl. 165-67.000.
- Cribben, James T.; and Feeser, Richard A., to Ethyl Corporation. Swimming pool coping. 4,229,844, Cl. 52-588.000.
- Crisci, Harry, to Northern Engineering & Plastics Corporation. Snap on bottle cap. 4,230,229, Cl. 215-253.000.
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- Crispell, Corey F., to SPS Technologies, Inc. Method of prestressing bolts. 4,229,875, Cl. 29-452.000.
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- Crum, Ronald J.; and Churchill, Edward J. Stereophonic system with discrete bass channels. 4,230,905, Cl. 179-1.0GA.
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- DeSantis, Raymond P., to PTX-Pentronix, Inc. Method for producing spherical articles. 4,230,653, Cl. 264-39.000.
- Desblache, Andre E., to International Business Machines Corporation. Method and device for determining the phase intercept in a system employing phase-shift keying modulation. 4,231,094, Cl. 364-514.000.
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- Dodson, Robert W., to Colt Industries Operating Corp. Induction passage structure. 4,230,645, Cl. 261-19.000.
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- Pruckmayr, Gerfried, 4,230,892, Cl. 568-617.000.
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- Durant, Dick Q., to McDonnell Douglas Corporation. Microwave heated vacuum dryer for powders. 4,229,886, Cl. 34-92.000.
- Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active triazole and thiazole thiourea and urea compounds. 4,230,865, Cl. 548-138.000.
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- Eastman, George Y.; and Ernst, Donald M., to Thermacore, Inc. Closely coupled two phase heat exchanger. 4,230,173, Cl. 165-1.000.
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- Eckle, Otto, to Komet Stahlhalter- und Werkzeugfabrik Robert Breunig GmbH. Boring tool for making borings in solid metal material of workpieces. 4,230,429, Cl. 408-186.000.
- Edholm, Emil. Collapsible wheel-chair undercarriage. 4,230,339, Cl. 280-647.000.
- Edstrom, Soren E. H., to Kockums Industri Aktiebolag. Antifriction bearing construction. 4,230,379, Cl. 308-187.000.
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- Eickmann, Karl. Fluid-stream driven ground vehicle. 4,230,198, Cl. 180-7.00P.
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- Emmel, Leroy L. Elongated filament lattice structure. 4,230,898, Cl. 174-32.000.
- Emmett, John C.: See—
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- Endo, Fujio: See—
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- Engineered Systems, Inc.: See—
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- English, Edgar, Jr. Water-saving float-to-inlet valve adapter device. 4,229,846, Cl. 4-396.000.
- Enright, John J.; and Holzworth, William T., to B. F. Goodrich Company, The. Method of making a caliper brake rotor. 4,230,253, Cl. 228-152.000.
- Eppler, Richard. Device to support rudders and trailing edge flaps of aircraft and watercraft. 4,230,295, Cl. 244-213.000.
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- Eubank, Marcus P. Damper assembly. 4,230,174, Cl. 165-27.000.
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- Eutectic Corporation: See—
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 Schneider, Mark R.; and Wickwar, Larry D., 4,229,936, Cl. 368-282.000.
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- Gatt, Michael E.: See—
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- Gatto, Donald F., to Motorola, Inc. Battery holder with integral access door and power switch. 4,230,777, Cl. 429-97.000.
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- Gaul, John H., Jr.; and Drago, Russell S., to University of Illinois Foundation, The. Polymer bound multidentate complexes. 4,230,828, Cl. 525-153.000.
- Gaumont, William J. Electric discharge machine with mechanism for orbiting the electrode. 4,230,926, Cl. 219-69.00V.
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- Gauthier, Donald R., to ICI United States, Inc. Azo dyestuffs containing an amino or acylated amino naphthol di-sulfonic acid radical and at least one reactive phosphoric or phosphonic acid group. 4,230,618, Cl. 260-187.000.
- Gee, James W.; and Arntz, Richard J., to Magic Chef, Inc. Oven door latch. 4,230,350, Cl. 292-144.000.
- Geeslin, John W.; and Spector, George. Articulated snorkel. 4,230,106, Cl. 128-201.110.
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- Hayter, Jerald D.: See—
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- Hayward Tyler Pump Company: See—
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- Heap, David L.; and Kenner, Allen L., to Sperry Rand Corporation. Performance monitor apparatus and method. 4,231,106, Cl. 364-900.000.
- Hebert, Donald G., to Falk, Helmut. Matrix print head assembly. 4,230,038, Cl. 101-93.050.
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- Heider, Henning; and Wieske, Theophil, to Lever Brothers Company. Margarine fat. 4,230,737, Cl. 426-607.000.
- Heinrich, Rudolf; Frensch, Heinz; and Albrecht, Konrad, to Hoechst Aktiengesellschaft. Pressure-resistant polyurethane-polyurea particles for the encapsulation of active ingredients and process for their manufacture. 4,230,809, Cl. 521-65.000.
- Heinrichs, Friedrich. Device for counting and sorting coins. 4,230,136, Cl. 133-3.00E.
- Heinzelmann, Karl-Georg: See—
Distler, Walter; and Heinzelmann, Karl-Georg, 4,230,949, Cl. 250-445.00T.
- Helene Curtis Industries, Inc.: See—
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- Heller, Lawrence G., to International Business Machines Corporation. Permanent or semipermanent charge transfer storage systems. 4,230,954, Cl. 307-238.000.
- Heller, Wilhelm; Knoor, Walter; and Schweitzer, Reinhard, to Fried. Krupp Huttenwerke AG. Abrasion resistant rails and/or rail wheels, and process for producing the same. 4,230,488, Cl. 75-123.00F.
- Heminover, Stephen R. Article of wearing apparel. 4,231,079, Cl. 362-106.000.
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- Henderson, Claude L.; and Abner, Edmund L., to General Aviation Electronics, Inc. Modular radio. 4,231,115, Cl. 455-73.000.
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- Henis, Jay M. S.; and Tripodi, Mary K., to Monsanto Company. Multi-component membranes for gas separations. 4,230,463, Cl. 55-16.000.
- Henkel, Otto, to Vereinigte Flugtechnische Werke-Fokker GmbH. Positioning and orienting a mobile equipment carrier for an antenna mast. 4,231,044, Cl. 343-881.000.
- Henriques, Joseph. Method and apparatus for improvements in convective heating. 4,230,092, Cl. 126-126.000.
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- Hentschel, Bernhard: See—
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- Hepar Chimie S.A.: See—
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- Hercouet, Alain: See—
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- Hermann Kronseder: See—
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- Hermes Susstoff AG: See—
de Wit, Erik, 4,230,237, Cl. 221-298.000.
- Heronema, Joseph D. Outside corner finishing tool. 4,230,441, Cl. 425-87.000.
- Herve et Fils, S.A.: See—
Denay, Andre M. J.; and Bouge, Pierre M. J., 4,230,262, Cl. 229-69.000.
- Herzog, Milton W., to H. Goodman & Sons Inc. Self-locking cartons. 4,230,259, Cl. 229-38.000.
- Hewgill, Douglas F.: See—
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- Hewlett-Packard Company: See—
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- Vincent, Kent D., 4,230,550, Cl. 204-159.230.
- Hicks, Alan A.: See—
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- Hidaka, Tsuneo; Inoue, Masahide; and Ebihara, Masatomi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Prosthetic teeth and bones. 4,230,455, Cl. 433-202.000.
- Higgerson, Raymond; and Parsons, David, to Automotive Products Limited. Hydraulic master cylinder. 4,229,940, Cl. 60-562.000.
- High Stoy Technological Corporation: See—
Pickering, Norman C.; and Bronson, Nathaniel R., II, 4,230,124, Cl. 128-660.000.
- High Voltage Engineering Corporation: See—
Cram, Robert D., 4,230,947, Cl. 250-434.000.
- Highway Equipment Company: See—
Leigh, Theodore M.; and Rawson, James L., 4,230,280, Cl. 239-677.000.
- Hildebrand, Daniel H., to Ford Motor Company. Compact four speed automatic transmission. 4,229,996, Cl. 74-688.000.
- Hill, Doyle E., to Eastman Kodak Company. Calibrator composition based upon dialyzed blood serum. 4,230,601, Cl. 252-408.000.
- Hill, Herbert M.; and Shrader, Donald R. Scrap chopper. 4,230,281, Cl. 241-142.000.
- Hill, Martin J., to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions useful in dry film photoresist. 4,230,790, Cl. 430-288.000.
- Hilscher, Eduard: See—
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- Hinsken, Hans: See—
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- Hintsch, Otto, to Sulzer Brothers Ltd. Cleaning means for a weaving machine. 4,230,158, Cl. 139-1.00C.
- Hintsch, Otto, to Sulzer Brothers Ltd. Clutch for a textile machine. 4,230,210, Cl. 192-28.000.
- Hirabayashi, Kazuyoshi: See—
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- Hirano, Hiroshi: See—
Kodama, Tsutomu; Nakabayashi, Masao; Watanabe, Isao; Hirano, Hiroshi; Abe, Norio; Tanaka, Katsufumi; and Arai, Hirotoshi, 4,230,719, Cl. 424-275.000.
- Hirs, Gene. Filter method and apparatus. 4,230,572, Cl. 210-767.000.
- Hitachi Cable Ltd.: See—
Ohura, Yasushi; Ohwada, Susumu; Nakamura, Akira; Kitanishi, Mitsuo; Nakamura, Yukuharu; and Tamura, Akio, 4,230,209, Cl. 191-407.000.
- Hitachi Denshi Kabushiki Kaisha: See—
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- Hitachi, Ltd.: See—
Hara, Toshitaka; and Hamada, Nagaharu, 4,231,032, Cl. 340-703.000.
- Ito, Tomo, 4,230,077, Cl. 123-389.000.
- Iwamoto, Taro; Ando, Shimon; Kurokawa, Koji; and Kusumoto, Sho, 4,230,067, Cl. 118-104.000.
- Kiryama, Toshikatsu; and Hasegawa, Yoshiro, 4,231,017, Cl. 340-166.00R.
- Kosugi, Hiroshi; Inoue, Hirofumi; and Shirasu, Hirotoshi, 4,231,022, Cl. 340-347.0DA.
- Matsuda, Toshiharu; Miyamoto, Seigo; and Minoshima, Yasuo, 4,230,470, Cl. 62-197.000.
- Matsuda, Yasuo; Honda, Kazuo; and Muto, Nobuyoshi, 4,231,083, Cl. 363-135.000.
- Mikamo, Kathumi; Ichimura, Shinya; and Yamaguchi, Kenichi, 4,230,932, Cl. 219-370.000.
- Oguro, Tomokatsu, 4,230,968, Cl. 315-39.510.
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- Yoshizaki, Masaaki; and Mizuno, Kenichi, 4,231,084, Cl. 364-200.000.
- Hitachi Maxell, Ltd.: See—
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- Hitora, Shozo, to Sasaki Electric Mfg. Co. Ltd. Beam-rotary lamp. 4,231,078, Cl. 362-35.000.
- Hittman Corporation: See—
Bustard, Thomas S.; and Pohl, Corriene S., 4,230,597, Cl. 252-301.10W.
- Hochandel, Thomas A.: See—
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- Hoechst Aktiengesellschaft: See—
Disselbeck, Dieter; Hilscher, Eduard; and Speier, Klaus, 4,230,175, Cl. 165-46.000.
- Eichhorn, Wilfried; and Seibel, Peter, 4,230,643, Cl. 525-253.000.
- Heinrich, Rudolf; Frensch, Heinz; and Albrecht, Konrad, 4,230,809, Cl. 521-65.000.
- Hoelzel, Fred L., Jr. One piece, collapsible package. 4,230,729, Cl. 426-124.000.
- Hoffmann-La Roche Inc.: See—
Bernauer, Karl; Pfoertner, Karlheinz; Schneider, Ferdinand; Schmid, Hans, deceased; Baumann-Schmid, Mary Margnith, heir; Schmid-Suter, Maria Albertine, heir; Wawria-Schmid, Jeannette
- Martha, heir; and Schmid-Gautschi, Ernst Georges, heir, 4,230,623, Cl. 260-326.5SM.
- Despreaux, Carl; Narwid, Thomas A.; Palleroni, Norberto J.; and Uskokovic, Milan R., 4,230,625, Cl. 260-397.100.
- Holick, Michael F.; and Uskokovic, Milan R., 4,230,701, Cl. 424-236.000.
- Hromatka, Otto; and Binder, Dieter, 4,230,873, Cl. 549-64.000.
- Klaus, Michael J.; and Pawsen, Beverly A., 4,230,872, Cl. 549-62.000.
- Hogg, Klaus: See—
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- Hohne, Wolfgang: See—
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- Holford, Kenneth, to U.S. Philips Corporation. Doppler radar device. 4,231,038, Cl. 343-5.0DD.
- Holick, Michael F.; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Administration of biologically active vitamin D₃ and vitamin D₂ materials. 4,230,701, Cl. 424-236.000.
- Holman, Rury R.; and Turner, Robert C. Automatic lancet. 4,230,118, Cl. 128-314.000.
- Holman, Thomas L.: See—
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- Holtvoigt, Werner: See—
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- Holz, George E.; Ogle, James A.; and Przybylek, George J., to Burroughs Corporation. Cathode ray tube with touch-sensitive display panel. 4,230,967, Cl. 315-3.000.
- Holzworth, William T.: See—
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- Honda Giken Kogyo Kabushiki Kaisha: See—
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- Honda, Hideo: See—
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- Honda, Kazuo: See—
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- Honeywell Inc.: See—
Fitch, Robert C.; and Narendra, Patrenahalli M., 4,231,065, Cl. 358-166.000.
- Fors, John A.; and Lee, Tzu-Chang, 4,230,950, Cl. 250-574.000.
- Merchant, John, 4,231,066, Cl. 358-180.000.
- Stauffer, Norman L., 4,230,941, Cl. 250-204.000.
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- Honeywell Information Systems, Inc.: See—
Tarbox, Bruce H.; Bruce, Kenneth E.; Conway, John W.; and Lombardo, Ralph M., Jr., 4,231,086, Cl. 364-200.000.
- Hoogovens Ijmuiden, B.V.: See—
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- Hooker Chemicals & Plastics Corp.: See—
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- Hope, Charles S., to Solwin Industries, Inc. Method of and system for generating energy from solar and wind energy sources. 4,229,941, Cl. 60-641.000.
- Hope, Mrs. Edward. Pollution control apparatus and method. 4,230,465, Cl. 55-83.000.
- Horie, Shigeru: See—
Saito, Masao; Aoyama, Tetsuo; Horie, Shigeru; and Takada, Kazuo, 4,230,636, Cl. 260-561.00R.
- Horiike, Masanori; Jinnai, Koichiro; and Iwasaki, Kyuhachiro, to Kodama, Yutaka; and Ricoh Co., Ltd. Ink jet recording apparatus. 4,231,048, Cl. 346-140.00R.
- Horiike, Masanori: See—
Iwasaki, Kyuhachiro; Kodama, Yutaka; Jinnai, Koichiro; and Horiike, Masanori, 4,231,047, Cl. 346-75.000.
- Horne, Fred H., to Ellis Paperboard Products, Inc. Composite structural system and method and applications to pallets and platforms. 4,230,049, Cl. 108-51.100.
- Horwitt, Laurence G.; and Mattis, Donald J., to Sun Chemical Corporation. Electric cigar lighter. 4,230,931, Cl. 219-265.000.
- Hoshino Gakki Ten, Inc.: See—
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- Hoshino, Yoshihiro, to Hoshino Gakki Ten, Inc. Securement of guitar bridge to guitar body. 4,230,014, Cl. 84-299.000.
- Houle, Peter C.: See—
Buchwald, Hubert W.; and Houle, Peter C., 4,230,467, Cl. 55-178.000.
- Howard, James; and Gombor, Oscar J., to Cities Service Company. Pigments dispersible in plastics. 4,230,501, Cl. 106-308.00Q.
- Howard, Leroy J., to UOP Inc. Heat-pumped fractionation process. 4,230,535, Cl. 203-26.000.
- Howe, Robert K.: See—
Liu, Kou-Chang; and Howe, Robert K., 4,230,866, Cl. 548-247.000.
- Howell, Russell B., to Fairchild Industries, Inc. Track fastener. 4,230,432, Cl. 410-102.000.

- Hower, Philip L.; and Page, Derrick J., to Westinghouse Electric Corp. Technique for controlling emitter ballast resistance. 4,231,059, Cl. 357-68.000.
- Hromatka, Otto; and Binder, Dieter, to Hoffmann-La Roche Inc. Thiophene derivatives. 4,230,873, Cl. 549-64.000.
- Hu, Mae W.: See—
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- Huber, Bernhard W., to Bodenseewerk Perkin-Elmer & Co., GmbH. Apparatus for automatically generating and measuring gaseous measuring samples from a series of liquid samples. 4,230,665, Cl. 422-64.000.
- Huch, Albert: See—
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- Huck Manufacturing Company: See—
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- Hudd, Anthony W., to IMI Refiners Limited. Continuous casting of metals. 4,230,006, Cl. 83-319.000.
- Huetter, O. William; and Gross, Richard A., to Huetter, O. William. Display device. 4,229,892, Cl. 40-152.100.
- Hug, William F.; and De Benedictis, Leonard C., to Xerox Corporation. Modular laser printing system. 4,230,902, Cl. 178-15.000.
- Hughes, John F., to Celcor Corporation of Canada Limited. Apparatus for producing modified starch products. 4,230,503, Cl. 127-1.000.
- Hughes, Robert S., to Oakwood Manufacturing, Inc. Kit of components for interconnecting structural members, and method of utilizing same. 4,229,919, Cl. 52-263.000.
- Hunsberger, Dennis J.; Nahabedian, Charles E.; Quinn, Thomas M.; and VanOrnum, James H., to Bell Telephone Laboratories, Incorporated. Microprocessor support system. 4,231,087, Cl. 364-200.000.
- Hunt, Geoffrey H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Optical screens. 4,231,068, Cl. 358-252.000.
- Husky Injection Molding Systems Limited: See—
Rees, Herbert; and Robinson, Allan H., 4,230,442, Cl. 425-451.200.
- Huss, Heinrich. Device for the continuous developing of band- and sheet-shaped photographic layer carriers. 4,230,404, Cl. 354-321.000.
- Hutchinson, Ronald, to Marconi Company Limited, The. Constant resistance coupling network. 4,231,001, Cl. 333-110.000.
- Hydes, Paul C.; and Malerbi, Bernard W., to Johnson, Matthey & Co., Limited. Platinum coordination compounds. 4,230,631, Cl. 260-429.00R.
- Hydrocarbon Research, Inc.: See—
Daly, Francis P., 4,230,893, Cl. 568-805.000.
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- Ichikawa, Toshizi; and Watanabe, Teruko, to Terumo Corporation. Liquid separating composition and apparatus for applying said composition. 4,230,584, Cl. 210-516.000.
- Ichimura, Shinya: See—
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- ICI Americas Inc.: See—
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- ICI Australia Limited: See—
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- ICI United States, Inc.: See—
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- Iino, Fujio, to Kabushiki Kaisha Mitsu Miike Seisakusho. Vertical bulk-conveying apparatus and bulk delivering system utilizing the characteristics thereof. 4,230,220, Cl. 198-509.000.
- Iizuka, Tetsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Complementary MOS transistors without an isolation region. 4,231,055, Cl. 357-42.000.
- Ikegami, Tadashi: See—
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- Ilegems, Marc: See—
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- Illinois Tool Works Inc.: See—
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- Illycky, Stephen, to Exxon Research & Engineering Co. Copolymers of ethylene and ethylenically unsaturated monomers, process for their preparation and distillate oil containing said copolymers. 4,230,811, Cl. 526-227.000.
- IMI Refiners Limited: See—
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- Imigawa, Masayuki; and Mori, Toshihiro, to Nippon Electric Co., Ltd. Tone signal detector. 4,231,018, Cl. 340-171.00R.
- Imperial Chemical Industries Limited: See—
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- Roesler, Frank C., deceased, 4,230,563, Cl. 210-629.000.
- Inaba, Masao: See—
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- Ingles, Orrin E. Weather proof radio tower bearing assembly. 4,231,045, Cl. 343-882.000.
- Ingro, Ben. Carburetion. 4,230,647, Cl. 261-78.00R.
- Inokawa, Tsuneo: See—
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- Inoue, Hirofumi: See—
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- INTERATOM, International Atomreaktorbau GmbH: See—
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- Intercane Systems, Inc.: See—
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- International Business Machines Corporation: See—
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- Bakos, Peter, 4,230,773, Cl. 428-447.000.
- Bazlen, Dieter; Berger, Rolf; Blum, Arnold; Bock, Dietrich W.; Chilinski, Herbert; Geng, Hellmuth R.; Hajdu, Johann; Irro, Fritz; and Neuber, Siegfried, 4,231,085, Cl. 364-200.000.
- Blasbalg, Herman L., 4,231,113, Cl. 455-29.000.
- Desblache, Andre E., 4,231,094, Cl. 364-514.000.
- Gajda, Joseph J., 4,230,523, Cl. 156-657.000.
- Hammer, William E.; Lewis, David O.; Reed, John W.; Robinson, Thomas S.; and Slack, Keith K., 4,231,088, Cl. 364-200.000.
- Heller, Lawrence G., 4,230,954, Cl. 307-238.000.
- International Harvester Company: See—
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- International Standard Electric Corporation: See—
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- International Telephone and Telegraph Corporation: See—
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- Fellinger, Frank; and Ruffing, James M., 4,230,911, Cl. 370-84.000.
- Inter technique: See—
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- Ionics Inc.: See—
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- Irons, Henry R.: See—
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- Irro, Fritz: See—
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- Irvine Enterprises Inc.: See—
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- Irving, Stephen J., to National Research Development Corporation. Aerator. 4,230,570, Cl. 210-758.000.
- Irwin, David C. Cattle skinning process and apparatus therefor. 4,229,860, Cl. 17-50.000.
- Isaka, Tsutomu; Matsuo, Maki; and Miyazaki, Yukinobu, to Toyo Boseki Kabushiki Kaisha. Heat sealable laminated propylene polymer packaging material. 4,230,767, Cl. 428-349.000.
- Isawa, Kazuo: See—
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- Ishida, Eisuke: See—
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- Ishihara Sangyo Kaisha Limited: See—
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- Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; and Shigehara, Itaru, 4,230,642, Cl. 570-193.000.
- Ishii, Michio: See—
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- Ishimaru, Hajime, to Director-General of National Laboratory for High Energy Physics, The. Shield-type coaxial vacuum feedthrough. 4,231,003, Cl. 333-33.000.
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- ITI Limited: See—
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- Ito, Hiroshi: See—
Yamazaki, Hitoshi; and Ito, Hiroshi, 4,230,741, Cl. 427-67.000.
- Ito, Sumio: See—
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- Ito, Tomo, to Hitachi, Ltd. Vacuum operated servo. 4,230,077, Cl. 123-389.000.
- Ito, Yutaka; Inoue, Yuzo; Shimizu, Takao; Inaba, Masao; Sugimoto, Atsumi; and Emori, Takeo, to Nippon Electric Co., Ltd. Frame synchronizer having a write-inhibit circuit. 4,231,063, Cl. 358-148.000.
- Itoh, Kunio; and Kumagai, Kimitaka, to Shin-Etsu Chemical Co., Ltd. Silicon-containing polybutadiene derivatives and method for the preparation thereof. 4,230,815, Cl. 526-335.000.
- Itoh, Tsutomu; Ouchi, Kenji; Furuya, Nobuo; and Shimizu, Takeo, to Onoda Cement Company, Ltd. Apparatus used in continuous process for electrostatic coating with pulverized material. 4,230,068, Cl. 118-634.000.
- ITT Industries, Inc.: See—
Tol, Dirk, 4,230,304, Cl. 254-89.00H.
- IUC International, Inc.: See—
Butler, Glenn J., 4,230,107, Cl. 128-205.260.
- Ivory, Jozsef; Lendvai, Imre; Szucs, Laszlo; and Orban, Jozsef. Integral servo steering gear with rack transmission. 4,230,020, Cl. 91-422.000.
- Iwaki, Takashi; Tanaka, Takeji; Tanaka, Yoshitomo; and Tanaka, Hiroshi, to Yuwa-Sangyo Kabushiki-Kaisha. Method and apparatus for manufacturing box-shaped structure from metal sheet. 4,230,058, Cl. 113-1.00R.
- Iwami, Naoki: See—
Aoki, Takao; Kadowaki, Hidejiro; and Iwami, Naoki, 4,230,783, Cl. 430-42.000.
- Iwamoto, Taro; Ando, Shimon; Kurokawa, Koji; and Kusumoto, Sho, to Hitachi, Ltd. Liquid applying apparatus. 4,230,067, Cl. 118-104.000.
- Iwamuro, Yoshiyuki: See—
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- Iwasaki, Hajime; Mizuta, Kuninori; Kobayashi, Yoshinori; Yoshikawa, Tadayoshi; and Muraoka, Kyozu, to Mitsui Petrochemical Industries Ltd.; and Mitsuboshi Sangyo Co., Ltd. Asphalt water-proofing material. 4,230,762, Cl. 428-234.000.
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- Iwasaki, Kyuhachiro: See—
Horike, Masanori; Jinnai, Koichiro; and Iwasaki, Kyuhachiro, 4,231,048, Cl. 346-140.00R.
- Iwase, Osamu: See—
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- Izzo, Henry J.; Moran, Martin J.; and Wheeler, Frederick G., to Armour-Dial, Inc. Antacid tablets and processes for their preparation. 4,230,693, Cl. 424-156.000.
- J. E. Grote Pepp-A-Matic Co., Inc.: See—
Grote, James E.; and Hochandel, Thomas A., 4,230,007, Cl. 83-409.200.
- J. J. Keller & Associates, Inc.: See—
Keller, Robert L., 4,229,891, Cl. 40-17.000.
- J. M. Huber Corporation: See—
Takewell, Robert B., 4,230,458, Cl. 23-313.0AS.
- Wagner, Joseph E., III; and Williams, Lloyd E., 4,230,593, Cl. 252-179.000.
- J. S. Staedtler: See—
Gartner, Jurgen, 4,230,413, Cl. 401-65.000.
- J. Sainsbury Limited: See—
Day, Timothy T., 4,229,927, Cl. 53-433.000.
- Jackson, Michael V., to Farmhand (U.K.) Limited. Bale collector. 4,230,433, Cl. 414-111.000.
- Jackson, Warren M. Adjustable holder for the stationary die of a thread rolling machine. 4,229,966, Cl. 72-469.000.
- Jacobs, Bernardus A. J.: See—
Dil, Jan G.; and Jacobs, Bernardus A. J., 4,230,915, Cl. 179-100.10G.
- Jacobson, Mark: See—
Beltari, Stanley C.; and Jacobson, Mark, 4,230,427, Cl. 407-91.000.
- Jacquin, Jean, to Societe Anonyme dite: Compagnie Generale d'Electricite. Sodium-sulphur electric cell. 4,230,780, Cl. 429-104.000.
- Jagnow, H. J., to Bergwerksverband GmbH. Method for starting up plant for producing fine coke. 4,230,528, Cl. 201-12.000.
- James, Richard N., agent: See—
Marshall II, John, deceased, 4,230,291, Cl. 244-17.110.
- Jamesbury Corporation: See—
Caliri, Charles T., 4,230,025, Cl. 92-31.000.
- Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., to Lilly Industries Limited. Method of treating asthma with alkyl, alkylidene and alkylene hydantoins. 4,230,709, Cl. 424-256.000.
- Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., to Eli Lilly Industries Limited. Treating immediate hypersensitivity conditions with 3,5-disubstituted hydantoin derivatives. 4,230,716, Cl. 424-273.00R.
- Janssen, Harvey W., to Wolff Manufacturing Company. Method and machine for rebuilding track roller assemblies. 4,230,928, Cl. 219-76.110.
- Janssen, Hermann J., to Sulzer Brothers Ltd. Burner for a fluid fuel. 4,230,445, Cl. 431-116.000.
- Japanese National Railways: See—
Ohura, Yasushi; Ohwada, Susumu; Nakamura, Akira; Kitanishi, Mitsuo; Nakamura, Yakuharu; and Tamura, Akio, 4,230,209, Cl. 191-40.000.
- Jasani, Shirish: See—
Roennau, Raymond B.; Chung, Daniel A.; and Jasani, Shirish, 4,230,770, Cl. 428-424.400.
- Jaworski, Eugene: See—
Breslow, Jeffrey D.; Hicks, Alan A.; Jaworski, Eugene; and Meyer, Burton C., 4,230,317, Cl. 273-119.00A.
- Jedlicka, Daniel M., to Caterpillar Tractor Co. Flexible coupling. 4,229,951, Cl. 64-14.000.
- Jenaer Glaswerk Schott & Gen.: See—
Guenther, Franz, 4,230,010, Cl. 83-600.000.
- Jeppsson, Jan-Bertil, to AB Akerlund & Rausing. Device for induction welding. 4,230,923, Cl. 219-10.530.
- Jet, Inc.: See—
Culp, Richard E.; and Baker, Robert G., 4,230,578, Cl. 210-86.000.
- Jewell, Henry J.; and Meyer, Richard L., to Viewpoint, Inc. Television image projection apparatus. 4,231,067, Cl. 358-237.000.
- JGC Corporation: See—
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,230,886, Cl. 562-486.000.
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Horike, Masanori; Jinnai, Koichiro; and Iwasaki, Kyuhachiro, 4,231,048, Cl. 346-140.00R.
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- John Zink Company: See—
Reed, Robert D., 4,230,278, Cl. 239-427.500.
- Johnson, Aldus, to Lambert, William H. Mobile cart. 4,230,329, Cl. 280-43.170.
- Johnson Controls, Inc.: See—
Matthews, Russell B., 4,230,444, Cl. 431-6.000.
- Johnson & Johnson: See—
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- Johnson, Matthey & Co., Limited: See—
Hydes, Paul C.; and Malerbi, Bernard W., 4,230,631, Cl. 260-429.00R.
- Johnson, Sterling V. Rider propelled toy vehicle. 4,230,331, Cl. 280-218.000.
- Johnston, Jesse C., Jr., to Babcock & Wilcox Company, The. Soot blower construction. 4,229,854, Cl. 15-316.00R.
- Johnston, Paul M., to Westinghouse Electric Corp. Automatic transfer control device and frequency monitor. 4,231,029, Cl. 340-658.000.
- Jones, C. David: See—
Suarez, Tulio; and Jones, C. David, 4,230,862, Cl. 546-237.000.
- Jones, James E., to Dow Corning Corporation. Capillary thermometer containing visible silicone fluid. 4,229,976, Cl. 73-371.000.
- Jones, Winton D.: See—
Albrecht, William L.; and Jones, Winton D., 4,230,715, Cl. 424-269.000.
- Jonson, Sven M., to Mohog AB. Method of sawing and stacking board. 4,230,004, Cl. 83-23.000.
- Jonsson, Ulf R. S. Pinch valve. 4,230,151, Cl. 137-595.000.
- Joyce, James E.; and Joyce, John P. Light toy. 4,231,077, Cl. 362-32.000.
- Joyce, John P.: See—
Joyce, James E.; and Joyce, John P., 4,231,077, Cl. 362-32.000.
- Judge, Kenneth E.; and Hayter, Jerald D., to Carnor Manufacturing Ltd. Stove. 4,230,091, Cl. 126-77.000.
- Jungblut, Camille: See—
Foy, Paul; Jungblut, Camille; and Deleens, Gerard, 4,230,838, Cl. 525-408.000.
- Junginger, Klaus M.; and Kieferle, Hermann, to Stuerlen-Maquet Aktiengesellschaft. Remote control arrangement for a medical appliance. 4,231,019, Cl. 340-171.00R.
- Jurich, Mike, III. Rapid loading device for a revolver. 4,229,896, Cl. 42-89.000.
- Jurick, Martin H.: See—
Potter, Gene B.; and Jurick, Martin H., 4,230,970, Cl. 315-307.000.
- Jurschewitz, Paul A. W. System for regulating the fuel supply of an internal combustion engine. 4,230,082, Cl. 123-518.000.
- Juvinali, John W., to Owens-Illinois, Inc. Method and apparatus of cavity identification of mold of origin of a glass container. 4,230,266, Cl. 235-490.000.
- Jyojiki, Masao: See—
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- K. G. Derman AB: See—
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- Kaartinen, Niilo H., to Packard Instrument Company, Inc. Apparatus for processing fluid materials particularly in the preparation of samples for radioactive isotope tracer studies. 4,230,671, Cl. 422-159.000.
- Kabushiki Kaisha Maruyama Seisakusho: See—
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- Kabushiki Kaisha Mitsu Miike Seisakusho: See—
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- Kabushiki Kaisha Osaka Packing Seisoshu: See—
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- Kabushiki Kaisha Sankyo Seiki Seisakusho: See—
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- Kabushiki Kaisha Toyota: See—
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- Kabushiki Kaisha Toyota Chuo Kenkyusho: See—
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- Kadowaki, Hidejiro: See—
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- Kaempfer, Gerhard P., to Wolverine World Wide, Inc. Material hold-down, 4,230,055, Cl. 112-236.000.
- Kagata, Tooru: See—
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- Kagetsu, Tadashi J.; De Atley, William B.; Fox, Joseph S.; and Malcarne, Oreste J., to Union Carbide Corporation. Recovery of Cr_2O_3 from a chromium bearing solution, 4,230,677, Cl. 423-54.000.
- Kaim, John W., to AMSTED Industries Incorporated. Pin type solid butt rotary coupler, 4,230,228, Cl. 213-62.00A.
- Kaiser Aluminum & Chemical Corporation: See—
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- Kakutani, Kazuo: See—
Nojiri, Michihiko; Kakutani, Kazuo; Uedono, Shigezo; Uenakai, Kazuo; and Matsumoto, Masafumi, 4,230,806, Cl. 435-255.000.
- Kalaf, George P.; and Henschen, Irvin C., to United States of America, Navy. Noise abating sleeve, 4,230,059, Cl. 114-20.00R.
- Kalbfleish, Adolphe W. Combined ball and throttle valve, 4,230,154, Cl. 137-614.170.
- Kalfoglou, George, to Texaco Inc. Method for treating subterranean, clay-containing earth formations, 4,230,183, Cl. 166-274.000.
- Kali-Chemie Aktiengesellschaft: See—
Weidenbach, Guenter; and Bonse, Dirk, 4,230,803, Cl. 435-176.000.
- Kali-Chemie Pharma GmbH: See—
Eckert, Theodor; and Kemper, Fritz H., 4,230,702, Cl. 424-242.000.
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- Kamiya, Sadayoshi: See—
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- Kanamaru, Masazi: See—
Nishikawa, Masaji; Nakatsubo, Toshio; Tsuda, Hiroshi; Fujie, Shigao; Kanamaru, Masazi; and Koseki, Shosaku, 4,230,786, Cl. 430-53.000.
- Kanso, Shiro. Electroconductive hose for cleaner, 4,230,899, Cl. 174-47.000.
- Kanayama, Toshiji: See—
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- Kaneda, Hiroshi; Watabe, Yoji; Souma, Akio; Ura, Yasuyuki; Ishii, Michio; and Anzai, Shiro, to Bridgestone Tire Co., Ltd. Polyurethane tire filling material with plasticizer incorporated therein, 4,230,168, Cl. 152-310.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: See—
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- Kaneko, Shiro: See—
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- Kaneko, Yoichi: See—
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- Kaneto, Kimikazu: See—
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- Kanetsu Kogyo Kabushiki Kaisha: See—
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- Kansai Paint Company, Limited: See—
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- Kao Soap Company, Limited: See—
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- Kaper, Louis: See—
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- Kastl, Johann; and Schutz, Heinrich, to INTERATOM, International Atomreaktorbau GmbH. Mixing device for fluids of different and varying temperatures, 4,230,410, Cl. 366-177.000.
- Katayama, Shigeru; and Aoki, Mutsuhiro, to Mitsui Petrochemical Industries Ltd. Process for producing hydrocarbon resins having improved color and thermal stability, 4,230,840, Cl. 526-77.000.
- Katayama, Yoshihiko: See—
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- Katsube, Junki: See—
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- Kauffman, William J.; and Lilley, George L., to Armstrong Cork Company. Process of forming an embossed surface covering, 4,230,759, Cl. 428-159.000.
- Kawabata, Hidetoshi: See—
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- Kawabata, Kazuaki: See—
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- Kawabe, Yunosuke: See—
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- Kawamura, Yasutaro: See—
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- Kawarada, Kuniyasu: See—
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- Kawasaki, Keiji; and Matsuda, Itsuaki, to Showa Denko K.K. Cathode for electrolysis of aqueous solution of alkali metal halide, 4,230,543, Cl. 204-98.000.
- Kawasaki, Motoo: See—
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- Keefer, Bowie G. Rotary reverse osmosis apparatus and method, 4,230,564, Cl. 210-652.000.
- Keegan, Robert R.: See—
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- Keene Corporation: See—
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- Keglewitsch, Josef, to Bunker Ramo Corporation. Electrical contact, 4,230,391, Cl. 339-97.00R.
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- Keller, Robert L., to J. J. Keller & Associates, Inc. Placard holding device, 4,229,891, Cl. 40-17.000.
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- Kemper, Fritz H.: See—
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- Kenmochi, Hirohito: See—
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- Kerbleski, Joseph J.: See—
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- Kern, Fred R.: See—
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- Kernforschungszentrum Karlsruhe, GmbH: See—
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- Kessl, Werner. Process for producing cast iron, 4,230,490, Cl. 75-130.00B.
- Keystone International, Inc.: See—
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- Khooibiar, Sargis, to Halcon International, Inc. Process for the preparation of methacrolein, 4,230,639, Cl. 568-471.000.
- Khooibiar, Sargis, to Halcon International, Inc. Process for the preparation of acrolein and methacrolein, 4,230,640, Cl. 568-477.000.
- Kidd, Robert P.: See—
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- Kieferle, Hermann: See—
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- Kieffe, Patrick W.: See—
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- Kilty, Michael; and Pernigotti, Allan, to AMF Incorporated. Cartridge filter and method of making same, 4,230,573, Cl. 210-767.000.
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- Kimura, Fumio: See—
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- King, Christopher J. H., to Monsanto Company. Pretreatment of cathodes in electrohydrodimerization of acrylonitrile, 4,230,541, Cl. 204-73.00A.
- King, David P.: See—
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- King, George W.: See—
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- King, Harry A.: See—
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- King, William R. Brake control apparatus for railway cars, 4,230,374, Cl. 303-22.00R.
- Kingsdon, William. Power take-off, 4,229,980, Cl. 74-15.630.
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- Kintopf, Siegfried; and Kress, Ulrich, to Ciba-Geigy Corporation. Process for the production of 2-aryl-2H-benzotriazoles, 4,230,867, Cl. 548-260.000.
- Kiriya, Toshikatsu; and Hasegawa, Yoshiro, to Hitachi, Ltd. Switching matrix equipment having a series circuit of relay coil and self-holding diode at each crosspoint, 4,231,017, Cl. 340-166.00R.
- Kistrup, Holger: See—
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- Kitagawa, Kiyoshi: See—
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- Kitanishi, Mitsuo: See—
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- Klasing Industries, Inc.: See—
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- Klaus, Michael J.; and Pawson, Beverly A., to Hoffmann-La Roche Inc. Polyene compounds, 4,230,872, Cl. 549-62.000.
- Klee, David J., to Air Products and Chemicals, Inc. Cryogenic freezer, 4,229,947, Cl. 62-374.000.
- Klein, Gerhart P., to Emhart Industries, Inc. Method for applying material to a substrate, 4,230,742, Cl. 427-79.000.
- Kleipool, Reinierus J. C., to Naarden International, N.V. Flavoring with 4-methyl-4-furfurylthio-pentanone-2, 4,230,734, Cl. 426-535.000.
- Klett, Stanley D., to Xerox Corporation. Cleaning system for an electrostatic copier, 4,230,406, Cl. 355-15.000.
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- KMS Fusion, Inc.: See—
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- Knaub, Edgar W.: See—
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- Knauer, Karl, to Siemens Aktiengesellschaft. Regenerator circuit for CCD arrangements in a multi-layer metallization structure, 4,230,952, Cl. 307-221.00D.
- Knauer, Karl; and Pfeleiderer, Hans-Joerg, to Siemens Aktiengesellschaft. Transversal filter having parallel inputs, 4,231,002, Cl. 333-165.000.
- Kneifel, Jerome J.; and Veburg, John C., to Dale Electronics, Inc. Method and means for testing the flammability of combustible materials, 4,229,967, Cl. 73-15.00R.
- Knoerr, Karlheinz: See—
Noll, Erwin; and Knoerr, Karlheinz, 4,230,001, Cl. 81-9.220.
- Knoll, Hartwig; Hogg, Klaus; and Laudenberg, Hermann, to Motoren- und Turbinen-Union Munchen GmbH. Arrangement for electromechanical axial clearance measurement, 4,229,884, Cl. 33-174.00L.
- Knoor, Walter: See—
Heller, Wilhelm; Knoor, Walter; and Schweitzer, Reinhard, 4,230,488, Cl. 75-123.00F.
- Knudsen, David S. Machine for installing inserts in container lids, 4,230,028, Cl. 93-1.300.
- Kobashi, Takashi, to Mitutoyo Mfg. Co., Ltd. Measuring instrument with digital display, 4,229,883, Cl. 33-143.00L.
- Kobayashi, Hiroto; and Hashimoto, Tsuneo, to Walbro Far East, Inc. Fuel feed system, 4,230,146, Cl. 137-494.000.
- Kobayashi, Masahiro: See—
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- Kobayashi, Yoshinori: See—
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- Kobe Steel, Limited: See—
Asari, Akira; Ueda, Masakazu; and Nishimoto, Takeo, 4,230,661, Cl. 264-323.000.
- Kockums Industri Aktiebolag: See—
Edstrom, Soren E. H., 4,230,379, Cl. 308-187.000.
- Kodama, Tsutomu; Nakabayashi, Masao; Watanabe, Isao; Hirano, Hiroshi; Abe, Norio; Tanaka, Katsufumi; and Arai, Hirotsu, to Toyama Chemical Co., Ltd. Novel 2-[4-(3-methyl-2-thienyl)phenyl]-propionic acid and pharmaceutically acceptable salt thereof and method for treating symptoms of inflammation and pain, 4,230,719, Cl. 424-275.000.
- Kodama, Yutaka: See—
Horike, Masanori; Jinnai, Koichiro; and Iwasaki, Kyuhachiro, 4,231,048, Cl. 346-140.00R.
- Iwasaki, Kyuhachiro; Kodama, Yutaka; Jinnai, Koichiro; and Horike, Masanori, 4,231,047, Cl. 346-75.000.
- Koehler, David P.: See—
Meyer, Donald E.; Colpaert, James J.; Fischer, Frederick R.; Gatt, Michael E.; and Koehler, David P., 4,230,252, Cl. 228-152.000.
- Kofman, Anatoli: See—
Schneerson, Moshe; and Kofman, Anatoli, 4,229,957, Cl. 70-134.000.
- Kohama, Tokio; Ozaki, Tadashi; Obayashi, Hideki; and Nohira, Hidetaka, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engines, 4,230,079, Cl. 23-568.000.
- Kohn, Jean: See—
Roberts, William M.; and Kohn, Jean, 4,230,061, Cl. 114-74.00A.
- Kojima, Noriatsu. Method of connecting pipes and flanged pipe joints used therein, 4,229,923, Cl. 52-741.000.
- Kolb, Gunter: See—
Tork, Leo; Kolb, Gunter; and Hohne, Wolfgang, 4,230,812, Cl. 526-320.000.
- Kolb, Karl H.: See—
Schoplin, Gisela; Fuchs, Peter; and Kolb, Karl H., 4,230,686, Cl. 424-22.000.
- Kolm, Eric A.: See—
Gardella, John F., Jr.; King, George W.; Kolm, Eric A.; and Kolm, Henry H., 4,230,978, Cl. 318-687.000.
- Kolm, Henry H.: See—
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- Kolpakov, Serafim V.: See—
Sharonov, Mikhail A.; Zainullin, Lik A.; Olginsky, Felix Y.; Scherbakov, Ivan I.; Kolpakov, Serafim V.; and Teder, Leonid I., 4,230,477, Cl. 65-141.000.
- Komatsu, Michiyasu: See—
Nakamura, Kiyoshi; Komatsu, Michiyasu; and Nakanishi, Masae, 4,230,494, Cl. 106-14.050.
- Komatsu, Noboru; Arai, Tohru; and Fujita, Hironori, to Kabushiki Kaisha Toyota; and Chuo Kenkyusho. Treating composition, forming a mixed-carbide layer of Va-Group elements and of chromium on a ferrous-alloy surface and resulting product, 4,230,751, Cl. 427-443.100.
- Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH: See—
Eckle, Otto, 4,230,429, Cl. 408-186.000.
- Komoto, Mikihiisa: See—
Oshima, Masanao; Komoto, Mikihiisa; Yabuki, Shoichi; and Inokawa, Tsuneo, 4,230,423, Cl. 405-211.000.
- Konishiroku Photo Industry Co., Ltd.: See—
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- Koppers Company, Inc.: See—
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- Korbilas, Christ P.: See—
Billington, Evans R.; Batka, Robert J.; and Korbilas, Christ P., 4,230,161, Cl. 141-302.000.
- Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. 1-And/or 7-substituted-6-hydroxy (or oxo)-3-decahydroquinoline carboxylic acids, 4,230,861, Cl. 546-164.000.
- Korwin, Paul; and Cohen, Eric S., to Cose Technology Corporation. System for and method of indicating intruder presence on telephone lines, and method of installation of telephone intruder alarm system, 4,230,914, Cl. 179-81.00E.
- Kosaka, Takao, to Mitsubishi Paper Mills, Ltd. Thermosensitive recording paper improved in printing quality, 4,230,776, Cl. 428-537.000.
- Kosek, Jiri: See—
Spacek, Jindrich; and Kosek, Jiri, 4,229,965, Cl. 72-453.130.
- Koseki, Shosaku: See—
Nishikawa, Masaji; Nakatsubo, Toshio; Tsuda, Hiroshi; Fujie, Shigo; Kanamaru, Masazi; and Koseki, Shosaku, 4,230,786, Cl. 430-53.000.
- Koswig, Kurt: See—
Coenen, Alfred; Koswig, Kurt; Hentchel, Bernhard; and Ziebarth, Jurgen, 4,230,681, Cl. 423-481.000.
- Kostka, Hans: See—
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- Kosugi, Hiroshi; Inoue, Hirofumi; and Shirasu, Hirotsu, to Hitachi, Ltd. Interpolative PCM decoder utilized for μ -law and A-law, 4,231,022, Cl. 340-347.00A.
- Koszi, Louis A.: See—
Hartman, Robert L.; Ilegems, Marc; Koszi, Louis A.; and Wagner, Wilfried R., 4,230,997, Cl. 331-94.50H.
- Kotick, Michael P.; Schut, Robert N.; Polazzi, Joseph O.; and Leland, David L., to Miles Laboratories, Inc. 7-Methyl-8 β -lower alkyl or 7-methyl-8-lower alkyl B/C cis or trans morphinan-6-one compounds and therapeutic method of treating pain employing them, 4,230,712, Cl. 424-260.000.
- Kotski, Edward J., to Amerace Corporation. Flexible electrical connector assembly, 4,230,389, Cl. 339-75.00M.
- Koumura, Suketsugu: See—
Sueda, Yoshihisa; Koumura, Suketsugu; Hirabayashi, Kazuyoshi; Kenmochi, Hirohito; Terao, Hisashige; and Mori, Yoshio, 4,230,852, Cl. 544-189.000.
- Kouyama, Susumu: See—
Suzuki, Yasoji; and Kouyama, Susumu, 4,230,951, Cl. 307-200.00B.
- Kowall, James L.; and Taylor, Paul M., to Powerpak, Inc. Shipping container, 4,230,227, Cl. 206-600.000.
- Koyo Jidoki Co., Ltd.: See—
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- Kozuma, Akiyoshi: See—
Matsukura, Kazuo; Murakami, Kunio; Nagasawa, Tsugio; Hayashi, Tadaaki; and Kozuma, Akiyoshi, 4,230,658, Cl. 264-235.800.
- Kramer, Petrus A.: See—
Verbrugge, Pieter A.; Kramer, Petrus A.; Van Berkel, Johannes; and Kelderman, Hendrik C., 4,230,891, Cl. 568-591.000.
- Kramer, Robert G., to Diamond International Corporation. Foldable protective packaging sleeve or carton. 4,230,260, Cl. 229-39.00B.
- Kraus, Peter: See—
Oeckl, Siegfried; Scheinplugg, Hans; and Kraus, Peter, 4,230,723, Cl. 424-302.000.
- Krause, Donald. Multipart photosensitive element with both fixed contrast and variable contrast part records. 4,230,795, Cl. 430-503.000.
- Kress, Ulrich: See—
Kintopf, Siegfried; and Kress, Ulrich, 4,230,867, Cl. 548-260.000.
- Kretzinger, Karl F., to Garrett Corporation. The. Apparatus for reinforcement of thin plate, high pressure fluid heat exchangers. 4,229,868, Cl. 29-157.30R.
- Kriegler, Franz. Steam engine. 4,229,943, Cl. 60-652.000.
- Kruckel, Peter; and Winkler, Wolfgang, to Messrs. Schwan-Stabilo Schwanhauser GmbH & Co. Pencils. 4,230,655, Cl. 264-135.000.
- Krueger, Achim R.: See—
Chang, David C.; Fryd, Michael; and Krueger, Achim R., 4,230,844, Cl. 526-210.000.
- Krueger, Gottfried J., to European Atomic Energy Community. Coil for the production of homogeneous magnetic fields. 4,231,008, Cl. 335-209.000.
- Krutsch, John R.: See—
Barlow, Gordon A.; and Krutsch, John R., 4,230,314, Cl. 273-1.00E.
- Kubelka, Axel: See—
Kubelka, Axel R., 4,229,862, Cl. 24-68.0SK.
- Kubelka, Axel R., to Weigl, Erwin; and Kubelka, Axel. Strap tensioning buckle. 4,229,862, Cl. 24-68.0SK.
- Kuboyama, Morio: See—
Nishida, Masayuki; Funakoshi, Satoshi; Ogasa, Katsuhiko; Kuboyama, Morio; Yanai, Nobuya; and Yamada, Muneco, 4,230,697, Cl. 424-177.000.
- Kudo, Kesayoshi: See—
Yoshida, Kiyotaka; Hatanaka, Yoshio; Kudo, Kesayoshi; and Aoki, Takao, 4,230,735, Cl. 426-557.000.
- Kudra, Anthony J., III. Roofing aid. 4,230,202, Cl. 182-45.000.
- Kuebler, Gary R.: See—
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- Kuga, Mutsuo; Kitagawa, Kiyoshi; Kawasaki, Motoo; and Watanabe, Junkichi, to Unitika Limited. Method of concurrently-biaxially drawing polyvinyl alcohol film. 4,230,654, Cl. 264-134.000.
- Kumagai, Kimitaka: See—
Itoh, Kunio; and Kumagai, Kimitaka, 4,230,815, Cl. 526-335.000.
- Kumai, Teruo: See—
Nohira, Hidetaka; Ito, Sumio; Oki, Hiashi; and Kumai, Teruo, 4,230,073, Cl. 123-308.000.
- Kunita, Masao: See—
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- Kunzmann, Otto, to Bielomatik Leuze & Co. Apparatus for transporting layers of sheets. 4,230,218, Cl. 198-461.000.
- Kuo, Chang-Kiang, to Texas Instruments Incorporated. Method of making implant programmable N-channel ROM. 4,230,504, Cl. 148-1.500.
- Kurihara, Toshio: See—
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- Kurokawa, Koji: See—
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- Kurpanek, Waldemar H. Hydro-thermic energy converter. 4,230,963, Cl. 310-306.000.
- Kurtz, Clark N., to Eastman Kodak Company. Electronic imaging apparatus using multicolor electrophotocopy particles. 4,230,405, Cl. 355-4.000.
- Kurz, Milton. Thermal insulating material. 4,230,057, Cl. 112-420.000.
- Kushner, Gerald J.: See—
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- Kusanuruk, Vladimir F.: See—
Meir, Vladimir A.; Zhukovsky, Alexei N.; Ponomarev, Vladimir S.; Subbotin, Vladimir G.; Kharitonov, Yuri P.; Kusanuruk, Vladimir F.; Anatychuk, Lukyan I.; Melnik, Anatoly P.; Skakodub, Vladimir A.; and Sokolov, Alexandr D., 4,230,945, Cl. 250-370.000.
- Kusumoto, Sho: See—
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- La Crosse Cooler Company, Inc.: See—
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- La Telemecanique Electrique: See—
Thierry, Jean-Pierre; Debonne, Alain; and Nourry, Daniel, 4,230,388, Cl. 339-74.00R.
- Lauwe, Robert H. Dispensing valve particularly for viscous products and having a dome-shaped applicator. 4,230,240, Cl. 222-212.000.
- Labofina, S.A.: See—
Bertrand, Jean-Noel M., 4,230,821, Cl. 521-95.000.
- Lagerwerf, Harry: See—
Braat, Antonius M. M.; and Lagerwerf, Harry, 4,230,178, Cl. 165-76.000.
- L'Air Liquide S.A. pour l'Etude et l'Exploitation des Procédés George Claude: See—
Zumbrunn, Jean-Pierre, 4,230,478, Cl. 71-3.000.
- Lambert, William H.: See—
Johnson, Aldus, 4,230,329, Cl. 280-43.170.
- Lamondine S.A.: See—
Sparkes, Curtis A., 4,229,856, Cl. 16-47.000.
- Lancashire Box Company, Limited: See—
Lane, Douglas C., 4,230,258, Cl. 229-30.000.
- Lane, Douglas C., to Lancashire Box Company, Limited. Tray for a shrink-wrap package. 4,230,258, Cl. 229-30.000.
- Langen, Marinus J. M.; and Strauss, Edgars H., to H. J. Langen & Sons Limited. Checkout counter with bag delivery means. 4,230,204, Cl. 118-68.000.
- Lanter, Kent J.: See—
Betz, Norman L.; Lanter, Kent J.; and Williams, Danny L., 4,230,736, Cl. 426-601.000.
- Larbig, Wolfgang, to Bayer Aktiengesellschaft. Process for working up effluents containing nitro-hydroxy-aromatic compounds. 4,230,567, Cl. 210-600.000.
- Larsen, Christian; Frederiksen, Per D.; and Sorensen, Ebbe N., to Wavin B.V. Pipe having an end portion, the inner wall of which is provided with a circumferential groove, in which a sealing means is mounted and a pipe joint consisting of this pipe and a spigot end of a second pipe inserted therein. 4,230,157, Cl. 138-155.000.
- Larson, Lary R., to Medtronic, Inc. Cardiac monitoring apparatus. 4,230,127, Cl. 128-706.000.
- Lascelles, Daniel J., to McDonnell Douglas Corporation. Circuit board wire bonding and cutting apparatus. 4,230,925, Cl. 219-56.100.
- Lathrop Paulson Company: See—
DuBroff, Warren, 4,230,519, Cl. 156-468.000.
- Lattime, Richard R., to Goodyear Tire & Rubber Company. The. Method of preparing resin. 4,230,810, Cl. 526-224.000.
- Lauck, Robert M., to Stauffer Chemical Company. Leavening acid composition. 4,230,730, Cl. 426-128.000.
- Laudenberg, Hermann: See—
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- Laughlin, William F. Take-apart convertible rotary tool. 4,229,912, Cl. 51-335.000.
- Laurel Bank Machine Co., Ltd.: See—
Ueda, Nobuo, 4,230,135, Cl. 133-3.00D.
- LaVance, Cecil N.; and Beale, Allan A., to Motorola, Inc. Method of returning to a last point in a path after a temporary discontinuance of an operation. 4,231,093, Cl. 364-460.000.
- Lavanish, Jerome M., to PPG Industries, Inc. 3-[5-(1-(Nitrophenoxy)alkyl, alkenyl, alkenyl, or haloalkyl)-1,3,4-thiadiazol-2-yl]-4-hydroxy-1-methyl-2-imidazolidinones. 4,230,480, Cl. 71-90.000.
- Lawrence, David K.: See—
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- Lawson, Charles M.: See—
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- Layeillon, Jacques, to Simmonds, S.A. Skirted nut. 4,230,166, Cl. 151-7.000.
- Lear Siegler, Inc.: See—
Potter, Gene B.; and Jurick, Martin H., 4,230,970, Cl. 315-307.000.
- LeBlanc, Joseph R.: See—
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- Le Corre, Maurice; Hercouet, Alain; and Begasse, Beatrice, to Agence Nationale de Valorisation de la Recherche. Process for the synthesis of derivatives of the benzofuran, chromene and isochromene type. 4,230,624, Cl. 260-345.200.
- Lee, David Q.; and Rovnyak, Richard M., to GTE Automatic Electric Laboratories Incorporated. Dial pulse sensor and repeater circuit. 4,230,912, Cl. 179-16.0EA.
- Lee, Joseph Y.: See—
D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., 4,230,549, Cl. 204-159.170.
- Lee, Tzu-Chang: See—
Forn, John A.; and Lee, Tzu-Chang, 4,230,950, Cl. 250-574.000.
- Lee, Wha S. Process for preparing 5,6-dihydro-2-methyl-1,4-oxathiin derivatives. 4,230,871, Cl. 549-14.000.
- Lee, Yu-Sun; and Shackle, Dale R., to Mead Corporation. The. Process for producing a pressure-sensitive carbonless copy sheet using microcapsules formed in situ in a radiation curable binder. 4,230,495, Cl. 106-14.500.
- Leeuwrik, Frederik H., to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer (Nijverheidsorganisatie T.N.O.). Rotor adapted to rotate about a rotary shaft. 4,230,648, Cl. 261-87.000.
- LeFever, Randall H., to GTE Products Corporation. Intrusion alarm safety. 4,230,450, Cl. 431-361.000.
- Lega-Norm AG: See—
Henggeler-Achermann, Joey, 4,230,310, Cl. 269-316.000.
- Legueu, Paul E. R. Highly autonomous cross-country workshop and servicing van. 4,230,358, Cl. 296-24.00R.

- Lehmann, Wilfried; Muller, Hermann; and Baranek, Bodo, to Sihi GmbH & Co. KG. Rotary pump assembly. 4,230,438, Cl. 415-122.00R.
- Leiber, Heinz, to Robert Bosch GmbH. Anti-skid braking system. 4,230,375, Cl. 303-105.000.
- Leichnitz, Kurt, to Drägerwerk Aktiengesellschaft. Apparatus and method for measuring aerosols and gases with detector tubes. 4,230,457, Cl. 23-232.00R.
- Leigh, Theodore M.; and Rawson, James L., to Highway Equipment Company. Vehicular spreader with digital electronic ground speed link. 4,230,280, Cl. 239-677.000.
- LEK, tovarna farmacevtskih in kemskih izdelkov, n.s.o.: See—
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- Zupancic, Boris; and Sopoic, Mirko, 4,230,884, Cl. 562-460.000.
- Leland, David L.: See—
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- Lemaire, Francis: See—
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- Lemoine, Kenneth D.; and Keegan, Robert R., to Lemoine, Kenneth D. Self-cleaning water distiller with intermittent overflow. 4,230,530, Cl. 202-180.000.
- Lenco, Inc.: See—
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- Lenk, Erich; and Dobbins, Donald J., to Barmag Barmer Maschinenfabrik AG. Traversing device for thread winding apparatus. 4,230,285, Cl. 242-43.00R.
- Lentz, Charles M., to Church's Fried Chicken, Inc. Apparatus for basting and displaying foods. 4,230,066, Cl. 118-20.000.
- Leonard, Robert D., Jr.; and Nestor, Charles R., to General Motors Corporation. Electrical socket connector. 4,230,392, Cl. 339-117.00R.
- Leonov, Ivan P.: See—
Svirachevsky, Valentin K.; Trofimuk, Andrei A.; Vasiliev, Genady G.; and Leonov, Ivan P., 4,230,191, Cl. 175-20.000.
- Le Page, Jean-Francois: See—
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- Lermann, Peter: See—
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- Lert, John G., Jr.; Lert, Peter W.; and Cornelius, John F. Broadcast program identification method and system. 4,230,990, Cl. 455-67.000.
- Lert, Peter W.: See—
Lert, John G., Jr.; Lert, Peter W.; and Cornelius, John F., 4,230,990, Cl. 455-67.000.
- Leveque, Marcel; and Battigelli, Jean A., to Saint-Gobain Industries. Suppression of pollution in mineral fiber manufacture. 4,230,471, Cl. 65-2.000.
- LeVeen, Harry H. Radio frequency, electromagnetic radiation device having orbital mount. 4,230,129, Cl. 128-804.000.
- Lever Brothers Company: See—
Heider, Henning; and Wiske, Theophil, 4,230,737, Cl. 426-607.000.
- Lewine, Donald A.; Dundon, Thomas M.; and Setera, Ronald J., to Digital Equipment Corporation. Data processing system with apparatus for correcting microinstruction errors. 4,231,089, Cl. 364-200.000.
- Lewis, David O.: See—
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- Lewis, Harry R., Jr., to Standard Oil Company (Indiana). Simplified subsea production wellhead. 4,230,186, Cl. 166-342.000.
- Lewis, John G.: See—
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- Leybold-Heraeus GmbH: See—
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- Leyerzapf, Manfred: See—
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- Li, Yao T. Distillation apparatus. 4,230,529, Cl. 202-175.000.
- Libbey-Owens-Ford Company: See—
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- Likhoshervostov, Arkady M.: See—
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- Lilley, George L.: See—
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- Lilly Industries Limited: See—
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- Linde Aktiengesellschaft: See—
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- Lindebrings, Charles M. P.; Vaillagou, Pierre; and Velte, Andre J. F., to Societe Anonyme de Telecommunications. Manufacture of printed circuit boards. 4,229,879, Cl. 29-840.000.
- Lindgren, Bo S.: See—
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- Lindmayer, Joseph, to Solarex Corporation. Method of making semi-crystalline silicon article. 4,230,508, Cl. 148-186.000.
- Lindner, Max E. Putting stroke practice device. 4,230,319, Cl. 273-192.000.
- Lindova Aktiebolag: See—
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- Ling, Chung-Mei: See—
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- LIPHA, Lyonnaise Industrielle Pharmaceutique: See—
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- Lipp, Alfred: See—
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- Lister Bolt & Chain Ltd.: See—
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- Litton Industrial Products Inc.: See—
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Beacco, Enzo; Bianchi, Maria L.; Minghetti, Annaceto; and Spalla, Celestino, 4,230,854, Cl. 544-346.000.
- Minin, Oleg D.: See—
Slavinsky, Valentin N.; Bairon, Genrikh V.; Alexandrov, Adolf M.; Alexeev, Gennady M.; Matveev, Vladimir M.; Minin, Oleg D.; Tsimbler, Jury A.; Vasiliev, Vladimir A.; and Provalsky, Gennady B., 4,229,946, Cl. 62-341.000.
- Minnesota Mining and Manufacturing Company: See—
Fish, Herbert J., 4,230,789, Cl. 430-159.000.
Munkberg, John A., 4,230,992, Cl. 328-140.000.
Theiler, Werner C., Sr., 4,229,849, Cl. 7-107.000.
- Minolta Camera Kabushiki Kaisha: See—
Murasaki, Hiroshi; Ogawa, Masaya; and Kawabata, Hidetoshi, 4,230,070, Cl. 118-658.000.
- Minoshima, Yasuo: See—
Matsuda, Toshiharu; Miyamoto, Seigo; and Minoshima, Yasuo, 4,230,470, Cl. 62-197.000.
- Mitaka Instrument Co., Ltd.: See—
Sano, Seisuke; Maeda, Masato; and Iguchi, Morimichi, 4,230,555, Cl. 204-195.00S.
- Mitani, Taizo: See—
Hashimoto, Shigeru; Mitani, Taizo; Isobe, Takashi; Aoyagi, Masao; Sumi, Akiyasu; and Tanaka, Katsumi, 4,230,403, Cl. 354-286.000.
- Mitchell, William T.; and Snyder, Philip S., to Celanese Corporation. Recovery of anhydrous acids, 4,230,887, Cl. 562-593.000.
- Mitsubishi Denki Kabushiki Kaisha: See—
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,230,927, Cl. 219-69.00C.
- Yamazaki, Hitoshi; and Ito, Hiroshi, 4,230,741, Cl. 427-67.000.
- Mitsubishi Gas Chemical Company, Inc.: See—
Saito, Masao; Aoyama, Tetsuo; Horie, Shigeru; and Takada, Kazuo, 4,230,636, Cl. 260-561.00R.
- Mitsubishi Paper Mills, Ltd.: See—
Kosaka, Takao, 4,230,776, Cl. 428-537.000.
- Tsuihai, Yasuo; Yoshida, Akio; and Suzuki, Shigeyoshi, 4,230,792, Cl. 430-302.000.
- Mitsubishi Petrochemical Company Limited: See—
Takayama, Toshihiro; Endo, Fujio; Nozawa, Tsuneo; Masuda, Yoshiro; Mori, Motokuni; and Kanayama, Toshiji, 4,230,800, Cl. 435-101.000.
- Mitsubishi Yuka Pharmaceutical Co., Ltd.: See—
Takayama, Toshihiro; Endo, Fujio; Nozawa, Tsuneo; Masuda, Yoshiro; Mori, Motokuni; and Kanayama, Toshiji, 4,230,800, Cl. 435-101.000.
- Mitsuboshi Sangyo Co., Ltd.: See—
Iwasaki, Hajime; Mizuta, Kuninori; Kobayashi, Yoshinori; Yoshikawa, Tadayoshi; and Muraoka, Kyouzi, 4,230,762, Cl. 428-234.000.
- Mitsui Engineering & Shipbuilding Co., Ltd.: See—
Nojiri, Michihiko; Kakutani, Kazuo; Uedono, Shigezo; Uenakai, Kazuo; and Matsumoto, Masafumi, 4,230,806, Cl. 435-255.000.
- Oshima, Masanao; Komoto, Mikihiisa; Yabuki, Shoichi; and Inokawa, Tsuneo, 4,230,423, Cl. 405-211.000.
- Mitsui Petrochemical Industries Ltd.: See—
Iwasaki, Hajime; Mizuta, Kuninori; Kobayashi, Yoshinori; Yoshikawa, Tadayoshi; and Muraoka, Kyouzi, 4,230,762, Cl. 428-234.000.
- Katayama, Shigeru; and Aoki, Mutsuhiro, 4,230,840, Cl. 526-77.000.
- Mitutoyo Mfg. Co., Ltd.: See—
Kobashi, Takashi, 4,229,883, Cl. 33-143.00L.
- Miyake, Tetsuya: See—
Seko, Maomi; Miyake, Tetsuya; Takeuchi, Hiroshi; and Tanouchi, Masatoshi, 4,230,882, Cl. 562-416.000.
- Miyamoto, Seigo: See—
Matsuda, Toshiharu; Miyamoto, Seigo; and Minoshima, Yasuo, 4,230,470, Cl. 62-197.000.
- Miyasaka, Katsuhiko: See—
Suzuki, Yasushi; Tsukamoto, Kunio; Minami, Nobuyoshi; Hasegawa, Yukio; Watanabe, Tadaharu; Miyasaka, Katsuhiko; Mikami, Takashi; and Funakoshi, Satoshi, 4,230,703, Cl. 424-244.000.
- Miyazaki, Yukinobu: See—
Isaka, Tsutomu; Matsuo, Maki; and Miyazaki, Yukinobu, 4,230,767, Cl. 428-349.000.
- Miyoshi, Michizo: See—
Uehara, Haruo; and Miyoshi, Michizo, 4,230,179, Cl. 165-113.000.
- Mizote, Atsunobu: See—
Yamaguchi, Hideo; Kobayashi, Masahiro; Mizote, Atsunobu; and Iwamura, Yoshiyuki, 4,230,525, Cl. 162-164.00R.
- Mizuno, Kenichi: See—
Yoshizaki, Masaaki; and Mizuno, Kenichi, 4,231,084, Cl. 364-200.000.
- Mizuno, Kiyofumi; Maeda, Hiroaki; Takahashi, Shigeo; Sato, Masanori; and Suzuki, Satomi, to Aisin Seiki Kabushiki Kaisha. Automatic speed ratio control system for stepless transmission of automotive vehicles, 4,229,998, Cl. 74-865.000.
- Mizuta, Kuninori: See—
Iwasaki, Hajime; Mizuta, Kuninori; Kobayashi, Yoshinori; Yoshikawa, Tadayoshi; and Muraoka, Kyouzi, 4,230,762, Cl. 428-234.000.
- Mizutani, Nagao; Kurihara, Toshio; Nishiyama, Yutaka; Kunita, Masao; Kinoshita, Teruo; and Yasunaga, Makoto, to Citizen Watch Company Limited. Drum printer with helically arranged type sets, 4,230,039, Cl. 101-93.170.
- Mizutani, Shigeru: See—
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; Moriguchi, Kiso; and Mizutani, Shigeru, 4,230,831, Cl. 525-240.000.
- Mobay Chemical Corporation: See—
Nodelman, Neil H., 4,230,824, Cl. 521-167.000.
- Mobil Oil Corporation: See—
Canterino, Peter J., 4,230,836, Cl. 525-332.000.
Neeley, Walter P., 4,231,111, Cl. 367-19.000.
Young, Lewis B., 4,230,894, Cl. 568-768.000.
- Mobil Tyco Solar Energy Corporation: See—
Taylor, Aaron S.; and Stormont, Richard W., 4,230,674, Cl. 422-246.000.
- Mochizuki, Asaji, to Showa Musen Kogyo Kabushiki Kaisha. Multiway change-over switch having joy-stick actuator, 4,230,916, Cl. 200-600A.
- MOCO Maschinen- und Apparatebau GmbH & Co. KG: See—
Haase, Egon, 4,230,282, Cl. 241-159.000.
- Mohog AB: See—
Jonson, Sven M., 4,230,004, Cl. 83-23.000.
- Moledeth Development Co., Ltd.: See—
Beresinsky, Isaac, 4,230,221, Cl. 198-513.000.
- Molins Machine Company, Inc.: See—
Coburn, Robert E., 4,230,009, Cl. 83-504.000.
- Moller, Ursula, to AGFA-Gevaert, A.G. Apparatus for making positive pictures from slides, 4,230,407, Cl. 355-27.000.
- Momma, Yoshinobu; Kawabe, Yunosuke; and Hataishi, Osamu, to Fujitsu Limited. Semiconductor device and method for its preparation, 4,231,057, Cl. 357-50.000.
- Monsanto Company: See—
Barker, Robert I.; King, David P.; and Rice, Patrick F., 4,229,970, Cl. 73-56.000.
- Delente, Jacques J.; and Weeks, Lloyd E., 4,230,537, Cl. 204-1.00T.
- Henia, Jay M. S.; and Tripodi, Mary K., 4,230,463, Cl. 55-16.000.
- King, Christopher J. H., 4,230,541, Cl. 204-73.00A.
- Liu, Kou-Chang; and Howe, Robert K., 4,230,866, Cl. 548-247.000.
- Monsanto Research Corporation: See—
Salyer, Ival O.; and Usmani, Arthur M., 4,230,551, Cl. 204-181.00R.
- Montedison S.p.A.: See—
Balducci, Luigi; and Rustioni, Massimo, 4,230,500, Cl. 106-288.00B.
- Capaccioni, Mario; Gentile, Laurentino; and Rusconi, Aldo, 4,230,855, Cl. 544-348.000.
- Moon, Derryll E. Chiropractic table, 4,230,100, Cl. 128-70.000.
- Moore-Perk Corporation: See—
Forstrom, Richard J.; and Wardle, Michael D., 4,230,663, Cl. 422-33.000.
- Moore, Vonnice S., to Team Inc. Apparatus for sealing flange joints, 4,230,348, Cl. 285-297.000.
- Moran, Daniel B.: See—
Allen, George R., Jr.; Hanifin, John W., Jr.; Moran, Daniel B.; and Albright, Jay D., 4,230,705, Cl. 424-250.000.
- Moran, Martin J.: See—
Izzo, Henry J.; Moran, Martin J.; and Wheeler, Frederick G., 4,230,693, Cl. 424-156.000.
- Mordwinkin, George, to Sensor Corporation. Digital eddy current apparatus for generating metallurgical signatures and monitoring metallurgical contents of an electrically conductive material, 4,230,987, Cl. 324-236.000.
- Moreau, Jean R.; Pelletier, Martin P.; and Tremblay, Gerard B. Process for agglomerating particulate wood material and products obtained thereby, 4,230,459, Cl. 44-10.00B.
- Morgan, Scott J. C., to Decca Limited. Automatic tape winding machine, 4,230,520, Cl. 156-505.000.
- Mori, Motokuni: See—
Takayama, Toshihiro; Endo, Fujio; Nozawa, Tsuneo; Masuda, Yoshiro; Mori, Motokuni; and Kanayama, Toshiji, 4,230,800, Cl. 435-101.000.
- Mori, Toshihiro: See—
Imigawa, Masayuki; and Mori, Toshihiro, 4,231,018, Cl. 340-171.00R.
- Mori, Yoshio: See—
Sueda, Yoshihisa; Koumura, Suketsugu; Hirabayashi, Kazuyoshi; Kenmochi, Hirohito; Terao, Hisashige; and Mori, Yoshio, 4,230,852, Cl. 544-189.000.
- Moriguchi, Kiso: See—
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; Moriguchi, Kiso; and Mizutani, Shigeru, 4,230,831, Cl. 525-240.000.
- Morimoto, Koichi; and Tokumaru, Tatsuo, to Nippon Electric Co., Ltd. Solid electrolyte capacitor, 4,231,075, Cl. 361-433.000.
- Morinaga Milk Industry Co. Ltd.: See—
Nishida, Masayuki; Funakoshi, Satoshi; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; and Yamada, Muneo, 4,230,697, Cl. 424-177.000.
- Morita, Masayasu, to France Bed Co., Ltd. Ball-and-screw power transmission device, 4,229,983, Cl. 74-89.140.
- Morlock, Gerhard: See—
Amann, Herbert; and Morlock, Gerhard, 4,230,606, Cl. 260-6.000.
- Morris, Robert W., to C. H. Masland & Sons. Moldable unitary composite carpet structure, 4,230,755, Cl. 428-95.000.

- Morrison, Howard J.; and Wildman, John R., to Marvin Glass & Associates. Remote controlled talking amusement device, 4,229,903, Cl. 46-232.000.
- Morrison-Knudsen Company, Inc.: See—
Fearon, Joseph G., 4,230,045, Cl. 104-279.000.
- Moskowitz, David, to Ford Motor Company. Method of improving tool life of TiC base tools, 4,230,462, Cl. 51-307.000.
- Motoren- und Turbinen-Union München GmbH: See—
Betz, Wolfgang; and Rossmann, Axel, 4,230,745, Cl. 427-255.400.
Knoll, Hartwig; Hogg, Klaus; and Landenberg, Hermann, 4,229,884, Cl. 33-174.00L.
- Weiler, Wolfgang, 4,229,944, Cl. 60-740.000.
- Motorola, Inc.: See—
Bafaro, Michael P., 4,230,972, Cl. 315-382.000.
Bickley, Robert H.; and Dewey, Michael J., 4,230,973, Cl. 315-383.000.
- Dolikian, Arman V., 4,231,114, Cl. 455-49.000.
- Gatto, Donald F., 4,230,777, Cl. 429-97.000.
- LaVance, Cecil N.; and Beale, Allan A., 4,231,093, Cl. 364-460.000.
- Stauers, Juris, 4,231,099, Cl. 364-718.000.
- Walker, Scott H., 4,231,040, Cl. 343-100.00A.
- Motz, Phillip R., to General Motors Corporation. Engine control system, 4,231,091, Cl. 364-431.000.
- Mougin, Georges L., to ITI Limited. Thermal protective device for tubular icebergs, 4,230,418, Cl. 405-52.000.
- Moyer, Joseph D., to W. R. Grace & Co. Heat stable, non-yellowing photopolymer compositions, 4,230,740, Cl. 427-54.100.
- Moynihan, Robert E.: See—
Derick, Burton N.; Moynihan, Robert E.; and Wolfe, Jon W., 4,230,775, Cl. 428-525.000.
- Moyroud, Louis M. Photocomposing machine and method, 4,230,399, Cl. 354-10.000.
- MTD Products Inc.: See—
Plamper, Gunter, 4,229,994, Cl. 74-552.000.
- Mueller, Robert S., to Eaton Corporation. Control for valve disablers, 4,230,076, Cl. 123-90.160.
- Mueller, Wolfgang H.: See—
Drake, William O.; Hinsen, Hans; Mayerhoefer, Horst; and Mueller, Wolfgang H., 4,230,857, Cl. 544-388.000.
- Muhammad, Clifton C., to Carter Bros. Iron Works, Inc. Skateboard, 4,230,330, Cl. 280-87.00A.
- Mulach, Arthur: See—
Calfo, Raymond M.; and Mulach, Arthur, 4,230,961, Cl. 310-68.00R.
- Muldoon, James F., to Electronic Associates, Inc. Gas measurement and analysis system, 4,229,968, Cl. 73-23.100.
- Muller, Hans; and Guazzone, Bruno, to Chemap AG. Method of cleaning filter elements thereof, 4,230,576, Cl. 210-797.000.
- Muller, Hans K. Device for connecting an ejection pin of an injection molding tool or the like to an ejector device, 4,230,328, Cl. 279-71.000.
- Muller, Hermann: See—
Lehmann, Wilfried; Muller, Hermann; and Baranek, Bodo, 4,230,438, Cl. 415-122.00R.
- Muller, Karl: See—
Hasselbach, Wolfgang; Leyerzapf, Manfred; Dotter, Klaus; Habfast, Karl Eugen; and Muller, Karl, 4,230,907, Cl. 179-1.00E.
- Muller, Rolf, to Papst Motoren KG. Brushless, permanent magnet d-c motor with improved commutation control, 4,230,976, Cl. 318-138.000.
- Mumford, George V., to Owens-Illinois, Inc. Plastic overcap for bottle package, 4,230,230, Cl. 215-321.000.
- Munchinger, Bernd; and Brehm, Robert. Method of and an apparatus for packaging consumer goods, 4,229,928, Cl. 53-452.000.
- Munetsugu, Eiichi, to Tokyo Shibaura Electric Co., Ltd. Device for a digital arithmetic processing apparatus, 4,231,024, Cl. 340-365.00S.
- Munkberg, John A., to Minnesota Mining and Manufacturing Company. Remote control system for traffic signal control system, 4,230,992, Cl. 328-140.000.
- Mura, Lawrence A., to Nalco Chemical Company. Stable water-in-oil emulsions of cationically modified quaternized polyacrylamide and their method of preparation, 4,230,608, Cl. 260-29.4UA.
- Murakami, Kunio: See—
Matsukura, Kazuo; Murakami, Kunio; Nagasawa, Tsugio; Hayashi, Tadashi; and Kozuma, Akiyoshi, 4,230,658, Cl. 264-235.800.
- Murakami, Kyoji: See—
Fujiyoshi, Kazuyoshi; and Murakami, Kyoji, 4,230,904, Cl. 179-1.00F.
- Muraoka, Kyouzi: See—
Iwasaki, Hajime; Mizuta, Kuninori; Kobayashi, Yoshinori; Yoshikawa, Tadayoshi; and Muraoka, Kyouzi, 4,230,762, Cl. 428-234.000.
- Murasaki, Hiroshi; Ogawa, Masaya; and Kawabata, Hidetoshi, to Minolta Camera Kabushiki Kaisha. Device for automatically replenishing toner to dry-type developing apparatus for electrophotography, 4,230,070, Cl. 118-658.000.
- Murata Manufacturing Co., Ltd.: See—
Ogawa, Toshio, 4,230,589, Cl. 252-62.900.
- Murch, Robert M.; Meyer, Phyllis I.; and Eagan, John J., to W. R. Grace & Co. Flame-retardant polyurethane foams, 4,230,822, Cl. 521-106.000.
- Murtha, Timothy P., to Phillips Petroleum Company. Separation of cyclohexylbenzene from a cyclohexylbenzene-cyclohexanone-phenol admixture, 4,230,638, Cl. 568-366.000.
- Muse, Wyndell G.: See—
Comer, O. Lawrence; Muse, Wyndell G.; and Clure, Tommy, 4,230,297, Cl. 248-317.000.
- Muto, Nobuyoshi: See—
Matsuda, Yasuo; Honda, Kazuo; and Muto, Nobuyoshi, 4,231,083, Cl. 363-135.000.
- Myers, Robert M., to Rohm and Haas Company. Ethylene oxide polymers as impact modifiers for PVC, 4,230,827, Cl. 525-121.000.
- Myojo Foods Company, Limited: See—
Yoshida, Kiyotaka; Hatanaka, Yoshio; Kudo, Kesayoshi; and Aoki, Takao, 4,230,735, Cl. 426-557.000.
- Naarden International, N.V.: See—
Kleipool, Reinerus J. C., 4,230,734, Cl. 426-535.000.
- Nachbur, Roland; and Faist, Dieter, to Swiss Aluminium Ltd. Vehicle body construction, 4,230,361, Cl. 296-193.000.
- Nagabhushan, Tattanahalli L.; Turner, William N.; and Cooper, Alan, to Schering Corporation. Aminoglycoside antibiotic compounds, 4,230,847, Cl. 536-10.000.
- Nagai, Shuzo; Watabe, Seiji; Ogino, Takao; and Okita, Koichi, to Sumitomo Electric Industries, Ltd. Fluorine resin coated structure of aluminum or aluminum alloy, 4,230,758, Cl. 428-141.000.
- Nagamachi, Tomoaki: See—
Yoneda, Koji; Ohashi, Takehisa; Nagamachi, Tomoaki; Fukumitsu, Hirotsuka; and Takahashi, Satomi, 4,230,869, Cl. 548-314.000.
- Nagasawa, Tsugio: See—
Matsukura, Kazuo; Murakami, Kunio; Nagasawa, Tsugio; Hayashi, Tadashi; and Kozuma, Akiyoshi, 4,230,658, Cl. 264-235.800.
- Nagel, John A.: See—
Deaver, Richard A.; Eifort, Ralph C.; and Nagel, John A., 4,230,986, Cl. 324-158.00F.
- Nahabedian, Charles E.: See—
Hunsberger, Dennis J.; Nahabedian, Charles E.; Quinn, Thomas M.; and VanOrnum, James H., 4,231,087, Cl. 364-200.000.
- Nahta, Roop C., to GAF Corporation. Foaming composition for textile finishing and coatings, 4,230,746, Cl. 427-373.000.
- Nakabayashi, Masao: See—
Kodama, Tsutomu; Nakabayashi, Masao; Watanabe, Isao; Hirano, Hiroshi; Abe, Norio; Tanaka, Katsufumi; and Arai, Hirotsuki, 4,230,719, Cl. 424-275.000.
- Nakagawa, Koji; and Watanabe, Yoshiharu, to Denki Kagaku Kogyo Kabushiki Kaisha. Concrete composition for making concrete moldings and method for making such concrete moldings, 4,230,499, Cl. 106-90.000.
- Nakajima, Takato, to Kanetsu Kogyo Kabushiki Kaisha. Nonmagnetic conductive material separating apparatus, 4,230,560, Cl. 209-212.000.
- Nakamura, Akira: See—
Ohura, Yasushi; Ohwada, Susumu; Nakamura, Akira; Kitanishi, Mitsuo; Nakamura, Yakuharu; and Tamura, Akio, 4,230,209, Cl. 191-40.000.
- Nakamura, Hiroaki; Kaneko, Shiro; and Watanabe, Takeshi, to Fuji Photo Film Co., Ltd. Process for producing pressure-sensitive copying paper, 4,230,743, Cl. 427-146.000.
- Nakamura, Kazuo: See—
Tokutomi, Seiji; Jyojiki, Masao; and Nakamura, Kazuo, 4,230,401, Cl. 354-25.000.
- Nakamura, Kiyoshi; Komatsu, Michiyasu; and Nakanishi, Masae, to Tokyo Shibaura Denki Kabushiki Kaisha. Article highly resistant to corrosion by gallium phosphide and gallium arsenide, 4,230,494, Cl. 106-14.050.
- Nakamura, Yakuharu: See—
Ohura, Yasushi; Ohwada, Susumu; Nakamura, Akira; Kitanishi, Mitsuo; Nakamura, Yakuharu; and Tamura, Akio, 4,230,209, Cl. 191-40.000.
- Nakamura, Zenzo: See—
Uchiyama, Takashi; Nakamura, Zenzo; and Ohtaki, Shohei, 4,230,402, Cl. 354-33.000.
- Nakanishi, Masae: See—
Nakamura, Kiyoshi; Komatsu, Michiyasu; and Nakanishi, Masae, 4,230,494, Cl. 106-14.050.
- Nakatsubo, Toshio: See—
Nishikawa, Masaji; Nakatsubo, Toshio; Tsuda, Hiroshi; Fujie, Shigo; Kanamaru, Masaji; and Koseki, Shosaku, 4,230,786, Cl. 430-53.000.
- Nalco Chemical Company: See—
Mura, Lawrence A., 4,230,608, Cl. 260-29.4UA.
- Napoli, Joseph L., Jr.: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,230,627, Cl. 260-397.200.
- Narendra, Patrenahalli M.: See—
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- Nartron Corporation: See—
Bull, David W., 4,231,082, Cl. 362-368.000.
- Narwid, Thomas A.: See—
Despreaux, Carl; Narwid, Thomas A.; Palleroni, Norberto J.; and Uskokovic, Milan R., 4,230,625, Cl. 260-397.100.
- Nasiatka, John R.; Austin, Ronald; and Schadek, Ernest F., to Duo-Fast Corporation. Hand-held fastener driving tool, 4,230,249, Cl. 227-123.000.
- National Distillers and Chemical Corporation: See—
Hardy, Michael F.; and Tgavalekos, Terry, 4,230,825, Cl. 525-62.000.
- National Instrument Company, Inc.: See—
Buckley, Lawrence W., 4,230,160, Cl. 141-116.000.
- National Research Development Corporation: See—
Irving, Stephen J., 4,230,570, Cl. 210-758.000.

National Semiconductor Corporation: See—
Wilcox, Milton E., 4,230,953, Cl. 307-230,000.
National Starch and Chemical Corporation: See—
Sirota, Julius, 4,230,834, Cl. 525-308,000.
National Steel Corporation: See—
Hartman, George J.; and Ewing, Vernon R., 4,230,678, Cl. 423-112,000.
NCR Corporation: See—
Deaver, Richard A.; Eifort, Ralph C.; and Nagel, John A., 4,230,986, Cl. 324-158,00F.
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer (Nij-verheidsorganisatie T.N.O.): See—
Leeuwrik, Frederik H., 4,230,648, Cl. 261-87,000.
Neeley, Walter P., to Mobil Oil Corporation. Marine cable location system. 4,231,111, Cl. 367-19,000.
Neely, John A.: See—
Brothers, Gene A.; Neely, John A.; and Kieffe, Patrick W., 4,230,913, Cl. 179-18,0FC.
Nelson Company, The: See—
Mays, Gerald F., 4,230,050, Cl. 108-51,100.
Mays, Gerald F., 4,230,051, Cl. 108-55,100.
Nelson, David A. Speed control for electric motor. 4,230,977, Cl. 318-305,000.
Nestor, Charles R.: See—
Leonard, Robert D., Jr.; and Nestor, Charles R., 4,230,392, Cl. 339-117,00R.
Neuber, Siegfried: See—
Bazlen, Dieter; Berger, Rolf; Blum, Arnold; Bock, Dietrich W.; Chilinski, Herbert; Geng, Hellmuth R.; Hajdu, Johann; Irro, Fritz; and Neuber, Siegfried, 4,231,085, Cl. 364-200,000.
Neustadt, Bernard R., to Schering Corporation. Substituted 4'-polyhaloisopropylsulfonamides. 4,230,635, Cl. 260-556,00A.
New, Maria I.: See—
Pang, Songja; and New, Maria I., 4,230,684, Cl. 424-1,000.
Newton, Robert P., to Autodynamics, Inc. Tire balancing machine system. 4,229,977, Cl. 73-487,000.
Ng, Wing P.: See—
Martin, John E.; and Ng, Wing P., 4,230,522, Cl. 156-638,000.
Nichol, Gloria C.: See—
Brooks, Henry W.; and Nichol, Gloria C., 4,229,880, Cl. 30-142,000.
Niedermeyer, Karl O. Through flow sump pump. 4,230,440, Cl. 417-424,000.
Nielsen, Willard J.: See—
Douglas, Walter H.; Peterson, Richard F.; Nielsen, Willard J.; Treat, Charles D.; Hagaman, Jerry B.; Loveless, Wendell G.; and Scott, William R., 4,229,991, Cl. 74-409,000.
Nieuwenhuis, Mogens D.; and Van Bracht, Raymond, to Aquapro A.G. Ignition timing testing device. 4,230,969, Cl. 315-241,00S.
Nifco, Inc.: See—
Hara, Kunio, 4,229,973, Cl. 73-317,000.
Nigg, Jurg. System for overall color correction of color picture information contained in a projecting multi-color light beam. 4,230,408, Cl. 355-35,000.
Nihon Sekiyo Hanbai Kabushiki Kaisha: See—
Tanaka, Hiroshige, 4,230,138, Cl. 137-13,000.
Nihon, Tengganyaku Kenkyusho K.K.: See—
Yamauchi, Aizo; Matsuzawa, Yasuo; Kamiya, Sadayoshi; Nishioka, Keisuke; Hara, Yoshiaki; and Matsushima, Shogo, 4,230,690, Cl. 424-78,000.
Nilsson, Sven R., to Lindova Aktiebolag. Tool for installing so-called press nuts. 4,229,960, Cl. 72-114,000.
Nippon Electric Co., Ltd.: See—
Imigawa, Masayuki; and Mori, Toshihiro, 4,231,018, Cl. 340-171,00R.
Ito, Yutaka; Inoue, Yuzo; Shimizu, Takao; Inaba, Masao; Sugimoto, Atsumi; and Emori, Takeo, 4,231,063, Cl. 358-148,000.
Morimoto, Koichi; and Tokumaru, Taisuo, 4,231,075, Cl. 361-433,000.
Nippon Kokan Kabushiki Kaisha: See—
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,230,927, Cl. 219-69,00C.
Nippon Soken, Inc.: See—
Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,230,078, Cl. 123-416,000.
Kohama, Tokio; Ozaki, Tadashi; Obayashi, Hideki; and Nohira, Hidetaka, 4,230,079, Cl. 23-568,000.
Noguchi, Masaaki; Sumiyoshi, Masaharu; Bunda, Tsuchio; and Tanaka, Taro, 4,230,072, Cl. 123-1,00A.
Nippon Telegraph and Telephone Public Corporation: See—
Suzuki, Masao; Hayashi, Toshio; Kawarada, Kuniyasu; Toyoda, Kazuhiro; and Ono, Chikai, 4,231,108, Cl. 365-174,000.
Nishida, Masayuki; Funakoshi, Satoshi; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; and Yamada, Muneco, to Morinaga Milk Industry Co. Ltd.; and Green Cross Corporation. The Virus-inactivated HGI-glycoprotein capable of stimulating proliferation and differentiation of human granulocyte, process for preparing same and leukopenia curative containing same. 4,230,697, Cl. 424-177,000.
Nishiguchi, Hisanori; Ishida, Eisuke; and Takashima, Yuji, to Matsushita Electric Industrial Co., Ltd. Electrostatic image forming process and particles comprising reactive sublimable dye, subliming developer and conductive substance. 4,230,784, Cl. 430-42,000.
Nishikawa, Masaji; Nakatsubo, Toshio; Tsuda, Hiroshi; Fujie, Shigo; Kanamaru, Masaji; and Koseki, Shosaku, to Olympus Optical Com-

pany Limited. Electrographic process of imaging by modulation of ions. 4,230,786, Cl. 430-53,000.
Nishikawa, Tetsuji: See—
Nishiyama, Ryuzo; Kimura, Fumio; Haga, Takahiro; Sakashita, Nobuyuki; and Nishikawa, Tetsuji, 4,230,481, Cl. 71-92,000.
Nishimoto, Takeo: See—
Asari, Akira; Ueda, Masakazu; and Nishimoto, Takeo, 4,230,661, Cl. 264-323,000.
Nishioka, Keisuke: See—
Yamauchi, Aizo; Matsuzawa, Yasuo; Kamiya, Sadayoshi; Nishioka, Keisuke; Hara, Yoshiaki; and Matsushima, Shogo, 4,230,690, Cl. 424-78,000.
Nishiyama, Ryuzo; Kimura, Fumio; Haga, Takahiro; Sakashita, Nobuyuki; and Nishikawa, Tetsuji, to Ishihara Sangyo Kaisha Limited. Pyrazole derivatives useful as a herbicidal component. 4,230,481, Cl. 71-92,000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; and Shigehara, Itaru, to Ishihara Sangyo Kaisha Limited. Process for producing 3,5-dichloro- α -methylstyrene. 4,230,642, Cl. 570-193,000.
Nishiyama, Yutaka: See—
Mizutani, Nagao; Kurihara, Toshio; Nishiyama, Yutaka; Kunita, Masao; Kinoshita, Teruo; and Yasunaga, Makoto, 4,230,039, Cl. 101-93,170.
Nissan Motor Company, Limited: See—
Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, 4,230,087, Cl. 123-193,0CH.
Nodelman, Neil H., to Mobay Chemical Corporation. Sucrose based polyether polyols. 4,230,824, Cl. 521-167,000.
Noguchi, Masaaki; Sumiyoshi, Masaharu; Bunda, Tsuchio; and Tanaka, Taro, to Nippon Soken, Inc. Internal combustion engine with a methanol reforming system. 4,230,072, Cl. 123-1,00A.
Nohira, Hidetaka; Ito, Sumio; Oki, Hisashi; and Kumai, Teruo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,230,073, Cl. 123-308,000.
Nohira, Hidetaka: See—
Kohama, Tokio; Ozaki, Tadashi; Obayashi, Hideki; and Nohira, Hidetaka, 4,230,079, Cl. 23-568,000.
Nogiri, Michihiko; Kakutani, Kazuo; Uedono, Shigezo; Uenakai, Kazuo; and Matsumoto, Masafumi, to Mitsui Engineering & Shipbuilding Co., Ltd. Process for the production of microbial protein and lipid from vegetable carbohydrates by culture of microbes. 4,230,806, Cl. 435-255,000.
Noll, Erwin; and Knoerr, Karlheinz. Tattooing pincers for marking ears of animals. 4,230,001, Cl. 81-9,220.
Nordish Fjerfabrik Aktieselskab: See—
Hansen, Sigurd S., 4,230,756, Cl. 428-101,000.
Normark, Olov M. Joint. 4,230,349, Cl. 285-342,000.
Northern Engineering & Plastics Corporation: See—
Crisci, Harry, 4,230,229, Cl. 215-253,000.
Northwestern University: See—
Senyei, Andrew E.; and Widder, Kenneth J., 4,230,685, Cl. 424-12,000.
Nourry, Daniel: See—
Thierry, Jean-Pierre; Debionne, Alain; and Nourry, Daniel, 4,230,388, Cl. 339-74,00R.
Nowacki, Christopher A.: See—
Walz, Arthur J., Jr.; and Nowacki, Christopher A., 4,230,115, Cl. 128-295,000.
Nozawa, Tsuneo: See—
Takayama, Toshihiro; Endo, Fujio; Nozawa, Tsuneo; Masuda, Yoshiro; Mori, Motokuni; and Kanayama, Toshiji, 4,230,800, Cl. 435-101,000.
NRM Corporation: See—
Enders, George E., 4,230,517, Cl. 156-396,000.
Nuss, George W., Jr.; Santora, Norman J.; and Douglas, George H., to William H. Rorer, Inc. Compositions and method of treatment. 4,230,727, Cl. 424-330,000.
Oakwood Manufacturing, Inc.: See—
Hughes, Robert S., 4,229,919, Cl. 52-263,000.
Obayashi, Hideki: See—
Kohama, Tokio; Ozaki, Tadashi; Obayashi, Hideki; and Nohira, Hidetaka, 4,230,079, Cl. 23-568,000.
Obayashi, Mikio; and Watanabe, Naoyoshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for sulfurizing cast iron. 4,230,507, Cl. 148-6,110.
O'Connor, John D. Tile-grout applicator. 4,230,356, Cl. 294-19,00R.
Oeckl, Siegfried; Scheinplug, Hans; and Kraus, Peter, to Bayer Aktiengesellschaft. Combating plant bacteria with acylhalogenomethyl thiocyanates. 4,230,723, Cl. 424-302,000.
Oeming, Joseph A. Feed apparatus for a lathe. 4,230,003, Cl. 82-2,700.
Oerth, Daniel P. Biorhythmic slide rule. 4,230,936, Cl. 235-70,00A.
Ogasa, Katsuhiro: See—
Nishida, Masayuki; Funakoshi, Satoshi; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; and Yamada, Muneco, 4,230,697, Cl. 424-177,000.
Ogawa, Masaya: See—
Murasaki, Hiroshi; Ogawa, Masaya; and Kawabata, Hidetoshi, 4,230,070, Cl. 118-658,000.
Ogawa, Toshio, to Murata Manufacturing Co., Ltd. Method for producing piezoelectric ceramics. 4,230,589, Cl. 252-62,900.
Ogino, Shigeo: See—
Fukui, Masaru; Ogino, Shigeo; and Yamamoto, Hisao, 4,230,725, Cl. 424-325,000.
Ogino, Takao: See—
Nagai, Shuzo; Watabe, Seiji; Ogino, Takao; and Okita, Koichi, 4,230,758, Cl. 428-141,000.

Ogle, Francis H., Jr., to De Laval Turbine Inc. Check-valve construction. 4,230,148, Cl. 137-512,100.
Ogle, James A.: See—
Holz, George E.; Ogle, James A.; and Przybylek, George J., 4,230,967, Cl. 315-3,000.
Oguro, Tomokatsu, to Hitachi, Ltd. Cathode structure for magnetrons. 4,230,968, Cl. 315-39,510.
Ohashi, Takehisa: See—
Yoneda, Koji; Ohashi, Takehisa; Nagamachi, Tomoaki; Fukumitsu, Hirotaka; and Takahashi, Satomi, 4,230,869, Cl. 548-314,000.
Ohlrogge, Alvin J., to Purdue Research Foundation. Method of increasing grain yield in field corn by application of triacontanol. 4,230,485, Cl. 71-122,000.
Ohtaki, Shohei: See—
Uchiyama, Takashi; Nakamura, Zenzo; and Ohtaki, Shohei, 4,230,402, Cl. 354-33,000.
Ohura, Yasushi; Ohwada, Susumu; Nakamura, Akira; Kitanishi, Mitsuo; Nakamura, Yakuharu; and Tamura, Akio, to Japanese National Railways; Sumitomo Electric Industries, Ltd.; and Hitachi Cable Ltd. Means of stringing trolley wires. 4,230,209, Cl. 191-40,000.
Ohwada, Susumu: See—
Ohura, Yasushi; Ohwada, Susumu; Nakamura, Akira; Kitanishi, Mitsuo; Nakamura, Yakuharu; and Tamura, Akio, 4,230,209, Cl. 191-40,000.
Okada, Shuhei; Uozumi, Masana; Matsuura, Masanori; and Sadaike, Masazumi, to Hitachi Maxell, Ltd. Storage container for recording tape cartridge. 4,230,225, Cl. 206-387,000.
Okagami, Akio: See—
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,230,886, Cl. 562-486,000.
Okamoto, Yoshinori: See—
Gotoh, Isamu; Okamoto, Yoshinori; and Wakatsuki, Goroei, 4,230,084, Cl. 123-179,00S.
Oki, Hisashi: See—
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Okita, Koichi: See—
Nagai, Shuzo; Watabe, Seiji; Ogino, Takao; and Okita, Koichi, 4,230,758, Cl. 428-141,000.
Okitsu, Hiroyuki: See—
Yamaji, Teizo; and Okitsu, Hiroyuki, 4,230,595, Cl. 252-188,000.
Okuda, Nobuo: See—
Shibayama, Shigeki; Iwata, Kazuhide; and Okuda, Nobuo, 4,231,097, Cl. 364-577,000.
Okumura, Akira: See—
Matsumoto, Tetsuo, 4,230,264, Cl. 233-27,000.
Olginsky, Felix Y.: See—
Sharonov, Mikhail A.; Zainullin, Lik A.; Olginsky, Felix Y.; Scherbakov, Ivan I.; Kolpakov, Serafim V.; and Teder, Leonid I., 4,230,477, Cl. 65-141,000.
Olin Corporation: See—
Capuano, Italo A.; and Turley, Patricia A., 4,230,486, Cl. 75-81,000.
Olivieri, Roberto; Robertiello, Andrea; and Degen, Ludwig, to Snamprogetti S.p.A. Method for depolluting fresh water and salt water bodies from crude oil, petroleum products and their derivatives. 4,230,562, Cl. 210-610,000.
Olsen, Richard J., to Goodyear Tire & Rubber Company. The. Curing a replaceable tread for a big tire. 4,230,511, Cl. 156-123,00R.
Olshansky, Robert; and Sarkar, Arnab, to Corning Glass Works. High bandwidth optical waveguides and method of fabrication. 4,230,396, Cl. 350-96,310.
Olson, Richard C. Phonograph record holder. 4,230,380, Cl. 312-9,000.
Olsson, Jan T.: See—
Bjork, Jan; Olsson, Jan T.; Lindgren, Bo S.; Borg, Arne G.; and Andersson, Jan A. R., 4,230,040, Cl. 102-13,000.
Olsson, Robert G.; and Turkdogan, Ethem T., to United States Steel Corporation. Desulfurizing pellet of manganese oxide and aluminum oxide and process for producing said pellet. 4,230,603, Cl. 252-463,000.
Olympus Optical Company Limited: See—
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DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,230,627, Cl. 260-397,200.
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Ono, Chikai: See—
Suzuki, Masao; Hayashi, Toshio; Kawarada, Kuniyasu; Toyoda, Kazuhiro; and Ono, Chikai, 4,231,108, Cl. 365-174,000.
Onoda Cement Company, Ltd.: See—
Itoh, Tsutomu; Ouchi, Kenji; Furuya, Nobuo; and Shimizu, Takeo, 4,230,068, Cl. 118-634,000.
O'Okiep Copper Company Limited: See—
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Opriko, Juri I.: See—
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Optic Ads (Pty.) Limited: See—
Uys Naude, Thomas F., 4,229,893, Cl. 40-332,000.
Orain, Michel A., to Glaesner Spicer. Method for prestressing an axially retained homokinetic joint. 4,229,871, Cl. 29-407,000.
Orban, Jozsef: See—
Ivony, Jozsef; Lendvai, Imre; Szucs, Laszlo; and Orban, Jozsef, 4,230,020, Cl. 91-422,000.

Oricchio, F. Frederick: See—
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Orient Kagaku Kogyo K.K.: See—
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,230,886, Cl. 562-486,000.
Oronzio de Nora Impianti Elettrochimici S.p.A.: See—
Traini, Carlo; Bianchi, Giuseppe; and Pellegri, Alberto, 4,230,542, Cl. 204-93,000.
Orr, Robert P., to Bendix Forest Products Corporation. End panel for carton. 4,230,233, Cl. 217-36,000.
Osborn, Robert A.: See—
Bullard, Herbert L.; and Osborn, Robert A., 4,230,842, Cl. 526-185,000.
Oshima, Masanao; Komoto, Mikihiisa; Yabuki, Shoichi; and Inokawa, Tsuneo, to Mitsui Engineering & Shipbuilding Co., Ltd. Ice-breaking apparatus for structure for use in icy waters. 4,230,423, Cl. 405-211,000.
Osika, Thomas F., to McGill Manufacturing Company, Inc. Removable-key rocker type switch for two circuits. 4,230,917, Cl. 200-42,00T.
Ospow, Lloyd I.: See—
Spitzer, Joseph G.; Ospow, Lloyd I.; Small, Marvin; and Marra, Dorothea C., 4,230,243, Cl. 222-402,180.
Ostermaier, Albert E. Flexible link fastener. 4,229,930, Cl. 54-79,000.
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Brooks, Kenneth R., 4,230,206, Cl. 187-29,00R.
Otis Engineering Corporation: See—
Fredd, John V., 4,230,185, Cl. 166-332,000.
Otsuka Chemical Co., Ltd.: See—
Yamaguchi, Hideo; Kobayashi, Masahiro; Mizote, Atsunobu; and Iwamura, Yoshiyuki, 4,230,525, Cl. 162-164,00R.
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Owens-Corning Fiberglass Corporation: See—
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Owens-Illinois, Inc.: See—
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Mumford, George V., 4,230,230, Cl. 215-321,000.
Pezzin, John J.; and Riggs, Darius O., 4,230,219, Cl. 198-481,000.
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P.S.I. Fluid Power Ltd.: See—
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Pacesetter Systems, Inc.: See—
Mann, Brian M.; and Beane, Russell R., 4,231,027, Cl. 340-636,000.
Packard Instrument Company, Inc.: See—
Kaartinen, Niilo H., 4,230,671, Cl. 422-159,000.
Page, Derrick J.: See—
Hower, Philip L.; and Page, Derrick J., 4,231,059, Cl. 357-68,000.
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., to Eli Lilly and Company. α -Alkyl- α -hydroxybenzyl-substituted 1-sulfonylbenzimidazoles. 4,230,868, Cl. 548-306,000.
Palleroni, Norberto J.: See—
Despreaux, Carl; Narwid, Thomas A.; Palleroni, Norberto J.; and Uskokovic, Milan R., 4,230,625, Cl. 260-397,100.
Pallos, Ferenc M.; and Gaughan, Edmund J., to Stauffer Chemical Company. N-(Benzenesulfonyl) carbamates-herbicide antidotes. 4,230,874, Cl. 560-12,000.
Palomo Coll, Antonio L.; and Diago Meseguer, Jose, to Antibioticos, S.A. Process for the activation of carboxylic acids. 4,230,849, Cl. 544-28,000.
Pang, Songja; and New, Maria I., to Cornell Research Foundation, Inc. Method for determining steroids in human body liquids. 4,230,684, Cl. 424-1,000.
Panzeri, Cesare, to Breda Termomeccanica S.p.A. Apparatus for automatic joint machining in heavily thick cylinders. 4,229,908, Cl. 51-103,00R.
Paper Converting Machine Company: See—
Charles, Richard J., 4,230,286, Cl. 242-68,600.
Wiens, Klaus, 4,230,216, Cl. 198-347,000.
Paphitis, Alexandre. Digital frequency process and method using frequency shifting techniques, especially for low frequency measurements. 4,230,991, Cl. 328-140,000.
Paphitis, Alexandre. Logic level shifters and their application in luminous display circuits. 4,231,033, Cl. 340-762,000.
Papst Motoren KG: See—
Muller, Rolf, 4,230,976, Cl. 318-138,000.
Paradise, William L., Jr.; and Byars, Mark L., to Airco, Inc. Methods of chilling poultry. 4,230,732, Cl. 426-393,000.
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- Parrini, Gianfranco: See—
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- Parry, Keith P.: See—
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- Parsons, David: See—
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- Parsons, Philip E.: See—
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- Paspek, Stephen C.; and Every, William A., to Standard Oil Company (Ohio). Process for purification of acrylic acid by fractional crystallization. 4,230,888, Cl. 562-600.000.
- Passarotti, Carlo: See—
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- Pastukhov, Valery V.: See—
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- Patel, Mahesh G.: See—
Taplin, David; Weinstein, Marvin J.; Testa, Raymond T.; Marquez, Joseph A.; and Patel, Mahesh G., 4,230,799, Cl. 435-76.000.
- Patel, Mahesh S., to Eutectic Corporation. Flame spray powder mix. 4,230,747, Cl. 427-423.000.
- Patel, Mahesh S., to Eutectic Corporation. Flame spray powder mix. 4,230,748, Cl. 427-423.000.
- Patel, Mahesh S., to Eutectic Corporation. Flame spray powder mix. 4,230,749, Cl. 427-423.000.
- Patel, Vishnu A.: See—
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- Patton, Franklin D.; and McFarlane, James D., to Westbay Instruments Ltd. Isolating packer units in geological and geophysical measuring casings. 4,230,180, Cl. 166-185.000.
- Paulk, John R., to Paulk Manufacturing Co., Inc. Peanut digger-shaker-inverter. 4,230,188, Cl. 171-101.000.
- Paulk Manufacturing Co., Inc.: See—
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- Paulson, Jerome I.: See—
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- Pawson, Beverly A.: See—
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- Peabody, Roger H., to United States of America, Navy. Biip scan analyzer. 4,231,036, Cl. 343-5.0EM.
- Pearshall, Thomas, to Thomson-CSF. Heterojunction photodiode of the avalanche type. 4,231,049, Cl. 357-13.000.
- Pedroso, Raul I.; and Auer, Robert E., to Coulter Electronics, Inc. Biohazard containment apparatus and method. 4,230,031, Cl. 98-115.0LH.
- Peeples, Denny L., to General Motors Corporation. Hydraulic booster with accumulator control. 4,230,018, Cl. 91-6.000.
- Pengourie, Jean-Pierre, to Agence Nationale de Valorisation de la Recherche-Anvar. Step by step motor and/or brake device. 4,229,984, Cl. 74-125.500.
- Pellegrini, Alberto: See—
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- Pelletier, Martin P.: See—
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- Pengilly, Brian W.: See—
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- Pennington, James R. In situ method of processing bituminous coal. 4,230,181, Cl. 166-259.000.
- Peresada, Vitaly P.: See—
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- Perez, Edwin C. Instrument for use in hair cutting. 4,230,134, Cl. 132-45.00R.
- Perkins, Patrick: See—
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- Pernigotti, Allan: See—
Kilty, Michael; and Pernigotti, Allan, 4,230,573, Cl. 210-767.000.
- Perryman, Albert A. Spray booth with ventilation. 4,230,032, Cl. 98-115.00H.
- Persoons, Gustaaf M.; and Wijts, Corneel C., to FMC Corporation. Harvesters. 4,229,932, Cl. 56-13.500.
- Persyn, Roland. Tow stabilizer. 4,230,333, Cl. 280-406.00A.
- Peterson, Larry W., to Shell Oil Company. Herbicide antidotes. 4,230,482, Cl. 71-93.000.
- Peterson, Richard F.: See—
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- Peth, Dennis K.: See—
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- Petroleum Designers, Inc.: See—
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- Petrolite Corporation: See—
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- Petroski, Alex: See—
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- Petrosky, Charles. Pressurized porous material cushion shoe base. 4,229,889, Cl. 36-28.000.
- Petrozorbent Corporation: See—
Faudree, Thomas L., III, 4,230,566, Cl. 210-693.000.
- Petrulich, Raymond W. Trappers tool and method of use. 4,230,355, Cl. 294-15.000.
- Pezzin, John J.; and Riggs, Darius O., to Owens-Illinois, Inc. Cavity identification handling system. 4,230,219, Cl. 198-481.000.
- Pfannkuche, Fritz T. Core sampling apparatus and method. 4,230,192, Cl. 175-59.000.
- Pfizer Inc.: See—
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- Cross, Peter E.; and Dickinson, Roger P., 4,230,714, Cl. 424-263.000.
- Gristina, Anthony G., 4,229,840, Cl. 3-1.910.
- Pfleiderer, Hans-Joerg: See—
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- Pfoertner, Karlheinz: See—
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- Phillips, Evan M. Pulsator valves. 4,230,141, Cl. 137-103.000.
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- Forseth, Glenn J., 4,230,670, Cl. 422-151.000.
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- Murtha, Timothy P., 4,230,638, Cl. 568-366.000.
- Richardson, Robert C., 4,230,479, Cl. 71-30.000.
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- Phillips, Roy L. Adjustable egg carrier system. 4,230,071, Cl. 119-21.000.
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- Pistiner, Josef S., to RCA Corporation. Closed loop roll control for momentum biased satellites. 4,230,294, Cl. 244-170.000.
- Pitts, Robert W., Jr., to Texaco Inc. High speed copying means and method. 4,231,070, Cl. 358-285.000.
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- Porter, John T., II, to General Atomic Company. Method for separating krypton isotopes. 4,230,547, Cl. 204-157.10R.
- Porter, Raymond J., to Barlow Marine Limited. Self-tailing winch. 4,230,306, Cl. 254-371.000.
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- Rao, Vemulapalli D. N., to Ford Motor Company. Method of fabricating a heat exchanger for Stirling engine. 4,230,651, Cl. 264-29.700.
- Rattunde, Manfred, to P.I.V. Antrieb Reimers Kommanditgesellschaft. Continuously variable cone pulley belt-drive gearing. 4,229,988, Cl. 474-28.000.
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- Roesler, Johanna, executrix: See—
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- Sacks, William: See—
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- Sadaike, Masazumi: See—
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- Marcault, Jeannik, 4,230,271, Cl. 239-113.000.
- Roth, Mario; Winandy, Johann; and Siemonsen, Hans-Pieter, 4,230,474, Cl. 65-114.000.
- St. Luke's Hospital: See—
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- Sair, Louis; and Sair, Ralph A., to Griffith Laboratories U.S.A., Inc. Encapsulation of active agents as microdispersions in homogeneous natural polymeric matrices. 4,230,687, Cl. 424-22.000.
- Sair, Ralph A.: See—
Sair, Louis; and Sair, Ralph A., 4,230,687, Cl. 424-22.000.
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- Sakashita, Nobuyuki: See—
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- Salyer, Ival O.; and Usmani, Arthur M., to Monsanto Research Corporation. Electrolysis process for making amine/aldehyde porous structures and powders. 4,230,551, Cl. 204-181.00R.
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- Sandman, Michael A.; and Loughlin, Bernard T., to Eli Sandman Company. Abrasive wheels. 4,230,461, Cl. 51-295.000.
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- Sano, Yoshiaki; Hanazawa, Toshio; and Honda, Hideo, to Fujitsu Limited. Bias circuit. 4,230,980, Cl. 323-19.000.
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- Santa Fe International Corporation: See—
Springett, Charles N.; Abramovich, Dan; Uyeda, Stanley T.; and Radu, E. John, 4,230,421, Cl. 405-168.000.
- Santek, Inc.: See—
Michel, Thomas J., 4,230,466, Cl. 55-147.000.
- Santora, Norman J.: See—
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- Sarantakis, Dimitrios, to American Home Products Corporation. Somatostatin analogues. 4,230,617, Cl. 260-112.50S.
- Sargent Industries, Inc.: See—
Smith, Fred T., 4,230,359, Cl. 296-101.000.
- Sarkar, Arnab: See—
Olshansky, Robert; and Sarkar, Arnab, 4,230,396, Cl. 350-96.310.
- Saruwatari, Kohichi; Isawa, Kazuo; Maejima, Masatsugu; and Suzuki, Takao, to Fujikura Cable Works, Ltd. Method for surface treatment of anodic oxide film. 4,230,539, Cl. 204-35.00N.
- Sasaki Electric Mfg. Co. Ltd.: See—
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- Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Kokan Kabushiki Kaisha. Apparatus for electrical discharge machining of cylindrical work. 4,230,927, Cl. 219-69.00C.
- Sato, Masanori: See—
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- Sato, Yasuhisa: See—
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- Savidge, Thomas A.; and Powell, Lawson W., to Beecham Group Limited. Water-insoluble penicillin acylase preparation. 4,230,804, Cl. 435-180.000.
- Savinov, Evgeny A.; and Baranov, Mikhail I. Machine for noncutting metal shaping. 4,229,963, Cl. 72-402.000.
- Saxon Industries, Inc.: See—
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- Scarafite, Cosimo: See—
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- Scaramucci, Domer. Disc valve. 4,230,139, Cl. 137-74.000.
- Scaramucci, Domer. Tilting disc check valve. 4,230,150, Cl. 137-527.000.
- Schantz, Spencer C.; and Kuebler, Gary R. Snap acting switch. 4,230,919, Cl. 200-67.00B.
- Schaudek, Ernest F.: See—
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- Scheben, Quirin: See—
Renner, Gunter; and Scheben, Quirin, 4,230,851, Cl. 544-183.000.
- Scheerer, Wolfgang, to A. Ehrenreich GmbH & Co. KG. Ball-joint with locking device. 4,230,415, Cl. 403-122.000.
- Scheibler Peltzer GmbH & Co.: See—
Schneider, Axel, 4,230,287, Cl. 242-77.100.
- Scheinflug, Hans: See—
Oeckl, Siegfried; Scheinflug, Hans; and Kraus, Peter, 4,230,723, Cl. 424-302.000.
- Schell, Paul F., to Maytag Company. The. Appliance door decorator panel construction. 4,229,921, Cl. 52-506.000.
- Scherbakov, Ivan I.: See—
Sharonov, Mikhail A.; Zainullin, Lik A.; Olginsky, Felix Y.; Scherbakov, Ivan I.; Kolpakov, Serafim V.; and Teder, Leonid I., 4,230,477, Cl. 65-141.000.
- Schering Aktiengesellschaft: See—
Schopflin, Gisela; Fuchs, Peter; and Kolb, Karl H., 4,230,686, Cl. 424-22.000.
- Schering Corporation: See—
Nagabhushan, Tatanahalli L.; Turner, William N.; and Cooper, Alan, 4,230,847, Cl. 536-10.000.
- Neustadt, Bernard R., 4,230,635, Cl. 260-556.00A.
- Taplin, David; Weinstein, Marvin J.; Testa, Raymond T.; Marquez, Joseph A.; and Patel, Mahesh G., 4,230,799, Cl. 435-76.000.
- Scheu, William E., Jr. Solder extractor. 4,230,250, Cl. 228-20.000.
- Schexnayder, Lawrence F.: See—
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- Schiff, Sidney: See—
Bonazza, Benedict R.; and Schiff, Sidney, 4,230,588, Cl. 252-51.50A.
- Schiller, August: See—
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- Schilz, Duane K. Stay nail bar. 4,230,303, Cl. 254-212.000.
- Schimmel, Karl F.; Sturni, Lance C.; and Robles, Martin J., to PPG Industries, Inc. Novel pigment grinding vehicle. 4,230,552, Cl. 204-181.00C.
- Schirmer, Joseph P.: See—
Broughton, Roy M., Jr.; Callander, Douglas D.; Pengilly, Brian W.; Schirmer, Joseph P.; and Winters, Terence E., 4,230,818, Cl. 528-272.000.
- Schlueter, Francis E.; Copley, Russell D.; and Sanderson, Leon F., to Deere & Company. Hydraulic height sensing system with cylinder by-pass. 4,229,931, Cl. 56-10.200.
- Schmalz, Roman, to Logemann Brothers Company. Apparatus for processing metal material into bales. 4,230,037, Cl. 100-95.000.
- Schmid-Appenzeller, Kathe Anna, heir: See—
Bernauer, Karl; Pfoertner, Karlheinz; Schneider, Fernand; Schmid, Hans, deceased; Baumann-Schmid, Mary Margrith, heir; Schmid-Suter, Maria Albertine, heir; Wawrla-Schmid, Jeannette Martha, heir; and Schmid-Gautschi, Ernst Georges, heir, 4,230,623, Cl. 260-326.55M.
- Schmid, Bruce K.: See—
Carr, Norman L.; and Schmid, Bruce K., 4,230,556, Cl. 208-8.0LE.
- Schmid-Gautschi, Ernst Georges, heir: See—
Bernauer, Karl; Pfoertner, Karlheinz; Schneider, Fernand; Schmid, Hans, deceased; Baumann-Schmid, Mary Margrith, heir; Schmid-Suter, Maria Albertine, heir; Wawrla-Schmid, Jeannette Martha, heir; and Schmid-Gautschi, Ernst Georges, heir, 4,230,623, Cl. 260-326.55M.
- Schmid, Hans, deceased: See—
Bernauer, Karl; Pfoertner, Karlheinz; Schneider, Fernand; Schmid, Hans, deceased; Baumann-Schmid, Mary Margrith, heir; Schmid-Suter, Maria Albertine, heir; Wawrla-Schmid, Jeannette Martha, heir; and Schmid-Gautschi, Ernst Georges, heir, 4,230,623, Cl. 260-326.55M.
- Schmid-Suter, Maria Albertine, heir: See—
Bernauer, Karl; Pfoertner, Karlheinz; Schneider, Fernand; Schmid, Hans, deceased; Baumann-Schmid, Mary Margrith, heir; Schmid-Suter, Maria Albertine, heir; Wawrla-Schmid, Jeannette Martha, heir; and Schmid-Gautschi, Ernst Georges, heir, 4,230,623, Cl. 260-326.55M.
- Schneerson, Moshe; and Kofman, Anatoli. Locking mechanism and locks incorporating said mechanism. 4,229,957, Cl. 70-134.000.
- Schneider, Axel, to Scheibler Peltzer GmbH & Co. Apparatus for the mechanical needling of pile fabrics. 4,230,287, Cl. 242-77.100.
- Schneider, Daniel E. Method and apparatus for effecting the prospective forewarning diagnosis of sudden brain death and heart death and other brain-heart-body growth maladies such as schizophrenia and cancer and the like. 4,230,125, Cl. 128-670.000.
- Schneider, Eugene. Foil web for filling automats with a removal apparatus. 4,230,760, Cl. 428-195.000.

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Bernauer, Karl; Pfoertner, Karlheinz; Schneider, Fernand; Schmid, Hans, deceased; Baumann-Schmid, Mary Margrith, heir; Schmid-Suter, Maria Albertine, heir; Wawria-Schmid, Jeannette Martha, heir; and Schmid-Gautschi, Ernst Georges, heir, 4,230,623, Cl. 260-326.5SM.

Schneider, Mark R.; and Wickwar, Larry D., to Fairchild Camera and Instrument Corporation. Low-cost watch case and band, 4,229,936, Cl. 368-282.000.

Schnitzius, Klaus, to Stabilus GmbH. Gas spring with automatic locking mechanism, 4,230,309, Cl. 267-120.000.

Schnoes, Heinrich K.: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,230,627, Cl. 260-397.200.

Scholl, Hans-Joachim; and Zenner, Armin, to Bayer Aktiengesellschaft. Process for the preparation of urethanes, 4,230,876, Cl. 560-25.000.

Schoolar, Richard B., to United States of America. Navy. High electrical frequency infrared detector, 4,231,053, Cl. 357-30.000.

Schoot, Cornelis J.: See—
de Bont, Marinus R. J.; Kivits, Petrus J.; Schoot, Cornelis J.; and Zalm, Pieter, 4,230,939, Cl. 235-488.000.

Schopflin, Gisela; Fuchs, Peter; and Kolb, Karl H., to Schering Aktiengesellschaft. Drug excipient of silicone rubber, 4,230,686, Cl. 424-22.000.

Schott, Charles M., Jr., to Gloucester Engineering Co., Inc. Cutting assembly useful in bag machines, 4,230,029, Cl. 93-33.00H.

Schreck, Raymond M.: See—
Griffin, James R.; and Schreck, Raymond M., 4,229,945, Cl. 62-229.000.

Schroeder, Arnold: See—
Hansma, Hendrik; and Schroeder, Arnold, 4,230,889, Cl. 568-559.000.

Schroeder, Thaddeus; and Traub, Norman L., to General Motors Corporation. Vehicle window glass breakage detector, 4,230,918, Cl. 200-61.620.

Schubert, Jurgen: See—
Lohrborg, Karl; Pfohl, Rainer; Schubert, Jurgen; and Gritschke, Martin, 4,230,569, Cl. 210-754.000.

Schuegraf, Eberhard, to Siemens Aktiengesellschaft. Antenna feed system for double polarization, 4,231,000, Cl. 333-109.000.

Schuller, James T.; Albrecht, Paul N.; and Canizares, Hugo M., to UMC Industries, Inc. Vendor control circuit, 4,231,105, Cl. 364-900.000.

Schultz, Peter C., to Corning Glass Works. Method of forming a substantially continuous optical waveguide, 4,230,472, Cl. 65-3.00A.

Schultz, William J.; and Van Bennekom, Carl F., to General Electric Company. Method of mounting a pivot insert, 4,229,874, Cl. 29-432.000.

Schut, Robert N.: See—
Kotick, Michael P.; Schut, Robert N.; Polazzi, Joseph O.; and Leland, David L., 4,230,712, Cl. 424-260.000.

Schutz, Heinrich: See—
Kastl, Johann; and Schutz, Heinrich, 4,230,410, Cl. 366-177.000.

Schwee, Leonard J.; Irons, Henry R.; and Anderson, Wallace E., to United States of America. Navy. Serriform strip cross tie memory, 4,231,107, Cl. 365-87.000.

Schweitzer, Reinhard: See—
Heller, Wilhelm; Knoor, Walter; and Schweitzer, Reinhard, 4,230,488, Cl. 75-123.00F.

Schwemmer, Leonard J., to Lord Corporation. Joint prosthesis, 4,229,839, Cl. 3-1.910.

Schwerdhofer, Hans-Joachim, to Fichtel & Sachs A.G. Multiple speed hub for a bicycle with centrifugally controlled speed change and override mechanism actuated by back pedaling, 4,229,997, Cl. 74-752.00E.

Schwetz, Karl A.; and Lipp, Alfred, to Elektrochemischwerk Kempten GmbH. Dense sintered shaped articles of polycrystalline α -silicon carbide and process for their manufacture, 4,230,497, Cl. 106-44.000.

Science Applications, Inc.: See—
McCarthy, Harry E., 4,230,367, Cl. 299-2.000.

Scott, Ward: See—
McKee, Clyde M.; and Scott, Ward, 4,229,992, Cl. 74-501.00M.

Scott, William R.: See—
Douglas, Walter H.; Peterson, Richard F.; Nielsen, Willard J.; Treat, Charles D.; Hagaman, Jerry B.; Loveless, Wendell G.; and Scott, William R., 4,229,991, Cl. 74-409.000.

Scovill Manufacturing Company: See—
Ward, Charles W., 4,230,023, Cl. 92-5.00L.

Seaberg, Richard D., to Cascade Corporation. Lift truck load-handling attachment having integral quick-disconnect hook, 4,230,434, Cl. 414-607.000.

Sealey, Francis; and Steadman, Stephen T., to Boeing Commercial Airplane Company. Decompression release door latch and stop, 4,230,352, Cl. 292-341.170.

Sech, Charles E. Method for the distillation purification of organic heat transfer fluids, 4,230,536, Cl. 203-89.000.

Sehgal, Surendra N.; and Vezina, Claude, to Ayerst McKenna & Harrison, Inc. Ravidomycin and process of preparation, 4,230,692, Cl. 424-122.000.

Seibel, Peter: See—
Eichhorn, Wilfried; and Seibel, Peter, 4,230,643, Cl. 525-253.000.

Seibert, Karl: See—
Praetorius, Heinz; Seibert, Karl; and Holtvoigt, Werner, 4,230,612, Cl. 260-33.20R.

Seidman, Jack: See—
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Seiguchi, Nobuo; Fujiwara, Yukinari; Toya, Mitsuo; and Kaneko, Yoichi, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Radio station system, 4,231,116, Cl. 455-87.000.

Seko, Maomi; Miyake, Tetsuya; Takeuchi, Hiroshi; and Tanouchi, Masatoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the production of a high purity terephthalic acid, 4,230,882, Cl. 562-416.000.

Semplak, Ralph A., to Bell Telephone Laboratories, Incorporated. Technique for reducing near-in sidelobes of an offset antenna, 4,231,043, Cl. 343-786.000.

Sensor Corporation: See—
Mordwinkin, George, 4,230,987, Cl. 324-236.000.

Sentisi, Joseph C.: See—
D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., 4,230,549, Cl. 204-159.170.

Senyei, Andrew E.; and Widder, Kenneth J., to Northwestern University. Method of magnetic separation of cells and the like, and microspheres for use therein, 4,230,685, Cl. 424-12.000.

Separex Teknik AB: See—
Westberg, Johan E. H., 4,230,263, Cl. 233-23.00R.

Sequeira, Avilino, Jr.; and Barger, Frank L., to Texaco Inc. Control system for an MP refining unit receiving medium sweet charge oil, 4,230,215, Cl. 196-46.000.

Serac S.A.: See—
Graffin, Jean-Jacques, 4,230,195, Cl. 177-1.000.

Setera, Ronald J.: See—
Lewine, Donald A.; Dundon, Thomas M.; and Setera, Ronald J., 4,231,089, Cl. 364-200.000.

Seto, Rodney K. M.; Brickman, Eugene L.; and Fitzgibbons, Michael R., to TRW Inc. Methods and apparatus for sensing wellhead pressure, 4,230,187, Cl. 166-362.000.

Shackle, Dale R.: See—
Lee, Yu-Sun; and Shackle, Dale R., 4,230,495, Cl. 106-14.500.

Shaparew, Vladimir. Bee escape board, 4,229,848, Cl. 6-4.00B.

Sharonov, Mikhail A.; Zainullin, Lik A.; Olginsky, Felix Y.; Scherbakov, Ivan I.; Kolpakov, Serafim V.; and Teder, Leonid I. Apparatus for granulating molten slag, 4,230,477, Cl. 65-141.000.

Sharp Kabushiki Kaisha: See—
Aiba, Masahiko, 4,231,046, Cl. 346-75.000.

Tanimoto, Akira, 4,231,098, Cl. 364-708.000.

Tsuji, Sigeaki; Shiozaki, Hiromichi; and Yamasaki, Eiji, 4,230,323, Cl. 274-9.00A.

Sharpe, Raymond, to Lucas Industries Limited. Axial loading device, 4,229,986, Cl. 74-200.000.

Shatto, Walter C., Jr.: See—
Fornwalt, Robert G.; and Shatto, Walter C., Jr., 4,230,008, Cl. 83-456.000.

Shaw, Joy D. Padded undergarment for physical fitness, 4,229,835, Cl. 2-406.000.

Shaw, Edward T.; and Bullano, Gerald A., to Atlantic Richfield Company. Method for increasing the 4,4'-dicarbamate isomer of the diphenylmethane dicarbamates during preparation thereof, 4,230,877, Cl. 560-25.000.

Sheely, Harold R.; Oricchio, F. Frederick; and Ferrari, Domenic C., to Badger Company, Inc. The Process and apparatus for producing halogenated unsaturated hydrocarbons, 4,230,668, Cl. 422-140.000.

Shell Oil Company: See—
Blytas, George C., 4,230,184, Cl. 166-312.000.

Peterson, Larry W., 4,230,482, Cl. 71-93.000.

Roman, Steven A., 4,230,863, Cl. 546-246.000.

Verbrugge, Pieter A.; Kramer, Petrus A.; Van Berkel, Johannes; and Kelderman, Hendrik C., 4,230,891, Cl. 568-591.000.

Shemer, Michael; McDonald, Richard E.; and Chen, Anthony H., to Miles Laboratories, Inc. Process for preparing textured protein concentrate, 4,230,738, Cl. 426-656.000.

Shepherd, Robert G., to American Cyanamid Company. 4-[(Carboxyl- and sulfamyl-substituted alkyl)-amino] benzoic acids and analogs, 4,230,628, Cl. 260-404.000.

Shepherd, Robert G., to American Cyanamid Company. Hypolipidemic and antiatherosclerotic 4-[(cyclopropyl alkyl)amino]benzoic acids and derivatives, 4,230,878, Cl. 560-48.000.

Sheyon, Gregory M., to Stauffer Chemical Company. Pressure sensitive composite article, 4,230,753, Cl. 428-40.000.

Shibayama, Shigeki; Iwata, Kazuhide; and Okuda, Nobuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for calculating a plurality of interpolation values, 4,231,097, Cl. 364-577.000.

Shigehara, Itaru: See—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; and Shigehara, Itaru, 4,230,642, Cl. 570-193.000.

Shikoku Kakooki Co., Ltd.: See—
Ayaha, Kyuhei, 4,230,217, Cl. 198-397.000.

Shimano Industrial Company, Limited: See—
Fujimoto, Hidesaki, 4,229,987, Cl. 474-82.000.

Tsuchie, Kimihito; and Harada, Takafumi, 4,230,212, Cl. 192-64.000.

Shimizu, Takao: See—
Ito, Yutaka; Inoue, Yuzo; Shimizu, Takao; Inaba, Masao; Sugimoto, Atsumi; and Emori, Takeo, 4,231,063, Cl. 358-148.000.

Shimizu, Takeo: See—
Itoh, Tsutomu; Ouchi, Kenji; Furuya, Nobuo; and Shimizu, Takeo, 4,230,068, Cl. 118-634.000.

Shimizu, Yoichi, to Kabushiki Kaisha Maruyama Seisakuho. Huddle frame, 4,230,159, Cl. 139-91.000.

Shin-Etsu Chemical Co., Ltd.: See—
Itoh, Kunio; and Kumagai, Kimitaka, 4,230,815, Cl. 526-335.000.

Shiozaki, Hiromichi: See—

Tsuji, Sigeaki; Shiozaki, Hiromichi; and Yamasaki, Eiji, 4,230,323, Cl. 274-9.00A.

Shirasu, Hirotoshi: See—
Kosugi, Hiroshi; Inoue, Hirofumi; and Shirasu, Hirotoshi, 4,231,022, Cl. 340-347.00A.

Sholl, Howard A.; and Marshall, John T., to Dapco Industries, Inc. System for selectively pulsing ultrasonic transducers in a test apparatus, 4,229,978, Cl. 73-626.000.

Short, Larry E.: See—
Divins, Larry A.; and Short, Larry E., 4,230,672, Cl. 422-159.000.

Showa Denko K.K.: See—
Kawasaki, Keiji; and Matsuda, Itsuaki, 4,230,543, Cl. 204-98.000.

Showa Musen Kogyo Kabushiki Kaisha: See—
Mochizuki, Asaji, 4,230,916, Cl. 200-6.00A.

Shrader, Donald R.: See—
Hill, Herbert M.; and Shrader, Donald R., 4,230,281, Cl. 241-142.000.

Siegel, Stephen L.: See—
Burnstein, Philip J.; Pariza, George R.; and Siegel, Stephen L., 4,230,383, Cl. 339-17.00R.

Siemens Aktiengesellschaft: See—
Bechteler, Martin, 4,231,034, Cl. 340-765.000.

Berg, Hermann O.; Gulden, Peter; Koska, Hans; and Michel, Alfred, 4,230,443, Cl. 431-328.000.

Distler, Walter; and Heinzelmann, Karl-Georg, 4,230,949, Cl. 250-445.00T.

Knauer, Karl, 4,230,952, Cl. 307-221.00D.

Knauer, Karl; and Pfeiderer, Hans-Joerg, 4,231,002, Cl. 333-165.000.

Meixner, Hans, 4,230,935, Cl. 219-523.000.

Rambold, Klaus, 4,230,981, Cl. 323-25.000.

Schuegraf, Eberhard, 4,231,000, Cl. 333-109.000.

Storck, Eckhard; and Wolff, Ulrich, 4,230,948, Cl. 250-445.00T.

Wengler, Christian; and Vogt, Herbert, 4,230,901, Cl. 174-52.0PE.

Zoeke, Siegfried, 4,230,409, Cl. 355-55.000.

Siemonsen, Hans-Pieter: See—
Roth, Mario; Winandy, Johann; and Siemonsen, Hans-Pieter, 4,230,474, Cl. 65-114.000.

Sihi GmbH & Co. KG: See—
Lehmann, Wilfried; Muller, Hermann; and Baranek, Bodo, 4,230,438, Cl. 415-122.00R.

Simmonds, Robin G.: See—
Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,230,709, Cl. 424-256.000.

Jamieson, William B.; Ross, William J.; Simmonds, Robin G.; and Verge, John P., 4,230,716, Cl. 424-273.00R.

Simmonds, S.A.: See—
Layeillon, Jacques, 4,230,166, Cl. 151-7.000.

Simokat, Frank L., to TII Corporation. Signalling and channel loop test circuits for station carrier telephone system, 4,230,910, Cl. 370-71.000.

Simon, Eli. Self-extinguishing cigarettes, 4,230,131, Cl. 131-4.00A.

Simpson Manufacturing Co., Inc.: See—
Gilb, Tyrell T., 4,230,416, Cl. 403-232.100.

Singer Company, The: See—
Warner, Richard C., 4,231,023, Cl. 340-347.00D.

Singh, Prithipal; and Hu, Mae W., to Syva Company. Theophylline antigens and antibodies, 4,230,805, Cl. 435-188.000.

Sintokogio Ltd.: See—
Uzaki, Nagato; Kawamura, Yasutaro; Kaneto, Kimukazu; and Hasizume, Masaharu, 4,230,172, Cl. 164-192.000.

Sirota, Julius, to National Starch and Chemical Corporation. Primers for polymerizable acrylate-chlorosulfonated polyethylene adhesives and two-part adhesives prepared therewith, 4,230,834, Cl. 525-308.000.

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Ruetsch, Christian; and Sittig, Roland, 4,231,054, Cl. 357-38.000.

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Meir, Vladimir A.; Zhukovsky, Alexei N.; Ponomarev, Vladimir S.; Subbotin, Vladimir G.; Kharitonov, Yuri P.; Kusniruk, Vladimir F.; Anatychuk, Lukyan I.; Melnik, Anatoly P.; Skakodub, Vladimir A.; and Sokolov, Alexandr D., 4,230,945, Cl. 250-370.000.

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Skoldinov, Alexandr P.; Likhoshesterov, Arkady M.; and Peresada, Vitaly P. 1,2,3,4-Tetrahydropyrrrolo-[1,2-a]-pyrazine, 4,230,856, Cl. 544-349.000.

Skolnick, Barry, to Saxon Industries, Inc. Open weave drapery fabric in association with a solar light-control film, 4,230,763, Cl. 428-246.000.

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Small, Marvin: See—
Spitzer, Joseph G.; Osipow, Lloyd I.; Small, Marvin; and Marra, Dorothea C., 4,230,243, Cl. 222-402.180.

Smart, Richard C. Convertible railway velocipede, 4,230,046, Cl. 105-95.000.

Smilgys, Bruno S., to Veeder Industries, Inc. Fuel delivery safety limit mechanism, 4,230,937, Cl. 235-94.00R.

Smith, Forrest D. Augmented bubble blower device, 4,229,902, Cl. 46-6.000.

Smith, Fred T., to Sargent Industries, Inc. Front end loader, 4,230,359, Cl. 296-101.000.

Smith, James D. B.; Phillips, D. Colin; and Grossett, Kenneth W., to Westinghouse Electric Corp. Petroleum and synthetic grease thermoparticulating coating, 4,229,974, Cl. 73-339.00R.

Smith, Joseph P., Jr.; Mentzer, Robert L.; and Freberg, Dana D., to General Electric Company. Air delivery system for regulating thermal growth, 4,230,439, Cl. 415-138.000.

Smith, Kenneth R., to Mallinckrodt, Inc. Polyhydroxy-alkyl-3,5-disubstituted-2,4,6-triiodocarbonyl, 4,230,845, Cl. 536-4.000.

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Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,230,865, Cl. 548-138.000.

Smith, Mildred E. Family relationships card game, 4,230,321, Cl. 273-308.000.

Smith, Philip E. Syringe-type liquid container dispenser adapter, 4,230,112, Cl. 128-272.300.

Smith, Trevor S., to Lucas Industries Limited. Shut-off valve arrangements for fluids, 4,229,937, Cl. 60-39.28R.

Smith, Trevor S., to Lucas Industries Limited. Fuel control for a gas turbine engine reheat system, 4,229,939, Cl. 60-243.000.

Smith, William C., to Rader Companies, Inc. Apparatus for pneumatically separating fractions of a particulate material, 4,230,559, Cl. 209-139.00R.

Smoky Mountain Enterprises, Inc.: See—
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Romano, Ugo; and Rivetti, Franco, 4,230,881, Cl. 560-193.000.

Snead, Edwin D. Load weighing and accumulating system and method for hydraulic loader, 4,230,196, Cl. 177-141.000.

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Snow, Kenneth T.; and Snow, Kenneth T., Jr. Corner bracket with saddle for hip rafters of buildings, 4,229,915, Cl. 52-92.000.

Snow, Kenneth T., Jr.: See—
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Snowden, Jimmy C. Muzzle loading apparatus, 4,229,897, Cl. 42-90.000.

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Bykhovsky, David G.; and Sobolev, Vyacheslav G

- Sorenson, Roderick J.: See—
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- Souma, Akio: See—
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- Southard, Albert A.: Rotary internal combustion engine with integrated supercharging, 4,230,088, Cl. 123-203.000.
- Southco, Inc.: See—
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- Southwire Company: See—
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- Speck, Jindrich; and Kosek, Jiri, to Vyzkumny ustav tvarecich stroju a technologie. Hydraulic circuit of a hydromechanical drawing press, 4,229,965, Cl. 72-453.130.
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- Sparkes, Curtis A.: to Lamondine S.A. Wheel support arrangements, 4,229,856, Cl. 16-47.000.
- Spars, Byron G.: See—
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- Spector, George: See—
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- Speier, Klaus: See—
 Disselbeck, Dieter; Hilacher, Eduard; and Speier, Klaus, 4,230,175, Cl. 165-46.000.
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- Spencer Heads, Inc.: See—
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- Spencer, Robert W.: See—
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- Sperry Rand Corporation: See—
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- Spiertz, Elisabeth J.; Flinsenber, Christiaan F. W.; and van Beek, Leendert K. H., to U.S. Philips Corporation. Method of manufacturing an external electrically conducting metal pattern, 4,230,788, Cl. 430-153.000.
- Spitzer, Joseph G.; Osipow, Lloyd I.; Small, Marvin; and Marra, Dorothea C. Aerosol container with flameless delivery valve, 4,230,243, Cl. 222-402.180.
- Sprague Electric Company: See—
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- Markarian, Mark; and Meyer, Kenneth B., 4,231,076, Cl. 361-433.000.
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- Spring, Carl E., to La Crosse Cooler Company, Inc. Liquid rejecting coin chute, 4,230,213, Cl. 194-1.00K.
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- Springett, Charles N.; Abramovich, Dan; Uyeda, Stanley T.; and Radu, E. John, to Santa Fe International Corporation. Self propelled dynamically positioned reel pipe laying ship, 4,230,421, Cl. 405-168.000.
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- SPS Technologies, Inc.: See—
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- Spurrer, Francis R., to United States of America. Energy. Magnetohydrodynamic (MHD) channel corner seal, 4,230,939, Cl. 310-11.000.
- Stabilus GmbH: See—
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- Stables A.G.: See—
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- Stahl, Kurt. Disc brake pad, 4,230,207, Cl. 188-73.100.
- Staiert, Richard W., to International Harvester Company. Combine grain loss sensing, 4,230,130, Cl. 130-27.00R.
- Stainless Ictainer Company: See—
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- Stal-Laval Appar AB: See—
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- Staley, Gary M.; and Cox, Monty S. Holding device for hunting equipment, 4,230,296, Cl. 248-309.00R.
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- Standard Oil Company (Indiana): See—
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- Standard Oil Company (Ohio): See—
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- Stanton, David J., to Medtronic, Inc. Electrical body stimulator, 4,230,121, Cl. 128-422.000.
- Stanton, Leo F., to Bush Universal, Inc. Method for stiffening shoe insoles, 4,229,851, Cl. 12-146.00S.
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- Stauffer Chemical Company: See—
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- Lauck, Robert M., 4,230,730, Cl. 426-128.000.
- Pallos, Ferenc M.; and Gaughan, Edmund J., 4,230,874, Cl. 560-12.000.
- Sheyon, Gregory M., 4,230,753, Cl. 428-40.000.
- Walker, Francis H., 4,230,720, Cl. 424-278.000.
- Wei, Chung H., 4,230,832, Cl. 525-260.000.
- Stauffer, Norman L., to Honeywell Inc. Corrector lens, 4,230,941, Cl. 250-204.000.
- Stauffer, Norman L., to Honeywell Inc. Crossed cylindrical lens, 4,230,942, Cl. 250-204.000.
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- Steelcase Inc.: See—
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- Steere, William C.; and Wilson, Stephen S., to Agro Sciences, Inc. Seed viability analyzer, 4,230,983, Cl. 324-71.00R.
- Steinbach, Irving H., to Glen Manufacturing Company. Automatic thread wiper for sewing machines, 4,230,056, Cl. 112-239.000.
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- Steinbrecher Corporation: See—
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- Steinbrecher, Donald H., to Steinbrecher Corporation. Doubly balanced mixer with optimized dynamic range, 4,230,956, Cl. 307-257.000.
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- Stierlen-Maquet Aktiengesellschaft: See—
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- Stinger, William. Face shield/helmet airflow noise reducer, 4,229,836, Cl. 2-422.000.
- Stirniman, James P. Skein and ball banding machine, 4,229,925, Cl. 53-399.000.
- Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D. Collapsible fifth wheel trailer hitch locked position indicator, 4,230,430, Cl. 410-59.000.
- Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D. Tractor operated fifth wheel hitch stand diagonal strut linkage, 4,230,431, Cl. 410-59.000.
- Storandt, Ralf, to Verrinigte Baubeschlagfabriken Gretch Co. GmbH. Ski bindings and ski brakes associated therewith, 4,230,337, Cl. 285-605.000.
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- Sumi, Akiyasu: See—
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- Svirachevsky, Valentin K.; Trofimuk, Andrei A.; Vasiliev, Gemady G.; and Leonov, Ivan P. Machine for making underground excavations, 4,230,191, Cl. 175-20.000.
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- Sylvania Circuit Breaker Corporation: See—
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- Tada, Tetsuya. Trigger type sprayer with integrally formed locking nozzle cover, 4,230,277, Cl. 239-333.000.
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- Takeuchi, Hiroshi: See—
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- Tanaka, Hiroshige, to Nihon Sekiyu Hanbai Kabushiki Kaisha. Method of storing heavy hydrocarbon oil and vessel therefor, 4,230,138, Cl. 137-13.000.
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- Tate, Ernest L. Freeze plug installation kit. 4,229,870, Cl. 29-254.000.
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- Taylor, Lauren P.; and Petroski, Alex, to LRS Research. Composting apparatus. 4,230,676, Cl. 422-62.000.
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- Taylor, Robert S.; and Boyer, Norman W., to United States of America, Energy. Epoxy-borax-coal tar composition for a radiation protective, burn resistant drum liner and centrifugal casting method. 4,230,660, Cl. 264-311.000.
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- Technion Research & Development Foundation Ltd.: See—
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- Teder, Leonid I.: See—
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- Teijin Limited: See—
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- Tektronix, Inc.: See—
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- Teledyne, Inc.: See—
Coulter, Leland E., 4,230,255, Cl. 228-184.000.
- Telescope Folding Furniture Co., Inc., The: See—
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- Teletype Corporation: See—
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- Templeton, William B., to Burroughs Corporation. Item sorter pocket flag and switch apparatus. 4,230,312, Cl. 271-215.000.
- Ter Beek Hengelo (T.B.H.) B.V.: See—
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- Teradyne, Inc.: See—
St. Clair, Richard P., 4,231,104, Cl. 364-900.000.
- Terao, Hisashige: See—
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- Testa, Raymond T.: See—
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- Brown, George R.; Carroll, Joseph C.; and Dubuisson, S. Elliott, 4,230,422, Cl. 405-210.000.
- Kalfoglou, George, 4,230,183, Cl. 166-274.000.
- Pitts, Robert W., Jr., 4,231,070, Cl. 358-285.000.
- Sequeira, Avilino, Jr.; and Barger, Frank L., 4,230,215, Cl. 176-46.000.
- Walker, Clarence O., 4,230,587, Cl. 252-8.55R.
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Bays, Marvin G., 4,230,201, Cl. 181-115.000.
- Cardin, Wilfred W., 4,231,010, Cl. 337-94.000.
- Kuo, Chang-Kiang, 4,230,504, Cl. 148-1.500.
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- Textron, Inc.: See—
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- Tezuka, Akitomi. Package for laver-wrapped rice-ball or "Onigiri". 4,230,728, Cl. 426-115.000.
- Tgavalekos, Terry: See—
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- Thaler, Richard, to Sprecher & Schuh AG. Gas-blast switch. 4,230,920, Cl. 200-148.00A.
- Theiler, Werner C., Sr., to Minnesota Mining and Manufacturing Company. Hand crimp tool. 4,229,849, Cl. 7-107.000.
- Thermacore, Inc.: See—
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- Thierry, Jean-Pierre; Debienne, Alain; and Nourry, Daniel, to La Telemecanique Electrique. Connection housing for aligned bus bars. 4,230,388, Cl. 339-74.00R.
- Thiollier, Gabriel: See—
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- Thomas, Daniel C., to Richardson Company, The. Aryl sulfonic acid based stabilizers for presensitized planographic plates. 4,230,492, Cl. 430-159.000.
- Thomas, John P.: See—
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- Thompson, Malcolm J.: See—
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- Thomson-CSF: See—
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- Pearsall, Thomas, 4,231,049, Cl. 357-13.000.
- Thornburn, Maxwell. Locking mechanism. 4,229,956, Cl. 70-129.000.
- Thormack Engineering Ltd.: See—
Boyne, Ralph A.; and Cottingham, Richard L., 4,230,447, Cl. 431-158.000.
- Thorpe, Donald H.: See—
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- Tidwell, Hubert. Self-guided reversible two speed row crop irrigator. 4,230,275, Cl. 239-184.000.
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- Simokat, Frank L., 4,230,910, Cl. 370-71.000.
- Tilby, Sydney E., to Intercane Systems, Inc. Methods and apparatus for extracting juice from plant material. 4,230,733, Cl. 426-429.000.
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- Timm, John E., to United States of America, Navy. Fast Fourier transform spectral analysis system employing adaptive window. 4,231,103, Cl. 364-726.000.
- Tinder, David V.; and Mack, Walter E., to McCord Corporation. Headlamp cleaning assembly. 4,230,276, Cl. 239-229.000.
- Tinney, Francis J.; Connor, David T.; Cetenko, Waczeslaw A.; Kerleski, Joseph J.; and Sorenson, Roderick J., to Warner-Lambert Company. Oxo-pyrido[1,2-a]thienopyrimidine compounds and methods for their production. 4,230,707, Cl. 424-251.000.
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- Toder, Ellis I. Dual wheel carrier for use in conjunction with curtain track. 4,229,857, Cl. 16-95.00R.
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- Tokutomi, Seiji; Jyojiki, Masao; and Nakamura, Kazuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera focus detecting device. 4,230,401, Cl. 354-25.000.
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- Minami, Masana; and Watanabe, Tomohide, 4,230,940, Cl. 250-201.000.
- Nakamura, Kiyoshi; Komatsu, Michiyasu; and Nakanishi, Masae, 4,230,494, Cl. 106-14.050.
- Shibayama, Shigeki; Iwata, Kazuhide; and Okuda, Nobuo, 4,231,097, Cl. 364-577.000.
- Uehara, Haruo; and Miyoshi, Michizo, 4,230,179, Cl. 165-113.000.
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- Suzuki, Yasoji; and Kouyama, Susumu, 4,230,951, Cl. 307-200.00B.
- Tol, Dirk, to ITT Industries, Inc. Arrangement to obtain equal travel of hydraulic cylinders. 4,230,304, Cl. 254-89.00H.

- Tollet de Santerre, Henri: See—
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- Tondreau, Raymond A.: See—
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- Toner, James K., to Eastman Kodak Company. Sonically securing articles in plastic mounts. 4,230,757, Cl. 428-137.000.
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- Tork, Leo; Kolb, Gunter; and Hohne, Wolfgang, to Bayer Aktiengesellschaft. Pigment preparations. 4,230,812, Cl. 526-320.000.
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Townsend, Ray T.; and Vandeweghe, Orville, 4,230,290, Cl. 244-1.00R.
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- Toyama, Akira, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Record/playback device for magnetic recording. 4,231,072, Cl. 386-44.000.
- Toyama Chemical Co., Ltd.: See—
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- Isaka, Tsutomu; Matsuo, Maki; and Miyazaki, Yukinobu, 4,230,767, Cl. 428-349.000.
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- Toyoda, Kazuhiro: See—
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- Traini, Carlo; Bianchi, Giuseppe; and Pellegrini, Alberto, to Oronzio de Nora Impianti Elettrochimici S.p.A. Electrolytic process for treating ilmenite leach solution. 4,230,542, Cl. 204-93.000.
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- Troxel, Ronald L. Pliers type cutting tool and the like. 4,229,881, Cl. 30-254.000.
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- Tsimbler, Jury A.: See—
Slavinsky, Valentin N.; Bairon, Genrikh V.; Alexandrov, Adolf M.; Alexeev, Gennady M.; Matveev, Vladimir M.; Minin, Oleg D.; Tsimbler, Jury A.; Vasiliev, Vladimir A.; and Provalsky, Gennady B., 4,229,946, Cl. 62-341.000.
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- Tsuchie, Kimihiko; and Harada, Takafumi, to Shimano Industrial Company, Limited. Rear hub for a bicycle. 4,230,212, Cl. 192-64.000.
- Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, to JGC Corporation; and Orient Kagaku Kogyo K.K. Method of obtaining dried terephthalic acid. 4,230,886, Cl. 562-486.000.
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- Tsuji, Sadahiko; and Sato, Yasuhisa, to Canon Kabushiki Kaisha. Zoom lens system. 4,230,398, Cl. 350-184.000.
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- Turley, Patricia A.: See—
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- Turner, John H., Jr., to Metritape, Inc. Level and temperature readout and alarm system. 4,231,025, Cl. 340-521.000.
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- Tyler, Hugh J., to Robertshaw Controls Company. Microwave cooking method and control means. 4,230,731, Cl. 426-233.000.
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- Ueda, Masakazu: See—
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- Ueda, Nobuo, to Laurel Bank Machine Co., Ltd. Sorted coin counting apparatus. 4,230,135, Cl. 133-3.00D.
- Ueda, Shigeki, to Matsushita Electric Industrial Co., Ltd. Input signal recognition circuit. 4,231,016, Cl. 340-166.00R.
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- UMC Industries, Inc.: See—
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- Uni-Mist, Inc.: See—
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- Hunt, Geoffrey H., 4,231,068, Cl. 358-252.000.
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- Figge, Irving E.; and Dean, Edward H., 4,230,764, Cl. 428-268.000.
- Tulis, Milton A.; Lawson, Charles M.; and Whiting, Lawrence D., III, 4,230,509, Cl. 149-109.400.
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- Winston, Roland, 4,230,095, Cl. 126-439.000.
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- Brown, Patricia A.; and Vernikos, Joan, Indomethacin-antihistamine combination for gastric ulceration control, 4,230,717, Cl. 424-274.000.
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- Weil, Richard C., 4,230,835, Cl. 525-316.000.
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- Unitika Limited, See—
- Kuga, Mutsuo; Kitagawa, Kiyoshi; Kawasaki, Motoo; and Watanabe, Junkichi, 4,230,654, Cl. 264-134.000.
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- Youn, Youngil; and Platt, Adrian E., 4,229,841, Cl. 3-1.910.
- University of Pittsburgh, See—
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- Wells, Gregory J.; and Voorhees, Kent J., 4,230,946, Cl. 290-423.000.
- UOP Inc., See—
- Cheshire, Ernest L., 4,230,414, Cl. 403-95.000.
- Howard, Leroy J., 4,230,535, Cl. 203-26.000.
- Uozumi, Fumiko, See—
- Matsumoto, Tetsuo, 4,230,264, Cl. 233-27.000.
- Uozumi, Masana, See—
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- Upjohn Company, The, See—
- Bundy, Gordon L., 4,230,629, Cl. 260-404.000.
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- Urata, Tetsuro, See—
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- Holick, Michael F.; and Uskokovic, Milan R., 4,230,701, Cl. 424-236.000.
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- Valyi, Emery I. Apparatus for the preparation of hollow plastic articles, 4,230,298, Cl. 249-65.000.
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- Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., 4,230,431, Cl. 410-59.000.
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- Van Pool, Joe, See—
- Chapman, Charles C.; and Van Pool, Joe, 4,230,666, Cl. 422-106.000.
- Van Poucke, Raphael K., See—
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- Varga, Ferenc. Traveling circular saw, 4,230,005, Cl. 83-100.000.
- Varma, Brajendra P., to Eltra Corporation. Battery plate, 4,230,779, Cl. 429-204.000.
- Varma, Ravi K., See—
- Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., 4,230,621, Cl. 260-239.570.
- Vasiliev, Gennady G., See—
- Svirachevsky, Valentin K.; Trofimuk, Andrei A.; Vasiliev, Gennady G.; and Leonov, Ivan P., 4,230,191, Cl. 175-20.000.
- Vasiliev, Vladimir A., See—
- Slavinsky, Valentin N.; Bairo, Genrikh V.; Alexandrov, Adolf M.; Alexeev, Gennady M.; Matveev, Vladimir M.; Minin, Oleg D.; Tsimbler, Jury A.; Vasiliev, Vladimir A.; and Provalsky, Gennady B., 4,229,946, Cl. 62-341.000.
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- Veeder Industries, Inc., See—
- Smilgys, Bruno S., 4,230,937, Cl. 235-94.00R.

- Vella, Louis C., See—
- Hansen, Walter L.; Galbraith, Wiley E.; Vella, Louis C.; and Cohen, Martini M., 4,231,096, Cl. 364-523.000.
- Velte, Andre J. F., See—
- Lindebrings, Charles M. P.; Vaillagou, Pierre; and Velte, Andre J. F., 4,229,879, Cl. 29-840.000.
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- Henkel, Otto, 4,231,044, Cl. 343-881.000.
- Verge, John P., See—
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- Adelmann, Siegfried; Margotte, Dieter; and Vernaleken, Hugo, 4,230,548, Cl. 204-159.140.
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- United States of America, National Aeronautics and Space Administration; Brown, Patricia A.; and Vernikos, Joan, 4,230,717, Cl. 424-274.000.
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- Ver Strate, Gary, See—
- Brois, Stanley J.; and Ver Strate, Gary, 4,230,837, Cl. 525-343.000.
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- Viewpoint, Inc., See—
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- Vischer, Peter, to Coors Container Company. Apparatus and method for obtaining uniform gobs in a triple gob feeder, 4,230,476, Cl. 65-128.000.
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- Ecker, Richard E., 4,230,695, Cl. 424-177.000.
- Vogt, B. Richard, See—
- Bernstein, Jack; Varma, Ravi K.; Vogt, B. Richard; and Weisenborn, Frank L., 4,230,621, Cl. 260-239.570.
- Vogt, Herbert, See—
- Wengler, Christian; and Vogt, Herbert, 4,230,901, Cl. 174-52.0PE.
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- Vollhardt, Kurt P. C.; and Perkins, Patrick, to United States of America, Energy. Novel Fischer-Tropsch catalysts, 4,230,633, Cl. 260-449.60M.
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- Voorhees, Kent J., See—
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- Vosper, Ralph R., See—
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- Bell, Vincent G., Jr.; Burke, Thomas P.; Margolin, George D.; and Vurpillat, Victor V., 4,230,344, Cl. 283-6.000.
- Margolin, George D.; and Vurpillat, Victor V., 4,230,938, Cl. 235-441.000.
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- Spasek, Jindrich; and Kosek, Jiri, 4,229,965, Cl. 72-453.130.
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- Murch, Robert M.; Meyer, Phyllis I.; and Eagan, John J., 4,230,822, Cl. 521-106.000.
- Wacker-Chemie GmbH, See—
- Maschberger, Adolph; and August, Peter, 4,230,820, Cl. 521-77.000.
- Sommer, Oswin; Schiller, August; Dorsch, Norman; and Strasser, Alois, 4,230,826, Cl. 525-100.000.
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- Wagner, Joseph E., III; and Williams, Lloyd E., to J. M. Huber Corporation. Inorganic water-softening bead, 4,230,593, Cl. 252-179.000.
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- Wick, Richard; Stemme, Otto; Lermann, Peter; Wagner, Karl; Borowski, Kurt; Cocron, Istvan; and Fauth, Gunter, 4,230,400, Cl. 354-25.000.
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- Wakatsuki, Goro, See—
- Gotoh, Isamu; Okamoto, Yoshinori; and Wakatsuki, Goro, 4,230,084, Cl. 123-179.00S.
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- Walker, Clarence O., to Texaco Inc. Additive composition for release of stuck drill pipe, 4,230,587, Cl. 252-8.55R.
- Walker, Francis H., to Stauffer Chemical Company. Heterocyclic dithiophosphates or phosphonates as insecticides and acaricides, 4,230,720, Cl. 424-278.000.
- Walker, Loren H., See—
- Espele, Paul M.; Walker, Loren H.; and Wright, William G., deceased, 4,230,979, Cl. 318-721.000.
- Walker, Scott H., to Motorola, Inc. Simultaneous multiple beam antenna array matrix and method thereof, 4,231,040, Cl. 343-100.05A.
- Walsh, David A.; and Westead, William J., Jr., to A. H. Robins Company, Inc. 1-Substituted-3,4-epoxypyrrolidines, 4,230,718, Cl. 424-274.000.
- Walsh, Michael M., See—
- Worthen, Roger P.; and Walsh, Michael M., 4,230,149, Cl. 137-517.000.
- Walz, Arthur J., Jr.; and Nowacki, Christopher A., to Illinois Tool Works Inc. Catheterization unit, 4,230,115, Cl. 128-295.000.
- Ward, Charles W., to Scovill Manufacturing Company. Clamping apparatus, 4,230,023, Cl. 92-5.00L.
- Ward, Michael A. V.; and Kern, Fred R., to Combustion Electromagnetics, Inc. Burner combustion improvements, 4,230,448, Cl. 431-208.000.
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- Wardle, Michael D., See—
- Forstrom, Richard J.; and Wardle, Michael D., 4,230,663, Cl. 422-33.000.
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- Warren, Alvin E., See—
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- Warsop, David H., to Cosmopolitan Textile Company Limited. Stitch bonded fabric, 4,229,953, Cl. 66-193.000.
- Wasservogel, Francois. Trailer for coupling to road vehicles, 4,230,340, Cl. 280-656.000.
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- Watabe, Yoji, See—
- Kaneda, Hiroshi; Watabe, Yoji; Souma, Akio; Ura, Yasuyuki; Ishii, Michio; and Anzai, Shiro, 4,230,168, Cl. 152-310.000.
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- Watanabe, Isao, See—
- Kodama, Tsutomu; Nakabayashi, Masao; Watanabe, Isao; Hirano, Hiroshi; Abe, Norio; Tanaka, Katsufumi; and Arai, Hiroto, 4,230,719, Cl. 424-275.000.
- Watanabe, Junkichi, See—
- Kuga, Mutsuo; Kitagawa, Kiyoshi; Kawasaki, Motoo; and Watanabe, Junkichi, 4,230,654, Cl. 264-134.000.
- Watanabe, Naoyoshi, See—
- Obayashi, Mikio; and Watanabe, Naoyoshi, 4,230,507, Cl. 148-6.110.
- Watanabe, Shotaro; Tozawa, Katsutoshi; and Uetake, Shigeru, to Konishiroku Photo Industry Co., Ltd. Magnetic toner for developing latent electrostatic images and a process for the preparation thereof, 4,230,787, Cl. 430-107.000.
- Watanabe, Tadaharu, See—
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- Watanabe, Tadashi, See—
- Yoshihara, Ichiro; Watanabe, Tadashi; and Iwase, Osamu, 4,230,829, Cl. 525-162.000.
- Watanabe, Takeshi, See—
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- Watanabe, Teruko, See—
- Ichikawa, Toshizi; and Watanabe, Teruko, 4,230,584, Cl. 210-516.000.
- Watanabe, Tomohide, See—
- Minami, Masana; and Watanabe, Tomohide, 4,230,940, Cl. 250-201.000.
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- Nakagawa, Koji; and Watanabe, Yoshiharu, 4,230,499, Cl. 106-90.000.

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Watson, Trevor F., to Kili, Inc. Tubal ligation instrument with anesthesia means. 4,230,116, Cl. 128-303.00A.

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Watts, William A., to Goodyear Tire & Rubber Company, The. Composite of a high nitrile copolymer adhered to an olefin based polymer. 4,230,761, Cl. 428-215.000.

Watts, William A.; and Creekmore, Mark D., to Goodyear Tire & Rubber Company, The. Heat sealable laminate. 4,230,774, Cl. 428-518.000.

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Wearing, Brian J.; and Zaidi, Syed M. A., to B.S.R. Limited of Monarch Works. Electric switch. 4,230,921, Cl. 200-153.00J.

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Weeks, Patrick W. Cigarette and lighter case. 4,230,224, Cl. 206-87.000.

Wei, Chung H., to Stauffer Chemical Company. Process for preparing resistant vinyl halide polymers. 4,230,832, Cl. 525-260.000.

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Glucksmann, Dov Z.; and Weidemann, Karl H., 4,230,933, Cl. 219-375.000.

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Weil, Richard C., to United States Steel Corporation. Method of removing polybutadiene gels from solutions. 4,230,835, Cl. 525-316.000.

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Weiler, Wolfgang, to Motoren- und Turbinen-Union Munchen GmbH. Fuel injection nozzle assembly for gas turbine drive. 4,229,944, Cl. 62-740.000.

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Weinstein, Marvin J.: See—
Taplin, David; Weinstein, Marvin J.; Testa, Raymond T.; Marquez, Joseph A.; and Patel, Mahesh G., 4,230,799, Cl. 435-76.000.

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Wellendorf, Klaus; and Sommer, Ruediger, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for producing image combinations. 4,231,069, Cl. 358-256.000.

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Wells, Gregory J.; and Voorhees, Kent J., to University of Utah. Cryogenic collimator apparatus and method. 4,230,946, Cl. 250-425.000.

Wells, Royzell F., to Martin Marietta Corporation. Double action, electrical connector coupling device. 4,230,390, Cl. 339-90.00R.

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Wenzlick, Erich; and Rothfuss, Hermann, to BBP Kunststoffwerk Marbach Baier & Co. Plastics drawer for furniture. 4,230,382, Cl. 312-330.00R.

Weresch, Thomas. Apparatus for treating leads of electrical components. 4,229,964, Cl. 72-452.000.

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Western Electric Company, Incorporated: See—
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Calfo, Raymond M.; and Mulach, Arthur, 4,230,961, Cl. 310-55.00R.

Darwent, Richard H., 4,230,205, Cl. 187-22.000.

Hower, Philip L.; and Page, Derrick J., 4,231,059, Cl. 357-68.000.

Johnston, Paul M., 4,231,029, Cl. 340-658.000.

Mayher, James M.; and Ying, Andrew S., 4,230,960, Cl. 310-51.000.

Smith, James D. B.; Phillips, D. Colin; and Grossett, Kenneth W., 4,229,974, Cl. 73-339.00R.

Taylor, John W., Jr., 4,231,005, Cl. 343-5.0NQ.

Whaley, Bennie M.; and Whaley, Janice C. Method for filtering frying oil. 4,230,574, Cl. 210-778.000.

Whaley, Janice C.: See—
Whaley, Bennie M.; and Whaley, Janice C., 4,230,574, Cl. 210-778.000.

Wheeler, Frederick G.: See—
Izzo, Henry J.; Moran, Martin J.; and Wheeler, Frederick G., 4,230,693, Cl. 424-156.000.

White, Alfred K.: See—
Brearley, Malcolm; and White, Alfred K., 4,230,376, Cl. 303-106.000.

White-Bird Enterprises, Inc.: See—
Bird, Thomas O.; White, Jack; and Bird, Carl H., 4,230,585, Cl. 252-8.100.

White, Jack: See—
Bird, Thomas O.; White, Jack; and Bird, Carl H., 4,230,585, Cl. 252-8.100.

White, Leonard D., to Lister Bolt & Chain Ltd. Sealing assembly for ball or rod mills and the like. 4,230,326, Cl. 277-166.000.

White Motor Corporation: See—
Plantan, Ronald S., 4,230,373, Cl. 303-7.000.

White, Robert W. Building panel. 4,229,916, Cl. 52-98.000.

Whitener, Philip C.: See—
Hamm, Robert A.; and Whitener, Philip C., 4,230,293, Cl. 244-119.000.

Whiting, Lawrence D., III: See—
Tulis, Milton A.; Lawson, Charles M.; and Whiting, Lawrence D., III, 4,230,509, Cl. 149-109.400.

Wick, Richard; Stemme, Otto; Lermann, Peter; Wagner, Karl; Borowski, Kurt; Cocron, Istvan; and Fauth, Gunter, to AGFA-Gevaert, A.G. Photographic camera with exposure-control and focussing means. 4,230,400, Cl. 354-25.000.

Wickwar, Larry D.: See—
Schneider, Mark R.; and Wickwar, Larry D., 4,229,936, Cl. 368-282.000.

Widder, Kenneth J.: See—
Senyeli, Andrew E.; and Widder, Kenneth J., 4,230,685, Cl. 424-12.000.

Wiebe, Donald, to A. Stucki Company. Railway truck bolster friction assembly. 4,230,047, Cl. 105-197.00D.

Wiegman, Douglas C.; and Grichnik, James A., to Advanced Instrument Development, Inc. X-ray system exposure control with ion chamber. 4,230,944, Cl. 250-355.000.

Wiens, Klaus, to Paper Converting Machine Company. Apparatus for intermediately storing products on storage devices. 4,230,216, Cl. 198-347.000.

Wieske, Theophil: See—
Heider, Henning; and Wieske, Theophil, 4,230,737, Cl. 426-607.000.

Wijts, Corneel C.: See—
Persoons, Gustaaf M.; and Wijts, Corneel C., 4,229,932, Cl. 56-13.500.

Wikel, James H.: See—
Paget, Charles J.; Chamberlin, James W.; and Wikel, James H., 4,230,868, Cl. 548-306.000.

Wilcox, Milton E., to National Semiconductor Corporation. Non-linear control circuit. 4,230,953, Cl. 307-230.000.

Wildman, John R.: See—
Morrison, Howard J.; and Wildman, John R., 4,229,903, Cl. 46-232.000.

Wilkinson Sword Limited: See—
Rowell, David G.; Spring, David J.; and Hems, Roger, 4,230,688, Cl. 424-45.000.

William H. Rorer, Inc.: See—
Nuss, George W., Jr.; Santora, Norman J.; and Douglas, George H., 4,230,727, Cl. 424-330.000.

Williams, Clifford C., to Kiasing Industries, Inc. Tee connection for well water storage tanks. 4,230,347, Cl. 285-119.000.

Williams, Danny L.: See—
Betz, Norman L.; Lanter, Kent J.; and Williams, Danny L., 4,230,736, Cl. 426-601.000.

Williams, Eric L.: See—
Dean, Noel S.; Chapman, Joseph E. G.; and Williams, Eric L., 4,230,395, Cl. 350-96.230.

Williams, Irving. Replaceable cartridge type oxygen generator and oxygen supply system including a plurality of such generators. 4,230,667, Cl. 422-113.000.

Williams, Lloyd E.: See—
Wagner, Joseph E., III; and Williams, Lloyd E., 4,230,593, Cl. 252-179.000.

Wilson, James R.: See—
McNutt, William J.; and Wilson, James R., 4,231,074, Cl. 361-44.000.

Wilson, Phillip S.: See—
Mark, Victor; and Wilson, Phillip S., 4,230,611, Cl. 260-29.15B.

Wilson, Stephen S.: See—
Steere, William C.; and Wilson, Stephen S., 4,230,983, Cl. 324-71.00R.

Wilson, Thomas S. Spare tire carrier. 4,230,246, Cl. 224-42.210.

Wilson, Warren. Funnel pitcher enabling batter to be prepared and poured into a cooking utensil. 4,230,238, Cl. 222-158.000.

Wiltse, Harold L., to Wiltse, Mary Louise. Flow metering and shut-off valve. 4,230,300, Cl. 251-205.000.

Wiltse, Mary Louise: See—
Wiltse, Harold L., 4,230,300, Cl. 251-205.000.

Winandy, Johann: See—
Roth, Mario; Winandy, Johann; and Siemonsen, Hans-Pieter, 4,230,474, Cl. 65-114.000.

Wingrave, James A., to Conoco, Inc. Polymeric electrical conductance dependent upon electrical potential. 4,230,604, Cl. 252-518.000.

Winkler, Wolfgang: See—
Krukel, Peter; and Winkler, Wolfgang, 4,230,655, Cl. 264-135.000.

Winston, Roland, to United States of America, Energy. Ideal light concentrators with reflector gaps. 4,230,095, Cl. 126-439.000.

Winters, Terence E.: See—
Broughton, Roy M., Jr.; Callander, Douglas D.; Pengilly, Brian W.; Schirmer, Joseph P.; and Winters, Terence E., 4,230,818, Cl. 528-272.000.

Wisconsin Alumni Research Foundation: See—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,230,627, Cl. 260-397.200.

Wisner, Allen; and Grudzinskas, Charles V., to American Cyanamid Company. 15-Deoxy-16-hydroxy-16-formyo or dimethoxy-methylpropane derivatives of the E and F series. 4,230,879, Cl. 560-121.000.

Witler, James L.: See—
Fritzlen, Jack D.; and Witler, James L., 4,231,039, Cl. 343-8.000.

Wixon, Harold E., to Colgate Palmolive Company. Detergent softener compositions containing a soap-cellulose ether mixture. 4,230,590, Cl. 252-97.000.

Wolfe, Jon W.: See—
Derick, Burton N.; Moynihan, Robert E.; and Wolfe, Jon W., 4,230,775, Cl. 428-525.000.

Wolff Manufacturing Company: See—
Janssen, Harvey W., 4,230,928, Cl. 219-76.110.

Wolff, Ulrich: See—
Storck, Eckhard; and Wolff, Ulrich, 4,230,948, Cl. 250-445.00T.

Wolinski, Leon E.; and Berezuk, Peter D., to Pratt & Lambert, Inc. Peroxy-free methacrylate lacquer and adhesive method employing same. 4,230,613, Cl. 156-315.000.

Wolverine World Wide, Inc.: See—
Kaempfer, Gerhard P., 4,230,055, Cl. 112-236.000.

Wood, Robert C.: See—
Deardorff, Paul A.; Wood, Robert C.; and Cundari, Sante M., 4,230,053, Cl. 110-346.000.

Worthen, Roger P.; and Walsh, Michael M., to Eaton Corporation. Fluid flow regulating valve and system. 4,230,149, Cl. 137-517.000.

Wright, Fred C.: See—
Fisher, William F.; Thompson, Malcolm J.; Wright, Fred C.; and Robbins, William E., 4,230,726, Cl. 424-325.000.

Wright, Mary Nobel, executrix: See—
Espelage, Paul M.; Walker, Loren H.; and Wright, William G., deceased, 4,230,979, Cl. 318-721.000.

Wright, William G., deceased: See—
Espelage, Paul M.; Walker, Loren H.; and Wright, William G., deceased, 4,230,979, Cl. 318-721.000.

Wu, Chung P.; and Rosen, Arye, to RCA Corporation. Method of making an impact diode utilizing a combination of epitaxial deposition, ion implantation and substrate removal. 4,230,505, Cl. 148-1.500.

Wu, Tai-Wing, to Eastman Kodak Company. Element and assay for albumin. 4,230,456, Cl. 23-230.00B.

Wu, Yulin, to Phillips Petroleum Company. Conversion of aromatic carboxylates to terephthalate. 4,230,885, Cl. 562-481.000.

Wygant, Thomas G.: See—
Logan, Clifford K., Jr., 4,230,193, Cl. 175-379.000.

Xerox Corporation: See—
Brueggemann, Harry P.; and Grafton, David A., 4,230,394, Cl. 350-6.800.

Goffe, William L., 4,230,782, Cl. 430-41.000.

Hug, William F.; and De Benedictis, Leonard C., 4,230,902, Cl. 178-15.000.

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Yabuki, Shoichi: See—
Oshima, Masanao; Komoto, Mikihiisa; Yabuki, Shoichi; and Inokawa, Tsuneo, 4,230,423, Cl. 405-211.000.

Yamada, Munee: See—
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Yamada, Shigemitsu: See—
Matsumoto, Tetsuo, 4,230,264, Cl. 233-27.000.

Yamaguchi, Hideo; Kobayashi, Masahiro; Mizote, Atsunobu; and Iwamuro, Yoshiyuki, to Otsuka Chemical Co., Ltd.; and Sansho Co., Ltd. Process for improving qualities of paper. 4,230,525, Cl. 162-164.00R.

Yamaguchi, Hiroaki: See—
Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,230,078, Cl. 123-416.000.

Yamaguchi, Katsunobu: See—
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,230,886, Cl. 562-486.000.

Yamaguchi, Kenichi: See—
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Yamaha Hatsudoki Kabushiki Kaisha: See—
Ichikawa, Satoru; and Minami, Shunji, 4,230,074, Cl. 123-55.00R.

Tamura, Jyoji, 4,229,989, Cl. 474-12.000.

Yamaji, Teizo; and Okitsu, Hiroyuki, to Teijin Limited. Oxygen scavenging and heat-generating compositions, and deoxygenating and heat-generating structures. 4,230,595, Cl. 252-188.000.

Yamamoto, Hisao: See—
Fukui, Masaru; Ogino, Shigeo; and Yamamoto, Hisao, 4,230,725, Cl. 424-325.000.

Yamamoto, Kenzo: See—
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Yamasaki, Eiji: See—
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Yamashita, Kyoichi, to Koyo Jidoki Co., Ltd. Labelling machine. 4,230,516, Cl. 156-364.000.

Yamauchi, Aizo; Matsuzawa, Yasuo; Kamiya, Sadayoshi; Nishioaka, Keisuke; Hara, Yoshiaki; and Matsushima, Shogo, to Director-General of the Agency of Industrial Science and Technology, and Nihon, Tengen-yaku Kenkyusho K.K. High-viscosity eye lotions. 4,230,690, Cl. 424-78.000.

Yamazaki, Hitoshi; and Ito, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Method of forming coated layer of fluorescent substance on inner surface of bulb. 4,230,741, Cl. 427-67.000.

Yanai, Nobuya: See—
Nishida, Masayuki; Funakoshi, Satoshi; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; and Yamada, Munee, 4,230,697, Cl. 424-177.000.

Yarbro, Orlan O., to United States of America, Energy. Apparatus for leaching core material from clad nuclear fuel pin segments. 4,230,675, Cl. 422-272.000.

Yasunaga, Makoto: See—
Mizutani, Nagao; Kurihara, Toshio; Nishiyama, Yutaka; Kunita, Masao; Kinoshita, Teruo; and Yasunaga, Makoto, 4,230,039, Cl. 101-93.170.

Ying, Andrew S.: See—
Mayher, James M.; and Ying, Andrew S., 4,230,960, Cl. 310-51.000.

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Sano, Seisuke; Maeda, Masato; and Iguchi, Morimichi, 4,230,555, Cl. 204-195.00S.

Yoneda, Koji; Ohashi, Takehisa; Nagamachi, Tomoaki; Fukumitsu, Hirotsuka; and Takahashi, Satomi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for preparing 5-(4-hydroxyphenyl)hydantoin. 4,230,869, Cl. 548-314.000.

Yoshida, Akio: See—
Tsubai, Yasuo; Yoshida, Akio; and Suzuki, Shigeyoshi, 4,230,792, Cl. 430-302.000.

Yoshida, Kiyotaka; Hatanaka, Yoshio; Kudo, Kenyoshi; and Aoki, Takao, to Myojo Foods Company, Limited. Process for producing quick-cooking noodles. 4,230,735, Cl. 426-557.000.

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Iwasaki, Hajime; Mizuta, Kuninori; Kobayashi, Yoshinori; Yoshikawa, Tadayoshi; and Muraoka, Kyozu, 4,230,762, Cl. 428-234.000.

Yoshizaki, Masaaki; and Mizuno, Kenichi, to Hitachi, Ltd. Data transfer system. 4,231,084, Cl. 364-200.000.

Youn, Youngil; and Flatt, Adrian E., to University of Iowa Research Foundation, The. Wrist prosthesis. 4,229,841, Cl. 3-1.910.

Young, David M., to Massachusetts General Hospital, The. Nerve growth factor antibody and process. 4,230,691, Cl. 424-85.000.

Young, Lewis B., to Mobil Oil Corporation. Method for producing 3-alkylphenols and 1,3-hydroxybenzene. 4,230,894, Cl. 568-768.000.

Young, Sharon L. Apparatus and method for sealing esophageal entrance to trachea above and below. 4,230,108, Cl. 128-207.150.

Yurasko, George, Jr., to Eutectic Corporation. Metallo-thermic powder. 4,230,750, Cl. 427-423.000.

Yuwa-Sangyo Kabushiki Kaisha: See—
Iwaki, Takashi; Tanaka, Takeji; Tanaka, Yoshitomo; and Tanaka, Hiroshi, 4,230,058, Cl. 113-1.00R.

Zahn, Irwin, to General Staple Company, Inc. Continuous connector. 4,230,387, Cl. 339-59.00M.

Zaidi, Syed M. A.: See—
Wearing, Brian J.; and Zaidi, Syed M. A., 4,230,921, Cl. 200-153.00J.

Zainullin, Lik A.: See—
Sharonov, Mikhail A.; Zainullin, Lik A.; Olginsky, Felix Y.; Scherbakov, Ivan I.; Kolpakov, Serafim V.; and Teder, Leonid I., 4,230,477, Cl. 65-141.000.

Zajac, John, to Davis & Wilder, Inc. Plasma etching apparatus. 4,230,515, Cl. 156-345.000.

- Zalm, Pieter: See—
de Bont, Marinus R. J.; Kivita, Petrus J.; Schoot, Cornelis J.; and Zalm, Pieter, 4,230,939, Cl. 235-488.000.
- Zander, Jurgen, to Bayer Aktiengesellschaft. Process for the preparation of chlorine-substituted aromatic amines. 4,230,637, Cl. 260-580.000.
- Zann, Annie: See—
Beguín, Alain; Dubois, Jean-Claude; and Zann, Annie, 4,230,596, Cl. 252-299.000.
- Zeff, Robert H.; and Phillips, Steven J. Method of implanting transcatheterous connector. 4,230,096, Cl. 128-1.00R.
- Zenner, Armin: See—
Scholl, Hans-Joachim; and Zenner, Armin, 4,230,876, Cl. 560-25.000.
- Zhukovsky, Alexei N.: See—
Meir, Vladimir A.; Zhukovsky, Alexei N.; Ponomarev, Vladimir S.; Subbotin, Vladimir G.; Kharitonov, Jury P.; Kusniruk, Vladimir F.; Anatychuk, Lukyan I.; Melnik, Anatoly P.; Skakodub, Vladimir A.; and Sokolov, Alexandr D., 4,230,945, Cl. 250-370.000.
- Ziebarth, Jurgen: See—
Coenen, Alfred; Kosawig, Kurt; Hentschel, Bernhard; and Ziebarth, Jurgen, 4,230,681, Cl. 423-481.000.
- Ziman, Stephen D., to Chevron Research Company. Fungicidal n-substituted 4,4-dialkyl homophthalimides. 4,230,711, Cl. 424-258.000.
- Zissimopoulos, Nick, to Baxter Travenol Laboratories, Inc. Fluid-flow limiting apparatus for use with intravenous-solution administering equipment. 4,230,244, Cl. 222-450.000.
- Zoeke, Siegfried, to Siemens Aktiengesellschaft. Device for adjusting the position of a lens in two directions. 4,230,409, Cl. 355-55.000.
- Zulaski, John A., to S & C Electric Company. Ready indicator for high-voltage switchgear. 4,231,028, Cl. 340-644.000.
- Zumbrunn, Jean-Pierre, to L'Air Liquide S.A. pour l'Etude et l'Exploitation des Procédés George Claude. Deodorant composition for animal and vegetal wastes. 4,230,478, Cl. 71-3.000.
- Zupancic, Boris; and Sopoic, Mirko, to LEK, tovarna farmacevtskih in kemskih izdelkov, n.s.o. Process for preparing 2-(3-benzoyl-phenyl)-propionic acid. 4,230,884, Cl. 562-460.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF OCTOBER, 1980

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barlow Marine Limited: See—

Hutton, Albert J.; Hutton, Allen W.; and Dellit, Richard J.,

Re. 30,423, Cl. 254-346.000.

Dellit, Richard J.: See—

Hutton, Albert J.; Hutton, Allen W.; and Dellit, Richard J., Re. 30,423, Cl. 254-346.000.

Hutton, Albert J.; Hutton, Allen W.; and Dellit, Richard J., to Barlow Marine Limited. Variable speed winch. Re. 30,423, Cl. 254-346.000.

Hutton, Allen W.: See—

Hutton, Albert J.; Hutton, Allen W.; and Dellit, Richard J., Re. 30,423, Cl. 254-346.000.

LIST OF DESIGN PATENTEEES

Ball Corporation: See—

Campbell, Arlin L.; and Cannon, Roger B., 257,463, Cl. D9-216.000.

Bayly, Peter K., to Nicholas Proprietary Limited. Combined container for candy or the like and toy building block. 257,462, 10-28-80, Cl. D9-10.000.

Benoit, Lucien E. Caddy for dental care implements. 257,458, 10-28-80, Cl. D6-91.000.

Brooks, Richard, to Schweiger Industries, Inc. Sofa. 257,455, 10-28-80, Cl. D6-63.000.

Broyhill Furniture Industries, Inc.: See—

Smith, Melbourne F., Jr., 257,459, Cl. D6-177.000.

Brunswick Corporation: See—

Moore, William D., 257,469, Cl. D21-232.000.

Campbell, Arlin L.; and Cannon, Roger B., to Ball Corporation. Beverage container. 257,463, 10-28-80, Cl. D9-216.000.

Cannon, Roger B.: See—

Campbell, Arlin L.; and Cannon, Roger B., 257,463, Cl. D9-216.000.

Ciecierski, Henry; and Nieckula, James J. Fishing sinker. 257,470, 10-28-80, Cl. D22-30.000.

Culler, Randy R., to Kroehler Mfg. Co. Ottoman. 257,451, 10-28-80, Cl. D6-36.000.

Culler, Randy R., to Kroehler Mfg. Co. Seat. 257,456, 10-28-80, Cl. D6-63.000.

Gillette Company, The: See—

Zierhut, Clarence, 257,465, Cl. D19-51.000.

Johnson, Paul E., Jr. Baby bonnet. 257,448, 10-28-80, Cl. D2-243.000.

Johnson, Paul E., Jr. Baby bonnet. 257,449, 10-28-80, Cl. D2-243.000.

King, Danny L. Combination tool for glazing. 257,461, 10-28-80, Cl. D8-55.000.

Kroehler Mfg. Co.: See—

Culler, Randy R., 257,451, Cl. D6-36.000.

Culler, Randy R., 257,456, Cl. D6-63.000.

Laub, Henry A., Jr.; and Laub, Steven D. Device to reform threads. 257,460, 10-28-80, Cl. D8-51.000.

Laub, Steven D.: See—

Laub, Henry A., Jr.; and Laub, Steven D., 257,460, Cl. D8-51.000.

Long, Edward L. Game goal. 257,467, 10-28-80, Cl. D21-200.000.

Moore, William D., to Brunswick Corporation. Billiard table. 257,469, 10-28-80, Cl. D21-232.000.

Nash, Stanley P., to Schweiger Industries, Inc. Seat or similar article. 257,453, 10-28-80, Cl. D6-63.000.

Nash, Stanley P., to Schweiger Industries, Inc. Seat or similar article. 257,454, 10-28-80, Cl. D6-63.000.

Nash, Stanley P., to Schweiger Industries, Inc. Seat or similar article. 257,457, 10-28-80, Cl. D6-63.000.

Nicholas Proprietary Limited: See—

Bayly, Peter K., 257,462, Cl. D9-10.000.

Nieckula, James J.: See—

Ciecierski, Henry; and Nieckula, James J., 257,470, Cl. D22-30.000.

Persiani, John D. Bin for granular material. 257,464, 10-28-80, Cl. D9-222.000.

Radek, John R., to Ready Metal Mfg. Co. Chair. 257,450, 10-28-80, Cl. D6-7.000.

Ready Metal Mfg. Co.: See—

Radek, John R., 257,450, Cl. D6-7.000.

Schoch, Robert R. Simulative toy mobile. 257,468, 10-28-80, Cl. D21-62.000.

Schweiger Industries, Inc.: See—

Brooks, Richard, 257,455, Cl. D6-63.000.

Nash, Stanley P., 257,453, Cl. D6-63.000.

Nash, Stanley P., 257,454, Cl. D6-63.000.

Nash, Stanley P., 257,457, Cl. D6-63.000.

Williams, David P. G., 257,452, Cl. D6-62.000.

Smith, Melbourne F., Jr., to Broyhill Furniture Industries, Inc. Dining room table. 257,459, 10-28-80, Cl. D6-177.000.

Smith, Richard R. Paperweight. 257,466, 10-28-80, Cl. D19-97.000.

Williams, David P. G., to Schweiger Industries, Inc. Seat or similar article. 257,452, 10-28-80, Cl. D6-62.000.

Zierhut, Clarence, to Gillette Company, The. Writing instrument. 257,465, 10-28-80, Cl. D19-51.000.

LIST OF PLANT PATENTEEES

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Crimson Sun. 4,603, 10-28-80, Cl. 68.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily named Star Fire. 4,604, 10-28-80, Cl. 68.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily plant named Star Duster. 4,605, 10-28-80, Cl. 68.000.

Kirsch, Ted T., to Sun Valley Bulb Farms, Inc. Lily plant named Gold Dust. 4,606, 10-28-80, Cl. 68.000.

Sun Valley Bulb Farms, Inc.: See—

Kirsch, Ted T., 4,603, Cl. 68.000.

Kirsch, Ted T., 4,604, Cl. 68.000.

Kirsch, Ted T., 4,605, Cl. 68.000.

Kirsch, Ted T., 4,606, Cl. 68.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 28, 1980

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 1	2.1 R	4,229,832	CLASS 34	92	4,229,886	CLASS 57	22	4,229,935	625	4,229,995	14.05	4,230,494	214 R	4,230,109
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431	4,229,837	CLASS 38	17	4,229,891	CLASS 63	562	4,229,940	CLASS 78	124	4,230,489	58	4,230,499	214.7	4,230,113
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CLASS 7	4 B	4,229,848	152.1	4,229,892	CLASS 68	564	4,229,945	CLASS 83	125 R	4,230,491	314	4,230,502	215	4,230,118
107	4,229,849	CLASS 8	102.1	4,229,890	CLASS 69	564	4,229,946	CLASS 84	125 R	4,230,491	314	4,230,502	215	4,230,119
CLASS 9	1.4	4,229,850	102.1	4,229,890	CLASS 70	564	4,229,947	CLASS 85	125 R	4,230,491	314	4,230,502	215	4,230,120
146 S	4,229,851	CLASS 10	102.1	4,229,890	CLASS 71	564	4,229,948	CLASS 86	125 R	4,230,491	314	4,230,502	215	4,230,121
CLASS 11	3.5	4,229,852	102.1	4,229,890	CLASS 72	564	4,229,949	CLASS 87	125 R	4,230,491	314	4,230,502	215	4,230,122
250.16	4,229,853	CLASS 12	102.1	4,229,890	CLASS 73	564	4,229,950	CLASS 88	125 R	4,230,491	314	4,230,502	215	4,230,123
316 R	4,229,854	CLASS 13	102.1	4,229,890	CLASS 74	564	4,229,951	CLASS 89	125 R	4,230,491	314	4,230,502	215	4,230,124
CLASS 14	29	4,229,855	102.1	4,229,890	CLASS 75	564	4,229,952	CLASS 90	125 R	4,230,491	314	4,230,502	215	4,230,125
47	4,229,856	CLASS 15	102.1	4,229,890	CLASS 76	564	4,229,953	CLASS 91	125 R	4,230,491	314	4,230,502	215	4,230,126
95 R	4,229,857	CLASS 16	102.1	4,229,890	CLASS 77	564	4,229,954	CLASS 92	125 R	4,230,491	314	4,230,502	215	4,230,127
CLASS 17	44	4,229,858	102.1	4,229,890	CLASS 78	564	4,229,955	CLASS 93	125 R	4,230,491	314	4,230,502	215	4,230,128
45	4,229,859	CLASS 18	102.1	4,229,890	CLASS 79	564	4,229,956	CLASS 94	125 R	4,230,491	314	4,230,502	215	4,230,129
50	4,229,860	CLASS 19	102.1	4,229,890	CLASS 80	564	4,229,957	CLASS 95	125 R	4,230,491	314	4,230,502	215	4,230,130
CLASS 20	161.1	4,229,861	102.1	4,229,890	CLASS 81	564	4,229,958	CLASS 96	125 R	4,230,491	314	4,230,502	215	4,230,131
230 B	4,230,456	CLASS 21	102.1	4,229,890	CLASS 82	564	4,229,959	CLASS 97	125 R	4,230,491	314	4,230,502	215	4,230,132
232 R	4,230,457	CLASS 22	102.1	4,229,890	CLASS 83	564	4,229,960	CLASS 98	125 R	4,230,491	314	4,230,502	215	4,230,133
313 AS	4,230,458	CLASS 23	102.1	4,229,890	CLASS 84	564	4,229,961	CLASS 99	125 R	4,230,491	314	4,230,502	215	4,230,134
568	4,230,459	CLASS 24	102.1	4,229,890	CLASS 85	564	4,229,962	CLASS 100	125 R	4,230,491	314	4,230,502	215	4,230,135
CLASS 25	68 SK	4,229,862	102.1	4,229,890	CLASS 86	564	4,229,963	CLASS 101	125 R	4,230,491	314	4,230,502	215	4,230,136
277	4,229,863	CLASS 26	102.1	4,229,890	CLASS 87	564	4,229,964	CLASS 102	125 R	4,230,491	314	4,230,502	215	4,230,137
CLASS 27	147	4,229,864	102.1	4,229,890	CLASS 88	564	4,229,965	CLASS 103	125 R	4,230,491	314	4,230,502	215	4,230,138
CLASS 28	25.42	4,229,865	102.1	4,229,890	CLASS 89	564	4,229,966	CLASS 104	125 R	4,230,491	314	4,230,502	215	4,230,139
26 A	4,229,866	CLASS 29	102.1	4,229,890	CLASS 90	564	4,229,967	CLASS 105	125 R	4,230,491	314	4,230,502	215	4,230,140
156.4 R	4,229,867	CLASS 30	102.1	4,229,890	CLASS 91	564	4,229,968	CLASS 106	125 R	4,230,491	314	4,230,502	215	4,230,141
157.3 R	4,229,868	CLASS 31	102.1	4,229,890	CLASS 92	564	4,229,969	CLASS 107	125 R	4,230,491	314	4,230,502	215	4,230,142
157.4	4,229,869	CLASS 32	102.1	4,229,890	CLASS 93	564	4,229,970	CLASS 108	125 R	4,230,491	314	4,230,502	215	4,230,143
254	4,229,870	CLASS 33	102.1	4,229,890	CLASS 94	564	4,229,971	CLASS 109	125 R	4,230,491	314	4,230,502	215	4,230,144
407	4,229,871	CLASS 34	102.1	4,229,890	CLASS 95	564	4,229,972	CLASS 110	125 R	4,230,491	314	4,230,502	215	4,230,145
420	4,229,872	CLASS 35	102.1	4,229,890	CLASS 96	564	4,229,973	CLASS 111	125 R	4,230,491	314	4,230,502	215	4,230,146
432	4,229,873	CLASS 36	102.1	4,229,890	CLASS 97	564	4,229,974	CLASS 112	125 R	4,230,491	314	4,230,502	215	4,230,147
452	4,229,874	CLASS 37	102.1	4,229,890	CLASS 98	564	4,229,975	CLASS 113	125 R	4,230,491	314	4,230,502	215	4,230,148
460	4,229,875	CLASS 38	102.1	4,229,890	CLASS 99	564	4,229,976	CLASS 114	125 R	4,230,491	314	4,230,502	215	4,230,149
509	4,229,876	CLASS 39	102.1	4,229,890	CLASS 100	564	4,229,977	CLASS 115	125 R	4,230,491	314	4,230,502	215	4,230,150
527.7	4,229,877	CLASS 40	102.1	4,229,890	CLASS 101	564	4,229,978	CLASS 116	125 R	4,230,491	314	4,230,502	215	4,230,151
840	4,229,879	CLASS 41	102.1	4,229,890	CLASS 102	564	4,229,979	CLASS 117	125 R	4,230,491	314	4,230,502	215	4,230,152
CLASS 42	142	4,229,880	102.1	4,229,890	CLASS 103	564	4,229,980	CLASS 118	125 R	4,230,491	314	4,230,502	215	4,230,153
254	4,229,881	CLASS 43	102.1	4,229,890	CLASS 104	564	4,229,981	CLASS 119	125 R	4,230,491	314	4,230,502	215	4,230,154
276	4,229,882	CLASS 44	102.1	4,229,890	CLASS 105	564	4,229,982	CLASS 120	125 R	4,230,491	314	4,230,502	215	4,230,155
CLASS 45	143 L	4,229,883	102.1	4,229,890	CLASS 106	564	4,229,983	CLASS 121	125 R	4,230,491	314	4,230,502	215	4,230,156
174 L	4,229,884	CLASS 46	102.1	4,229,890	CLASS 107	564	4,229,984	CLASS 122	125 R	4,230,491	314	4,230,502	215	4,230,157
178	4,229,885	CLASS 47	102.1	4,229,890	CLASS 108	564	4,229,985	CLASS 123	125 R	4,230,491	314	4,230,502	215	4,230,158
CLASS 48	178	4,229,886	102.1	4,229,890	CLASS 109	564	4,229,986	CLASS 124	125 R	4,230,491	314	4,230,502	215	4,230,159
CLASS 49	178	4,229,887	102.1	4,229,890	CLASS 110	564	4,229,987	CLASS 125	125 R	4,230,491	314	4,230,502	215	4,230,160
CLASS 50	178	4,229,888	102.1	4,229,890	CLASS 111	564	4,229,988	CLASS 126	125 R	4,230,491	314	4,230,502	215	4,230,161
CLASS 51	178	4,229,889	102.1	4,229,890	CLASS 112	564	4,229,989	CLASS 127	125 R	4,230,491	314	4,230,502	215	4,230,162
CLASS 52	178	4,229,890	102.1	4,229,890	CLASS 113	564	4,229,990	CLASS 128	125 R	4,230,491	314	4,230,502	215	4,230,163
CLASS 53	178	4,229,891	102.1	4,229,890	CLASS 114	564	4,229,991	CLASS 129	125 R	4,230,491	314	4,230,502	215	4,230,164
CLASS 54	178	4,229,892	102.1	4,229,890	CLASS 115	564	4,229,992	CLASS 130	125 R	4,230,491	314	4,230,502	215	4,230,165
CLASS 55	178	4,229,893	102.1	4,229,890	CLASS 116	564	4,229,993	CLASS 131	125 R	4,230,491	314	4,230,502	215	4,230,166
CLASS 56	178	4,229,894	102.1	4,229,890	CLASS 117	564	4,229,994	CLASS 132	125 R	4,230,491	314	4,230,502	215	4,230,167
CLASS 57	178	4,229,895	102.1	4,229,890	CLASS 118	564	4,229,995	CLASS 133	125 R	4,230,491	314	4,230,502	215	4,230,168
CLASS 58	178	4,229,896	102.1	4,229,890	CLASS 119	564	4,229,996	CLASS 134	125 R	4,230,491	314	4,230,502	215	4,230,169
CLASS 59	178	4,229,897	102.1	4,229,890	CLASS 120	564	4,229,997	CLASS 135	125 R	4,230,491	314	4,230,502	215	4,230,170
CLASS 60	178	4,229,898	102.1	4,229,890	CLASS 121	564	4,229,998	CLASS 136	125 R	4,230,491	314	4,230,502	215	4,230,171
CLASS 61	178	4,229,899	102.1	4,229,890	CLASS 122	564	4,229,999	CLASS 137	125 R	4,230,491	314	4,230,502	215	4,230,172
CLASS 62	178	4,229,900	102.1	4,229,890	CLASS 123	564	4,230,000	CLASS 138	125 R	4,230,491	314	4,230,502	215	4,230,173
CLASS 63	178	4,229,901	102.1	4,229,890	CLASS 124	564	4,230,001	CLASS 139	125 R	4,230,491	314	4,230,502	215	4,230,174
CLASS 64	178	4,229,902	102.1	4,229,890	CLASS 125	564	4,230,002	CLASS 140	125 R	4,230,491	314	4,230,502	215	4,230,175
CLASS 65	178	4,229,903	102.1	4,229,890	CLASS 126	564	4,230,003	CLASS 141	125 R	4,230,491	314	4,230,502	215	4,230,176
CLASS 66	178	4,229,904	102.1	4,229,890	CLASS 127	564	4,230,004	CLASS 142	125 R	4,230,491	314	4,230,502	215	4,230,177
CLASS 67	178	4,229,905	102.1	4,229,890	CLASS 128	564	4,230,005	CLASS 143	125 R	4,230,491	314	4,230,502	215	4,230,178
CLASS 68	178	4,229,906	102.1	4,229,890	CLASS 129	564	4,230,006	CLASS 144	125 R	4,230,491	314	4,230,502	215	4,230,179
CLASS 69	178	4,229,907	102.1	4,229,890	CLASS 130	564	4,230,007	CLASS 145	125 R	4,230,491	314	4,230,502	215	4,230,180
CLASS 70	1													

CLASSIFICATION OF PATENTS

1	CLASS 338	23	4,231,051	124	4,230,412	244	4,230,703	41	4,230,782	224	4,230,810
36	4,231,006	24	4,231,052		CLASS 401	248.51	4,230,704	42	4,230,783	227	4,230,811
131	4,231,007	30	4,231,053	65	4,230,413	180	4,230,705	53	4,230,784	320	4,230,812
209	4,231,008	38	4,231,054		CLASS 401	251	4,230,706	56	4,230,785	329	4,230,813
212	4,231,009	42	4,231,055	95	4,230,414	253	4,230,707	107	4,230,787	333	4,230,814
	CLASS 337	50	4,231,056	122	4,230,415	256	4,230,708	153	4,230,788	335	4,230,815
94	4,231,010	67	4,231,057	252.1	4,230,416	258	4,230,709	159	4,230,789		
	CLASS 338	68	4,231,058	301	4,230,417	260	4,230,710	288	4,230,790	12	4,230,816
2	4,231,011		4,231,059		CLASS 405	163	4,230,711	296	4,230,791	206	4,230,817
	CLASS 339	69	4,231,060	52	4,230,418	269	4,230,712	302	4,230,792	272	4,230,818
17 R	4,230,383	76	4,231,061	166	4,230,419	273 R	4,230,713	315	4,230,793	483	4,230,819
	4,230,384	109	4,231,062	166	4,230,420	274	4,230,714	323	4,230,794		
42	4,230,385	148	4,231,063	168	4,230,421		4,230,715	503	4,230,795	4	4,230,845
39 M	4,230,386	158	4,231,064	210	4,230,422	275	4,230,716	523	4,230,796	10	4,230,846
74 R	4,230,387	166	4,231,065	211	4,230,423	278	4,230,717			17 R	4,230,847
75 M	4,230,388	180	4,231,066	227	4,230,424	283	4,230,718				
90 R	4,230,389	237	4,231,067	239	4,230,425	301	4,230,719				
97 R	4,230,390	252	4,231,068		CLASS 406	317	4,230,720				
117 R	4,230,391	256	4,231,069	191	4,230,426	325	4,230,721				
	4,230,392	285	4,231,070		CLASS 407	330	4,230,722				
	CLASS 340	40	4,231,071	91	4,230,427		4,230,723				
52 A	4,231,012	88	4,231,072	116	4,230,428		4,230,724				
72	4,231,013				CLASS 408	87	4,230,441				
146.3 Y	4,231,014				CLASS 409	451.2	4,230,442				
147 R	4,231,015	1	4,231,073	186	4,230,429		4,230,443				
166 R	4,231,016	44	4,231,074		CLASS 410		4,230,444				
	4,231,017	433	4,231,075		CLASS 411		4,230,445				
171 R	4,231,018		4,231,076	59	4,230,430	115	4,230,446				
347 DA	4,231,019			102	4,230,431	124	4,230,447				
347 DD	4,231,020	32	4,231,077		4,230,432	128	4,230,448				
	4,231,021	35	4,231,078		CLASS 412	233	4,230,449				
	4,231,022	106	4,231,079	111	4,230,433	393	4,230,450				
365 S	4,231,023	298	4,231,080	607	4,230,434	429	4,230,451				
521	4,231,024	306	4,231,081	722	4,230,435	535	4,230,452				
636	4,231,025	368	4,231,082		CLASS 413	557	4,230,453				
	4,231,026				CLASS 414	601	4,230,454				
	4,231,027				4,230,436	607	4,230,455				
644	4,231,028	135	4,231,083		4,230,437	656	4,230,456				
648	4,231,029				4,230,438		4,230,457				
695	4,231,030				4,230,439		4,230,458				
762	4,231,031	200	4,231,084		CLASS 415	42	4,230,459				
765	4,231,032		4,231,085		4,230,440	54.1	4,230,460				
765	4,231,033		4,231,086		CLASS 416	67	4,230,461				
765	4,231,034		4,231,087		4,230,441	79	4,230,462				
765	4,231,035		4,231,088		CLASS 417	148	4,230,463				
765	4,231,035		4,231,089		4,230,442	163	4,230,464				
	CLASS 341	411	4,231,090	33	4,230,663	163	4,230,465				
5 CE	4,231,037	431	4,231,091	61	4,230,664	255.4	4,230,466				
5 DD	4,231,038		4,231,092	62	4,230,665	373	4,230,467				
5 EM	4,231,039	460	4,231,093	64	4,230,666	423	4,230,468				
5 NQ	4,231,040	514	4,231,094	106	4,230,667		4,230,469				
8	4,231,041	515	4,231,095	113	4,230,668		4,230,470				
100 SA	4,231,042	523	4,231,096	140	4,230,669	443.1	4,230,471				
767	4,231,043	577	4,231,097	148	4,230,670		4,230,472				
786	4,231,044	708	4,231,098	151	4,230,671		4,230,473				
	4,231,045	718	4,231,099	159	4,230,672	17	4,230,474				
881	4,231,046	724	4,231,100	225	4,230,673	40	4,230,475				
882	4,231,047		4,231,101	226	4,230,674	95	4,230,476				
	4,231,048	726	4,231,102	272	4,230,675	101	4,230,477				
73	4,231,049		4,231,103		CLASS 418	137	4,230,478				
140 R	4,231,050	900	4,231,104	54	4,230,677	141	4,230,479				
	CLASS 342		4,231,105	112	4,230,678	159	4,230,480				
	4,231,051		4,231,106	325	4,230,679	195	4,230,481				
6.5	4,230,393	87	4,231,107	360	4,230,680	215	4,230,482				
6.8	4,230,394	174	4,231,108	481	4,230,681	234	4,230,483				
96.23	4,230,395		4,231,109	579	4,230,682	246	4,230,484				
96.31	4,230,396	194	4,231,110		CLASS 419	288	4,230,485				
184	4,230,397				4,230,683	307	4,230,486				
	4,230,398				4,230,684	349	4,230,487				
	CLASS 343	177	4,230,410	12	4,230,685	352	4,230,488				
10	4,230,399				4,230,686	412	4,230,489				
25	4,230,400	19	4,231,111	45	4,230,687	424.4	4,230,490				
	4,230,401	158	4,231,112	74	4,230,688	437	4,230,491				
33	4,230,402			78	4,230,689	441	4,230,492				
286	4,230,403			85	4,230,690	447	4,230,493				
321	4,230,404	282	4,229,936	122	4,230,691	518	4,230,494				
	CLASS 344		4,230,411	156	4,230,692	525	4,230,495				
4	4,230,405	24	4,230,903	172	4,230,693	537	4,230,496				
15	4,230,406	71	4,230,910	177	4,230,694		4,230,497				
27	4,230,407	84	4,230,911		4,230,695	97	4,230,498				
35	4,230,408				4,230,696	104	4,230,499				
55	4,230,409				4,230,697	104	4,230,500				
	CLASS 345	4	4,230,989	180	4,230,698	204	4,230,501				
	4,231,049				4,230,699	204	4,230,502				
13	4,231,050	121	4,230,411	242	4,230,700	204	4,230,503				
					4,230,701	210	4,230,504				

CLASSIFICATION OF DESIGNS

D2—	243	257,448	62	257,452	257,456	D8—	51	257,460	222	257,464	200	257,467		
		257,449	63	257,453	257,457		55	257,461	51	257,465	232	257,469		
D6—	7	257,450		257,454	91	D9—	10	257,462	97	257,466				
	36	257,451		257,455	177		216	257,463	D21—	62	257,468	D22—	30	257,470

CLASSIFICATION OF PLANTS

P—	68	4,603	4,604	4,605	4,606
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PATENTS

4 :	4,230,319	4,230,114	4,231,027	4,230,799	4,230,317	4,230,864
6 :	4,229,868	4,230,126	4,231,080	4,230,912	4,230,330	4,230,868
	4,230,034	4,230,131	4,231,103	4,230,925	4,230,335	4,230,917
	4,230,038	4,230,140	4,231,104	4,230,996	4,230,341	4,230,962
	4,230,137	4,230,145	4,231,110	4,231,030	4,230,378	4,231,073
	4,230,235	4,230,226	4,230,162	4,231,056	4,230,383	4,231,091
	4,230,300	4,230,233	4,230,367	4,231,067	4,230,391	4,231,111
	4,230,384	4,230,247	4,230,476	4,230,071	4,230,397	4,229,925
	4,230,449	4,230,265	4,230,678	4,230,188	4,230,417	4,229,931
	4,230,482	4,230,302	4,230,941	4,230,297	4,230,428	4,229,934
	4,230,547	4,230,322	4,230,942	4,230,313	4,230,440	4,230,096
	4,230,554	4,230,325	4,231,039	4,230,600	4,230,491	4,230,280
	4,230,652	4,230,334	4,229,978	4,230,602	4,230,492	4,230,290
	4,230,863	4,230,353	4,230,163	4,230,732	4,230,519	4,230,347
	4,230,874	4,230,354	4,230,255	4,231,037	4,230,535	4,230,819
	4,230,902	4,230,359	4,230,291	4,230,224	4,230,561	4,230,088
	4,230,906	4,230,364	4,230,486	4,230,045	4,230,577	4,230,303
II :	4,231,051	4,230,394	4,230,573	4,230,046	4,230,608	4,230,453
	4,229,890	4,230,412	4,230,860	4,230,153	4,230,626	4,230,986
IV :	4,230,390	4,230,416	4,230,880	4,230,360	4,230,647	4,229,869
	4,230,092	4,230,421	4,230,931	4,230,585	4,230,683	4,229,945
	4,230,513	4,230,435	4,230,937	4,229,865	4,230,685	4,229,933
01 :	4,230,467	4,230,441	4,229,904	4,229,901	4,230,687	4,230,108
	4,230,818	4,230,446	4,230,593	4,229,903	4,230,693	4,230,329
III :	4,230,002	4,230,483	4,230,679	4,229,912	4,230,695	4,230,890
	4,230,127	4,230,515	4,230,830	4,229,915	4,230,752	4,231,025
	4,230,164	4,230,522	4,230,832	4,229,925	4,230,846	4,231,102
	4,230,292	4,230,550	4,230,103	4,229,951	4,230,848	4,229,841
	4,230,336	4,230,557	4,230,106	4,229,962	4,230,922	4,230,050
	4,230,973	4,230,571	4,230,321	4,229,966	4,230,944	4,230,051
	4,230,989	4,230,574	4,230,995	4,229,975	4,230,972	4,230,059
	4,231,040	4,230,579	4,229,832	4,229,993	4,230,974	4,230,160
	4,231,093	4,230,633	4,229,835	4,230,022	4,231,028	4,230,460
05 :	4,231,099	4,230,660	4,229,899	4,230,035	4,231,045	4,230,508
	4,229,897	4,230,663	4,229,977	4,230,085	4,231,079	4,230,509
	4,230,268	4,230,711	4,229,982	4,230,095	4,231,114	4,230,597
06 :	4,230,530	4,230,717	4,230,012	4,230,112	4,229,894	4,230,740
	4,229,837	4,230,720	4,230,031	4,230,115	4,230,089	4,230,822
	4,229,846	4,230,724	4,230,064	4,230,130	4,230,167	4,231,005
	4,229,870	4,230,731	4,230,119	4,230,152	4,230,234	4,231,053
	4,229,876	4,230,805	4,230,123	4,230,161	4,230,252	4,231,107
	4,229,887	4,230,875	4,230,203	4,230,171	4,230,296	4,231,113
	4,229,896	4,230,898	4,230,208	4,230,176	4,230,444	4,229,851
	4,229,902	4,230,928	4,230,231	4,230,199	4,230,485	4,229,874
	4,229,922	4,230,936	4,230,242	4,230,223	4,230,611	4,229,911
	4,229,930	4,230,938	4,230,243	4,230,228	4,230,620	4,230,025
	4,229,936	4,230,953	4,230,356	4,230,244	4,230,644	4,230,330
	4,229,956	4,230,970	4,230,362	4,230,249	4,230,712	4,230,368
	4,230,017	4,230,971	4,230,399	4,230,254	4,230,769	4,230,393
	4,230,026	4,230,977	4,230,466	4,230,261	4,230,797	4,230,448
	4,230,032	4,230,990	4,230,541	4,230,269	4,230,798	4,230,461
	4,230,048	4,230,994	4,230,582	4,230,279	4,230,861	4,230,529
	4,230,065	4,231,015	4,230,777	4,230,314	4,230,862	

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

4,230,668	28 :	4,230,699	4,231,081	4,230,432	4,231,058	4,230,350
4,230,674	29 :	4,229,833	4,231,087	4,230,672	4,229,839	4,230,675
4,230,691		4,229,836	4,230,558	4,230,746	4,229,844	4,230,682
4,230,701		4,229,886	4,229,834	4,230,100	4,229,852	4,229,860
4,230,742		4,230,028	4,229,842	4,229,854	4,229,857	4,229,867
4,230,754		4,230,116	4,229,849	4,229,861	4,229,859	4,229,900
4,230,785		4,230,202	4,229,941	4,229,892	4,229,875	4,229,907
4,230,933		4,230,357	4,229,948	4,229,917	4,229,913	4,230,066
4,230,947		4,230,380	4,229,950	4,229,970	4,229,926	4,230,147
4,230,955		4,230,463	4,229,985	4,229,991	4,229,947	4,230,174
4,230,956		4,230,537	4,230,015	4,229,994	4,229,974	4,230,182
4,230,978		4,230,657	4,230,030	4,230,000	4,229,999	4,230,183
4,230,988		4,230,736	4,230,043	4,230,007	4,230,008	4,230,184
4,231,010		4,230,802	4,230,057	4,230,018	4,230,009	4,230,185
4,231,021		4,230,839	4,230,061	4,230,023	4,230,047	4,230,187
4,231,062		4,230,845	4,230,075	4,230,024	4,230,105	4,230,190
4,231,066		4,230,866	4,230,086	4,230,148	4,230,113	4,230,192
4,231,071		4,230,929	4,230,107	4,230,219	4,230,154	4,230,196
4,231,074		4,231,013	4,230,109	4,230,230	4,230,173	4,230,201
4,231,076		4,231,105	4,230,111	4,230,253	4,230,229	4,230,214
4,231,086	30 :	4,229,938	4,230,124	4,230,257	4,230,241	4,230,215
4,231,089		4,230,546	4,230,125	4,230,260	4,230,274	4,230,299
4,231,112	31 :	4,229,967	4,230,129	4,230,281	4,230,294	4,230,348
4,229,863		4,230,479	4,230,206	4,230,301	4,230,305	4,230,372
4,229,872		4,230,913	4,230,250	4,230,373	4,230,311	4,230,374
4,229,906	32 :	4,230,142	4,230,256	4,230,392	4,230,344	4,230,381
4,229,916		4,230,369	4,230,259	4,230,436	4,230,351	4,230,385
4,229,919	33 :	4,230,029	4,230,267	4,230,439	4,230,355	4,230,420
4,229,924		4,230,049	4,230,298	4,230,480	4,230,365	4,230,426
4,229,942	34 :	4,229,858	4,230,315	4,230,495	4,230,450	4,230,458
4,229,976		4,229,881	4,230,387	4,230,511	4,230,471	4,230,504
4,229,992		4,229,929	4,230,396	4,230,517	4,230,496	4,230,545
4,229,996		4,229,968	4,230,405	4,230,536	4,230,498	4,230,587
4,230,003		4,230,042	4,230,406	4,230,551	4,230,526	4,230,669
4,230,053		4,230,056	4,230,419	4,230,566	4,230,532	4,230,680
4,230,055		4,230,101	4,230,456	4,230,578	4,230,552	4,230,726
4,230,062		4,230,110	4,230,464	4,230,586	4,230,556	4,230,887
4,230,076		4,230,205	4,230,472	4,230,592	4,230,603	4,231,070
4,230,149		4,230,238	4,230,493	4,230,607	4,230,605	4,231,111
4,230,227		4,230,240	4,230,510	4,230,609	4,230,610	4,230,181
4,230,266		4,230,389	4,230,523	4,230,649	4,230,617	4,230,275
4,230,273		4,230,473	4,230,549	4,230,670	4,230,641	4,230,386
4,230,276		4,230,501	4,230,601	4,230,700	4,230,656	4,230,946
4,230,312		4,230,505	4,230,613	4,230,715	4,230,676	4,231,106
4,230,342		4,230,527	4,230,628	4,230,761	4,230,704	4,230,090
4,230,345		4,230,533	4,230,662	4,230,770	4,230,713	4,230,144
4,230,427		4,230,590	4,230,677	4,230,771	4,230,727	4,230,248
4,230,430		4,230,591	4,230,684	4,230,774	4,230,755	4,230,363
4,230,431		4,230,621	4,230,696	4,230,810	4,230,759	4,230,954
4,230,462		4,230,625	4,230,698	4,230,825	4,230,772	4,229,889
4,230,506		4,230,635	4,230,730	4,230,841	4,230,779	4,230,036
4,230,521		4,230,639	4,230,744	4,230,842	4,230,781	4,230,128
4,230,572		4,230,640	4,230,747	4,230,843	4,230,790	4,230,155
4,230,629		4,230,705	4,230,748	4,230,888	4,230,827	4,230,156
4,230,632		4,230,763	4,230,749	4,230,894	4,230,833	4,230,689
4,230,645		4,230,794	4,230,757	4,230,911	4,230,835	4,230,718
4,230,651		4,230,811	4,230,773	4,231,041	4,230,844	4,230,764
4,230,653		4,230,817	4,230,782	4,229,895	4,230,877	4,230,016
4,230,673		4,230,834	4,230,791	4,229,971	4,230,892	4,230,060
4,230,707		4,230,836	4,230,795	4,230,139	4,230,939	4,230,293
4,230,710		4,230,837	4,230,813	4,230,150	4,230,960	4,230,352
4,230,816		4,230,847	4,230,814	4,230,193	4,230,961	4,230,434
4,230,828		4,230,857	4,230,878	4,230,194	4,230,975	4,230,905
4,230,900		4,230,883	4,230,879	4,230,278	4,230,987	4,231,060
4,230,918		4,230,893	4,230,909	4,230,331	4,231,011	4,230,775
4,230,930		4,230,895	4,230,910	4,230,424	4,231,029	4,230,824
4,230,983		4,230,896	4,230,914	4,230,437	4,231,059	4,229,864
4,230,984		4,230,958	4,230,965	4,230,533	4,230,134	4,229,891
4,231,077		4,230,964	4,230,979	4,230,534	4,231,006	4,229,981
4,231,082	27 :	4,230,120	4,230,985	4,230,588	4,230,729	4,230,037
4,230,121		4,230,997	4,230,985	4,230,604	4,229,877	4,230,200
4,230,222		4,230,998	4,231,026	4,230,638	4,229,954	4,230,213
4,230,789		4,230,999	4,231,036	4,230,666	4,230,284	4,230,286
4,230,924		4,231,009	4,231,061	4,230,885	4,230,753	4,230,514
4,230,950		4,231,023	4,231,096	4,229,882	4,229,880	4,230,627
4,230,992		4,231,042	4,229,840	4,229,910	4,229,909	4,230,919
4,231,065		4,231,043	4,230,054	4,229,959	4,230,081	4,230,926
4,231,088		4,231,050	4,230,093	4,230,452	4,230,246	4,230,104

DESIGN PATENTS

6 :	257,464	12 :	257,448	18 :	257,463	257,459	48 :	257,465	53 :	257,457
06 :	257,455		257,449	34 :	257,452	257,468		257,466	55 :	257,453
	257,460	17 :	257,450	37 :	257,451	257,469		257,467		257,454
	257,461		257,470		257,456	257,458	44 :			

PLANT PATENTS

41 :	4,603	4,604	4,605	4,606		
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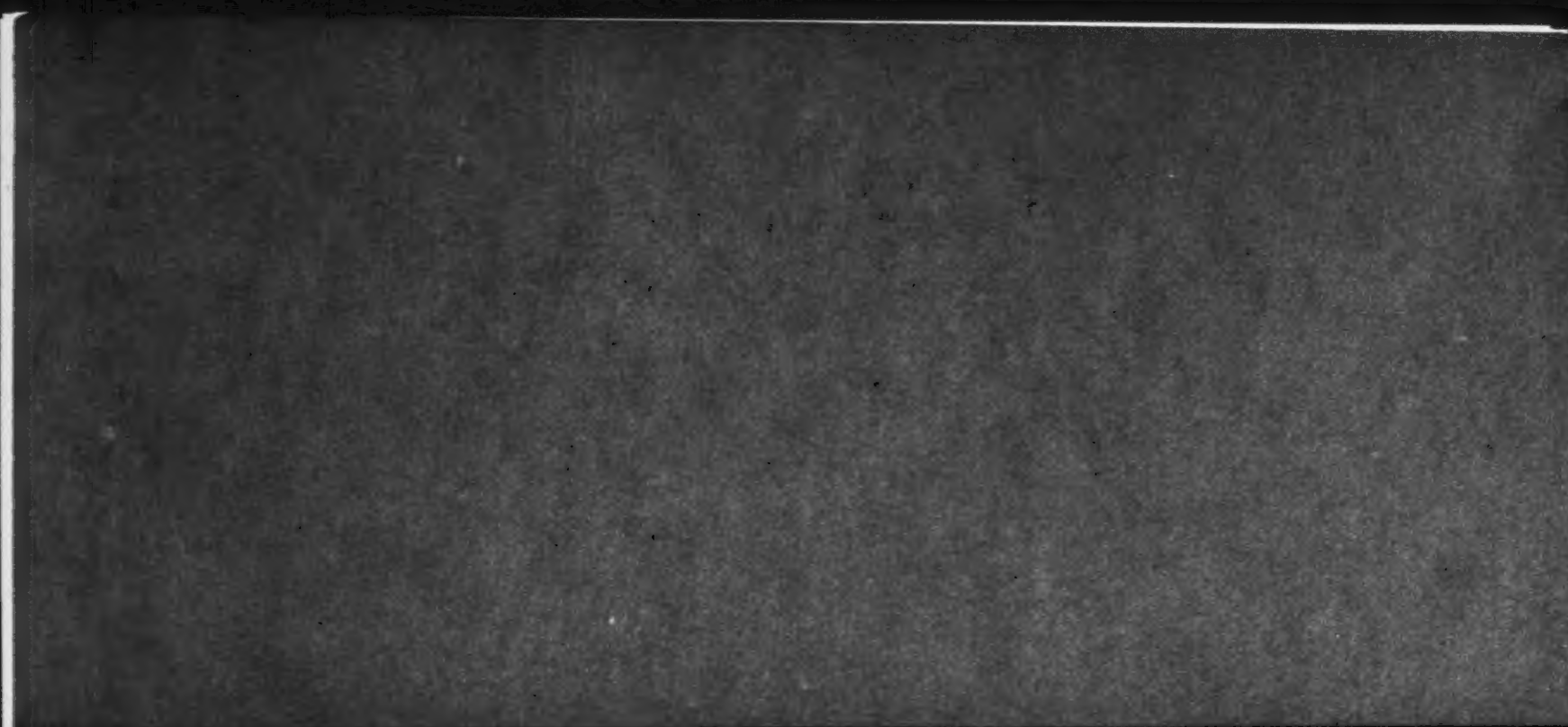
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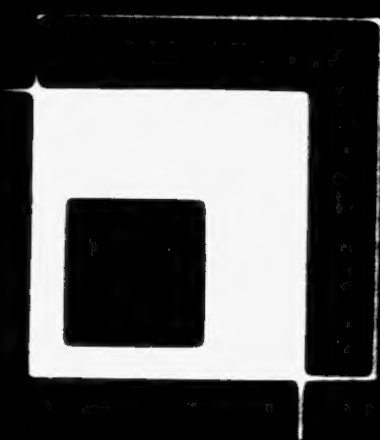
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